DIRECTORATE OF RESEARCH
ANAND AGRICULTURAL UNIVERSITY
UNIVERSITY BHAVAN, ANAND-388 110 (Gujarat)

☎/**Fax:** 02692-263600(O)
e-mail : dr@aau.in

Director of Research & Dean PG Studies (I/c)

No. AAU/DR/RES/T-3/ 2000 **/2023** **Date:** 14 **/06/2023**

To,
1. All University Officers, AAU, Anand
2. All Conveners AGRESCO Sub Committee, AAU, Anand
3. All Unit / Sub-Unit Officers, AAU, Anand

Sub : Proceeding of 19th Combined AGRESCO of SAUs and KU ...regarding

With reference to above cited subject, please find enclosed herewith the proceeding of the **19th Combined AGRESCO meeting** of SAUs and Kamdhenu University held during **25th April to 17th May, 2023** through **online mode** organized by Anand Agricultural University, Anand. This is for your information and further needful action.

Encl: As above

Director of Research &
Dean P.G. Studies

Copy to:
1. PS to Vice Chancellor, AAU, Anand for information.
2. The Director, Information Technology, AAU, Anand for uploading on AAU website.

PROCEEDING OF THE NINETEENTH MEETING OF COMBINED AGRICULTURAL RESEARCH COUNCIL (AGRESCO) OF SAUs AND KAMDHENU UNIVERSITY OF GUJARAT 2022-23

ORGANIZED BY (THROUGH VIRTUAL MODE)

ANAND AGRICULTURAL UNIVERSITY ANAND

APRIL 25 TO MAY 17, 2023

DIRECTORATE OF RESEARCH
ANAND AGRICULTURAL UNIVERSITY
ANAND 388110

CONTENT

Online Video Conference Meeting

19th Combined AGRESCO of SAUs and

Kamdhenu University of Gujarat

Date: April 25 to May 17, 2023 **Organizer: Anand Agricultural University**

INAUGURAL SESSION

Date: 25/04/2023 **Time: 09.00 hr onwards**

Place: Yagyavalkya Hall, AAU, Anand

Welcome address	:	Dr. M. K. Jhala, DR, AAU
Chairman	:	Dr. K. B. Kathiria, Hon'ble VC, AAU
Address by Dignitaries	:	Dr. R. M. Chauhan, Hon'ble VC, SDAU Dr. Z. P. Patel, Hon'ble VC, NAU Dr. V. P. Chovatia, Hon'ble VC, JAU Dr. N. H. Kelawala, Hon'ble VC, KU
Presidential Address	:	Dr. K. B. Kathiria, Hon'ble VC, AAU
Rapporteurs	:	Dr. S. N. Shah, ADR, AAU Dr. R. B. Madariya, ADR, JAU Dr. Lalit Mahatma, ADR, NAU Dr. C.K. Patel, ADR, SDAU
Vote of Thanks	:	Dr. M. L. Gaur, Professor, AAU

Schedule of Parallel Technical Sessions 19th Combined AGRESCO Sub-committees

Particulars	AGRESCO Sub-Committee		
	1. Plant Protection/ Crop Protection	**2. Basic Science & Humanities/ Plant Physiology/ Bio-chemistry & Biotechnology**	**3. Dairy Science/ Food Tech./ FPT & Bio Energy**
Dates	**April 25-27, 2023**		
Chairman	**Dr. Z. P. Patel, VC, NAU**	**Dr. M. K. Jhala, DR, AAU**	**Dr. Atanu Jana, Principal, SMC college of Dairy Science, KU, Anand**
Co-Chairmen	1. Dr. Muralidharan, DR, SDAU	1. Dr. Y. M. Shukla, Dean (Agri.), AAU	1. Dr. Samit Dutta, Dean (FPT), AAU
	2. Dr. K. B. Rakholiya, Prof. & Head, (Pl Patho.), NAU	2. Dr. V. H. Kanbi, Dean (Basic Sci.), SDAU	2. Dr. I. N. Patel, Dean (Food Tech.), SDAU
Rapporteurs	1. Dr. D. B. Sisodiya, AAU	1. Dr. Sushil Kumar, AAU	1. Dr. Bhavesh Joshi, AAU, Anand
	2. Dr. M. K. Ghelani, JAU	2. Dr. U. K. Kandoliya, JAU	2. Dr. Subrota Hati, KU, Anand
	3. Dr. P. R. Patel, NAU	3. Dr. Ajay Narwade, NAU	3. Dr. Bhavesh Jani, S.K.Nagar
	4. Dr. P.S. Patel, SDAU	4. Dr. Kapil Tiwari, SDAU	4. Dr. Dev Raj, NAU
Statistician	Dr. A. D. Kalola, Professor & Head, AAU	Dr. Mayur Sitap, JAU	Dr. V. B. Darji, Professor, AAU
Place	Yagyavalkya Hall, AAU, Anand	Training Hall, EEI, AAU, Anand	Conference Hall, NAHEP CAAST, AAU, Anand
Presentation	Respective Conveners of AAU, JAU, NAU, SDAU and KU		

Particulars	AGRESCO Sub-Committee		
	4. Crop Improvement	**5. Horticulture & Forestry**	**6. Social Science**
Dates	**May 01-03, 2023**		
Chairman	**Dr. K. B. Kathiria, VC, AAU**	**Dr. T. Ahlawat, DR, NAU**	**Dr. R. M. Chauhan, VC, SDAU**
Co-Chairmen	1. Dr. S. D. Solanki, Dean (Agri.), SDAU	1. Dr. N. I. Shah, Dean (Horti.), AAU	1. Dr. H. B. Patel, DEE, AAU
	2. Dr. R. B. Madariya, ADR, JAU	2. Dr. Piyush Verma, Dean (Horti.), SDAU, Jagudan	2. Dr. H. M. Gajipara, DEE, JAU
Rapporteurs	1. Dr. D. A. Patel, AAU	1. Dr. M. J. Patel, AAU	1. Dr. J. B. Patel, AAU
	2. Dr. A. G. Pansuriya, JAU	2. Dr. K. M. Karetha, JAU	2. Dr. S. B. Vekariya, JAU
	3. Dr. R. K. Patel, NAU	3. Dr. R. V. Tank, NAU	3. Dr. Narendra Singh, NAU
	4. Dr. N. B. Patel, SDAU	4. Dr. Manish Patel, SDAU	4. Dr. J. J. Mistry, SDAU
Statistician	Dr. D. J. Parmar, Assoc. Professor, AAU	Dr. A. P. Chaudhary, NAU	Dr. D. V. Patel, Assoc. Professor, JAU
Venue	Yagyavalkya Hall, AAU, Anand	Conference Hall, NAHEP CAAST, AAU, Anand	Training Hall, EEI, AAU, Anand
Presentation	Respective Conveners of AAU, JAU, NAU, SDAU and KU		

Particulars	AGRESCO Sub-Committee		
	7. Crop Production/ Natural Resource Management	**8. Agriculture Engineering and AIT**	**9. Animal Science (Animal Health, Animal Production & Fisheries Science)**
Dates	**May 08 -10, 2023**	**May 05, 06 and 08, 2023**	
Chairman	**Dr. V. P. Chovatia, VC, JAU**	**Prof. (Dr.) N. K. Gontia, Dean (CAET), JAU**	**Dr. N. H. Kelawala, VC, KU**
Co-Chairmen	1. Dr. S. G. Savalia, Dean (Agri.), CoA, JAU, Junagadh	1. Dr. D. R. Kathiriya, Director (IT), AAU, Anand	1. Dr. D. B. Patil, DR, KU
	2. Dr. D. D. Patel, Principal (Agri.), NAU, Bharuch	2. Dr. S. H. Sengar, Principal (CAE), NAU, Dediapada	2. Dr. B. P. Brahmkshtri, Principal, Vet. College, KU, Himmatnagar
Rapporteurs	1. Dr. V. J. Patel, AAU	1. Dr. Navneet Kumar, AAU	1. Dr. F. P. Savaliya, AAU, Anand
	2. Dr. R. M. Solanki, JAU	2. Dr. G. V. Prajapati, JAU	2. Dr. M. M. Islam, KU, Anand Dr. K. A. Sadariya, KU, Anand Dr. B.G. Chudasama, KU, Veraval
	3. Dr. V. P. Usadadiya, NAU	3. Dr. A. K. Lakkad, NAU	3. Dr. G. B. Solanki, JAU
	4. Dr. D. M. Patel, SDAU	4. Dr. B. S. Parmar, SDAU	4. Dr. Gaurav Pandya, NAU
Statistician	Dr. G. K. Chaudhari, SDAU	Dr. Alok Srivastava, Professor & Head, NAU	Dr. A. N. Khokhar, Assoc. Professor, AAU
Venue	Yagyavalkya Hall, AAU, Anand	Conference Hall, NAHEP CAAST, AAU, Anand	Training Hall, EEI, AAU, Anand
Presentation	Respective Conveners of AAU, JAU, NAU, SDAU and KU		

:: PLENARY SESSION ::

Date: 17.05.2023		**Time: 09:00 hr onwards**
Place: Yagyavalkya Hall, AAU, Anand		
Welcome Address	:	Dr. M. K. Jhala, DR, AAU
Chief Guest	:	Hon'ble Agriculture Minister, Gujarat State
Chairman	:	Dr. K. B. Kathiria, Hon'ble VC, AAU
Co-Chairmen	:	Dr. R. M. Chauhan, Hon'ble VC, SDAU Dr. V. P. Chovatiya, Hon'ble VC, AAU Dr. Z. P. Patel, Hon'ble VC, NAU Dr. N. H. Kelawala, Hon'ble VC, KU
Rapporteurs	:	Dr. S. N. Shah, ADR, AAU Dr. R. B. Madariya, ADR, JAU Dr. Lalit Mahatma, ADR, NAU Dr. C.K. Patel, ADR, SDAU

Proceeding Presentation Schedule:

1.	Crop Improvement	Dr. R. R. Acharya, AAU
2.	Crop Production / NRM	Dr. M. B. Viradiya, AAU
3.	Plant Protection	Dr. R. K. Thumar, AAU
4.	Horticulture & Forestry	Dr. J. S. Patel, AAU
5.	Agriculture Engineering and AIT	Dr. Pankaj Gupta, AAU
6.	Basic Science & Humanities, (Plant Physiology, Bio Chemistry and Biotechnology)	Dr. J. J. Dhruv, AAU
7.	Social Science	Dr. A. D. Kalola, AAU
8.	Animal Science (Animal Health, Animal Production & Animal Science, Fisheries)	Dr. K. N. Wadhwani, AAU
9.	Dairy & Food Technology / Dairy Science, FPT & Bio Energy	Dr. S. H. Akbari, AAU
Vote of Thanks		Dr. S. N. Shah, ADR, AAU

Proceedings of 19th Combined AGRESCO meeting of SAUs and Kamdhenu University (Virtual Mode) (April 25 to May 17, 2023)

INAUGURAL SESSION

The inaugural session of 19th Combined AGRESCO meeting was chaired by Dr. K.B. Kathiria, Hon'ble Vice Chancellor, AAU, Anand. Dr. Z.P. Patel, Hon'ble Vice Chancellor, NAU, Navsari, Dr. R.M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar, Dr. V.P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh and Dr. N. H. Kelawala, Hon'ble Vice Chancellor, NAU, Navsari along with Directors of Research, Associate Directors of Research, Deans of various faculties and Scientists from all the five universities remained present.

At the outset, Dr. M.K. Jhala, Director of Research, AAU, Anand welcomed all the members of Combined AGRESCO and stated that SAUs of Gujarat have set an example to work in coordination and harmony among the Agricultural Scientists of Gujarat and the event of Combined AGRESCO really provides such a platform to work together. He felicitated Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU, Anand and Chairman of the inaugural function with bouquet of flowers. The Directors of Research of all other SAUs and KU also felicitated Hon'ble Vice Chancellors of respective University.

Dr. V. P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh in his address informed the house that India at present is among top five countries in terms of area and production of major cereals, pulses, beverages and spices, fruit and vegetable crops and animal products. The demand for food grain would increase to 345 million tonnes by 2030 and we have to achieve it from decreasing available cultivable land by developing high yielding varieties with better nutritional quality. Gujarat is blessed with several agro-climatic weather conditions and soil types which enables growing of most of the crops. Agriculture faced many constraints like small and fragmented land holding, low SRR, irrigation facilities, farm mechanization, soil erosion, storage and transport facilities and processing at village level. Moreover, climate change is the major threat as we are experiencing rise in temperature, erratic rainfall, water scarcity, off season rainfall etc. Para-wilting in cotton, yellowing and low root nodulation in groundnut, blast disease in pearl millet, less fruit setting in coconut due to low pollination, low germination in wheat due to high temperature are some of the examples of climate change effect in recent years. For mitigating these, development of the climate resilient varieties with biotic and abiotic stress tolerance, low water requirement and adopting MIS irrigation system on large area are required. He emphasized on development of Bio-control agents, export oriented horticulture, nanotechnology, soil health management, crop residue management, development of low cost farm implements, encouraging farmer producer organizations on large scale, ICT application for smart agriculture, robotics and AI in agriculture. He also urged the social science group for doing impact analysis of research technology of SAUs.

He appreciated and congratulated the scientists of SAUs and KU for discussing the research output critically with constructive suggestions for the benefit of farmers after screening at multiple levels.

Dr. N.H. Kelawala, Hon. Vice Chancellor, KU, appreciated the unique pattern of SAUs and KU of Gujarat working together through the platform of Combined AGRESCO. He informed that KU has got two projects under natural farming in the current year and small holding farmers are likely to be benefitted with these projects. Sex semen technology is going to make a huge impact on the breed improvement of the cattle. While emphasizing on the problem of diseases in cattle, he opined that the mortality can be reduced remarkably through early diagnosis and detection.

Dr. R. M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar narrated the achievements of SDAU in terms of awards, Rural Business Incubation Center (RBIC), sanctioned by NABARD; that is only one of its kinds in Gujarat and research under Natural farming. He also informed the house that in the field of research, SDAU has done many important achievements related to agriculture. With the commendable and continuous efforts of the scientists, the university has got success to increase the productivity of castor, potato, spices, pomegranate, date and wheat and many other crops. He informed that by adopting the Integrated Farming System developed by the University, farmers are not only increasing their income but also playing an important role in environmental balance. He also narrated that the Jagudan centre of spices has been adjudged as the best centre by the ICAR. The new variety of wheat GW 513 got appreciation by the ICAR. Tharad campus of SDAU has been declared as the natural farming campus.

Dr. Z.P. Patel, Hon'ble Vice Chancellor, NAU, Navsari stated that there are 65 recommendations and 11 varieties proposed by NAU and wished that all the discussions and deliberations will be held taking farmers of Gujarat into consideration He congratulated the scientists for their recommendations and conveyed best wishes to all the scientists/faculty members of SAUs of Gujarat for working hard in developing varieties, technologies for farmers and generation of scientific information in large numbers which shall empower the farmers of the state. He wished 19th Combined AGRESCO a grand success.

Dr. K.B. Kathiria, Hon'ble Vice Chancellor of AAU, Anand, welcoming all the members in his presidential address, appreciated the unique modality of Combined AGRESCO system which probably only the Gujarat State follows in the country. He showed his satisfaction that all the four SAUs and KU are putting their best efforts in research area domains as per their jurisdiction. Earlier, the research work related to veterinary, dairy and fisheries were with all the four SAUs of Gujarat but now it has been shifted to KU. The research experiments must be concluded with important recommendations. There have been total 29 varieties proposed from all the four SAUs and are to be discussed in this AGRESCO. He also mentioned about newly started course on M.Sc. (Agriculture Analytics) by AAU in a unique and innovative manner which is jointly offered by DA-IICT, Gandhinagar, Anand Agricultural University and Indian Institute of

Remote Sensing, Dehradun with active participation of Industries by offering value added courses.

AAU, Anand and NDDB have signed a MOU which is going to be a very result oriented. AAU has approved two new Research farms one each at Kansari and Balasinor. To encourage and motivate the scientists, AAU has initiated to give the appreciation certificates to all the scientists who have contributed in the variety development and recommendations. AAU has established heritage museum where many rare articles /books/ implements/articles of significance from various colleges / centres / subcenters of AAU have been collected and displayed in the museum, which encourages and inspires the present scientists and reminds us about the prestigious heritage of AAU, Anand and the then erstwhile Gujarat Agricultural University. He further suggested to have NTPs in collaboration among the SAUs of Gujarat as and when required. He further added that all the recommendations made this time should be finalized and released as soon as possible so that it may reach the end users in a short possible time. The respective breeders of the crops should take the seed production programme in a larger area and produce the maximum seed so that it may reach the farmers in a short time. Scientists must give their maximum inputs to make recommendations / NTPs more useful and product oriented.

The inaugural session was ended by the vote of thanks given by Dr. M.L. Gaur.

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19.1 CROP IMPROVEMENT

DATE: 1-3 MAY, 2023

Chairman	Dr. K. B. Kathiria	Hon'ble Vice Chancellor, AAU, Anand
Co-Chairman	Dr. S. D. Solanki	Principal and Dean, CPCA, SDAU, SK Nagar
	Dr. R. B. Madariya	Associate Director of Research, JAU, Junagadh
Rapporteurs	Dr. D. A. Patel	Unit Head and Associate Research Scientist, Dept. of Agril. Biotech., BACA, AAU, Anand
	Dr. N. B. Patel	Associate Professor, Dept. of GPB, CPCA, SDAU, SK Nagar
	Dr. K. G. Modha	Associate Professor, Dept. of GPB, NMCA, NAU, Navsari
	Dr. A. G. Pansuriya	Associate Research Scientist, WRS, JAU, Junagadh

The 19th Combined AGRESCO online meeting of four SAUs for Crop Improvement Sub-committee (to finalize release proposals of varieties, recommendations and new technical programmes) was held during 1-3 May, 2023. It was hosted by AAU, Anand. At the outset, Dr. R. R. Acharya, Convener, Crop Improvement Sub-committee, AAU, Anand welcomed all the Vice Chancellors of SAUs, Director of Research, Co-Chairmen, Conveners, Rapporteurs and Scientists of crop improvement sub-committee of all SAUs.

Presentation of release proposal, recommendations and new technical programmes by Conveners of SAUs

Sr. no.	Name	Designation and University
1	Dr. R. R. Acharya	Research Scientist (Veg.), MVRS, AAU, Anand
2	Dr. B. A. Monpara	Research Scientist (Chickpea), PRS, JAU, Junagadh
3	Dr. B. K. Davda	Research Scientist (Sorghum), MSRS, NAU, Surat
4	Dr. P. J. Patel	Research Scientist (Spices), SRS, SDAU, Jagudan

Summary of the Release Proposals, Recommendations and New Technical Programmes

Name of University	Proposed				Approved			
	Crop Varieties	Farmer Reco.	Scientific Reco.	NTPs	Crop Varieties	Farmer Reco.	Scientific Reco.	NTPs
AAU	08	-	01	01	08	-	01	01
JAU	07	01	-	02	07	01	-	02
NAU	11	-	-	-	09	-	-	-
SDAU	03	-	02	01	02	-	02	01
TOTAL	**29**	**01**	**03**	**04**	**26**	**01**	**03**	**04**

19.1.1 Release proposals of varieties/ hybrids for farming community

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.1.1.1	**Fodder Maize: Gujarat Fodder Maize 1 (GFM 1 : Anand Tall)**
	The farmers of Gujarat state are recommended to grow fodder maize variety Gujarat Fodder Maize 1 (GFM 1: Anand Tall) during *kharif* season. The proposed variety recorded 446.81 and 81.13 q/ha green fodder yield and dry matter yield, respectively, which manifested 24.2 per cent higher green fodder yield and 32.5 per cent higher dry matter yield than the national check variety African Tall in middle Gujarat condition. The variety showed superiority in green fodder per day productivity (7.81 q/ha/day) and dry matter per day productivity (1.36 q/ha/day) as compared to the check. The variety has dark green foliage colour, thin stem, early in silking and tall plant with more number of leaves per plant. The proposed variety contains higher dry matter and neutral detergent fiber content; while it had comparable crude protein and acid detergent fiber content as compared to the check variety African Tall. The variety has lower acid detergent lignin content than the check. It has comparable prevalence of *maydis* leaf blight disease as well as fall armyworm and lower population of aphid as compared to the check African Tall.
	ઘાસચારા મકાઈ: ગુજરાત ઘાસચારા મકાઈ ૧ (જીએફએમ ૧: આણંદ ટોલ)
	ગુજરાત રાજ્યમાં ચોમાસુ ઋતુમા ઘાસચારા માટે મકાઈની ખેતી કરતા ખેડૂતોને ગુજરાત ઘાસચારા મકાઈ ૧ (જીએફએમ ૧: આણંદ ટોલ) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. મધ્ય ગુજરાતમાં આ જાતનું સરેરાશ લીલાચારા અને સુકાચારાનું ઉત્પાદન અનુક્રમે ૪૪૬.૮૧ અને ૮૧.૧૩ કિવ./હે. મળેલ છે, જે રાષ્ટ્રીય કક્ષાની અંકુશ જાત આફ્રિકન ટોલ કરતાં અનુક્રમે ૨૪.૨ અને ૩૨.૫ ટકા વધારે ઉત્પાદન આપે છે. આ જાતની લીલાચારામાં પ્રતિ દિન ઉત્પાદક્તા (૭.૮૧ કિવ./હે./દિન) અને સુકાચારામાં પ્રતિ દિન ઉત્પાદક્તા (૧.૩૬ કિવ./હે./દિન) અંકુશ જાત કરતા સારી જણાયેલ છે. આ જાતના પાનનો રંગ ઘાટો લીલો, થડ પાતળું અને મૂંછ આવવામાં વહેલી તેમજ છોડની ઉંચાઈ અને છોડ દીઠ પાનની સંખ્યા વધુ છે. અંકુશ જાત આફ્રિકન ટોલની સરખામણીએ, આ જાતમાં શુષ્ક પદાર્થ અને ન્યૂટ્રલ ડિટર્જેંટ ફાઇબરનું પ્રમાણ વધુ છે, જ્યારે ક્રુડ પ્રોટીન અને એસીડ ડિટર્જેંટ ફાઇબરના પ્રમાણમાં સામ્યતા ધરાવે છે. આ જાતમાં એસીડ ડિટર્જેંટ લીગનીનનું પ્રમાણ અંકુશ જાત કરતા ઓછું છે. અંકુશ જાત આફ્રિકન ટોલની સરખામણીએ, આ જાતમાં પાનના સુકારાના રોગ તેમજ પૂંછડે ચાર ટપકાવાળી લશ્કરી ઈયળ ના પ્રમાણમાં સામ્યતા જોવા મળેલ છે જયારે મોલોમશીનું પ્રમાણ ઓછું જોવા મળે છે.
	Release proposal was accepted by the house with following suggestions: 1. *In-vitro* digestibility data should be included 2. Add data of AICRP trial in proposal 3. Remove Table 3 (crude protein yield) 4. In point 5(c): write “modified bulk method” and add flowchart of pedigree as Annexure
	[Action: Research Scientist (FC), MFRS, AAU, Anand**]**

19.1.1.2	**Pigeon pea: Gujarat Tur 109 (GT 109: Sweta)**
	The farmers of Gujarat state growing pigeon pea are recommended to grow Gujarat Tur 109 (GT 109: Sweta) during *kharif* season. The proposed variety gave 1918 kg/ha seed yield which was 14.5, 11.3, 11.1 and 27.4 per cent higher than check varieties AGT 2, GT 104, BDN 2 and Vaishali, respectively in the Gujarat State. Whereas, it gave 1890 kg/ha seed yield which exhibited yield increment by 24.4, 32.6, 35.1, 14.9 and 26.8 per cent over AGT 2, GT 104, BDN 2, GJP 1, and Vaishali, respectively in middle Gujarat. The variety had medium maturity, semi-erect in nature, resistant against wilt and SMD under natural field condition. On quality point of view, seeds of this variety contain higher amount of protein (23.35%) as compared to check varieties AGT 2, GT 104 and Vaishali whereas, nutrients like Fe (32.54 mg/kg) and Zn (22.38 mg/kg) were found higher as compared to check varieties AGT 2, BDN 2 and Vaishali.
	તુવેર: ગુજરાત તુવેર ૧૦૯ (જી. ટી. ૧૦૯ : શ્વેતા)
	ગુજરાત રાજ્યમાં તુવેરની ખેતી કરતાં ખેડૂતોને ગુજરાત તુવેર ૧૦૯ (જીટી ૧૦૯: શ્વેતા) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું સરેરાશ ઉત્પાદન ૧૯૧૮ કિ.ગ્રા./હે. છે જે અંકુશ જાતો, એજીટી ૨, જીટી ૧૦૪, બીડીએન ૨ અને વૈશાલી કરતાં અનુક્રમે ૧૪.૫,૧૧.૩, ૧૧.૧, અને ૨૭.૪ ટકા વધારે છે. આ નવી જાત મધ્ય ગુજરાતમાં ૧૮૯૦ કિ.ગ્રા./હે. દાણાનું ઉત્પાદન આપે છે જે અંકુશ જાતો એજીટી ૨, જીટી ૧૦૪, બીડીએન ૨, જીજેપી ૧ અને વૈશાલી કરતાં અનુક્રમે ૨૪.૪, ૩૨.૬, ૩૫.૧, ૧૪.૯ અને ૨૬.૮ ટકા વધુ ઉત્પાદન આપે છે.આ જાત મધ્યમ પાકતી, અર્ધ ફેલાતી તેમજ સુકારા અને વંધ્યત્વના રોગ સામે પ્રતિકારક માલુમ પડેલ છે. આ જાતમાં પ્રોટીનનું પ્રમાણ (૨૩.૩૫%) અંકુશ જાતો એજીટી ૨, જીટી ૧૦૪ અને વૈશાલી કરતાં વધુ છે. આ ઉપરાંત લોહ (૩૨.૫૪ મી.ગ્રા./કિ.ગ્રા.) અને ઝીંક (૨૨.૩૮ મી.ગ્રા./કિ.ગ્રા.) તત્વોનું પ્રમાણ પણ અંકુશ જાતો એજીટી ૨, બીડીએન ૨ અને વૈશાલી કરતાં વધુ છે.
	Release proposal was accepted by the house with following suggestions: 1. Add SMD data of Bharuch center in Table 7b 2. Mention only parentage information in point 5(a) 3. Add flow chart of pedigree as Annexure 4. Verify the flower colour of GT 104 in Table 5
	[Action: Associate Research Scientist, Pulse Research Station, AAU, Vadodara**]**
19.1.1.3	**Rice: Gujarat Aerobic Rice 201 (GAR 201: Anand Akshat)**
	The *kharif* aerobic rice growing farmers of the Gujarat state are recommended to grow Gujarat Aerobic Rice 201 (GAR 201: Anand Akshat). The proposed variety gave 3988 kg/ha average grain yield, which was 29.3, 22.3 and 13.4 per cent higher over the check varieties NAUR 1, GNR 8 and GNR 3, respectively. It showed moderately resistant reaction against leaf and

	neck blast and grain discoloration, while moderately resistant to white backed plant hopper and leaf folder. This early maturing variety possesses medium bold grain, good cooking quality and suitable for puffed and flattened rice. It contains 1.08 ppm ß-carotene and 8.06 per cent protein.
	ગુજરાત ઓરાણ ડાંગર ૨૦૧ (જીએઆર ૨૦૧: આણંદ અક્ષત)
	ગુજરાત રાજ્યના ખરીફ ઋતુમાં પિયતથી ક્યારીની જમીનમાં ઓરાણ ડાંગરની ખેતી કરતા ખેડુતોને ગુજરાત ઓરાણ ડાંગર ૨૦૧ (જીએઆર ૨૦૧: આણંદ અક્ષત) જાતનું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. આ જાતનું દાણાનું સરેરાશ ઉત્પાદન ૩૯૮૮ કિગ્રા/હે. છે, જે અંકુશ જાતો એનએયુઆર ૧, જીએનઆર ૮ અને જીએનઆર ૩ કરતાં અનુક્રમે ૨૯.૩, ૨૨.૨ અને ૧૩.૪ ટકા વધુ છે. આ જાત પાન અને કંટીનો કરમોડી અને ભુખરા દાણાના રોગ સામે તેમજ સફેદ પીઠવાળા ચૂસિયાં અને પાન વાળનાર ઇયળ સામે મધ્યમ પ્રતિકારક માલુમ પડેલ છે. આ વહેલી પાકતી જાત મધ્યમ જાડો દાણો, દાણા અને રાંધવાની સારી ગુણવત્તા તેમજ મમરા અને પૌઆ માટે અનુકૂળ છે. જે ૧.૦૮ પીપીએમ બીટા-કેરોટીન અને ૮.૦૬ ટકા પ્રોટિન ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. In point no. 5(a): flow chart of pedigree should be included as a Annexure 2. Delete Table 2c (Irrigated transplanting condition) 3. Location-wise data should be included along with zonal mean in Table 3a 4. Verify 1000 grain weight in Table 4a 5. In grain classification, write LB instead of MB in Table 4a and 6a 6. Change the propose name of variety as "Gujarat Aerobic Rice 201 (GAR 201)" instead of GDSR 201
	[Action: Research Scientist, MRRS, AAU, Nawagam**]**
19.1.1.4	**Banana: Gujarat Banana 1 (GB 1: Anand Vaaman)**
	The farmers of Gujarat state are recommended to grow short stature and early maturing banana variety Gujarat Banana 1 (Anand Vaaman) which gave 70.16 t/ha fruit yield, which was 93.4 per cent higher than check Nendran and at par yield with Grand Naine over the years. This variety produced 215.9 kg fruit yield per ha per day, which was 123.3 and 8.9 per ce*nt* higher than checks Nendran and Grand Naine, respectively. The proposed variety has dwarf plant height having very short pseudostem length (1.53 m) as compared to checks Grand Naine (2.02 m) and Nendran (2.38 m). It showed that this variety had about 50 cm less plant height than Grand Naine. This will help to reduce the cost of propping and may withstand under high wind velocity conditions resulting less damage to the crop in this proposed variety. The fruits matured very early about 325 days which was 55 and 50 days earlier than check variety Grand Naine and Nendran, respectively. This variety has conical shape compact bunch. It has green peel colour before ripening and pale-yellow peel and white pulp colour at ripening. The proposed variety has average fruit weight 176 g, pulp weight per fruit 128 g, peel weight per fruit 48 g and pulp to peel ratio 2.68. This variety has the least sigatoka leaf spot disease intensity as compared to all the checks. The insect-pest did not appear during evaluation

	period of the variety. This variety contains higher moisture (82.92%), total anti-oxidant activity (5.26 mg/100g) and flavanoid (9.68 mg/100g) as compared to check varieties Grand Naine and Nendran. This variety contains higher Fe (84.80 mg/kg), Mn (16.73 mg/kg) and Cu (6.38 mg/kg) as compared to check Grand Naine.
	કેળ: ગુજરાત કેળ ૧ (જીબી ૧ : આણંદ વામન)
	ગુજરાત રાજ્યમાં કેળની ખેતી કરતા ખેડુતોને કેળની ઠીંગણી અને વહેલી તૈયાર થતી જાત ગુજરાત કેળ ૧ (આણંદ વામન) નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. કેળની આ જાત પ્રતિ હેક્ટર વિસ્તારમાંથી ૭૦.૧૬ ટન કેળાનું ઉત્પાદન આપે છે જે અંકુશ જાત નેન્દ્રન કરતાં ૯૩.૪ ટકા વધારે છે જયારે આ જાતનું કેળાનું હેકટરે ઉત્પાદન ગ્રાન્ડ નૈન જેટલું છે. આ જાત એક દિવસમાં ૨૧૫.૯ કિ.ગ્રા. ફળ પ્રતિ હેક્ટર વિસ્તારમાંથી આપે છે જે અંકુશ જાતો ગ્રાન્ડ નૈન અને નેન્દ્રન કરતાં અનુક્રમે ૮.૯ અને ૧૨૩.૩ ટકા વધારે છે. આ જાત અંકુશ જાતો ગ્રાન્ડ નૈન (૨.૦૨ મી.) અને નેન્દ્રન (૨.૩૮ મી.) કરતાં ખુબજ ઓછી ઉંચાઈ (૧.૫૩ મી.) ધરાવે છે, જે અંકુશ જાત ગ્રાન્ડ નૈન કરતાં ૫૦ સેમી જેટલી ઓછી છે. આ જાતની ઉંચાઈ ખુબજ ઓછી હોવાથી છોડને ટેકા આપવાનો ખર્ચ ઘટાડી શકશે તેમજ વધુ પવનની ગતિ સામે ટકી શકે તેવી ક્ષમતા ધરાવે છે. આ જાત અંકુશ જાત ગ્રાન્ડ નૈન કરતાં ૫૫ દિવસ વહેલી એટલે કે માત્ર ૩૨૫ દિવસમાં તૈયાર થઇ જાય છે. આ જાતની લૂમ કોનિકલ આકારમાં અને ભરાવદાર હોય છે. આ જાતના પાકતા પહેલા ફળની છાલનો રંગ લીલો જયારે પાક્યા બાદ ફળની છાલ આછી પીળી તથા માવો સફેદ રંગનો હોય છે. આ જાતમાં ફળનું વજન ૧૭૬ ગ્રામ, માવાનું વજન પ્રતિ ફળ ૧૨૮ ગ્રામ, છાલનું વજન પ્રતિ ફળ ૪૮ ગ્રામ અને માવા:છાલનો રેશીયો (૨.૬૮) હોય છે. આ જાતમાં સીગાટોકા રોગથી થતું નુકસાન અંકુશ જાતો કરતા પ્રમાણમાં ઓછું જોવા મળેલ છે. આ જાતમાં ભેજનું પ્રમાણ ૮૨.૯૨%, એન્ટી-ઓક્સિડન્ટ પ્રવૃત્તિ ૫.૨૬ મિ.ગ્રા./૧૦૦ ગ્રામ અને ફ્લેવેનોઈડ ૯.૬૮ મિ.ગ્રા./૧૦૦ ગ્રામ જોવા મળેલ છે જે અંકુશ જાતો નેન્દ્રન અને ગ્રાન્ડ નૈન કરતાં વધારે છે. આ જાતમાં લોહ તત્વ (૮૪.૮૦ મી.ગ્રા./કિ.ગ્રા.), મેંગેનીઝ (૧૬.૭૩ મી.ગ્રા./કિ.ગ્રા.) અને કોપર (૬.૩૮ મી.ગ્રા./કિ.ગ્રા.) ગ્રાન્ડ નૈન કરતાં વધારે છે.
	Release proposal was accepted by the house with following suggestions: 1. Recommendation text and salient features should be precise 2. Verify data of Table 1(a) 3. Mention name of station (Jabugam) instead of station trial 4. Include the data of calcium and potassium content and re-verify micronutrients data in Table 5
	[Action: Associate Res. Scientist, ARS, COA, Jabugam**]**
19.1.1.5	**Banana: Gujarat Banana 2 (GB 2: Prasadam)**
	The farmers of Gujarat state are recommended to grow banana variety Gujarat Banana 2 (Prasadam) which gave 50.13 t/ha fruit yield, which was 5.5, 65.8, 13.8 and 12.3 per cent higher than checks Peyan, Rasthali, Red banana and Ney Pooven, respectively. This variety produced 130.2 kg fruit yield per

	ha per day, which was 10.0, 74.3, 52.3 and 18.1 per cent higher than checks Peyan, Rasthali, Red banana and Ney Pooven, respectively. The variety has medium plant height with early maturity and conical shape loose bunch. The proposed variety has pale green peel colour before ripening and at the time of ripening pale-yellow peel and cream pulp colour. The proposed variety has comparable average fruit weight 99.3 g and pulp weight per fruit 76.7 g as compared to checks Peyan, Rasthali and Ney Pooven, while lower peel weight per fruit (22.7 g) and higher pulp to peel ratio (3.39) as compared to all the check varieties. The insect-pests did not appear during evaluation period of the variety. This variety contains higher carotenoid (3.64 mg/100gm) and reducing sugar (2.51%) as well as lower crude fiber (1.66%) as compare to check varieties Peyan, Rasthali and Red banana. This variety contains higher Fe (32.10 mg/kg) and Zn (9.16 mg/kg) as compared to check Rasthali, Red banana and Ney Pooven. This variety fetches higher price than Grand Naine.
	કેળ: ગુજરાત કેળ ૨ (જીબી ૨: પ્રસાદમ)
	ગુજરાત રાજ્યમાં કેળની ખેતી કરતા ખેડુતોને કેળની જાત ગુજરાત કેળ ૨ (પ્રસાદમ)નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. કેળની આ જાત પ્રતિ હેક્ટર વિસ્તારમાંથી ૫૦.૧૩ ટન કેળાનું ઉત્પાદન આપે છે જે અંકુશ જાતો પેયન, રસથાલી, રેડ બનાના અને નેય પુવન કરતાં અનુક્રમે ૫.૫, ૬૫.૮, ૧૩.૮ તથા ૧૨.૩ ટકા વધારે છે. આ જાત એક દિવસમાં ૧૩૦.૨ કિ.ગ્રા. ફળનું ઉત્પાદન પ્રતિ હેકટર આપે છે જે અંકુશ જાતો પેયન, રસથાલી, રેડ બનાના અને નેય પુવન કરતાં અનુક્રમે ૧૦.૦, ૭૪.૩, ૫૨.૩ તથા ૧૮.૧ ટકા વધારે છે. આ જાત વહેલી પાકતી તેમજ છોડ મધ્યમ ઉંચાઈ અને કોનિકલ આકારની આછી લૂમ ધરાવતો હોય છે. આ જાતના પાકતા પહેલા ફળની છાલનો રંગ આછો લીલો જયારે પાક્યા બાદ ફળની છાલ આછી પીળી તથા માવો ક્રીમ રંગનો હોય છે. આ જાતમાં ફળનું વજન ૯૯.૩ ગ્રામ અને માવાનું વજન પ્રતિ ફળ ૭૬.૭ ગ્રામ છે જે અંકુશ જાતો પેયન, રસથાલી અને નેય પુવન જેટલું હોય છે, જયારે છાલનું વજન પ્રતિ ફળ (૨૨.૭ ગ્રામ) ઓછું હોવાથી માવો અને ફળનો ગુણોત્તર (૩.૩૯) અંકુશ જાતો કરતાં વધારે છે. આ જાતમાં અંકુશ જાતો પેયન, રસથાલી, રેડ બનાના અને નેય પુવનની સરખામણીમાં વધુ કેરોટીનોઈડ (૩.૬૪ મિ.ગ્રા./૧૦૦ ગ્રામ માવા દીઠ), દ્રાવ્ય શર્કરા (૨.૫૧%) અને ઓછા પ્રમાણમાં રેસા (૧.૬૬%) જોવા મળેલ છે. આ જાતમાં લોહ તત્વ ૩૨.૧૦ મી.ગ્રા./કિ.ગ્રા. અને ઝીંક ૯.૧૬ મી.ગ્રા./કિ.ગ્રા. છે જે અંકુશ જાતો પેયન, રસથાલી, રેડ બનાના અને નેય પુવન કરતાં વધારે છે. આ જાતના કેળાના ભાવ ગ્રાન્ડ નૈન કરતા વધુ મળે છે.
	Release proposal was accepted by the house with following suggestions: 1. In point 5a, modify as per prescribed proforma 2. Mention pseudo-stem length instead of plant height in Table 2 3. Mention name of station (Jabugam) instead of station trial 4. The proposed variety should be contributed in AICRP trial through FRS, NAU Gandevi
	[Action: Associate Res. Scientist, ARS, COA, Jabugam**]**

19.1.1.6	**Chilli: Gujarat Vegetable Chilli 113 (GVC 113: Anand Jwala)**
	The farmers of Gujarat state growing chilli crop are recommended to grow Gujarat Vegetable Chilli 113 (GVC 113: Anand Jwala) during *kharif-rabi* season. The proposed variety gave 165 q/ha average green fruit yield in middle Gujarat which exhibited 23.4 per cent higher over the check GAVC 112. Fruits of this variety have light green colour with high pungency at unripe stage and strong sinuation of pericarp, rough texture with medium glossiness. Under natural field condition, this variety has comparatively low levels of chilli leaf curl disease incidence and number of thrips/leaf with comparable level of fruit damage by fruit borer infestation to the check GAVC 112. The variety contains higher ascorbic acid (11.90 mg/100 g) and capsaicin (0.219%) as compared to the check GAVC 112.
	મરચી: ગુજરાત શાકભાજી મરચી ૧૧૩ (જીવીસી ૧૧૩: આણંદ જ્વાલા)
	ગુજરાત રાજ્યમાં ખરીફ રવી ઋતુ દરમ્યાન મરચાં પાકની ખેતી કરતાં ખેડૂતોને ગુજરાત શાકભાજી મરચી ૧૧૩ (જીવીસી૧૧૩: આણંદ જ્વાલા) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. મધ્ય ગુજરાતમાં આ જાતનું સરેરાશ ઉત્પાદન ૧૬૫ કિવ./હે. જોવા મળેલ છે જે અંકુશ જાત જીએવીસી ૧૧૨ કરતા ૨૩.૪ ટકા વધારે માલુમ પડેલ છે. આ જાતના મરચાં પાકતા પહેલા આછા લીલા રંગના તથા વધુ પ્રમાણમાં તીખાશ ધરાવતા અને તેની છાલ વધારે કરચલીવાળી, ખરબચડી સપાટી ધરાવતી તેમજ મધ્યમ આકર્ષક હોવાનું માલૂમ પડેલ છે. આ જાતમાં અંકુશ જાત જીએવીસી ૧૧૨ ની સરખામણીમાં પાનનાં કોકડવાનો રોગ અને થ્રીપ્સથી થતું નુકસાન ઓછુ જોવા મળેલ છે તથા ફળ કોરી ખાનાર ઇયળથી થતું નુકસાન અંકુશ જાત જીએવીસી ૧૧૨ જેટલું જ જોવા મળેલ છે. આ જાતમાં એસ્કોર્બિક એસીડ (૧૧.૯૦ મિ.ગ્રા./૧૦૦ ગ્રામ) અને કેપ્સીસીન (૦.૨૧૯%) નું પ્રમાણ અંકુશ જાત જીએવીસી ૧૧૨ કરતા વધારે માલુમ પડેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Recommendation text and salient features should be precise 2. Include the name of only those scientists in release proposal who contributed from making crosses to final evaluation of genotype 3. In point no. 7(c), instead of middle Gujarat write chilli growing area of Gujarat 4. Data of AICRP trials should be added, if available 5. Rename the proposed variety as Gujarat Vegetable Chilli 113 instead of GAVC 113
	[Action: Research Scientist (Veg.), MVRS, AAU, Anand**]**
19.1.1.7	**Okra: Gujarat Okra Hybrid 205 (GOH 205 : Anand Kranti)**
	The farmers of Gujarat state are recommended to grow okra hybrid Gujarat Okra Hybrid 205 (GOH 205: Anand Kranti) during *kharif* season. The proposed hybrid recorded 140 q/ha average fruit yield in Gujarat which manifested 20.0, 23.1 and 30.1 per cent higher over the checks GJOH 4, GAO

	5 and Pusa Sawani, respectively. It produced 163 q/ha average fruit yield in middle Gujarat. The hybrid has short plant stature with short internodes. It has strong serration of leaf blade margin and deep depth of lobbing. Fruits of this hybrid are dark green colour, tender, smooth, medium long having narrow acute shape of apex. The hybrid contains higher mucilage (28.51 g/kg) and chlorophyll a (0.400 mg/g) as compared to the checks GJOH 4, GAO 5 and Pusa Sawani. It has less prevalence of yellow vein mosaic virus and enation leaf curl disease as well as lower jassids, whitefly population and shoot and fruit damage as compared to the checks GJOH 4, GAO 5 and Pusa Sawani.
	ભીંડા: ગુજરાત ભીંડા સંકર જાત ૨૦૫ (જીઓએચ ૨૦૫ : આણંદ ક્રાંતિ)
	ગુજરાત રાજ્યમાં ચોમાસુ ઋતુમાં ભીંડાની ખેતી કરતા ખેડૂતોને ગુજરાત ભીંડા સંકર જાત ૨૦૫ (જીઓએચ ૨૦૫ : આણંદ ક્રાંતિ) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. ગુજરાતમાં આ જાતનું સરેરાશ ઉત્પાદન ૧૪૦ કિવ./હે જોવા મળેલ છે જે અંકુશ જાતો જીજેઓએચ ૪, જીએઓ ૫ અને પુસા સાવની કરતા અનુક્રમે ૨૦.૦, ૨૩.૧ અને ૩૦.૧ ટકા વધારે જોવા મળેલ છે. જ્યારે મધ્ય ગુજરાતમાં આ જાતનું સરેરાશ ઉત્પાદન ૧૬૩ કિવ./હે. જોવા મળેલ છે. ઓછી ઉંચાઈ ધરાવતા આ જાતના છોડમાં બે ગાંઠો વચ્ચે નુ અંતર ઓછુ જોવા મળે છે. આ જાતની શીંગો ઘાટા લીલા રંગની, કુણી, મધ્યમ લંબાઈની અને પાતળી ટોચ ધરાવતી હોય છે. તેના પાંદડા ઉંડા ખાંચાવાળા હોય છે. આ જાતમાં મ્યુસીલેજ (૨૮.૫૧ ગ્રા./કિ.) અને કલોરોફીલ એ (૦.૪૦૦ મિગ્રા/ગ્રા) નુ પ્રમાણ અંકુશ જાતો જીજેઓએચ ૪, જીએઓ ૫ અને પુસા સાવની કરતાં વધારે માલુમ પડેલ છે. આ જાતમાં પીળી નસનો પચરંગીયો, એનેસન પાનનો કોકડવા રોગ, તડતડીયા, સફેદ માખી તથા ડુંખ અને ફળ કોરીખાનાર ઈયળનો ઉપદ્રવ અંકુશ જાતો જીજેઓએચ ૪, જીએઓ ૫ અને પુસા સાવની કરતાં ઓછો જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestion: 1. Recommendation text and salient features should be precise 2. Include the name of only those scientists in release proposal who contributed from making crosses to final evaluation of genotype
	[Action: Research Scientist (Veg.), MVRS, AAU, Anand**]**
19.1.1.8	**Cucumber: Gujarat Cucumber 2 (GCU 2: Anand Sheetal)**
	The farmers of Gujarat state are recommended to grow cucumber variety Gujarat Cucumber 2 (GCU 2: Anand Sheetal) during summer season. The proposed variety was developed through distant hybridization. The proposed variety recorded 221 q/ha average fruit yield in middle Gujarat condition. It depicted 26.2 per cent higher fruit yield than the check GCU 1 in middle Gujarat. The variety has medium size fruit with dark green skin colour, crispy pulp texture having pleasant aroma. This variety has comparable prevalence of CMV, powdery mildew and downy mildew disease reaction as well as leaf miner and fruit fly infestation as compared to the check GCU 1. The proposed variety contains higher total carotenoid (4.62 mg/100g), β carotene (3.05 ppm) and total chlorophyll (2.32 mg/g) than GCU 1

	ગુજરાત કાકડી ૨ (જીસીયુ ૨: આણંદ શીતલ)
	ગુજરાત રાજ્યમાં ઉનાળુ ઋતુમાં કાકડીની ખેતી કરતા ખેડૂતોને ગુજરાત કાકડી ૨ (જીસીયુ ૨: આણંદ શીતલ) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાત આંતર-પ્રજાતીય સંકરણ દ્વારા વિકસાવેલ છે. મધ્ય ગુજરાતમાં આ જાતનું સરેરાશ ઉત્પાદન ૨૨૧ કિવ./ હે જોવા મળેલ છે. જે અંકુશ જાત ગુજરાત કાકડી ૧ કરતા ૨૬.૨ ટકા વધારે ઉત્પાદન આપે છે. આ જાતના ફળ મધ્યમ લાંબા, ઘાટા લીલા રંગના તેમજ સુગંધિત અને કડક માવો ધરાવે છે. આ જાતમાં અંકુશ જાત ગુજરાત કાકડી ૧ ની સરખામણીમાં પંચરંગીયો, ભૂકીછારો અને તળછારાનો રોગ તેમજ પાનકોરીયુ અને ફળમાખીનું નુકસાન ઓછુ જોવા મળેલ છે. આ જાતમાં કુલ કેરોટીનોઇડ (૪.૬૨ મીલીગ્રામ/ ૧૦૦ ગ્રામ), બીટા કેરોટીન (૩.૦૫ પીપીએમ) અને કુલ હરિતદ્રવ્ય (૨.૩૨ મીલીગ્રામ/ગ્રામ) ગુજરાત કાકડી ૧ કરતાં વધારે માલુમ પડેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Rename the proposed variety as "Gujarat Cucumber 2" instead of GACU 2 2. Reanalyze biochemical parameters of proposed variety along with check
	[Action: Research Scientist (Veg.), MVRS, AAU, Anand**]**

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19.1.1.9	**Chickpea (Mechanical Harvesting): Gujarat Gram 8 (GG 8: Sorath Vikram)**
	The farmers of Gujarat state growing chickpea under irrigated and un-irrigated conditions are recommended to grow Gujarat Gram 8 (GG 8: Sorath Vikram). This variety is suitable for mechanical harvesting as it possesses plants with more height and erect growth habit. This variety has produced 2814 kg/ha seed yield which was 25.3, 26.3, 12.8, 75.5 and 43.8 per cent higher over check varieties Dahod Yellow, GG 1, GG 5, NBeG 47 and JG 24, respectively under irrigated condition. Under un-irrigated condition, it recorded 2017 kg/ha seed yield, which was 25.5, 30.4, 16.9, 11.9 and 24.5 per cent higher over GG 1, GG 2, GJG 3, GJG 6 and JG 24, respectively. Seeds of this variety are of medium size and brown in colour. This variety is resistant to wilt and stunt diseases and showed low pod borer damage. This variety has higher iron content as compared to the check varieties.
	ચણા: ગુજરાત ચણા ૮ (જીજી ૮: સોરઠ વિક્રમ)
	ગુજરાત રાજ્યમાં પિયત અને બિનપિયત પરિસ્થિતિ હેઠળ ચણા નું વાવેતર કરતા ખેડુતોને ગુજરાત ચણા ૮ (જીજી ૮: સોરઠ વિક્રમ) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના છોડ ઊંચા અને સીધા હોવાથી મશીન (હાર્વેસ્ટર) થી કાપણી કરવા માટે અનુકુળ છે. આ જાતમા પિયત પરિસ્થિતિ હેઠળ ૨૮૧૪ કિ.ગ્રા./હે. દાણાનું ઉત્પાદન મળેલ છે, જે અંકુશ જાતો દાહોદ પીળા, ગુજરાત ચણા ૧, ગુજરાત ચણા ૫, એન.બી.ઈ.જી ૪૭ અને જે.જી. ૨૪ કરતા અનુક્રમે ૨૫.૩, ૨૬.૩, ૧૨.૮, ૭૫.૫ અને ૪૩.૮ ટકા વધુ છે. બિનપિયત પરિસ્થિતિ હેઠળ આ જાતમા ૨૦૧૭ કિ.ગ્રા./હે. દાણાનું ઉત્પાદન મળેલ છે, જે અંકુશ જાતો ગુજરાત ચણા ૧, ગુજરાત ચણા ૨, ગુજરાત જૂનાગઢ

	ચણા ૩, ગુજરાત જૂનાગઢ ચણા ૬ અને જેજી ૨૪ કરતા અનુક્રમે ૨૫.૫, ૩૦.૪, ૧૬.૯, ૧૧.૯ અને ૨૪.૫ ટકા વધુ છે. આ જાતના દાણા મધ્યમ કદના અને કથ્થાઈ રંગના છે. આ જાત સુકારા અને સ્ટન્ટ રોગ સામે પ્રતિકારકતા ધરાવે છે, તેમજ પોપટા કોરી ખાનાર ઈયળથી ઓછુ નુકસાન જોવા મળેલ છે. આ જાતમાં અંકુશ જાતોની સરખામણીમાં વધુ લોહ તત્વ જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Add data of 2022-23 and submit revised proposal to chairman before presenting in GSSSC 2. Mention date and place of ZREAC and AGRESCO in point 7a 3. Mention the parameters that variety suitable for mechanical harvesting in point 7b 4. Write "As per Indian Minimum Seed Certification Standards" in point 14 5. Write "rainfed condition" instead of "unirrigated condition" 6. Remove top ranking of GG 8 over the check row from Table 1.1 and 1.2 7. Put the data of S. Em in Table 10 8. In Table 13, verify data of Zn and Fe and also mention cooking method by which cooking time adjudged 9. Salient features should be precise
	[**Action:** Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
19.1.1.10	**Kabuli Chickpea: Gujarat Kabuli Gram 2 (GKG 2: Sorath Kabuli 2)**
	The farmers of Gujarat state growing *kabuli* chickpea under irrigated condition are recommended to grow early maturing variety Gujarat Kabuli Gram 2 (GKG 2: Sorath Kabuli 2). It recorded 2117 kg/ha seed yield, which was 29.1, 16.5 and 24.8 per cent higher over check varieties KAK 2, JGK 1 and PG 0517, respectively. Seeds of this variety are of large size (35.8 g/100 seeds). This variety showed resistant reaction against wilt and stunt diseases with low pod borer damage. It has higher dhal recovery (67.45%), iron (63.58 ppm) and zinc (38.68 ppm) content than check varieties KAK 2, JGK 1 and PG 0517
	કાબુલી ચણા: ગુજરાત કાબુલી ચણા ૨ (જીકેજી ૨: સોરઠ કાબુલી ૨)
	ગુજરાત રાજ્યમાં પિયત પરિસ્થિતિમાં કાબુલી ચણાનું વાવેતર કરતા ખેડુતોને વહેલી પાકતી કાબુલી ચણાની જાત ગુજરાત કાબુલી ચણા ૨ (જીકેજી ૨: સોરઠ કાબુલી ૨) નું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતમાં ૨૧૧૭ કિ.ગ્રા./હે. દાણાનું ઉત્પાદન મળેલ છે, જે અંકુશ જાતો કે.એ.કે. ૨, જે.જી.કે. ૧ અને પી.જી. ૦૫૧૭ કરતા અનુક્રમે ૨૯.૧, ૧૬.૫ અને ૨૪.૮ ટકા વધુ છે. આ જાતના દાણા મોટા (૩૫.૮ ગ્રામ/૧૦૦ દાણા) કદના છે. આ જાત સુકારા અને સ્ટન્ટના રોગ સામે પ્રતિકારકતા ધરાવે છે, તેમજ પોપટા કોરી ખાનાર ઈયળથી ઓછુ નુકસાન જોવા મળેલ છે. આ જાતમાં અંકુશ જાતો કરતાવધુ દાળનું (૬૭.૪૫%) તેમજ લોહ (૬૩.૫૮ પીપીએમ) અને જસત (૩૮.૬૮ પીપીએમ) તત્વોનું પ્રમાણ જોવા મળેલ છે.

	Release proposal was accepted by the house with following suggestions: 1. Mention date and place of ZREAC and AGRESCO in point No. 7a 2. Write "As per Indian Minimum Seed Certification Standards" in point 14 3. Remove top ranking of GJGK 1824 over the check row from Table 1 4. Verify the ranges in Table 6 and Table 8 5. Mention unprotected condition in Table 9 6. Add "early maturity" word in salient features 7. Write resistant reaction in place of resistant behavior in English recommendation paragraph
	[Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
19.1.1.11	**Mungbean: Gujarat Mung 10 (GM 10:Sorath Moti)**
	The farmers of Gujarat state growing mung in *kharif* season are recommended to grow early (65 days) maturing variety Gujarat Mung 10 (GM 10: Sorath Moti). This variety has produced 1036 kg/ha seed yield, which was 12.8, 15.0, 20.8, 4.5 and 11.1 per cent higher over check varieties GM 4, GAM 5, Meha, GM 6 and GM 7, respectively. Seeds of this variety are of medium in size and greenish in colour. This variety is resistant to MYMV, leaf curl, anthracnose and powdery mildew diseases.
	મગ: ગુજરાત મગ ૧૦ (જી.એમ.૧૦: સોરઠ મોતી)
	ગુજરાત રાજ્યમાં ચોમાસામાં મગનુ વાવેતર કરતા ખેડુતોને વહેલી (૬૫ દિવસે) પાકતી ગુજરાત મગ ૧૦ (જી.એમ.૧૦: સોરઠ મોતી) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતમા ૧૦૩૬ કિ.ગ્રા./હે. દાણાનું ઉત્પાદન મળેલ છે, જે અંકુશ જાતો જી.એમ. ૪, જી.એ.એમ. ૫, મેહા, જી.એમ. ૬ અને જી.એમ. ૭ કરતા અનુક્રમે ૧૨.૮, ૧૫.૦, ૨૦.૮, ૪.૫ અને ૧૧.૧ ટકા વધુ છે. આ જાતના દાણાં મધ્યમ કદના અને લીલા રંગના છે. આ જાત પીળા પચરંગીયા, પાનના કોકડવા, કાલવ્રણ અને ભુકી છારા રોગ સામે પ્રતિકારકતા ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Mention date and place of ZREAC and AGRESCO in point No. 7a 2. Check the maturity group in point 9b 3. Write "As per Indian Minimum Seed Certification Standards" in point 14 4. Remove top ranking of GJM 1701 over the check row and also check the mean data of SSVT 2018 of Table 1 5. Mention the yield data of proposed variety in salient features
	[Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
19.1.1.12	**Garlic: Gujarat Garlic 8 (GG 8: Sorath Mohini)**
	The farmers of Gujarat state growing garlic crop during *rabi* season are recommended to grow variety Gujarat Garlic-8 (GG-8: Sorath Mohini). This variety recorded 87.26 q/ha bulb yield, which was 16.4, 20.7, 22.1 and 22.1

	per cent higher over the check varieties GJG-5, GAG-6, GG-7 and G-282, respectively. The bulb of this variety contains higher Total soluble solids (40.36%), Pyruvic acid (2.98 mg/g), Carotenoids (0.82 mg/ 100 g), Reducing sugar (2.34%), Ascorbic acid (9.42%), True protein (3.13%), Total carbohydrate (27.32%) and Phenol (38.12%) as compared to all the check varieties. The bulbs are medium in size, compact and creamy white in colour with purple tinch. The variety also reported low infestation of thrips and moderately susceptible to diseases.
	લસણ: ગુજરાત લસણ-૮ (જી.જી.-૮: સોરઠ મોહિની)
	ગુજરાત રાજ્યના રવિ ઋતુમાં લસણ ઉગાડતા ખેડુતોને ગુજરાત લસણ-૮ (જી.જી.-૮: સોરઠ મોહિની) જાતનું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. આ જાતનાં કંદનું ઉત્પાદન ૮૭.૨૬ કવિન્ટલ/ હેકટર મળેલ છે, જે અંકુશ જાતો ગુજરાત જૂનાગઢ લસણ-૫, ગુજરાત આણંદ લસણ-૬, ગુજરાત લસણ-૭ અને જી-૨૮૨ કરતા ૧૬.૪, ૨૦.૭, ૨૨.૧ અને ૨૨.૧ ટકા વધારે માલુમ પડેલ છે. આ જાત ગુણવતાની દ્રષ્ટીએ અંકુશ જાતોની સરખામણીમાં વધારે કુલ દ્રાવ્ય ઘટ્ટતા (૪૦.૩૬%), પાયરૂવીક એસીડ (૨.૯૮ મીલી ગ્રામ/ગ્રામ), કેરોટીનોઈડસ (૦.૮૨ મીલી ગ્રામ/૧૦૦ ગ્રામ), રીડયુસીંગ સુગર (૨.૩૪%), એસ્કોર્બીક એસીડ (૯.૪૨%), ટ્રુ પ્રોટીન (૩.૧૩%), કુલ કાર્બોહાઈડ્રેટ (૨૭.૩૨%) અને ફિનોલ (૩૮.૧૨%) નું પ્રમાણ ધરાવે છે. આ જાતનાં કંદ મધ્યમ કદના, કઠણ અને જાંબલી ઝાંય સાથે સફેદ રંગના હોય છે. આ જાતમાં થ્રીપ્સનો ઉપદ્રવ ઓછો અને રોગો સામે મધ્યમ સંવેદનશીલ જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Revised the proposal as per prescribed proforma 2. Write "As per Indian Minimum Seed Certification Standards" in point 14 3. In point 5a, Mention RGP 429 was collected and selection made from it 4. Include the name of test entry in each Table title 5. Acknowledge the center from where the germplasm was received 6. Add DNA profile in proposal with interpretation 7. Recast English and Gujarati recommendation text as per disease reaction given in Table 4
	[Action: Research Scientist (Garlic & Onion), Vegetable Research Station, JAU, Junagadh]
19.1.1.13	**Coriander: Gujarat Coriander 4 (G. Cor 4: Sorath Sugandha)**
	The farmers of Gujarat state growing coriander crop during *rabi* season are recommended to grow Gujarat Coriander 4 (G. Cor 4: Sorath Sugandha). It has recorded the mean seed yield of 2083 kg/ha, which was 17.3 and 8.6 per cent higher over check varieties; Gujarat Coriander 2 and Gujarat Coriander 3, respectively. The seeds of G. Cor 4 are medium in size, oblong in shape and brown in colour. This variety has early maturity and excellent aroma in seed due to higher Linalool content (68.80%) in volatile oil. This variety was moderately resistant to aphid and resistant to powdery mildew disease as compared to check varieties.

	ધાણા: ગુજરાત ધાણા ૪ (જી.સીઓઆર ૪: સોરઠ સુગંધા)
	ગુજરાત રાજ્યના રવિ ઋતુમાં ધાણા ઉગાડતા ખેડૂતોને ગુજરાત ધાણા ૪ (જી.સીઓઆર ૪: સોરઠ સુગંધા) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું સરેરાશ ઉત્પાદન ૨૦૮૩ કિ.ગ્રા./હે. મળેલ છે, જે અંકુશ જાતો ગુજરાત ધાણા ૨ અને ગુજરાત ધાણા ૩ કરતા અનુક્રમે ૧૭.૩ અને ૮.૬ ટકા વધારે માલુમ પડેલ છે. આ જાતનો દાણો મધ્યમ, ઈંડાકાર અને ભૂખરા રંગનો છે. આ જાત વહેલી પાકતી અને તેના તેલમાં લીનાલોલનું પ્રમાણ (૬૮.૮૦%) વધારે હોવાથી સારી એવી સુગંધ ધરાવે છે. આ જાત મોલો સામે મધ્યમ પ્રતિકારક અને ભૂકીછારા રોગ સામે અંકુશ જાતો કરતા પ્રતિકારક જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Rename variety as G. Cor 4 instead of GCr 4 2. Revised the proposal as per prescribed proforma 3. Include the disease-pest data of other center also 4. Mention flower colour in point 9b 5. Write "As per Indian Minimum Seed Certification Standards" in point 14 6. Consider data of the year 2021 only in Table 2d 7. Add the data of *Dal* recovery in tabular form 8. Add DNA profile in proposal with interpretation 9. Recast Gujarati recommendation text as per the English text
	[Action: Research Scientist (Garlic & Onion), Vegetable Research Station, JAU, Junagadh]
19.1.1.14	**Endorsement Cotton: Gujarat Cotton 46 (G. Cot 46: Sorath Swet Hem)**
	The farmers of Gujarat state growing Non *Bt* cotton (*Gossypium hirsutum* L.) are recommended to grow cotton variety Gujarat Cotton 46 (G.Cot 46: Sorath Swet Hem) under irrigated condition. This variety has recorded 2121 kg/ha seed cotton yield which was 27.7, 26.6, 27.7 and 15.1 per cent higher over check varieties *viz*., G.Cot 20, GN.Cot 22, GN.Cot 32 and Phule Yamuna, respectively. This variety gave lint yield of 812 kg/ha which was 48.5, 43.2, 35.5 and 33.4 per cent higher over check varieties *viz*., G.Cot 20, GN.Cot 22, GN.Cot 32 and Phule Yamuna, respectively. It possesses 36.7 % ginning outturn. It is found moderately resistant to *alternaria* leaf spot and bacterial leaf blight disease and also against sucking pests.
	કપાસ: ગુજરાત કપાસ ૪૬ (જી. કોટ ૪૬ : સોરઠ સ્વેત હેમ)
	ગુજરાત રાજ્યના પિયત વિસ્તારમાં નોન બીટી કપાસ ઉગાડતા ખેડૂતોને હિરસુતમ કપાસની જાત ગુજરાત કપાસ ૪૬ (જી.કોટ ૪૬ : સોરઠ સ્વેત હેમ) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતમાં કપાસનું ઉત્પાદન ૨૧૨૧ કિ.ગ્રા./હે. મળેલ છે, જે અંકુશ જાતો જેવી કે જી.કોટ ૨૦, જીએન.કોટ ૨૨, જીએન.કોટ ૩૨ અને ફૂલે યમુના કરતા અનુક્રમે ૨૭.૭, ૨૬.૬, ૨૭.૭ અને ૧૫.૧ ટકા કપાસનું વધુ ઉત્પાદન આપેલ છે. આ જાતમાં રૂ નું ઉત્પાદન ૮૧૨ કિ.ગ્રા./હે. મળેલ છે, જે અંકુશ જાતો જેવી કે જી.કોટ ૨૦, જીએન.કોટ ૨૨, જીએન.કોટ ૩૨ અને ફૂલે યમુના કરતા અનુક્રમે ૪૮.૫, ૪૩.૨,

	૩૫.૫ અને ૩૩.૪ ટકા રૂ નું વધુ ઉત્પાદન આપેલ છે. આ જાતમાં ૩૬.૭ ટકા રૂનું ઉત્પાદન મળે છે. આ જાત બળિયા ટપકા અને ખુણીયા ટપકાના રોગ અને ચુસીયા જીવાતો સામે પણ મધ્યમ પ્રતિકારક શક્તિ ધરાવે છે.
	Release proposal for endorsement was accepted with following suggestions: 1. Mention seed cotton yield or lint yield and also verify the data in the point 7b 2. Write "As per Indian Minimum Seed Certification Standards" in point 14 3. In Table 1, mention only state trials data and supporting data of AICRP trials should be put in separate Table 4. Modify the recommendation text as per the data in Table 8b
	[Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh]
19.1.1.15	**Sesame: Gujarat Til 8 (G. Til 8: Sorath Ratna)**
	The farmers of Gujarat state growing sesame in summer season are recommended to grow Gujarat Til 8 (G. Til 8: Sorath Ratna). The variety recorded seed yield of 1318 kg/ha which was 10.6 and 15.5 per cent higher over the check varieties G. Til 3 and GJT 5, respectively. Seeds of this variety are white and bold; and it contains 48.44 % oil. This variety showed lower incidence of stem and root rot, phyllody diseases and thrips infestation
	તલ: ગુજરાત તલ ૮ (ગુ.તલ ૮ :સોરઠ રત્ન)
	ગુજરાત રાજયના ઉનાળુ ઋતુમાં તલ ની ખેતી કરતા ખેડૂતોને ગુજરાત તલ ૮ (ગુ.તલ ૮ : સોરઠ રત્ન) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે .આ જાતનું સરેરાશ ઉત્પાદન ૧૩૧૮ કિ.ગ્રા./હે .મળેલ છે, જે અંકુશ જાત ગુ .તલ ૩ અને જીજેટી ૫ કરતા અનુક્રમે ૧૦.૬ અને ૧૫.૫ ટકા વધારે માલુમ પડેલ છે .આ જાતના દાણા સફેદ રંગના અને મોટા, તેમજ તેલનું પ્રમાણ ૪૮.૪૪ ટકા ધરાવે છે .આ જાતમાં થડ અને મુળનો કોહવારો, ગુચ્છપર્ણ રોગ તથા થ્રીપ્સનું પ્રમાણ ઓછું જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Write "As per Indian Minimum Seed Certification Standards" in point 14 2. In Table 2, remove negative per cent increase over and put "- " 3. Verify and correct data in English and Gujarati recommendation paragraphs 4. Remove the names of Agril. Assistant and Agril. Supervisors from the proposal
	[Action: Research Scientist (Pl. Breeding), ARS, JAU, Amreli]

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19.1.1.16	**Grain Sorghum: Gujarat Jowar 102 (GJ 102: Surat Goti)**
	The farmers of Gujarat state are recommended to grow grain sorghum variety Gujarat Jowar-102 (GG 102: Surat Goti) during *Rabi* and *Kharif* seasons. The proposed genotype recorded average grain yield of 2731 kg/ha and dry fodder yield of 7390 kg/ha during *Rabi* season with grain yield increment of 12.4 %, 12.9 % and 21.0 % over *Rabi* check varieties GJ-101 (Madhu Moti), Phule Revati and CSV-29R, respectively. While during *Kharif* season, this variety produced and 2535 kg/ha grain yield and 13937 kg/ha dry fodder yield with grain yield superiority of 6.2 %, 11.2 % and 14.5 % over *Kharif* checks GJ-44 (Madhu), GNJ-1 and CSV 20, respectively. The proposed variety exhibited moderately resistance disease reaction and low incidence of stem borer and shoot fly as compared to susceptible check.
	જુવારની દાણાની જાત: ગુજરાત જુવાર ૧૦૨ (જીજે ૧૦૨: સુરત ગોટી)
	ગુજરાત રાજ્યમાં દાણાની જુવારની ખેતી કરતા ખેડુતોને શિયાળુ તથા ચોમાસુ ઋતુમાં જુવારની જાત ગુજરાત જુવાર-૧૦૨ (જીજે ૧૦૨: સુરત ગોટી) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. જુવારની આ સુચિત જાતમાં શિયાળુ ઋતુ પિયત પરિસ્થિતિમાં સરેરાશ ૨,૭૩૧ કિ./હે. દાણા અને ૭,૩૯૦ કિ./હે. સુકા ઘાસચારાનુ ઉત્પાદન મળેલ છે. જે દાણાના ઉત્પાદનમાં શિયાળુ અંકુશ જાતો જી.જે.-૧૦૧ (મધુ મોતી), ફુલે રેવતી અને સી.એસ.વી.-૨૯આર કરતા અનુક્રમે ૧૨.૪%, ૧૨.૯% અને ૨૧.૦% વધુ છે. આ જાતમાં ચોમાસુ ઋતુમાં દાણાનુ સરેરાશ ઉત્પાદન ૨,૫૩૫ કિ./હે. તથા સુકા ઘાસચારાનું ઉત્પાદન ૧૩,૯૩૭ કિ./હે. મળેલ છે. જે દાણાના ઉત્પાદનમાં ચોમાસુ દાણાની જાતો જી.જે.-૪૪(મધુ), જી.એન.જે.-૧ અને સી.એસ.વી.-૨૦ કરતા અનુક્રમે ૬.૨%, ૧૧.૨% અને ૧૪.૫% વધુ છે. જુવારની આ સુચિત જાતમાં ગાભમારાની ઈયળ અને સાંઠાની માખીનો ઓછો ઉપદ્રવ તથા રોગો સામે આંશિક પ્રતિકારકતા જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Data presented in Table 1.3 and 1.4 are repeated, verify data 2. Check frequency of top non-significant group in Table no. 1.3, Table 3.0 and Table 3.1 3. State the reason for vitiated trial at Mangrol location and also add the data of 2022-23 in Table 3.1 4. Add the Table no. 4.1 in final proposal 5. Mention the season as well as name of resistant and susceptible check in trial 6. Put range of data in Table 6 7. Verify data of DM % in Table 7 8. Do not write moderately resistance or susceptible reaction in proposal,

	when trial conducted in natural field condition 9. Add the interpretation of DNA profiling/finger-printing along with checks 10. Recast recommendation text and salient features 11. Remove Annexure II 12. All the Table should be as per the standard release proposal format 13. After incorporating all the above suggestions, the revised proposal should be submitted to the chairman before presenting to the GSSSC
	[Action: Research Scientist, MSRS, NAU, Surat]
19.1.1.17	**Rice: Gujarat Rice 26 (GR 26: Navsari Lalmoti)**
	The farmers of Gujarat state are recommended to grow *bio-fortified* rice variety Gujarat Rice 26 (GR 26: Navsari Lalmoti) in transplanted condition under both normal and salt affected soils during *kharif* season. The proposed variety recorded average grain yield of 4871 kg/ha in Gujarat, which was 10.0, 11.4, 40.4 and 24.9 per cent higher over the check varieties GNR-3, GNR-5, GNR-4 and GNR-9, respectively. It has long bold grain, long panicle and more productive tillers per plant. It has high amount of protein content (11.91 %), intermediate amount of zinc content (21.68 ppm) and amylose content (23.51 %) with high head rice recovery (62.70 %). The variety is moderately resistant against diseases like bacterial leaf blight, grain discoloration, sheath rot and leaf blast, whereas tolerant reaction against pest like brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite.
	ડાંગર: ગુજરાત ડાંગર ૨૬ (જી.આર. ૨૬: નવસારી લાલમોતી)
	ગુજરાત રાજ્યમાં ખરીફ ઋતુમાં સામાન્ય તેમજ ક્ષારગ્રસ્ત જમીનમાં રોપાણ ડાંગરનો પાક ઉગાડતા ખેડૂતોને ગુજરાત ડાંગર ૨૬ (જી.આર. ૨૬: નવસારી લાલમોતી) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. ડાંગરની સુચિત જાતનું ગુજરાતમાં સરેરાશ ઉત્પાદન ૪૮૭૧ કિ.ગ્રા./હે. મળેલ છે, જે અંકુશ જાતો જી.એન.આર.-૩, જી.એન.આર.-૫, જી.એ.આર.-૪ અને જી.એન.આર.-૯ કરતાં અનુક્રમે ૧૦.૦, ૧૧.૪, ૪૦.૪ અને ૨૪.૯ ટકા વધુ ઉત્પાદન મળેલ છે. આ જાતનો દાણો લાબો અને જાડો, કંટીની લંબાઈ તેમજ ફુટની સંખ્યા વધુ છે. આ જાતના દાણામાં વધુ પ્રોટીન (૧૧.૯૧%), મધ્યમ ઝીંક (૨૧.૬૮ પી.પી.એમ.) અને એમાઇલોઝ (૨૩.૫૧%) તેમજ વધુ આખા દાણાનું પ્રમાણ (૬૨.૭૦%) ધરાવે છે. ડાંગરની આ જાત જીવાણુંથી થતો પાનનો સુકારો, ભુખરા દાણાનો રોગ, પર્ણચ્છેદના કહોવારા અને પાનનો કરમોડી રોગ સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે જયારે બદામી ચુસીયા જીવાત સામે પ્રતિકારક અને ગાભમારાની ઈયળ, પાનવાળનારી ઈયળ અને પર્ણતલ કથીરી સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. In point 4a and 12a, give the designation along with center 2. In point no. 5a, pedigree flowchart should be given in Annexure and

	correct generation 3. In point no. 9b, give only 4-5 important distinguishable morphological feature in running text 4. In Table no. 1, separate the data for salt and bio-fortified trial for all year and put together in combined Table 5. Exclude the data of non-significant trial in mean of Table 1 and revised the text accordingly 6. Add the top non-significant in Table no. 2 7. In Table no. 5a, mention the disease reaction and protected condition in each year 8. Give the severity index below the Table no. 5b 9. Add the interpretation of DNA profiling/finger-printing along with checks 10. Verify data and remove range from DUS Table in Annexure 11. Remove the Annexure II 12. Mention protein content of polished rice in salient feature 13. Include biochemical data for both normal and salt conditions 14. Recast English and Gujarati recombination text
	[Action: Asso. Research Scientist, MRRC, NAU, Navsari]
19.1.1.18	**Rice: Gujarat Rice 25 (GR 25: Mahatma)**
	The farmers of Gujarat state are recommended to grow long bold rice variety Gujarat Rice 25 (GR 25: Mahatma) in transplanted condition during *kharif* season. The proposed variety recorded average grain yield of 6301 kg/ha in Gujarat, which was 26.0 and 34.7 per cent higher over the check varieties GNR-3 and Jaya, respectively. Rice variety GR 25 contains high head rice recovery (58.3%) and high 1000 grain weight (33.8 g). The proposed variety showed moderately resistant against leaf blast, stem borer, sheath mite and leaf folder.
	ડાંગર: ગુજરાત ડાંગર ૨૫ (જીઆર ૨૫: મહાત્મા)
	ગુજરાત રાજ્યમાં ખરીફ ઋતુમાં રોપાણ ડાંગરનો પાક ઉગાડતા ખેડૂતોને જાડા દાણાવાળી ચોખાની જાત ગુજરાત ડાંગર ૨૫ (જીઆર ૨૫: મહાત્મા) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું ગુજરાતમાં સરેરાશ ઉત્પાદન ૬૩૦૧ કિ.ગ્રા./હે. છે, જે અંકુશ જાતો જીએનઆર-૩ અને જયા કરતાં અનુક્રમે ૨૬.૦ ટકા અને ૩૪.૭ ટકા વધુ છે. ડાંગરની જીઆર ૨૫ જાત વધુ આખા ચોખાનું પ્રમાણ (૫૮.૩%) અને વધુ ૧૦૦૦ દાણાનું વજન (૩૩.૮ ગ્રામ) ધરાવે છે. આ જાત પર્ણના કરમોડી રોગ, ગાભમારાની ઇયળ, પર્ણતલ કથીરી તથા પાન વાળનારી ઈયળ સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. In point 4a and 12a, give the designation along with center 2. In point no. 5a, pedigree flowchart should be given in Annexure 3. Include only important morphological traits of variety in point 9b 4. Remove data of Gurjari (check) from Table 1 5. Mention the data of all the locations, where it was tested, in Table no. 3 (AICRP) 6. Photographs of distinguishable traits should be added

	7. Add data for lodging resistance, if available 8. Include pest and disease reaction/data of Nawagam center 9. Add the interpretation of DNA profiling/finger-printing along with checks
	[Action: Asso. Research Scientist, RRRS, NAU, Vyara]
19.1.1.19	**Pigeon pea: Gujarat Tur 110 (GT 110: NAVTUR)**
	This proposal thoroughly discussed in the house and suggested that 1. To generate one more year data and revised proposal will be submitted in the next year 2. All the checks as per technical programme should be added in all Tables 3. State trials and Zonal trials data should be separated
	[**Action:** Asso. Research Scientist, PCRC, NAU, Navsari]
19.1.1.20	**Groundnut: TG 90 (TGG 90: Tapi Kiran)**
	The Chairman of Crop Improvement Sub-committee, 19th Combined AGRESCO constituted a committee under the chairmanship of Dr. R. M. Chauhan, Vice Chancellor, SDAU, Sardarkrushinagar and members; Dr. R. B. Madariya, ADR, JAU, Junagadh; Dr. S. D. Solanki, Principal & Dean, CPCA, SDAU, Sardarkrushinagar; Dr. P. B. Patel, Asso. Res. Sci., MRRC, NAU, Navsari and Dr. K. V. Patel, Asso. Res. Sci. and Head, MAPRS, AAU, Anand. The proposal thoroughly reviewed. According to the report of committee, the various suggestions will be taken into consideration by the Associate Research Scientist (RRRS, NAU, Vyara) in consultation with Research Scientist (Groundnut) and final decision should be followed accordingly for next year. The decision should be taken as early as possible.
	[**Action:** Asso. Research Scientist, RRRS, NAU, Vyara and Research Scientist (Groundnut), JAU, Junagadh]
19.1.1.21	**Fenugreek: Gujarat Methi 4 (GM 4: Supriya)**
	The farmers of Gujarat state are recommended to grow fenugreek variety Gujarat Methi 4 (GM 4: Supriya). The bold seeded fenugreek variety GM 4 recorded 1586 kg/ha mean seed yield in Gujarat. It has exhibited overall 15.9, 23.5 and 24.3 per cent seed yield superiority over check varieties GM 2, Hissar Sonali and RMT 361, respectively. It possesses indeterminate "V" shaped growth pattern coupled with tall plant height (60.26 cm), less number of primary branches (5.95) as well as secondary branches (2.63) per plant, which makes it more suitable for dense planting. It is also having higher number of pods per plant (39.22), medium long pod length (11.65 cm), more number of seeds per pod (15.78) along with higher 1000 seed weight (17.39 g) which makes it more productive. The higher seed protein content (29.75 %) and higher crude fiber (22.01 %) as well as comparable diosgenin content (317.00 mg/100 g) are the value-added traits in the proposed variety. This variety found moderately resistant reaction to powdery mildew and root rot diseases.
	મેથી: ગુજરાત મેથી ૪ (જી એમ ૪: સુપ્રિયા)
	ગુજરાત રાજ્યમાં મેથી ઉગાડતા ખેડૂતોને ગુજરાત મેથી ૪ (જી એમ ૪: સુપ્રિયા) વાવેતર

	માટે ભલામણ કરવામાં આવે છે. ગુજરાતની પરિસ્થિતિમાં મેથીના મોટા દાણા ધરાવતી જી એમ ૪ જાતનું સરેરાશ ઉત્પાદન ૧૫૮૬ કિ.ગ્રા./હે. આવે છે. આ જાત અન્ય અંકુશ જાતો જી એમ ૨, હિસ્સાર સોનાલી અને આર એમ ટી ૩૬૧ કરતા અનુક્રમે ૧૫.૯, ૨૫.૫ તથા ૨૪.૩ ટકા વધુ ઉત્પાદન આપે છે. આ અનિયત જાત "V" આકારની વૃદ્ધિ રચનાની સાથે વધુ છોડની ઉંચાઈ (૬૦.૨૬ સે.મી) તેમજ ઓછી પ્રાથમિક (૫.૯૫) તથા ગૌણ શાખા (૨.૬૩) ધરાવતી હોવાથી ગાઢ વાવેતર માટે અનુકુળતા ધરાવે છે. આ જાત વધુ શીંગ પ્રતિ છોડ (૩૯.૨૨), મધ્યમ શીંગની લંબાઈ (૧૧.૬૫ સે.મી), વધુ દાણા પ્રતિ શીંગ (૧૫.૯૮) ની સાથે વધારે ૧૦૦૦ દાણાનું વજન (૧૭.૩૯ ગ્રામ) ધરાવતી હોવાથી વધુ ઉત્પાદન આપે છે. આ જાતના દાણા વધુ પ્રોટીન ની માત્રા (૨૯.૭૫%), વધુ અપરિપક્વ રેસાનું પ્રમાણ (૨૨.૦૧%) તથા તુલનાત્મક ડાયોસજેનીન ની માત્રા (૩૧૭.૦૦મી.ગ્રામ/૧૦૦ ગ્રામ) જેવા વધુ મુલ્યવર્ધક ગુણો ધરાવે છે. આ જાત ભૂકી છારા અને મૂળના સડા સામે મધ્યમ રોગ પ્રતિકારકતા ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Rename the proposed variety as GM 4 (*Supriya*) instead of GM 3 (*Supriya*) 2. Include the name of the scientists from Bhiloda, Junagadh and Anand centers 3. Lodging data should be added in point 9g 4. In point 4a and 12a, give the designation along with center 5. In point 5a, mention source and year of germplasm collection 6. Calculate simple mean instead of weighted mean and also add S.Em data in Table 1 and 2 7. Give the range for disease and insect-pest data in Table 5 and 6 8. Add the data of AICRP trials, if available 9. Add traders' opinion 10. Recast recommendation and salient features 11. Remove Annexure IV from the proposal
	[Action: Professor & Head, Dept. of GPB, NAU, Navsari]
19.1.1.22	***Desi* cotton: Gujarat cotton 31 (G Cot. 31: Narmada Gold)**
	The farmers of Gujarat state are recommended to grow *desi* cotton variety Gujarat cotton 31 (G Cot. 31: Narmada Gold) under rainfed conditions. The *Desi* cotton variety G Cot. 31 recorded 1353 kg/ha average seed cotton yield which was 31.8 and 29.3 per cent higher than checks G. Cot. 23 and GN. Cot. 25, respectively under *rainfed* condition of South Gujarat. It exhibited 451 kg/ha average lint yield and 33.2% average ginning out turn. The GBhv 356 showed disease resistant reaction against Wilt, *Alternaria* leaf spot as well as Bacterial leaf blight diseases. The proposed variety recorded below ETL population of sucking pests. The bollworms damage in G Cot. 31was also found comparable to checks.
	દેશી કપાસ: ગુજરાત કપાસ ૩૧ (જી કોટ. ૩૧: નર્મદા ગોલ્ડ)

	ગુજરાત રાજ્યના ખેડૂતોને બિનપિયત વિસ્તાર માટે દેશી કપાસની જાત ગુજરાત કપાસ ૩૧ (જી કોટ. ૩૧: નર્મદા ગોલ્ડ) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. બિનપિયત પરિસ્થિતિમાં, દેશી કપાસની જાત જી કોટ. ૩૧ દ્વારા કપાસનુ સરેરાશ ઉત્પાદન ૧૩૫૩ કિ.ગ્રા./હે. મળેલ છે જે નિયંત્રિત જાતો જી. કોટ. ૨૩ અને જીએન. કોટ. ૨૫ કરતાં અનુક્રમે ૩૧.૮ અને ૨૯.૩ ટકા વધુ છે. આ જાત દ્વારા રૂનુ સરેરાશ ઉત્પાદન ૪૫૧ કિ.ગ્રા./હે. અને રૂનુ સરેરાશ પ્રમાણ ૩૩.૨ ટકા મળેલ છે. આ જાત છોડના સુકારા, પાનના બળિયા ટપકા અને ખુણિયા ટપકાના રોગો સામે પ્રતિકારક ગુણધર્મ ધરાવે છે. જી કોટ. ૩૧ જાતમાં ચુસિયા પ્રકારની જીવાતો નુ પ્રમાણ ક્ષમ્ય માત્રા કરતાં ઓછું જોવા મળેલ છે. આ જાતમાં જીંડવાની ઈયળોનું નુક્શાન પણ નિયંત્રિત જાતો જેટલુ જ છે.
	Release proposal was accepted by the house with following suggestions: 1. Change the name as G Cot. 31 instead of GN.Cot.31 2. Include the name of the scientists from Kukda center 3. Give the pedigree information in point 5a and also add the flowchart in Annexure 4. In point 4a and 12a, give the designation along with center 5. Include only important morphological traits of variety in point 9b 6. Revised Table 1 after incorporating the data of LSVT 2022-23 and revised the text accordingly. Remove column number 3 from Table 1 7. Include frequency of top non-significant group in Table 2 8. Verify the *per cent* increase over data in Table 6 and 7 9. Give the morphological features of proposed variety in comparison of check in Annexure II 10. Add high resolution photo of DNA profile along with interpretation 11. Add word "**દેશી**" in Gujarati recommendation text 12. Revised proposal sends to Chairman, CISC, 19th Combined AGRESCO for verification
	[Action: Asso. Research Scientist, RCRS, NAU, Bharuch]
19.1.1.23	**Tannia: Gujarat Tannia 1 (G. Tannia 1: Navsari Pari)**
	The farmers of Gujarat state are recommended to grow Gujarat Tannia 1 (G. Tannia 1: Navsari Pari) during *kharif* season. The proposed variety recorded average green leaves yield of 7.96 t/ha and after 270 days of planting, corm and cormel yield 10.02 t/ha in south Gujarat which was 31.1 and 14.8 per cent higher over national check variety Konkan Haritparni, respectively. The variety also having higher starch (8.15%) and low fibre content (1.65%) with value added traits. This variety has found lower population of aphid as well as less prevalence of *phytophthora* leaf blight and corm rots as compared to check.
	પત્તરવેલી: ગુજરાત તાનિયા ૧ (જી. તાનિયા ૧: નવસારી પરી)
	ગુજરાત રાજ્યમાં ખેડૂતોને ચોમાસા ઋતુ દરમિયાન પત્તરવેલીની જાત ગુજરાત તાનિયા ૧

	(જી. તાનિયા ૧: નવસારી પરી) ઉગાડવાની ભલામણ કરવામાં આવે છે. આ જાતનું દક્ષિણ ગુજરાતમાં સરેરાશ લીલા પાનનું ઉત્પાદન ૭.૯૬ ટન/હેક્ટર અને રોપણી બાદ ૨૭૦ દિવસ પછી ગાંઠોનું ઉત્પાદન ૧૦.૦૨ ટન/હેક્ટર મળેલ છે, જે રાષ્ટ્રીય અંકુશ જાત કોંકણ હરિતપર્ણી કરતાં અનુક્રમે ૩૧.૧ અને ૧૪.૮ ટકા વધુ ઉત્પાદન મળેલ છે. આ જાતવધુ સ્ટાર્ચ (૮.૧૫%) અને ઓછા રેસા (૧.૬૫%) ધરાવે છે. આ જાતમાં મોલોમશી જીવાતનું પ્રમાણ તથા "પાનનો સુકારો" અને "ગાંઠના કોહવારા" રોગોથી થતું નુકસાન અંકુશ જાત કરતા ઓછુ જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. In point 4a and 12a, give the designation along with center 2. Mention the details in point 7a and 7b as per the prescribed proforma 3. Include only important morphological traits of variety in point 9b 4. Remove the row of mean (*Kharif* 2019) data from Table 1, 2 and 3 and add frequency of top non-significant group as well as highlight data on the bases of significance 5. Include AICRP trial data 6. Add disease reaction scale in Table 8 7. Add DNA profile interpretation 8. Recast recommendation and salient features 9. Mention harvesting period of corms and merits of the variety in relation to leaves in recommendation text
	[Action: Professor, Dept. of Veg. Sci., ACH, NAU, Navsari]
19.1.1.24	**Adenium : Gujarat Adenium 5 (GAd 5 :Shashaank)**
	The nursery men dealing with ornamental plants, landscape designers and plant lovers are recommended to grow adenium variety Gujarat Adenium 5 (GAd 5: Shashaank) under polyhouse for higher commercial value as well as in garden and house plant. Adenium variety GAd 5 is novel that it bears white coloured flowers having multipetalous flower form with dual whorls of petals (10) in each flower along with more flowers per cluster and flowering duration. It can be propagated by grafting on local pink root stock.
	એડેનીયમ: ગુજરાત અડેનીયમ ૫ (જી.એ.ડી.-૫: શશાંક)
	સુશોભીત છોડનાં નર્સરી ધારોકોને એડેનીયમ જાત ગુજરાત અડેનીયમ ૫ (જી.એ.ડી.-૫: શશાંક) પોલીહાઉસમાં ઉગાડી આકર્ષક વળતર મેળવી શકે છે તેમજ લેન્ડસ્કેપ ડીઝાઈનર્સ આ જાતને બગીચામાં અને છોડનો શોખ ધરાવતા લોકો કુંડામાં પણ ઉગાડી શકે છે. એડેનિયમની જી.એ.ડી- ૫ એ સફેદ રંગની દસ પાંખડીઓવાળા ફૂલો ધરાવતું નવીન પ્રકારનું એડેનીયમ છે જે મોટા ઝુમખા અને લાંબા સમયગાળા સુધી ફુલો આપે છે. આ જાતને સ્થાનિક ગુલાબી ફુલવાળા મૂળકાંડ સાથે કલમ (ગ્રાફટીંગ) દ્વારા સંવર્ધન કરી શકાય છે.
	Release proposal was accepted by the house with following suggestions: 1. Rename variety as "Gujarat Adenium 5" instead of "GNAd 5" 2. In point 4a and 12a, give the designation along with center

	3. Mention the details in point 7a as per the prescribed proforma 4. In point 9(i), remove "adenium is drought tolerant plant" and mention "not tested" 5. Correct point no 14(a) 6. Verify the statistical analysis and give per cent increase over check, add frequency of top non-significant group as well as highlight data on the bases of significance in Table 1 7. Remove the characters of parents from Table 10 8. Remove the package of practices from the proposal
	[Action: Professor, Dept. of Flori. and Landscape Archi. ACH, NAU, Navsari]
19.1.1.25	**Turfgrass: Gujarat Turf Grass 1 (GTG 1: Arna)**
	The farmers, nurserymen and professional landscapers of the Gujarat state are advised to grow turf grass (Lawn) variety Gujarat Turf Grass 1 (GTG 1: Arna) with early establishment rate (minimum days taken for 90% coverage), high turfing ability, root depth and lower shoot- root ratio than the check Selection 1. The proposed variety having good aesthetic appearance, require less number of mowing and less incidence of pest and disease in proposed variety.
	હરિયાળી (લૉન): ગુજરાત ટર્ફ ગ્રાસ ૧ (જીટીજી ૧: અરના)
	ગુજરાત રાજ્યના ખેડુતો, નર્સરી વ્યવસાયિકો તેમજ બાગ-બગીચા બનાવનાર લેન્ડસ્કેપરોને પાણીની અછત સામે સારી ટકાઉ શક્તિ ધરાવતી હરિયાળી (લૉન) ની ગુજરાત ટર્ફ ગ્રાસ ૧ (જીટીજી ૧: અરના) જાત રોપવા માટે ભલામણ કરવામાં આવે છે જે અંકુશ જાત સીલેક્સન – ૧ ની સરખામણીમાં વહેલો પ્રસ્થાપિત થવાનો દર (૯૦% વિસ્તારમાં પથરાવા માટે લાગતા દિવસો), વધુ આચ્છાદન શક્તિ, મૂળની ઊંડાઇ અને ઓછો પ્રકાંડ- મુળનો ગુણોત્તર ધરાવે છે. આ જાતની હરિયાળી (લૉન) સારો દેખાવ ધરાવે છે તથા તેને ઓછી કાપણીની જરૂર છે અને તેમાં રોગ અને જીવાતની અસર પણ ઓછી જોવા મળે છે.
	Release proposal was accepted by the house with following suggestions: 1. In point 4a and 12a, give the designation along with center 2. Give the name of genotype instead of variety in point 2a 3. Mention the details in point 7a and 7b as per the prescribed proforma 4. Use word "water stress" instead of "drought tolerant" from point 8a and 8b 5. Include only important morphological traits of variety in running text instead of tabular form in point 9b 6. Add frequency of top non-significant group as well as highlight data on the bases of significance in Table 1, 2, 3 and 4 7. Remove data of mealy bug from Table 7(a) 8. Mention "Disease not appeared" in Table 7(b) 9. Remove name of village from point 5(a) 10. Recast salient features 11. Give interpretation for DNA fingerprinting

	12. In proposal, mention trials were conducted in sprinkler irrigation system
	[Action: Professor, Dept. of Flori. and Landscape Archi., ACH, NAU, Navsari**]**
19.1.1.26	**Endorsement Cotton: GISV 312 (GN. Cot. 44)**
	The farmers of Gujarat state are recommended to grow *hirsutum* cotton variety GISV 312 (GN. Cot. 44) under *rainfed* conditions for high density planting". The *hirsutum* cotton variety GISV 312 recorded average seed cotton yield of 2534 kg/ha in Gujarat under rainfed condition where it exhibited seed cotton yield advantage of 26.7, 18.7 and 63.6 *per cent* over check varieties G.Cot.16, Suraj and G.Cot.42, respectively with narrow spacing at 60 x 15 cm. The average lint yield in GISV 312 was 997 kg/ha. It has 41.7 per cent ginning outturn. GISV 312 (GN. Cot. 44) showed resistant reaction for bacterial leaf blight and a*lternaria* leaf spot as well as resistant to moderately resistant for grey mildew. It showed moderate to lower population of whitefly, thrips and aphids, whereas boll worm damage was found below ETL.
	એન્ડોર્સમેન્ટ કપાસ: ગુજરાત નવસારી કપાસ ૪૪ (જીઆઇએસવી ૩૧૨: જી એન.કોટ.૪૪)
	ગુજરાત રાજ્યના બિન પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત ગુજરાત નવસારી કપાસ ૪૪ (જીઆઇએસવી ૩૧૨: જી એન.કોટ.૪૪) ને ઘનિષ્ઠ પાક પધ્ધતિમાં વાવેતર માટે ભલામણ કરવામાં આવે છે. ગુજરાતનાં બિન પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત જીઆઇએસવી ૩૧૨ ને ૬૦ x ૧૫ સેમી. નાં સાંકડાગાળે વાવવાથી તેનુ સરેરાશ ઉત્પાદન ૨૫૩૪ કિ.ગ્રા./હે. મળેલ છે. જે નિયંત્રીત જાતો જેવી કે, જી.કોટ.૧૬, સુરજ અને જી.કોટ.૪૨ કરતાં અનુક્રમે ૨૬.૭, ૧૮.૭ અને ૬૩.૬ ટકા વધુ ઉત્પાદન આપેલ છે. આ જાતમાં રૂ નુ સરેરાશ ઉત્પાદન ૯૯૭ કિ.ગ્રા./હે. મળેલ છે. આ જાતની રૂ ની ટકાવારી ૪૧.૭ ટકા છે. આ જાતમાં પાનનાં સુકારાનો રોગ તેમજ પાનનાં ટપકાંના રોગ સામે પ્રતિકારત્મક લક્ષણો જણાયેલ છે. આ જાતમાં ચુસિયા પ્રકારની જીવાતો જેવી કે, સફેદ માખી, થ્રિપ્સ અને મોલોમશીનું નુકશાન મધ્યમથી નીચુ રહેલ હતું જ્યારે જીંડવાની ઈયળથી થયેલ નુક્શાન આર્થિક ક્ષમ્ય માત્રા કરતા ઓછુ જણાયેલ છે.
	Release proposal was accepted by the house with following suggestions: 1. Include only important morphological traits of variety in running text in point 9b 2. Verify and correct the data of Table 1 also add frequency of top non-significant group 3. Remove negative % increase over values from Table 2 4. Mention spacing for high density planting in point 9(g) 5. Give interpretation for DNA fingerprinting 6. Write DUS traits as per guidelines 7. Remove name of Agril. Supervisor and Agril. Assistant for proposal
	[Action: Research Scientist, MCRS, NAU, Surat]

19.1.4.27	**Sorghum: Gujarat Jowar 45 (GJ 45: SDAU Jowar Moti)**
	The farmers of Gujarat state growing sorghum are recommended to grow sorghum variety Gujarat Jowar 45 (GJ 45: SDAU Jowar Moti) for the *kharif* season. Under normal conditions, this variety gave an average 2467 kg/ha grain yield which was 12.8, 9.4, 7.4 and 13.4 per cent higher over check varieties GJ 43, GNJ 1, GJ 44 and CSV 20, respectively. It gave 158.7q/ha dry fodder yield which exhibited 26.4, 40.4 and 2.4 per cent higher than check varieties GNJ 1, GJ 44 and CSV 20, respectively. It has tall height with long and broad leaves. It is moderately resistant to diseases like leaf blight, anthracnose, grain mold, ergot and has a lower infestation of shoot fly and stem borer than checks. The grain is attractive, good lustrous, circular in shape and contains a good amount of protein.
	જુવાર: ગુજરાત જુવાર ૪૫ (જીજે ૪૫: એસડીએયુ જુવાર મોતી)
	ગુજરાત રાજ્યના જુવારની વાવણી કરતા ખેડૂતોને ગુજરાત જુવાર ૪૫ (જીજે ૪૫: એસડીએયુ જુવાર મોતી) જાત ચોમાસુ ઋતુમાં વાવતેર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું સામાન્ય પરિસ્થિતિમાં સરેરાશ દાણાનું ઉત્પાદન ૨૪૬૭ કિ.ગ્રા./હે. છે જે અંકુશ જાતો જીજે ૪૩, જીએનજે ૧, જીજે ૪૪ અને સીએવી ૨૦ કરતા અનુક્રમે ૧૨.૮, ૯.૪, ૭.૪ અને ૧૩.૩ ટકા વધુ છે. તેમજ સુકી કડબનું ઉત્પાદન ૧૫૮.૭ ક્વિન્ટલ/હેક્ટર આપે છે જે અંકુશ જાતો જીએનજે ૧, જીજે ૪૪ અને સીએવી ૨૦ કરતા અનુક્રમે ૨૬.૪, ૪૦.૪ અને ૨.૪ ટકા વધુ છે. આ જાત વધુ ઉચાઇ, લાંબા અને પહોળા પાન ધરાવે છે. આ જાત પાનનો સુકારો, કાલવર્ણ, મધીયો અને દાણાની ફૂગ જેવા રોગ સામે મધ્યમ પ્રતિકારક શક્તિ ધરાવે છે. તેમજ સાંઠાની માખી અને સાંઠાના વેધકનો ઓછો ઉપદ્રવ જોવા મળેલ છે. ગુણવત્તાની દ્રષ્ટીએ આ જાતના દાણા આકર્ષક, ગોળાકાર અને સારી માત્રામાં પ્રોટીન ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Give the detail in point 5(a) and flow chart in Appendix 2. Correct the title of Table 4 3. Write word "IPS" instead of progeny selection in Appendix 1 4. Remove mean data from Table 4b and 4d 5. Check the range of ancillary observation in Table 7 6. More characters should be included as per the DUS guidelines, if possible 7. In Table 9, Add data of other quality parameters of grain and fodder
	[Action: Associate Research Scientist (Millets), SDAU, Deesa]
19.1.4.28	**Fennel: Gujarat Fennel 13 (GF 13: SDAU Fennel Suvas)**
	Release proposal was differed by the house due following reasons 1. This variety was proposed in AICRP trial but rejected due to *Ramularia* blight disease

	2. Data of only single LSVT is presented in proposal 3. Insect-pest data are not mentioned in the proposal 4. Consumer preference data are not included in the proposal
	[Action: Research Scientist (Spices), SDAU, Jagudan]
19.1.1.29	**Endorsement of Grain Amaranth Variety: Gujarat Amaranth 5 (GA 5)**
	The farmers of Gujarat state growing grain amaranth are recommended to grow early maturing and high yielding amaranth variety Gujarat Amaranth 5 (GA 5). It gave an average grain yield of 2534 kg/ha which was 18.6, 43.5, 38.3 and 50.0 per cent higher than the check varieties Gujarat Amaranth 2, Suvarna, BGA 2 and RMA 7, respectively. It has light red inflorescence, creamy white bold grain, contains good amount of protein and iron.
	એન્ડોર્સમેન્ટ રાજગરો: ગુજરાત રાજગરો ૫ (જી.એ.૫)
	ગુજરાત રાજ્યના ખેડૂતોને રાજગરાની વહેલી પાકતી તેમજ વધુ ઉત્પાદન આપતી ગુજરાત રાજગરો ૫ (જી.એ.૫) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાત દાણાનું સરેરાશ ઉત્પાદન ૨૫૩૪ કિ.ગ્રા./હે. આપે છે. જે અંકુશ જાતો ગુજરાત રાજગરો ૨, સુવર્ણા, બીજીએ ૨ અને આર.એમ.એ. ૭ કરતા અનુક્રમે ૧૮.૬, ૪૩.૫, ૩૮.૩ અને ૫૦.૦ ટકા વધારે છે. આ જાત આછા લાલાશ પડતા ડુંડા, મોટા ચમકદાર દાણા, સારા પ્રમાણમાં પ્રોટીન અને લોહતત્વ ધરાવે છે.
	Release proposal was accepted by the house
	[Action: Associate Research Scientist, CCI, SDAU, Sardarkrushinagar]

Recommendation for farmers

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

19.1.1.16	**: Assessment of best practices for storage of turmeric planting material**
	The farmers of Saurashtra region growing turmeric are recommended to store the rhizomes of turmeric from their produce to be used as planting material in next season, in soil pit storage. It showed maximum germination per cent with higher number of healthy rhizomes.
	સૌરાષ્ટ્ર વિસ્તારમાં હળદરનું વાવેતર કરતાં ખેડૂતો માટે ભલામણ કરવામાં આવે છે કે, આગામી સીઝનમાં હળદરની ગાંઠોનો વાવેતરમાં ઉપયોગ કરવા માટે હળદરની ગાંઠોનો જમીનમાં ખાડો કરી સંગ્રહ કરવો. એનાથી મહતમ ઉગાવાની ટકાવારી સાથે વધારે સંખ્યામાં તંદુરસ્ત ગાંઠો વાવેતર માટે મળી રહે છે.
	Recommendation was accepted by the house with following suggestions: 1. Mention size of pit for unit quantity of planting material and place where pit should be done and also add time duration for storage 2. Mention only maximum per cent of germination in recommendation text
	[Action: Professor & Head, Dept. of Genetics & Plant Breeding, JAU, Junagadh]

19.1.2 Recommendation for Scientific Community

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.1.2.1	**Effect of mechanical scarification and biofertilizer treatments on seed quality enhancement in senna (*Senna alexandrina* Mill)**
	It is recommended that seeds of Senna (*Senna alexandrina* Mill) should be mechanically scarified for 2 to 3 minutes followed by seed priming treatment with Bio NPK (5ml/kg seeds) for getting higher seed germination per cent and seedling vigour.
	The recommendation was accepted by the house
	[Action: Assistant Professor and Head, Dept. of Seed Science & Technology, BACA, AAU, Anand**]**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

	NIL

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

	NIL

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.1.2.2	**Effect of priming on seed germination of fennel** Priming of fennel seeds with vermiwash for 12 hours increased the germination and other growth parameters. **The recommendation is accepted by the house with following suggestion** 1. Mention the volume of vermiwash in recommendation text
	[Action : Principal, College of Horticulture, SDAU, Jagudan**]**
19.1.2.3	**Effect of priming on seed germination of china aster** Priming of china aster seed with 2% PEG 6000 for 12 hours increased the germination percentage and other growth parameters. **The recommendation is accepted by the house with following suggestion:** 1. Remove sentence "whereas priming with 10% cow urine reduced germination percentage" from recommendation
	[Action : Principal, College of Horticulture, SDAU, Jagudan]

19.1.3 New Technical Programmes

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title of Experiment	Suggestion/s
19.1.3.1	Effect of presowing seed treatments on seedling establishment, growth and yield of direct seeded rice under middle Gujarat conditions	**Approved with following suggestions:** 1. If GAR 201is not released before conductance of trial then include GNR 8 instead of GAR 201 2. Mention the name of filler material in P_6 treatment

		3. Change the title of NTP as per the objectives 4. Add treatment of water soaking as a control **[Action:** Assistant Professor and Head, Dept. of Seed Science & Technology, BACA, AAU, Anand]

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title of Experiment	Suggestion/s
19.1.3.2	Effect of growth regulator on cuttings of Barbados cherry (*Malpighia glabra* L.)	**Approved with following suggestion:** 1. Title should be revised as per the objectives **[Action:** Professor & Head, Dept. of Genetics & Plant Breeding, JAU, Junagadh]
19.1.3.3	Orgopriming of sesame (*Sesamum indicum* L.) seeds to enhance germination	**Approved with following suggestions:** 1. Design should be Factorial CRD with factor 1 as Date of sowing and factor 2 as Treatments 2. Use word repetitions in place of replications 3. The priming solution (organic compound) should be extracted from common variety of coconut, ginger, garlic and turmeric 4. Mention the quantities of organic compound used for per unit quantity of seed 5. Use word "orgopriming" in place of "seed priming" in objective **[Action:** Professor & Head, Dept. of Seed Science & Technology, JAU, Junagadh]

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

	NIL

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

Sr. No.	Title of Experiment	Suggestion/s
19.1.3.4	Effect of bagging materials on storage of groundnut pods	**Approved with following suggestions:** 1. All the observations should be recorded at 6 month and 9 months

		2. Write variety name GJG 32 in place of GG 32 3. Follow common fumigation treatment of seed before experimentation 4. Modify the title of experiment as per the treatment **[Action:** Assistant Farm Manager, SDAU, Aseda]

General suggestions

1. All the suggestions/corrections made and approved by the house must be incorporated in respective recommendations and new technical programmes
2. Prepare release proposal as per the prescribed proforma of SAUs
3. IC number should be included in the varietal proposals before submission to GSSSC
4. *Kharif* 2023 onwards zonal trials should not be conducted without prior permission of respective crop scientist except in those crops where multi-location testing is not available
5. Susceptible check should be included in all the varietal/hybrids and disease screening trials
6. For endorsement of any notified variety/hybrid in future, at least three years yield data of station/state trials to be considered for recommendation of variety and AICRP data will be considered as supporting data
7. Data of trials having non-significant results should not be considered for calculation of mean
8. Interpretation of DNA profiling must be given in the proposal
9. Location-wise data of AICRP trials should be included in the proposal
10. Breeder seed production must be under the control of only main crop scientist (only one) in each university

19.2 CROP PRODUCTION/ NATURAL RESOURCE MANAGEMENT

DATE: May 08-11, 2023

Chairman	:	Dr.V. P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh
Co-Chairmen	:	1. Dr. S. G. Savalia, Dean (Agri.), CoA, JAU, Junagadh 2. Dr. D. D. Patel, Principal (Agri.), NAU, Bharuch
Rapporteurs	:	1. Dr. V. J. Patel, AAU 2. Dr. R. M. Solanki, JAU 3. Dr. V. P. Usadadiya, NAU 4. Dr. D.M. Patel, SDAU
Statistician	:	Dr. G. K.Chaudhari, SDAU

The 19thCombined meeting of AGRESCO of Crop Production Sub Committee (CPSC) of SAUs was held through virtual platform hosted by AAU, Anand during 08-11 May, 2023 under the Chairmanship of Dr. V. P. Chovatia, Hon'ble Vice Chancellor, JAU. Junagadh. The Chairman, Dr. V. P. Chovatia, welcomed Co Chairmen Dr. S. G. Savalia, Dean (Agri.), CoA, JAU, Junagadh and Dr. D. D. Patel, Principal (Agri.), NAU, Bharuch and all the conveners of CPSC of SAUs, rapporteurs and all the scientists who remained present online in the meeting. Conveners of the Crop Production Sub Committee of SAUs presented recommendations for farmers, information for scientific community and new technical programmes of their respective Universities.

Presentation of the recommendations and new technical programmes by conveners of SAUs

	Name	**Designation & University**
1.	Dr. M. B. Viradiya	Associate Professor, Dept. of Soil Science & Agril. Chemistry, BACA, AAU, Anand
2.	Dr. P. D. Kumawat	Professor & Head, Department of Agronomy, CoA, JAU, Junagadh
3.	Dr. SonalTripathi	Associate Professor, Dept. of Soil Science and Agricultural Chemistry, NMCA, NAU, Navsari
4.	Dr. C. K. Patel	Associate Director of Research (Farm), SDAU, Sardarkrushinagar

Summary of the Recommendations

Name of University	No. of Recommendations				New Technical Programs	
	Farmers		Scientific			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	22	19	06	04	26	26
JAU	15	15	03	03	20+7** = 27	20
NAU	18	18	03	02	25+1**	24
SDAU	16	13	02	02	28+3**=31	24

**** Considered as AICRP trials**

19.2.1 RECOMMENDATIONSFOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

Department of Agronomy, BACA, AAU, Anand	
19.2.1.1	**Nutrient management through organic sources in amaranthus (Rajgira)** The farmers of Middle Gujarat Agro-climatic Zone cultivating amaranthus organically are recommended to apply 30 kg N/ha as basal through NADEP compost (about 2 t/ha) or vermicompost (about 2.3 t/ha) for obtaining higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતી હેઠળ રાજગરાનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ૩૦ કિ.ગ્રા. નાઇટ્રોજન નાડેપ કમ્પોસ્ટ (આશરે ૨ ટન/હે) અથવા વર્મીકમ્પોસ્ટ (આશરે ૨.૩ ટન/હે) દ્વારા પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Mention the permissible limit of heavy metals in report 2. Mention the initial heavy metals content in FYM, VC and NADEP **(**Action : Professor and Head, Department of Agronomy, BACA, AAU, Anand**)**
19.2.1.2	**Long term effect of soil test based fertilizer use with and without organic manure on pearl millet (*kharif*)-wheat crop sequence** The farmers of middle Gujarat Agro - climatic Zone growing pearl

millet – wheat cropping sequence continuously for a long period are recommended to apply either NP (soil test value) + K (equal to N) + FYM 20 t/ha (only pearl millet) along with Zn/Fe/S as per soil test value while for succeeding wheat crop application of NP (soil test value) + K (equal to N) for getting higher system productivity. Following ready reckoner table are used for application of fertilizer in pearl millet and wheat crop.

Sr. No	Class	Organic carbon status in soil before sowing	Pearlmillet N applied (kg/ha)	Wheat N applied (kg/ha)	Class	Available phosphorus status in soil before sowing (kg/ha)	Pearl millet Phosphorus applied (kg/ha)	Wheat Phosphorus applied (kg/ha)
1	Very Low	0.00 to 0.25	110	185	Very Low	0.00 to 16.80	62	95
2	Low	0.26 to 0.40	100	175	Low	16.81 to 28.00	50	75
		0.41 to 0.50	85	150	Medium	28.10 to 56.00	37	60
3	Medium	0.51 to 0.75	75	125				
					High	56.10 to 67.20	25	50
4	High	0.76 to 0.96	62	100		67.20 to 84.00	25	40
		0.97 to 1.00	50	75	Very High	84.1 to more	12	30
		1.00 and more	37	62				

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર માં લાંબા સમયથી ચોમાસું બાજરી – ઘઉં પાક પદ્ધતિ અપનાવતા ખેડૂતોએ વધુ ઉત્પાદન મેળવવા ફક્ત ચોમાસું બાજરીમાં ૨૦ ટન/હેક્ટર છાણીયું ખાતર આપવું અને જમીનના પૃથ્થકરણનાં આધારે નાઈટ્રોજન, ફોસ્ફરસ, ઝીંક, આયર્ન અને સલ્ફર આપવો તથા નાઈટ્રોજન જેટલો પોટાશ આપવો જ્યારે ઘઉંનાં પાકને જમીનના પૃથ્થકરણનાં આધારે નાઈટ્રોજન, ફોસ્ફરસ તથા નાઈટ્રોજન જેટલો પોટાશ આપવાની ભલામણ કરવામાં આવે છે. વધુમાં બન્ને પાકોમાં નીચે આપેલ રેડી રેક્નોર ટેબલ પ્રમાણે ખાતર આપવાની ભલામણ કરવામાં આવે છે.

અનુ નં.	ક્લાસ	પાકની વાવણી પહેલા જમીનમાં સેદ્રીય કાર્બન (%)	બાજરીમાટે નાઇટ્રોજનનો જથ્થો (કી/હે)	ઘઉં માટે નાઇટ્રોજનનો જથ્થો (કી/હે)	ક્લાસ	પાકની વાવણી પહેલા જમીનમાં લભ્ય ફોસ્ફોરસ (%)	બાજરી માટે ફોસ્ફોરસનો જથ્થો (કી.ગ્રા/હે)	ઘઉં માટે ફોસ્ફોરસનો જથ્થો (કી.ગ્રા/હે)
૧	ખુબ ઓછું	૦.૦૧ થી ૦.૨૫	૧૧૦	૧૮૫	ખુબ ઓછું	૦.૦૦ થી ૧૬.૮૦	૬૨	૯૫
૨	ઓછું	૦.૨૬ થી ૦.૪૦	૧૦૦	૧૭૫	ઓછું	૧૬.૮૦ થી ૨૮.૦	૫૦	૭૫
		૦.૪૧ થી	૮૫	૧૫૦	મધ્યમ	૨૮.૧૦ થી	૩૭	૬૦

		૦.૫૦				૫૬.૦		
૩	મધ્યમ	૦.૫૧ થી ૦.૭૫	૭૫	૧૨૫				
					વધારે	૫૬.૧૦ થી ૬૭.૨	૨૫	૫૦
૪	વધારે	૦.૭૬ થી ૦.૯૬	૬૨	૧૦૦		૬૭.૨૦ થી ૮૪.૦	૨૫	૪૦
		૦.૯૭ થી ૧.૦૦	૫૦	૭૫	ખુબ વધારે	૮૪.૧૦ થી વધારે	૧૨	૩૦
		૧.૦૦ થી વધારે	૩૭	૬૨				

Approved with following suggestion/s

1.Give fertilizer chart for fertilizer application as per STV value

(Action:Professor and Head, Department of Agronomy, BACA, AAU, Anand**)**

AICRP on Weed Management., BACA, AAU, Anand

19.2.1.3 **Weed management in onion**

The farmers of Middle Gujarat Agro-climatic Zone growing *rabi* onion through transplanting are recommended to adopt any one of the following recommendation for obtaining higher onion bulb yield, effective management of weeds and higher net return.

- Pendimethalin 38.7% CS 580.5 g/ha (30 ml/10 litre of water) at 2-3 DBTP *fb*oxyfluorfen 23.5% EC 120 g/ha (10.2 ml/10 litre of water) at 25-30 DATP **or**
- Propaquizafop 5% + oxyfluorfen 12% w/w EC (PM) 43.75 +105 g/ha (17.5 ml/10 litre of water) at 25-30 DATP **or**
- Oxyfluorfen 23.5% EC 120 g/ha (10.2 ml/10 litre of water) at 2-3 DATP *fb* propaquizafop 5% + oxyfluorfen 12% w/w EC (PM) 43.75 +105 g/ha (17.5 ml/10 litre of water) at 25-30 DATP **or**
- Pendimethalin 38.7% CS 580.5 g/ha (30 ml/10 litre of water) at 2-3 DBTP **or**
- HW at 20 and 40 DATP.

There was no any adverse effect of applied herbicide in onion on succeeding crops (Pearlmillet, Maize and Greengram).

મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ડુંગળીનું ફેરરોપણીથી વાવેતર કરતા ખેડૂતોને ડુંગળીનું વધુ ઉત્પાદન, અસરકારક નીંદણ વ્યવસ્થાપન અને વધુ વળતર મેળવવા માટે નીચેના પૈકી કોઈ એક નીંદણ વ્યવસ્થાપન અપનાવવા ભલામણ કરવામાં આવે છે.

- ફેરરોપણીના ૨-૩ દિવસ પહેલાં પેન્ડીમિથાલીન ૩૮.૭%સીએસ ૫૮૦.૫ ગ્રામ સક્રિય તત્વ/હે (૩૦ મિ.લિ./૧૦ લિટર પાણી) અને ફેરરોપણી

	બાદ ૨૫-૩૦ દિવસે ઓક્સિફ્લુર્ફેન ૨૩.૫% ઇસી ૧૨૦ ગ્રામ સક્રિય તત્વ/હે (૧૦.૨ મિ.લિ./૧૦ લિટર પાણી) **<u>અથવા</u>** ➢ ફેરરોપણી બાદ ૨૫-૩૦ દિવસે પ્રોપાક્વીઝાફોપ ૫% + ઓક્સિફ્લુર્ફેન ૧૨% ડબલ્યુ/ડબલ્યુ ઇસી (પ્રિમિક્ષ) ૪૩.૭૫+૧૦૫ ગ્રામ સક્રિય તત્વ/હે (૧૭.૫ મિ.લિ./૧૦ લિટર પાણી) **<u>અથવા</u>** ➢ ફેરરોપણીના ૨-૩ દિવસ પહેલાં ઓક્સિફ્લુર્ફેન ૨૩.૫% ઇસી ૧૨૦ ગ્રામ સક્રિય તત્વ/હે (૧૦.૨ મિ.લિ./૧૦ લિટર પાણી) અને ફેરરોપણી બાદ ૨૫-૩૦ દિવસે પ્રોપાક્વીઝાફોપ ૫% + ઓક્સિફ્લુર્ફેન ૧૨% ડબલ્યુ/ડબલ્યુ ઇસી (પ્રિમિક્ષ) ૪૩.૭૫+૧૦૫ ગ્રામ સક્રિય તત્વ/હે (૧૭.૫ મિ.લિ./૧૦ લિટર પાણી) **<u>અથવા</u>** ➢ ફેરરોપણીના ૨-૩ દિવસ પહેલાં પેન્ડીમિથાલીન ૩૮.૭% સીએસ ૫૮૦.૫ ગ્રામ સક્રિય તત્વ/હે (૩૦ મિ.લિ./૧૦ લિટર પાણી) **<u>અથવા</u>** ➢ ફેરરોપણી બાદ ૨૦ અને ૪૦ દિવસે હાથ નીંદામણ શિયાળુ ડુંગળીના પાકમાં છંટકાવ કરેલ નીંદણનાશકોની કોઈપણ પ્રકારની આડઅસર તેના પછીના પાકો (બાજરી, મકાઈ અને મગ) પર જોવા મળેલ નથી **Not approved with following suggestion/s** 1.**Extend one more year due to Y x T significant** **(**Action**:**Agronomist & PI, AICRP -WM., BACA, AAU, Anand)
19.2.1.4	**Weed management in onion nursery** The farmers of Middle Gujarat Agro-climatic Zone raising *rabi*onion seedlings as line sowing in nursery keeping the distance of 10 cm between rows are recommended to adopt any one of the following recommendation for obtaining higher number of healthy transplantable onion seedlings, effective management of weeds and higher net return. ➢ Propaquizafop 5% + oxyfluorfen 12% w/w EC (PM) 43.75+105 g a.i./ha (17.5 ml/10 litre of water) at 10-15 DAS <u>or</u> ➢ Oxyfluorfen 23.5% EC 80 g a.i./ha (6.8 ml/10 litre of water) at 10-15 DAS <u>or</u> ➢ Pendimethalin 30% EC 300 g a.i./ha (20 ml/10 litre of water) at 1-2 DAS <u>or</u> ➢ Hand weeding at 15 and 30 DAS There was no adverse effect of applied herbicide in onion nursery on succeeding crops (Wheat, Chickpea and Mustard). મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ડુંગળીનું ધરૂ બે હાર

	વચ્ચે ૧૦ સે.મી. અંતર રાખી ઉછેરવા માગતા ખેડૂતોને અસરકારક નીંદણ વ્યવસ્થાપન ,વધુ ફેર રોપણીલાયક ધરું અને વધુ નફો મેળવવા માટે નીચેના પૈકી કોઈ એક નીંદણ વ્યવસ્થાપન અપનાવવા ભલામણ કરવામાં આવે છે. ➢ વાવણી બાદ૧૦-૧૫ દિવસે પ્રોપાક્વીઝાફો ૫૫% + ઓક્સિફ્લુર્ફેન ૧૨% ડબલ્યુ/ડબલ્યુ ઇસી (પ્રિમિક્ષ) ૪૩.૭૫ +૧૦૫ ગ્રામ સક્રિય તત્વ/હે (૧૭.૫ મિ.લિ./ ૧૦લિટર પાણી) <u>અથવા</u> ➢ વાવણી બાદ ૧૦-૧૫ દિવસે ઓક્સિફ્લુર્ફેન ૨૩.૫% ઇસી ૮૦ ગ્રામ સક્રિય તત્વ/હે (૬.૮મિ.લિ./૧૦ લિટર પાણી) <u>અથવા</u> ➢ વાવણી બાદ ૧-૨ દિવસે પેન્ડીમિથાલીન ૩૦% ઇસી ૩૦૦ ગ્રામ સક્રિય તત્વ/હે (૨૦મિ.લિ./ ૧૦લિટર પાણી) <u>અથવા</u> ➢ વાવણી બાદ ૧૫ અને ૩૦ દિવસે હાથ નીંદામણ શિયાળુ ડુંગળી ના ધરૂવાડિયામાં છંટકાવ કરેલ નીંદણ નાશકોની કોઈ પણ પ્રકારની આડ અસર તેના પછીના પાકો (ઘઉં, ચણા અને રાઈ) પર જોવા મળેલ નથી. **Not approved with following suggestion/s** 1.**Extend one more year due to Y x T significant** **(**Action:Agronomist & PI, AICRP -WM., BACA, AAU, Anand
Regional Research Station, AAU, Anand	
18.2.1.5	**Effect of sowing interval and ethephon on fresh dormancy in groundnut (*Arachis hypogea* L.) var. GG 34** The farmers of Middle Gujarat Agro-climatic Zone cultivating *kharif* groundnut var. GG 34 using seeds of preceding summer season are recommended to keep the seed for minimum 14 days storage period then give seed treatment of 150 ppm Ethephon 39%SL (3.75 mL Ethaphone in 10 litre water for 100 kg seed and dry under shed) one day before sowing for better germination, seedling growth and higher yield of *kharif* groundnut. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ ઋતુમાં તૈયાર થયેલ મગફળી જાત જીજી ૩૪ ના બિયારણથી તુરંત ચોમાસુ ઋતુમાં વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઉનાળુ ઋતુમાં તૈયાર થયેલ બિયારણને ઓછામાં ઓછા ૧૪ દિવસના સંગ્રહ બાદ વાવેતરના એક દિવસ પહેલાં ૧૫૦ પીપીએમ ઇથેફોન ૩૯ % એસએલ (૧૦૦ કિગ્રા. મગફળીના દાણાને ૧૦ લીટર પાણીમાં ૩.૭૫ મીલી. ઇથેફોનના દ્રાવણનો છંટકાવ કરી છાંયડામાં સુકવવું) ની માવજત આપવાથી બિયારણનો સારો ઉગાવો, છોડનો વિકાસ અને વધારે ઉત્પાદન મેળવી શકાય છે.

	Approved with following suggestion/s 1. Add dry under shed in the text **(**Action: Research Scientist, RRS, AAU, Anand)
Main Maize Research Station, AAU, Godhara	
18.2.1.6	**Effect of nitrogen and phosphorus on yield of baby corn hybrid in *Kharif* Season** The farmers of Middle Gujarat Agro-climatic Zone growing *kharif* baby corn hybrid maize are recommended to fertilize the crop with 40 kg nitrogen and 20 kg phosphorus per hectare, from which 20 kg nitrogen and 20 kg phosphorus as basal, while remaining 20 kg nitrogen apply after 30 DAS for getting higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ખરીફ ઋતુમાં સંકર બેબીકોર્નનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ૪૦ કિલોગ્રામ નાઇટ્રોજન અને ૨૦ કિલોગ્રામ ફોસ્ફરસ પ્રતિ હેકટર આપવાની ભલામણ કરવામાં આવેછે, જે પૈકી ૨૦ કિલો ગ્રામ નાઇટ્રોજન અને ૨૦ કિલોગ્રામ ફોસ્ફરસ પ્રતિ હેકટર પાયામાં તથા બાકી રહેલ ૨૦ કિલોગ્રામ નાઇટ્રોજન પ્રતિ હેકટર વાવણી બાદ ૩૦દિવસે આપવો. **Approved** **(**Action:Research Scientist, MMRS, AAU, Godhara**)**
Main Rice Research Station, AAU, Nawagam	
19.2.1.7	**Performance of transplanted rice varieties under direct seeded method** The farmers of Middle Gujarat Agro-climatic Zone growing rice in *kharif* season are recommended to adopt Direct Seeded Rice (DSR) method and sow the transplanted rice variety Gurjari or Mahisagar during third week of June to first week of July for obtaining higher yield and net return and no cost for nursery raising and transplanting in field. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું ડાંગર કરતા ખેડૂતોને ભલામણ કરવામાં આવેછેકે ડાંગરની ઓરાણ પધ્ધતિ (**DSR method)** અપનાવીને રોપાણ ડાંગર ગુર્જરી અથવા મહીસાગર જાતનું વાવેતર જુનના ત્રીજા અઠવાડીયાથી જુલાઈના પ્રથમ અઠવાડીયા દરમ્યાન કરવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે તથા નર્સરી ઉછેર અને રોપણી ખર્ચ પણ થતો નથી.. **Approved** **(**Action: Research Scientist, MRRS, AAU, Navagam**)**

Main Rice Research Station, AAU, Nawagam	
19.2.1.8	**Integrated Nutrient Management in Rice under middle Gujarat** The farmers of Middle Gujarat Agro-climatic Zone growing late maturing rice varieties are recommended to adopt any oneof the following integrated nutrient management practices for getting higher yield and net return. 75% RDF through chemical fertilizer + 25% RDN through castor cake (42 kg N, 18 kg P_2O_5 and about 833 kg castor cake/ha as basal, remaining 42 kg N/ha at tillering stage, 21 kg N/ha at panicle initiation stages) OR 50% RDF RDFthrough chemical fertilizer+ 50% RDN through FYM (28 kg N, 13 kg P_2O_5 and about 14 tone FYM/ha as basal, remaining 28 kg N/ha at tillering and 14 kg N/ha at panicle initiation stages) OR 50% RDF RDFthrough chemical fertilizer+ 50% RDN through castor cake (28 kg N, 13 kg P_2O_5 and about 1667 kg castor cake/ha as basal, remaining 28 kg N/ha at tillering and 14 kg N/ha at panicle initiation stages) મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાંડાંગરની મોડી પાકતી જાતોની ફેરરોપણી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, નીચે પૈકી કોઈ એક સંકલિત પોષણ વ્યવસ્થાપન આપનાવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે. ૭૫% ભલામણ મુજબ રાસાયણિક ખાતર + ૨૫%નાઈટ્રોજન દિવેલી ખોળ દ્વારા (૪૨ કિગ્રા નાઈટ્રોજન, ૧૮ કિગ્રા ફોસ્ફરસ અને અંદાજીત ૮૩૩ કિગ્રા દિવેલી ખોળ પ્રતિ હેકટરે પાયામાં, બાકીનો ૪૨ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે ફૂટ અવસ્થાએ અને ૨૧ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે કંટી અવસ્થાએ) **અથવા** • ૫૦% ભલામણ મુજબ રાસાયણિક ખાતર + ૫૦% છાણિયું ખાતર (૨૮કિગ્રા નાઈટ્રોજન, ૧૩ કિગ્રા ફોસ્ફરસ અને અંદાજીત ૧૪ ટન છાણિયું ખાતર પ્રતિ હેકટરે પાયામાં, બાકીનો ૨૮ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે ફૂટ અવસ્થાએ અને ૧૪ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે કંટી અવસ્થાએ) **અથવા** • ૫૦% ભલામણ મુજબ રાસાયણિક ખાતર + ૫૦% દિવેલી ખોળ (૨૮કિગ્રા નાઈટ્રોજન, ૧૩ કિગ્રા અને અંદાજીત ૧૬૬૭ કિગ્રા દિવેલી ખોળ પ્રતિ હેકટરે પાયામાં, બાકીનો ૨૮ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે ફૂટ અવસ્થાએ અને ૧૪ કિગ્રા નાઈટ્રોજન પ્રતિ હેકટરે કંટી અવસ્થાએ). **Approved with following suggestion/s** 1.Add through chemical fertilizer in the English text (Action: Research Scientist, MRRS, AAU, Navagam)

19.2.1.9	**Effect of sowing time and poly sheet cover on seedling growth in summer rice nursery** The farmers of Middle Gujarat Agro climatic Zone are recommended to sow the seed in summer rice nursery during the 1st week of December under 25 micron transparent plastic tunnel up to 40 DAS to get early transplantable seedlings, higher number of seedlings and net return as compare to open field condition. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળું ડાંગરનું ધરૂવાડિયું કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઉનાળું ડાંગરના ધરૂવાડિયાનું વાવેતર ડીસેમ્બરના પહેલા અઠવાડિયા દરમ્યાન ૨૫ માઈક્રોન પારદર્શક પ્લાસ્ટીકની પોલી ટનલમાં કરવાથી ખુલ્લા ખેતરની સરખામણીમાં ૪૦ દિવસમાં વધારેઅને વહેલું રોપાણલાયક ધરૂ અને વધુ નફો મેળવી શકાય છે. **Approved** **(**Action: Research Scientist, MRRS, AAU, Navagam**)**
Agriculture Research Station, AAU, Khandha	
19.2.1.10	**Effects of spacing and nitrogen on castor grown on heavy black soil** The farmers of Middle Gujarat Agro-climatic Zone (AES-IX) growing castor (GAC 11) are recommended to sow their crop in paired row at the spacing of 60-120-60 cm and fertilize the crop with 50 kg N/ha,besides, 50 kg P_2O_5/ha and 5 t FYM/ha as basal. The nitrogen should be applied in three splits *i.e.*, 12.5 kg N/ha as a basal, 25 kg N/ha at 30 DAS and 12.5 kg N/ha at 60 DAS for getting better yield મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર (એઈએસ-૯) ના દિવેલા (જી.એ.સી.૧૧) નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવેછેકે દિવેલાનું સારૂ ઉત્પાદન મેળવવા માટે દિવેલાનું વાવેતર જોડીયા હારમાં ૬૦-૧૨૦-૬૦સે.મી. રાખી કરવું તથા પાકને ૫૦ કિ.ગ્રા. નાઈટ્રોજન/હે. તથા પાયામાં પ્રતિ હેક્ટ ૨૫૦ કિ.ગ્રા. ફોસ્ફરસ અને ૫ ટન છાણીયું ખાતર આપવું. નાઈટ્રોજન ખાતર ત્રણ હપ્તામાં એટલેકે ૧૨.૫ કિ.ગ્રા. નાઈટ્રોજન/હે. પાયામાં, ૨૫ કિ.ગ્રા. નાઈટ્રોજન/હે. ૩૦ દિવસે અને ૧૨.૫ કિ.ગ્રા. નાઈટ્રોજન/હે. ૬૦ દિવસે આપવો **Approved with following suggestion/s** 1. Check the EC and CV value **(**Action:Asstt**.**Research scientist ARS. , AAU, Khandha)
19.2.1.11	**Response of castor (GCH 10) to spacing and nitrogen under irrigated condition** The farmers of Middle Gujarat Agro-climatic Zone are recommended to sow castor (GCH 10) at 120 x 60 cmspacing and fertilize the crop with 120 kg N/ha and 1L/ha *Azotobacter* liquid biofertilizer mixed with500 kg FYM, besides, 40 kg P_2O_5/ha and 4.5 t FYM/ha as basal. Nitrogen should be applied in four equal splits *i.e.* 30 kg N/ha each as basal, at 30,60 and at 90 DAS to get higher yield

	મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને દિવેલા (જી.સી.એચ. ૧૦) નું વધુ ઉત્પાદન મેળવવા માટે ૧૨૦ x ૬૦ સે.મી.ના અંતરે વાવેતર કરવા તથા પાકને ૩૦ કિ.ગ્રા. નાઈટ્રોજન/હે. અને ૧ લીટર એઝેટોબેકટર પ્રવાહી જૈવિક ખાતર/હે. ૫૦૦ કિ.ગ્રા છાણીયા ખાતર સાથે ભેળવી પાયામાં અને બાકીનો ૯૦ કિ.ગ્રા. નાઈટ્રોજન ત્રણ સરખા હપ્તામાં એટલે કે ૩૦ કિ.ગ્રા. નાઈટ્રોજન વાવણી પછીના ૩૦,૬૦ અને ૯૦ દિવસે આપવાની ભલામણ કરવામાં આવે છે **Approved with following suggestion/s** 1.Mention the unit of plant population 2. Recalculate the cost of seed for spacing treatment **(**Action:Asstt**.**Research scientist ARS. , AAU, Khandha)
Pulse Research Station, AAU, Vadodara	
19.2.1.12	**Nutrient management through organic sources in summer blackgram** The farmers of Middle Gujarat Agro-climatic Zone growing summer blackgram organically are recommended to apply 1.0 L/ha Bio NP liquid biofertilizer (*Rhizobium* and PSB) mixed with 500 kg/ha vermicompost or 250 kg/ha Castor cake as basal for getting higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતી હેઠળ ઉનાળુ અડદનું વાવેતર કરતા ખેડૂતોએ વધુ ઉત્પાદન અને નફો મેળવવા હેક્ટર દીઠ ૧.૦ લિટર બાયો એનપી (રાઇઝોબીયમ અને પીએસબી) પ્રવાહી જૈવિક ખાતરને ૫૦૦ કિલોગ્રામ વર્મિકમ્પોસ્ટ અથવા ૨૫૦ કિલોગ્રામ દિવેલીખોળની સાથે ભેળવી પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Check the data of Nitrogen content 2. Correct the unit of heavy metals (ppb) **(**Action: Research Scientist PRS, AAU, Vadodara**)**
College of Agriculture, AAU, Jabugam, AAU, Anand	
19.2.1.13	**Evaluation of soybean based cropping system in middle Gujarat condition (Tribal area of Chhotaudepur district)** The farmers of Middle Gujarat Agro-climatic Zone growing *kharif* soybean are recommended to grow chickpea or mustard or maize in subsequent *rabi* season for getting higher net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ચોમાસું ઋતુમાં સોયાબીન પાક લીધા પછી શિયાળુ ચણા

	અથવા રાઈ અથવા મકાઈ પાકો લેવાથી વધુ આવક મેળવી શકાય છે.. **Approved with following suggestion/s** 1. Verify that observation on yield attributes suggested in New Technical 2. Mention the selling price of by product **(Action:** Principal, COA, AAU, Jabugam)
19.2.1.14	**Effect of time of sowing and irrigation scheduling at critical growth stages on summer groundnut** The farmers of Middle Gujarat Agro-climatic Zone growing summer groundnut are recommended to sow groundnut during 2nd week of January with pre sowing irrigation and give total 8 irrigations at 10 -12 days interval from 30 DAS for getting higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ મગફળીની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે મગફળીની વાવણી જાન્યુઆરી માસના બીજા અઠવાડિયા દરમિયાન પિયત આપી કરવી તથા વાવણીના ૩૦ દિવસ બાદ કુલ ૮ પિયત ૧૦-૧૨ દિવસના ગાળે પિયત આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1.Delete the name of variety, mention pre sowing irrigation and total number of irrigation in text **(**Action: Principal, COA, AAU, Jabugam)
Agriculture Research Station, AAU, Arnej	
19.2.1.15	**Nutrient management through organic sources in wheat (GW 1) under *Bhal*region)** The farmers of *Bhal* and Coastal Agro-climatic Zone growing *durum* wheat organically are recommended to apply about 600 kg castor cake/ha (75% RDN) before *kharif* season and seed treatment of bio NPK liquid biofertilizer (5 ml/kg seed) for obtaining higher yield and net return. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતી પધ્ધતિથી ભાલીયા ઘઉં ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પ્રતિ હેક્ટર અંદાજીત ૬૦૦ કિ.ગ્રા. દીવેલીનાં ખોળને (ઘઉંમાં ભલામણ કરેલ નાઈટ્રોજનની ૭૫% માત્રા) ચોમાસું ઋતુની શરુઆતમાં આપવું અને બાયો એન.પી.કે. પ્રવાહી જૈવિક ખાતરની બીજ માવજત (૫ મીલી/કિ.ગ્રા. બીજ) આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1.Mention the permissible limit of heavy metals 2. Verify the data of plant population and microbial count 3. Mention composition of neem cake and castor cake in report

	(Action: Research Scientist ARS, AAU, Arnej**)**
19.2.1.16	**Nutrient management through organic sources in wheat (GW 496) under *Bhal* region** The farmers of *Bhal* and Coastal Agro-climatic Zone growing *aestivum* wheat organically with restricted irrigation (Two irrigations 21 DAS and 45 DAS) are recommended to apply about 1.8 t castor cake/ha (75% RDN) before *kharif* season and apply seed treatment of bio NPK liquid bio fertilizer (5 ml/kg seed) for obtaining higher yield and net return. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય પધ્ધતિથી અને મર્યાદિત પિયતથી (બે પિયત વાવણી બાદ ૨૧ અને ૪૫ દિવસે) ઘઉંની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પ્રતિ હેક્ટર અંદાજીત ૧.૮ ટન દીવેલીનાં ખોળ (ઘઉંમાં ભલામણ કરેલ નાઈટ્રોજનની ૭૫% માત્રા) ચોમાસાની ઋતુની શરૂઆતમાં આપવું અને બાયો એન.પી.કે. પ્રવાહી જૈવિક ખાતરની બીજ માવજત (૫ મીલી/કિ.ગ્રા. બીજ) આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Verify the data of plant population and N content 2. Mention the time of irrigation in the text 3. Delete variety name from recommendation para **(**Action: Research Scientist ARS, AAU, Arnej**)**
19.2.1.17	**Nutrient management through organic sources in chickpea in *Bhal* region** The farmers of *Bhal* and Coastal Agro-climatic Zone growing chickpea (GJG 3) organically are recommended to apply 2 tFYM/ha and 250 kgcastor cake/ha as basal applied before*kharif* season for getting higher yield and net return. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રીય ખેતી પધ્ધતિથી ચણા (જી. જે. જી. ૩) ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પ્રતિ હેક્ટર ૨ ટન છાણીયું ખાતર અને ૨૫૦ કિ.ગ્રા. દીવેલી ખોળ ચોમાસુ ઋતુની શરૂઆતમાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Reanalyzed the plant population data as per ANOVA 2. Verify EC and pHdata **(**Action: Research Scientist ARS, AAU, Arnej**)**
19.2.1.18	**Effect of different sources and levels of sulphur on growth, yield and quality of dill seed under restricted irrigation (RI) in *Bhal*region** The farmers of *Bhal* and Coastal Agro-climatic zone growing dill seed under restricted irrigation are recommended toadopt any one of following

	recommendation for getting higher yield and net return: Apply 10 kg S/ha through gypsum (77 kg/ha) before 15 days of sowing along with recommended dose of fertilizer (NPK: 40:20:00 kg/ha and FYM 2.5 t/ha before *kharif* season). **OR** Apply 10 kg S/ha through ammonium sulphate at the time of sowing along with recommended dose of fertilizer (NPK: 31:20:00 kg/ha and FYM 2.5 t/ha before *kharif* season). ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં મર્યાદિત પિયતથી સુવાની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને વધુ નફો મેળવવા નીચે મુજબની કોઈ એક ભલામણ અપનાવાની રહેશે: ૧૦ કિ.ગ્રા. ગંધક/હેક્ટર વાવણીના ૧૫ દિવસ પહેલા જીપ્સમ (૭૭ કિ.ગ્રા/હે) દ્વારા ભલામણ કરેલા ખાતરના જથ્થા (ના.ફો.પો.: ૪૦:૨૦:૦૦ અને છાણીયુ ખાતર ૨.૫ ટન/હે ચોમાસાની શરૂઆતમાં) સાથે આપવાનો રહેશે. અથવા ૧૦ કિ.ગ્રા ગંધક/હેક્ટર એમોનિયમ સલ્ફેટ દ્વારા વાવણી સમયે ભલામણ કરેલા ખાતરના જથ્થા (ના.ફો.પો.: ૩૧:૨૦:૦૦ અને છાણીયુ ખાતર ૨.૫ ટન/હે ચોમાસાની શરૂઆતમાં) સાથે આપવાનો રહેશે. **Approved with following suggestion/s** 1.Delete the word about and અંદાજિત from the text 2. Mention the input price of Gypsum in economics 3. Mention FYM application in recommendation para **(Action:** Research Scientist ARS, AAU, Arnej**)**
Agricultural Research Station, DAAU, Derol	
19.2.1.19	**Effect of sowing time and variety on growth and yield of chickpea** The farmers of Middle Gujarat Agro-climatic Zone growing chickpea are recommended to sow during 29th October to 4th November for obtaining higher yield and net return. ખેડૂતોપયોગીભલામણ: મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચણા નું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ચણાના પાકને ૨૯મી ઓક્ટોબરથી ૪થી નવેમ્બર દરમ્યાન વાવણી કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1.Delete the name of varieties from the text

	(Action: Associate Research Scientist, ARS, AAU, Derol**)**
College of Agriculture, AAU, Vaso	
19.2.1.20	**Nutrient management in castor (GAC 11)** The farmers of Middle Gujarat Agro-climatic Zone (AES II) growing castor cv. GAC 11 are recommended to apply 75 kg N/ha and 25 kg P_2O_5 /ha, of which 18.75 kg N/ha and 25 kg P_2O_5 /ha as basal and remaining 37.5 kg N/ha at 30 DAS and 18.75 kg N/ha at 60 DAS for obtaining better yield and net return**.** મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં (એઈએસ-૨)દિવેલાની જી.એ.સી. ૧૧ જાતનું વાવેતર કરતા ખેડૂતોએ વધુ ઉત્પાદન અને નફો મેળવવા ૭૫ કિલોગ્રામ નાઇટ્રોજન અને ૨૫ કિલોગ્રામ ફોસ્ફરસ પ્રતિ હેકટર આપવાની ભલામણ કરવામાં આવે છે. જે પૈકી ૧૮.૭૫ કિ.ગ્રા. નાઇટ્રોજન/હે. અને ૨૫ કિ.ગ્રા. ફોસ્ફરસ/હે. પાયામાં અને બાકીનો ૩૭.૫ કિ.ગ્રા. નાઇટ્રોજન/હે. વાવણી બાદ ૩૦ દિવસે તેમજ ૧૮.૭૫ કિ.ગ્રા. નાઇટ્રોજન/હે. પાકની વાવણી બાદ ૬૦ દિવસે આપવો. **Approved with following suggestion/s** 1.Mention the unit of plant population 2. Mention the AESinstead of saline water in the text 3. Give rainfall data in report **(**Action: Principal, COA, AAU, Vaso**)**
Medicine and Aromatic Plant Research, AAU, Anand	
19.2.1.21	**Effect of different organic manures and Bio NPK consortium on dry biomass yield and quality of kalmegh (*Andrographispaniculata*L.) and its residual effect on *kalijiri* [*Baccharoidesanthelmintica* (L.)] Moench** The farmers of middle Gujarat Agro-climatic Zone growing kalmegh-kalijiri cropping system are recommended to adopt any of below recommendation for obtaining higher yield and net return ➢ Apply recommended dose of 50 kg N/ha through neem cake (2.5 t/ha) as basal to kalmegh only or ➢ Apply recommended dose of 50 kg N/ha through vermicompost (4.5 t/ha) as basal to kalmegh only or ➢ Apply 5 t/ha FYM along with 25 kg N/ha and 25 kg P_2O_5/ha as basal and 25 kg N/ha at 30 DATP through fertilizers to kalmegh only મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં કાલમેઘ- કાળીજીરી પાક

	પધ્ધતિ અપનાવતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે નીચેના પૈકી કોઈ પણ એકની ભલામણ કરવામાં આવે છે ➢ ફક્ત કાલમેઘ પાકમાં ભલામણ કરેલ ૫૦કિ.ગ્રા./હેકટર નાઈટ્રોજન લીંબોળી ખોળ (૨.૫ટન/હેકટર) ધ્વારા પાયામાં આપવો અથવા ➢ ફક્ત કાલમેઘ પાકમાં ભલામણ કરેલ ૫૦કિ.ગ્રા./હેકટર નાઈટ્રોજન વર્મીકમ્પોસ્ટ (૪.૫ટન/હેકટર) ધ્વારા પાયામાં આપવો અથવા ➢ ફક્ત કાલમેઘ પાકમાં પ્રતિ હેકટરે ૫ ટન છાણીયા ખાતરની સાથે ૨૫ કિ.ગ્રા.નાઈટ્રોજન તથા ૨૫ કિ.ગ્રા.ફોસ્ફરસ પાયામાં અને ૨૫ કિ.ગ્રા.નાઈટ્રોજન ફેરરોપણી ના ૩૦ દિવસ બાદ આપવો **Approved** **(**Action: Research Scientist MAPRS,AAU, Anand**)**
Dept. of Plant Pathology, BACA, AAU, Anand	
19.2.1.22	**Integrated nutrient management in chilli (Capsicum annuum L.)** The farmers of Middle Gujarat Agro Climatic Zone growing vegetable chilli are recommended to apply 80 % recommended dose of fertilizer (100:40:40 N:P:K kg /ha) along with seedling root dip with liquid BioNPK consortium (5mL/L water) for 15 minutes before transplanting and soil drenching with Bio NPK (500L water / 1 lit BioNPK/ha) at 40 and 70 DATP for getting higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં શાકભાજી મરચાની ખેત્તી કરતા ખેડુતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલા ખાતરના ૮૦ (૧૦૦:૪૦:૪૦ ના:ફો:પો. કિ.ગ્રા./હે) આપવા. વધુમાં બાયો એન.પી.કે પ્રવાહી જૈવીકખાતર (૫ મિ.લિ./લિ પાણીમા મિશ્રણ કરી) ફેરરોપણી પેહલા ધરુના મુળીયાને ૧૫ મીનીટ સુધી ડૂબાડ્વા તથા ફેરરોપણી બાદ ૪૦ અને ૭૦ દિવસે (૫૦૦ લિ પાણી/૧ લિ બાયો એન.પી.કે/હે) જમીનમા મુળમા રેડ્વાની ભલામણ કરવામાં આવે છે. પાકને 20:40:00 ના:ફો:પો કિ.ગ્રા./હે પ્રમાણે ખાતર આપવું. **Approved with following suggestion/s** 1. Extended for one more year **(**Action: Asstt. Prof, Dept. of Plant Pathology, BACA, AAU, Anand**)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

19.2.1.23	**Effect of NPK levels on growth, yield and nutrient uptake by isabgol** The farmers of Saurashtra region growing isabgol are recommended to apply 30 kg nitrogen, 30 kg phosphorus and 30 kg potash/ha along with FYM 5 t/ha at the time of sowing and remaining 30 kg N as top dressing at 45 DAS for getting higher seed yield and net realization. સૌરાષ્ટ્ર વિસ્તારમાં ઈસબગુલનુ વાવેતર કરતાં ખેડુતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવેતર સમયે હેકટરે ૫ ટન છાણીયા ખાતર સાથે ૩૦ કિ.ગ્રા. નાઈટ્રોજન, ૩૦ કિ.ગ્રા. ફોસ્ફરસ અને ૩૦ કિ.ગ્રા. પોટાશ તેમજ વાવેતરના ૪૫ દિવસ બાદ ૩૦ કિ.ગ્રા. નાઈટ્રોજન પૂર્તિ ખાતર તરીકે આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** 1. Recommended the 60 kg N/ha instead of 90 kg N/ha 2. Check yield data in economics table **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.1.24	**Evaluation of low-cost natural farming in wheat + chickpea intercropping system** The farmers of South Saurashtra Agro-climatic Zone growing wheat are recommended to adopt recommended package of practices (Conventional farming) for obtaining higher yield and net return. The farmers are also recommended to adopt organic farming to improve physical, chemical and biological properties of soil. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં ઘઉંનું વાવેતર કરતા ખેડુતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે ભલામણ કરેલ ખેતી પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. જમીનની ભૌતિક, રાસાયણિક તેમજ જૈવિક પરિસ્થિતી સુધારવા સેન્દ્રિય ખેતી પધ્ધતિ અપનાવવાની પણ ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** 1. **Extend for 2 years** 2. Mention the quantity of mulch in Module -1 **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.1.25	**Weed management in *kharif* maize**

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* maize are recommended to adopt following practices for effective weed management and achieving higher grain yield and net realization without any phytotoxic effect on succeeding crops i.e., wheat, chickpea, coriander and mustard.

For effective management of purple nutsedge and other weeds

- Atrazine 500 g/ha (50% WP 20 g /10 L water) as pre-emergence *fb* Tank-mix halosulfuron-methyl 30 g/ha (75% WG 0.8 g/10 L water) + Topramezone 12.5 g/ha (33.6% SC 0.744 g/10 L water) as post-emergence at 30 DAS **OR**
- HW at 15 and 30 DAS.

For effective management of purple nutsedge

- Atrazine 500 g/ha (50% WP 20 g/10 L water) as pre-emergence *fb* halosulfuron-methyl 60 g/ha (75% WG 1.6 g/10 L water) as post-emergence at 30 DAS. **OR**
- HW at 15 and 30 DAS.

For effective weed management

- Atrazine 500 g/ha (50% WP 20 g/10 L water) as pre-emergence *fb* Topramezone 25 g/ha (33.6% SC 1.488 g/10 L water) as post-emergence at 30 DAS **OR**
- HW at 15 and 30 DAS.

દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં ચોમાસુ મકાઈનું વાવેતર કરતા ખેડૂતોને અસરકારક નિંદણ નિયંત્રણ, દાણાનું મહત્તમ ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા ઉપરાંત મકાઈ પછી વાવેતર કરવામાં આવતા પાકો જેવા કે ઘઉં, ચણા, ધાણા અને રાઈ પર આડ અસર વગર નીચે મુજબની ભલામણ કરવામાં આવે છે કે,

ચીઢા તથા અન્ય નીંદણોના અસરકારક નિયંત્રણ માટે:

- વાવણી બાદ પરંતુ પાક અને નિંદણ ઉગ્યા પહેલા એટ્રાઝીન ૫૦૦ ગ્રા./હે. (૫૦% ડબલ્યુપી ૨૦ ગ્રા./૧૦ લી. પાણી) અને વાવણી બાદ ૩૦ દિવસે ટાંકી-મિશ્રણ હેલોસલ્ફયુરોન–મિથાઈલ ૩૦ ગ્રા./હે. (૭૫% ડબલ્યુજી ૦.૮ ગ્રા./૧૦ લી. પાણી) + ટોપ્રામેઝોન ૧૨.૫ ગ્રા./હે. (૩૩.૬% એસ.સી. ૦.૭૪૪ ગ્રા./૧૦ લી. પાણી) **અથવા**

	• વાવણી બાદ ૧૫ અને ૩૦ દિવસે આંતરખેડ અને હાથ નિંદામણ કરવું. **<u>ચીઢાના અસરકારક નિયંત્રણ માટે:</u>** • વાવણી બાદ પરંતુ પાક અને નિંદણ ઉગ્યા પહેલા એટ્રાઝીન ૫૦૦ ગ્રા./હે. (૫૦% ડબલ્યુપી ૨૦ ગ્રા./૧૦ લી. પાણીમાં) અને વાવણી બાદ ૩૦ દિવસે હેલોસલ્ફયુરોન–મિથાઈલ ૬૦ ગ્રા./હે. (૭૫% ડબલ્યુજી ૧.૬ ગ્રા./૧૦ લી. પાણી) **<u>અથવા</u>** • વાવણી બાદ ૧૫ અને ૩૦ દિવસે આંતરખેડ અને હાથ નિંદામણ કરવું. **<u>નીંદણોના અસરકારક નિયંત્રણ માટે:</u>** • વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલા એટ્રાઝીન ૫૦૦ ગ્રા./હે. (૫૦% ડબલ્યુપી ૨૦ ગ્રા./૧૦ લી. પાણી) અને વાવણી બાદ ૩૦ દિવસે ટોપ્રામેઝોન ૨૫ ગ્રા./હે. (૩૩.૬% એસ.સી. ૧.૪૮૮ ગ્રા./૧૦ લી. પાણી) **<u>અથવા</u>** • વાવણી બાદ ૧૫ અને ૩૦ દિવસે આંતરખેડ અને હાથ નિંદામણ કરવું. **Approved with following suggestion/s:** 1. Mention the bioassay in recommendation para 2. Do the recommendation as point wise 3. Do DNMRT analysis and check the data **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.1.26	**Effect of N, P and K levels on growth, yield and nutrients uptake by bottle gourd** The farmers of South Saurashtra Agro-climatic Zone growing bottle gourd in summer season are recommended to apply 125-75-75 kg N-P_2O_5-K_2O/ha for achieving higher yield and net return. Nitrogen should be applied in three equal splits (Basal and remaining nitrogen at 30 and 45 days after sowing as spot application), full dose of phosphurus and potash as basal. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારમાં ઉનાળુ ઋતુમાં દુધીનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ૧૨૫-૭૫-૭૫ કિ.ગ્રા. ના.-ફો.-પો./હે. આપવાની ભલામણ કરવામાં આવે છે. નાઈટ્રોજન ત્રણ સરખા હપ્તામાં (પાયામાં તથા બાકી રહેલ નાઈટ્રોજન ખાતરનો જથ્થો વાવેતર બાદ ૩૦ અને ૪૫ દિવસે છોડની બાજુમાં) તેમજ

	ફોસ્ફરસ અને પોટાશ નો પૂરો જથ્થો પાયામાં આપવો. **Approved with following suggestion/s:** 1. Mention the number of irrigation and weeding in cultural practices 2. Check the uptake data 3. Mention the spot application of nitrogen instead of split application (Action: Professor & Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.1.27	**Effect of fresh cow dung on yield, quality and uptake of nutrients in groundnut** The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut are recommended to apply slurry of 1500 kg/ha fresh (upto five days) cow dung (cow dung : water - 1:3) through drenching at the time of sowing **or** RDN (12.5 kg/ha) through FYM (about 2.5 t/ha) + 25:50 kg P_2O_5:K_2O per ha for getting higher yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારના ચોમાસુ મગફળીનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મગફળીના પાકમાં ૧૫૦૦ કિ.ગ્રા./હે. ગાયના તાજા છાણની (પાંચ દિવસ સુધીનું) રબડી (તાજુ છાણ : પાણી - ૧:૩) ડ્રેન્ચીંગ દ્વારા **અથવા** ભલામણ કરેલ નાઈટ્રોજન (૧૨.૫ કિ.ગ્રા./હે.) છાણીયા ખાતરના સ્વરૂપમાં (અંદાજીત ૨.૫ ટન/હે.) અને ભલામણ કરેલ ફોસ્ફરસ (૨૫ કિ.ગ્રા./હે.) અને પોટાશ (૫૦ કિ.ગ્રા./હે.) વાવેતર સમયે આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestions:** 1. Give the composition of cow dung 2. Ckeck the data of uptake and content 3. Mention the quntity of FYM in recommendation para (Action: Professor & Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh
19.2.1.28	**Standardization of periodicity of sulphur, zinc and iron in prevalent *kharif* groundnut -based cropping system** The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut - *rabi* wheat sequence cropping are recommended to apply Fe 10 kg/ha, Zn 5 kg/ha and S 20 kg/ha in form of ferrous sulphate, zinc sulphate and cosavet (Fertis), respectively once in two years as basal, in both groundnut and wheat, for obtaining higher groundnut equivalent yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં ચોમાસામાં મગફળી અને ત્યાર બાદ શિયાળુ ઋતુમાં ઘઉંનુ વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મગફળી અને ઘઉંના બંન્ને પાકને લોહ ૧૦ કિ.ગ્રા./હે., ઝીંક ૫ કિ.ગ્રા./હે.અને સલ્ફર ૨૦ કિ.ગ્રા./હે. દર બે વર્ષે એક વખત અનુક્રમે ફેરસ સલ્ફેટ, ઝીંક સલ્ફેટ અને કોસાવેટ (ફર્ટીસ) ના રૂપમાં આપવાથી મગફળી સમકક્ષ વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

Approved with following suggestion/s:

1. Mention the source of Fe, Zn and S in recommendation para
2. Specify the crop name in content and uptake table in report

(Action: Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)

19.2.1.29

Response of drip irrigated castor to plant geometry and nitrogen fertigation

The farmers of South Saurashtra Agro-climatic Zone growing irrigated castor during *kharif* season are recommended to adopt plant geometry of 120 cm x 60 cm **or** 150 cm x 60 cm and irrigate the crop with drip irrigation and apply RDN 30 kg/ha (25%) as a soil application (15 kg/ha as basal and 15 kg/ha at 30 DAS), remaining 90 kg/ha (75%) RDN through drip in form of urea in five equal splits at an interval of 12 days (starting after cessation of monsoon) along with recommended dose of phosphorus and potash (50-50 kg P_2O_5 and K_2O/ha) as basal for obtaining higher castor seed yield and net return.

The drip system details as under: -

Details	**Month**	**Operating time (Minutes)**
Lateral spacing : 120 cm or 150 cm	October	110-125
Dripper spacing : 60 cm	November	100-110
Dripper discharge rate : 4 lph	Dec.-Jan.	95-105
Operating pressure :1.2 kg/cm^2	-	-
Operating frequency : Every 3rd day irrigation	-	-

દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારમાં પિયત દિવેલા ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે ભલામણ કરવામાં આવે છે કે, બે હાર વચ્ચેનું અંતર ૧૨૦ અથવા ૧૫૦ સે.મી. અને બે છોડ વચ્ચેનું અંતર ૬૦ સે.મી. (૧૨૦ સે.મી. x ૬૦ સે.મી. અથવા ૧૫૦ સે.મી. x ૬૦ સે.મી.) ના અંતરે દિવેલા પાકનું વાવેતર કરવું અને પાકને ટપક

પધ્ધતિથી પિયત આપવું અને નાઈટ્રોજન ખાતર ૩૦ કિ.ગ્રા./હે. (૨૫%) જમીનમાં આપવું જેમાં ૧૫ કિ.ગ્રા./હે. પાયામાં અને ૧૫ કિ.ગ્રા./હે. વાવેતર બાદ ૩૦ દિવસે આપવું બાકીનો ૯૦ કિ.ગ્રા./હે. (૭૫%) નાઈટ્રોજન ખાતર ટપક પધ્ધતિ દ્વારા યુરીયાના રૂપમાં પાંચ સરખા ભાગમાં ચોમાસું વિદાય બાદ ૧૨ દિવસના અંતરે આપવું, સાથે ભલામણ કરેલ ફોસ્ફરસ અને પોટાશ (૫૦:૫૦ ફો:પો કિ.ગ્રા./હે.) પાયામાં આપવો.

ટપક સિંચાઈ પદ્ધતિની વિગત	પરિચાલનનો સમય	
	મહિનો	મિનીટ
પાણીની નળીઓનું અંતર : ૧૨૦ અથવા ૧૫૦ સે.મી.	ઓક્ટોબર	૧૧૦-૧૨૫
ટપકણીયાનું અંતર : ૬૦ સે.મી.	નવેમ્બર	૧૦૦-૧૧૦
ટપકણીયાની સ્રાવ ક્ષમતા : ૪ લી. પ્રતિ કલાક	ડીસેમ્બર-જાન્યુઆરી	૯૫-૧૦૫
પરિચાલનનું દબાણ : ૧.૨ પ્રતિ ચો.સે.મી.	-	-
પરિચાલનનું પુનરાવર્તન : દર ત્રીજા દિવસે	-	-

Approved with following suggestion/s:

1. Add 120 cm x 60 cm in recommendation para
2. Delete 0.8 PEF from recommendation para

(Action: Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)

19.2.1.30 **Management of reddening in *Bt* cotton**

The farmers of South Saurashtra Agro-climatic Zone growing Bt cotton are recommended to spray multimicro nutrient Grade -IV @ 1 % (100 g/10 lit) at 100 DAS or apply 40 kg S/ha as basal dose along with RDF 240-50-150 N-P_2O_5-K_2O kg/ha for reducing cotton reddening, achieving higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં બીટી કપાસનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, કપાસમાં રાતડ ઘટાડવા, વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ૧૦૦ દિવસે માઈક્રોમિકસ ગ્રેડ- ૪

	નો ૧% (૧૦૦ ગ્રા./૧૦ લી. પાણી) પ્રમાણે છંટકાવ કરવો અથવા પાયામાં સલ્ફર ૪૦ કિગ્રા/હે. સાથે ભલામણ કરેલ રસાયણિક ખાતર ૨૪૦-૫૦-૧૫૦ કિગ્રા. નાઈટ્રોજન, ફોસ્ફરસ અને પોટાશ પ્રતિ હેક્ટરે આપવા. **Approved with following suggestion/s:** 1. Add 40 kg S/ha in recommendation para (Action: Research Scientist, Cotton Research Station, JAU, Junagadh)
19.2.1.31	**Effects of nutrient management and high density planting of *Bt* cotton under rainfed condition in Saurashtra region** The farmers of North Saurashtra Agro-climatic Zone growing *Bt* cotton under rainfed condition are recommended to sow *Bt* cotton at 60 cm x 45 cm spacing and apply 120 kg N, 10 t FYM and 500 kg castor cake/ha for obtaining higher yield and net return. The nitrogen should be applied in three splits *i.e.* 25% as basal at the time of sowing, 50% and 25% as top dressing at 35-40 and 60-65 days after sowing, respectively by drilling in 10 cm soil depth. ઉત્તર સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારમાં વરસાદ આધારિત બીટી કપાસનું વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે કપાસનું વાવેતર ૬૦ ૪૫ સે.મી.ના અંતરે અને પ્રતિ હેકટરે ૧૨૦ કિ.ગ્રા. નાઈટ્રોજન, ૧૦ ટન છાણીયું ખાતર અને ૫૦૦ કિલોગ્રામ એરંડીનો ખોળ આપવાની ભલામણ કરવામાં આવે છે. નાઈટ્રોજન ત્રણ હપ્તામાં એટલે કે, ૨૫% પાયાના ખાતર તરીકે વાવેતર સમયે, ૫૦% અને ૨૫% પૂર્તિ ખાતર તરીકે વાવેતર પછી અનુક્રમે ૩૫-૪૦ દિવસે અને ૬૦-૬૫ દિવસે ૧૦ સે.મી. ઉંડાઈએ જમીનમાં ઓરીને આપવું. **Approved:** (Action: Research Scientist, Main Dry Farming Research Station, JAU, Targhadia)
19.2.1.32	**Weed management in *Bt* cotton under dry farming condition (Vallabhipur)** The farmers of *Bhal* region growing *Bt* cotton under rainfed condition are recommended to apply pendimethalin (30% EC) 0.900 kg/ha (3 lit./ha) as pre-emergence *fb* HW and IC at 30 and 60 DAS **OR** HW and IC at 30, 60 and 90 DAS for effective weed management and achieving higher seed cotton yield and net realization. ભાલ વિસ્તારમાં વરસાદ આધારિત પરિસ્થિતિમાં બીટી કપાસનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, અસરકારક નિંદણ

	નિયંત્રણ તથા કપાસનું મહતમ ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા માટે કપાસના વાવેતર બાદ, પરંતુ પાક અને નિંદામણ ઉગ્યા પહેલા પેન્ડીમીથીલીન (૩૦% ઈસી) ૦.૯૦૦ કિ.ગ્રા/હે. (૩ લી./હે.) પ્રમાણે છંટકાવ કરવો તેમજ વાવણી બાદ ૩૦ અને ૬૦ દિવસે હાથ નિંદામણ અને આંતર ખેડ કરવું **અથવા** વાવણી બાદ ૩૦, ૬૦ અને ૯૦ દિવસે હાથ નિંદામણ અને આંતર ખેડ કરવું. **Approved** (Action: Research Scientist, Main Dry Farming Research Station, JAU, Targhadia and Assistant Research Scientist, Dry Farming Research Station, JAU, Vallabhipur)
19.2.1.33	**Nutrient management in gram under conserve soil moisture condition** The farmers of *Bhal* region growing gram under conserved soil moisture condition are recommended to apply 20-40-00-20 kg N-P_2O_5-K_2O-S/ha for obtaining higher yield and net monetary returns. ભાલ વિસ્તારમાં સંગ્રહિત ભેજમાં ચણાનું વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે પ્રતિ હેકટરે ૨૦-૪૦-૦૦-૨૦ કિ.ગ્રા. નાઈટ્રોજન-ફોસ્ફરસ-પોટાશ-સલ્ફર આપવાની ભલામણ કરવામાં આવે છે. **Approved** (Action: Research Scientist, Main Dry Farming Research Station, JAU, Targhadia and Assistant Research Scientist, Dry Farming Research Station, JAU, Vallabhipur)
19.2.1.34	**Evaluation of microbial consortia enriched vermicompost in pearl millet** The farmers of North Saurashtra Agro-climatic Zone growing *kharif* pearl millet under organic condition are recommended to apply FYM 5 t/ha along with vermicompost 2 tonne/ha enriched with *Azospirillum* 2 L/ha, PSB 2 L/ha, KSB 2 L/ha, *Trichoderma harzianum* 3 kg/ha, *Pseudomonas fluorescens* 3 L/ha and *Beauveria bassiana* 3 kg/ha to obtain higher yield and net return and to improve soil health. For enrichment of vermicompost, above each components should be mixed with 2 tonne vermicompost and sprinkled with little water (moisture content 20%) and use in field after 10 days incubation period. ઉત્તર સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારમાં સેન્દ્રીય ખેતીમાં ચોમાસું બાજરાનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વધારે

	ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે હેકટરે ૫ ટન છાણીયું ખાતર તેમજ એઝોસ્પાઈરીલમ ૨ લી./હે., પીએસબી ૨ લી./હે., કેએસબી ૨ લી./હે., ટ્રાઈકોડર્મા હાર્જીયાનમ ૩ કિ.ગ્રા./હે., સ્યુડોમોનાસ ફલુરોસન્સ ૩ કિ.ગ્રા./ હે. અને બ્યુવેરીયા બાસીયાના ૩ કિ.ગ્રા./હે. થી સમૃધ્ધ કરેલ અળસીયાનું ખાતર ૨ ટન/હે. આપવું. અળસીયાના ખાતરને સમૃધ્ધ કરવા માટે ઉપરના દરેક ઘટકો ભેળવી પાણીનો છંટકાવ કરી (૨૦% ભેજ) ૧૦ દિવસ બાદ ઉપયોગમાં લેવું. **Approved with following suggestion/s:** 1. Mention incubation methodology (Action: Research Scientist, Pearlmillet Research Station, JAU, Jamnagar)
19.2.1.35	**Agronomic biofortification of pearl millet cultivars through zinc fertilizer** The farmers of North Saurashtra Agro-climatic Zone growing *kharif* pearlmillet are recommended to apply 20 kg $ZnSO_4$/ha in soil as basal, seed treatment of 3 g $ZnSO_4$/kg seed and foliar spray of 0.5% $ZnSO_4$ with 0.25% lime at tillering and flowering stage in addition to recommend dose of fertilizers (80-40-00 N-P_2O_5-K_2O kg/ha) to increase the Zn content of grain and fodder of pearl millet cultivar GHB-732 having low Zn content. The farmers are also recommended to sow high zinc content (>40 ppm) pearl millet cultivar GHB 1225 and apply foliar spray of 0.5% $ZnSO_4$ with 0.25% lime at tillering and flowering stage in addition to recommended dose of fertilizers (80-40-00 N-P_2O_5-K_2O kg/ha) to obtain higher yield and net returns as well as to improve quality of grain and fodder. ઉત્તર સૌરાષ્ટ્ર ખેત-આબોહવાકિય વિસ્તારમાં ચોમાસું બાજરાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ઓછા જસત ધરાવતી (<૪૦ પીપીએમ) બાજરાની જીએચબી-૭૩૨ જાતના દાણામાં અને ફોડરમાં જસતનું પ્રમાણ વધારવા માટે વાવેતર સમયે ભલામણ કરેલ ખાતર (૮૦-૪૦-૦૦ ના-ફો-પો કિ.ગ્રા./હે.) ઉપરાંત ૨૦ કિ.ગ્રા./હે. ઝીંક સલ્ફેટ, ૩ ગ્રામ ઝીંક સલ્ફેટ/કિ.ગ્રા. બીજ પ્રમાણે બીજ માવજત તેમજ ૦.૫% ઝીંક સલ્ફેટ સાથે ૦.૨૫% ચુનાના દ્રાવણનાં બે છંટકાવ ફૂટ અવસ્થા અને ફૂલ અવસ્થાએ કરવા.

	વધારે ઉત્પાદન અને ચોખ્ખી આવક મેળવવા તેમજ દાણા અને ચારાની ગુણવતા સુધારવા માટે વધારે જસત ધરાવતી (>૪૦ પીપીએમ) બાજરાની જીએચબી ૧૨૨૫ જાતનું વાવેતર કરી, ભલામણ કરેલ ખાતર (૮૦-૪૦-૦૦ ના-ફો-પો કિ.ગ્રા./હે.) ઉપરાંત ૦.૫% ઝીંક સલ્ફેટ સાથે ૦.૨૫% ચુનાના નિતરેલ પાણીના દ્રાવણનાં બે છંટકાવ ફૂટ અવસ્થા અને ફૂલ અવસ્થાએ કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** 1. Recast the recommendation para (Action**:** Research Scientist, Pearlmillet Research Station, JAU, Jamnagar)
19.2.1.36	**Feasibility of seed spices intercropping with autumn-planted sugarcane (*Saccharum* complex hybrid)** The farmers of South Saurashtra Agro-climatic Zone growing autumn-planted sugarcane are recommended to grow one row of fenugreek as intercrop in sugarcane planted at 90 cm row spacing for securing higher yield and additional net return. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં શરદકાલીન શેરડીનું વાવેતર કરતા ખેડુતોને વધારે ઉત્પાદન અને વધારાનો ચોખ્ખો નફો મેળવવા માટે ૯૦ સે.મી.ના અંતરે વાવેલ શેરડીમાં આંતરપાક તરીકે મેથીની એક હારનું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Approved** **(**Action: Research Scientist, Main Sugarcane Research Station, JAU, Kodinar)
19.2.1.37	**Response of summer sesame to levels of potassium and sulphur** The farmers of North Saurashtra Agro-climatic Zone growing sesame during summer season are recommended to apply 40 kg K_2O and 20 kg sulphur per hectare as a basal dose with recommended dose of nitrogen and phosphorus (50 : 25 N, P_2O_5 kg/ha) fertilizers for getting higher seed yield and net return. ઉત્તર સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં ઉનાળુ ઋતુમાં તલ ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, તલના પાકમાં ૪૦ કિ.ગ્રા. પોટાશ અને ૨૦ કિ.ગ્રા. સલ્ફર પ્રતિ હેકટર પાયાના ખાતર તરીકે ભલામણ

	કરેલ રાસાયણિક ખાતર નાઈટ્રોજન અને ફોસ્ફરસ (૫૦-૨૫ ના-ફો કિ.ગ્રા./હે.) સાથે આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved** (**Action:** Research Scientist, Agricultural Research Station, JAU, Amreli)
19.2.1.38	**Improving phosphorus use efficiency in summer groundnut with microbial culture** The farmers of South Saurashtra Agro-climatic Zone growing summer groundnut are recommended to apply 40 kg/ha of P_2O_5 + PSB (*Bacillus subtilis*-1 x 10^8 cfu/g) culture @ 15ml/kg seed in addition to recomeded dose of nitrogen and potash (25-50 kg N-K_2O/ha) for securing higher yield and net income. દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં ઉનાળુ મગફળીનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે ભલામણ કરેલ નાઈટ્રોજન અને પોટાશ (૨૫-૫૦ કિ.ગ્રા ના.-પો./હે.) ઉપરાંત ૪૦ કિ.ગ્રા. ફોસ્ફરસ/હે. અને ૧૫ મી.લી/કિ.ગ્રા. બીજ પ્રમાણે પી.એસ.બી કલ્ચરની માવજત આપવાની ભલામણ કરવામાં આવે છે. **Approved** (Action: Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Soil and Water Management Research Unit, Navsari	
19.2.1.39	**Effect of fertigation on vegetable okra in clay soils of South Gujarat (15.2.3.42)** The farmers of South Gujarat growing summer okra under drip irrigation system are recommended to apply 5 t/ha biocompost as basal and recommended dose of fertilizer (100-50-50 kg N–P_2O_5–K_2O/ha). Apply either N in form of urea through fertigation and P in form of single super phosphate and K in form of muriate of potash as basal **or** apply N in form of urea and K in form of muriate of potash through fertigation and P in form of single super phosphate as basal for getting higher yield and net income. **Or** Apply 5 t/ha biocompost as basal and fertigate RDF of N, P and K through water soluble fertilizers, 17:44:00 urea phosphate for N and P and remaining N through urea and K in the form of muriate of potash **or** 25% RDF as basal soil application through urea, SSP and MoP and fertigate 75% RDF of N, P and K through water soluble fertilizers, 17:44:00 urea phosphate for N and P and remaining N through urea and K in the form of muriate of potash for getting higher yield and net income.

Fertigation schedule:

Growth period (Week)	No. of splits	% of total N & K / P
2 to 3	2	10 / 40
4 to 7	3	50 / 30
8 to 12	3	40 / 30

System details:

Lateral spacing: 1.20 m
Dripper spacing: 0.60 m
Dripper discharge: 4 lph
Operating pressure: 1.20 kg/cm^2

Operating time (alternate day):

March: 120-140 min., April: 140-160 min., May: 160-180 min.

દક્ષિણ ગુજરાત વિસ્તારમાં ટપક પિયત પધ્ધતિથી ઉનાળુ ભીંડાનું વાવેતર કરતાં ખેડૂતોને ૫ ટન/હે. બાયોકમ્પોસ્ટ પાયામાં અને ભલામણ કરેલ ખાતરનો જથ્થો (૧૦૦:૫૦:૫૦ કિગ્રા એન.પી.કે./હે.) આપવાની ભલામણ કરવામાં આવે છે. ફોસ્ફરસ,સિંગલ સુપર ફોસ્ફેટના રૂપમાં પાયામાં નાખીને તથાનાઈટ્રોજન, યુરીયાના રૂપમાં અને પોટેશીયમ, મ્યુરેટ ઓફ પોટાશના રૂપમાં ફર્ટીગેશન દ્વારા **અથવા** ફોસ્ફરસ,સિંગલ સુપર ફોસ્ફેટના રૂપમાં અને પોટેશીયમ, મ્યુરેટ ઓફ પોટાશના રૂપમાં પાયામાં નાખીને નાઈટ્રોજન યુરીયાના રૂપમાં ફર્ટીગેશન દ્વારા આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

અથવા

બાયોકમ્પોસ્ટ ૫ ટન/હે. સાથે ભલામણ કરેલ ખાતરનો જથ્થો પાણીમાં સંપૂર્ણ દ્રાવ્ય ખાતરો ફર્ટીગેશન દ્વારા આપવા, જેમાં નાઈટ્રોજન અને ફોસ્ફરસ, ૧૭:૪૪:૦૦ યુરીયા ફોસ્ફેટના રૂપમાં અને બાકીનો નાઈટ્રોજન યુરીયાના રૂપમાં અને પોટેશીયમ, મ્યુરેટ ઓફ પોટાશના રૂપમાં વાપરવા. **અથવા** ભલામણ કરેલ ખાતરનો ૨૫ ટકા જથ્થો પાયામાં નાખીને બાકીનો ૭૫ ટકા જથ્થો પાણીમાં સંપૂર્ણ દ્રાવ્ય ખાતરો ફર્ટીગેશન દ્વારા આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

ટપક પધ્ધતિ દ્વારા ખાતર આપવાનો કાર્યક્રમ:

પાકનો વૃધ્ધિ ગાળો (અઠવાડીયા)	હપ્તાની સંખ્યા	કુલ નાઈટ્રોજન અને પોટેશીયમ / ફોસ્ફરસ (ટકા)

૨ થી ૩	૨	૧૦ / ૪૦
૪ થી ૭	૩	૫૦/ ૩૦
૮ થી ૧૨	૩	૪૦/ ૩૦

ટપક પધ્ધતિની વિગત:

લેટરલ અંતર : ૧.૨૦ મી.

ડ્રીપર અંતર : ૦.૬૦ મી.

ડ્રીપર દર : ૪ લી/કલાક

ચલાવવાનું દબાણ : ૧.૨૦ કિગ્રા/સેમી^{૨}

પધ્ધતિ ચલાવવાનો સમય : માર્ચ - ૧૨૦-૧૪૦ મીનીટ

(એકાંતરે દિવસે) એપ્રિલ – ૧૪૦-૧૬૦ મીનીટ, મે – ૧૬૦-૧૮૦ મીનીટ

Approved with following suggestion/s

1. Add initial and at harvest plant population data
2. Mention date of plant protection measures
3. Add plant yield data in report
4. Add biocompost 5 t/ha in second paragraph of recommendation

(Action:Research Scientist, SWMRU, NAU, Navsari**)**

19.2.1.40

Effect of land leveling on crop water requirement and growth of sugarcane (14.2.3.61)

Farmers of South Gujarat growing sugarcane (plant and ratoon crop) are recommended to make 0.1 per centslope along the field slope by laser leveler for furrow irrigated sugarcane crop for achieving higher cane yield and net profit along with 15 per cent water saving as compared to non-uniform slope of field.

દક્ષિણ ગુજરાતવિસ્તારમાં શેરડીનું વાવેતર (રોપણ અને લામ પાક) કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે લેસર લેવલરથી ખેતરના ઢાળની દિશામાં ૦.૧ ટકાનોઢાળ કરી ચાસમાં પિયત દ્વારા શેરડીની ખેતી કરવામાં આવે તો અસમાન ઢાળવાળા ખેતર કરતા ૧૫ ટકા પાણીની બચત સાથે વધુ શેરડીનું ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

Approved with following suggestion/s

1. Add initial and final plant population at harvest data
2. Mention IWUE instead of WUE

(Action:Research Scientist, SWMRU, NAU, Navsari**)**

19.2.1.41

Effect of methods and levels of irrigation on sweet potato under South Gujarat conditions (15.2.3.41)

The farmers of South Gujarat growing sweet potatoduring *rabi*season are recommended to adopt drip method of irrigation and place

	drip line between two rows on raised bed (100 cm top width and 60 cm furrow width) at a spacing of 80 cm x 30 cm for achieving higher tuber yield, net profit and good quality tubers along with 39 per cent water saving. *System details:* Lateral spacing : 1.60 m Dripper spacing : 0.60 m Dripper discharge : 4 lph Operating pressure: 1.20 kg/cm^2 Operating time (alternate day): December: 60-85 min, January: 70-100 min, February: 80-110 min, March: 120-150 min દક્ષિણ ગુજરાતવિસ્તારમાં શિયાળાની ઋતું દરમ્યાન શક્કરીયાની ખેતી કરતા ખેડુતોને ટપક પિયત પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે અને ગાદી ક્યારા (૧૦૦ સેમી ગાદીની પહોળાઇ અને ૬૦ સેમી ચાસની પહોળાઇ) ઉપર ૮૦ x ૩૦ સેમીના અંતરે બે લાઇનનું વાવેતર કરી, વચ્ચે ડ્રીપલાઇન મુકવામાં આવે તો ૩૯ ટકા પાણીની બચત સાથે સારી ગુણવત્તા વાળાશક્કરીયા, વધારે ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **પધ્ધતીની વિગત:** લેટરલ અંતર: ૧.૬૦મી. ડ્રીપર અંતર: ૦.૬૦મી. ડ્રીપર દર: ૪લી/કલાક ચલાવવાનું દબાણ: ૧.૨૦ કિગ્રા/ચો.સેમી ચલાવવાનો સમય (એકાંતરે દિવસે): ડીસેમ્બર:૬૦-૮૫ મીનીટ, જાન્યુઆરી: ૭૦-૧૦૦ મીનીટ ફેબ્રુઆરી: ૮૦-૧૧૦ મીનીટ, માર્ચ: ૧૨૦-૧૫૦ મીનીટ **Approved with following suggestion/s** 1. Add initial and at harvest plant population data 2. Remove variety Bhukanti from recommendation paragraph 3. Add plant yield data in report **(**Action:Research Scientist, SWMRU, NAU, Navsari**)**
CSSRS, Danti/Umbharat	
19.2.1.42	**Response of Bt. Cotton to gypsum, organic manure and nitrogen levels under partially reclaimed coastal salt affected soils (15.2.3.45)** Farmers growing *Bt.* Cotton hybrids in partially reclaimedcoastal salt affected soil of South Gujarat are recommended to apply 50% of gypsum requirement with 10 t biocompost/ha during land preparation. Further, they

	are advised to apply nitrogen (240 kg/ha) in 5 equal splits at 30, 60, 75, 90, 105 DAS along with phosphorus (40 kg/ha) as basal for getting higher seed cotton yield and net income. Application of gypsum was also found to reduce soil sodicity. દક્ષિણ ગુજરાતના દરિયાકાંઠાની અંશત: નવસાધ્ય ક્ષારીય જમીન વિસ્તારમાં બીટી સંકર કપાસનું વાવેતર કરતા ખેડુતોને ૫૦ ટકાજીપ્સમની જરૂરિયાત મુજબનો જીપ્સમનો જથ્થો અને ૧૦ ટન બાયોકમ્પોસ્ટ પ્રતિ હેક્ટર જમીનની તૈયારી સમયે આપવાની ભલામણ કરવામાં આવે છે. વધુમાં પાકને નાઇટ્રોજનનો જથ્થો (૨૪૦ કિ.લો./હે) પાંચ સરખા હપ્તામાં વાવણીના ૩૦,૬૦, ૭૫, ૯૦ અને ૧૦૫ દિવસે તેમજ ફૉસ્ફરસ (૪૦ કિ.ગ્રા./હે) મુજબ પાયામાં આપવાથી કપાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. જીપ્સમ વાપરવાથી જમીનની ભાસ્મીકતામાં પણ ધટાડો થાય છે. **Approved with following suggestion/s** 1. Add initial and at harvest plant population data. **(**Action:Research Scientist, SWMRU, NAU, Navsari**)**
19.2.1.43	**Effect of irrigation and mulching on productivity of brinjal under coastal salt affected soils (15.2.3.46)** The farmers of coastal areas of South Gujarat growing late *kharif* season brinjal following ridge and furrow methodare recommended to use silver black plastic mulch (50 µ thick) on the ridgesand give irrigation at 18-20 days after cessation of monsoon and remaining irrigations at 12-14 days interval for getting higher fruit yield and net income. દક્ષિણ ગુજરાતના દરિયાકાંઠા વિસ્તારમાં મોડી ખરીફ ઋતુમાં નિકપાળા પદ્ધતિમાં રીંગણ ઉગાડતા ખેડુતોને ભલામણ કરવામાં આવે છે કે સીલ્વર - બ્લેક પ્લાસ્ટીકનું આવરણ (૫૦ માઈક્રોન જાડાય) ફક્ત નિક પરકરવું. તેમજ વરસાદ બંધથયા પછી૧૮-૨૦ દિવસે પિયતઆપવું અને બાકીના પિયત ૧૨-૧૪દિવસને ગાળેઆપવાથીવધું ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestion/s** 1. Add initial and at harvest plant population data with statistical analysis 2. Remove spacing (90 cm x 60 cm) from recommendation paragraph 3. Add mulch on ridge in recommendation paragraph **(**Action:Research Scientist, SWMRU, NAU, Navsari**)**
MRRC, NAU, Navsari	
19.2.1.44	**Sustainable weed management in aerobic rice system (17.2.3.49)** The farmers of South Gujarat growing aerobic rice are recommended to use mechanical hand weeder, first at 20 days after sowing and subsequent

	two at 15-20 days interval for efficient weed management, getting higher grain yield and net income. દક્ષિણ ગુજરાત વિસ્તારમાં ચોમાસુ ઋતુમાં એરોબિક ડાંગરની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે નિંદણના અસરકારક નિયંત્રણ માટે હાથથી ચલાવવાના નીંદણ નિયંત્રક સાધનથી નીંદામણ કરવું, પ્રથમ નિંદણ વાવણીના ૨૦ દિવસ પછી અને બાકીના બે નિંદણ ૧૫-૨૦ દિવસના અંતરે કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestion/s** 1. Add weed species observed in experiment in the report 2. Add date wise cultural operation in the report 3. Add plant population data in the report 4. Correct plot size in the report 5. Verify the WCI data in the report **(**Action:Research Scientist, SWMRU, NAU, Navsari**)**
MSRS, NAU, Navsari	
19.2.1.45	**Assessment of planting geometry for single eye budded settling on sugarcane under south Gujarat condition (16.2.3.59)** The farmers of south Gujarat planting sugarcane through single eye bud settling are recommended to plant the settling at 120 cm row spacing or with pair row of 60-120-60 cm. Further, it is also recommended to keep plant to plant distance 45 cm for getting higher yield and net return. દક્ષિણ ગુજરાતવિસ્તારમાં એક આંખના રોપાથી શેરડીની રોપણી કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા બે હરોળ વચ્ચે ૧૨૦ સે.મી. અથવા ૬૦-૧૨૦-૬૦ સે.મી.નીજોડિયા હારમાં રોપવાની તેમજ બે રોપા વચ્ચે ૪૫ સે.મી. અંતર રાખી રોપણી કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Verify the cane yield data **(**Action: Research Scientist, MSRS, NAU, Navsari**)**
Pulses and Castor Research Station, Navsari	
19.2.1.46	**Optimization of sowing time and row spacing for Indian bean var. GNIB-22 (14.2.3.70)** The farmers of South Gujarat growing Indian bean (GNIB-22) during *kharif*season are recommended to sow the crop during first to third week of August with spacing of 60 cm x 30 cm for getting higher and profitable yield. દક્ષિણ ગુજરાતમાં ચોમાસું ઋતુમાં પાપડી (જી.એન.આઇ.બી.-૨૨) ની ખેતી કરતાં ખેડૂતોને પાપડીનાં પાકમાં વધુ ઉત્પાદન મેળવવા તથા નફાકારક

	ખેતી કરવા માટે ઑગસ્ટ મહિનાનાં પહેલા અઠવાડીયાથી ત્રીજા અઠવાડીયા સુધી ૬૦ સે.મી. x ૩૦ સે.મી. નાં અંતરે વાવવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Remove "row" from the recommendation paragraph 2. Significant interaction mention in Table 4 (Action: Nodal Officer (Megaseed) and Unit Head, PCRS, Navsari)
19.2.1.47	**Optimization of inter and intra row spacing for pigeon pea var. GT 104 (15.2.3.48)** The farmers of South Gujarat growing Pigeon pea *var*. GT-104 during *kharif* season are recommended to sow the crop at the spacing of 150 cm x 60 cm for getting higher yield and net returns. દક્ષિણ ગુજરાતમાં ચોમાસું ઋતુમાં તુવર (જી.ટી.-૧૦૪) ની ખેતી કરતાં ખેડૂતોને તુવરનાં પાકમાંથી વધુ ઉત્પાદન મેળવવા તથા નફાકારક ખેતી કરવા માટે ૧૫૦ સે.મી. x ૬૦ સે.મી. નાં અંતરે વાવવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Verify economics data 2. Recast recommendation as "higher yield and net returns" 3. Add *Gotar* yield data in the report. 4. Mention seed index instead of test weight. (Action: Nodal Officer (Megaseed) and Unit Head, PCRS, Navsari)
Main Cotton Research Station, Surat	
19.2.1.48	**Performance of Arboreum cotton to nitrogen levels and planting density under rainfed condition (15.2.3.50)** Farmers growing Arborium cotton (Desi) under rainfed condition are recommended to sow the crop at 60 x 15 cm spacing in South Gujarat heavy rainfall zone and 60 x 30 cm spacing in South Gujarat zone and apply 150 kg Nitrogen/ha in two equal splits (75 kg N/ha each) at 30 and 60 days after sowing for achieving higher seed cotton yield and net income. બિનપિયત વિસ્તારમાં આરબોરીયમ કપાસ (દેશી) ઉગાડતા ખેડુતોને હેક્ટર દિઠ કપાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે કપાસની વાવણી દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિભાગમાં ૬૦x૧૫ સે.મી. ના અંતરે તથા દક્ષિણ ગુજરાત વિભાગમાં ૬૦x૩૦ સે.મી. ના અંતરે કરવા અને કુલ ૧૫૦ કીલો નાઇટ્રોજન / હેક્ટર બે સરખા હપ્તામાં (દરેક હપ્તામાં ૭૫

	કીલો નાઇટ્રોજન/હેક્ટર) વાવણી બાદ ૩૦ અને ૬૦ દીવસે આપવાની ભલામણ કરવામાં આવે છે. **Approved** **(**Action: Research Scientist, MCRS, Surat**)**
CRSS, Achhalia	
19.2.1.49	**Integrated nitrogen management in kharif grain sorghum (14.2.3.75)** The farmers of South Gujarat growing *Kharif* sorghum are recommended to apply 20 kg N/ha through Neem cake (803 kg/ha) + 20 kg N/ha through Castor cake (463 kg/ha) well mixed with soil during land preparation along with recommended basal application of phosphorus (40 kg P_2O_5/ha) and top dressing of 40 kg N/ha through urea at 30 DAS to achieve higher yield and net return. દક્ષિણ ગુજરાતના ખરીફ જુવાર ઉગાડતા ખેડૂતોને જુવારનું વધુ ઉત્પાદન અને આવક મેળવવા માટે પાયામાં ભલામણ કરેલ ફોસ્ફોરસ (૪૦ કિલો/હે.) સાથે ૨૦ કિલો/હે. નાઈટ્રોજન લીમડાના ખોળ દ્વારા (૮૦૩ કિલો/હે.) + ૨૦ કિલો/હે. નાઈટ્રોજન દિવેલીના ખોળ દ્વારા (૪૬૩ કિલો/હે.) જમીન તૈયાર કરતી વખતે અને વાવેતરબાદ ૩૦ દિવસે ૪૦ કિલો/હે. નાઈટ્રોજન યુરિયા દ્વારા પૂર્તી ખાતર તરીકે આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Mention stalk yield instead of stover yield 2. Recast the recommendation paragraph **(**Action: Associate Research Scientist, CRSS, Achhalia**)**
Dept. of Agronomy, NMCA, Navsari	
19.2.1.50	**Effect of organic manures on soil health and nutrient requirement of *kharif* and summer rice crop sequence (IF-1)** The farmers of South Gujarat growing long term *kharif* rice- summer rice crop sequence are recommended to apply 5.0 t Biocompost/ha + 25.0 kg N/ha and 25 kg P_2O_5/ha as basal, 12.5 N/ha at 25 DAS and 12.5 N/ha at 50 DAS or 1.0 t castor cake/ha + 25.0 kg N/ha and 25 kg P_2O_5/ha as basal, 12.5 N/ha at 25 DAS and 12.5 N/ha at 50 DAS to *kharif* and summer rice for getting higher yields, net returns and sustain the soil health. દક્ષિણ ગુજરાતમાં લાંબા ગાળાથી ચોમાસું ડાંગર -ઉનાળુ ડાંગર પાક પદ્ધતિ અપનાવતા ખેડૂતોને વધુ ઉત્પાદનઅને ચોખ્ખો નફો તેમજ જમીનની તંદુરસ્તી જાળવવા માટે ચોમાસું -ઉનાળુ ડાંગર માટે બયોકમ્પોસ્ટ ૫.૦ ટન/

	હેક્ટર + ૨૫.૦ કિગ્રા નાઈટ્રોજન/ હેક્ટર અને ૨૫ કિગ્રા ફોસ્ફરસ/ હેક્ટર પાયામાં અને ૧૨.૫ કિગ્રા નાઈટ્રોજન/ હેક્ટર રોપણીના ૨૫ દિવસ પછી અને ૧૨.૫ કિગ્રા નાઈટ્રોજન/ હેક્ટર રોપણીના ૫૦ દિવસ પછી અથવા દિવેલી ખોળ ૧.૦ ટન/ હેક્ટર + ૨૫.૦ કિગ્રા નાઈટ્રોજન/ હેક્ટર અને ૨૫ કિગ્રા ફોસ્ફરસ/ હેક્ટર પાયામાં અને ૧૨.૫ કિગ્રા નાઈટ્રોજન/ હેક્ટર રોપણીના ૨૫ દિવસ પછી અને ૧૨.૫ કિગ્રા નાઈટ્રોજન/ હેક્ટર રોપણીના ૫૦ દિવસ પછી આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Add long term word in the recommendation paragraph. 2. Mention soil health instead of soil fertility. 3. Use DATP in place of DAS. 4. Mention RDF in the report. 5. Verify the economic data. **(**Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari**)**
19.2.1.51	**Integrated nutrient management in summer fodder pearl millet (*Pennisetumglaucum*l.) under south Gujarat condition (15.2.3.51)** The farmers of south Gujarat growing fodder pearl millet in summer season are recommended to apply bio compost 5.0 t/ha and 125 kg N/ha (62.5 kg N/ha as basal and remaining 62.5 kg N/ha at 30 DAS)with bio-fertilizer (*Azotobacter* + PSB) as seed treatment forgetting higher yield and net returns with better quality. દક્ષિણ ગુજરાતમાં ઉનાળુ ઋતુમાં ઘાસચારા બાજરાનું વાવેતર કરતા ખેડૂતોને ગુણવત્તા સભર વધુ ઉત્પાદન તેમજ ચોખ્ખો નફો મેળવવા માટે પાયામાં બાયોકમ્પોસ્ટ ૫.૦ ટન/હેક્ટર અને ૧૨૫ કિગ્રા નાઈટ્રોજન/હેક્ટર (૬૨.૫ કિગ્રા નાઈટ્રોજન/હેક્ટરઅને બાકીનો ૬૨.૫ કિગ્રા નાઈટ્રોજન/હેક્ટર વાવણી બાદ ૩૦ દિવસે) આપવાની ભલામણ સાથે બીજને જૈવિક ખાતરની (એઝેટોબેકટર + પીએસબી) માવજત આપવી. **Approved with following suggestion/s** 1. Add bio-fertilizer in the recommendation. **(**Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari**)**
19.2.1.52	**Integrated nutrient management in seed production of fodder cowpea (*Vignaunguiculata* L.) under south Gujarat condition (15.2.3.52)**

	The farmers of south Gujarat growing fodder cowpea for seed production during summer season are recommended to apply Bio compost 2.0 t/ha along with 15 kg N/ha and 30 kg P_2O_5as basalfor getting higher yield and net returns. દક્ષિણ ગુજરાતમાં ઉનાળુ ઋતુમાં ઘાસચારા ચોળીનું બીજ ઉત્પાદન કરતા ખેડૂતોને વધુ ઉત્પાદન તેમજ ચોખ્ખો નફો મેળવવા માટે બાયોકમ્પોસ્ટ ૨.૦ ટન/હેક્ટર + ૧૫ કિગ્રા નાઈટ્રોજન અને ૩૦ કિગ્રા ફોસ્ફરસ/હેક્ટર પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Verify the yield data. 2. Add content and uptake of N,P and K datain the report **(**Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari**)**
SSAC, NMCA, NAU, Navsari	
19.2.1.53	**Effect of boron and zinc application on growth, yield and quality of sugarcane (*Saccharumofficinarum* L.) under south Gujarat condition (13.2.3.57)** The farmers of South Gujarat growing plant and ratoon sugarcane are recommended to apply 2 kg boron/ha (20 kg Borax/ha) if soil is deficient in boron or 10 kg Zn/ha (50 kg Zinc sulphate/ha) if soil isdeficient in zinc or if soil is deficient in both then apply 2 kg boron/ha (20 kg Borax/ha) and 10 kg Zn/ha (50 kg Zinc sulphate/ha) at the time of planting in plant crop only along with recommended dose of chemical fertilizer to plant and ratoon cane for getting higher yield, quality and net return of plant and ratoon sugarcane. દક્ષિણ ગુજરાત વિસ્તાર માં શેરડી અને લામ ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન, ગુણવત્તા અને આવક મેળવવા ફક્ત રોપાણ પાકમાં રોપાણ સમયે જો જમીનમાં બોરોનની ઉણપહોય તો ૨કિ.ગ્રા. બોરોન/હે (૨૦કિ.ગ્રા. બોરેક્ષ/હે.) અથવા જો જમીનમાં ઝિંકની ઉણપ હોય તો૧૦ કિ.ગ્રા. ઝીંક/હે (૫૦કિ.ગ્રા. ઝિંકસલ્ફેટ/હે.) અથવા જમીનમાં બંનેની ઉણપ હોયતો ૨ કિ.ગ્રા. બોરોન/હે (૨૦કિ.ગ્રા. બોરેક્ષ/હે.) અને ૧૦ કિ.ગ્રા. ઝીંક/હે (૫૦ કિ.ગ્રા. ઝિંક સલ્ફેટ/હે.) ફક્ત રોપાણ પાકમાં અને ભલામણ કરેલ રસાયણિક ખાતરો રોપાણ અને લામ પાકમાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** 1. Mention word “growing” in place of “intended” in the recommendation. 2. Verify the economics of control treatment.

	(Action: Professor& Head, Dept. of SSAC, NMCA, NAU, Navsari**)**
College of Agriculture, Bharuch	
19.2.1.54	**Effect of row and plant spacing on pigeon pea (14.2.3.86)** Farmers of South Gujarat cultivating rainfedpigeonpea (GNP 2) are advised to sow the crop at 120 cm x 20 cm spacing for producing higher and profitable yield. દક્ષિણ ગુજરાતમાં વરસાદ આધારિત તુવર (જીએનપીર)ની ખેતી કરતાં ખેડૂતોને ભલામણ છે કે પાક વાવણીનું અંતર ૧૨૦ **x** ૨૦ સેમી રાખવાથી વધુ તેમજ નફાકારક ઉત્પાદન મેળવી શકાય છે. **Approved with following suggestion/s** **1.** Mention "Stover yield" instead of "halum yield". **(**Action: Professor of Agronomy, CoA, Bharuch**)**
19.2.1.55	**Effect of land configuration and drought mitigating strategies in pigeonpea under rainfed condition (15.2.3.58)** Farmers of south Gujarat growing rainfed pigeonpea are recommended to sow pigeonpea either on broad bed furrow system (150 cm bed & 30 cm furrow) or on ridges and furrow systemwith 5 t/ha FYM. Further, Pusa Hydrogel 2.5 kg should be applied in sowing rows mixed with FYM or 1% KNO_3 spray after cessation of rainfall should be done to increase pigeonpea production. દક્ષિણ ગુજરાતના તુવેરની વરસાદ આધારિત ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, તુવેરના પાકમાં ૫ ટન/હે છાણિયું ખાતર પાયામાં આપી પહોળા ગાદી ક્યારા (બ્રોડ બેડ ફરો- ૧૫૦ સે.મી. બેડ અને ૩૦ સે.મી. ફેરો) અથવા નિક–પાળા પધ્ધતિથી વાવણી કરવી. તેમજ, ૨.૫ કિલો પુસા હાઇડ્રોજેલ છાણિયું ખાતર સાથે વાવણી પહેલા ચાસમાં આપવાથી અથવા વરસાદ બંધ થયા પછી **1%** KNO_3 સ્પ્રે કરવાથી વધુ ઉત્પાદન મેળવી શકાય છે. **Approved with following suggestion/s** 1. Add FYM 5 t/ha in second treatment in the recommendation. 2. Verify the CD value in the table. **(**Action: Professor of Agronomy, CoA, Bharuch**)**
19.2.1.56	**Response of pigeonpea to spacing and fertility levels under rainfed condition of south Gujarat (13.2.3.56)** Farmers of South Gujarat growing rainfed pigeonpea (GNP 2) crop are recommended to apply bio-compost 2 t/ha + seed treatment with *rhizobium* and PSB bio-fertilizer (each 10 ml/kg seeds) or Bio-compost 2 t/ha + 1 % foliar spray of Banana *psudeostem* enriched sap at bud initiation and flowering stage for producing higher and profitable yield of pigeonpea crop and to improve the nitrogen and phosphorus availability in soil.

	દક્ષિણ ગુજરાતમાં વરસાદ આધારિત તુવર (જીએનપી ૨) ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, તુવરના પાકમાં બાયોકોમ્પોસ્ટ ૨ ટ/હે. + રાઈજોબયમ અને પીએસબી (પ્રત્યેક ૧૦ મીલી/કિગ્રા બીજ) પ્રમાણે બીજ માવજત અથવા બાયોકોમ્પોસ્ટ ૨ ટ/હે. + ૧% કેળના થડમાંથી તૈયાર કરેલ એનરિચ સેપના કળી આવવાની અને ફૂલ અવસ્થાએ છંટકાવ કરવાથી તુવરનું વધુ તેમજ નફાકારક ઉત્પાદન સાથે જમીનમાં નાઇટ્રોજન તથા ફોસ્ફરસ તત્વોની લભ્યતામાં વધારો થાય છે. **Approved with following suggestion/s** 1. Verify the economic data. 2. Recommended only nutrients and recast the recommendation. **(**Action: Professor of Agronomy, CoA, Bharuch**)**

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19.2.1.57	**Effect of phosphorus and potassium on yield attributes, yield and quality of mustard** The farmers of North Gujarat Agro-climatic Zone IV growing mustard are recommended to apply 75 % RDP (37.5 kg P_2O_5/ha) and PSB (1 lit/ha) in addition to recommended dose of nitrogen (50kg/ha) and sulphur (40kg/ha) for obtaining higher yield and net return. It also saves 25% phosphorus. Application of potash is not found beneficial to mustard crop. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ ના રાઇનું વાવેતર કરતા ખેડૂતોને હેકટર દીઠ વધુ ઉત્પાદન તેમજ નફો મેળવવા માટે રાઇના પાકને ભલામણ કરેલ ફોસ્ફરસ ના ૭૫ ટકા (૩૭.૫કિ.ગ્રા./હે.) અનેપી.એસ.બી (૧લી./હે.) ની સાથે ભલામણ કરેલ નાઇટ્રોજન (૫૦કિ.ગ્રા./હે.) અને સલ્ફર (૪૦ કિ.ગ્રા./હે.) આપવાની ભલામણ કરવામા આવેછે. જેનાથી ૨૫ ટકા ફોસ્ફરસની બચત થાય છે. રાઇના પાકને પોટાશ ખાતર આપવાથી ફાયદો થતો નથી. **Suggestions:** 1. Write quantity of N and S applied **(**Action: Head of Unit., BSRC, SDAU, Sardarkrushinagar**)**
19.2.1.58	**Zinc management in wheat** The farmers of North Gujarat Agro-climatic Zone IV growing wheat crop are recommended to apply 5 kg zinc sulphate/ha in soil and foliar spray

of 0.5 % zinc sulphateand 0.25 % limeat tillering and booting stage in addition to recommended dose of fertilizer for obtaining higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ ના ઘઉંનુ વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફોમેળવવા માટે ઘઉંના પાકને ભલામણ કરેલ ખાતર ઉપરાંત પ્રતિહેક્ટરપ કિ.ગ્રા. ઝીંકસલ્ફેટ જમીનમાં તથા ૦.૫ ટકા ઝીંકસલ્ફેટસાથે ૦.૨૫ % ચુનાના દ્રાવણનો ગાભે આવવાની અવસ્થાએ કરવાની ભલામણ કરવામાં આવે છે.

Suggestions:

1. Use word "Sig" instead of "S" in Tables

(Action:Head of Unit., BSRC, SDAU, Sardarkrushinagar)

19.2.1.59 **Evaluation of organic, inorganic and integrated production systems**

The farmers of North Gujarat Agro climatic Zone IV growing crops under organic farming are recommended to adopt groundnut - wheat-greengram crop sequence with recommended dose of nitrogen to each crop in the ratio of 50:25:25 through FYM:vermicompost:castor cake (as mentioned in table) for obtaining higher system equivalent yield and net return. It also improves soil health.

Crop	RDN (kg/ha)	Quantity of organic manure (kg/ha)		
		FYM(0.5% N)	Vermicompost (1.5% N)	Castor cake (3.9% N)
Groundnut	12.5	1250	210	80
Wheat	120	12000	2000	770
Greengram	20	2000	335	130

ઉત્તર ગુજરાત ખેતઆબોહવાકીય વિસ્તાર ૪ ના સેંદ્રીયખેતી કરતા ખેડુતોને મગફળી સમકક્ષ વધુ ઉત્પાદન અને નફો મેળવવા માટે મગફળી-ઘઉં- મગ પાક પદ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.જેમાં દરેક પાકને ભલામણ કરેલ નાઇટ્રોજનનો જથ્થો ૫૦:૨૫:૨૫ પ્રમાણે છાણીયું ખાતર:અળસીયા ખાતર: દિવેલી ખોળ મારફત (ટેબલમાં જણાવ્યા મુજબ) જમીનમાં આપવાની ભલામણ કરવામાં આવે છે. જેનાથી જમીનની તંદુરસ્તીમાં પણ સુધારો થાય છે.

પાક	ભલામણ કરેલ નાઇટ્રોજન (કિ.ગ્રા/હે)	સેંદ્રિય ખાતર (કિ.ગ્રા/હેક્ટર)		
		છાણીયુ ખાતર (૦.૫% ના.)	અળસિયા ખાતર (૧.૫% ના.)	દિવેલી ખોળ (૩.૯% ના.)
મગફળી	**૧૨.૫**	૧૨૫૦	૨૧૦	૮૦
ઘઉં	૧૨૦	૧૨૦૦૦	૨૦૦૦	૭૭૦
મગ	૨૦	૨૦૦૦	**૩૩૫**	૧૩૦

Suggestions:

1.Add date of sowing and harvesting in cultural detail

(Action:Research Scientist, IFS, SDAU, Sardarkrushinagar)

19.2.1.60 **Evaluation of response of different varieties of major crops for organic farming**

The farmers of North Gujarat Agro-climatic Zone IV adopting organic farming are recommended to grow of groundnut GJG 17(S), wheat GW 451 or GW 496 and greengram GM 4 varieties with recommended dose of nitrogen to each crop in the equal proportion of FYM, vermicompost and castor cake (as mentioned in table) on the basis of nitrogen content for obtaining higher yield and net return. It also improves soil health.

Crop	RDN (kg/ha)	Quantity of organic manure (kg/ha)		
		FYM (0.5% N)	Vermicompost (1.5% N)	Castor cake (3.9% N)
Groundnut	12.5	835	280	110
Wheat	120	8000	2670	1030
Greengram	20	1335	445	170

ઉત્તર ગુજરાત ખેતઆબોહવાકીય વિસ્તાર ૪ ના સેંદ્રીય ખેતી કરતા ખેડુતોને મગફળી, ઘઉં અને મગનુ વધુ ઉત્પાદન અને નફો મેળવવા માટે ગુજરાત જુનાગઢ મગફળી ૧૭ (વેલડી),ગુજરાત ઘઉં ૪૫૧ અથવા ગુજરાત ઘઉં ૪૯૬ અને ગુજરાત મગ ૪ ની જાતો પસંદગી કરી જે તે પાકના ભલામણ કરેલ નાઇટ્રોજનના જથ્થાને છાણીયા ખાતર, અળસીયા ખાતર અને દિવેલી ખોળ (ટેબલ માં જણાવ્યા મુજબ) મારફત નાઈટ્રોજન તત્વના આધારે સરખા ભાગે દરેક પાકને વાવણી વખતે આપવાની ભલામણ કરવામાં આવે છે. જેનાથી જમીનની તંદુરસ્તીમાં પણ સુધારો થાય છે.

પાક	ભલામણ કરેલ નાઇટ્રોજન (કિ.ગ્રા/હે)	સેંદ્રિય ખાતર (કિ.ગ્રા/હેક્ટર)		
		છાણીયુ ખાતર (૦.૫% ના.)	અળસિયા ખાતર (૧.૫% ના.)	દિવેલી ખોળ (૩.૯% ના.)
મગફળી	૧૨.૫	૮૩૫	૨૮૦	૧૧૦
ઘઉં	૧૨૦	૮૦૦૦	૨૬૭૦	૧૦૩૦
મગ	૨૦	૧૩૩૫	૪૪૫	૧૭૦

Suggestions:

1. Give recommendeddose of fertilizer and quantity of organic manures used in the tabular form.

(Action:Research Scientist, IFS, SDAU, Sardarkrushinagar)

19.2.1.61 **Nitrogen management in fodder oat - pearl millet under organic farming**

The farmers of North Gujarat Agro-climatic Zone IV adopting forage oat-fodder pearlmillet crop sequence after sunhemp green manuring under organic farming are recommended to apply recommended dose of nitrogen to each crop in the ratio of 50:25:25 through FYM:vermicompost:castor cake (as mentioned in table) on the basis of nitrogen content for obtaining higher oat green fodder equivalent yield and better fodder quality. It also improves soil health.

Crop	RDN (kg/ha)	Quantity of organic manure (kg/ha)		
		FYM (0.5% N)	Vermicompost (1.5% N)	Castor cake (3.9% N)
Fodder oat	120	12000	2000	770
Fodder pearl millet	120	12000	2000	770

ઉત્તર ગુજરાત ખેતઆબોહવાકીય વિસ્તાર ૪ ના સેંદ્રીય ખેતીથી શણ લીલા પડવાશ કર્યા બાદ–ઘાસચારા ઓટ-ઘાસચારા બાજરી પાક પધ્ધતિનુ વાવેતર કરતા ખેડુતોને ઓટના લીલા ઘાસચારા સમકક્ષ વધુ ઉત્પાદન મેળવવામાટે ઘાસચારાના ઓટ અને બાજરીના પાકને ભલામણ કરેલનાઇટ્રોજનના ૫૦:૨૫:૨૫, છાણીયા ખાતર:અળસીયા ખાતર:દિવેલી ખોળના (ટેબલ માં જણાવ્યા મુજબ) મારફત નાઈટ્રોજન તત્વના આધારે બન્ને પાકોમાં આપવાની ભલામણ કરવામાં આવે છે. જેનાથી જમીનની તંદુરસ્તીમાં પણ સુધારો થાય છે.

પાક	ભલામણ કરેલ નાઇટ્રોજન (કિ.ગ્રા/હે)	સેંદ્રિય ખાતર (કિ.ગ્રા/હેક્ટર)		
		છાણીયુ ખાતર (૦.૫% ના.)	અળસિયા ખાતર (૧.૫% ના.)	દિવેલી ખોળ (૩.૯% ના.)
ઘાસચારાના ઓટ	૧૨૦	૧૨૦૦૦	૨૦૦૦	૭૭૦
ઘાસચારાબાજરી	૧૨૦	૧૨૦૦૦	૨૦૦૦	૭૭૦

Suggestions:

1. Give recommended dose of fertilizer and quantity of organic manures used in the tabular form.

(Action:Research Scientist, IFS, SDAU, Sardarkrushinagar)

19.2.1.62 **Weed management in organic *rabi* fennel**

The farmers of North Gujarat Agro-climatic Zone IV growing *rabi* fennel under organic farming are recommended to adopt stale seed bed *fb* hand weeding at 30 days after sowing OR interculturingat 30 days after sowing *fb* hand weeding at 30 and 60 days after sowing and earthing up at 70 days after sowing for effective weed control, higher seed yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ માં સેન્દ્રીય ખેતી હેઠળ શિયાળુ વરીયાળીનું વાવેતર કરતા ખેડૂતોને અસરકારક નિંદણ નિયંત્રણ, વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકના વાવેતર પહેલા પિયત આપી ખેડ કરી વાવેતર કરવું અને ત્યારબાદ ૩૦ દિવસે હાથ વડે નિંદામણ કરવું **અથવા** પાકની વાવણી બાદ ૩૦ દિવસે આંતર ખેડ કરી હાથ વડે નિંદામણ કરવું ત્યારબાદ વાવણી પછી ૬૦ દિવસે હાથ નિંદામણ તેમજ ૭૦ દિવસે પાળા ચડાવવાની ભલામણ કરવામાં આવેછે

Suggestions:

1. Approved

(Action: Research Scientist, CNRM, SDAU, Sardarkrushinagar)

19.2.1.63	**Production potential of ajwain under organic farming** The farmers of North Gujarat Agro-climatic Zone IV growing ajwain under organic farming are recommended to apply RDN (20 kg N/ha) through castor cake (485 kg/ha) at the time of sowing and foliar spray of 3% *panchgavya* at 45, 60 and 75 days after sowing OR RDN (20 kg N/ha) through castor cake (485 kg/ha) at the time of sowing and seed treatment with *bijamrut* (300 ml/kg seed) + *jivamrut* 500 lit/ha at 45 and 60 days after sowing OR RDN (20 kg N/ha) through neem cake (435 kg/ha) + *Bijamrut* (seed treatment 300 ml/kg seed) + *Jivamrut*500 lit/ha at 45and 60 DAS OR RDN (20 kg N/ha) through FYM (4000 kg/ha) + spray of *Panchgavya*3% at 45, 60 and 75 DAS for obtaining higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪માં સેન્દ્રીય ખેતી હેઠળ અજમાનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ નાઇટ્રોજનનો જથ્થો (૨૦ કી.ગ્રા. નાઇટ્રોજન/હે)દિવેલી ખોળ (૪૮૫ કી.ગ્રા./હે)મારફત વાવણી વખતે તદ્દઉપરાંત ૩ ટકા પંચગવ્યના દ્રાવણનો છંટકાવ વાવણી બાદ ૪૫, ૬૦ અને ૭૫ દિવસે અથવા ભલામણ કરેલ નાઇટ્રોજનનો જથ્થો (૨૦ કી.ગ્રા. નાઇટ્રોજન/હે)દિવેલી ખોળ (૪૮૫ કી.ગ્રા./હે)મારફત વાવણી વખતે તદ્દઉપરાંતબીજામૃતની બીજ માવજત (૩૦૦મી.લી/કી.ગ્રા.) તથા વાવણી બાદ ૩૦ અને ૪૫ દિવસે જીવામૃત (૫૦૦ લી./હે.) અથવા ભલામણ કરેલ નાઇટ્રોજનનો જથ્થો (૨૦ કી.ગ્રા. નાઇટ્રોજન/હે)લીમ્બોળી ખોળ (૪૩૫ કી.ગ્રા./હે)મારફત વાવણી વખતે તદ્દઉપરાંત બીજામૃતની બીજ માવજત (300 મી.લી./કી.ગ્રા)આપવી તથા વાવણી બાદ ૩૦ અને ૪૫ દિવસે જીવામૃત (૫૦૦ લી./હે.) અથવા

	ભલામણ કરેલ નાઇટ્રોજનનો જથ્થો (૨૦ કી.ગ્રા. નાઇટ્રોજન/હે)છાણિયા ખાતર(૪૦૦૦ કી.ગ્રા./હે) મારફત વાવણી વખતે તદ્દઉપરાંત ૩ ટકા પંચગવ્યના દ્રાવણનો છંટકાવ વાવણી બાદ ૪૫,૬૦ અને ૭૫ દિવસે આપવાની ભલામણ કરવામાં આવે છે. **Suggestions:** **1.** Mension quantity of FYM, castor cake and neem cake applied in the bracket. **(**Action: Research Scientist, CNRM, SDAU, Sardarkrushinagar)
19.2.1.64	**Nutrient management in chickpea** The farmers of North Gujarat Agro-climatic zone IV growing chickpea are recommended to apply 75% RDF (15:30:00kg N:P_2O_5:K_2O/ha) and *Rhizobium* + PSB 1lit/ha each mix with 100 kg FYM as basal application through broadcasting followed by foliar spray of 1% neem coated urea at pre flowering stage or apply 75% RDF (15:30:00kg N:P_2O_5:K_2O/ha) and foliar spray of 1% 19-19-19 (N-P-K) at pod initiation stage for getting higher seed yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ ના ચણાનું વાવેતર કરતા ખેડુતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ભલામણ કરેલ ખાતરના જથ્થાના ૭૫% (પ્રતિ હેક્ટરે ૧૫:૩૦:૦૦ કિ.ગ્રા ના: ફો: પો) અને રાઇઝોબીયમ + પી.એસ.બી. એક-એક લિટર પ્રમાણે ૧૦૦ કિ.ગ્રા છાણીયા ખાતરમાં ભેળવીને વાવણી વખતે પુંખીને આપવું તેમજ ૧% નીમ કોટેડ યુરીયાના દ્રાવણનો ફુલ બેસવાની શરુઆત પહેલા છંટકાવ અથવા ભલામણ કરેલ ખાતરના જથ્થાના ૭૫% (પ્રતિ હેક્ટરે ૧૫:૩૦:૦૦ કિ.ગ્રા ના: ફો: પો) અને ૧% ૧૯-૧૯-૧૯ (ના: ફો: પો)ના દ્રાવણનો શિંગ બેસવાની શરુઆત થાય ત્યારે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1. Add treatment T_7 in the text of recommendationpara **(**Action: Research Scientist, Pulses Res. Station, SDAU, Sardarkrushinagar)
19.2.1.65	**Phosphorus and zinc economy with phosphate and zinc solubilizing microbes in fieldpea**

	The farmers of North Gujarat Agro-climatic zone IV growing fieldpeaare recommended to apply 20:30 kg N: P_2O_5 /ha as basal along with seed treatment of biophos 5 ml/kg seed for obtaining higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ ના વટાણાનું વાવેતર કરતા ખેડુતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે વાવણી વખતે પ્રતિ હેક્ટરે ૨૦:૩૦ કિ.ગ્રા ના:ફો અને બાયોફોસની બીજ માવજત (એક કિલો બિયારણ દીઠ ૫ મીલી) આપી વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** **1.**Approved for Scientific community **(**Action: Research Scientist, Pulses Res. Station, SDAU, Sardarkrushinagar)
19.2.1.66	**Performance of different vegetables under *rabi* fennel *(Foeniculum vulgare* Mill.) based intercropping system** The farmers of North Gujarat Agro-climatic zone IV growing *rabi* fennel are recommended to grow two rows of carrot as inter crop in *rabi* fennel for obtaining higher fennel equivalent yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના શિયાળુ વરીયાળી ઉગાડતા ખેડૂતોને વરીયાળી સમકક્ષ વધારે ઉત્પાદન અને નફો મેળવવા માટે વરિયાળીની બે હાર વચ્ચે ગાજરની બે હાર આંતરપાક તરીકે વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1. Correct the price of urea (Rs 270/45 kg instead of Rs 370/45 kg). 2. Mention the selling price of fennel, coriander, fenugreek and carrot in economics table (Table 10.6). **(**Action: Research Scientist, Seed Spices Res. Station, SDAU, Sardarkrushinagar)
19.2.1.67	**Response of fenugreek (*Trigonellafoenumgraecum* L.) to varying levels of sulphur and zinc** The farmers of North Gujarat Agro-climatic Zone IV growing fenugreek are recommended to apply 10 kg sulphur/ha at the time of field preparation and foliar spray of 1.2% zinc at 30 and 60 DAS in addition to recommended dose of fertilizer (20:40:00 kg N:P_2O_5:K_2O/ha) to obtain higher yield and net return.

	ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના મેથીનુ વાવેતર કરતા ખેડુતોને વધુ ઉત્પાદન અને નફો મેળવવા માટેભલામાણ કરેલ ખાતર (૨૦:૪૦:૦૦ ના: ફો:પોકિ.ગ્રા./હે) ઉપરાંત હેક્ટર દીઠ ૧૦ કિ. ગ્રા. સલ્ફર પાયામાં જમીન તૈયાર કરતી વખતે અને ઝીંક ૧.૨ ટકાનુ દ્રાવણ પાક્ની વાવણી બાદ૩૦ અને ૬૦ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1. **Concluded** (Action: Research Scientist, Seed Spices Res. Station, SDAU, Sardarkrushinagar**)**
19.2.1.68	**Module based organic wheat package of practice** The farmers of North Gujarat Agro-climatic Zone IV growing wheat under organic farming are recommended to adopt following module for getting higher yield and net return. 1. Apply 90 kg N through castor cake (1.8 t /ha) 2. Soil application of *Trichoderma viridie* 1.5 kg/ha + PSB & *Azotobacter* each@ of 1 lit/ha as soil application + *Metarhizium anisopliae@* 1.0 kg/ha enriched with 50 kg FYM 3. Soil application of *Jivamrut* @500 lit/ha at the time of sowing and 30 and 60 days after sowing 4. Foliar application of *Panchgavya* @ 3 % at 30 & 45 DAS **ખેડૂતોપયોગી ભલામણ** ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના સેન્દ્રિય ખેતી હેઠળ ઘઉં પકવતા ખેડુતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે નીચે મુજબના પગલા લેવા ભલામણ કરવામાં આવે છે. ૧.જમીનમાં હેક્ટરે ૯૦ કિ.ગ્રા. નાઇટ્રોજન દિવેલીના ખોળ (૧.૮ ટન) રૂપે આપવો ૨.જમીનની તૈયારી વખતે ૧.૫ કિ.ગ્રા. ટ્રાઇકોડર્મા વીરીડી + એક-એક લીટર પીએસબી અને એઝૉટોબેક્ટર કલ્ચર + ૧ કિ. ગ્રા. મેટરીઝીયમ એનીસોપ્લીથી સમૃધ્ધ કરેલ ૫૦ કિ. ગ્રા. છણીયુ ખાતર આપવુ ૩. વાવણી સમયે અને વાવણી બાદ ૩૦ અને ૬૦ દિવસે પ્રતિ હેક્ટરે ૫૦૦ લીટર જીવામૃત આપવું ૪. વાવણી બાદ ૩૦ અને ૪૫ દિવસે પંચગવ્યના ત્રણ ટકા દ્રાવણનો છંટકાવ કરવો

	Suggestions: 1. Extended for two years. (Action: Research Scientist, Wheat Research Station, SDAU, Vijapur)
19.2.1.69	**Micronutrient Management in Groundnut** The farmers of North Gujarat Agro-climatic Zone IV growing *kharif* groundnut on Zn deficient light textured soil are recommended to apply 15 kg/ha ferrous sulphate and 8 kg/haz inc sulphate as basal in addition to recommended dose of fertilizers (12.5-25 kg N-P_2O_5 /ha) for getting higher yield and net return ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ની જસત તત્વની ઉણપ અને હલકા પ્રતવાળી જમીનમાં ચોમાસું મગફળીનું વાવેતર કરતા ખેડુતોનેમગફળીનુ વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ રાસાયણીક ખાતર (૧૨.૫-૨૫ કિ.ગ્રાના.ફો./હે) ઉપરાંત પ્રતિ હેક્ટરે ૧૫ કિ.ગ્રા ફેરસ સલ્ફેટ અને ૮ કિ.ગ્રા ઝીંક સલ્ફેટ પાયાના ખાતર તરીકે આપવાની ભલામણ કરવામા આવે છે. **Suggestions:** **1**. Made recommendation on bases of T_7 instead onT_3 **(**Action: Assistant Farm Manager ,ARS,, SDAU, Aseda**)**
19.2.1.70	**Relay cropping of castor in *kharif* groundnut** The farmers of North Gujarat Agro-climatic Zone IV growing groundnut are recommended to grow groundnut at 30 cm spacing and castor at 150 cm x 120 cm (3:1) or 180 cm x 120 cm (4:1) as relay crop for getting higher groundnut equivalent yield and net profit. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪માં મગફળીનું વાવેતર કરતાં ખેડૂતોને મગફળી સમકક્ષ વધુ ઉત્પાદન અને નફો મેળવવા માટે મગફળીના ૩૦ સે.મી. હારમાં વાવેતર સાથે રીલે પાક તરીકે દિવેલા ૧૫૦ સેમી. X ૧૨૦ સેમી. અંતરે (૩:૧) અથવા ૧૮૦ સેમી. X ૧૨૦ સેમી. અંતરે (૪:૧) વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1.Approved **(**Action: Senior Scientist and Head, KVK, SDAU, Tharad**)**

19.2..71	**Intercropping study in pearl millet under rain fed condition** The farmers of North-West Gujarat Agro-climatic Zone V growing pearlmilletunder rainfed condition are recommended to adopt intercropping of pearlmillet: mothbean (1:3) with 45 cm spacing for getting higher pearlmillet equivalent yield and net profit. ઉત્તર-પશ્ચિમ ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૫માં વરસાદ આધારિત બાજરીનું વાવેતર કરતાં ખેડૂતોને બાજરી સમકક્ષ વધુ ઉત્પાદન અને નફો મેળવવા માટે બાજરી:મઠ (૧:૩) આંતરપાકમાં ૪૫ સે.મી. અંતરે વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1. Mention "under rainfed condition" in the recommendationpara. 2. Add yearwise rainfall data in report. **(**Action: Assistant Research Scientist, Dry Farming Res. Station, SDAU, Radhanpur**)**
9.2.1.72	**Management of *Orobanche* in mustard crop** The farmers of North Gujarat Agro-climatic Zone IV growing mustard are recommended to keep crop weed free by carrying out three hand weeding at 55, 75 and 95 days after sowing to control *Orobanche* for securing higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૪ના રાઇનું વાવેતર કરતા ખેડુતોએ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા તેમજ વાકુંબાનુ અસરકારક નિયંત્રણ માટે પાકની વાવણી બાદ ૫૫, ૭૫ અને ૯૫ દિવસે ત્રણ હાથ નિંદામણ કરવાની ભલામણ કરવામાં આવે છે. **Suggestions:** 1. Mention days of hand weeding in recommendationpara. **(**Action: Prof. and Head, Dept. of Agronomy, CPCA, SDAU, Sardarkrushinagar**)**

19.2.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

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19.2.2.1	**Study on rainfall climatology and its association with productivity of major crops of Gujarat** To characterize rainfall distribution in different districts there is no common distribution to fit. From the study of 8 distributions as listed below were found to fit better in respective districts. For rainfall based crop yield modeling of below listed crops with associated rainfall periods should be preferred with XGBoost technique and its parameters. **Approved with following suggestion/s** 1. Mention districts name as listed below (Action: Professor and Head, Department of Agril. Meteorology,BACA, AAU, Anand)
19.2.2.2	**Weed management in onion** Application of clodinafop 12.25% + oxyfluorfen 14.7% EC (PM)122.5+147 g/ha PoE or pendimethalin 38.7% CS 580.5 g/ha PPI *fb* oxadiargyl 6% EC 75 g/ha PoE or oxyfluorfen 23.5% EC 120 g/ha PE *fb* clodinafop 12.25% + oxyfluorfen 14.7% EC (PM) 122.5+147 g/ha PoE and oxadiargyl 6% EC 75 g/ha PE *fb* clodinafop 12.25% + oxyfluorfen 14.7% EC (PM)122.5+147 g/ha PoE provide effective and economical management of complex weed flora in transplanted onion. **Not approved with following suggestion/s** **1.Extend for one more year** (Action:Agronomist& PI, AICRP-WM, BACA, AAU, Anand)
19.2.2.3	**Effect of long term manuring on yield and quality of bidi tobacco and soil productivity** Bidi tobacco variety can be grown by applying 12.5 tonnes FYM per hectare alternate year or green manuring every year with sunnhemp as well as 180 kg N/ha from ammonium sulphate or 50% nitrogen throughcastor cake and 50 % nitrogen from ammonium sulphate recorded higher yield. **Approved** (Action: Research Scientist, BTRS, AAU, Anand)
19.2.2.4	**Effect of spacing and fertilizer on *summer* groundnut variety GG 34** Summer groundnut var. GG 34 can be sown at 40 cm spacing between the row with application of gypsum @ 250 kg/ha as a basal and foliar spray of nano NP fertilizer (1.5 % N) 5.0 mL/L at 25 and 50 DAS recorded higher yield. Biosafety guidelines of nano fertilizer should be followed at the time of spraying. **Approved** (Action: Research Scientist, RRS, AAU, Anand)

19.2.2.5	**Effects of macro and micronutrient on *Bt* cotton grown on heavy black soil of middle Gujarat** Under heavy black soil of Middle Gujarat Agro-climatic Zone, soil application of macronutrients like N,P,K,S,Mg and micronutrients like Cu,Mn,Fe,Zn,B as well as foliar spraying of micronutrient mixture Grade-IV to Bt cotton did not affect the growth attributes, yield attributes, seed cotton yield ,physiological parameters like reddening of leaves and bolls as well as soil parameters **Approved with following suggestion/s** 1. House suggested to **conclude** **(**Action: Asstt. Research Scientist, NARP, AAU, Khandha)
19.2.2.6	**Long term effect of soil test-based fertilizer use with and without organic manure on pearl millet (*kharif*)-wheat crop sequence** **(1)** 20 years result indicated that application of nitrogen alone (i.e. as per soil test value) and FYMalone in*kharif*pearl millet not showed positive effect on crop productivityof pearl millet. **(2)** Balance application of nutrients, i.e. NP (soil test value) + K (equal to N) along with 20 t FYM/ha to pearl millet only increase the yield of pearl millet. **(3)** Yield data of pearl millet indicated that combined application of NP (soil test value) + K (equal to N)+ S/Fe/Zn (soil test value) + 20 t/ha FYM had additive effect thus S/Fe/Zn nutrients need to be supplied as per soil test value for enhancing/maintaining crop productivity. **(4)** Studies on crop response to K result clearly indicated that application of N and NP alone did not show positive response until K is not supplied (N equal to K) in pearl millet crop and in succeeding wheat crop. Result indicated that response to K in pearl millet and in wheat crop found to be positive. 20 years result clearly indicated that application of NP (soil test value) + K (equal to N) increases the production of wheat crop. **(5)** Sustainable yield index (SYI) is being used to measure the potentiality of different crops or cropping systems or a management practice. Sustainable yield index (SYI) will be low indicating unsustainable

	management practice. Application of NP+ Zn/Fe/S (STV) + K (equal to N) + FYM 20 t/ha (only pearl millet) recorded higher sustainable yield index (SYI) values 0.34, 0.43 and 0.44 for pearl millet, wheat and pearl millet-wheat cropping system, respectively. Whereas sole application of FYM alone recorded lower sustainable yield index (SYI) values 0.30, 0.26 and 0.32 for pearl millet, wheat and pearl millet-wheat cropping system, respectively. **(6)** The nutrient content in soil after harvest of pearl millet crop clearly indicated that application of NP (soil test value) + Zn/Fe/S (soil test value) + K (equal to N) + FYM 20 t/ha (only pearl millet) increase organic carbon, available P_2O_5 and available K_2O in the soil after harvest of pearl millet crop since commencement to completion of experiment in 2021. **(7)** The nutrient content in soil after harvest of wheat crop clearly indicated that application of NP (soil test value) + K (equal to N) increase organic carbon and available K_2O in the soil after harvest of wheat crop since commencement to completion of experiment in 2021-22. Whereas, application of NP (soil test value) increase the available P_2O_5 in the soil after completion of year 2021-22. **(9)** 20 years results revealed that significantly positive correlation was observed between organic carbon and pearl millet yield under treatment NP (Soil test value) + FYM @ 20 t/ha (only pearl millet), N (Soil test value), NP (Soil test value) + K (equal to N), NP+ Zn/Fe/S (Soil test value) + K (equal to N) + FYM @ 20 t/ha (only pearl millet) and NP + Zn/Fe/S (Soil test value) + K (equal to N). **The treatment NP (soil test value) + Zn/Fe/S (Soil test value) + K (equal to N) + FYM 20 t/ha (only pearl millet) found correlation coefficient (r=0.64).** Increase in organic carbon content in soil increase production of pearl millet and decrease organic carbon content in soil decrease the production of pearl millet. **Approved** (Action:Prof. & Head, Dept. of Agronomy, AAU, Anand)

JUNAGADH AGRICULTURE UNIVERSITY, JUNAGADH

19.2.2.7	**Optimization of nutrient package in *Bt* cotton under irrigated condition** If soil status of available nitrogen and phosphorus is low and potassium is high, than apply 180:50:113 kg/ha N:P_2O_5:K_2O to *Bt* cotton. N fertilizer apply in five splits of 20% each *viz*: as basal, at 30, 60, 90 and 120 DAS and K_2O in two splits viz; 50% as basal and at 30 DAS and P_2O_5 as basal. In addition, apply *Azatobactor*, PSB and KSB each 3 lit./ha through drenching for getting higher yield. **Approved** (Action: Professor & Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.2.1.8	**Improving phosphorus use efficiency in summer groundnut with microbial culture** It is informed to scientific community that in summer groundnut apply 40 kg/ha of P_2O_5 + DGRC (microbial consortia) culture (10 g/kg seed) for obtaining higher groundnut pod and haulm yield. **Approved with following suggestion/s:** **1.** Recommend 40 kg/ha of P_2O_5 + PSB culture part for farming community (Action: Research Scientist, Main Oilseeds Research Station, JAU, Junagadh)
19.2.2.9	**Response of sugarcane (*Saccharum* complex hybrid) to N, P and K nano- fertilizers** The scientific community is informed that application of recommended dose of fertilizers *viz*. 250-125-125 kg N, P_2O_5 and K_2O/ha **or** the application of 1/5th of RDF Nano- fertilizer (50-25-25 kg N, P_2O_5 and K_2O/ha) + *Azotobacter* + PSB each @ 4 litre/ha gave higher cane yield in sugarcane. **Approved** (Action: Research Scientist, Main Sugarcane Research Station, JAU, Kodinar)

NAVSARI AGRICULTURE UNIVERSITY, NAVSARI

College of Agriculture, Bharuch	
19.2.2.10	**Bio-chemical changes in leafy vegetables grown on contaminated and non-contaminated soils (16.2.3.76)** • The concentration of Pb, Ni and Cd in contaminated soils was found above the permissible limit (value set by Indian/WHO/ agencies) in most of the soils samples. The non- contaminated soils samples contained heavy metals and that too within permissible limits. • The accumulation of Ni, Cd and Pb were much higher than the permissible level in the edible portion of leafy vegetables (Fenugreek, Coriander, Dill leaves, Spinach and Amaranthus) grown on contaminated soils. But the metal ions of vegetables grown with non-contaminated soils were below threshold value. • However, biochemical composition of these vegetables are hampering due to the polluted soils. **Approved with following suggestion/s** 1. Remove "phytoremediation purposes" from the information paragraph. (Action: Professor, SSAC, CoA, Bharuch)
Food Quality Testing Laboratory, NAU, Navsari	
19.2.2.11	**Persistence and dissipation studies of some registered herbicides in sugarcane (15.2.3.53)** 2,4-D Dimethyl amine salt 58% SL, 2,4-D Sodium salt 80% w/w) and Halosulfuron methyl 75% WG are readily degradable in the soil under sugarcane cultivation under South Gujarat as their dissipation half-life (DT50) is less than 20 days as per FAO. Further, Halosulfuron methyl 75 % WG and 2,4 –D dimethyl amine 58% SL as well as 2,4-D sodium salt 80% W/W, when these are applied at the rate of 67.5 g a.i./ha, 3.5 kg a.i./ and 2 kg a.i./ha, respectively at 60 days after planting are found below detectable limit in sugarcane juice and leaves. **Approved with following suggestion/s** 1. Use "not detected" word instead of "free from" in the information paragraph. (Action: Assistant Professor, FQTL, NMCA, NAU, Navsari)
Collage of Forestry, NAU, Navsari	
19.2.2.12	**Seasonal and Diurnal variation of surface ozone at NAU campus (12.2.3.39)** The surface ozone concentration at NAU campus was observed higher in summer than in winter and monsoon season. Moreover, the ozone concentration was observed higher in afternoon hours than in morning hours. The NAAQ Standards for Ozone is 100 µg/m^3 (8hr Time Weighted Average).

	Not Approved with following suggestion/s 1. Experiment extends for one more year and present in the next AGRESCO meeting. (Action: Professor, CoF, ACF, NAU, Navsari)

S. D. AGRICULTURE UNIVERSITY, S. K. NAGAR

19.2.2.13	**Management of *Orobanche* in mustard crop** Application of glyphosate 25g at 25-30 DAS and 50 g at 50-55 DAS found effective for control of *Orobanche* in mustard. **Not Approved** (Action: Prof. and Head, Dept. of Agronomy, CPCA, SDAU, Sardarkrushinagar)
19.2.2.14	**Information for Scientific community** The soil samples can be analysed for soil organic carbon, available nitrogen, phosphorus, potash and sulphur content rapidly and non-destructively with FT NIR instrument. The results obtained by FT NIR are significantly correlated with the well developed chemical analysis methods. **Approved** (Action: Research Scientist, COR , SDAU, Sardarkrushinagar)

19.2.3 NEW TECHNICAL PROGRAMMES

Summary of the new technical programme

Name of University	New Technical Programs	
	Proposed	**Approved**
AAU	**26**	**26**
JAU	**20+7**= 27**	**20**
NAU	25+1**	**24**
SDAU	**31**	**24**

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title of Experiment	Suggestion/s and Action
Dept. of Agronomy, BACA, AAU, Anand		
19.2.3.1	Performance of soybean varieties to spacing in summer season	**Approved with following suggestion/s** 1. Change Title as " Performance of soybean varieties under different spacing in summer season" (Action: Professor and Head, Department of Agronomy, BACA, AAU, Anand)
19.2.3.2	Performance of soybean varieties to date of sowing in *semi rabi* season	**Approved with following suggestion/s** 1. Change Title as " Performance of soybean varieties under different time of sowing in semi *rabi* season" 2. Write factor as Time of sowing instead of date of sowing (Action: Professor and Head, Department of Agronomy, BACA, AAU, Anand and Principal, COA, AAU, Jabugam)
19.2.3.3	Response of irrigation regimes and mulch on sweet corn its effect on green gram under organic condition	**Approved with following suggestion/s** 1. Change Title as "Response of irrigation regimes and mulching on sweet corn and its effect on green gram under organic farming" 2. Write green gram stover yield instead of haulm yield (Action: Professor and Head, Department of Agronomy, BACA, AAU, Anand)
19.2.3.4	Comparative study of nano nitrogen and nano urea on irrigated wheat	**Approved as such** (Action: Professor and Head, Department of Agronomy, BACA, AAU, Anand)

19.2.3.5	Comparative study of nano nitrogen and nano urea on *rabi* maize	**Approved** (Action: Professor and Head, Department of Agronomy, BACA, AAU, Anand)
Dept. of Agricultural Meteorology, BACA, AAU, Anand		
19.2.3.6	Crop weather relationship of mango under semi-arid environment	**Approved with following suggestion/s** 1. Discuss with Chairman of Horticulture group for technical suggestion (Action: Professor and Head, Department of Ag. Meteorology, BACA, AAU, Anand)
19.2.3.7	Study on association of weather parameters with productivity of major perennial fruit crops of Gujarat	**Approved** (Action: Professor and Head, Department of Ag. Meteorology, BACA, AAU, Anand)
Department of Soil Science, BACA, AAU, Anand		
19.2.3.8	Nitrogen management in finger millet	**Approved with following suggestion/s** 1. Take 12 kg seed /ha of fingermillet for drilling instead of 5.0 kg/ha (Action: Prof. & Head Dept. of SSAC, BACA, AAU, Anand)
AICRP on Weed Management, AAU, Anand		
19.2.3.9	Bio-efficacy of different herbicides against complex weed flora in *kharif*blackgram	**Approved** (**Action**: Agronomist& PI, AICRP-WM,AAU, Anand)
Main Forage Research Station, AAU, Anan		
19.2.3.10	Response of nitrogen and phosphorus levels on green fodder yield of *kharif* fodder maize	**Approved with following suggestion/s** 1. $ZnSo_4$ will be applied as per STV 2.Addavailable N and P initial and at harvest in observation **(**Action: Research Scientist, MFRS, AAU, Anand)
19.2.3.11	Comparative study of zinc sulphate and nano zinc of summer fodder sorghum	**Approved with following suggestion/s** 1. $ZnSo_4.7\ H_2O$ neutralized with lime water 2.Add available Zn content in soilinitial and at harvest in observation **(**Action: Research Scientist, MFRS, AAU, Anand)

Medicinal and Aromatic Plants Research Station, AAU, Anand		
19.2.3.12	Effect of Safed musli and Pigeon pea intercropping system on yield and quality of Safed musli (*Chrophytum boriviliunum* L.)	**Approved with following suggestion/s** 1. Seed rate for pigeon pea: 15 kg/ha 2. Spacing for safedmusli: 30 x 10 cm 3. MentionRDF of Safed musli, if available (Action: Associate Research Scientist and Head, M & AP Research Station, AAU, Anand)
19.2.3.13	Effect of row spacing and mulch on summer okra under drip irrigation system	**Approved with following suggestion/s** 1. Check the quantity of nitrogen in early stage growth 2. Recast the treatment as T_3: 60-30 cm x 20 cm T_4: 60-30 cm x 20 cm T_5: 75-30 cm x 20 cm T_6: 75-30 cm x 20 cm (Action: Research Scientist, MFRS, AAU, Anand)
Regional Research Station, AAU, Anand		
19.2.3.14	Comparative study of nano nitrogen and nano urea on potato	**Approved** (Action: Research Scientist, RRS, AAU, Anand)
Pulse Research Station, AAU, Vadodara		
19.2.3.15	Nitrogen management through organic sources in soybean and its residual effect on chickpea under organic condition	**Approved with following suggestion/s** 1. Change title as" Nitrogen management through organic sources in soybean and its residual effect on chickpea under organic farming" 2. Work out the system yield (Action: Research Scientist (Pulse Research Station, AAU, Vadodara)
Tribal Research cum Trainig Centre, AAU, D. Baria		
19.2.3.16	Effect of multi-micronutrient mixture grades application on growth, yield and quality of Amaranthus	**Approved with following suggestion/s** 1. Take Citric acid instead of lime water for neutralize of $FeSO_4$ 2. For neutralization of $CuSO_4$ and Borex no need of lime water (Action: Research Scientist TRTC, , AAU, D. Baria)
College of Agri., AAU, Jabugam		
19.2.3.17	Studies on sorghum and soybean intercropping system in *kharif* season	**Approved with following suggestion/s** 1. Calculate Sorghum equivalent yield 2. Work out LER (Action: Principal, COA, AAU, Jabugam)

Agril. Research Station ., AAU, Jabugam		
19.2.3.18	Bio-efficacy of different herbicides against complex weed flora in summer black gram	**Approved** (Action: Principal, COA, AAU, Jabugam)
Agricultural Research Station, AAU, Arnej		
19.2.3.19	Nitrogen management in dill seed through organic sources in *Bhal* region under organic condition	**Approved with following suggestion/s** 1. Add in note: organic manure will be applied before *kharif* season (Action: Associate Research Scientist, Agriculture Research Station, AAU, Arnej
Agricultural Research Station, AAU, Dahod		
19.2.3.20	Evaluation of soybean - millets intercropping systems	**Approved with following suggestion/s** 1. Correct the name of variety as GNN 8 instead of GN 8 2. Mention replacement series symbol in treatments (Action: Assoc. Res. Scientist, ARS, AAU, Dahod)
19.2.3.21	Nutrient management in kodo millet (*Paspalumscrobiculatum* L.)	**Approved with following suggestion/s** 1. Add observation: a. Nutrient content and uptake of seed and straw b. Plant population/meter row length 2. Change the level of phosphorous as P_1: 10 kg/ha P_2: 20 kg/ha (Action: Assoc. Res. Scientist, ARS, AAU, Dahod)
Agriculture Research Station, AAU, Dhandhuka		
19.2.3.22	Comparative study of nano urea and nano nitrogen on yield and yield attributes of durum wheat under restricted irrigation in *Bhal* condition of Gujarat	**Approved** (Action: Asstt. Res. Scientist, ARS, AAU, Dhandhuka))
Sheth D. M. Polytechnic , AAU, Vadodara)		
19.2.3.23	Effect of nano Zn and Fe on yield and quality of Acid lime. cv. Kagzi lime	**Approved** (Action: Principal, Sheth D. M. Polytech, Vadodara)
College of Agri, AAU, Vaso		
19.2.3.24	Comparative study of nano nitrogen and nano urea on growth, yield and quality of brinjal (*Solanum melongena*L.) cv. GAB 6 (Anand Doli)"	**Approved with following suggestion/s** 1. Add observation: Plant population/net plot (Actio**n**: Principal, COA, AAU, Vaso)

Micronutrient Research Scheme, AAU, Anand		
19.2.3.25	Influence of micronutrient management on yield, nutrient composition and quality of Guava (*Psidium guajava*)	**Approved with following suggestion/s** 1. Change experimental design CRD instead of RBD (Action: Assoc. Res. Scientist, Micronutrient, AAU, Anand)
Main Rice Research Station , AAU, Anand		
18.2.3.26	Effect of seedling age and transplanting time on yield of summer rice	**Approved with following suggestion/s** 1. Change title as**:** "Effect of seedling age on yield of summer rice" 2. Add observation : Plant population/m^2 3. Take only one date of transplanting (Action: Research Scientist, MRRS, , AAU, Anand)

JUNAGADH AGRICULTURE UNIVERSITY, JUNAGADH

Sr. No.	Title of Experiment	Suggestion/s and Action
19.2.3.27	Effect of nano urea on growth, yield and quality of *rabi* sweet corn (*Zea mays* L. *saccharata*)	**Approved with following suggestion/s** 1. Conduct the experinment on fixed site 2. Add T_{11} as 25 % RDN at basal + 25 RDN at 20-25 DAS + 4% urea two spray 3. Add T_{12} as control (Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.3.28	Evaluation of different varieties of soybean under various row spacing in South Saurashtra Agro-climatic condition	**Approved with following suggestion/s** 1. Add plant population observation 2. Recast the objective No. 1and delete third objective 3. Add observation on days to maturity 4. Delete 10 cm from spacing **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.3.29	Evaluation of natural farming, organic farming, conventional farming and integrated crop management under chickpea-sesame cropping sequence	**Approved with following suggestion/s** 1. Keep *Jivamrut* @ 200 ml/kg seed 2. Delete FYM and keep 3 t/ha vermicompost in OF module summer season 3. Carryout nutrient status analysis initial, 3rd year and after completion of experiment 4. Heavy metals analysis soil should be done if organic inputs purchased from out side 5. Write Non replicated large plot design **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.3.30	Cropping system diversification and/or intensification (AICRP)	**Approved with following suggestion/s** 1. Considered as AICRP trail **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)

19.2.3.31	Calibration and validation of CERES model (DSSAT 4.6) for different cultivars of chickpea under different sowing time	**Approved with following suggestion/s** 1. Keep date of sowing as 15 Oct., 25 Oct., 5 Nov. and 25 Nov. 2. Delete variety GJG 3 in subplot 3. Delete days to anthesis observation 4. Add leaf area in observation 5. Delete DSSAT 4.6 from title **(**Action: Professor & Head, Department of Agronomy, COA, JAU, Junagadh)
19.2.3.32	Evaluation of natural farming, organic farming, conventional farming and integrated crop management under tomato - vegetable cowpea cropping sequence	**Approved with following suggestion/s** 1. Replace mix cropping from natural farming and add leafy coriander on bunds 2. Keep *Pseudomonas fluorescens* in plant protection 3. Apply 10 t FYM/ha in organic farming module of tomato 4. Keep 5 t FYM/ha in conventional farming and ICM module of cowpea 5. Keep *Ghanjivamrut* 500 kg/ha in natural farming module of cowpea 6. Soil anaylsis of microbial count, BD and WHC at initial, after 3rd and 5th year of experiment (Action: Professor and Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.3.33	Evaluation of the foliar application of nano nitrogen on the performance of wheat	**Approved with following suggestion/s** 1. Keep gross plot size 5.0 x 2.7 m. 2. Add T_{11} as 25 % RDN at basal + 25 RDN at 20-25 DAS + 4% urea two spray 3. Add T_{12} as control 4. Spray of liquid fertilizer at 30 & 45 DAS 5. Add SPAD reading and NUE analysis **(**Action: Professor and Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.3.34	Effect of silicon on chickpea under saline irrigation water	**Approved with following suggestion/s** 1. Mention irrigation methodology **(**Action: Professor and Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.3.35	Effect of silicon on wheat under saline irrigation water	**Approved with following suggestion/s** 1. Mention irrigation methodology **(**Action: Professor and Head, Department of Soil Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.3.36	Effect of foliar application of various fertilizers on growth, yield and nutrient	**Approved with following suggestion/s** 1. Keep humic acid @ 0.3% instead of 1.0% 2. Add plant population observation 3. Change the variety **(**Action: Professor and Head, Department of Soil

	uptake by pigeon pea	Sci. & Agril. Chem., COA, JAU, Junagadh)
19.2.3.37	Best management practices in groundnut to boost minimum 10% groundnut yield during summer season (AICRP)	**Approved with following suggestion/s** 1. Considered as AICRP trial **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.38	Response of summer groundnut foliar application of nano urea and urea phosphate	**Approved with following suggestion/s** 1. Add soil phosphorus analysis 2. Replace 0.2% nano urea with 4 ml nano urea **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.39	Efficacy of nano urea on growth, yield and quality of irrigated castor (AICRP)	**Approved with following suggestion/s** **1.** Considered as AICRP trial **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.40	Evaluation of pre-emergence herbicide molecules in castor	**Approved with following suggestion/s** 1. Considered as AICRP trial **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.41	Evaluation of *Rhizobia* for enhancing BNF and yield of *kharif* groundnut (AICRP)	**Approved with following suggestion/s** 1. Considered as AICRP trial **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.42	Organic farming experiments on permanent basis in prominent cropping system of the respective region (AICRP)	**Approved with following suggestion/s** 1. Considered as AICRP trial **(**Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.2.3.43	Evaluation of natural farming, organic farming, conventional farming and integrated crop management in cotton crop	**Approved with following suggestion/s** 1. Keep FYM 5 t/ha in OF, CF and ICM module 2. Herbicide application in CF module finalize after discussion with Dr. Chaudhary from AAU 3. Add observations of groundnut 4. In NF module keep 200 ml *bijamrut*/kg seed, *ghanjivamrut* 500 kg/ha and keep *jivamrut* @ 7.5% in each spray 5. Add PSB and KMB in OF module **(**Action: Research Scientist (Cotton), cotton Research Station, JAU, Junagadh)

19.2.3.44	Evaluation of the foliar application of nano urea on the performance of okra	**Approved with following suggestion/s** 1. Add T_{11} as 25 % RDN at basal + 25 RDN at 20-25 DAS + 4% urea two spray 2. Add T_{12} as control **3.** Add SPAD reading and NUE analysis **(**Action: Research Scientist (G-O), Vegetable Research Station, JAU, Junagadh)
19.2.3.45	Effect of intercropping of sunflower and sesame on growth, yield and yield attributes of soybean under rainfed conditions	**Approved with following suggestion/s** 1. Keep intercropping symbol of replacement 2. Apply seed rate and fertilizer as per area occupied by intercrops 3. Add plant population obervations **(**Action: Research Scientist (Dry Farming), Main Dry Farming Research Station, JAU, Targhadia)
19.2.3.46	Response of *Bt* cotton to foliar application of nano urea under rainfed condition	**Approved with following suggestion/s** 1. Take T_{12} as control (water spray) 2. Add plant population and NUE in observations **(**Action: Research Scientist (Dry Farming), Main Dry Farming Res. Station, JAU, Targhadia)
19.2.3.47	Effect of recycling of crop residues through composting in combination of fertilizer on yield of groundnut and physico-chemical properties of soil	**Approved with following suggestion/s** 1. Add observation on plant population and nodules **2.** Add content and uptake of NPK in groundnut **3.** Replace 500 g compost culture with 1 kg **(**Action: Research Scientist (Dry Farming), Main Dry Farming Res. Station, JAU, Targhadia)
19.2.3.48	Response of summer pearlmillet to foliar application of nano urea	**Approved with following suggestion/s** 1. Write treatments as 100%, 75% and 50% RDN **(**Action: Research Scientist (Pearl millet),Main Pearl millet Research Station, JAU, Jamnagar)
19.2.3.49	Productivity of pearl millet – mustard cropping sequence influenced by organic and natural farming (AICRP)	**Approved with following suggestion/s** 1. Considered as AICRP trial **(**Action: Research Scientist (Pearl millet),Main Pearl millet Research Station, JAU, Jamnagar)
19.2.3.50	Management of nutsedge (*Cyperus* spp.) in sugarcane and residual effects of herbicides on succeeding crops	**Approved with following suggestion/s** 1. Delete 'post emergence directed spray' in the treatments 2. Apply preplanting herbicide treatment after irrigation 3. Delete IC at 25 DAS from note **(**Action: Research Scientist (Sugarcane), Main Sugarcane Research Station, JAU,

		Kodinar)
19.2.3.51	Effect of nano urea on growth and yield of summer sesame	**Approved with following suggestion/s** 1. Add T_9 as 75% RDN through urea + 2% urea spray at 40 DAS and 50 DAS 2. Add T_9 as 75% RDN through urea + 4% urea spray at 40 DAS and 50 DAS **(**Action: Research Scientist, Agricultural Research Station, JAU, Amreli)
19.2.3.52	Response of cutting interval and cutting height on productivity and quality of marvel grass (*Dichanthium annulatum*) under irrigated condition	**Approved** **(**Action: Associate Research Scientist, Grassland Research Station, JAU, Dhari)
19.2.3.53	Evaluation of multicut fodder pearlmillet varieties under different levels of nitrogen in summer season	**Approved with following suggestion/s** 1. Replace GFB 1 with GFB 4 2. Keep N level as 60, 90, 120 and 150 kg/ha 3. Keep replication 4 **(**Action: Associate Research Scientist, Grassland Research Station, JAU, Dhari)

NAVSARI AGRICULTURE UNIVERSITY, NAVSARI

<table>
<tr><th>Sr. No.</th><th>Title of Experiment</th><th>Suggestion/s and Action</th></tr>
<tr><td colspan="3">Soil & Water Management Research Unit, Navsari</td></tr>
<tr><td colspan="3">CSSRS,NAU,Danti / Umbharat</td></tr>
<tr><td>19.2.3.54</td><td>Drip Irrigation and fertigation levels on yield and quality of dragon fruit (Hylocereuspolyrhizus) on coastal soil</td><td>
Approved with following suggestion/s

Recast the title “Standardization of fertilizer dose for drip irrigated dragon fruit (Hylocereuspolyrhizus) on coastal soil”.
Correct the objective as ‘To optimize fertilizer dose through drip irrigation for dragon fruit’.
Take the treatments as:

<table>
<tr><th colspan="9">Fertilizer doses (g/pillar)</th></tr>
<tr><th>Nitrogen levels</th><th>1st two years</th><th>3rd year onwards</th><th>P_2O_5 levels</th><th>1st two years</th><th>3rd year onwards</th><th>K_2O levels</th><th>1st two years</th><th>3rd year onwards</th></tr>
<tr><td>N_1</td><td>150</td><td>340</td><td>P_1</td><td>25</td><td>175</td><td>K_1</td><td>25</td><td>150</td></tr>
<tr><td>N_2</td><td>200</td><td>450</td><td>P_2</td><td>50</td><td>350</td><td>K_2</td><td>50</td><td>300</td></tr>
<tr><td>N_3</td><td>250</td><td>565</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>N_4</td><td>300</td><td>675</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
<table>
<tr><th colspan="2">Treatment combinations (16)</th></tr>
<tr><td>N1P1K1
N1P1K2
N1P2K1
N1P2K2
N2P1K1
N2P1K2
N2P2K1
N2P2K2</td><td>N3P1K1
N3P1K2
N3P2K1
N3P2K2
N4P1K1
N4P1K2
N4P2K1
N4P2K2</td></tr>
</table>
System details
Lateral spacing – 2.5 m
Dripper per pillar – 2

Dripper discharge – 4 lph
Irrigation water will be applied at 0.4 PEF for 1st two years and at 0.6 PEF from 3rd year onwards
(Action: Research Scientist, SWMRU, NAU, Navsari)
</td></tr>
<tr><td>19.2.3.55</td><td>Effect of biochar and gypsum levels on yield of kharif transplanted rice and its residual effect on wheat crop on coastal salt affected soil</td><td>
Approved with following suggestion/s

Change the wheat variety.
T_{10} treatment imposed every year in the experiment.
Mention design as non-replicated large plot technique.

</td></tr>
</table>

		4. Add observation of total carbon. 5. Give the method/protocol for biochar preparation. (**Action**: Research Scientist, SWMRU, NAU, Navsari)
MRRC, Navsari		
19.2.3.56	Effect of biochar and fertilizer levels on yield of kharif transplanted rice and its residual effect on *rabi* Indian bean	**Approved with following suggestion/s** 1. Mention the time of emission. 2. Mention design as non-replicated large plot technique. (Action: Research Scientist, SWMRU, NAU, Navsari)
19.2.3.57	Effect of nano-urea on growth and yield of kharif transplanted rice (AICRIP)	**Approved with following suggestion/s** 1. Consider as AICRP trial only. (Action: Research Scientist, SWMRU, NAU, Navsari)
MSRS, NAU, Navsari		
19.2.3.58	Response of sugarcane planted through single eye budded settling to nano urea under south Gujarat condition	**Approved with following suggestion/s** 1. Protected spray of nano-urea application with flat fan / flood jet nozzle. 2. Add observation of chlorophyll content before and after nano urea application. 3. Add observation of NUE. (Action: Research Scientist, MSRS, NAU, Navsari)
Soil Science, Navsari		
19.2.3.59	Characterization of Biochar prepared from different plant residues and its enrichment with organic sources	**Approved with following suggestion/s** 1. Take "*Prosopisjuliflora"* residue instead of "brinjal stalk" residue in treatment S_4. 2. Add total organic carbon in the observation. (Action: Research Scientist, Soil Science, NAU, Navsari)
Pulse & Castor Research Station, Navsari		
19.2.3.60	Effect of growth regulators on yield of pigeon pea var. GT-104	**Approved with following suggestion/s** 1. Add observation of initial plant population and at harvest. 2. Mention 90 DAS and 120 DAS instead of flowering initiation stage and 100 % flowering stage, respectively in all the treatments. (Action: Nodal Officer (Megaseed) and Unit Head, PCRS, Navsari)
19.2.3.61	Effect of nano DAP on yield and yield attributes of mungbean	**Approved with following suggestion/s** 1. Recast the treatments as:- T_1 :Control (Absolute control) T_2: RDF T_3:75 % RDF + spray of nano DAP @ 2 ml/l at flowering T_4:75 % RDF + spray of nano DAP @ 2 ml/l at pod

		development T_5:75 % RDF + spray of DAP @ 2 % at flowering T_6:75 % RDF + spray of DAP @ 2 % at pod development T_7:50 % RDF + spray of nano DAP @ 2 ml/l at flowering T_8:50 % RDF + spray of nano DAP @ 2 ml/l at pod development T_9: 50 % RDF + spray of DAP @ 2 % at flowering T_{10}:50 % RDF + spray of DAP @ 2 % at pod development 2. Add observation of initial plant population and at harvest. 3. Mention nano DAP instead of nano nitrogen. (Action: Nodal Officer (Megaseed) and Unit Head, PCRS, Navsari)
MCRS, Surat		
19.2.3.62	Efficacy of polymer based Super absorbent on Bt. Cotton hybrid under rainfed condition	**Not Approved with following suggestion/s** 1. Take as filler trial. 2. Mention depth of application. 3. Compare Hydro gel with super absorbent in the experiment. (Action: Research Scientist, MCRS, Surat)
19.2.3.63	Effect of foliage spray of liquid nano urea on Cotton under irrigated condition	**Approved with following suggestion/s** 1. Add observation of plant population initial and at harvest. 2. Protected spray of nano-urea application with flat fan / flood jet nozzle. 3. Add observation of chlorophyll content before and after nano urea application. 4. Add observation of NUE. (Action: Research Scientist, MCRS, Surat)
19.2.3.64	Canopy management through plant growth regulator in Bt. Cotton hybrid under rainfed condition	**Approved with following suggestion/s** 1. Add plant population initial and at harvest in observation. 2. Add 60 cm x 30 cm one more treatment in spacing. (Action: Research Scientist, MCRS, Surat)
WRS, Bardoli		
19.2.3.65	Effect of foliar spray of urea and Nano-urea on the productivity of late-sown irrigated wheat	**Approved with following suggestion/s** 1. Add observation of initial plant population and at harvest. 2. In Treatment T_3, use 4 ml/l instead of 1.25 l/ha. 3. Protected spray of nano-urea application with flat fan / flood jet nozzle. 4. Add observation of chlorophyll content before

		and after nano urea application. 5. Add observation of NUE. (Action: ARS, WRS, Bardoli)
ARS, Mangrol		
19.2.3.66	Effect of foliar application of urea and nano urea on *rabi* grain sorghum	**Approved with following suggestion/s** 1. Protected spray of nano-urea application with flat fan / flood jet nozzle. 2. Spray at 35 DAS instead of 30 DAS in all treatments. 3. Add observation of chlorophyll content before and after nano urea application. 4. Add observation of NUE. 5. Write 50% RDN at basal in treatment T_3 and T_4. (Action: ARS, Mangrol)
Dept. of Agronomy, NMCA, Navsari		
19.2.3.67	Residue management of plant sugarcane and their effect on ratoon sugarcane under different fertilizer levels	**Approved with following suggestion/s** 1. Take four replications instead of three. 2. In treatment T_3, apply decomposer @ 1 kg/ha instead of 75ml/ha. 3. Correct the RDF of ratoon as 300: 62.5: 125 kg NPK/ha. (Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari)
19.2.3.68	Effect of pre and post emergence herbicides on direct seeded rice and their residual effect on succeeding crops	**Approved with following suggestion/s** 1. Add the treatments as: T_9: Petilachlor 6% + Pyrazosulfuron ethyl 0.15% GR (Ready mix) 615 g/ha at 0-5 DAS T_{10}: Penoxulam + Chalofop (Ready mix) 120 g/ha at 15-20 DAS T_{11}: Triafamone (20%) + Ethoxysulfuron(10%) (Ready mix 30% WG) 45 + 22.5 g/ha at15 DAS 2. Add phytotoxicity score observation at 7 and 14 days after spray 3. Record weed count group wise. 4. Record dry weight of weed at 60 DAS and at harvest. (Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari)
19.2.3.69	Response of fodder sorghum to cutting and nitrogen management under south Gujarat	**Approved with following suggestion/s** 1. Add observation of initial plant population and at harvest. 2. Add equivalent and dry fodder yield in observation.

	condition	3. In note-2, additional application of ½ dose of N for treatment C_2 and C_3 after first cut. (Action: Prof. & Head, Dept. of Agronomy, NMCA, Navsari)
Dept. of Soil Science and Agricultural Chemistry, NMCA		
19.2.3.70	Study on natural farming system in sugarcane for their economic feasibility and impact on soil health	**Approved with following suggestion/s** 1. Mention *Rabi* season instead of *kharif*. 2. Seed treatment of *Beejaamrit* @ 200ml/kg. 3. Take *GhanJivaamrit* 1500 kg/ha instead of 250kg/ha in Module-1. 4. Mention design as non-replicated large plot technique. (**Action**: Prof.& Head, Dept. of SSAC, NMCA, NAU, Navsari)
19.2.3.71	Study on natural farming system in rice for their economic feasibility and impact on soil health	**Approved with following suggestion/s** 1. Seed treatment of *Beejaamrit* @ 200ml/kg. 2. Mention design as non-replicated large plot technique. 3. Take *GhanJivaamrit* 500 kg/ha instead of 250 kg/ha in module-1. (Action: Prof.& Head, Dept. of SSAC, NMCA, NAU, Navsari)
19.2.3.72	Study on natural farming system in Indian bean for their economic feasibility and impact on soil health	**Approved with following suggestion/s** 1. Seed treatment of *Bijaamrut* @ 200ml/kg. 2. Mention design as non-replicated large plot technique. (**Action**: Prof.& Head, Dept. of SSAC, NMCA, NAU, Navsari)
19.2.3.73	Study on natural farming system in sorghum for their economic feasibility and impact on soil health	**Approved with following suggestion/s** 1. Seed treatment of *Bijaamrut* @ 200ml/kg. 2. Mention design as non-replicated large plot technique. 3. Take *GhanJivaamrit* 500 kg/ha instead of 250 kg/ha in module-1. (Action: Prof.& Head, Dept. of SSAC, NMCA, NAU, Navsari)
19.2.3.74	Study on natural farming system in green gram for their economic feasibility and impact on soil health	**Approved with following suggestion/s** 1. Seed treatment of *Bijaamrut* @ 200ml/kg. 2. Mention design as non-replicated large plot technique. (Action: Prof.& Head, Dept. of SSAC, NMCA, NAU, Navsari)

NRM, ACH, Navsari		
19.2.3.75	Study on comparison between organic and natural farming on crop productivity and soil health in rice based cropping system	**Approved with following suggestion/s** 1. Mention application of*Jivaamrit* 500 l/ha at 15 days interval. 2. Mention design as non-replicated large plot technique. (Action:Prof. & Head, Dept. of NRM, ACH, NAU, Navsari)
19.2.3.76	Response of sweet corn to different spacings and nutrient management	**Approved with following suggestion/s** 1. Remove economics from observation. 2. Add seed treatment before biofertilzer in treatment N_1 and N_3. (Action:Prof. & Head, Dept. of NRM, ACH, NAU, Navsari)
19.2.3.77	Microbial degradation of paddy straw under in situ condition	**Approved with following suggestion/s** 1. Mention methodology of *Glyricidia* leaf extract. (Action:Prof. & Head, Dept. of NRM, ACH, NAU, Navsari)
CoA, Waghai		
19.2.3.78	Response of Finger Millet based Intercropping systems under Rainfed Conditions	**Approved with following suggestion/s** 1. Recast title as "Response of finger millet based intercropping systems in hilly region of south Gujarat". 2. Remove LER from observation (Action:Professor& Head, Dept. of Agronomy, CoA, Waghai)
CoA/NARP/CRS, Bharuch		
19.2.3.79	Feasibility of Pigeon pea-small millets intercropping system under rainfed condition	**Approved with following suggestion/s** 1. Recast title as "Feasibility of pigeon pea based small millets intercropping system under rainfed condition". (Action: Prof. & Head, Dept. of Agronomy, CoA, Bharuch)

S. D. AGRICULTURE UNIVERSITY, S. K. NAGAR

NTP No.	Title	Suggestions
19.2.3.80	Establishment of critical limit of iron for groundnut in light textured soils of North Gujarat	**Approved with following suggestions:** 1. Add observation on number of root nodules per plant at 45 DAS 2. Mention fertilizer dose of groundnut i.e. 12.5:25:00 kg N:P_2O_5:K_2O/ha. 3. Take total number of soils : 20 instead of 15 (Low: 10, Medium: 06, High: 04). 4. Replace word "zinc" with "iron" in objective no. 2 and 3. **(**Action**:** Department of Agricultural Chemistry and Soil Science, CPCA, SDAU, Sardarkrushinagar**)**
19.2.3.81	Establishment of critical limit of zinc for wheat crop in soils of North Gujarat	**Approved with following suggestions:** 1. Recast treatment of Zn levels as T_1: 0 ppm Zn (Control), T_2: 2.5 ppm Zn, T_3: 5.0 ppm Zn and T_4: 10 ppm Zn. 2. Mention fertilizer dose of wheat i.e. 90:60:00 kg N:P_2O_5:K_2O/ha. 3. Take total number of soils: 20 instead of 15 (Low: 10, Medium: 06, High: 04). 4. Correct soil rating of Zn for Low: <0.5 ppm and Medium: 0.5 - 1.0 ppm. 5. Mention source of Zn. **(**Action: Bio Science Research Centre, SDAU, Sardarkrushinagar**)**
19.2.3.82	Establishment of critical limit of zinc for pearlmillet crop in soils of North Gujarat	**Not Approved** **(**Action: Bio Science Research Centre, SDAU, Sardarkrushinagar**)**
19.2.3.83	Evaluation of organic, inorganic and integrated production systems (AICRP- IFS trial)	**Approved with following suggestions:** 1. Considered as AICRP trial only. (Action: Research Scientist, Centre for Research on IFS, SDAU, Sardarkrushinagar)
19.2.3.84	Evaluation of response of different varieties of major crops for organic farming (AICRP- IFS trial)	**Approved with following suggestions:** 1. Considered as AICRP trial only. (Action: Research Scientist, Centre for Research on IFS, SDAU, Sardarkrushinagar)
19.2.3.85	Development of integrated organic farming system models (AICRP- IFS trial)	**Approved with following suggestions:** 1. Considered as AICRP trial only. (Action: Research Scientist, Centre for Research on IFS, SDAU, Sardarkrushinagar)

19.2.3.86	Evaluation of natural farming practices in different crop sequence	**Approved with following suggestions:** 1. Keep quantity of *Ghanjeevamrit*500kg/hain T_2 (Complete NF), 500kg/ha in T_3 (AI-NPOF package), 750kg/ha in T_4 (Complete NF)and 1000 kg/ha in T_5 (Complete NF) treatments. 2. Composition of different inputs used should be done. 3. Add observation on Bulk density at initial and after harvest of crop. (Action: Research Scientist, Centre for Research on IFS, SDAU, Sardarkrushinagar)
19.2.3.87	Effect of *in-situ* stalk management practices of castor on summer green gram	**Approved with following suggestions:** 1. Fertilizer dose of 20:40:00 kg N:P_2O_5:K_2O/ha to be given to greengram crop. 2. Mention in the foot note "Greengram crop sown immediately after incorporation of castor stalk". 3. Excel (Madhyam) waste decomposer to be used for decomposition of the castor stalk. 4. Add observations on Microbial count and Bulk density at initial and after harvest of crop. (Action: Research Scientist, Centre for Oilseeds Research, SDAU, Sardarkrushinagar)
19.2.3.88	Effect of coated urea on growth and yield of castor	**Approved with following suggestions:** 1. Add observation on N content (%) in plant and N use efficiency. **(**Action***:*** Research Scientist, Centre for Oilseeds Research, SDAU, Sardarkrushinagar)
19.2.3.89	Effect of coated urea on growth and yield of summer pearlmillet	**Approved with following suggestions:** 1. Add observation on N content (%) in plant and N use efficiency. **(**Action: Professor & Head (Agronomy), CPCA, SDAU, Sardarkrushinagar**)**
19.2.3.90	Effect of *in-situ* stalk management practices of pigeonpeaon summer greengram	**Approved with following suggestions:** 1. Fertilizer dose of 20:40:00 kg N:P_2O_5:K_2O/ha to be given to greengram crop. 2. Mention in the foot note "Greengram crop sown immediately after incorporation of castor stalk". 3. Excel (Madhyam) waste decomposer to be used for decomposition of the castor stalk. 4. Add observations on Microbial count and Bulk density at initial and after harvest of crop. **(**Action**:** Research Scientist, Pulses Research Station, SDAU, Sardarkrushinagar**)**

19.2.3.91	Response of coriander to different component of natural farming	**Approved** **(**Action: Research Scientist, Seed Spices Research Station, SDAU, Jagudan**)**
19.2.3.92	Response of dilseed to different component of natural farming	**Approved** **(**Action: Assistant Research Scientist, Agricultural Research Station, SDAU, Shihori**)**
19.2.3.93	Response of isabgul to different component of natural farming	**Approved with following suggestions:** 1. Keep treatments as per coriander experiment on natural farming (19.2.3.91). **(**Action: Assistant Research Scientist, Agricultural Research Station, SDAU, Kholwada**)**
19.2.3.94	Effect of seed rate and spacing on Isabgul	**Approved with following suggestions:** 1. Add one treatment R_4: 4.5 kg/ha in seed rate. 2. Add observation on "plant population at harvest" from 90 cm x 90 cm quadrate. **(**Action: Assistant Research Scientist, Agricultural Research Station, SDAU, Kholwada)
19.2.3.95	Evaluation of different component of natural farming for wheat under salt affected soil	**Approved with following suggestions:** 1. Recast title of experiment as "Evaluation of *jeevamrut* and *ghanjeevamrut* to wheat under salt affected soil". 2. Recast treatments of *GhanJeevamrut* as G_1: 1.0 t/ha, G_2: 1.5 t/ha and G_3: 2.0 t/ha. 3. Design: RBD with factorial concept. 4. Gross plot size: 5.0 m x 3.6 m **(**Action: Assistant Research Scientist, ARS, SDAU, Adiya**)**
19.2.3.96	Effect of sowing date and variety on growth and yield of summer groundnut	**Approved with following suggestions:** 1. Replace variety "GG 23" with "GJG 31". 2. Add observation on Days to maturity. 3. In title replace the word "date" with "time". **(**Action: Assistant Research Scientist, ARS, SDAUAseda**)**
19.2.3.97	Weed management in *kharif* groundnut under organic farming	**Approved with following suggestions:** 1. Recast treatment T_3: Fennel mulch 5.0 t/ha *fb*HW at 25 DAS. 2. Add observation on Weed flora composition,Weed density, Weed dry biomass at harvest and N, P, K content and uptake by plant and weed. 3. Define weed free treatment. 4. Seed treatment should be done with bio-fertilizers instead of *bijamrut.* **(**Action: Asstt. Res. Sci., ARS, SDAUAseda**)**
19.2.3.98	Feasibility of wheat intercropping in potato	**Not Approved** **(**Action: Asstt. Res. Sci., ARS, SDAU,Aseda**)**

19.2.3.99	Effect of coated urea on growth and yield of potato	**Approved with following suggestions:** 1. Add observation on N content (%) in plant and N use efficiency. **(**Action: Associate Research Scientist, Potato Research Station, SDAU, Deesa**)**
19.2.3.100	Evaluation of different components of natural farming for Sorghum-leafy coriander-groundnut cropping sequence	**Not Approved** **(**Action: Associate Research Scientist, CMR, SDAU, Deesa)
19.2.3.101	Study of intercropping of senna with major crops grown under rainfed condition of Kachchh	**Approved with following suggestions:** 1. Correct variety Senna as "AnandSenna 1". 2. Replace quantity of *GhanJeevamrut* "750 kg/ha" with "1000 kg/ha" in T_2 and "375 kg/ha" with "500 kg/ha" in T_7 for pearlmillet. **(**Action: Associate Research Scientist, RRS, SDAU, Bhachau**)**
19.2.3.102	Study of intercropping inpearlmillet with pulses under rainfed condition of Kachchh	**Approved with following suggestions:** 1. Keep quantity of *GhanJeevamrut* "1000 kg/ha" instead of 750 kg/ha in T_1. 2. *GhanJeevamrut* to be applied in the furrows at the time of sowing to be mentioned as footnote. **(**Action: Associate Research Scientist, RRS, SDAU, Bhachau**)**
19.2.3.103	Effect of PROM and bio-inoculants on green gram	**Approved with following suggestions:** 1. PROM used in experiment as input should be analyzed for Total P_2O_5 and water soluble P_2O_5. **(**Action: Senior Scientist and Head, KVK, SDAU, Deesa**)**
19.2.3.104	Response of coriander (*Coriandrumsativum* L.) to nano urea	**Not Approved** **(**Action: Senior Scientist and Head, KVK, SDAU, Deesa**)**
19.2.3.105	Effect of coated urea on growth and yield of Bt. cotton (*Gossypiumhirsutum* L.)	**Approved with following suggestions:** 1. Add observation on N content (%) in plant, N use efficiency and Urease enzyme activity. 2. Record observationson "pH, EC, OC (%), available N before and after harvest of crop. **(**Action: Associate Research Scientist, CRS, SDAU, Talod**)**
19.2.3.106	Effect of in-situ stalk management of Bt. cotton on summer greengram	**Approved with following suggestions:** 1. Fertilizer dose of 20:40:00 kg N:P_2O_5:K_2O/ha to be given to greengram crop. 2. Mention in the foot note "Greengram crop sown immediately after incorporation of cotton stalk". 3. Excel (Madhyam) waste decomposer to be

		used for decomposition of the castor stalk. 4. Add observation on Microbial count and Bulk density at initial and after harvest of crop. **(**Action: Associate Research Scientist, CRS, SDAU, Talod**)**
19.2.3.107	Evaluation of different components of natural farming for linseed	**Approved with following suggestions:** 1. Recast title of experiment as "Evaluation of *jeevamrut* and ghan*jeevamrut* in linseed undernatural farming". 2. Recast treatments of *GhanJeevamrut* as G_1: 1.0 t/ha, G_2: 1.5 t/ha and G_3: 2.0 t/ha. 3. Design: RBD with factorial concept. **(**Action: Assistant Professor, Dept. of Agronomy, CoA, SDAU, Tharad**)**
19.2.3.108	Assessment of percolation pit for reclamation of highly saline-alkali low land soil	**Approved with following suggestions:** 1. Delete name of Dr. R. L. Meena, Co-PI. 2. Consult Dr. N. K. Gontia and Dr. Rank, JAU,Junagadh for confirmation of the treatments. **(**Action: Assistant Professor, Department of Soil Science and Ag. Chem, CoA, SDAU, Tharad**)**
19.2.3.109	Impact of irrigation regimes and mulch on watermelon (*Citrullus lanatus* L.)	**Approved with following suggestions:** 1. Recast treatment M_2: Fennel mulch 5.0 t/ha. 2. In treatment M_3, keep quantity of mulch 5.0 t/ha instead of 4.0 t/ha. **(**Action: Research Scientist, CNRM, SDAU, Sardarkrushinagar**)**
19.2.3.110	Response of cotton to sowing time and topping under HDPS	**Approved** **(**Action: Asstt. Research Scientist, Cotton Res.l Centre , SDAU, Talod)

GENERAL SUGGESTIONS:

1. Plant population (initial and after harvest) should be recorded compulsorily in each experiment of Crop Production group.
2. The experiments which conducted on organic farming, chemical analysis of soil and plant samples should be carried out for micronutrients and heavy metals after completion of three years and at end of experiment.
3. If the suggestions of combined AGRESCO of Crop Production sub-committee is not incorporated, not permitted to present in Combine AGRESCO.
4. Soil analysis should be done at initial and after harvest for available nutrients in nutrient management experiments.
5. Carry out heavy metal analysis in organic farming/natural farming experiments where inputs are purchased from outside the farm.
6. Take nutrient management experiments on fixed site where residual effect of the treatments is to be studied.
7. Major focus should be given on cropping system while finalizing new experiments particularly for nutrient management.
8. There should be a uniform format of report for all four SAUs.

19.3 PLANT PROTECTION/ CROP PROTECTION

Chairman : Dr. Z. P. Patel, Hon. Vice Chancellor, NAU, Navsari

Co-Chairmen : Dr. C. M. Muralidharan, Director of Research, SDAU, SK Nagar

: Dr. K. B. Rakholiya, Prof. & Head (Pl. Patho.), NMCA, NAU, Navsari

Rapporteurs : Dr. D. B. Sisodiya, AAU, Anand

: Dr. M. K. Ghelani, JAU, Junagadh

: Dr. P. R. Patel, NAU, Navsari

: Dr. P. S. Patel, SDAU, SK Nagar

Statistician : Dr. A. D. Kalola, Professor & Head, AAU, Anand

Name of Conveners of SAUs

Sr. No.	Name	University
1.	Dr. R. K. Thumar	AAU, Anand
2.	Dr. D. S. Kelaiya	JAU, Junagadh
3.	Dr. Hemant Sharma	NAU, Navsari
4.	Dr. R. S. Jaiman	SDAU, Sardarkrushinagar

The meeting of 19th Combined AGRESCO Plant Protection Sub Committee regarding "Recommendation for Farmers and Scientific Community as well as New Technical Programmes" was held during 25-27th April, 2023 through virtual mode.

At the outset, Dr. Lalit Mahatma, Associate Director of Research, NAU, Navsari welcomed Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari, Co-Chairmen, Conveners, Rapporteurs and all the members of 19th Combined AGRESCO Plant Protection Sub Committee.

In the welcome speech, Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari and Chairman of the Combined Joint AGRESCO meeting of Plant Protection Sub-committee, in his introductory remarks requested all the conveners and members for their active participation in fruitful discussion on the recommendations and new technical programmes to get sustainable technology for the farmers of Gujarat. The chairman pointed out that the Plant Protection Sub-Committee (PPSC) is one of the most important and vibrant group of all four SAU's of Gujarat. Scientists of the group are directly involved with the farmer's in resolving their day-to-day farming problems which affect their food, livelihood, and socio-economic status and environment.

He also explained the major concern for farmers is pests and diseases, which regardless of any production system adopted is common.

He further said that in present scenario, we are facing problems of many invasive insect pests and devastating diseases. There are many reasons of their introduction; however, global trade and climate change are main reason. We need to focus on this so that their entry is prevented or if entered due to any means, their further spread must be restricted.

In recent years, the scientists of this group have faced the problems of introduced pests, Black thirps, American pin worm, Fall army worm and Rugose spiraling whitefly *etc.* are very important insect pests and scientist should regularly monitor their population and inform the stakeholders so that they can timely take necessary management strategies of these invasive pests. Similarly, in diseases, sudden decline in mango, panama wilt in banana, wilt in pomegranate, and southern rice black-streaked dwarf virus (SRBSDV), a viral disease, behind the stunting of paddy plants should also in keen interest. Plant protection scientists need to critically explore the new areas to manage invasive pests and diseases in effective and economic ways.

The chairman urged all the scientists to transform today's challenges into opportunities by developing cost effective, easily adaptable, and farmer-oriented technologies. Further, the chairman suggested that this group will work to minimize the problems of hazardous pesticides by adopting some eco-friendly approaches and work on some other alternative ways of pest management as well as multidisciplinary integration including use of information and communication technology (ICT) and farmer participatory research. He said that we should also think about the research work on crop protection include biochar, bacteriophages, biofumigation, biotechnological approaches, bio-priming of seeds, leaf coating, non-pathogenic strains, pathogenesis-related proteins, RNA interference, fusion protein-based biopesticides, and seed mat technology.

He emphasized that our recommendations must be easy to understand and crystal-clear in the language without any ambiguity. We must guide our farmers so that they will implement the plant protection measures in time thereby losses can be minimized. Lastly, the chairman also gives emphasis to strengthen new technical programmes by giving scientific and valid suggestions instead of asking undue questions.

He also narrated that as plant protectionist, we must understand that "protecting plant health can help our war against hunger, reduce poverty, protect biodiversity and the environment, and boost economic development." This was followed by the presentation of recommendations and new technical programmes by conveners of SAUs.

Summary

Name of University	No. of Recommendations				New Technical Programs	
	Farming community		Scientific community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	08	08	31	28 (3[&])	43	43
JAU	05	05+1*	05	04	30	30
NAU	12	08	06	06+ 04**	20	20
SDAU	14	12	07	09 (2[**]+3[#]-3[&])	36	36
TOTAL	**39**	**34**	**49**	**51**	**129**	**129**

*** Shifted to "Farmers recommendation" from "Scientific Information"**
****Shifted to "Scientific information" from "Farmers recommendation"**
[#]Split from 'Farmers recommendation' to 'Scientific information'
[&] Not Approved

19.3.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

AGRICULTURAL ENTOMOLOGY	
19.3.1.1	**Influence of habitat manipulation on incidence and severity of pest damage in cabbage**
	Farmers of Gujarat growing cabbage are recommended to grow cabbage with vegetable cowpea as intercrop (5:1 rows) and one row of fodder oats as border crop or cabbage with oats as border crop to manage the population of aphids and diamond back moth (DBM), which enhances the natural enemies (*Coccinellids* and *Chrysoperla*) of insect pests infesting cabbage. ગુજરાતમાં કોબીજની ખેતી કરતા ખેડૂતોએ મોલો-મશી અને હીરાફૂદાની ઇયળના વ્યવસ્થાપન માટે કોબીજની પાંચ હાર પછી એક હાર શાકભાજી ચોળીની આંતરપાક તરીકે અને કોબીજના પાક ફરતે એક હાર ઘાસચારા માટેના ઓટની વાવણી અથવા કોબીજના પાક ફરતે એક હાર ઘાસચારા માટેના ઓટની વાવણી કરવાથી કોબીજના પાકમાં નુકસાન કરતી જીવાતોના કુદરતી દુશ્મનો (દાળીયા અને લીલીપોપટી)ની સંખ્યામાં વધારો થાય છે. **Approved with following suggestions:** 1. Include T_5 in recommendation text 2. Remove "organic and natural farming" from English and "સેન્દ્રિય અને પ્રાકૃતિક" from Gujarati recommendation 3. Mention name of natural enemies in recommendation text [Action: Principal Research Scientist, AICRP on Biological Control of Crop Pests, AAU, Anand]

19.3.1.2 Effect of insecticidal hydropriming on sucking pests of mungbean

Farmers of Gujarat growing mungbean in summer season are recommended to prime one kg of seeds for 5 hrs with imidacloprid 17.8 SL @ 2.5 ml in 1.25 litre water followed by drying under shade for 12 hrs. for effective to manage infestation of sucking insect-pests *viz*., thrips, jassid and whitefly up to 30 days after sowing which resulted in higher seed yield and plant vigour.

As per CIB RC Format

Year	Crop	Pests	Technical	Dosage				Application	Waiting periods/ PHI (days)
				g a.i.	Quantity of formulation/ ha	Conc (%)	Dilution in water (10 liter)		
2023	Mung bean	Thrips, jassid, whitefly	Imidacloprid 17.8 SL	10	50 ml	0.04	-	Seed treatment before sowing	-

ગુજરાતમાં ઉનાળામાં મગની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઈમીડાક્લોપ્રીડ ૧૭.૮ એસ.એલ.ને ૨.૫ મિ.લિ. પ્રતિ કિ.ગ્રા. બીજ પ્રમાણે ૧.૨૫ લિટર પાણીમાં મિશ્રણ કરી, બીજને ૫ કલાક સુધી બોળી અને ત્યારબાદ બીજને ૧૨ કલાક છાંયડામાં સૂકવી વાવેતર કરવાથી ૩૦ દિવસ સુધી મગમાં નુકસાન કરતી ચુસિયાં પ્રકારની જીવાતો જેવી કે થ્રીપ્સ, તડતડીયાં અને સફેદમાખીનો ઉપદ્રવ ઓછો રહે છે તેમજ ઉત્પાદન અને છોડની વૃદ્ધિમાં વધારો કરી શકાય છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાતો	કીટનાશક	પ્રમાણ				પ્રતિક્ષા સમય/ દિવસ	રીમાર્ક
				સ.ત. ગ્રામ/હે.	માત્રા (%)	કીટનાશકનું પ્રમાણ (કિ.ગ્રા./હે)	છંટકાવનો સમય		
૨૦૨૩	મગ	થ્રીપ્સ, તડતડીયાં, સફેદમાખી	ઈમીડાક્લોપ્રીડ ૧૭.૮ એસ.એલ.	૧૦	૦.૦૪	૫૦	બીજ માવજત		

Suggestions: Approved

[Action: Assistant Research Scientist (Ento.), Regional Research Station, AAU, Anand]

19.3.1.3 Efficacy of granular insecticides against major insect-pests of rice

The rice growers of Gujarat are recommended to use ready-mix granular insecticide chlorantraniliprole 0.50% + thiamethoxam 1.00% GR, 6.0 kg or chlorantraniliprole 0.4% GR, 10 kg or flubendiamide 0.7% GR, 14.28 kg/ha

mixed with sand (25 kg/ha) and apply at 40 days after transplanting for effective management of yellow stem borer, leaf folder and white backed plant hopper.

As per CIB RC Format

Year	Crop	Pests	Insecticide with formulation	Dosage			Appl. Schedule	Waiting period/ PHI (Days)	Remarks
				g a.i./ ha	Conc (%)	Quantity of formulation (kg/ha)			
2023	Rice	Yellow stem borer, leaf folder and white backed plant hopper	Chlorantraniliprole 0.50% + thiamethoxam 1.00% GR OR	90	-	6.0	40 days after transplanting	60	Approximately 25 kg sand/ha required to mix with the granular insecticides
			Chlorantraniliprole 0.4% GR OR	40	-	10.0		53	
			Flubendiamide 0.7% GR	100	-	14.28		25	

ગુજરાતમાં ડાંગરની ખેતી કરતા ખેડૂતોને ગાભમારાની ઈયળ, પાન વાળનાર ઈયળ અને સફેદ પીઠવાળા ચુસિયાંના અસરકારક વ્યવસ્થાપન માટે દાણાદાર કીટનાશકના તૈયાર મિશ્રણ ક્લોરાન્ટ્રાનિલિપ્રોલ ૦.૫% + થાયામીથોક્ઝામ ૧.૦% જીઆર, ૬.૦ કિ.ગ્રા. અથવા ક્લોરાન્ટ્રાનિલિપ્રોલ ૦.૪% જીઆર, ૧૦.૦ કિ.ગ્રા. અથવા ફ્લુબેન્ડીયામાઈડ ૦.૭% જીઆર, ૧૪.૨૮ કિ.ગ્રા. પ્રતિ હેક્ટર પ્રમાણે લઇ રેતી (૨૫ કિ.ગ્રા./હે.) સાથે મિક્ષ કરી રોપણીના ૪૦ દિવસ બાદ પુંખવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાતો	કીટનાશક	પ્રમાણ			કીટનાશક આપવાનો સમય	પ્રતિક્ષા સમય/ દિવસ	રીમાર્ક
				સ.ત. ગ્રામ/ હે.	માત્રા (%)	કીટનાશક નું પ્રમાણ (કિ.ગ્રા./હે)			
૨૦૨૩	ડાંગર	ગાભમારાની ઈયળ, પાન વાળનાર ઈયળ અને સફેદ પીઠવાળા ચુસિયા	ક્લોરાન્ટ્રાનિલિપ્રોલ ૦.૫% + થાયામીથોક્ઝામ ૧.૦% જીઆર અથવા	૯૦	-	૬.૦	રોપણીના ૪૦ દિવસ બાદ દાણાદાર કીટનાશક આપવું	૬૦	આશરે૨૫ કિ.ગ્રા./હે. મુજબ રેતી સાથે દાણાદાર કીટનાશક ભેળવી પુંખવું
			ક્લોરાન્ટ્રાનિલિપ્રોલ ૦.૪% જીઆર અથવા	૪૦	-	૧૦.૦		૫૩	
			ફ્લુબેન્ડીયામાઈડ ૦.૭% જીઆર	૧૦૦	-	૧૪.૨૮		૨૫	

Suggestions: Approved

[Action: Assistant Research Scientist (Ento.), Main Rice Research Station, AAU, Nawagam]

19.3.1.4 **Effect of sowing periods on the incidence of castor capsule borer, *Dichocrosis punctiferalis* Guenee**

Farmers of middle Gujarat growing castor are recommended to sow the crop during 4th week of August to 2nd week of September to minimize the incidence of capsule borer and securing higher yield.

મધ્ય ગુજરાતમાં દિવેલાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે દિવેલાની વાવણી ઓગષ્ટના ચોથા અઠવાડિયાથી સપ્ટેમ્બરના બીજા અઠવાડિયા સુધીમાં કરવાથી ડોડવા કોરી ખાનાર ઇયળનો ઉપદ્રવ ઓછો રહે છે તથા ઉત્પાદન વધુ મેળવી શકાય છે.

Approved with following suggestions:

1. Remove scientific name of pest from English recommendation text
   [Action: Assistant Research Scientist (Ento.), Agricultural Research Station, AAU, Sansoli]

19.3.1.5 **Evaluation of organic inputs for management of mustard aphid, *Lipaphis erysimi* (Kaltenbach)**

Farmers of Gujarat growing mustard are recommended to spray Neem Seed Kernel Extract 5% (500 g kernels/10 litre water) mixed with sticker 0.1% (10 ml/ 10 litre of water) at starting of colony formation of aphid and subsequent two sprays at 10 days interval from first spray for effective management of aphid.

As per CIB RC Format

Year	Crop	Pest	Organic inputs	Dosage				Application schedule	Waiting period/ PHI (days)	Rema-rks
				Conc (%)	Dose/ 10 lit (g/ml)	Quantity of formulation/ ha	Dilution in water			
2022-23	Mustard	Aphid	NSKE	5	500	25 kg	500 litres	First spray at starting of colony formation of aphid and subsequent two sprays at 10 days interval from first spray	-	-

ગુજરાતમાં રાઈની ખેતી કરતા ખેડૂતોને મોલો-મશીના અસરકારક વ્યવસ્થાપન માટે લીંબોળીના મીંજનો અર્ક ૫ % (૫૦૦ ગ્રામ મીંજ/૧૦ લિટર પાણીમાં) સ્ટીકર ૦.૧% (૧૦ મિ. લિ. /૧૦ લિટર પાણી) પ્રમાણે ભેળવી પ્રથમ છંટકાવ મોલો-મશીની વસાહતની શરૂઆત થાય ત્યારે અને ત્યારબાદ બે છંટકાવ, પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	ઓર્ગેનિક ઈનપુટ	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષા સમય/ દીવસ	રીમાર્ક
				માત્રા (%)	માત્રા/ ૧૦ લિ. (ગ્રા./મિ લિ)	કીટનાશક નું પ્રમાણ/ હે.	પાણી			
૨૦૨૨-૨૩	રાઈ	મોલો-મશી	લીંબોડીના મીંજનો અર્ક	૫	૫૦૦ ગ્રામ	૨૫ કી. ગ્રા	૫૦૦ લિટર	પ્રથમ છંટકાવ મોલો-મશીની વસાહતની શરૂઆત થાય ત્યારબાદ બે છંટકાવ પ્રથમ છંટકાવના ૧૦ દીવસના આતરે કરવો	--	--

Approved with following suggestions:

1. Remove "organic and natural farming" and "in mustard" from English and "સેન્દ્રિય અને પ્રાકૃતિક" from Gujarati recommendation text
2. In CIB table correct quantity of formulation/ha to 25 kg instead of 10 kg
3. Add sticker
4. In table mention aphid index per plant

[Action: Assistant Professor, Department of Entomology, CoA, AAU, Vaso]

19.3.1.6 Decontamination study of pesticides in okra

For dislodging of pesticide residues in okra fruits, any of the following household methods is used.

Washing of okra fruits under running tap water for a minute followed by soaking in the 5% NaCl aqueous solution for 10 minutes and again washing under running tap water for a minute effectively dislodge the residues of flubendiamide (91.95%), lambda-cyhalothrin (82.02%), profenophos (79.53%), quinalphos (76.98%), acetamiprid (63.27%), imidacloprid (56.45%) and ethion (47.15%).

OR

Washing of okra fruits under running tap water for a minute followed by soaking in 1% NaCl aqueous solution for 10 minutes and again washing under running tap water for a minute also found effective in dislodging residues of flubendiamide (86.21%), quinalphos (66.32%), lambda-cyhalothrin (56.74%), profenophos (49.61%), imidacloprid (41.94%), ethion (17.41%) and acetamiprid (11.22%).

OR

Washing of okra fruits under running tap water for a minute followed by soaking the okra fruits in 5% $NaHCO_3$ and again washing under running tap water for a minute also found effective for dislodging the flubendiamide, lambda-cyhalothrin, profenophos, quinalphos, acetamiprid, imidacloprid and ethion in the range of 14 to 83%.

	ભીંડામાં કિટનાશકોના અવશેષો ઓછા કરવા માટે નીચે આપેલ પૈકી કોઇ પણ એક ઘરઘથ્થુ પધ્ધતિ અપનાવવા ઉપભોગતા માટે ભલામણ કરવામાં આવે છે. ભીંડાને ચાલુ નળે એક મીનીટ સુધી ધોયા બાદ ૫% મીઠાના દ્રાવણમાં ૧૦ મીનીટ સુધી ડુબાડી રાખ્યા બાદ ફરીથી ચાલુ નળે એક મીનીટ સુધી ધોવાથી ફ્લ્યુબેંડીયામાઇડ, લેમ્બડા-સાયહેલોથ્રીન, પ્રોફેનોફોસ, ક્વીનાલફોસ, એસીટામીપ્રીડ, ઇમીડાક્લોપ્રીડ અને ઇથીઓન જેવી કીટનાશકોના અવશેષો અંદાજીત ૪૭-૯૧% સુધી ઓછા કરી શકાય છે. **અથવા** ભીંડાને ચાલુ નળે એક મીનીટ સુધી ધોયા બાદ ૧% મીઠાના દ્રાવણમાં ૧૦ મીનીટ સુધી ડુબાડી રાખ્યા બાદ ફરીથી ચાલુ નળે એક મીનીટ સુધી ધોવાથી ફ્લ્યુબેંડીયામાઇડ, લેમ્બડા-સાયહેલોથ્રીન, પ્રોફેનોફોસ, ક્વીનાલફોસ, એસીટામીપ્રીડ, ઇમીડાક્લોપ્રીડ અને ઇથીઓન જેવી કીટનાશકોના અવશેષો અંદાજીત ૧૧-૮૬% સુધી ઓછા કરી શકાય છે. **અથવા** ભીંડાને ચાલુ નળે એક મીનીટ સુધી ધોયા બાદ ૫% ખાવાના સોડાના દ્રાવણમાં ૧૦ મીનીટ સુધી ડુબાડી રાખ્યા બાદ ફરીથી ચાલુ નળે એક મીનીટ સુધી ધોવાથી ફ્લ્યુબેંડીયામાઇડ, લેમ્બડા-સાયહેલોથ્રીન, પ્રોફેનોફોસ, ક્વીનાલફોસ, એસીટામીપ્રીડ, ઇમીડાક્લોપ્રીડ અને ઇથીઓન જેવી કીટનાશકોના અવશેષો અંદાજીત ૧૪-૮૩% સુધી ઓછા કરી શકાય છે. **Approved with following suggestions:** 1. Give names of insecticides in recommendation 2. In Gujarati text, replace "**આમ જનતા** with "**ઉપભોગતા**" [Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand]
Plant Pathology and Nematology	
19.3.1.7	**Effect of different supplementations on growth and yield of oyster mushroom**
	The oyster mushroom (*Pleurotus sajor-caju*) growers of Gujarat are recommended to supplement one kg of paddy dry substrate with 60 g of pre-sterilized groundnut or chickpea haulm or rice husk to get higher yield and income.

ગુજરાતમાં ઢીંગરી મશરૂમ (*પ્લુરોટસ સજોર-કાજુ*)ની ખેતી કરતાં ખેડૂતોને મશરૂમનું વધારે ઉત્પાદન અને આવક મેળવવા માટે ૧ કિ.ગ્રા. ડાંગરના સૂકા પરાળ સાથે ૬૦ ગ્રામ પ્રમાણે પૂરક તરીકે નિર્જીવીકરણ કરેલ મગફળી અથવા ચણાનું ગોતર અથવા ડાંગરની ફોતરી ઉમેરવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestions:

1. In Gujarati text, mention scientific name of mushroom and replace "નફો" with "આવક"
2. Correct control treatment in table 1 and 2 and check economics of the treatment
3. In recommendation text mention groundnut and chickpea haulm first followed by rice
4. Remove wheat substrate

[Action: Professor & Head, Department of Plant Pathology, BACA, AAU, Anand]

19.3.1.8 **Evaluation of nematicides for the management of root-knot nematodes in tomato**

Farmers growing tomato in Gujarat are recommended to drench fluopyram 34.48% SC @ 500 g a.i./ha at one day after transplanting for the effective management of root-knot nematodes. For this, prepare water solution by mixing 2.08 ml fluopyram 34.48% SC in the 10 litre water and drench 200 ml solution per plant near the root zone area.

As per CIB RC Format

Year	Crop	Disease	Formulation	Dosage				Application schedule	Waiting period/ PHI (Days)
				g. a.i./ ha	Quantity of formulation/ha	Conc. (%)	Dilution in water (10 l)		
2023	Tomato	Root-knot disease	Fluopyram 34.48 % SC	500	1250 ml	-	-	Drenching one day after transplanting	5

ગુજરાતમાં ટામેટાની ખેતી કરતા ખેડૂતોને ગંઠવા કૃમિના અસરકારક વ્યવસ્થાપન માટે ફ્લુઓપાયરમ ૩૪.૪૮% એસ.સી. ૫૦૦ ગ્રામ સક્રિય તત્વ પ્રતિ હેકટર પ્રમાણે ફેરરોપણીના બીજા દિવસે આપવાની ભલામણ કરવામાં આવે છે. આ માટે ૧૦ લિટર પાણીમાં ૨.૦૮ મિ. લિ. ફ્લુઓપાયરમ ૩૪.૪૮% એસ.સી. મિશ્ર કરી દ્રાવણ બનાવવું અને છોડ દીઠ ૨૦૦ મિ.લિ. દ્રાવણ મુળની

આજુબાજુ જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	કૃમિનાશક દવાનું સ્વરૂપ	પ્રમાણ				માવજતનો સમય	પ્રતિક્ષા સમય/ દિવસ
				સક્રિય તત્વ ગ્રામ /હેક્ટર	ફોર્મ્યુલેશન ની માત્રા પ્રતિ હેક્ટર	સંદ્રતા (%)	પાણીનું પ્રમાણ (૧૦ લિ)		
૨૦૨૩	ટામેટા	ગાંઠવા કૃમિનો રોગ	ફ્લુઓપાયરમ ૩૪.૪૮% એસ સી	૫૦૦	૧૨૫૦ મિ.લિ.	-	-	ફેરરોપણી ના એક દિવસ પછી દરેડવું	૫

Approved with following suggestions:

1. In Gujarati text, replace "ટામેટી" with "ટામેટા"
2. Give dose of nematicides/ 10 litre of water & recast the recommendation accordingly
3. Check CD and S.Em value of pooled in Table 1

[Action: Professor & Head, Department of Nematology, BACA, AAU, Anand]

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AGRICULTURAL ENTOMOLOGY

19.3.1.9 Bio-efficacy of insecticides against leaf eating caterpillar, *Spodoptera litura* Fab. infesting soybean

The farmers of Gujarat growing soybean are recommended to spray spinetoram 11.70 SC, 0.011% (9 ml/10 l of water) or emamectin benzoate 1.9 EC, 0.002% (8.5 ml/10 l of water), first at the initiation of pest infestation and second spray at 15 days after first spray, for effective and economical management of leaf eating caterpillar.

As per CIB & RC Format

Year	Crop	Pest	Pesticides/ Bio-pesticides formulation	Dosage				Quantity of water/ Soil amen-dments required (kg or l/ha	Applica-tion schedule	Waiting period/ PHI (days)
				a.i. (g/ha)	Quantity of formulation g or ml/kg seed, kg or l/ha	Con. (%)	Quantity of formulation in 10 l of water (g or ml)			
2022-23	Soybean	Leaf eating cater-pillar, *S. litura*	Spinetoram 11.70 SC	53	0.450 l	0.011	9 ml	500 l	First spray at initiation of pest infestation, second spray at 15 days interval after first spray	30
			Emamectin benzoate 1.9 EC	8	0.425 l	0.002	8.5 ml			20

ગુજરાતમાં સોયાબીનની ખેતી કરતા ખેડૂતોને લશ્કરી ઈયળના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે સ્પીનેટોરામ ૧૧.૭૦ એસસી, ૦.૦૧૧% (૯ મિ.લી./૧૦ લી. પાણીમાં) અથવા એમામેકટીન બેન્ઝોએટ ૧.૯ ઈસી, ૦.૦૦૨% (૮.૫ મિ.લી./૧૦ લી. પાણીમાં), પ્રથમ છંટકાવ જીવાત દેખાય ત્યારે અને ત્યારબાદ બીજો છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી અને આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુઘ્ન / જૈવિક જંતુઘ્નનું સ્વરૂપ	પ્રમાણ				પાણી/જમીન સુધારકો નો જથ્થો (કિ.ગ્રા. અથવા લી./હે)	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ / પી.એચ. આઈ. (દિવસ)
				સક્રિય તત્વ (ગ્રામ/હે)	ફોમ્યુલેશન નો જથ્થો ગ્રામ અથવા મિલી/કિ.ગ્રા. બીજ, કિગ્રા અથવા લી./હે.	સાંદ્રતા (%)	૧૦ લિટર પાણીમાં જરૂરી ફોમ્યુલેશન નો જથ્થો (ગ્રામ અથવા મિલી)			
૨૦૨૨-૨૩	સોયાબીન	લશ્કરી ઈયળ	સ્પીનેટોરામ ૧૧.૭૦ એસસી	૫૩	૦.૪૫૦ **લી.**	૦.૦૧૧	૯ મિ.લી.	૫૦૦ લી.	પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ શરૂ થયે અને ત્યારબાદ બીજો છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના અંતરે	૩૦
			એમામેકટીન બેન્ઝોએટ ૧.૯ ઈસી	૮	૦.૪૨૫ **લી.**	૦.૦૦૨	૮.૫ મિ.લી.			૨૦

Approved with following suggestions:

1. Recommendation to be made for entire Gujarat
2. Mention PHI of both insecticide in CIBRC format
3. Correct CV % in table.1
4. Check Additional income in economics
5. Remove DNMRT from table

(Action: Professor & Head, Department of Entomology, JAU, Junagadh)

19.3.1.10 **Effect of detopping on defoliators and stem rot in *kharif* groundnut**

The farmers of South Saurashtra Agro-climatic Zone growing groundnut in *Kharif* season are recommended to detop the crop 5 cm in length from the top at 30 days after sowing for effective and economical management of defoliators *viz; Helicoverpa* & *Spodoptera*.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ચોમાસું ઋતુમાં મગફળીની ખેતી કરતા ખેડૂતોને પાન ખાનાર ઇયળો જેવી કે લીલી અને લશ્કરી ઇયળનાં અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે વાવેતરના ૩૦ દિવસ પછી પાકને ૫ સેમી ટોચથી કાપવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestions:

1. Shift to scientific information
2. Verify no. of pegs in table
3. Removing detopping of 30, 40 and 60 DAS in every table

(Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

19.3.1.11 **Management of mealybug, *Maconellicoccus hirsutus* Green infesting custard apple**

The farmers of South Saurashtra Agro-climatic Zone having custard apple orchards are recommended to apply two sprays of fenobucarb 50 EC, 0.1% (20 ml/10 l of water) or first spray of *Beauveria bassiana* 1.15 WP (Min. 1 x 10^8 cfu/g) 0.007% (60 g/10 l of water) followed by second spray of fenobucarb 50 EC, 0.1% (20 ml/10 l of water), first at initiation of pest infestation and second at 15 days after first spray for the effective management of mealybug.

As per CIB & RC Format

Year	Crop	Pest	Pesticides/ Biopesticides formulation	Dosage				Quantity of water/ Soil amen-dments required (kg or l/ha	Application schedule	Wait-ing period / PHI (days)
				a.i. (g/ha)	Quantity of formulation g or ml/kg seed, kg or l/ha	Con. (%)	Quantity of formulation in 10 l of water (g or ml)			
2023	Custard apple	Mealy bug	Fenobucarb 50 EC	--	1.4 l	0.10	20 ml	700 l	First spray at initiation of pest infestation and second spray at 15 days after first spray	09
			Beauveria bassiana 1.15 WP	--	4.2 kg	0.007	60 g			--

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સીતાફળના બગીચા ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મીલીબગ (ચીકટો)ના અસરકારક વ્યવસ્થાપન માટે ફેનોબ્યુકાર્બ ૫૦ ઈસી (૨૦ મિ.લી./૧૦ લીટર પાણી) ના બે છંટકાવ અથવા પ્રથમ છંટકાવ જંતુનાશક બ્યુવેરિયા બાસીયાના ૧.૧૫ ડબલ્યુપી (ન્યુનતમ ૧ x ૧૦૮ સીએફયુ/ગ્રામ) ૦.૦૦૭% (૬૦ ગ્રામ/૧૦ લીટર પાણી) અને ત્યારબાદ બીજો છંટકાવ ફેનોબ્યુકાર્બ ૫૦ ઈસી (૨૦ મિ.લી./૧૦ લીટર પાણી), પ્રથમ જીવાતનો

ઉપદ્રવ શરુ થયે અને ત્યારબાદ બીજો, પ્રથમ છાંટકાવના ૧૫ દિવસ પછી કરવો.

સીઆઈબી અને આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુઘ્ન / જૈવિક જંતુઘ્નનું સ્વરૂપ	પ્રમાણ				પાણી/ જમીન સુધારકોનો જથ્થો (કિ.ગ્રા. અથવા લી./હે)	વાપરવા ની પધ્ધતિ	વેઇટીંગ પીરીયડ / પી.એચ આઈ. (દિવસ)
				સક્રિય તત્વ (ગ્રામ/ હે)	ફોમ્યુલેશનનો જથ્થો ગ્રામ અથવા મિલી/કિ.ગ્રા. બીજ, કિગ્રા અથવા લી./હે.	સાંદ્રતા (%)	૧૦ લિટર પાણીમાં જરૂરી ફોમ્યુલેશન નો જથ્થો (ગ્રામ અથવા મિલી)			
૨૦૨૩	સીતા-૬૦૧	મીલી બગ (સીકરો)	ફેનોબ્યુકાર્બ ૫૦ ઈસી	--	૧.૪ લી.	૦.૧૦	૨૦ મિ.લી.	૭૦૦ લી.	પ્રથમ છંટકાવ જીવાત નો ઉપદ્રવ શરુ થયે અને ત્યારબાદ બીજો છંટકાવ, પ્રથમ છંટકાવ ના ૧૫ દિવસના અંતરે	૦૯
			બ્યુવેરિયા બાસીયાના ૧.૧૫ ડબલ્યુપી	--	૪.૨ કિ.ગ્રા.	૦.૦૦૭	૬૦ ગ્રામ			--

Approved with following suggestions:

1. Correct methodology
2. Mention PHI of insecticide in CIBRC format
3. Mention NBAIR strain in place of AAU strain in table footnote
4. Check concentration of T3, T4 and T5
5. **Approved as Ad-hoc farmer recommendation**

(Action: Principal & Dean, CoH, JAU, Junagadh)

PLANT PATHOLOGY

19.3.1.12 **Efficacy of ready-mix formulation of fungicides against foliar diseases of cumin**

The farmers of Saurashtra region growing cumin are recommended to spray metiram 55 + pyraclostrobin 5 WG, 0.180% (30 g/10 l of water) or pyraclostrobin 13.3 + epoxiconazole 5 SE, 0.027% (15 ml/10 l of water) for blight and metiram 55 + pyraclostrobin 5 WG, 0.180% (30 g/10 l of water) for powdery mildew disease, first at 30 days after sowing and subsequent two sprays at an interval of 20 days for effective and economical management.

As per CIB & RC Format

Year	Crop	Pest	Pesticides/ Biopesticides formulation	Dosage: a.i. (g/ha)	Dosage: Quantity of formulation g or ml/kg seed, kg or l/ha	Dosage: Con. (%)	Dosage: Quantity of formulation in 10 l of water (g or ml)	Quantity of water/ Soil amen-dments required (kg or l/ha	Application schedule	Waiting period/ PHI (days)	Remarks
2023	Cumin	Blight & Powdery mildew diseases	Metiram 55 + Pyraclostrobin 5 WG	900	1.5 kg	0.180	30 g	500 l	First spray at 30 DAS and subsequent two sprays at an interval of 20 days	20	This fungicide is registered in CIB- RC for blight and Powdery mildew diseases in cumin crop
			Pyraclostrobin 13.3 + Epoxiconazole 5 SE	137.25	0.750 l	0.027	15 ml	500 l		22	This fungicide is registered in CIB- RC for blight disease in cumin crop

*DAS = Days after sowing

સૌરાષ્ટ્ર વિસ્તારમાં જીરૂની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, જીરૂનાં પાકમાં કાળી ચરમી રોગના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે મેટીરામ ૫૫ + પાયરેકલોસ્ટ્રોબીન ૫ ડબલ્યુજી, ૦.૧૮૦% (૩૦ ગ્રામ/૧૦ લીટર પાણી) અથવા પાયરેકલોસ્ટ્રોબીન ૧૩.૩ + ઈપોક્ષીકોનાઝોલ ૫ એસઈ, ૦.૦૨૭% (૧૫ મિ.લી./૧૦ લીટર પાણી) તેમજ ભૂકીછારા રોગ માટે મેટીરામ ૫૫ + પાયરેકલોસ્ટ્રોબીન ૫ ડબલ્યુજી, ૦.૧૮૦% (૩૦ ગ્રામ/૧૦ લીટર પાણી) નો પ્રથમ છંટકાવ વાવેતર બાદ ૩૦ દિવસે અને ત્યાર બાદ બીજા બે છંટકાવ ૨૦ દિવસના સમયાંતરે કરવા.

સીઆઈબી અને આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુઘ્ન / જૈવિક જંતુઘ્નનું સ્વરૂપ	પ્રમાણ: સક્રિય તત્વ (ગ્રામ/હે)	પ્રમાણ: ફોમ્યુલેશન નો જથ્થો ગ્રામ અથવા મિલી/કિ. ગ્રા. બીજ, કિગ્રા અથવા લી./હે.	પ્રમાણ: સાંદ્રતા (%)	પ્રમાણ: ૧૦ લિટર પાણીમાં જરૂરી ફોમ્યુલે-શનનો જથ્થો (ગ્રામ અથવા મિલી)	પાણી/ જમીન સુધારકો નો જથ્થો (કિ.ગ્રા. અથવા લી./હે)	વાપરવા ની પધ્ધતિ	વેઈટીંગ પીરીયડ / પી.એચ. આઈ. (દિવસ)	નોંધ
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧	૧૨

૨૦૨૩	જીરૂ	કાળી ચરમી અને ભૂકીછારો	મેટીરામ ૫૫ + પાયરેકલો સ્ટ્રોબીન ૫ ડબલ્યુજી	૯૦૦	૧.૫ કિ. ગ્રા.	૦.૧૮૦	૩૦ ગ્રામ	૫૦૦ લી.	પ્રથમ છંટકાવ વાવેતર બાદ ૩૦ દિવસે અને ત્યારબાદ બીજા બે છંટકાવ પ્રથમ છંટકાવનાં ૨૦ દિવસનાં અંતરે	૨૦	આ ફૂગનાશક દવા જીરૂમાં કાળી ચરમી અને ભૂકીછારાનાં રોગ સામે સીઆઈબી અને આરસી માં નોંધાયેલ છે.
			પાયરેકલો-સ્ટ્રોબીન ૧૩.૩ + ઈપોક્ષીકો-નાઝોલ ૫ એસઈ	૧૩૭.૨૫	૦.૭૫૦ લી.	૦.૦૨૭	૧૫ મી.લી.	૫૦૦ લી.		૨૨	આ ફૂગનાશક દવા જીરૂમાં કાળી ચરમી નાં રોગ સામે સીઆઈબી અને આરસી માં નોંધાયેલ છે.

Approved with following suggestions:

1. Write 2023 in place of 2022 in CIBRC table
2. Remove 3rd row in CIBRC table

(Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)

19.3.1.13 Chemical control of die-back of mango

The farmers of South Saurashtra Agro-climatic Zone cultivating mango are recommended to apply three sprays of tebuconazole 50 + trifloxystrobin 25 WG, 0.094% (12.50 g/10 l of water) after pruning, first spray just before onset of monsoon and subsequent two sprays at 30 days interval after first spray for effective and economical management of die-back disease.

As per CIB & RC Format

Year	Crop	Pest	Pesticides/ Biopesticides formulation	Dosage				Quantity of water/ Soil amen-dments required (kg or l/ha	Applicati-on schedule	Waiting period/ PHI (days)	Rema-rk(s)
				a.i. (g/ha)	Quantity of formulation g or ml/kg seed, kg or l/ha	Con. (%)	Quantity of formulation in 10 l of water (g or ml)				
2023	Mango	Die back	Tebuconazole 50 + Trifloxystro-bin 25 WG	940	1.25 kg	0.094	12.50 g	1000 l	First spray at before onset of monsoon and subsequent two sprays at an interval of 30 days	15	Fungicide is labelled for mango crop

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં આંબાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, અવરોહ મૃત્યુ (બાંડી) રોગના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે છટણી કર્યા બાદ ટેબ્યુકોનાઝોલ ૫૦ + ટ્રાઈફલોક્ષીસ્ટ્રોબીન ૨૫ ડબલ્યુજી, ૦.૦૯૪% (૧૨.૫૦ ગ્રામ/૧૦ લી. પાણી) ના ત્રણ છંટકાવ કરવા, પ્રથમ છંટકાવ ચોમાસું શરૂ થતા પહેલાં અને ત્યારબાદ બીજા બે

છંટકાવ, ૩૦ દિવસના સમયાંતરે કરવા.

સીઆઈબી અને આરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુઘ્ન / જૈવિક જંતુઘ્નનું સ્વરૂપ	પ્રમાણ				પાણી/જમીન સુધારકોનો જથ્થો (કિ.ગ્રા. અથવા લી./હે)	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ / પી.એચ. આઈ. (દિવસ)	રીમાર્કસ
				સક્રિય તત્વ (ગ્રામ/હે)	ફોર્મ્યુલેશનનો જથ્થો ગ્રામ અથવા મિલી/કિ.ગ્રા. બીજ, કિગ્રા અથવા લી./હે.	સાંદ્રતા (%)	૧૦ લિટર પાણીમાં જરૂરી ફોર્મ્યુલેશનનો જથ્થો (ગ્રામ અથવા મિલી)				
૨૦૨૩	આંબો	અવરોહ મૃત્યુ	ટેબ્યુકોનાઝોલ ૫૦ + ટ્રાઈફલોક્ષી-સ્ટ્રોબીન ૨૫ ડબલ્યુજી	૯૪૦	૧.૨૫ કિ.ગ્રા.	૦.૦૯૪	૧૨.૫૦ ગ્રામ	૧૦૦૦ લી.	પ્રથમ છંટકાવ ચોમાસું બેસતા પહેલા અને બીજા બે છંટકાવ ૩૦ દિવસનાં અંતરે કરવા.	૧૫	આંબાના પાક માટે નોંધાયેલ છે.

Approved with following suggestions:

1. Replace 12.5 ml with 12.5 g in recommendation text
2. Recast recommendation text by adding pruning and mention "ચોમાસું શરુ થતા પહેલા" in place of ચોમાસું બેસતા
3. Verify ICBR ratio

(Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)

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19.3.1.14 ***In vitro* compatibility of *Metarhizium anisopliae* with insecticides**

The farmers are advised to refer the following table for mixing *M. anisopliae* with different insecticides.

Table: Compatibility of *Metarhizium anisopliae* with insecticides

Tr. No	Insecticides	0.5 X RD			1 X RD			2 X RD		
		% Conc.	Dose (ml or g per l)	Farmer are advised to mix the insecticides with *M. anisopliae* (Yes/No)	% Conc.	Dose (ml or g per l)	Farmer are advised to mix the insecticides with *M. anisopliae* (Yes/No)	% Conc.	Dose (ml or g per l)	Farmer are advised to mix the insecticides with *M. anisopliae* (Yes/No)
1	Profenophos 50EC	0.0500	1.00	No	0.100	2.00	No	0.200	4.00	No
2	Quinalphos 25EC	0.0250	1.00	Yes	0.050	2.00	Yes	0.100	4.00	No

3	Dimethoate 30EC	0.0150	0.50	Yes	0.030	1.00	Yes	0.060	2.00	No
4	Cypermethrin 10EC	0.0050	0.50	Yes	0.010	1.00	Yes	0.020	2.00	Yes
5	Deltamethrin 2.8EC	0.0014	0.50	Yes	0.003	1.07	Yes	0.006	2.14	No
6	Lambda cyhalothrin 5EC	0.0013	0.26	Yes	0.003	0.60	No	0.005	1.00	No
7	Spinosad 45SC	0.0068	0.15	No	0.014	0.31	No	0.027	0.60	No
8	Indoxacarb 14.5SC	0.0036	0.25	No	0.007	0.48	No	0.015	1.03	No
9	Fipronil 5SC	0.0050	1.00	No	0.010	2.00	No	0.020	4.00	No
10	Diafenthiuron 50WP	0.0250	0.50	Yes	0.050	1.00	Yes	0.100	2.00	No
11	Flubendiamide 39.35SC	0.0059	0.15	No	0.012	0.30	No	0.024	0.61	No
12	Chlorantraniliprole 18.5SC	0.0028	0.15	Yes	0.006	0.32	Yes	0.011	0.59	No
13	Cyantraniliprole 10.26OD	0.0062	0.60	No	0.012	1.17	No	0.025	2.44	No
14	Emamectin benzoate 5SG	0.0013	0.26	No	0.003	0.60	No	0.005	1.00	No
15	Imidacloprid 17.8SL	0.0027	0.15	Yes	0.005	0.28	No	0.011	0.62	No
16	Acetamiprid 20SP	0.0040	0.20	Yes	0.008	0.40	Yes	0.016	0.80	No
17	Thiamethoxam 25WG	0.0050	0.20	Yes	0.010	0.40	Yes	0.020	0.80	Yes
18	Chlorfenapyr 10SC	0.0100	1.00	Yes	0.020	2.00	No	0.040	4.00	No
19	Fenpyroximate 5EC	0.0025	0.50	No	0.005	1.00	No	0.010	2.00	No

ખેડૂતોને જુદી જુદી કિટનાશકો સાથે *મેટારાઈઝીયમ એનીસોપ્લી* ભેળવવા માટે નીચે દર્શાવેલ કોષ્ટકને અનુસરવાની ભલામણ કરવામાં આવે છે.

કોષ્ટક: *મેટારાઈઝીયમ એનીસોપ્લી* ની જુદી જુદી કીટનાશક દવાઓ સાથે સુસંગતતા

ક્રમ	કીટનાશક દવાનું નામ	ભલામણ કરતા ઓછી માત્રા			ભલામણ કરેલ માત્રા			ભલામણ કરતા વધુ માત્રા		
		સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રા પ્રતિ ૧લી)	મેટારાઈઝીયમ સાથે કીટનાશકદવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રા પ્રતિ ૧લી)	મેટારાઈઝીયમ સાથે કીટનાશકદવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રા પ્રતિ ૧લી)	મેટારાઈઝીયમ સાથે કીટનાશકદવા ભેળવવાની ભલામણ (હા/ના)
૧	પ્રોફેનોફોસ ૫૦ઈસી	૦.૦૫૦૦	૧.૦૦	ના	૦.૧૦૦	૨.૦૦	ના	૦.૨૦૦	૪.૦૦	ના
૨	ક્વીનાલફોસ ૨૫ઈસી	૦.૦૨૫૦	૧.૦૦	હા	૦.૦૫૦	૨.૦૦	હા	૦.૧૦૦	૪.૦૦	ના
૩	ડાયમીથોએટ ૩૦ઈસી	૦.૦૧૫૦	૦.૫૦	હા	૦.૦૩૦	૧.૦૦	હા	૦.૦૬૦	૨.૦૦	ના
૪	સાઈપરમેથ્રીન ૧૦ઈસી	૦.૦૦૫૦	૦.૫૦	હા	૦.૦૧૦	૧.૦૦	હા	૦.૦૨૦	૨.૦૦	હા

૫	ડેલ્ટામેથ્રીન ૨.૮ઈસી	૦.૦૦૧૪	૦.૫૦	હા	૦.૦૦૩	૧.૦૭	હા	૦.૦૦૬	૨.૧૪	ના
૬	લેમ્ડાસાયહેલોથ્રીન ૫ઈસી	૦.૦૦૧૩	૦.૨૬	હા	૦.૦૦૩	૦.૬૦	ના	૦.૦૦૫	૧.૦૦	ના
૭	સ્પીનોસાડ ૪૫એસસી	૦.૦૦૬૮	૦.૧૫	ના	૦.૦૧૪	૦.૩૧	ના	૦.૦૨૭	૦.૬૦	ના
૮	ઈન્ડોકઝાકાર્બ ૧૪.૫એસસી	૦.૦૦૩૬	૦.૨૫	ના	૦.૦૦૭	૦.૪૮	ના	૦.૦૧૫	૧.૦૩	ના
૯	ફીપ્રોનીલ ૫એસસી	૦.૦૦૫૦	૧.૦૦	ના	૦.૦૧૦	૨.૦૦	ના	૦.૦૨૦	૪.૦૦	ના
૧૦	ડાયફેનથ્યુરોન ૫૦ડબલ્યુપી	૦.૦૨૫૦	૦.૫૦	હા	૦.૦૫૦	૧.૦૦	હા	૦.૧૦૦	૨.૦૦	ના
૧૧	ફ્લુબેન્ડીયામાઈડ ૩૯.૩૫એસસી	૦.૦૦૫૯	૦.૧૫	ના	૦.૦૧૨	૦.૩૦	ના	૦.૦૨૪	૦.૬૧	ના
૧૨	ક્લોરેન્ટ્રાનિલિપ્રોલ ૧૮.૫એસસી	૦.૦૦૨૮	૦.૧૫	હા	૦.૦૦૬	૦.૩૨	હા	૦.૦૧૧	૦.૫૯	ના
૧૩	સાયન્ટ્રાનિલિપ્રોલ ૧૦.૨૬ઓડી	૦.૦૦૬૨	૦.૬૦	ના	૦.૦૧૨	૧.૧૭	ના	૦.૦૨૫	૨.૪૪	ના
૧૪	એમામેકટીન બેન્ઝોએટ ૫એસજી	૦.૦૦૧૩	૦.૨૬	ના	૦.૦૦૩	૦.૬૦	ના	૦.૦૦૫	૧.૦૦	ના
૧૫	ઈમીડાક્લોપ્રિડ ૧૭.૮એસએલ	૦.૦૦૨૭	૦.૧૫	હા	૦.૦૦૫	૦.૨૮	ના	૦.૦૧૧	૦.૬૨	ના
૧૬	એસીટામીપ્રિડ ૨૦એસપી	૦.૦૦૪૦	૦.૨૦	હા	૦.૦૦૮	૦.૪૦	હા	૦.૦૧૬	૦.૮૦	ના
૧૭	થાયોમેથોક્ઝામ ૨૫ડબલ્યુજી	૦.૦૦૫૦	૦.૨૦	હા	૦.૦૧૦	૦.૪૦	હા	૦.૦૨૦	૦.૮૦	હા
૧૮	ક્લોરફેનપાયર ૧૦એસસી	૦.૦૧૦૦	૧.૦૦	હા	૦.૦૨૦	૨.૦૦	ના	૦.૦૪૦	૪.૦૦	ના
૧૯	ફેનપાયરોક્સિમેટ ૫ઈસી	૦.૦૦૨૫	૦.૫૦	ના	૦.૦૦૫	૧.૦૦	ના	૦.૦૧૦	૨.૦૦	ના

Approved with following suggestions:

1. Remove CD value write “Sig” or “NS” when using DNMRT
2. Write CV% value in table-3 for individual year
3. Mention year of approval

(Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)

19.3.1.15 **Survey of pollinator fauna and floral diversity under South Gujarat conditions**

19.3.1.15 (A):

The farmers and policymakers of Gujarat state are recommended to grow fruit trees and vegetations of forest/aesthetic values like; amali, amla, arjun, ashok tree, bottle brush, flemingia, garmalo, jamun, kamini, limado, nagod, papaya, parda vel, simalo, supari, tamravruksh, and Tecoma gaudichaudi on field

boundary, wasteland as well as social forestry and save it to conserve native pollinators.

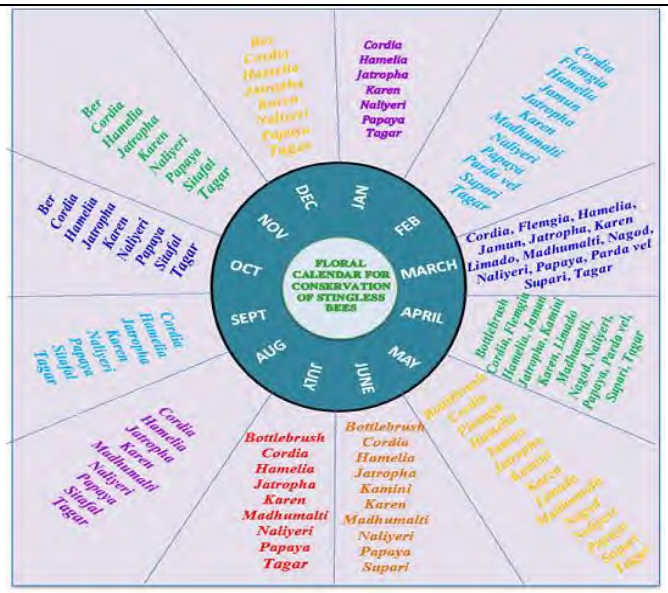
ગુજરાત રાજ્યના ખેડૂતો અને નીતિ ઘડનારાઓને સ્થાનિક પરાગવાહકોના સંરક્ષણ માટે આમલી, આમળા, અર્જુન, અશોક, બોટલ બ્રશ, ફ્લેમિંજીયા, ગરમાળો, જાંબુ, કામિની, લીમડો, નગોડ, પપૈયા, પડદા વેલ, સિમળો, સોપારી, તામ્રવૃક્ષ અને ટીકોમા ગૌડીચૌડી જેવા ફળઝાડ અને વન/સૌંદર્યલક્ષી મૂલ્યો ધરાવતી વનસ્પતિઓ શેઢાપાળા, પડતર જમીન અને સામાજિક વનીકરણ હેઠળ ઉગાડવા અને તેનું જતન કરવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestions:

1. Use the word "recommended" instead of "encouraged" in recommendation para
2. Delete the word "in Gujarat" in recommendation para
3. In table, write the name of month for duration of flowering instead of number
4. In methodology, add name of places of middle and south Gujarat

19.3.1.15 (B):

The farmers and policy makers of Gujarat state are recommended to grow trees/plants like; ber, bottle brush, cordia, flemingia, hamelia, jamun, jatropha, kamini, karen, limado, madhumalti, nagod, naliyeri, papaya, parda vel, sitafal, supari, and tagar on field boundary, waste land as well as social forestry and save it to conserve stingless bees.



ગુજરાત રાજ્યના ખેડૂતો અને નીતિ ઘડનારાઓને કુચીમાખી (ધુસીયામાખી) ના સંરક્ષણ માટે બોર, બોટલ બ્રશ, કોર્ડીયા, ફ્લેમિંજીયા, હેમેલીયા, જાંબુ, જેટ્રોફા, કામિની, કરેણ, લીમડો, મધુમાલતી, નાગોડ, નાળિયેર, પપૈયા, પડદા વેલ, સીતાફળ, સુપારી અને ટગર જેવા ફળઝાડ અને વન/સૌંદર્યલક્ષી મૂલ્યો ધરાવતી વનસ્પતિઓ શેઢાપાળા, પડતર જમીન અને સામાજિક વનીકરણ હેઠળ ઉગાડવા અને તેનું જતન કરવા ભલામણ કરવામાં આવે છે.

Approved with following suggestions:

1. Replace the word “recommended” instead of “encouraged” in recommendation para

2. Write "**ધુસીયામાખી**" in () after "**કુચીમાખી**" in Gujarati recommendation para **19.3.1.15 (C):**

The beekeepers of Gujarat state are recommended to follow the flower calendar mentioned in below table for the migration of their bee hives in different vegetations during respective periods for their conservation.

Flower calendar (For beekeeper of Gujarat)

Type of flower resources / Month	Months of flowering in crop for honey bees												District*
	January	February	March	April	May	June	July	August	September	October	November	December	
Ajwain									■	■	■		Jamnagar, Surendranagar, Morabi, Junagadh, Ahmedabad, Banaskantha
Babul (Acacia)			■	■									Saurashtra, Kutch, North & Middle Gujarat
Ber									■	■			Morbi, Rajkot, Jamnagar, Vadodara
Coriander	■	■	■										Junagadh, Rajkot, Jamnagar, Porbandar
Coconut					■	■	■	■					Gir Somnath, Bhavnagar
Fennel		■	■										Surendranagar, Morbi, Junagadh, Patan, Sabarkantha, Panchmahal,
Jamun (*Ravana*)				■	■	■							Junagadh, Chhotaudepur, Anand
Lucern				■	■								Banaskantha, Patan, Bhavnagar
Mustard	■											■	Banaskantha, Patan, Mahisagar, Sabarkantha
Nilgiri										■	■		Panchmahal, Chhotaudepur, Dahod
Sesamum				■	■			■	■				Morbi, Junagadh, Amreli, Rajkot

*** Small area of respective crops in the adjoining district is involved in the mentioned district**

ગુજરાત રાજ્યના મધમાખી ઉછેર કરનારાઓને મધમાખીની જાળવણી માટે નીચે જણાવેલ મહિનાઓ પ્રમાણે વિવિધ વનસ્પતિઓમાં મધમાખીની પેટીઓનું સ્થળાંતર કરવા માટે નીચે આપેલા કોષ્ટકમાં દર્શાવેલ ફૂલ કેલેન્ડરને અનુસરવા ભલામણ કરવામાં આવે છે.

ફૂલ કેલેન્ડર (ગુજરાતના મધમાખી પાલકો માટે)

ફૂલ સ્રોતના પ્રકાર / મહિના	યોક્કસ મહિના દરમિયાન ફૂલો સાથેની વનસ્પતિની સંખ્યા												જીલ્લા*
	જાન્યુઆરી	ફેબ્રુઆરી	માર્ચ	એપ્રિલ	મે	જૂન	જુલાઇ	ઓગસ્ટ	સપ્ટેમ્બર	ઓક્ટોબર	નવેમ્બર	ડિસેમ્બર	
અજમો									■	■	■		જામનગર, સુરેન્દ્રનગર, મોરબી, જૂનાગઢ, અમદાવાદ, બનાસકાંઠા
બાવળ (અકાસિયા)			■	■									સૌરાષ્ટ્ર, કચ્છ, ઉત્તર અને મધ્ય ગુજરાત
બોર									■	■			મોરબી, રાજકોટ, જામનગર, વડોદરા
ધાણા	■	■	■										જૂનાગઢ, રાજકોટ, જામનગર, પોરબંદર
નાળિયેરી					■	■	■	■					ગીર સોમનાથ, ભાવનગર
Fennel		■	■										સુરેન્દ્રનગર, મોરબી, જૂનાગઢ, પાટણ, સાબરકાંઠા, પંચમહાલ,
જાંબુ (રાવણા)				■	■	■							જૂનાગઢ, છોટાઉદેપુર, આણંદ
રજકો				■	■								બનાસકાંઠા, પાટણ, ભાવનગર
રાઇ	■											■	બનાસકાંઠા, પાટણ, મહિસાગર, સાબરકાંઠા
નિલગિરી										■	■		પંચમહાલ, છોટાઉદેપુર, દાહોદ
તલ				■	■			■	■				મોરબી, જૂનાગઢ, અમરેલી, રાજકોટ

* નજીકના જિલ્લામાં સંબંધિત પાકોનો નાનો વિસ્તાર ઉલ્લેખિત જિલ્લામાં સામેલ છે

Approved with following suggestions:

1. Replace the word "recommended" instead of "advised" in recommendation para
2. Delete the word "**વધુ મધ ઉત્પાદન મેળવવા તેમજ તેની**" in Gujarati recommendation para and write "**મધમાખીની જાળવણી માટે**"
3. Write "district" instead of "location" in flower calendar table
4. Remove "honey production" from recommendation text
5. Mention data year wise

(Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)

19.3.1.16 **Efficacy of biorational insecticides against rice yellow stem borer, *Scirpophaga* spp and leaf folder, *Cnaphalocrosis* spp**

The paddy growers of South Gujarat are recommended to apply chlorantraniliprole 0.4 GR @ 10 kg/ha as soil application (twice) or chlorantraniliprole 18.5 SC @ 3 ml/10 litre of water as foliar spray for effective management of rice stem borer as well as leaf folder and get higher grain and straw yield. The first spray or soil application should be given at 30 days after transplanting and second spray at 15 days after first spray or soil application.

As per CIB RC Format

Year	Crop	Pest	Pesticide with Formulation	Doses			Waiting period (days)	Remark Residue
				Quantity of Formulation per ha	Conc. (%)	Dilution in water		
2023	Rice	Stem borer, Leaf folder	Chlorantraniliprole 0.4 % GR	10 kg	0.04	-	53 As per CIB	BQL
			Chlorantraniliprole 18.5 % SC	150 ml	0.006	500 L	47 As per CIB	BQL

દક્ષિણ ગુજરાતના ડાંગરની ખેતી કરતા ખેડૂતોને ડાંગરની ગાભમારાની ઇયળ અને પાન વાળનારી ઈયળના અસરકારક નિયંત્રણ અને ડાંગરના વધુ ઉત્પાદન મેળવવા માટે ક્લોરાન્ટ્રાનીલીપ્રોલ ૦.૪ દાણાદાર દવા ૧૦ કિલોગ્રામ પ્રતિ હેક્ટર જમીનમાં બે વાર આપવી અથવા ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસ. સી. દવાના બે છંટકાવ ૩.૦ મી.લી. પ્રતિ ૧૦ લિટર પાણીમાં કરવા. પહેલો છંટકાવ અથવા પહેલી સોઇલ એપ્લીકેશન ફેરરોપણી પછી ૩૦ દિવસે અને બીજો છંટકાવ અથવા બીજી સોઇલ એપ્લીકેશન પ્રથમ છંટકાવ અથવા પહેલી સોઇલ એપ્લીકેશન પછી ૧૫ દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.

સી.આઈ.બી.આર.સી. પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા			વેઇટિંગ પિરિયડ (દિવસ)	રિમાર્ક્સ (દવાના અવશેષ)
				માત્રા/હેક્ટર	સાંદ્રતા %	પાણીમાં મિશ્રણ		
૨૦૨૩	ડાંગર	ગાભમારાની ઇયળ, પાન વાળનારી ઈયળ	ક્લોરાન્ટ્રાનીલીપ્રોલ ૦.૪ દાણાદાર	૧૦ કિલોગ્રામ	૦.૦૪	-	૫૩	ક્વોન્ટીફિકેશન મર્યાદાની નીચે

			ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસ. સી.	૧૫૦ મી.લી.	૦.૦૦૬	૫૦૦ લી.	૪૭	ક્વોન્ટીફિકેશન મર્યાદાની નીચે

Approved with following suggestions:

1. Replace the word "recommended" instead of "advised" in recommendation para
2. Recast the language of recommendation in both English and Gujarati
3. In CIBRC format, mention year 2023 and write both the doses (soil and spray) in application schedule
4. Check the CV% and correct it
5. Transformed Before data
6. Correct BQL level
7. Remove "increase in the yield"

(Action: Research Scientist, Main Rice Res. Center, SWMRU, NAU, Navsari)

19.3.1.17 **Evaluation of different insecticides against sucking pests in *Bt* cotton**

Farmers of Gujarat cultivating *Bt* cotton are recommended to spray flonicamid 50 WG at 0.015% (3 g/10 litre water) at initiation of any sucking pests (Aphid, leafhopper, thrips and mealybug) and subsequent two sprays at 15 days interval from first spray for effective and economical management.

As per CIBRC format

Year	Crop	Pests	Pesticides with formulation	Dosage/ha				Application schedule	Waiting period (days)*
				g *a.i.*	Conc. (%)	Quantity of formulation (g or ml)	Dilution in water (L)		
2023	Cotton	Sucking pests (Aphid, leafhopper, thrips and mealybug)	Flonicamid 50 WG	75	0.015	150	500	First spray at initiation of sucking pests and subsequent two sprays at 15 days interval from first spray	25

***As per the CIBRC**

ગુજરાતના બીટી કપાસની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ચુસિયાં પ્રકારની જીવાતોના (મોલોમશી, તડતડીયાં, થ્રિપ્સ અને મીલીબગ) વધુ અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ફલોનીકામીડ ૫૦ ડબલ્યુજી, ૦.૦૧૫ ટકા (૩ ગ્રામ/૧૦ લિટર પાણીમાં)નો પ્રથમ છંટકાવ ચુસિયાં પ્રકારની જીવાતોની શરૂઆત થાય ત્યારે અને ત્યારબાદ બે છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના આંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબીઆરસી પ્રફોર્મા પ્રમાણે									
વર્ષ	પાક	જીવાતો	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	માત્રા/હે				છંટકાવનો સમય	પ્રતિક્ષા સમય (દિવસ)*
				ગ્રા. સ.ત.	સાંદ્રતા (%)	જંતુનાશકનું પ્રમાણ (ગ્રા/મિ.લિ.)	પાણીનુ પ્રમાણ (લિ.)		
૨૦૨૩	કપાસ	ચુસિયાં પ્રકારની જીવાતો (મોલોમશી, તડતડીયાં, થ્રિપ્સઅને મીલીબગ)	ફ્લોનીકામીડ ૫૦ ડબલ્યુજી	૭૫	૦.૦૧૫	૧૫૦	૫૦૦	પ્રથમ છંટકાવ ચુસિયાં પ્રકારની જીવાતોની શરૂઆત થાય ત્યારે અને ત્યારબાદ બે છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના આંતરેકરવા	૨૫
*સીઆઈબીઆરસીપ્રમાણે									

Approved with following suggestions:

1. Recast the language of recommendation both in English and Gujarati and Revise the recommendation considering the effectiveness of insecticides
2. In text number of sprays should be mentioned
3. Remove pink bollworm and whitefly from recommendation text
4. Correct the CIBRC format accordingly recommendation
5. Correct **"મોલો"** to **"મોલોમશી"**
6. Remove the word "south" from the recommendation

(Action: Research Scientist, Main Cotton Res. Station, NAU, Surat)

19.3.1.18 Evaluation of insecticides against sorghum stem borer

The grain sorghum growers of south Gujarat are recommended to spray chlorantraniliprole 18.5 SC @ 4.0 ml/10 lit of water or emamectine benzoate 5 SG @ 6.25 g/10 lit of water at 25 and 45 DAG (days after germination) of the crop for effective and economical management of sorghum stem borer.

As per CIB RC Format

Year	Crop	Pest	Pesticides	Dosege/ha			Application Schedule	Waiting Period
				a.i.	Quantity (g or ml)	Dilution in water (L)		
2023	Sorghum	Stem borer	Chlorantraniliprole 18.5 SC	40 g.a.i/ha	400 ml	500	1st spray 25 DAE of crop 2nd spray 45 DAE of Crop	--
			Emamectine benzoate 5 SG	200 g a.i./ha	625 g	500		--

દક્ષિણ ગુજરાતમાં દાણાની જુવારની ખેતિ કરતા ખેડૂતોને પાકમાં ગાભમારાની ઇયળના અસરકારક અને અર્થક્ષમ નિયંત્રણમાટે ક્લોરાંટ્રાનિલિપ્રોલ

૧૮.૫ એસસી ૪ મીલી અથવા એમામેક્ટીન બેંજોએટ ૫ એસજી ૬.૨૫ ગ્રામ પ્રતિ ૧૦ લિટર પ્રમાણે પાકઉગ્યાના ૨૫ અને ૪૫ દિવસ પછી છંટકાવ કરવા ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	દવા	પ્રમાણ/હે.			છંટકાવનો સમય	પ્રતિક્ષા સમય
				સક્રિય તત્વ	જથ્થો	પાણીનુ પ્રમાણ (લિ.)		
૨૦૨૩	જુવાર	ગાભમારાની ઇયળ	ક્લોરાંટ્રાનીલીપ્રોલ ૧૮.૫ એસ.સી.	૪૦ ગ્રામ	૪૦૦ મીલી	૫૦૦	પ્રથમ છંટકાવ પાક ઉગ્યાના ૨૫ મા દિવસેબીજો છંટકાવ પાક ઉગ્યાના ૪૫ મા દિવસે	--
			એમામેક્ટીન બેંજોએટ ૫એસ.જી.	૨૦૦ગ્રામ	૬૨૫ગ્રામ	૫૦૦		--

Approved with following suggestions:

1. Replace the word “advised” with “recommended” in recommendation text
2. Replace the word “emergence” with “germination” in recommendation text
3. Mention unit of yield in economics (table number 5)
4. Include the residue data and fodder yield
5. Incorporate “stem borer” instead of “sorghum borer”
6. Check the ICBR table
7. Add CIB table (PHI and residue)
8. Provide as Adhoc recommendation

(Action: Research Scientist, Main Sorghum Res. Station,NAU, Surat)

19.3.1.19 **Management of mango hoppers and thrips on mango by oil based formulation of *Metarhizium anisopliae***

The mango growers of South Gujarat are recommended to apply first spray of *Metarhizium anisopliae*: oil based formulation ($1x10^9$cfu/ml) @ 10ml/10 lit water at panicle stage and subsequent four sprays at 10 days intervals for effective non-chemical management of hoppers and thrips.

Note: Add sticker @ 10ml/10lit water during spray.

As per CIBRC format

Year	Crop	Pest/ Disease	Pesticide with formulation	Dosage/Ha			Waiting period (days)
				Quantity of formulation	Conc (%)	Dilution in water (Lit)	
2022	Mango	Hoppers and	*Metarhizium anisopliae*	2 lit	1 ml/lit	2000 lit	NA

		Thrips	1ml/lit ($1x10^9$cfu/ml)				

દક્ષિણ ગુજરાતમાં આંબાની ખેતી કરતા ખેડૂતોને મધિયો અને થ્રીપ્સના બીન રાસાયણિક અસરકારક વ્યવસ્થાપન માટે મોર આવવાના સમયે *મેટારાઈઝીયમ એનીસોપ્લી* : ઓઇલ આધારિત ફોર્મ્યુલેશન (૧ x ૧૦^{૯} સીએફયુ/મીલી) @ ૧૦ મીલી/ ૧૦ લી. પાણી પ્રમાણે પ્રથમ છંટકાવ અને ત્યારબાદ દસ દિવસના અંતરે ચાર છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

નોંધ: છંટકાવ દરમિયાન ૧૦ મીલી/ ૧૦ લી. પાણી પ્રમાણે સ્ટિકર ઉમેરો.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા/હે.			વેઇટીંગ પીરિયડ (દિવસ)
				સ.ત./.હે	સાંદ્રતા (%)	પાણીમાં મિશ્રણ (લી)	
૨૦૨૨	આંબા	મધિયો અને થ્રીપ્સના	મેટારાઈઝીયમ એનીસોપ્લી ૧ મીલી/ લી (૧ x ૧૦૯ સીએફયુ/મીલી)	૨ લી	૧ મીલી/ લી	૨૦૦૦ લી.	--

Approved with following suggestions:

1. Differ from farmers to scientific information
2. Cfu value should be mentioned in ( )
3. Add cost of sticker and CIBRC conc. in economic

(Action: Research Scientist, AES, NAU, Paria)

19.3.1.20 Screening of cashew germplasms against major pests

The farmers of Gujarat having Cashew orchards are inform that damage of Tea mosquito bug (TMB) was initiated from the month of November till June on cashew tree. The maximum damage was noticed in the month of February. So, farmers are advised to follow the TMB damage grade calendar for taking appropriate measure to reduce TMB damage during these month.

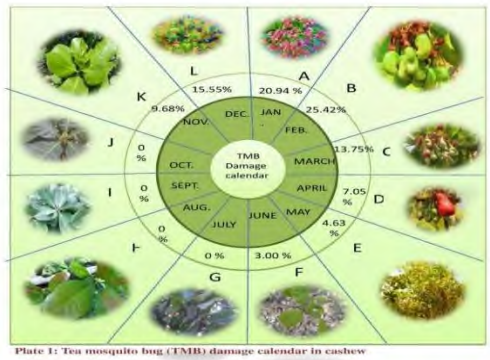


Plate 1: Tea mosquito bug (TMB) damage calendar in cashew

A- Flowering and fruit setting
B- Fruit development
C- Fruit development and partial fruit ripening
D- Fruit ripening and harvesting
E- Initiation of leaf shedding
F-Partial defoliation
G- Partial emergence of new vegetative flush
H-New leaves development and maturation
I-Complete Maturation of Leaves
J- Emergence of new reproductive flush
K- Full flushing and panicle initiation
l- Full flowering

ગુજરાતમાં કાજુની વાડી ધરાવતા ખેડુતોને જણાવવામાં આવે છે કે, કાજુના ઝાડમાં ટી મોસ્કીટો બગનું (ટીએમબી) નુકસાન નવેમ્બર મહિનાથી શરૂ થઇ જુન મહિના સુધી રહે છે. જેમા ફેબ્રુઆરી મહિનામાં મહતમ નુકસાન જોવા મળતુ હોવાથી ખેડુતોને સલાહ આપવામાં આવે છે કે, આ મહિનાઓ દરમ્યાન ટી મોસ્કીટો બગ નુકસાન આધારિત કેલેન્ડરને અનુસરીને ટી મોસ્કીટો બગનુ નુકસાન ઘટાડવા માટે સાવચેતીના પગલા લઇ શકાય છે.

Approved with following suggestions:

1. Recommendation is differed as scientific information
2. Mention varietal screening result in recommendation text

[Action: Principal, Polytechnic in Horticulture, NAU, Paria]

19.3.1.21 Chemical control of fenugreek powdery mildew

Fenugreek growers of South Gujarat are advised to apply, three sprays of hexaconazole 5 EC (0.005%) @ 10 ml/ 10 lit. or propiconazole 25 EC (0.025%) @ 10 ml/10 lit or sulphur 80 WP (0.2%) @ 25g/10 lit of water for effective management of powdery mildew and to get higher yield. The first spray should be given with anyone fungicides after initiation of disease and subsequent two sprays at 15 days of interval.

As per CIBRC format

Crop	Disease	Fungicides	Conc. (a. i %)	Quantity g or ml/ l	Dilution in water (liter)	Waiting period	Residue in the seed sample
Fenugreek (Not included in CIB-RC)	Powdery	Hexaconzole 5% EC	0.005	10.0 ml	10	30 (Another crops)	BQL
		Propiconazole 25 % EC	0.025	10.0 ml	10	30 (Another crops)	BQL
		Sulphur 80 % WP	0.2	25 g	10	--	---

દક્ષિણ ગુજરાતમાં મેથીની ખેતી કરતા ખેડૂતોને ભૂકીછારા રોગના અસરકારક નિયંત્રણ તેમજ વધુ ઉત્પાદન મેળવવા માટે હેકઝાકોનાઝોલ ૫ ઇસી (૦.૦૦૫%), ૧૦ મિલી પ્રતિ ૧૦ લિટર અથવા પ્રોપીકોનાઝોલ ૨૫ ઇસી (૦.૦૨૫%) ૧૦ મિલી પ્રતિ ૧૦ લિટર અથવા સલ્ફર ૮૦ ડબલ્યુ પી (૦.૨%), ૨૫ ગ્રામ/૧૦ લિટર પાણીમાં મિશ્ર કરી તે પૈકી કોઈ એક ફૂગનાશકનો પ્રથમ છંટકાવ ભૂકીછારા રોગની શરૂઆતમાં અને બીજા બે છંટકાવ ૧૫ દિવસના આંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

પાક	રોગ	ફૂગનાશક	સાંદ્રતા (ટકા)	ફૂગનાશક ની માત્રા ગ્રામ અથવા મિલી/ લીટર	પાણી માં મિશ્રણ (લીટર)	પ્રતિક્ષા સમય (દિવસ)	સીડ માં જંતુનાશક નાં અવશેષ
મેથી (CIB-RC માં આ પાક નો સમાવેશ કરવામાં આવ્યો નથી)	ભૂકીછારા	હેકઝાકોનાઝોલ ૫ ઇસી	૦.૦૦૫	૧૦ મિલી	૧૦ લિટર	30 (અન્ય પાક માં)	BQL
		પ્રોપીકોનાઝોલ ૨૫ ઇસી	૦.૦૨૫	૧૦ મિલી	૧૦ લિટર	30 (અન્ય પાક માં)	BQL
		સલ્ફર ૮૦ ડબલ્યુ પી	૦.૨	૨૫ ગ્રામ	૧૦ લિટર	--	---

Approved with following suggestions:

1. Recommendation is differed as scientific information
2. Mention the name of variety
3. Recast the language as for scientific information

(Action:Professor & Head, Deptt. of Plant Pathology, NMCA, NAU, Navsari)

19.3.1.22 **Management of leaf and flower blight of Marigold**

The marigold growers are recommended to apply three sprays of hexaconazole 4 + zineb 68 WP, 0.072 % (10 g/ 10 litre of water) or mancozeb 75WP, 0.225 % (30g/10 litre of water) or tebuconazole 50 + trifloxystrobin 25WG, 0.03 % (4g/ 10 litre of water) for effective management of leaf and flower blight. The first spray should be given after initiation of disease and subsequent two sprays at 15 days interval.

Note: Farmer recommendation for non medicinal purpose.

As per CIBRC format

Crop	Disease	Fungicides	Conc. (a. i %)	Quantity g or ml/ 10L	Dilution in water (liter)	Waiting period
Marigold (Not included in CIBRC)	Leaf and flower blight	Hexaconazole 4 + Zineb 68 WP	0.072	10 g	10	-
		Mancozeb 75WP	0.225	30 g	10	-
		Tebuconazole 50 + trifloxystrobin 25WG	0.03	4.0g	10	-

ગલગોટાની ખેતી કરતાં ખેડૂતોને, પાન અને ફૂલમાં ઝાળના રોગના અસરકારક નિયંત્રણ માટે હેક્સાકોનાઝોલ ૪ + ઝાઇનેબ ૬૮ ડબલ્યુ પી ૦.૦૭૨%) (૧૦ ગ્રામ/૧૦ લિટર પાણી) અથવા મેન્કોઝેબ ૭૫ ડબલ્યુ પી ૦.૨૨૫% (૩૦ ગ્રામ/૧૦ લિટર પાણી.) અથવા ટેબુકોનાઝોલ ૫૦ + ટ્રાઇફ્લોક્સીસ્ટ્રોબિન ૨૫ ડબલ્યુ જી, ૦.૦૩% (૪ ગ્રામ/૧૦ લીટર પાણી) પૈકી કોઇ એક ફુગનાશકનો પ્રથમ છંટકાવ રોગ આવવાની શરુઆતના સમયે ત્યારબાદનાં બીજા બે છંટકાવ ૧૫

દિવસના આંતરે કરવાની ભલામણ છે.

નોધ: બિન ઔષધીય હેતુ માટે ખેડૂત ભલામણ

સીઆઈબીઆરસી પ્રફોર્મા પ્રમાણે

પાક	રોગ	ફૂગનાશક	સાંદ્રતા (ટકા)	ફૂગનાશક ની માત્રા ગ્રામ અથવા મિલી/ ૧૦ લીટર	પાણી માં મિશ્રણ (લીટર)	પ્રતિક્ષા સમય (દિવસ)
ગલગોટા (CIB-RC માં આ પાક નો સમાવેશ કરવામાં આવ્યો નથી)	પાન અને ફૂલનો ઝાળ રોગ	હેક્સાકોનાઝોલ ૪ + ઝાઇનેબ ૬૮ડબલ્યુ પી	૦.૦૭૨	૧૦ ગ્રામ	૧૦ લિટર	-
		મેન્કોઝેબ ૭૫ ડબલ્યુ પી	૦.૨૨૫	૩૦ ગ્રામ	૧૦ લિટર	-
		ટેબુકોનાઝોલ ૫૦ + ટ્રાઇફ્લોક્સીસ્ટ્રોબિન ૨૫ ડબલ્યુ જી	૦.૦૩	૪.૦ ગ્રામ	૧૦ લિટર	-

Approved with following suggestions:

1. Approved as *Adhoc* recommendation for entire Gujarat state
2. Use the word "recommended" instead of "advised" in recommendation para
3. In English, remove word "to get higher flower yield" in recommendation para
4. In Gujarati text replace "**દવાનો**" with "**ફૂગનાશકનો**" and delete "**આવતા**" as well as "**વધુ ઉત્પાદન**"
5. Verify CV% in pooled table.

(Action: Professor & Head, Deptt. of Plant Protection, ACH, NAU, Navsari)

19.3.1.23 Evaluation of bioagents against cotton disease

Cotton growing farmers of South Gujarat are recommended to follow the seed treatment of *Pseudomonas florescence* 0.5% WP (10^8cfu/g)10g per kg of seeds before sowing and two applications of *Pseudomonas fluorescens* 0.5% WP (10^8cfu/g) 2.5 kg/ha mixed in 250 kg of vermicompost at 30 and 60 days after sowing for the effective and economical management of bacterial leaf blight.

As per CIB guidelines

Year	Crop	Pest/ disease	Pesticides/ Biocontrol with formulation	Dosage			Application schedule	Waiting period/ PHI (days)
				g. a. i. /ha	Conc. (%)	Dilution in water (10 lit)		
2023	Cotton	Bacterial leaf blight	*Pseudomonas fluorescens* 0.5% WP	10 g/kg of seed	-	-	Seed Treatment	-
Remark: *Pseudomonas florescence* 0.5% WP 10^8cfu/g yet to register in CIBRC								

દક્ષિણ ગુજરાતના કપાસ ની ખેતી કરતા ખેડુતોને ખુણિયા ટપકાનાં રોગના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે *સ્યુડોમોનાસ ફ્લુરોસેન્સ* ૦.૫% ડબલ્યુપી (૧૦૮ સીએફ્યુ/ગ્રામ) પ્રમાણે ૧૦ ગ્રામ પ્રતિ કિલો બીજ મુજબ માવજત આપી અને વાવણીના ૩૦ અને ૬૦ દિવસ બાદ *સ્યુડોમોનાસ ફ્લુરોસેન્સ* ૦.૫% ડબલ્યુપી (૧૦૮ સીએફ્યુ/ગ્રામ) ૨.૫ કિગ્રા/હેકટર પ્રમાણે ૨૫૦ કિલો વર્મીકંપોસ્ટ

ખાતરમાં ભેળવીને ચાસમાં આપવાની ભલામણ કરવામાં છે.

સીઆઈબીઆરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	જંતુનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ			વાપરવાની પધ્ધત્તિ	વેઇટીંગ પીરીયડ / પીએચ આઇ (દિવસ)
				સક્રિય તત્વ ગ્રામ પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન(૧૦ લીટર પાણીમાં)		
૨૦૨૩	કપાસ	ખુણિયા ટપકા રોગ	*સ્યુડોમોનાસ ફ્લુરોસેન્સ* ૦.૫% ડબલ્યુપી	૧૦ ગ્રામ/ કિલોગ્રામ બીજ	-	-	બીજ માવજત	-

Remark: *Pseudomonas florescence* 0.5% WP 10^8cfu/g yet to register in CIBRC

Approved with following suggestions:

1. Recast the language of recommendation in both English and Gujarati
2. In Gujarati text replace the word "**ઉગાડતા**" with "**ની ખેતી કરતા**"
3. Remove word "**બીજ માવજત તરીકે**" and "**જમીનમાં**" In Gujarati text
4. Add "**માવજત આપી**"
5. Replace the word "**સલાહ**" with word "**ભલામણ કરવામાં**"
6. Add the data of Alternaria leaf spot
7. Remove the strain name from recommendation text
8. Check and correct the SEm value in table number 3

(Action: Research Scientist, Main Cotton Res. Station,NAU, Surat)

19.3.1.24 **Management of collar rot disease of chickpea (*Cicer arietinum*) caused by *Sclerotium rolfsii***

Farmers of South Gujarat growing chickpea crop are recommended to treat seeds with *Pseudomonas fluorescens* 1.5% AS ($1x10^8$ cfu/ml) 10 ml/kg or *Trichoderma viride* 1.5% WP ($2x10^6$ cfu/g) 10 g/kg (25 ml water used to coat the seeds uniformly) + soil application of *T. viride* 2.5 kg/hector (mixed in 250 kg FYM) at the time of sowing to manage collar rot disease.

As Per CBRC format

Year	Crop	Name of Disease	Pesticides with formulation	a.i. (g)	Formulation (g/ml) %	Dilution in Water	Waiting period
2023	Chickpea	Collar rot (*S. rolfsii*)	*Pseudomonas fluorescence* ($1X10^8$ CFU/ml)	-	10 ml/kg seeds	Sufficient to coat the seeds uniformly	NA

			Trichoderma viride (2x10^6 cfu/g) 1.5% WP	-	10 g/kg seeds	Sufficient to coat the seeds uniformly	NA

દક્ષિણ ગુજરાતમાં ચણાના પાકની ખેતી કરતા ખેડૂતોને થડના કોહવારા રોગને નિયંત્રણ માટે *સ્યુડોમોનાસ ફ્લોરોસેન્સ* ૧.૫% એ.એસ. (૧x૧૦^{૮}સીએફયુ/મીલી) ૧૦ મી.લી./કિ. ગ્રા. અથવા *ટ્રાઇકોડેર્મા વિરીડી* ૧.૫% ડબલ્યુ.પી. (૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૧૦ ગ્રામ/કિ. ગ્રા.ની બીજ માવજત (બીજના સરખા આવરણ માટે ૨૫ મી.લી.પાણીનો ઉપયોગ કરવો) અને *ટ્રાઇકોડેર્મા વિરીડી*ને ૨.૫ કિ.ગ્રા./હેકટર (૨૫૦ કિ.ગ્રા. છાણીયા ખાતરમાં મિશ્રણ કરી) વાવેતરનાં સમયે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

સીઆઈબીઆરસી પ્રફોર્મા પ્રમાણે

વર્ષ	પાક	રોગ	ફૂગનાશક	સાંદ્રતા (ટકા)	ફૂગનાશકની માત્રા ગ્રામ અથવા મિલી/ લીટર	પાણીમાં મિશ્રણ (લીટર)	
૨૦૨૩	ચણા	થડના કોહવારા	*સ્યુડોમોનાસ ફ્લોરોસેન્સ* ૧.૫% એ.એસ. (૧x૧૦^{૮} સીએફયુ/ મીલી)	-	૧૦મીલી/ કિગ્રા. બીજ	બીજના સરખા આવરણ માટે પાણીનો ઉપયોગ કરવો	-
			ટ્રાઇકોડેર્મા વિરીડી ૧.૫% ડબલ્યુ.પી. (૨×૧૦^{૬}સીએફયુ/ગ્રામ)	-	૧૦ગ્રામ/ કિગ્રા. બીજ	બીજના સરખા આવરણ માટે પાણીનો ઉપયોગ કરવો	-

Approved with following suggestions:

1. Use the word "recommended" instead of "advised" in recommendation para
2. Recast the language of recommendation in both english and gujarati
3. In Gujarati text remove "**ભલામણ કરવામાં આવે છે કે**" and "**અને વધુ ઉપજ મેળવવા**"
4. In Gujarati text replace "**કોલર રોટ**" with word "**ઊગસૂક**"
5. In Gujarati text "**જમીનમાં**" and "**કરવામાં આવે**"
6. Check the yield in economics

(Action: Research Scientist, RRRS, NAU, Vyara)

19.3.1.25 **Management of collar rot disease of groundnut caused by *Aspergillus niger***

19.3.1.25 (A): Farmers of South Gujarat growing Kharif groundnut are advised to treat seeds with thiophanate methyl 450 g/l + pyraclostrobin 50 g/l w/v FS@ 1.5ml/kg seeds to manage of collar rot disease and get higher yield.

As Per CBRC format							
Year	**Crop**	**Name of Disease**	**Pesticides with formulation**	**a.i. (g)**	**Formulation (g/ml) %**	**Dilution in Water**	**Waiting period**
2023	Ground-nut	Collar rot (*Aspergillus niger*)	Thiophanate Methyl 450g/l + Pyraclostrobin 50g/l	10-12.5	20-25	Sufficient to coat the seeds uniformly	NA
			Trichoderma viride (*2x10^6 cfu/g) 1.5% WP*	-	10g/kg seeds	uniformly seeds coated	NA

દક્ષિણ ગુજરાતમાં ચોમાસામાં મગફળીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના ઉગસુક રોગના નિયંત્રણ અને વધુ ઉત્પાદન માટે બીજને થિયોફેનેટ મિથાઈલ ૪૫૦ ગ્રામ/લી. + પાયરાક્લોસ્ટ્રોબિન ૫૦ ગ્રામ/લી. ડબ્લયુ/વી એફએસ ૧.૫ મીલી/કિ.ગ્રા. બીજ માવજત આપીને વાવેતર કરવું.

19.3.1.25 (B): Farmers of South Gujarat growing organic *Kharif* groundnut are advised to treat seeds with *Trichoderma viride* (2x10^6 cfu/g) 1.5% WP @ 10 g/kg (25 ml water used to coat the seeds uniformly) + soil application of *Trichoderma viride* (2x10^6 cfu/g) @ 2.5 kg, mixed in 250 kg FYM/ ha at the time of sowing to manage of collar rot disease and get higher yield.

ભલામણ: મગફળીનીસેન્દ્રિય ખેતીકરતા ખેડૂત માટે ઉપયોગી ભલામણ

દક્ષિણ ગુજરાતમાં ચોમાસામાં મગફળીની સેન્દ્રિયખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના ઉગસુક રોગના નિયંત્રણ અને વધુ ઉત્પાદન માટે બીજને *ટ્રાયકોડર્મા વીરીડી* (૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૧.૫% ડબલ્યુ પી ૧૦ ગ્રામ પ્રતિ કિગ્રા બીજ માવજત (બીજના સરખા આવરણ માટે ૨૫ મીલી પાણીનો ઉપયોગ કરવો) આપી અને જમીનમાં *ટ્રાયકોડર્મા વીરીડી* (૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૨.૫ કિ.ગ્રા./હે.૨૫૦ કિગ્રા છાણીયા ખાતરમાં મિશ્રણ કરી વાવણીના સમયે આપી વાવેતર કરવું.

Approved with following suggestions:

1. Recommendation is differed as scientific information

(Action: Research Scientist, RRRS, NAU, Vyara)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

19.3.1.26 Eco-friendly management of mustard aphid

The farmers of Gujarat growing mustard are recommended to apply two sprays of azadirachtin 10,000 ppm 30 ml/10 L, first at initiation of pests and second at 10 days after first spray for eco-friendly management of aphid.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Mustard	Aphid	Azadira-chtin	-	0.003	1.5 L	30	500	Two spray at 10 day interval starting from pest initiation	-

ગુજરાતના રાઈની ખેતી કરતા ખેડૂતોને મોલોના પર્યાવરણીય સલામત નિયંત્રણ માટે એઝાડીરેકટીન ૧૦,૦૦૦ પીપીએમ ૩૦ મિલી/ ૧૦ લિટર પ્રમાણેના બે છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ ઉપદ્રવ શરુ થયે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસ બાદ કરવાની ભલામણ છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરૂરીયાત (લીટર/ હેકટર)	વાપરવાની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ(ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	રાઈ	મોલો	એઝાડીરે-કટીન	-	0.003	૧.૫ લી.	૩૦	૫૦૦	મોલોના ઉપદ્રવ થયે ૧૦ દિવસના ગાળે બે છંટકાવ	-

Approved with following suggestions

1. Recommendation shifted to scientific information

Scientific information

Application of two sprays of azadirachtin 10,000 ppm 30 ml/10 L, first at initiation of pests and second at 10 days after first spray for management of mustard aphid.

(Action: Assoc. Res. Sci., Oilseed Research Station, SDAU, Sardarkrushinagar)

19.3.1.27 **Management of wheat aphid (*Rhopalosiphum maidis* F.) in wheat**

The farmers of Gujarat growing wheat are recommended to spray anyone of the following bio-rational at initiation of infestation for the effective management of aphid.

1. NSKS 5 % (500 g/10 L of water)
2. *Lecanicillium lecanii* 1.15 WP ($1x10^9$cfu/g) 40 g/10 L of water
3. *Metarhizium anisopliae* 1.15 WP ($1x10^9$cfu/g) 40 g/10 L of water

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Wheat	Aphid	NSKE	-	5	25 kg	500 g	500	Foliar spray should be made at initiation of aphid	-
			Lecanicillium lecanii L. 1.15 WP $1x10^9$cfu/g	-	0.004	2.0 kg	40 g			-
			Metarhizium anisopliae 1.15 WP $1x10^9$cfu/g	-	0.004	2.0 kg	40 g			-

ગુજરાતના ઘઉની ખેતી કરતા ખેડૂતોને મોલોના અસરકારક નિયંત્રણ માટે ઉપદ્રવની શરૂઆત જોવા મળે ત્યારે નીચે પૈકી કોઈ એક જૈવિક દવાનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

૧. લીંબોળીના મીંજનો અર્ક ૫% (૫૦૦ ગ્રામ/૧૦ લિટર પાણી)

૨. લેકાનીસિલિયમ લેકાની ૧.૧૫ ડબ્લ્યુપી (૧x ૧૦૯ સીએફયુ/ગ્રામ) ૪૦ ગ્રામ / ૧૦ લિટર પાણી

૩. મેટારીઝીયમ એનીસોપ્લી ૧.૧૫ ડબ્લ્યુપી (૧x ૧૦૯ સીએફયુ/ગ્રામ) ૪૦ ગ્રામ/

૧૦ લિટર પાણી

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવાની પદ્ધતિ	વેઇટીન્ગ પિરિયડપી .એચ.આઈ (દિવસ)
				સક્રિયતત્વ(ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	ઘઉ		લીંબોળીના મીંજનો અર્ક	-	૫	૨૫ કિ.ગ્રા	૫૦૦ ગ્રામ	૫૦૦	ઘઉના પાકમાં મોલો નો ઉપદ્રવ શરૂ થતાં છંટકાવ કરવો	-
		મોલો	*લેકાની-સિલિયમ લેકાની* ૧x ૧૦^{૯} સીએફયુ	-	૦.૦૦૪	૨ કિ.ગ્રા	૪૦ ગ્રામ			-
			મેટા-રીઝીયમ એનીસોપ્લી ૧x ૧૦^{૯} સીએફયુ	-	૦.૦૦૪	૨ કિ.ગ્રા	૪૦ ગ્રામ			-

Approved with following suggestions

1. Delete ‘azadirachtin’ from recommendation and add in scientific information
2. Change the year in CIBRC table

(Action: Asstt. Res. Sci., Wheat Research Station, SDAU, Vijapur)

19.3.1.28 **Eco-friendly management of aphid in isabgul**

The farmers of Gujarat growing isabgul are recommended to apply three foliar sprays of neem leaf extract 10% (1 kg leaves/10 L water) for economical and eco-friendly management of aphid, first foliar spray should be made at initiation of aphid and remaining two sprays at 10 days interval.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			

2022-23	Isabgul	Aphid	Neem leaf extract	-	10	50 kg	1 kg	500	First foliar spray should be made at initiation of aphid and remaining two sprays at 10 days interval.	-

ગુજરાતના ઈસબગુલની ખેતી કરતા ખેડુતોને મોલોના અર્થક્ષમ અને પર્યાવરણ સલામત નિયંત્રણ માટે લીમડાના પાનનો અર્ક ૧૦ ટકા (૧ કિગ્રા પાન/૧૦ લીટર પાણીમાં) પ્રમાણે ત્રણ છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ મોલોનો ઉપદ્રવ શરૂથાય ત્યારે તથા બાકીના બે છંટકાવ ૧૦ દિવસના ગાળે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરૂરીયાત (લીટર/ હેકટર)	વાપરવાની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ(ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	ઇસબગુલ	મોલો	લીંમડાના પાનનો અર્ક	-	૧૦	૫૦ કિગ્રા	૧ કિગ્રા	૫૦૦	પ્રથમ છંટકાવ ઈસબગુલના પાકમાં મોલોનો ઉપદ્રવ શરૂ થાય ત્યારે અને બાકીના બે છંટકાવ ૧૦ દિવસના ગાળે કરવા	-

Approved with following suggestions

1. Write Aphid index/plant in all tables
2. Change the year in CIBRC table
3. Delete @ from both the recommendation wording.
4. Mention “1 kg leaves” in recommendation text

(Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)

19.3.1.29 **Bio-efficacy of different insecticides against pink bollworm in *Bt* cotton**

The farmers of Gujarat growing *Bt* cotton are recommended to apply

schedule spraying of indoxacarb 14.5 SC, 75 g a.i./ha (8.60 ml/10 L of water), profenophos 50 EC, 1000 g a.i./ha (33.33 ml /10 L of water) and alphacypermethrin 10 EC, 20 g a.i./ha (3.33 ml/10 L of water) or deltamethrin 2.8 EC, 12.5 g a.i./ha (7.50 ml/10 L of water), spinosad 45 SC, 73 g a.i./ha (2.70 ml/10 L of water) and chlorantraniliprole 18.5 SC, 30 g a.i./ha (2.70 ml/10 L of water), first spray at bud formation stage and subsequent two sprays at 15 days interval for effective and economic management of pink bollworm.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Cotton	Pink boll worm	Indoxacarb	75	14.5 SC	517 ml	8.6	600	First spray at bud formation stage and sub-sequent two sprays at 15 intervals	16
			Profenophos	1000	50 EC	2000 ml	33.33			15
			Alpha-cypermethrin	20	10 EC	200 ml	3.33			07
Or										
2022-23	Cotton	Pink boll worm	Deltamethrin	12.5	2.8 EC	446 ml	7.5		First spray at bud formation stage and subsequent two sprays at 15 intervals	-
			Spinosad	73	45 SC	162 ml	2.70			10
			Chlorantrani-lipore	30	18.5 SC	162 ml	2.70			09

ગુજરાતમાં બીટી કપાસની ખેતી કરતા ખેડૂતોને, ગુલાબી ઇયળના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપનમાટે ક્રમ અનુસાર દવાઓ જેવી કે, ઇન્ડોકઝાકાર્બ ૧૪.૫ એસસી@ ૭૫ ગ્રામ સક્રિયતત્વ (૮.૬૦ મીલી/૧૦ લિટર પાણીમાં), પ્રોફેનોફોસ ૫૦ ઇસી ૧૦૦૦ ગ્રામ સક્રિય તત્વ (૩૩.૩૩ મીલી/૧૦ લિટર પાણીમાં) અને આલ્ફાસાયપરમેથ્રીન ૧૦ ઇસી ૨૦ ગ્રામ સક્રિયતત્વ (૩.૩૩ મીલી/ ૧૦ લિટર પાણીમાં) અથવા ડેલ્ટામેથ્રીન ૨.૮ ઇસી ૧૨.૫ ગ્રામ સક્રિયતત્વ (૭.૫૦ મીલી/૧૦ લિટર પાણીમાં), સ્પીનોસાડ ૪૫ એસસી ૭૩ ગ્રામ સક્રિયતત્વ (૨.૭૦ મીલી/૧૦ લિટર પાણીમાં) અને ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસસી ૩૦ ગ્રામ

સક્રિયતત્વ (૨.૭૦ મીલી/૧૦ લિટર પાણીમાં) નો છંટકાવ કરવો, જે પૈકી પ્રથમ છંટકાવ પાકની ફૂલ ભમરી અવસ્થાએ તથા બીજા બે છંટકાવ ૧૫ દિવસના અંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	કપાસ	ગુલાબી ઇયળ	ઇન્ડોકઝા-કાર્બ	૭૫	૧૪.૫ એસ.સી.	૫૧૭ મીલી	૮.૫૦	૬૦૦	પ્રથમ છંટકાવ ફુલ ભમરી અવસ્થાએ ત્યારબાદ બીજો અને ત્રીજો છંટકાવ ૧૫ દિવસના અંતરે	-
			પ્રોફેનોફોસ	૧૦૦૦	૫૦ ઇસી	૨૦૦૦ મીલી	33.33			-
			આલ્ફા-સાયપરમેથ્રીન	૨૦	૧૦ ઇસી	૨૦૦ મીલી	3.33			-
અથવા										
૨૦૨૨-૨૩	કપાસ	ગુલાબી ઇયળ	ડેલ્ટામેથ્રિન	૧૨.૫	૨.૮ ઇસી	૪૪૬ મીલી	૭.૫૦	૬૦૦	પ્રથમ છંટકાવ ફુલ ભમરી અવસ્થાએ ત્યારબાદ બીજો અને ત્રીજો છંટકાવ ૧૫ દિવસના અંતરે	-
			સ્પિનોસેડ	૭૩	૪૫ એસ.સી.	૧૬૨ મીલી	૨.૭૦			-
			ક્લોરેન્ટ્રાનિલિપ્રોલ	૩૦	૧૮.૫ એસ. સી.	૧૬૨ મીલી	૨.૭૦			-

Suggestions: Approved with following suggestions

1. Check total cost of material in economics table
2. In English recommendation text, write "chlorantraniliprole 18.5 SC, 30 g a.i./ha (2.70 ml/10 L of water), first spray at bud formation stage and subsequent two sprays at 15 days interval for effective and economic management of pink bollworm."
3. Change the year in CIBRC table
4. Give insecticides in sequence

(Action: Asstt. Res. Sci., Cotton Research Station, SDAU, Talod)

19.3.1.30 Eco-friendly approaches for management of jassids in *kharif* okra

The farmers of Gujarat growing okra are recommended to apply three

foliar sprays of *Beauveria bassiana* 1.15 WP (1 × 10^9cfu/g) 0.004 % (40 g/10 L of water), first at appearance of pest and subsequent sprays at 10 days interval for effective and economic management of jassid.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2023	Okra	Jassid	*Beauveria bassiana* 1.15 WP (1 × 10^9cfu/g)	23	0.004	2000 g	40	500	First spray at pest appearance and second and third at 10 days after first spray	-

ગુજરાતમાં ભીંડાની ખેતી કરતા ખેડૂતોને લીલા તડતડિયાના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે બ્યુવેરીયા બેસીયાના ૧.૧૫ વેપા (૧x૧૦^{૯} સીએફયુ/ ગ્રામ) ૦.૦૦૪% (૪૦ ગ્રામ/ ૧૦ લીટર પાણી) ના ત્રણ છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ જીવાતના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બાકીના છંટકાવ ૧૦ દિવસના ગાળે કરવાની ભલામણ છે

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણી ના દ્રાવણ ની કુલ જરુરી યાત (લીટર / હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			

૨૦૨૩	ભીંડા	લીલાતડતીડિયા	બ્યુવેરીયાબેસીયા ના૧.૧૫ વેપા (૧x૧૦૯સીએફયુ/ ગ્રામ)	૨૩	૦.૦૦૪	૨૦૦૦ ગ્રામ	૪૦ગ્રામ	૫૦૦	પ્રથમ છંટકાવ જીવાતના ઉપદ્રવનીશરૂ આત થાય ત્યારે અને બીજો અને ત્રીજો છંટકાવ તેના ૧૦ દિવસ પછી	-

Approved with following suggestions

1. Split the recommendation for farmers and for scientific information
2. Recast the wording of English and Gujarati recommendation accordingly.
3. Check *Beauveria* dose and cfu

Scientific information

Title: Eco-friendly approaches for management of jassids in *kharif* okra

Application of three foliar sprays of azadirachtin 10,000 ppm 0.003% (30 ml/10 L of water), first at appearance of pest and subsequent sprays at 10 days interval for effective and economic management of jassid in okra.

(Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)

19.3.1.31 **Influence of indigenous bee attractants in enhancing pollination and yield of onion seeds**

The farmers of Gujarat growing onion for seed production are recommended to apply two sprays of jaggery or table sugar solution 15% (1.5 kg/10 L water), first at 10% flowering stage and second at 50% flowering stage for maximum attraction of honeybees and higher seed yield.

ગુજરાતમાં ડુંગળીનું બીજ ઉત્પાદન કરતા ખેડૂતોએ મધમાખીઓને આકર્ષવા તેમજ વધુ ઉત્પાદન લેવા માટે ગોળનું અથવા ખાંડનું દ્રાવણ ૧૫% (૧.૫ કીગ્રા/ ૧૦ લીટર પાણી) મુજબના બે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે જે પૈકી પ્રથમ છંટકાવ ૧૦% ફૂલ અવસ્થાએ અને બીજો છંટકાવ ૫૦ % ફૂલ અવસ્થાએ કરવો.

Approved with following suggestions

1. Write '%' instead of '**ટકા**' in Gujarati recommendation text

(Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)

19.3.1.32 **Eco-safe management of mole cricket in potato crop**

The farmers of Gujarat growing potato are recommended to apply *Metarhizium anisopliae* 1.15 WP (min. 1×10^8cfu/g) 2 kg/ha enriched with vermicompost 1 ton/ha in soil before sowing to reduce tuber damage by mole cricket. Enrich *M. anisopliae* 1.15 WP (min. 1×10^8cfu/g) with vermicompost before 20 days of sowing under shade.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha	Dose (g/ml) /10 L			
2023	Potato	Mole cricket	Vermicompost @ 1 ton/ha + *Metarhizium anisopliae* 1.15 WP (1×10^8cfu/g) @ 2 kg/ha	-	-	1 ton + 2 kg	-	-	Soil application before sowing	-

ગુજરાતમાં બટાટાની ખેતી કરતા ખેડૂતોને ભોંયતમરીના અસરકારક નિયંત્રણમાટે મેટારીજીયમ એનીસોપ્લી ૧.૧૫ વેપા (૧x૧૦૮ સીએફયુ/ ગ્રામ) ૨ કિલો/હે. ને વર્મીકમ્પોસ્ટ ૧ ટન પ્રમાણે ભેળવી વાવણી પહેલા જમીનમા આપવાની ભલામણ કરવામાં આવે છે. વાવણીના ૨૦ દિવસ પહેલા મેટારીજીયમ એનીસોપ્લીને વર્મીકમ્પોસ્ટ ખાતર સાથે છાયડે રાખીને સંવર્ધિત કરવું.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૩	બટાટા	ભોંયતમરી	વર્મીકમ્પોસ્ટ ૧ટન + *મેટારીજીયમ એનીસોપ્લી* ૧.૧૫ વે.પા. (૧x૧૦૮ સી.એફ.યુ /ગ્રા) ૨ કિલો/હે.	-	-	૧ટન + ૨ કિગ્રા	-	-	વાવણીપહેલા જમીનમાં આપવું.	-

Approved with following suggestions

1. Change table title

2. Delete " **પર્યાવરણીય સલામત**" from Gujarati recommendation text

3. Recommend only one treatment (T6)
4. Mention 'minimum' in cfu count

(Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)

19.3.1.33 Impact of indigenous bee attractants in enhancing pollination and seed yield of lucerne

The farmers of Gujarat growing lucerne for seed production are recommended to apply two sprays of jaggery or table sugar solution 15% (1.5 kg/10 L of water), first at 10% flowering stage and second at 50% flowering stage for maximum attraction of honeybees and higher seed yield.

ગુજરાતમાં રજકાનું બીજ ઉત્પાદન કરતા ખેડૂતોએ મધમાખીઓને આકર્ષવા તેમજ વધુ ઉત્પાદન મેળવવા માટે ગોળનું અથવા ખાંડનું દ્રાવણ ૧૫% (૧.૫ કીગ્રા/ ૧૦ લીટર પાણી) મુજબના બે છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ ૧૦% ફૂલ અવસ્થાએ અને બીજો છંટકાવ ૫૦% ફૂલ અવસ્થાએ કરવાની ભલામણ કરવામાં આવે છે

Approved with following suggestions
1. Correct ICBR
2. Write '%' instead of '**ટકા**' in Gujarati recommendation text

[Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar]

19.3.1.34 Eco-friendly management of leaf miner (*Aproaerema modicella*) in *kharif* groundnut

The farmers of Gujarat growing groundnut are recommended to apply two foliar sprays of azadirachtin 1500 ppm 0.0006 per cent (40 ml/ 10 L water), first at appearance of pest and second at 15 days after first spray for effective management of leaf miner.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			

2023	Groundnut	Leaf miner	Azadirachtin 1500 ppm	3	0.0006	2000 ml	40	500	First spray at pest appearance and second at 15 days after first spray	-

ગુજરાતના મગફળી ઉગાડતા ખેડૂતોને પાનકોરીયાના અસરકારક નિયંત્રણ માટે એઝાડીરેકટીન ૧૫૦૦ પીપીએમ ૦.૦૦૦૬% (૪૦ મિલી /૧૦લીટર પાણી) ના બે છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ જીવાતના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો છંટકાવ ત્યારબાદ ૧૫ દિવસે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરૂરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જરૂરી			
૨૦૨૩	મગફળી	પાનકોરીયુ	એઝાડીરેકટીન ૧૫૦૦ પીપીએમ	૩	૦.૦૦૦૬	૨૦૦૦ મિલી	૪૦ મિલી	૫૦૦	પ્રથમ છંટકાવ જીવાતના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો છંટકાવ તેના ૧૫દિવસ પછી	-

Approved with following suggestions

1. Shifted to scientific information
2. Recast the wording accordingly

Scientific information

Application of two foliar sprays of azadirachtin 1500 ppm @ 0.0006 per cent (40 ml/ 10 L water), first at appearance of pest and second at 15 days after first spray for management of groundnut leaf miner.

(Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)

19.3.1.35 **Management of American serpentine leaf miner, *Liriomyza trifolii* (Burgess) on tomato under protected cultivation**

The farmers of Gujarat growing tomato under protected cultivation are recommended to apply three sprays of NSKE 5% (500 g/10 L water) or tobacco decoction 2% (200 ml/10 L water), first at initiation of the leaf miner and subsequent sprays at 10 days interval for effective management.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ ha.	Dose (g/ml) /10 L			
2022-23	Tomato	Leaf miner	Neem seed kernel extract	-	5	25 kg	500 g	500	First spray at appearance of the pest and subsequent two sprays at 10 days interval	-
			Tobacco decoction	-	2	10 L	200 ml			-

ગુજરાતમાં ટામેટાની રક્ષીત ખેતી કરતાં ખેડૂતોને પાનકોરીયાનાં અસરકારક વ્યવસ્થાપન માટે લીંબોળીનાં મીંજનો અર્ક ૫% (૫૦૦ ગ્રામ પ્રતિ ૧૦ લિટર પાણી) અથવા તમાકુનો ઉકાળો ૨% (૨૦૦ મીલી પ્રતિ ૧૦ લીટર પાણી) ના ત્રણ છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ જીવાતનાં ઉપદ્રવની શરૂઆત થયે અને ત્યારબાદ ૧૦ દિવસનાં **આંતરે** કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણ ની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડપી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	ટામેટા	પાનકોરીયુ	લીમડાનીમીંજ નો અર્ક	-	૫	૨૫ કિ.ગ્રા	૫૦૦ ગ્રામ	૫૦૦	પ્રથમ છંટકાવ જીવાતની શરૂઆત થયે અને ત્યારબાદ બે છંટકાવ ૧૦ દિવસ ના અંતરે	-
			તમાકુનો ઉકાળો	-	૨	૧૦ લીટર	૨૦૦ મીલી			-

Approved with following suggestions

1. Split the recommendation in farmers and scientific information

2. Write "આંતરે" instead of "અંતરે"

3. Write "રક્ષીત" instead of "સંરક્ષીત"

4. Mention "%"instead of "ટકા" in Gujarati text

5. Remove @ from the recommendation text

Scientific information

Application of three sprays of azadirachtin 1500 ppm 0.15 % (40 ml/10 L water), first at initiation of the pest and subsequent sprays at 10 days interval for effective management of serpentine leaf miner in tomato.

(Action: Asstt. Prof. Ento., COH, SDAU, Jagudan)

19.3.1.36 **Biological management of common scab (*Streptomyces scabies*) of potato**

The farmers of Gujarat growing potato are recommended to treat tuber with 3% boric acid (IP) solution (spray before tuber sprouting) followed by soil application of boric acid (IP) 4 kg/ha at the time of planting or tuber treatment with *Bacillus subtilis* 1.15 WP (1×10^8 CFU/g) 1 kg/ ha tuber followed by soil application of 100 kg FYM enriched with 1 kg *Bacillus subtilis* 1.15 WP (1×10^8 CFU/g) enriched before a week and apply at the time of planting for management of common scab of potato.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2023	Potato	Common scab	Boric acid (IP)	-	3	4 kg	300 gm	-	Seed treatment with 3% boric acid (IP) solution spray followed by soil application of boric acid (IP) @ 4 kg/ha	-
			Bacillus subtilis	-	-	1 kg + 1 kg	-	-	Seed treatment with *Bacillus subtilis*@ 1 kg/ ha seed before planting followed by soil application with *Bacillus subtilis*, 1 kg mixed in 100 kg FYM,	-

ગુજરાતના બટાટાનું વાવેતર કરતા ખેડૂતોને કોમન સ્કેબરોગના

વ્યવસ્થાપન માટે કંદને 3% બોરીક એસીડ (આઇપી) દ્રાવણથી (કંદના સ્ફુરણ પહેલા છંટકાવ કરવો) માવજત આપવી અને ત્યારબાદ બોરીક એસીડ (આઇપી) ૪ કીગ્રા/હે. પ્રમાણે વાવેતર સમયે જમીનમાં આપવો અથવા કંદને બેસીલસ સબટીલીસ ૧.૧૫ વે.પા. (૧× ૧૦^{૯} સીએફયુ/ગ્રામ) ૧ કિગ્રા/૧ હેકટર પ્રમાણે બીજને માવજત આપવી ત્યારબાદ ૧ કીગ્રા બેસીલસ સબટીલીસ ૧.૧૫ વે.પા. (૧×૧૦^{૯} સીએફયુ/ગ્રામ) પ્રતિ ૧૦૦ કિગ્રા છાણીયા ખાતરમાં ભેળવી, વાવેતરના એક અઠવાડિયા પહેલા સંવર્ધિત કરી વાવેતર સમયે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

સીઆઇબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરૂરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
	બટાટા	કોમન સ્કેબ	બોરિક એસિડ (આઇપી)	-	૩	૪ કિ.ગ્રા	૩૦૦ ગ્રામ	-	બીજ કંદને તેના સ્ફુરણ પહેલા 3% બોરીક એસીડ(I P) દ્રાવણ વડે બીજની માવજત આપી બોરિક એસિડ(આઇપી) @ ૪કીગ્રા/હે. પ્રામાણે પાયામાં જમીનમાં આપવો	-
			બેસીલસ સબટીલીસ	-	-	૧ કિ.ગ્રા + ૧ કિ.ગ્રા	-	-	વાવેતર કરતા પહેલા ૧ હેકટરના બીજને ૧ કીગ્રા બેસીલસ સબટીલીસ ૧X ૧૦^{૯} ની બીજમાવજત આપી બેસીલસ સબટીલીસ (૧કીગ્રા પ્રતિ ૧૦૦ કિગ્રા છાણીયા ખાતરમાં ભેળવી, વાવેતરના એક અઠવાડિયા પહેલા સંવર્ધિત કરી વાવેતર સમયે જમીનમાં આપવું.	-

Approved with following suggestion

1. Give separate data of healthy and scab infected tuber yield and recalculate economics accordingly

2. Recalculate Y x T interaction for disease incidence
3. Replace “incubate for” with “enriched before”
4. Revised both recommendation wording accordingly

(Action: Asstt. Prof. Patho., Potato Research Station, SDAU, Deesa)

19.3.1.37 **Management of soil-borne diseases in Soybean**

The farmers of Gujarat growing soybean are recommended to treat the seed with penflufen 13.28 % + trifloxystrobin 13.28 % FS 1 ml/kg of seed for effective and economic management of root rot disease.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Soybean	Root rot	Penflufen 13.28 % + Trifloxystrobin 13.28 % FS	13.28 +13.28	26.56	60 ml	-	-	Seed treatment at the rate of 1 ml/kg of seed before sowing	-

ગુજરાતમાં સોયાબીનની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે સોયબીનના મૂળના કોહવારો રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે વાવણી પહેલા પેનફ્લૂફેન ૧૩.૨૮% + ટ્રાઇફ્લોકસી સ્ટ્રોબિન ૧૩.૨૮% એફએસ ૧ મિલી પ્રતિ કિ.ગ્રા. ની બીજ માવજત આપવી.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			

૨૦૨૨-૨૩	સોયાબીન	મૂળનો કોહવારો	પેનફ્લૂફેન ૧૩.૨૮% + ટ્રાઇફ્લોકસી-સ્ટ્રોબિન ૧૩.૨૮%	૨૬.૫૬	૬૦ મિલી	-	-	-	વાવણી પૂર્વે ફૂગનાશક દવાની ૧ મિલી પ્રતિ કિગ્રા બીજના દરે બીજ માવજત આપવી	-

Approved with following suggestions

1. Write "2022-23" instead of "2021-22"
2. Correct the concentration in CIBRC table
3. Mention dilution quantity of water for seed treatment
4. Mention time interval for seed treatment
5. Mention foot note about other diseases
6. Delete "**આવતા**"
7. Write **સોયાબીન** instead of **સોયબીન** in Gujarati recommendation text

(Action: Asstt. Res. Sci., Agricultural Research Station, SDAU, Ladol)

19.3.1.38 **Management of foliar fungal diseases of soybean**

The farmers of Gujarat growing soybean are recommended to apply three sprays of pyraclostrobin 13.3 % + epoxiconazole 5% SE 5 g/ 10 L of water, (first spray at the time of initiation of the disease and subsequent two sprays at 15 days interval after 1st spray) for management of *Alternaria* and *Cercospora* leaf spot of soybean.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Soybean	Alternaria and Cercospora leaf spot	Pyraclostrobin 13.3% + Epoxiconazole 5% SE	133+50 g	18.3	250g	5 g	500	First spray applied at the initiation of disease, second and third spray will be applied at fifteen days intervals	27

ગુજરાતમાં સોયાબીનની ખેતી કરતાં ખેડૂતોને અલ્ટરનારીયા તથા સરકોસ્પોરા પાનના ટપકાના રોગના નિયંત્રણ માટે પાયરાક્લોસ્ટ્રોબીન ૧૩.૩% + એપોકક્ષીકોનાજોલ ૫% એસઈ ૫ ગ્રામ / ૧૦ લી. પાણીના ત્રણ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે, જે પૈકી પ્રથમ છંટકાવ રોગની શરૂઆત થાય ત્યારે અને બીજા બે છંટકાવ ૧૫ દિવસ ના ગાળે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરૂરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	સોયાબીન	અલ્ટરનારીયા તથા સરકોસ્પોરા પાનના ટપકાનો રોગ	પાયરાક્લો-સ્ટ્રોબીન ૧૩.૩% + એપોકક્ષી-કોનાજોલ ૫% એસ. ઈ	૧૩૩ + ૫૦	૧૮.૩	૨૫૦ ગ્રામ	૫ ગ્રામ	૫૦૦	પ્રથમ છંટકાવ રોગની શરૂઆત થયે ત્યારબાદ બે છંટકાવ પંદર દિવસના આંતરે કરવા	૨૭

Suggestions: Approved with following suggestions

1. Correct spelling "epoxiconazole" instead of "epoxiconaxole"
2.Delete **"**for getting the higher yield and minimum disease intensity" from recommendation text
3. Check the concentration in CIBRC table
4. Write "2022-23" instead of "2021-22"

(Action: Asstt. Res. Sci., Agricultural Research Station, SDAU, Ladol)

19.3.1.39 **Eco-friendly management of fungal leaf/fruit spot of pomegranate**

The farmers growing pomegranate in Gujarat are recommended to apply three sprays of *Pseudomonas fluorescens* 1.75 WP (10^8 CFU/g) 50 g/10 L water or NSKE 5% (500 g/10 L water), first at appearance of the disease and subsequent two sprays at 15 days interval for effective management of leaf and

fruit spot disease.

As per CIBRC Format

Year	Crop	Pest/Disease	Pesticide with formulation	Dosage				Dilution in water (L/ha)	Application Schedule	Waiting period/PHI (days)
				g a.i./ha	Conc. (%)	Quantity of Formulation/ha.	Dose (g/ml) /10 L			
2022-23	Pomegranate	Leaf spot	*Pseudomonas fluorescens* (10^8 CFU)	-	1.75	5 kg	50 g	1000 L	First spray at appearance of the disease and subsequent two sprays at 15 days interval	-
			Neem seed kernel extract	-	5	50 kg	500 g			-

ગુજરાતમાં દાડમની ખેતી કરતા ખેડૂતોને પાન તથા ફળના ટપકાના રોગ્ ના અસરકારક વ્યવસ્થાપન માટે સ્યુડોમોનાસ ફ્લુરોસેન્સ ૧.૭૫ ટકા (૧×૧૦^{૮} સીએફયુ/ગ્રામ) ૫૦ ગ્રામ પ્રતિ ૧૦ લિ. પાણી અથવા લીમડાની મીંજનો અર્ક ૫% (૫૦૦ ગ્રામ પ્રતિ ૧૦ લિ. પાણી) ના ત્રણ છંટકાવ કરવા, જે પૈકી પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને ત્યારબાદ બે છંટકાવ ૧૫ દિવસના આંતરે કરવાની ભલામણ કરવામાં આવે છે.

સીઆઈબી આરસી ફોર્મેટ પ્રમાણે

વર્ષ	પાક	જીવાત/રોગ	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીના દ્રાવણની કુલ જરુરીયાત (લીટર/ હેકટર)	વાપરવા ની પદ્ધતિ	વેઇટીન્ગ પિરિયડ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ (ગ્રામ/ હેક્ટર)	સાંદ્રતા (%)	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	૧૦ લીટર પાણીમાં જથ્થો			
૨૦૨૨-૨૩	દાડમ	પાન અને ફળના ટપકાં	*સ્યુડોમોનાસ ફ્લુરોસેન્સ*	-	૧૭૫	૫ કિ.ગ્રા	૫૦ ગ્રામ	૧૦૦૦	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને ત્યારબાદ બે છંટકાવ ૧૫ દિવસના અંતરે	-
			લીમડાની મીંજનો અર્ક	-	૫	૫૦ કિ.ગ્રા	૫૦૦ ગ્રામ			-

Approved with following suggestions

	1. Split the recommendation in farmers and scientific information 2. Correct the concentration in tables **Scientific information** Application of three sprays of Azadirachtin 1500 ppm 40 ml/ 10 L water, first at appearance of the disease and subsequent two sprays at 15 days interval for effective management of leaf and fruit spot of pomegranate. (Action: Asstt. Prof., Patho., COH, SDAU, Jagudan)

19.3.2 INFORMATION FOR SCIENTIFIC COMMUNITY
ANAND AGRICULTURAL UNIVERSITY
Agricultural Entomology

19.3.2.1	**Bio-efficacy of organic inputs against aphid in fennel**
	Application of two sprays of *Lecanicillium lecanii* 1.15% WP (1 x 10^9 cfu/g) 40 g or *Metarhizium anisopliae* 1.15% WP (1 x 10^9 cfu/g) 40 g per 10 litre of water mixed with sticker 0.1% (10 ml/ 10 litre of water) first at starting of colony formation of aphid and second at fifteen days after the first spray found effective for the management of aphid infesting fennel. **Approved with following suggestions:** 1. Delete "either" from English recommendation text (Action: Professor & Head, Department of Entomology, BACA, AAU, Anand)
19.3.2.2	**Development of biointensive pest management (BIPM) module for the management of shoot and fruit borer, *Leucinodes orbonalis* (Guenee) in brinjal**
	The following components of bio-intensive pest management (BIPM) module found effective for the management of shoot and fruit borer, *Leucinodes orbonalis* infesting brinjal. 1. Intercropping of brinjal with coriander (seed purpose) (2:1 rows) 2. Clipping of damaged shoots 3. Installation of pheromone trap for *L. orbonalis* @40/ha at 30 DATP (Change lure at 21 days interval) 4. Three sprays of azadirachtin 10000 ppm (20 ml/10 litre water) at 30, 75, 105 DATP, two sprays of *Bacillus thuringiensis* AAU-Bt1 (2x10^8 cfu/g) 1% WP (50 g/10 litre water) at 45, 90 DATP, and one spray of entomopathogenic nematode (EPN) *Steinernema carpocapsae* 1% WP (80 g/10 litre water) at 60 DATP **Suggestions: Approved** (Action: Principal Research Scientist, AICRP on Biological Control of Crop Pests, AAU, Anand)
19.3.2.3	**Isolation, characterization and bioassay studies of *Spodoptera frugiperda* nuclear polyhedrosis virus (*Sf*NPV)**

	The maximum number of NPV infected larvae of fall armyworm, *Spodoptera frugiperda* found during cob formation stage of maize. The native isolate of *Sf*NPV found to possess tetrahedral to hexagonal shaped POBs. The median lethal concentration (LC_{50}) was 5.1 x 10^6 POBs/ml and there was no cross infectivity of native isolate of *Sf*NPV against *Spodoptera litura*. **Approved with following suggestions:** 1. Mention "maximum" instead of "more" in recommendation **(**Action**:** Principal Research Scientist, AICRP on Biological Control of Crop Pests, AAU, Anand)
19.3.2.4	**Bio-efficacy of different mycoinsecticides for the management of leaf eating caterpillar, *Spodoptera litura* (F) in bidi tobacco nursery**
	Two applications of *Metarhizium anisopliae* 1% WP, 2 × 10^8 cfu 5 g/lit water OR oil formulation of *Metarhizium anisopliae* 1% (2 × 10^8 cfu) 5 ml/lit water first at initiation of the pest and subsequent at 10 days interval found effective for the management of leaf eating caterpillar, *Spodoptera litura* (Fab.) in bidi tobacco nursery. **Approved with following suggestions:** 1. Revise recommendation text **(**Action: Assistant Research Scientist (Ento.), Bidi Tobacco Research Station, AAU, Anand**)**
19.3.2.5	**Residues and persistence of fluoxapiprolin 30 g/l + flupicolide 200 g/l SC in potato**
	Three foliar sprays of the combi-product fluoxapiprolin 30 g/L + fluopicolide 200 g/L SC to the potato crop at 18.75 + 125 g a.i. /ha at 7 days interval starting 35 days prior to harvest of potato tubers, resulted in the residues of fluoxapiprolin and fluopicolide in potato tubers at 21 days of last foliar spray were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 21 days can be suggested if fluoxapiprolin 30 g/L + fluopicolide 200 g/L SC is recommended for use in potato crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
19.3.2.6	**Residues and persistence of iprovalicarb 8.4% + copper oxychloride 40.6% WG in potato**

	Three foliar sprays of combi-product iprovalicarb 8.4% + copper oxychloride 40.6% WG to potato crop at 105 + 507.50 g a.i./ha at 7 days interval starting 35 days prior to harvest of potato tubers, resulted in the residues of iprovalicarb in potato tubers at 21 days after last foliar spray were found below the LOQ of 0.01 mg/kg. The residue of copper oxychloride as Cu (fresh weight basis) in potato tubers found below the FSSAI's MRL of 30 mg/kg. Therefore, the PHI of 21 days can be suggested if iprovalicarb 8.4% + copper oxychloride 40.6% WG is recommended for use in potato crop. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.7	**Residues and persistence of spirotetramat 30 g/l + diafenthiuron 120 g/l SC in chilli**
	Three foliar sprays of combi-product spirotetramat 30 g/L + diafenthiuron120 g/L SC to chilli crop at 75 + 300 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of spirotetramat and diafenthiuron in green chilli fruits at 21 days after last foliar spray were found below the FSSAI's MRLs of 0.8 and 0.05 mg/kg, respectively. Therefore, the PHI of 21 days can be suggested if the combi-product spirotetramat 30 g/L + diafenthiuron 120 g/L SC is recommended for use in chilli crop. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.8	**Residues and persistence of tetraniliprole 120 g/l + spirotetramat 240 g/l SC in cabbage**
	Three foliar sprays of combi-product tetraniliprole 120 g/L + spirotetramat 240 g/L SC to cabbage crop at 45 + 90 g a.i./ha at 7 days interval starting from head development stage, resulted in the residues of spirotetramat in the cabbage head after 2 h of the last foliar spray were found below the CODEX's MRL of 2.0 mg/kg. While the MRL for tetraniliprole residues can be estimated by considering the highest residues level after initial deposit for risk assessment. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.9	**Residues and persistence of tetraniliprole 120 g/l + spirotetramat 240 g/l SC in chilli**

	Three foliar sprays of combi-product tetraniliprole 120 g/L + spirotetramat 240 g/L SC to chilli crop at 45 + 90 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of tetraniliprole and spirotetramat in green chilli fruits at 49 days after last foliar spray were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 49 days can be suggested if the combi-product tetraniliprole 120 g/L + spirotetramat 240 g/L SC is recommended for use in chilli crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
19.3.2.10	**Residues and persistence of fluopyram 400 g/l SC in cucumber (through drip application)**
	Single application of fluopyram 400 g/L SC at 500 g a.i./ha through drip irrigation to cucumber crop (at 14 days after sowing) or two applications at 250 g a.i./ha (first at 14 days after sowing and another at 14 days after first application), resulted in the residues of fluopyram in cucumber fruits were found below the CODEX's MRL of 0.5 mg/kg for all the sampling intervals. Therefore, the PHI of 30 days can be suggested if fluopyram 400 g/L SC is recommended for use in cucumber crop. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.11	**Residues and persistence of iprovalicarb 8.4% + copper oxychloride 40.6% WG in cucumber**
	Three foliar sprays of combi-product iprovalicarb 8.4% + copper oxychloride 40.6% WG to cucumber crop at 105 + 507.50 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of iprovalicarb in cucumber fruits at 7 days after the last foliar spray were found below the LOQ of 0.01 mg/kg. The residue of copper oxychloride as Cu (fresh weight basis) also found below the FSSAI's MRL of 30 mg/kg on 2 hrs. after the last spray. Therefore, the PHI of 7 days can be suggested if iprovalicarb 8.4% + copper oxychloride 40.6% WG is recommended for use in cucumber crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.12	**Residues and persistence of fluopyram 400 g/l SC in pomegranate (through drip application)**

	Single application of fluopyram 400 g/L SC at 500 g a.i./ha through drip irrigation to pomegranate tree (first drip irrigation after defoliation) or two applications at 250 g a.i./ha (first drip irrigation after defoliation and another at 45 days after first application), resulted in the residues of fluopyram in mature fruits at 197 days after last application were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 197 (for single application at 500 g a.i./ha) and 152 days (for two applications at 250 g a.i./ha) can be suggested, if fluopyram 400 g/L SC is recommended for use in pomegranate. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
19.3.2.13	**Residues and persistence of spirotetramat 120 g/l + imidacloprid 120 g/l SC in potato**
	Three foliar sprays of combi-product spirotetramat 120 g/L + imidacloprid 120 g/L SC to potato crop at 75 + 75 g a.i./ha at 7 days interval starting from potato tuber formation stage, resulted in the residues of spirotetramat were found below the CODEX MRL of 0.8 mg /kg within 2 hrs. after the last application. However, the MRL for imidacloprid can be estimated by considering the highest residue level after initial deposit for risk assessment. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.14	**Residues and persistence of tetraniliprole 120 g/l + spirotetramat 240 g/l SC in tomato**
	Three foliar sprays of combi-product tetraniliprole 120 g/L + spirotetramat 240 g/L SC to tomato crop at 45 + 90 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of tetraniliprole and spirotetramat in the tomato fruits at 28 days after the last foliar spray were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 28 days can be suggested if the combi-product tetraniliprole 120 g/L + spirotetramat 240 g/L SC is recommended for use in tomato crop. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.15	**Residues and persistence of fluoxapiprolin 30 g/l + fluopicolide 200 g/l SC in tomato**
	Three foliar sprays of the combi-product fluoxapiprolin 30 g/L + fluopicolide 200 g/L SC to tomato crop at 18.75 + 125 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of fluoxapiprolin and fluopicolide in tomato fruits at 21 days of last application were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 21 days can be suggested if the combi-product fluoxapiprolin 30 g/L + fluopicolide 200 g/L SC is recommended for use in tomato crop.

	Suggestions: Approved (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.16	**Residues and persistence of tetraniliprole 120 g/l + thiacloprid 360 g/l SC in brinjal**
	Three foliar sprays of combi-product tetraniliprole 120 g/L + thiacloprid 360 g/L SC to brinjal crop at 45 + 135 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of thiacloprid in fruits immediately 2 h of last foliar spray were found below the FSSAI's MRL of 0.7 mg/kg. Whereas tetraniliprole residues were found below the LOQ of 0.01 mg/kg from 21 days after the last foliar spray. The MRL for tetraniliprole can be estimated by considering the highest residues level after initial deposit for risk assessment. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.17	**Residues and persistence of tetraniliprole 200 g/l SC in brinjal**
	Three foliar sprays of tetraniliprole 200 g/L SC to brinjal crop at 50 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of tetraniliprole in fruits at 21 days after the last foliar spray were found below the LOQ of 0.01 mg/kg. Therefore, the PHI of 21 days can be suggested if tetraniliprole 200 g/L SC is recommended for use in brinjal crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.18	**Residues and persistence of iprovalicarb 8.4% + copper oxychloride 40.6% WG in tomato**
	Three foliar sprays of a combi-product iprovalicarb 8.4% + copper oxychloride 40.6% WG to tomato crop at 105 + 507.5 g a.i./ha at 7 days interval starting from fruit development stage, resulted in the residues of iprovalicarb in tomato fruits at 21 days after the last foliar spray were found below the LOQ of 0.01 mg/kg. While the residues of copper oxychloride as Cu (fresh weight basis) in tomato fruits were found below the FSSAI's MRL of 30 mg/kg. Therefore, the PHI of 21 days can be suggested if iprovalicarb 8.4% + copper oxychloride 40.6% WG is recommended for use in tomato crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.19	**Residues and persistence of mancozeb 75% WP in cumin**

	Three foliar sprays of mancozeb 75% WP at 1500 g a.i./ha to cumin crop at 15 days interval starting from appearance of blight disease, resulted in the residues of mancozeb (as CS_2) in cumin leaves at 7 days after the last foliar spray were found below the FSSAI's MRL of 10 mg/kg. Further, residues in cumin seed collected 56 days after the last application were also found below the FSSAI's MRL of 10 mg/kg. Therefore, the PHI of 56 days can be suggested for mancozeb 75% WP use in cumin crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
19.3.2.20	**Residues and persistence of propanil 60% + propyrisulfuron 2% WG in paddy**
	Application of combi-product propanil 60% + propyrisulfuron 2% WG to paddy field at 1550 g a.i./ha at post-emergence of weeds (i.e., 2-3 leaves stage), resulted in the residues of propanil and propyrisulfuron in paddy plant foliage at 15 days after application were found below the LOQ of 0.05 mg/kg. Moreover, the residues in paddy grain at 74 days after herbicide application were also found below the LOQ level. Therefore, the PHI of 74 days can be suggested if propanil 60 % + propyrisulfuron 2% WG is recommended for use in paddy crop. **Suggestions: Approved** **(**Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.2.21	**Evaluation of organic inputs against aphid infesting broccoli (*Brassica oleracea* var. *italica* L.)**
	Application of two sprays of *Lecanicillium lecanii* 1.15% WP (1 x 10^9 cfu/g) 40 g per 10 litre of water mixed with sticker 0.1% (10 ml/ 10 litre of water) first at initiation of aphid and second at 15 days after first spray found effective against aphid infesting broccoli. **Suggestions: Approved** **(**Action**:** Assistant Professor & Head, Department of Plant Protection, CoH, AAU, Anand**)**
19.3.2.22	**Isolation and characterization of endophytes from tomato plants grown in Anand district**

	The highest number of endophytic fungal and bacterial isolates were recorded at fruit development stage of tomato plant. The endophytic *Fusarium* sp. (AAUBC EF-1), *Acrophialophora* sp. (AAUBC EA-1) and *Talaromyces* sp. (AAUBC ET-1) were found to possess entomopathogenic potential against insect pest, *Corcyra cephalonica* and endophytic *Bacillus subtilis* (AAUBC-EBS1, AAUBC-EBS2), *Bacillus velezensis* (AAUBC-EBV1, AAUBC-EBV2) were found to possess antimicrobial potential against phytopathogens *viz*., *Fusarium oxysporum* f. sp. *lycopersici* and *Macrophomina phaseolina.* **Suggestions: Approved** **(Action:** Training Associate, Directorate of Extension Education, AAU, Anand)
19.3.2.23	**Surveillance programme of *Helicoverpa armigera* in chickpea** The larval population of *Helicoverpa armigera* in chickpea had a highly significant positive correlation with morning relative humidity while significantly negatively correlated with minimum temperature. The peak activity of *H. armigera* was observed during 4th to 8th Standard Meteorological Week (SMW). **Approved with following suggestions:** 1. Remove "Based on 15 years of data" recommendation text **(**Action: Assistant Research Scientist (Ento.), Agricultural Research Station, AAU, Derol)
19.3.2.24	**Bio-efficacy of different insecticides against thrips, *Caliothrips indicus* Bagnall on pea**
	Application of two sprays of imidacloprid 40 % + fipronil 40 % 80 WG 350 g. a. i. /ha (8.75 g /10 lit of water) or spinosad 45 SC 73 g. a.i. /ha (3.25 ml/10 lit of water), first at initiation of pest and second at 10 days after first spray found effective for management of thrips, *Caliothrips indicus* on pea. **Approved with following suggestions:** 1. Write "or" instead of "and" **(**Action: Assistant Professor, Department of Entomology, CoA, AAU, Jabugam**)**
<u>Plant Pathology and Nematology</u>	
19.3.2.25	**Bio-efficacy of different bioagents against early blight of tomato**

	The application of *Trichoderma harzianum* (AAUBC-Th1)-1% WP (min. 2 x 10^6 cfu/g) and *Pseudomonas fluorescens* (NBAIR PfDWD)-1% WP (min. 2 x 10^8 cfu/g) through any of the following methods found effective for the management of early blight disease of tomato. 1. Soil application of enriched vermicompost (1.25 kg of each formulation/250 kg vermicompost/ha) before transplanting, seedling root dip (5 g of each formulation/litre of water) for 30 min just before transplanting and two foliar sprays (2.5 g of each formulation/litre of water), first spray starting with the initiation of the disease and second at 10 days after first spray. 2. Soil application of enriched vermicompost (2.5 kg of *P. fluorescens*/250 kg vermicompost/ha) before transplanting, seedling root dip (10 g of *P. fluorescens*/litre of water) for 30 min just before transplanting and two foliar sprays (5 g of *P. fluorescens*/litre of water), first spray starting with the initiation of the disease and second at 10 days after first spray. **Approved with following suggestions:** 1. Mention cfu in recommendation **(**Action: Principal Research Scientist, AICRP on Biological Control of Crop Pests, AAU, Anand & Professor & Head, Department of Plant Pathology, BACA, AAU, Anand**)**
19.3.2.26	**Evaluation of nematicides against *Meloidogyne incognita* infecting capsicum in polyhouse**
	Two applications of fluopyram 34.48 % SC @ 250 g a.i./ha one day after transplanting and again 25 DAT with 200 ml water/plant or single application of fluensulfone 2% GR @ 1.5 g/plant one day after transplanting were proved effective against root-knot nematode, *Meloidogyne incognita* by reducing root-knot index. **Approved with following suggestions:** 1. Spell out "*M. incognita*" as "*Meloidogyne incognita"* full form 2. Remove "and increasing fruit yield of capsicum" from recommendation text **(**Action: Professor & Head, Department of Nematology, BACA, AAU, Anand**)**
19.3.2.27	**Screening and evaluation of diverse germplasm of okra for nematode resistance** Following germplasm of okra were found susceptible (S) to highly susceptible (HS) against root-knot nematodes under sick plot conditions with initial nematode population was >1.5 IJs/cc soil. Susceptible (S): • *A. manihot* var. *tetraphyllus* (Accession No. IC 90410) Highly Susceptible (HS): • *A. manihot* var. *tetraphyllus* (Accession No. IC141025, IC90364, IC90478, IC90499, IC90504, IC90515, IC90518, IC90519, IC90522, IC90524, IC140967, IC140972, IC140976, IC140996, IC140006,

	IC141019, IC141021, IC141022), *A. moschatus* (AMA02), *A. manihot* var. *tetraphyllus* (U.G. Hostel), *A. manihot* var. *tetraphyllus* (canal), Pusa sawani (check), Parbhani kranti, GO 2, GAO 5, Arka Anamika, GJO-3, GO-6 and GAO-8. **Suggestions: The house suggested to conclude the experiment** (Action: Professor & Head, Department of Nematology, BACA, AAU, Anand)
19.3.2.28	**Efficacy of ready-mix fungicides for the management of damping-off disease in bidi tobacco nursery**
	Application of metiram 55% + pyraclostrobin 5% WG, (17.5 g/50 l water/100 m^2) as a spray drench found effective for the management of damping-off disease in bidi tobacco nursery. **Suggestions: Approved** (Action: Associate Research Scientist (Nema.), Bidi Tobacco Research Station, AAU, Anand)
19.3.2.29	**Screening of promising entries of rice selected from advance generation breeding material against bacterial leaf blight**
	Rice genotypes NWGR-17008 and NWGR-17048 were found resistant (score 1.0), while both the checks TN 1 and GR 11 were found highly susceptible (score 9.0) against bacterial leaf blight under artificial inoculation conditions in the field. **Suggestions: The house suggested to conclude the experiment** (Action: Associate Research Scientist (Pl. Path.), Main Rice Research Station, AAU, Nawagam)
19.3.2.30	**Screening of promising entries of rice selected from advance generation breeding material for multiple disease resistance**
	Rice genotype NWGR-17008 was found resistant (score 1.0), while both the checks HR 12 and Gurjari were found susceptible (score 7.0) against grain discolouration under natural conditions in the field. Whereas none of the genotype was found resistant against sheath rot, leaf blast and neck blast. **Suggestions: The house suggested to conclude the experiment** (Action: Associate Research Scientist (Pl. Path.), Main Rice Research Station, AAU, Nawagam)
19.3.2.31	**Field evaluation of fungicides for the management of powdery mildew of okra**
	Two foliar spray of tebuconazole 50% + trifloxystrobin 25% WG, 0.093% (12 g per 10 litre of water) along with sticker 0.1% (10 ml per 10 litre of water) first at the initiation of disease and second spray at 15 days interval was effective in managing powdery mildew in okra. **Suggestions: Approved** (Action: Assistant Professor, Department of Plant Pathology, CoA, AAU, Jabugam)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

AGRICULTURAL ENTOMOLOGY	
19.3.2.32	**Effect of solarization on infestation of pulse beetle and quality of chickpea seeds**
	The farmers of Gujarat are recommended that solarization of chickpea seeds in transparent polythene (700 gauge) packet (5 cm thick seed layer) for 6 days (4 hrs on each day between 11.00 to 15.00 hours) during summer sunny days can protect from pulse beetle damage and maintain seed germination (Above 85.00% IMSCS level) up to 9 months of storage. **ખેડુત ઉપયોગી ભલામણ:** ગુજરાતના ખેડુતોને ભલામણ કરવામાં આવે છે કે, ચણાને પારદર્શક પાલ્સ્ટીક્ની કોથળી (૭૦૦ ગેજ) ૫ સે.મી ની જાડાઈનો થર રાખી ૬ દિવસ (દરરોજની ચાર કલાક, ૧૧.૦૦ થી ૧૫.૦૦ કલાકે) સુધી ઉનાળાના સુર્યપ્રકાશમાં રાખવાથી ભોટવા સામે રક્ષણ અને બીજનો ઉગાવો (૮૫.૦૦% આઈ. એમ. એસ. સી. એસ. લેવલ થી વધારે) ૯ મહીના સુધી સંગ્રહ કરી શકાય છે. **Approved with following suggestions:** 1. Shift to farming community 2. Recast text in English and Gujarati for farming community (Action: Research Scientist (Pearl Millet), Pearl Millet Research Station, JAU, Jamnagar)
PLANT PATHOLOGY	
19.3.2.33	**Efficacy of ready-mix formulation of fungicides against foliar diseases of cumin**
	Three spray of azoxystrobin 11 + tebuconazole 18.3 SC, 0.044 (15 ml/10 l of water), first at 30 days after sowing and subsequent two sprays at an interval of 20 days found effective for the management of blight and powdery mildew diseases of cumin. **Approved with following suggestion:** 1. Recast text by removing “It is informed to scientific community that” 2. Remove economical word in scientific information text (Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
19.3.2.34	**Efficacy of different fungicides against powdery mildew diseases of fenugreek**

	Three spray of difenoconazole 25 EC, 0.013% (5 ml/10 l of water) or tebuconazole 50 + trifloxystrobin 25 WG, 0.038% (5 g/10 l of water) or tebuconazole 10 + sulphur 65 WDG, 0.150% (20 g/10 l of water), first spray at 30 days after sowing and subsequent two sprays at 20 days interval after first spray found effective for management of powdery mildew of fenugreek. Treat the seeds with thiram @3 g/kg seed at the time of sowing **Approved with following suggestions:** 1. Recast text by removing "It is informed to scientific community that" 2. Mention seed treatment of thiram in text 3. Remove word Local from variety 4. Remove economical word in scientific information text (Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
19.3.2.35	**Utilization of different wastes on the yield of oyster mushroom (*Pleurotus sajor caju*)**
	Sugarcane bagasse can be used as substrate with 5 per cent spawn rate for the higher sporophore production (biological efficiency) with better nutritional and biochemical properties of oyster mushroom (*Pleurotus sajor caju*). **Approved with following suggestion:** 1. Recast text by removing "It is informed to scientific community that" (Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
19.3.2.36	**Chemical control of die-back of mango**
	Three spray of azoxystrobin 18.2 + difenoconazole 11.4 SC, 0.037% (12.50 ml/10 l of water) or azoxystrobin 18.2 + difenoconazole 11.4 SC, 0.030% (10 ml/10 l of water), first spray just before onset of monsoon and subsequent two sprays at 30 days interval after first spray found effective for management of die-back of mango. **Approved with following suggestion:** 1. Recast text by removing "It is informed to scientific community that" 2. Remove economical word in scientific information text (Action: Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

19.3.2.37	**Survey of pollinators fauna in different cucurbit vegetables in South Gujarat**
	Insect pollinators belongs to order Hymenoptera (08) [*Apis dorsata* (Fabricius), *Apis cerana indica* (Fabricius), *Apis florea* (Fabricius), *Tetragonula spp.*, *Megachile spp.*, *Xylocopa enestrate* (Fabricius), *Lasioglossum* (*Ctenonomia*) *serenum* (Cameron), *Sphecodes fumipennis* (Smith)]; Lepidopteran (04) [Common Crow (*Euploea core* Cramer),

	Common Grass Yellow (*Eurema hecabe* Linnaeus), Blue butterflies (*Lampides boeticus* Linnaeus) and Small Branded Swift (*Pelopidas mathias* Fabricius)] and Dipteran (01) [Syrphid flies] were noticed in cucurbit vegetable crops in South Gujarat. **Approved with following suggestions:** 1. Remove "among which, Hymenopteran was found to be abundant" from recommendation text (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.2.38	**Survey of natural enemies of *Spodoptera frugiperda* (J. E. Smith) in maize**
	Egg masses of maize fall armyworm (*Spodoptera frugiperda*) were naturally parasitized by *Telenomus remus* (Nixon) and larvae were naturally parasitized by four parasitoids *viz*., *Exorista xanthaspis* (Wiedemann), *Chelonus* sp., *Campoletis* sp. and *Apanteles* sp. as well as by one entomopathogenic fungi, *Metarhizium rileyi* (Farlow) and one parasitic nematode, *Hexamermis* sp. in the Dangs district of South Gujarat. **Suggestions: Approved** (Action: Principal, College of Agriculture,NAU, Waghai)
19.3.2.39	**Survey of natural enemies of *Helicoverpa armigera* (Hubner) in Gram**
	Larvae of gram pod borer (*Helicoverpa armigera*) were naturally parasitized by two parasitoids *viz*., *Carcelia illota* (Curran) and *Campoletis chlorideae* (Uchida) as well as by predatory spiders in the Dangs district of South Gujarat. **Approved with following suggestions:** 1. Include spiders population in the information text. (Action: Principal, College of Agriculture, NAU, Waghai)
19.3.2.40	**Survey of major insect pests, diseases and their natural enemies in brinjal, okra and chilli in tribal belt of Surat district**
	A. The highest population of sucking pests *viz.*, whitefly, aphid and leaf hopper in brinjal was found during first fortnight of October, first fortnight of December and second fortnight of September, respectively in tribal belt of Surat district. The highest fruit damage in brinjal by shoot and fruit borer was found during second fortnight of December. Maximum incidence of brinjal diseases *viz.*, fusarium wilt and little leaf was observed during mid October to mid December and December, respectively. The highest population of natural enemies *viz.*, lady bird beetle and *Chrysoperla* spp. in brinjal was found during second fortnight of September and November, respectively. B. The highest population of sucking pests *viz.*, leaf hopper, whitefly and mite in okra was found during first fortnight of October, second fortnight of October and first fortnight of October, respectively in tribal belt of

	Surat district. Maximum incidence of okra diseases *viz.*, powdery mildew and yellow vein mosaic was observed during December and mid September to mid November, respectively. The highest population of lady bird beetle was found during second fortnight of October. C. The highest population of thrips in chilli was found during first fortnight of October in tribal belt of Surat district. Maximum incidence of chilli diseases *viz.*, powdery mildew and leaf curl was observed during November-December. The highest population of lady bird beetle in chilli was found during second fortnight of November. **Approved with following suggestions:** 1. Write "shoot and fruit borer" in brinjal instead of "fruit and shoot borer" 2. Write "leaf hopper" in brinjal instead of "jassid (Action: Sr. Scientist & Head, KVK, NAU, Surat)
19.3.2.41	**Assessment of yield losses due to major insect pest in cashew**
	Per cent avoidable loss due to cashew major insect pest (Tea mosquito bug and Thrips) infestation was recorded in the range of 23.30 to 28.10 with an average 25.08 per cent. **Approved with following suggestions:** 1. Recast the wording of information 2. Mention name of insect pests in the text (Action: Principal, Polytechnic in Horticulture, NAU, Paria)
19.3.2.42	**Diversity of fungal endophytic communities from paddy (*Oryza sativa* L.) and their antagonistic activities in *in vitro***
	Fungal endophytic communities like *Alternaria alternata, Daldinia eschscholtzii, Daldinia korfii, Orbilia foliicola, Curvularia lunata, Aspergillus terreus, Aspergillus* sp., *Aspergillus niveus, Trichoderma harzianum, Penicillium citrinum, Xylaria feejeensis, Trichoderm aerinaceum* and *Aspergillus flavus* more at milky and dough stage. *Aspergillus niveus* is effective against *Sclerotium oryzae* and *Aspergillus flavus*is against *Pyricularia oryzae* and *Sarocladium oryzae.* **Approved with following suggestions:** 1. Recast the wording of information 2. Remove "Paddy (*Oryza sativa* L.) variety GNR-3 possess" and "effective" (Action: Professor & Head, Deptt. of Plant Pathology, NMCA, NAU Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

19.3.2.43	**Management of wheat aphid (*Rhopalosiphum maidis* F.) in wheat**
	Application of azadirachtin 1500 ppm 50 ml/ 10 L of water or thiamethoxam 25 WG 4 g/10 L of water or acetamiprid 20 SP 3 g/10 L of water at initiation of aphid in wheat for effective management.

	Approved with following suggestion 1. Add azadirachtin in recommendation (Action: Asstt. Res. Sci., Wheat Research Station, SDAU, Vijapur)
19.3.2.44	**Bio-efficacy of newer acaricides and botanical against red spider mite, *Tetranychus urticae* in summer okra**
	Application of two sprays of propargite 57 % EC 0.057 % (10 ml/10 L water), first at initiation of red spider mite and second at 15 days after the first spray for the effective management in okra. **Approved with following Suggestion/s:** 1. Add residue information in the text (Action: Assoc. Prof., Polytechnic in Agriculture, SDAU, Khedbrahma)
19.3.2.45	**Management of powdery mildew in fenugreek**
	Application of two foliar sprays of hexaconazole 5 SC 0.0050 % (10 ml/10 L water) or wettable sulphur 80 WP 0.20 % (25 g/ 10 L water) found effective in management of powdery mildew in fenugreek. First spray should be made at the initiation of the disease and second at 15 days after the first spray. **Approved with following Suggestion/s:** 1. Remove "@" (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.2.46	**Interaction between *Rhizobium* bioinoculant and Root-knot nematode on cowpea**
	Application of *Rhizobium* (8.2 x10^8 cfu /ml) 1 ml/pot in ring around the plant 15 days prior to nematodes reduces galls/plant and root-knot index in cowpea plant. **Suggestions: Not Approved** (Action: Asstt. Prof., Nemato., CPCA, SDAU, Sardarkrushinagar)
19.3.2.47	**Interaction between *Rhizobium* bioinoculant and Root-knot nematode on chickpea**
	Application of *Rhizobium* (7.5 x10^8 cfu /ml) 1 ml/pot in ring around the plant 15 days prior to nematodes reduces galls/plant and root-knot index in chickpea plant **Suggestions: Not Approved** (Action: Asstt. Prof., Nemato., CPCA, SDAU, Sardarkrushinagar)
19.3.2.48	**Nematicidal properties of aqueous leaf extracts of marigold and neem on root-knot nematode**
	Application of Neem + Marigold leaf extract 15 % (15 ml/ 100 ml of water) per pot each or Neem leaf extract 15 % (15 ml/ 100 ml of water) were most effective in reducing the root-knot index and nematode population in tomato. **Suggestions: Not Approved** (Action: Asstt. Prof., Nemato., CPCA, SDAU, Sardarkrushinagar)

19.3.2.49	**Survey, collection and identification of the macromycetes from Amirgadh and Danta**
	Biodiversity studies on macromycetes carried out in Amirgadh and Danta talukas of Banaskantha district revealed a spices richness of 47 and 41 respectively. The total 48 mushroom species were distributed among Twenty different family, Nine different orders, Two classes and Two divisions. Among identified species 9 are edible (*(Leucocopinus sp., Agaricus campestris*, *Macrocybe crassa*, *Macrolepiota procera*, *Pleurotus sp, Pleurotus djamore*, *Phallus impudicus*, *Phallus sp* and *Tramella foliacea),* 10 inedible(*Agaricus rotalis*, *Leucoagaricus americanus*, *Leucocoprinus cretaceous*, *Lepiota sp, Parasola sp.1, Parasola sp. 2, Parasola conopilus*, *Candolleomyces sp., Mycena galericulata* and *Microporus xanthopus*), 16 medicinal(*Coprinus comatus*, *Schizophyllum commune, Schizophyllum sp., Cyathus striatus*, *Geatrum saccatum*, *Ramaria flaccida*, *Ramariopsis kunzei, Amylosporus campbellii*, *Ganoderma lucidum*, *Polyporales sp, Favolus tenuiculus*, *Ganoderma sp, Auricularia auricular*, *Xylaria polymorpha*, *Xylaria sp.and Daldinia concentric),* 10 are conditionally edible(*Podoxis pistillari, Coprinus comatus, Termitomycetes sp, Marasmius elegans, Marasmiellus rameali, Marasmius sp, Marasmius paratrichotus, Marasmius rotula*, *Clitocybe glaucocana* and *Clitocybe sp.*) and 4 are poisonous species (*Agaricus hondesi, Agaricus trisulphurales, Amanita sp.and Crepidotus sp.)* The Shannon diversity index of 1.48 and 1.43 and Simpson index of 1.23 and 1.43 ws observed in Amirgadh and Danta talukas, respectively. **Approved with following Suggestion/s:** 1. Check methodology 2. Edible/ non edible/ medicinal/ poisonous group should be mentioned in the table 3. Recast the recommendation text (Action: Asstt. Prof., Polytechnic in Agriculture, SDAU, Deesa)
19.3.2.50	**Eco-friendly management of mustard aphid**
	Application of two sprays of azadirachtin 10,000 ppm 30 ml/10 L, first at initiation of pest and second at 10 days after first spray for management of mustard aphid. **Suggestions: Approved** 1. Shifted from farmers recommendation (Action: Assoc. Res. Sci., Oilseed Research Station, SDAU, Sardarkrushinagar)
19.3.2.51	**Eco-friendly approaches for management of jassids in *kharif* okra**
	Application of three foliar sprays of azadirachtin 10,000 ppm 0.003% (30 ml/10 L of water), first at appearance of pest and subsequent sprays at 10 days interval for effective and economic management of jassid in okra. **Suggestions: Approved**

	1. Split from farmers recommendation (Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)
19.3.2.52	**Eco-friendly management of leaf miner (*Aproaerema modicella*) in *kharif* groundnut**
	Application of two foliar sprays of azadirachtin 1500 ppm 0.0006 per cent (40 ml/ 10 L water), first at appearance of pest and second at 15 days after first spray for management of groundnut leaf miner. **Suggestions: Approved** 1. Shifted from farmers recommendation (Action: Prof. & Head., Dept. of Ento. CPCA, SDAU, Sardarkrushinagar)
19.3.2.53	**Management of American serpentine leaf miner, *Liriomyza trifoli* (Burgess) on tomato under protected cultivation**
	Application of three sprays of azadirachtin 1500 ppm 0.15 % (40 ml/10 L water), first at initiation of the pest and subsequent sprays at 10 days interval for effective management of serpentine leaf miner in tomato. **Suggestions: Approved** 1. Split from farmers recommendation (Action: Asstt. Prof. Ento., COH, SDAU, Jagudan)
19.3.2.54	**Eco-friendly management of fungal leaf/fruit spot of pomegranate**
	Application of three sprays of Azadirachtin 1500 ppm 40 ml/ 10 L water, first at appearance of the disease and subsequent two sprays at 15 days interval for effective management of leaf and fruit spot of pomegranate. **Suggestions: Approved** 1. Split from farmers recommendation (Action: Asstt. Prof., Patho., COH, SDAU, Jagudan)

19.3.3 NEW TECHNICAL PROGRAMMES

Summary

Name of University	Proposed		Approved		
	Entomology	Pathology/ Nematology	Entomology	Pathology/ Nematology	Total
AAU	34	9	34	9	43
JAU	21	9	21	9	30
NAU	16	4	16	4	20
SDAU	19	17	19	17	36
TOTAL	**90**	**39**	**90**	**39**	**129**

ANAND AGRICULTURAL UNIVERSITY

Agricultural Entomology

Sr. No.	Title	Suggestion/s and Action
19.3.3.1.	Evaluation of ready-mix combination of insecticide and fungicide as seed treatment against sucking insect-pests and diseases of soybean	**Approved with following Suggestion/s:** 1. Record observation form 3 leaves per plant 2. Record ancillary observations on root rot incidence **(**Action: Professor and Head, Department of Entomology, BACA, AAU, Anand & Professor and Head, Department of Plant Pathology, BACA, AAU, Anand**]**
19.3.3.2	Diversity of pollinators fauna in coriander crop	**Approved with following Suggestion/s:** 1. Revise experiment title as "Foraging behaviour of pollinators fauna in coriander" 2. Mention species wise pollinators 3. Change objectives accordingly **(**Action: Professor and Head, Department of Entomology, BACA, AAU, Anand**)**
19.3.3.3	Effect of organic inputs against aphid infesting vegetable cowpea	**Approved with following Suggestion/s:** 1. Replace "organic" in title with "ecofriendly" 2. Mention cfu (minimum 1 x 10^8) in T3, 4 and 5 3. Replace T6 with Neemastra **(**Action: Assistant Professor and Head, Department of Plant Protection, CoH, AAU, Anand)
19.3.3.4	Evaluation of ovicidal effect of aluminium phosphide on pulse beetle in stored green gram	**Approved with following Suggestion/s:** 1. Mention tablet size in the methodology (Action: Assistant Research Scientist (Ento.), Regional Research Station, AAU, Anand)
19.3.3.5	Efficacy of ready-mix insecticides and fungicides against major insect-pests and diseases in rice	**Approved with following Suggestion/s:** 1. Correct title by replacing "disease" with "blast" **(**Action: Assistant Research Scientist (Ento.), Main Rice Research Station, AAU, Nawagam)
19.3.3.6	Bio-efficacy of different ready-mix insecticides against leaf webber and capsule borer infesting sesame	**Approved with following Suggestion/s:** 1. Remove "different" from title 2. Correct title as "Bio-efficacy of ready-mix insecticides against leaf webber infesting sesame"

		3. Add recommended insecticide as standard check in the treatments 4. Correct spelling of "novaluron" **(**Action: Assistant Professor, Department of Entomology, CoA, AAU, Jabugam)
19.3.3.7	Impact of intercropping on the incidence of fall armyworm, *Spodoptera frugiperda* (J.E. Smith) in maize	**Approved with following Suggestion/s:** 1. Record observations on cob damage and natural enemies 2. Conduct experiment in large plot CRD design **(**Action: Assistant Research Scientist (Ento.), Main Maize Research Station, AAU, Godhra)
19.3.3.8	Efficacy of different ready-mix insecticides against spotted pod borer of blackgram	**Approved with following Suggestion/s:** 1. Remove "different" from title 2. Check the dose of T7 3. Delete scientific name from objectives **[Action:** Assistant Research Scientist (Ento.), Agricultural Research Station, AAU, Derol**]**
19.3.3.9	Efficacy of different insecticides against stem borer infesting wheat	**Approved with following Suggestion/s:** 1. Add observations on termite 2. Include one treatment of soil application without seed treatment **(**Action: Scientist (Plant Protection), Krishi Vigyan Kendra, AAU, Arnej)
19.3.3.10	Evaluation of organic inputs against aphid infesting cabbage	**Approved with following Suggestion/s:** 1. Replace "organic" with "ecofriendly" in title 2. Mention cfu (minimum1 x 10^8) in treatments 3. Add Neemastra in the treatments (Action: Assistant Professor (Ento.), SMC Polytechnic in Agriculture, AAU, Anand &Associate Research Scientist (Ento.), Main Vegetable Research Station, AAU, Anand)
19.3.3.11	Residues and persistence study of triafamone 37.5 g/L + fentrazamide 300 g/L SC and triafamone 40 g/L+ oxadiazon 240 g/L SC in transplanted rice	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

19.3.3.12	Residues and persistence study of triafamone 37.5 + fentrazamide 300 g/L SC and triafamone 40 + oxadiazon 240 g/L SC in direct seeded rice crop	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)**]**
19.3.3.13	Residues and persistence study of flufenacet 24% + metribuzin 17.5% WG in potato crop	**Approved** [(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.14	Residues and persistence study of flufenacet 24% + metribuzin 17.5% WG in soybean crop	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.15	Residues and persistence study of thiencarbazone-methyl 68 g/L + tembotrione 345 g/L SC in maize	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.16	Residues and persistence of fluopyram 400 g/L SC in citrus	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.17	Residues and persistence study of fluopyram 400 g/L SC in guava	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.18	Residues and persistence study of fluopyram 400 g/L SC in carrot	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.19	Residues and persistence study of fluopyram 400 g/L SC in ginger	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.20	Residues and persistence study of fluopyram 250 g/L + difenoconazole 125 g/L SC, trifloxystrobin 500 g/L SC and fluopicolide 62.5 g/L + propamocarb hydrochloride 625 g/L SC in chilli crop	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

19.3.3.21	Residues and persistence study of beta-cyfluthrin 90 g/L+ imidacloprid 210 g/L OD and spirotetramat 150 g/L OD in banana	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.22	Residues and persistence study of isotianil 120 g/L + trifloxystrobin 100 g/L SC, trifloxystrobin 500 g/L SC and propineb 70% WG in transplanted rice	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.23	Residues and persistence study of isotianil 200 g/L + trifloxystrobin 80 g/L FS (as seed treatment) in transplanted rice	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.24	Residues and persistence study of fluopyram 200 g/L and tebuconazole 200 g/L SC and spirotetramat 150 g/L OD in cucumber	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.25	Residues and persistence study of beta-cyfluthrin 90 g/L + imidacloprid 210 g/L OD in cumin	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.26	Residues and persistence study of azoxystrobin 4.8% + chlorothalonil 40% SC in pea	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.27	Residues and persistence study of flubendiamide 90 g/L + deltamethrin 60 g/L SC in mango	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.28	Residues and persistence study of tetraniliprole 200 g/L SC in chickpea	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.29	Residues and persistence study of tetraniliprole 200 g/L SC in black gram	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

19.3.3.30	Residues and persistence study of tetraniliprole 200 g/L SC in groundnut	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.31	Residues and persistence study of spirotetramat 150 g/L OD in pomegranate	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.32	Residues and persistence study of chlorantraniliprole 4.3% + abamectin 1.7% SC in watermelon	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.33	Residues and persistence study of chlorantraniliprole 4.3% + abamectin 1.7% SC in pomegranate	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
19.3.3.34	Residues and persistence study of chlorantraniliprole 4.3% + abamectin 1.7% SC in cotton	**Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
<u>Plant Pathology and Nematology</u>		
19.3.3.35	Evaluation of ready-mix insecticide and fungicide as seed treatment against major insect pests and diseases in groundnut	**Approved with following Suggestion/s:** 1. Record observations per 3 leaves 2. Remove names of insect-pests and diseases from objective (Action: Professor and Head, Department of Plant Pathology, BACA, AAU, Anand & Professor and Head, Department of Entomology, BACA, AAU, Anand)
19.3.3.36	Evaluation of ready-mix fungicides for management of major foliar diseases in *Bt* cotton	**Approved with following Suggestion/s:** 1. Remove name of disease from objective 2. Remove categorization from methodology and recast the methodology by mentioning the spraying details 3. Check disease severity for BLB 4. Mention time of observations after spray (Action: Professor and Head, Department of Plant Pathology, BACA, AAU, Anan & Assistant Professor, Department of Plant Pathology, CoA, AAU, Jabugam)

19.3.3.37	Efficacy of nano-particles against powdery mildew of coriander	**Approved with following Suggestion/s:** 1. Correct title as "nano-fungicides" instead of "nano-pesticides" 2. Mention dose/ litre in methodology 3. Give note under treatments 4. Remove "pods" from scale (Action: Assistant Professor (Pl. Path.), Department of Plant Protection, CoH, AAU, Anand)
19.3.3.38	Impact of organic amendments and varieties on incidence of root-knot nematode in bidi tobacco	**Approved with following Suggestion/s:** 1. In objective mention "to manage" 2. Conduct experiment in RBD (factorial) trial 3. Provide description for RKI 4. Include plot wise INP and FNP in observations (Action: Associate Research Scientist (Nema.), Bidi Tobacco Research Station, AAU, Anand & Prof. & Head, Department of Nematology, BACA, AAU, Anand)
19.3.3.39	Effect of seed treatment on leaf blast and brown spot diseases in rice nursery	**Approved with following Suggestion/s:** 1. Recast title as "Effect of fungicidal seed treatment on leaf blast and brown spot in rice nursery" 2. Include carbendazim 25% + mancozeb 50% as one more treatment by replacing T4 3. Check dose of thiram in treatment T5 (Action: Associate Research Scientist (Pl. Path.), Main Rice Research Station, AAU, Nawagam)
19.3.3.40	Survey for soil-borne fungal diseases of chickpea in Ahmedabad district	**Approved with following Suggestion/s:** 1. In methodology record observations at monthly interval 2. Correct completion year 3. Add detail methodology for survey (Action: Scientist (Plant Protection), Krishi Vigyan Kendra, AAU, Arnej)

19.3.3.41	Survey for soil-borne fungal diseases of chickpea in Anand district	**Approved with following Suggestion/s:** 1. In methodology record observation at monthly interval 2. Correct completion year 3. Mention talukas (Action: Scientist (Plant Protection), Krishi Vigyan Kendra, AAU, Devataj)
19.3.3.42	Survey for major diseases of tomato in Anand district	**Approved with following Suggestion/s:** 1. In methodology record observation at monthly interval 2. Mention completion year 3. Mention talukas 4. Mention disease scale in methodology for tomato (Action: Scientist (Plant Protection), Krishi Vigyan Kendra, AAU, Devataj)
19.3.3.43	Management of Alternaria leaf spot and flower blight in marigold through ready-mix fungicides	**Approved with following Suggestion/s:** 1. In methodology mention intervals 2. Mention disease scale for flower blight 3. Take Punjab Genda – 1 variety 4. Add time after each spray and days of observations 5. Mention fertilizer dose in methodology (Action: Assistant Professor, Department of Plant Pathology, CoA, AAU, Jabugam)

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AGRICULTURAL ENTOMOLOGY		
19.3.3.44	Bioefficacy of different biopesticides against *Helicoverpa armigera* (Hubner) in chickpea	**Approved with following Suggestion/s:** 1. Randomization in replication is required 2. Check concentration and g.a.i./ha of NSKE 5% 3. Check concentration/dose of Azadirachtin 1500 ppm 4. Mention healthy and damaged pod per plant in observation 5. Check dose/cfu for *Bt* 6. Record the observations at 3, 6 and 9 days after spray 7. Remove g a.i/ ha for biopesticides 8. Mention Seed yield (kg/ plot) 9. Check dose for *Bt* and replace “mg” with “g” (Action: Professor & Head, Department of Entomology, JAU, Junagadh)

19.3.3.45	Morphological and molecular identification of honey bee species in sesame crop of junagadh district	**Approved with following Suggestion/s:** 1. Remove Junagadh from title and recast title as well as objective 2. Mention sample size 3. Increase no. of districts, keep junagadh and others districts and change methodology accordingly (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.46	Bio-efficacy of different biopesticides against sucking pests in mango	**Approved with following Suggestion/s:** 1. Recast title as "Bio-efficacy of different biopesticides against insect pests in mango". 2. Mention leaf webber in objective and recast it 3. Check concentration and g.a.i./ha of NSKE 5% 4. Add no. of leaf webber per panicle in observation 5. Keep dose of Azadirachtin 1500 ppm, 40 ml/10 lit. of water (Action: Professor & Head, Department of Entomology, JAU, Junagadh
19.3.3.47	Development of standard operational procedures (sop) for application of pesticides through drone against *Helicoverpa armigera* Hubner in chickpea	**Approved with following Suggestion/s:** 1. Add 20 lit water qty/ha in treatment part B 2. Take design Large Plot CRD 4. Record yield and calculate economics 5. Remove the application time of afternoon (12:00 to 14:00) from treatment 6. Record wind speed, humidity, temperature 7. Recast title as "Standardization of operational procedures for application of pesticides through drone against *Helicoverpa armigera* (Hubner) in chickpea" 8. Recast objective accordingly 9. Add sticker during application 10. Drone height consider as trial and error bases

		(Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.48	Efficacy of natural components against aphid population in coriander under natural farming	**Approved with following Suggestion/s:** 1. Recast title as "Efficacy of natural inputs against aphid population in coriander" 2. Check concentration and g.a.i./ha of NSKE 5% 3. Mention conc. % of all natural inputs in treatment details 4. Record the observations at 3, 6 and 9 days after spray 5. Record observation as aphid index per plant 6. Randomization in replication is required (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.49	Efficacy of natural components against aphid population in mustard under natural farming	**Approved with following Suggestion/s:** 1. Recast title as "Efficacy of natural inputs against aphid population in mustard" 2. Check concentration and g.a.i./ha of NSKE 5% 3. Mention conc. % of all natural inputs in treatment details 4. Record the observations at 3, 6 and 9 days after spray 5. Record observation as aphid index per plant 6. Randomization in replication is required (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.50	Development of standard operational procedures (sop) for application of biopesticides through drone against insect pests in cotton	**Approved with following Suggestion/s:** 1. Add 20 lit water qty/ha in treatment part B 2. Take design Large Plot CRD 3. Record yield and calculate economics 4. Remove the application time of afternoon (12:00 to 14:00) from treatment 5. Record wind velocity, speed, humidity, temperature

		6. Recast title as "Standardization of operational procedures for application of biopesticides through drone against insect pests in cotton" 7. Recast objective accordingly 8. Record natural enemies 9. Add sticker during application (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.51	Development of standard operational procedures (sop) for application of biopesticides through drone against defoliators in groundnut	**Approved with following Suggestion/s:** 1. Add 20 lit water qty/ha in treatment part B 2. Take design Large Plot CRD 3. Record yield and calculate economics 4. Remove the application time of afternoon (12:00 to 14:00) from treatment 5. Record wind speed, humidity, temperature 6. Recast title as "Standardization of operational procedures for application of biopesticides through drone against defoliators in groundnut" 7. Recast objective accordingly 8. Record natural enemies 9. Add sticker during application (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.52	Effect of different sequence based insecticidal spray against chilli gall midge	**Approved with following Suggestion/s:** 1. Keep four (4) replication 2. Record ancillary observation of thrips, natural enemies and heliothis 3. Randomization in replication is required 4. Writ scientific name of gall midge in title (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
19.3.3.53	Bio-efficacy of ready mix insecticides against leaf eating caterpillar *Spodoptera litura* Fab. And semilooper *Achaea janata* on castor	**Approved with following Suggestion/s:** 1. Record ancillary observation of capsule borer 2. Check dose of insecticides as per CIBRC 3. Mention Profenofos 40 + cypermethrin

		4 as standard check in treatment 4. Randomization in replication is required (Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
19.3.3.54	Integrated pest management in cotton	**Approved with following Suggestion/s:** 1. Record no. of sucking pest/three leaves/plant in observation 2. Check dose of flonicamid and diafenthiuron, dinotefuran 3. Add one more IPM module in treatment (Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
19.3.3.55	Evaluation of different natural farming biorationals against pink bollworm in cotton	**Approved with following Suggestion/s:** 1. Recast title as "Evaluation of different natural inputs against pink bollworm in cotton" 2. Recast objective accordingly 3. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 4. Randomization in replication is required (Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
19.3.3.56	Field efficacy of natural farming components against major insect pests and diseases in *kharif* pearl millet	**Approved with following Suggestion/s:** 1. Recast title as "Field efficacy of natural inputs against major insect pests and diseases in *kharif* pearl millet" 2. Recast objective accordingly 3. Mention dose of fermented butter milk 4. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 5. Record ancillary observation of no. of bee visits per ear head per two minute 6. Check the doze of Neemastra (Action: Research Scientist (Pearl millet), Main Pearl millet Research Station, JAU, Jamnagar)

19.3.3.57	Studies on the effect of entomopathogens and inert dust on storage insect-pest and seed quality during storage under ambient condition in chickpea	**Approved with following Suggestion/s:** 1. Recast title as "Effect of entomopathogens and inert dust on insect pests and seed quality during storage under ambient condition in chickpea" for state trial (Action: Research Scientist (Pearl millet), Main Pearl millet Research Station, JAU, Jamnagar)
19.3.3.58	Studies on the effect of entomopathogens and inert dust on storage insect-pest and seed quality during storage under ambient condition in pearl millet	**Approved with following Suggestion/s:** 1. Recast title as "Effect of entomopathogens and inert dust on insect pests and seed quality during storage under ambient condition in pearl millet" for state trial (Action: Research Scientist (Pearl millet), Main Pearl millet Research Station, JAU, Jamnagar)
19.3.3.59	Efficacy of natural components against insect pest of sesame under natural farming	**Approved with following Suggestion/s:** 1. Recast title as "Efficacy of natural inputs against insect pest of sesame" 2. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 3. Add NSKE 5% as standard check 4. Remove treatment of T1, T2, T9 (Action: Research Scientist, Agricultural Research Scientist, JAU, Amreli)
19.3.3.60	Evaluation of various ipm tactics against sucking pests of bt cotton	**Approved with following Suggestion/s:** 1. Recast title as "Management of sucking pests in *Bt* cotton" 2. Recast objective accordingly 3. Check the dose of seed treatment of imidacloprid 4. Check plot size 5. Record no. of sucking pest/three leaves/plant in observation 6. Record no. of natural enemies, if any in observation 7. Remove economics from observation 8. Delete economics in observation (Action: Research Scientist, Dry Farming

		Research Scientist, JAU, Targhadiya
19.3.3.61	Evaluation for efficacy of different bio-rational pesticides against sucking pests of soybean under rainfed condition	**Approved with following Suggestion/s:** 1. Recast title as "Evaluation of natural inputs against sucking pests of soybean under rainfed condition" 2. Recast objective accordingly 4. Record no. of sucking pest/three leaves/plant in observation 5. Mention NSKE 5% as standard check 4. Remove treatment of T2, T3. T4 and T5 5. Add treatment of Agniastra, Dasparni ark, Jivamrut 6. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 7. Check concentration and g.a.i./ha of NSKE 5% 8. Randomization in replication is required (Action: Research Scientist, Dry Farming Research Scientist, JAU, Targhadiya
19.3.3.62	Bio-efficacy of different natural farming components against sucking pests of coconut	**Approved with following Suggestion/s:** 1. Recast title as "Bio-efficacy of different natural inputs against sucking pests of coconut" 2. Recast objective accordingly 3. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 4. Record no. of healthy and damaged nuts per frond 5. Record no. of natural enemies per frond 6. Replace Beauveria with NSKE 5% (Action: Research Scientist (FC), Agricultural Research Scientist, JAU, Mahuva)
19.3.3.63	Efficacy of different natural farming components against sucking pest through root feeding in coco**nut**	**Approved with following Suggestion/s:** 1. Recast title as "Efficacy of different natural inputs against sucking pest through root feeding in coconut" 2. Recast objective accordingly 3.Mention conc. % of all natural inputs in

		treatment details, and keep dose as per Prakrutik Krushi book, 2020 4. Record no. of healthy and damaged nuts per frond 5. Record no. of natural enemies per frond 6. Add T8 as NSKE 5% (Action: Research Scientist (FC), Agricultural Research Scientist, JAU, Mahuva)
19.3.3.64	Evaluation of plant protection component of natural farming against different insects and diseases in chickpea	**Approved with following Suggestion/s:** 1. Recast title as "Evaluation of natural inputs against different insect and disease in chickpea" 2. Recast objective accordingly 3. Add suthastra as treatment 4. Mention conc. % of all natural inputs in treatment details, and keep dose as per Prakrutik Krushi book, 2020 5. Take design Large plot(CRD) 6. Check the plot size should be verified (Action: Research Scientist (Chickpea), Pulses Research Scientist, JAU, Junagadh)
PLANT PATHOLOGY		
19.3.3.65	Eco-friendly management of pearl millet blast	**Approved with following Suggestion/s:** 1. Recast title as "Eco-friendly management of blast in pearl millet" 2. Add eco-friendly inputs in objective 3. Add formulation of bio-pesticide 4. Add recommended check, if any (Action: Research Scientist (Pearl millet), Main Pearl millet Research Station, JAU, Jamnagar)
19.3.3.66	Management of pearl millet downy mildew disease by microbial consortia	**Approved with following Suggestion/s:** 1. Mention spp. of bio-agents as well as formulations 2. Replace Metalaxyl 35 SD with Metalaxyl 35WS as recommended check 3. Remove foot note from the treatment (500L) (Action: Research Scientist (Pearl millet), Main Pearl millet Research Station, JAU, Jamnagar)

19.3.3.67	An eco-friendly approach for the management of soil borne diseases of solanaceous crops (brinjal, tomato, chilli /bell pepper)	**Approved with following Suggestion/s:** 1. Recast title as "Eco-friendly management of soil borne diseases of tomato" 2. Recast objective accordingly 3. Write formulations of bio-agents 4. Mention variety (Action: Research Scientist (Vegetable), Vegetable Research station, JAU, Junagadh)
19.3.3.68	Biological management of fusarium wilt in chickpea (*Cicer arietinum* L.) caused by *Fusarium oxysporum* f. Sp. *Ciceri*	**Approved with following Suggestion/s:** 1. Recast title as "Biological control of fusarium wilt in chickpea" 2. Recast objective accordingly 3. Mention (Treated check) in T6 4. Take 100 seed weight (g) 5. Take ancillary observation of root rot 6. Remove g a.i/ in bio-agents 7. Mention time of application in methodology 8. Write the name of VAM spp. (Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)
19.3.3.69	Management of sterility mosaic disease of pigeonpea	**Approved with following Suggestion/s:** 1. Recast title as "Evaluation of acaricides for the management of sterility mosaic disease of pigeonpea" 2. Recast objective accordingly 3. Add treatment of sulphur as T8 4. Take dose 6 ml in T7 5. Check dose and g.a.i/ha of the treatments as per CIBRC 6. Add observations on mite (Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)
19.3.3.70	Management of stunt disease of chickpea	**Approved with following Suggestion/s:** 1. Recast title as "Evaluation of insecticides for management of stunt disease of chickpea" 2. Recast objective accordingly 3. Check dose of flonicamid, diafenthiuron and tolfenpyrad 4. Replace acephate with sulfloxaflor and

		dimethoate with pyriproxifen 5. Check dose and g.a.i/ha of the treatments as per CIBRC 6. Remove T9 7. Take common seed treatment of Imidacloprid 17.8 SL (Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)
19.3.3.71	Evaluation of ready-mix formulation of fungicides against powdery mildew disease of coriander	**Approved with following Suggestion/s:** 1. Take 1000 g seed weight in observation 2. Remove word disease in title and recast it 3. Measure qty of volatile compound 4. Add sulphur as treated check 5. Mention time of observation (Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
19.3.3.72	Efficacy of natural components on powdery mildew of cumin	**Approved with following Suggestion/s:** 1. Recast title as "Efficacy of natural inputs and bio-control agents on powdery mildew of cumin" 2. Recast objective accordingly 3. Take 1000 g seed weight in observation 4. Add aphid population in observation 5. Check conc. and formulation of bio-agents 6. Revise scale of powdery mildew disease as per Anon., 2004 **7.** Add ancillary observations on thrips 8. Check scale of aphid (Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
19.3.3.73	Evaluation of ready mixed formulation of fungicides against powdery mildew disease of sesame	**Approved with following Suggestion/s:** 1. Revise title as "Evaluation of ready-mix formulation of fungicides against powdery mildew of sesame" 2. Recast objective accordingly 3. Add treatment as standard check 4. Check dose of all the treatment 5. Record ancillary observations of other diseases

		(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)

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Sr. No.	Title	Suggestion/s and Action
19.3.3.74	Biology of lac insect, *Kerria lacca* (Kerr) on *Flemingia semialata* Roxb.	**Approved with following Suggestion/s:** 1. Insect number should be mentioned 2. Mention fecundity in observations (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.75	Synergistic interaction of *Metarhizium anisopliae* and insecticide combinations against fall armyworm, *Spodoptera frugiperda*	**Approved with following Suggestion/s:** 1. Remove "Synergistic interaction" from title and write "Effect" 2. Take it first as filler trial by incorporating recommended insecticides from CIB & RC (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.76	Attraction of female fruit flies to the different protein food baits in mango orchard	**Approved with following Suggestion/s:** 1. Add one treatment as protein hydrolysate powder 2. Add treatment for papaya and pumpkin 3. Identify the female up-to species level 4. Mention the distance between orchard 5. Protinex should be removed from control (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.77	Study of pollinators diversity in mango under Middle and South Gujarat condition	**Approved with following Suggestion/s:** 1. Take observation at 5 & 7 days interval 2. Remove the weather data from observation (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.78	Revision of the floral calendars and migration routes in alignment with the change in cropping systems	**Approved** (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.79	Investigation on volatile/non-polar insecticidal active compound in different	**Approved with following Suggestion/s:** 1. Write the title as " Determination on volatile/non-polar insecticidal active compound in different bioformulations"

	bioformulations *viz.*, Dashparni ark, Agniastra, Neemastra, Brahmastra & Garlic + ginger + mint mixture	2. Reduce higher dose 3. Check replications as per treatment (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.80	Assessment of Unmanned Aerial Vehicle (UAV) based spraying against pod borer, *Helicoverpa armigera* (Hubner) in gram	**Approved with following Suggestion/s:** 1. Mention the design as large plot technique (CRD) 2. Take quantity of formulation as 220 g/ha 3. UVA height will be consider on trial and error basis 4. Include the phytotoxic observations 5. Mention no. of sprays in methodology (Action: Professor & Head, Deptt. of Entomology, NMCA, NAU Navsari)
19.3.3.81	Survey on native entomopathogenic fungi in South Gujarat condition	**Approved with following Suggestion/s:** 1. Take GPS location of survey area 2. Remove the third objective and write in methodology 3. In second objective write "to prove pathogenicity" instead of "to confirm pathogenicity" (Action:Professor & Head, Deptt. of Plant Protection, ACH, NAU, Navsari)
19.3.3.82	Management of rice ear head bug *Leptocorisa acuta* Thunberg under field conditions	**Approved with following Suggestion/s:** 1. Recast the title as "Evaluation of biopesticides against rice ear head bug, *Leptocorisa acuta* Thunberg in rice" 2. In treatment, use the concentration of cow urine as 15% 3. Delete factor, levels & other details from the reports and record the observation of 5, 7 and 10 days 4. Mention the unit of yield in observations to be recorded 5. Remove the word economic from the observations to be recorded 6. Add healthy and damaged grains/ panicle in observation (Action: Research Scientist, Main Rice Res. Center, SWMRU, NAU, Navsari)

19.3.3.83	Augmentation of pollination by bees (*Apis cerana* F.and *Apis mellifera* L.) and its effect on yield of cucumber (*Cucumis sativus* L.)	**Approved with following Suggestion/s:** 1. Remove 2nd objective 2. Mention design as large plot technique (CRD) 3. Mention plot size and isolation distance 4. Conduct this experiment for two years (Action: Principal, Polytechnic in Horticulture, NAU, Paria)
19.3.3.84	Management of mango fruit borer, *Citripestis eutraphera* (Meyrick)	**Approved with following Suggestion/s:** 1. Remove the word economic from the observations to be recorded 2. Add *Beauveria bassiana* and *Bacillus thuringiensis* in treatment with their appropriate dose (Action: Research Scientist, AES, NAU, Paria)
19.3.3.85	Effect of different pesticides on pollen germination, fruit set and yield in mango	**Approved with following Suggestion/s:** 1. Revise title as "Effect of different pesticides on pollen germination and fruit set in mango" 2. Mention spraying time 3. Take observation of number of fruits set at marble stage per panicle (Action: Research Scientist, AES, NAU, Paria)
19.3.3.86	Chemical Control of pest complex in cashew	**Approved with following Suggestion/s:** 1. Consider the experiment as state trial also and change the title as "Evaluation of different insecticides against tea mosquito bug in cashew" 2. Remove + sign from treatment T_6 3. Add Bifenthrin 8 SC 8 ml/10 lit and Clothianidin 5 g/10 lit with their g a.i/ha 4. Mention No. of sprays at 15 days interval in methodology 5. In observation keep score only (Action: Research Scientist, AES, NAU, Paria)
19.3.3.87	Evaluation of Botanicals for the control of Tea Mosquito Bug (TMB), *Helopeltis antonii* Signoret in cashew	**Approved with following Suggestion/s:** 1. Consider the experiment as state trial also and change the title as "Evaluation of Biopesticide and Botanicals for the control of Tea Mosquito Bug (TMB), *Helopeltis antonii* Signoret in cashew" 2. Add two more treatments *i.e. Beauveria bassiana* and *Lecanicillium lecanii* with their proper doses (Action: Research Scientist, AES, NAU, Paria)

19.3.3.88	Evaluation of management modules against of major insect pests of sapota	**Approved with following Suggestion/s:** 1. Add word "different" instead of "management" in title 2. Remove ICBR and weather data during spraying period from observation to be recorded. 3. Mention design CRD instead of RBD 4. Remove word "replication" and insert "repetition" 5. Add methodology from all four direction (Action:Associate Res. Sci., Fruit Res. Station, NAU, Gandevi)
19.3.3.89	Study on pesticide residues in fruits collected from different districts of South Gujarat	**Approved with following Suggestion/s:** 1. Remove word local and imported fruits from crop and variety row 2. Write Fruits collected from APMC market in methodology (Action:FQTL, NAU, Navsari)
PLANT PATHOLOGY		
19.3.3.90	Standardization of nutrients requirements for the growth of *Termitomyces* sp. under *in vitro*	**Approved with following Suggestion/s:** 1. Change the objective as "To standardization of nutrients requirements of *Termitomyces* sp. for growing under *in vitro* condition" (Action:Professor Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)
19.3.3.91	Isolation, identification and evaluation of microbial diversity from *Beejamrut* and their antagonistic effect against seed borne pathogens	**Approved with following Suggestion/s:** 1. Revise title as "Isolation and identification of microbial diversity from *Beejamrut* and their antagonistic effect against seed borne pathogens" 2. Record observations on Number of seed germination and Root length in cm (Action:Professor Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)
19.3.3.92	Isolation, identification and evaluation of microbial diversity from Jeevamrut and their antagonistic effect against soil borne pathogens	**Approved with following Suggestion/s:** 1. Revise title as "Isolation and identification of microbial diversity from Jeevamrut and their antagonistic effect against soil borne pathogens" 2. Record observations on Number of seed germination and Root length in cm 3. Record Ancillary observations on microbial soil contamination, if any (Action:Professor Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)

19.3.3.93	Bio-efficacy of Unmanned Aerial Vehicle (UAV) based spraying to manage sheath blight disease of rice	**Approved with following Suggestion/s:** 1. Recast the title as " Assessment of Unmanned Aerial Vehicle (UAV) based spraying to manage sheath blight disease of rice" 2. UVA height will be consider on trial and error basis 3. Remove word "1X" from fungicidal table (Action:Professor & Head, Dept. of Plant Protection, ACH, NAU, Navsari)

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

Sr. No.	Title	Suggestion/s and Action
19.3.3.94	Management of insect pests in pigeonpea	**Approved with following Suggestion/s:** 1. Change the title as "Evaluation of IPM modules against insect pests in pigeonpea" 2. Mention time of maize planting 3. Mention formulation of emmamectin benzoate and correct the dose 4. Mention time of spraying of thiamethoxam 5. Write large plot technique (CRD) (Action: Asstt. Res. Sci., Ento., Pulses Research Station, SDAU, Sardarkrushinagar)
19.3.3.95	Cultural management of insect pest in groundnut	**Approved with following Suggestion/s:** 1. Correct the title as "Impact of sowing periods against insect-pests in groundnut" 2. Mention the word "sowing" in each treatment 3. Replace imadacloprid with chlorpyriphos 20EC @ 25 ml/kg seed (Action: Assoc. Res. Sci., Oilseed Research Station, SDAU, Sardarkrushinagar)
19.3.3.96	Evaluation of botanicals extracted in cow urine against thrips in castor	**Approved with following Suggestion/s:** 1.Add one more treatment "cow urine 5%" 2. Mention plant parts in table 3. Record observations on phytotoxicity (Action: Assoc. Res. Sci., Oilseed Research Station, SDAU, Sardarkrushinagar)
19.3.3.97	Efficacy of different insecticides sprayed through conventional and CDA sprayer against aphids in cumin	**Approved with following Suggestion/s:** 1. Write aphid index/plant instead of per cent umbels infested by cumin aphid 2. Replace T3& T4 with Tolfenpyrad 15 EC 3. Replace T5 &T6 with Thiamethoxam 25

		WG 4. Correct design as RBD (with factorial concept) 5. Record observations on phytotoxicity (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.3.98	Eco-friendly management of cotton sucking pests	**Approved with following Suggestion/s:** 1. Delete T5 and include Neemastra 2. In T2, T3 & T4, correct as cfu/g instead of cfu/ml 3. First spray will be applied at initiation of sucking pests (Action: Asstt. Res. Sci., Cotton Research Station, SDAU, Talod)
19.3.3.99	Eco-safe management of termite in wheat	**Approved** (Action: Prof. & Head, Ento., CPCA, SDAU, Sardarkrushinagar)
19.3.3.100	Influence of honey bee attractant in enhancing the seed yield of coriander	**Approved with following Suggestion/s:** 1. Record observations of honey bee visits 1 m^2/ 2 min at 10 AM to 12 PM timing 2. Write large plot technique (CRD) 3. Record observation on seed test weight (Action: Asstt. Prof., Ento., COH, SDAU, Jagudan)
19.3.3.101	Eco-friendly management of Aphid, *Aphis punicae* Passerini in pomegranate	**Approved with following Suggestion/s:** 1. Delete the scientific name from title. 2. Delete the T3 from treatment 3. Check the dose and concentration of treatments. 4. Observation of no. of aphids will be recorded at before and 3,6 and 9 days after application. 5. Correct adult and larvae of coccinelids instead of larva and pupa in observation to be recorded. 6. Record ancillary observations on thrips population 7. Mention CFU (minimum 1 x 10^8) (Action: Asstt. Prof., Ento.,COH, SDAU, Jagudan)
19.3.3.102	Succession of insect pests and their natural enemies	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation

	in pigeonpea	(Action: Asstt. Res. Sci., Ento., Pulses Research Station, SDAU, Sardarkrushinagar)
19.3.3.103	Succession of insect pests and their natural enemies in castor	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Assoc. Res. Sci., Oilseed Research Station, SDAU, Sardarkrushinagar)
19.3.3.104	Succession of insect pests and their natural enemies in ber	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Assoc. Res. Sci., Agroforestry Research Station, SDAU, Sardarkrushinagar)
19.3.3.105	Succession of insect pests and their natural enemies in fennel	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.3.106	Succession of insect pests and their natural enemies in wheat	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Wheat Research Station, SDAU, Vijapur)
19.3.3.107	Succession of insect pests and their natural enemies in *Bt* Cotton	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Cotton Research Station, SDAU, Talod)
19.3.3.108	Succession of insect pests and their natural enemies in potato	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Potato Research Station, SDAU, Deesa)
19.3.3.109	Succession of insect pests and their natural enemies in *kharif* groundnut	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Prof. & Head, Ento., CPCA, SDAU, Sardarkrushinagar)
19.3.3.110	Succession of insect pests and their natural enemies	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider

	in citrus	for recommendation (Action: Asstt. Prof., Ento.,COH, SDAU, Jagudan)
19.3.3.111	Genetic inheritance of golden mosaic resistant gene(s) in cowpea [*Vigna unguiculata* (L). Walp.]	**Approved** (Action: Asstt. Res. Sci., Patho., Pulses Research Station, SDAU, Sardarkrushinagar)
19.3.3.112	Eco friendly management of foliar diseases in mothbean	**Approved with following Suggestion/s:** 1. Mention time of disease observation in methodology. 2. Mention formula of AUDPC in methodology 3. Record ancillary observations on whitefly and yellow mosaic % incidence 4. Delete reaction table 5. Record and mention seed as well as haulm yield 6. Delete low cost from objectives (Action: Asstt. Res. Sci., Patho., Pulses Research Station, SDAU, Sardarkrushinagar)
PLANT PATHOLOGY		
19.3.3.113	Management of foliar fungal diseases of potato	**Approved with following Suggestion/s:** 1. Change the title as "Management of blight diseases in potato". 2. Add the Mancozeb 75WP in treatment 3. Record incidence of early and late blight 4. Mention AUDPC formula in methodology 4. Record observations at 50, 60 and 70 days as well as tuber yield (Action: Asstt. Res. Sci., Potato Research Station, SDAU, Deesa)
19.3.3.114	Cultivation of cordyceps mushroom (*Cordyceps militaris*) on different substrate	**Approved with following Suggestion/s:** 1. Remove the scientific name from the title. 2. Recast the title as "Evaluation of different substrate for the cultivation of cordyceps" 3. Add observation on biological parameter (Action: Asstt. Res. Sci., Wheat Research Station, SDAU, Vijapur)
19.3.3.115	Eco-friendly management of cumin blight	**Approved with following Suggestion/s:** 1. Add treatment (chemical) as a recommended check.

		2. Remove AUDPC from observation to be recorded 3. Check dose of T_8 10g/ 10L (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.3.116	Bio-efficacy of fungicides against powdery mildew of fenugreek	**Approved with following Suggestion/s:** 1. Remove AUDPC from observation to be recorded. 2. Add Kresoxim-methyl 15% + chlorothalonil 56% WG and Fluxapyroxad 250g/l + Pyraclostrobin 250g/l SC 3. Revise objective 4. Put all dose in "g.a.i/ha" 5. Use hexaconazole/ wettable sulphur as check (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.3.117	Assessment of substrats for production of *Pleurotus* species	**Approved** (Action: Prof. & Head, Patho., CPCA, SDAU, Sardarkrushinagar)
19.3.3.118	Eco-friendly management of Alternaria leaf spot of Broccoli (*Brassica oleracea* var. *italic*)	**Approved with following Suggestion/s:** 1. Change the title as" Evaluation of different botanicals against Alternaria leaf spot of broccoli" 2. Change the objective as " To evaluate the different botanicals against Alternaria leaf spot of broccoli" 3. Remove the scientific name from treatments 4. Remove PDC from observation to be recorded. 5. Include Curd yield (Kg/ha) (Action: Prof. & Head, Patho., CPCA, SDAU, Sardarkrushinagar)
19.3.3.119	Evaluation of organic inputs against root-knot nematode (*Meloidogyne* spp.) in tomato under field condition	**Approved with following Suggestion/s:** 1. In title replace "organic" with "Eco-friendly". 2. Keep one recommended check in treatment 3. Mention cfu (min. 1 x10^8) 4. Mention fertilizer dose of Tomato 5. *Paecilomyces* is now banned so add *Bacillus subtilis* 6. Correct spacing 90 x 45 cm in Net plot size 7. Add before 25 days soil application of *Trichoderma harzianum* in method

		8. Mention 0-5 scale 9. Record INP and FNP (Action: Asstt. Prof., Nemato., CPCA, SDAU, Sardarkrushinagar)
19.3.3.120	Integrated disease management of citrus canker	**Approved with following Suggestion/s:** 1. Add the disease severity scale with reference in methodology 2. Write yield (kg/tree) in observation to be recorded 3. Remove the treatment T6 4. Record leaf miner observation 5.Write large plot technique (CRD) 6. Add std. check streptocycline + copper oxychloride 7. Give ref. of scale 8. Mention cfu (min. 1 x 10^8) (Action: Asstt. Prof., Patho.COH, SDAU, Jagudan)
19.3.3.121	Survey, collection, isolation, biochemical and molecular study of Ganoderma mushroom of North Gujarat region	**Approved with following Suggestion/s:** 1. Replace "medicinal" with "biochemical" in objective 2. Record GPS location 3. Delete Triterpinoids from the observations 4. Change the title as "Diversity of Ganoderma mushroom of North Gujarat region" 5. Record GPS co-ordinates (Action: Asstt. Prof. , Patho., Polytechnic Agriculture, SDAU, Deesa)
19.3.3.122	Disease succession in *kharif* mungbean	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Patho., Pulses Research Station, SDAU, Sardarkrushinagar)
19.3.3.123	Disease succession in castor	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Patho., Oilseed Research Station, SDAU, Sardarkrushinagar)
19.3.3.124	Disease succession in ber	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Agroforestry Research Station, SDAU, Sardarkrushinagar)

19.3.3.125	Disease succession in fennel	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Assoc. Res. Sci., Seed Spices Research Station, SDAU, Jagudan)
19.3.3.126	Diseases succession in wheat	**Approved with following Suggestion/s:** 1.Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Wheat Research Station, SDAU, Vijapur)
19.3.3.127	Disease succession in potato	**Approved with following Suggestion/s:** **1.** Conduct the experiment but don't consider for recommendation (Action: Asstt. Res. Sci., Potato Research Station, SDAU, Deesa)
19.3.3.128	Disease succession in *kharif* groundnut	**Approved with following Suggestion/s:** 1. Conduct the experiment but don't consider for recommendation (Action: Prof. & Head, Patho., CPCA, SDAU, Sardarkrushinagar)
19.3.3.129	Disease succession in citrus	**Approved with following Suggestion/s:** 1. Conduct the experiment but don't consider for recommendation (Action: Asstt. Prof., Patho.,COH, SDAU, Jagudan)

General Suggestions:

1. Screening trials should not be presented in the combined AGRESCO, but individual centres are permitted to conduct as routine work. Only those screening trials which were conducted atleast three years or more with a well-defined experimental design should be presented in combined AGRESCO of SAUs.

2. All surveyed areas should be provided with their respective GPS coordinates.

3. As per Statistician, a common format and calculation should be made for economics in all trials.

4. All Adhoc recommendations will be converted into farmers' recommendations as and when the pesticides, bio-products, *etc.* are registered in CIBRC. Same should be brought up to the notice of the house in next combined AGRESCO for approval/endorsement.

5. In the future, Convener of respective SAUs should collect the queries in advance and present in the combined AGRESCO.

6. In certain cases, recommendations should be made either for the Saurashtra region or entire Gujarat whenever applicable for the benefit of the farmers.

19.4 HORTICULTURE & AGROFORESTRY

DATE: 01-03 /05/2023

Summary

Name of University	No. of Recommendations				New Technical Programs	
	Farmers		Scientific			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	07	07	--	--	09	07
JAU	04	04	01	01	12	10 (1)
NAU (Horti)	10	9 + 3# =12	06#	03	18	12 (1)
NAU (Forestry)	01	01	03	03	08	08
SDAU	10	09	04	04	12	11
Total	**32**	**30+03=33**	**14**	**11**	**59**	**48 (2)**

Note: 1. # Shifted from Scientific Recommendations to Farmers Recommendations
2. Figure in Brackets indicate the Shifting of NTP from Horticulture Subcommittee to other Subcommittees

Chairman	**Dr. T. Ahlawat, DR, NAU, Navsari**
Co-Chairmen	(1) Dr. N. I. Shah, Dean (Horti.), AAU, Anand
	(2) Dr. Piyush Verma,Dean (Horti.), SDAU, Jagudan
Rapporteurs	(1) Dr. M. J. Patel, AAU, Anand
	(2) Dr. K. M. Karetha, JAU, Junagadh
	(3) Dr. R.V. Tank, NAU, Navsari
	(4) Dr. Manish Patel, SDAU, S. K. Nagar
Statistician	Dr. A. P. Chaudhary, NAU, Navsari

19.4.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

Recommendations for Horticulture Faculty

19.4.1.1 Effect of different hydroponic methods on growth, yield and quality of lettuce

The farmers interested to grow lettuce in hydroponics under fan & pad greenhouse are recommended to adopt aero tower system for getting higher production and net return.

Note : RO Water, pH : 5.5 to 6.0, EC : 1 to 1.5 ds/m
Temperature < 25 ^{o}C, Humidity : 65 to 75 %
Application of nutrients should be based on Hoagland solution.

Nutrients	Stock Solution	Working Solution/ L
Macro Nutrients		
1. Potassium Nitrate (KNO_3)	1 M(101.1 g/L)	5 ml
2. Calcium Nitrate ($CaNO_3$)2 $4H_2O$	1 M(236.15 g/L)	5 ml

3. Monopotassium phosphate (KH_2PO_4)	1 M(136 g/L)	1 ml
4. Magnesium sulphate ($MgSO_4$ $7H_2O$)	1 M(246.47 g/L)	2 ml
Micro Nutrients		
1. Boric acid (H_3BO_3)	2.86 g/ L	1 ml
2. Manganese chloride ($MnCl_2$ $4H_2O$)	1.81 g/ L	1 ml
3. Zinc sulphate ($ZnSO_4$ 7 H_2O)	0.22 g/ L	1 ml
4. Copper sulphate ($CuSO_4$ 5 H_2O)	0.08 g/ L	1 ml
5. Molybdic acid (H_2MoO_4 H_2O)	0.02 g/ L	1 ml
6. Iron Chelate	15 g/L	1 ml

ફેન & પેડ ગ્રીનહાઉસમાં હાઇડ્રોપોનીકસ ધ્વારા લેટયુસ ઉગાડવા માગતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે એરો ટાવર પધ્ધતિ અપનાવવાથી વધુ ઉત્પાદન અને વળતર મળે છે.

<u>નોંધ:</u> આર.ઓ. વોટર, પીએચ. : ૫.૫ થી ૬.૦૦, ઇસી : ૧ થી ૧.૫ ડીએસ./એમ.તાપમાન <૨૫°સે., ભેજના ટકા ૬૫ થી ૭૫

પોષક તત્વોનો ઉપયોગ હોગલેન્ડ સોલ્યુશન આધારિત કરવો

ન્યુટ્રીયન્ટ	સ્ટોકસોલ્યુશન	વર્કીંગસોલ્યુશન/ લિ.
મેક્રોન્યુટ્રીયન્ટ		
૧. પોટેશિયમનાઈટ્રેટ(KNO_3)	૧એમ(૧૦૧.૧ગ્રામ/ લિ.)	૫ મિલિ
૨. કેલ્શિયમનાઈટ્રેટ ($CaNO_3$)2 $4H_2O$	૧એમ(૨૩૬.૧૫ગ્રામ/ લિ.)	૫ મિલિ
૩. મોનોપોટેશિયમફોસ્ફેટ (KH_2PO_4)	૧એમ(૧૩૬ગ્રામ/ લિ.)	૧ મિલિ
૪. મેગ્નેશિયમસલ્ફેટ($MgSO_4$ $7H_2O$)	૧એમ(૨૪૬.૪૭ગ્રામ/ લિ.)	૨ મિલિ
માઈક્રોન્યુટ્રીયન્ટ		
૧. બોરિકએસિડ (H_3BO_3)	૨.૮૬ગ્રામ/ લિટર	૧ મિલિ
૨. મેગેનિઝક્લોરાઈડ ($MnCl_2$ $4H_2O$)	૧.૮૧ગ્રામ/ લિટર	૧ મિલિ
૩. ઝીંકસલ્ફેટ ($ZnSO_4$ 7 H_2O)	૦.૨૨ગ્રામ/ લિટર	૧ મિલિ
૪. કોપરસલ્ફેટ($CuSO_4$ 5 H_2O)	૦.૦૮ગ્રામ/ લિટર	૧ મિલિ
૫. મોલિબ્લેડિકએસિડ(H_2MoO_4 H_2O)	૦.૦૨ગ્રામ/ લિટર	૧ મિલિ
૬. આર્યનચિલેટ	૧૫ગ્રામ/ લિટર	૧ મિલિ

Suggestions: Approved

(Action: Professor & Head, Dept. of Horticulture, BACA, Anand)

19.4.1.2

Effect of transplanting time and spacing on growth and yield of summer African marigold (*Tagetes erecta* L.) cv. Punjab Gainda 1 under middle Gujarat condition

The farmers of middle Gujarat agro-climatic zone growing African marigold (Punjab Gainda 1) in summer season are recommended to

	transplant seedling at spacing of 30 cm x 30 cm in the second week of February for getting higher yield. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં આફ્રિકન ગલગોટા(પંજાબ ગેંદા ૧) ની ઉનાળુ ઋતુમાં ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ધરૂની ફેર રોપણી ૩૦ સે.મી. x ૩૦ સે.મી.ના અંતરે ફેબ્રુઆરી મહિનાના બીજા અઠવાડિયામાં કરવાથી વધુ ઉત્પાદન મળે છે. **Suggestions: Approved** (Action**:** Professor and Head, Department of Horticulture, BACA, AAU, Anand)
19.4.1.3	**Nitrogen management through organic sources in vegetable cluster bean var. Pusa Navbahar** The farmers of middle Gujarat agro-climatic zone cultivating vegetable cluster bean late *kharif* season organically are recommended to apply N equivalent of 20 kg/ha through FYM (2.0 t/ha) or castor cake (565 kg/ha) for getting higher yield and net return**.** મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સેંદ્રિય ખેતી દ્વારા શાકભાજી ગુવારનું ચોમાસુ ઋતુમાં મોડું વાવેતર કરતાં ખેડૂતોએ વધુ ઉત્પાદન અને વળતર મેળવવા માટે નાઈટ્રોજન ૨૦ કિ.ગ્રા./હે ના પ્રમાણમા છાણિયું ખાતર (૨.૦ ટન/હે) અથવા દીવેલી ખોળ (૫૬૫ કિ.ગ્રા./હે) દ્વારા આપવાની ભલામણ કરવામાં આવે છે. **Suggestions: Approved** (Action: Unit Officer, AHRS, Khambholaj)
19.4.1.4	**Effect of bio-fertilizer and bio-stimulants on growth and yield of onion (*Allium cepa* L.) under middle Gujarat** The farmers of middle Gujarat agro-climatic zone growing onion crop are recommended to dip seedlings in Bio-NPK liquid fertilizer (5ml/liter water) for 15 to 20 minutes before transplanting and foliar spray of Novel Organic Liquid Nutrients (15 ml/liter water) at 30 and 60 DATP. Besides this, application of FYM 20 t/ha as basal and 100:50:50 NPK kg/ha (50 kg/ha N, P and K as basal and remaining 50 kg/ha N at 30 DATP) for getting higher yield and net return. **Note**: Novel Organic Liquid Nutrients content : Banana pseudostem sap 80% + plant extract 10 %+ animal extract 10% મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં ડુંગળીની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ધરુને બાયો એન.પી.કે. પ્રવાહી જૈવિક ખાતર (૫ મી.લી./લિ. પાણીમાં) દ્રાવણમાં ૧૫ થી ૨૦ મિનિટ બોળી ફેરરોપણી કરવી ત્યારબાદ નોવેલ ઓર્ગનિક પ્રવાહી ન્યુટ્રીયંટ (૧૫ મી.લી./લિ. પાણીમાં)

	નો છંટકાવ ૩૦ અને ૬૦ દિવસે કરવાથી વધુ ઉત્પાદન અને નફો મળે છે. આ ઉપરાંત, પાયામાં ૨૦ ટન છાણિયું ખાતર અને ૧૦૦:૫૦:૫૦ ના.ફો.પો. કિ.ગ્રા./હે (જે પૈકી ૫૦ કિ.ગ્રા ના.ફો.પો.પ્રતિ હેકટરે પાયામાં તથા બાકીનો ૫૦ કિ.ગ્રા. નાઇટ્રોજન ફેરરોપણીના ૩૦ દિવસ પછી) આપવો. **<u>નોંધ:</u>** નોવેલ ઓર્ગનિક પ્રવાહી ન્યુટ્રીયંટ : કેળાના થડ નો રસ ૮૦% + વાનસ્પતિક પેદશો નો રસ ૧૦% + પ્રાણીજન્ય પેદાશો નો રસ ૧૦% **Suggestions: Approved** (Action : Sheth D. M. Polytechnic, AAU, Vadodara**)**
19.4.1.5	**Effect of N, P and K application on yield and quality of watermelon** The farmers of middle Gujarat agro-climatic zone growing watermelon under drip and mulching (25 micron silver plastic mulch) are recommended to apply 150:50:75 NPK kg/ha of which 15:50:7.5 NPK kg/ha as basal, while remaining 135:67.5 N and K kg/ha through drip in 6 equal splits as weekly interval from 20 DAS for getting higher yield and net return. **Drip irrigation system details:** Lateral spacing : 1.5 m Dripper spacing : 1.0 m (online dripper) Dripper discharge rate : 8 l/hour Operating pressure : 1.2 kg/cm^2 Operating time : 30 minutes to 2.0 hrs on alternate day based on plant growth stage મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ડ્રીપ તથા મલ્ચીંગ (૨૫ માઈક્રોન સિલ્વર પ્લાસ્ટિક મલ્ચ) અંતર્ગત તરબૂચની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે તરબુચનું વધુ ઉત્પાદન અને આવક મેળવવા માટે ૧૫૦:૫૦:૭૫ કી.ગ્રા. ના:ફો:પો: પ્રતિ હેકટરે આપવો, જે પૈકી ૧૫:૫૦:૭.૫ કી.ગ્રા. ના:ફો:પો: પ્રતિ હેકટરે પાયામાં આપવું જયારે બાકીનો ૧૩૫ કી.ગ્રા. નાઈટ્રોજન અને ૬૭.૫ કી.ગ્રા. પોટાશ પ્રતિ હેકટરે વાવણીના ૨૦માં દિવસથી અઠવાડિયાના ગાળે ૬ સરખા હપ્તામાં ડ્રીપ દ્વારા આપવો. **ટપક પધ્ધતિની વિગત:** લેટરલ વચ્ચેનું અંતર : ૧.૫ મીટર ડ્રીપર વચ્ચેનું અંતર : ૧.૦ મીટર (ઓનલાઈન ડ્રીપર) ડ્રીપરની ક્ષમતા : ૮ લીટર/કલાક ડ્રીપ ચલાવવા માટેનું દબાણ: ૧.૨ કી.ગ્રા./સે.મી.^{૨} ડ્રીપ ચલાવવા માટેનો સમય: એકાંતરા દિવસે ૩૦ મિનિટ થી ૨.૦ કલાક છોડના વિકાસ પ્રમાણે

	Suggestions: Approved (Action : Associate Research Scientist, ARS, COA, AAU, Jabugam)
19.4.1.6	**Effect of different rate and frequency of foliar application of zinc on yield attributes and quality of tomato** The farmers of the middle Gujarat agro-climatic zone growing tomato (GAT 5) in *rabi* season are recommended to fertilize crop with 100-50-50 NPK kg/ha (50-50-50 NPK kg/ha as basal and remaining 50 kg N/ha at 30 DATP) *fb* three foliar sprays of 0.75% zinc sulphate (7.5 g/1it of water) at 30, 60 and 90 days after transplanting for getting good quality higher tomato fruit yield. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ટામેટા (જીએટી-૫)નું શિયાળામાં વાવેતર કરતાં ખેડૂતોને ભલામણ કરેલ ખાતર ૧૦૦-૫૦-૫૦ ના-ફો-પો કિ.ગ્રા./હે. (જે પૈકી ૫૦-૫૦-૫૦ ના-ફો-પો કિ.ગ્રા./હે. પાયામાં તથા બાકીનો ૫૦ કિ.ગ્રા. નાઈટ્રોજન/હે. ફેરરોપણીના ૩૦ દિવસ પછી) આપવું તેમજ ઉભા પાકમાં ૦.૭૫% ઝિંક સલ્ફેટ (૭.૫ ગ્રા./લિ. પાણીમાં)ના દ્રાવણને ફેરરોપણીથી ૩૦, ૬૦ અને ૯૦ દિવસે ત્રણ છંટકાવ કરવાથી ગુણવત્તા સભર વધુ ઉત્પાદન મેળવી શકાય છે. **Suggestions: Approved** (Action: Assoc. Research Sci, Micronutrient Research Project, AAU, Anand)
19.4.1.7	**Effect of INM on growth, yield & quality of cauliflower (*Brassica oleraceae* var. *botrytis*) cv. Pusa Snowball KT-25 on rice based cropping system** The farmers of middle Gujarat agro-climatic zone growing cauliflower after rice are recommended to apply 200 kg N from which 50 kg N from FYM (10 t/ha) and 75 kg N, 56 kg P and 28 kg K with chemical fertilizers as a basal dose and remaining 75 kg N should be applied 30 days after transplanting for higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ડાંગર પછી ફ્લેવરની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૨૦૦ કિ.ગ્રા. નાઇટ્રોજન પૈકી ૫૦ કિ.ગ્રા. નાઇટ્રોજન છાણિયા ખાતર (૧૦ ટન પ્રતિ હેક્ટર) દ્વારા અને ૭૫ કિ.ગ્રા. નાઇટ્રોજન, ૫૬ કિ.ગ્રા. ફૉસ્ફરસ અને ૨૮ કિ.ગ્રા. પોટાશ રાસાયણિક ખાતર દ્વારા પાયામાં આપવા તેમજ બાકીનો ૭૫ કિ.ગ્રા. નાઇટ્રોજન ફેરરોપણીના ૩૦ દિવસ બાદ આપવાથી ફ્લેવરનું વધુ ઉત્પાદન અને વળતર મળે છે. **Suggestions: Approved** (Action: Principal, College of Agriculture, AAU, Vaso)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

19.4.1.8	**Effect of time and intensity of pruning on yield of Jasmine (Mogra) *Jasminum sambac* (L) cv. Double type** Farmers of Saurashtra region growing jasmine (Mogra) are recommended to prune the crop up to 30 cm above ground level (Medium pruning) during 4th week of October for getting higher yield and net return. સૌરાષ્ટ્રમાં મોગરાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મોગરાના છોડને જમીનથી ૩૦ સે.મી. ઉપર સુધી(મધ્યમ છટણી) ઓક્ટોબરના ચોથા અઠવાડિયામાં કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestions:** 1. Recast recommendation (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.1.9	**Effect of different drying techniques with use of various media for drying of flower *Butea monosperma*** **<u>Recommendation for processors</u>:** The dry flower processors are recommended to keep the flower of flame of the forest at open condition for sun drying for two days with embedded in borex powder as a media for obtaining good quality dried flower. **<u>પ્રોસેસરો માટે ભલામણ</u>:** ફૂલોની સુકવણી કરતાં પ્રોસેસરોને ભલામણ કરવામાં આવે છે કે, કેસૂડાંનાં તાજા ફૂલોને બોરેક્સ પાઉડરમાં દબાવી દઈ સૂર્યપ્રકાશમાં બે દિવસ સુધી રાખવાથી સારી ગુણવત્તાવાળા સુકા ફૂલો મળે છે. **Approved with following suggestions:** **1. Recast recommendation** (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.1.10	**Effect of integrated nutrient management on growth, yield and quality in rejuvenated guava (*Psidium guajava*) cv. Bhavnagar Red.** Farmers of Saurashtra region having rejuvenated orchard of guava are recommended to apply 187.5 g of each N: P_2O_5: K_2O/plant along with well decomposed FYM 5 kg/plant + Vermicompost 2.5 kg/plant + Azospirillum 125 ml/plant + PSB 15 ml/plant as basal dose during *kharif* season 187.50 g N/plant as split after completion of *kharif* season for getting higher yield and net return. સૌરાષ્ટ્ર વિસ્તારમાં નવીનીકરણ કરેલ જામફળના બગીચા ધરાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મૃગ બહાર લેતા જામફળના પાકને ચોમાસાં દરમ્યાન પાયાના ખાતર તરીકે ૧૮૭.૫૦ ગ્રા. ના:ફો:પો: દરેક સાથે છોડ દીઠ ૫ કિ.ગ્રા. સારું કોહવાયેલું છાણિયું ખાતર + ૨.૫ કિ.ગ્રા.

	વર્મીકમ્પોસ્ટ + ૧૨૫ મી.લી. એઝોસ્પીરીલમ + ૧૫ ગ્રા. પી.એસ.બી. આપવુ તેમજ ચોમાસાંબાદ છોડ દીઠ ૧૮૭.૫૦ ગ્રા.નાઈટ્રોજન આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestions:** **1. Recast recommendation** (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.1.11	**Nutrient management in cucumber under polyhouse** The farmers of Gujarat growing parthenocarpic cucumber under greenhouse are recommended to apply fertilizer 8.0-5.0-5.0 kg NPK/1000 m^2 as a basal + panchgavaya 3% with three sprays at 30, 40 and 50 days after sowing to obtain higher yield and net return. ગ્રીનહાઉસમાં પાર્થેનોકાર્પિક કાકડીની ખેતી કરતા ગુજરાતનાં ખેડુતોને ભલામણ કરવામાં આવે છે કે કાકડીને ૮.૦-૫.૦-૫.૦ કિ.ગ્રા. ના:ફો:પો /૧૦૦૦ ચો.મી.પાયાના ખાતર તરીકે તેમજ તેની સાથે પંચગવ્ય ૩% ના ત્રણ છંટકાવ વાવેતર કર્યા પછીના ૩૦, ૪૦ અને ૫૦ દિવસે આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved with following suggestions:** **1. Recast recommendation** (Action: Principal & Dean, CoH, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Horticulture)

	Fruit Science
19.4.1.12	**Effect of growth regulators on flowering and yield of sapota cv. Kalipatti** The farmers of South Gujarat agro climatic zone growing sapota cv. Kalipatti are recommended to apply foliar spray of CCC 100 mg L^{-1} (10 g in 100 L water) in April month and GA_3 50 mg L^{-1} (5 g in 100 L water) in September and November month on adult tree along with RDF (100 kg FYM + 1000 : 500 : 500 NPK g/plant) for obtaining higher yield and net returns. દક્ષિણ ગુજરાતના ખેત આબોહવાકીય વિસ્તારમાં ચીકુની કાલીપત્તી જાત ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે પુખ્તવયના ઝાડ ઉપર સાયકોસીલ ૧૦૦ મિ.ગ્રા./ લિ. (૧૦ ગ્રા. પ્રતિ ૧૦૦ લિ. પાણી) નો એપ્રિલ માસમાં અને જીબ્રેલીક એસીડ ૫૦ મિ.ગ્રા./ લિ. (૫ ગ્રા. પ્રતિ ૧૦૦ લિ. પાણી) નો સપ્ટેમ્બર અને નવેમ્બર માસમાં છંટકાવ કરવાની સાથે ભલામણ મુજબનું ખાતર (૧૦૦

કિલો છાણીયું ખાતર + ૧૦૦૦:૫૦૦:૫૦૦ ગ્રામ ના. ફો. પો./ઝાડ) આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

Suggestions : Approved

(Action: Res. Scientist, RHRS, ACH, NAU, Navsari)

19.4.1.13 Alleviation of soil moisture deficit stress in banana

The farmers of South Gujarat agro climatic zone cultivating banana are recommended foliar application of Acetyl Salicylic Acid (18 mg/lit) at floral primordial initiation stage in banana plant (5 month after planting) under probability of water stress condition up to one month. The treatment reduced the effect of water stress and gave satisfactory growth, yield and increased net profit of banana.

દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં કેળની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળના છોડમાં પુષ્પ બંધાવવાની શરૂઆત (રોપણીનાં ૫ મહિના પછી)ના સમયે એક મહિના સુધી પાણીની અછત ઉદભવવાની પરિસ્થિતિને નિવારવા માટે એસીટાઈલ સેલીસીલીક એસીડ (૧૮ મિ. ગ્રા./લિ.) નો છંટકાવ કરવાથી કેળના છોડને પાણીની અછતની ઓછી અસર થવાથી સંતોષકારક વિકાસ, ઉત્પાદન અને વધુ ચોખ્ખો નફો મેળવી શકાય છે.

Suggestions : Approved

(Action: Associate Res. Scientist, FRS, NAU, Gandevi)

19.4.1.14 Fertigation scheduling for quality fruit production of mango

Farmers of South Gujarat agro climatic zone having adult orchard of Kesar mango are advised to apply recommended dose of fertilizers (750-160-750 g NPK per tree) through fertigation for getting higher yield and net realization.

Schedule of fertilizer application		
Splits	Quantity of fertilizers per tree	Stage of application
N-40%, P-60%, K-20%	650 g Urea, 112 g Phosphoric acid, 250 g MOP	After harvest
N-40%, P-40%, K-20%	650 g Urea, 76 g Phosphoric acid, 250 g MOP	During fruit set
N-20%, K-60%	325 g Urea, 750 g MOP	At marble stage

Schedule of drip irrigation	
Number of dripper per tree	4
Dripper discharge	4 litre/hour
Operating pressure	1.20 kg/cm^2
Operating time	6 hour /day (two days at each stage)

દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં કેસરની પુખ્તવયની આંબાવાડી ધરાવતા ખેડૂતોને સલાહ આપવામાં આવે છે કે ભલામણ કરેલ રાસાયણિક ખાતરોનો જથ્થો (૭૫૦-૧૬૦-૭૫૦ ગ્રા. ના.ફો.પો. પ્રતિ ઝાડ) ટપક પધ્ધતિ દ્વારા આપવાથી વધુ ઉત્પાદન અને આવક થઇ શકે છે.

ખાતરો આપવા માટેનું પત્રક

ખાતરોના ભાગ	**ખાતરોનો જથ્થો (પ્રતિઝાડ)**	**ખાતર આપવાનો તબક્કો**
નાઈટ્રોજન ૪૦%, ફોસ્ફોરસ ૬૦%, પોટાશ ૨૦%	૬૫૦ ગ્રામ યુરિયા, ૧૧૨ ગ્રામ ફોસ્ફોરિકએસીડ, ૨૫૦ ગ્રામ મ્યુરેટઓફપોટાશ	કેરીની લણણી પછી
નાઈટ્રોજન ૪૦%, ફોસ્ફોરસ ૪૦%, પોટાશ ૨૦%	૬૫૦ ગ્રામ યુરિયા, ૭૬ ગ્રામ ફોસ્ફોરિકએસીડ, ૨૫૦ ગ્રામ મ્યુરેટઓફપોટાશ	ફળ ધારણ દરમ્યાન
નાઈટ્રોજન ૨૦%, પોટાશ ૬૦%	૩૨૫ ગ્રામ યુરિયા, ૭૫૦ ગ્રામ મ્યુરેટઓફપોટાશ	કેરી લખોટી જેવડી થાય ત્યારે

ટપકપદ્ધતિચલાવવાનુંપત્રક

ટપકણીયાની સંખ્યા	૪ પ્રતિ ઝાડ
ટપકણીયાની ક્ષમતા	૪ લીટર/કલાક
ટપક પદ્ધતિનું દબાણ	૧.૨૦ કિગ્રા/સેમી^{2}
ટપક પદ્ધતિનો સમય	૬ કલાક પ્રતિ દિવસ (બે દિવસ માટે દરેક તબક્કે)

Suggestions : Approved

Action: Research Scientist, AES, NAU, Paria

19.4.1.15 **Standardize the fertilizer dose of drumstick (*Moringa spp.*)**

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(Action: Prof. (Pl. Breeding), Dept. of Veg. Sci., ACH, NAU, Navsari)

19.4.1.16 **Influence of sett size and spacing on growth and yield of greater yam (*Dioscorea alata* L.)**

The farmers of South Gujarat agro climatic zone growing greater yam (Hemlata) are recommended to use 250 g tuber size and planting the greater yam at 90 cm x 60 cm spacing to get higher yield and net realization.

દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં રતાળુ (હેમલતા) ની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા રતાળુની ૨૫૦ ગ્રામ વજનની ગાંઠનું ૯૦ સે.મી. x ૬૦ સે. મી. ના અંતરે વાવેતર કરવા ભલામણ કરવામાં આવે છે.

Suggestions : Approved

(Action: Prof. (Pl. Breeding), Dept. of Veg. Sci., ACH, NAU, Navsari)

19.4.1.17

Effect of organic spray on growth, yield and quality of tomato (*Solanum lycopersicum*L.) under South Gujarat condition.

Farmers of South Gujarat Agro climatic Zone growing tomato are recommended to spray Novel Organic Liquid Nutrients 1% (100 ml/10 liter of water) at 25, 50, 75 & 100 DATP along with recommended dose of fertilizer (100-50-50 N-P-K kg/ha) for higher yield and net realization.

દક્ષિણ ગુજરાતના ખેત આબોહવાકીય વિસ્તારનાં ખેડુતોને ટામેટાંનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ફેરરોપણી બાદ ૨૫, ૫૦, ૭૫ અને ૧૦૦ દિવસે નોવેલ ઓર્ગેનિક લીક્વીડ ન્યુટ્રીઅન્ટસ ૧ % (૧૦૦ મિ.લિ./ ૧૦ લીટર પાણી) પ્રમાણે નિયત કરેલ રાસાયણિક ખાતરના જથ્થા (૧૦૦-૫૦-૫૦ ના.ફો.પો કિ.ગ્રા./હે.) સાથે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

Approved with following Suggestions:

1. Shift this recommendation from scientific to **'Farmers community'.**
2. Mention year in all the tables.
3. Recast the recommendation text in both the version.

(Action: Prof. (Pl. Breeding), Dept. of Veg. Sci., ACH, NAU, Navsari)

19.4.1.18

Effect of different bio-stimulants on growth, quality and yield of *Dendrobium* orchid under NVPH

Farmers of Gujarat growing *dendrobium* orchid under naturally ventilated polyhouse are recommended to spray Novel Prime @ 2% (20 ml in 1 L water) at every 15 days interval to obtain higher cut flower yield and better quality

કુદરતી હવા ઉજાશ વાળા પોલીહાઉસમાં ઓર્કિડ ઉગાડતા ગુજરાતના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ,ઓર્કિડમાં દર ૧૫ દિવસે ૨% નોવેલ પ્રાઈમ (૨૦ મિ.લિ. ૧ લી. પાણીમાં) નો છંટકાવ કરવાથી સારી ગુણવત્તાવાળી વધુ ફૂલ દાંડીઓનું ઉત્પાદન મેળવી શકાય છે.

Suggestions : Approved

(Action: Prof. & Head, Dept. of FLA, ACH, NAU, Navsari)

19.4.1.19

Studies on phenophase based nutrient scheduling on flower yield and quality in China aster

Farmers of South Gujarat agro climatic zone growing China aster are recommended to apply 180:120:60 kg NPK/ha. Wherein, 25% should be applied as basal dose and remaining 75 % through drip system in three splits in the following manner for higher yield as well as net realization

Splits of NPK	**Phenophase**	**75% RDF through fertigation (kg/ha)**			**Remarks**
		Urea	12:61:00 (MAP)	00:00:50 (K_2SO_4)	

First (40:20:20 %)	Vegetative phase	109.49	29.52	18.00	Three equal splits of fertilizers at weekly interval
Second (30:40:40 %)	Bud phase	72.51	59.04	36.00	Two equal splits of fertilizers at weekly interval
Third (30:40:40 %)	Flowering phase	72.51	59.04	36.00	Two equal splits of fertilizers at weekly interval

Note:

- 25% of RDF (Urea:97.65 kg, SSP:187.50kg and KCl:25.05 kg/ha) should be applied as basal dose
- Paddy straw @ 7.5 t/ha as mulch should be applied on raised beds.

દક્ષિણ ગુજરાત ખેત અબોહાકીય વિસ્તારમાં ચાઈના એસ્ટરની ખેતી કરતા ખેડુતોને ભલામણ કરવામા આવે છે કે ૧૮૦ :૧૨૦ : ૬૦ કિ.ગ્રા. ના.ફો.પો. પ્રતિ હેક્ટર આપવો. જે પૈકી ૨૫ % પાયાના ખાતર તરીકે જ્યારે બાકીના ૭૫ % ટપક પધ્ધતિ દ્વારા ત્રણ હપ્તામા નીચે મુજબ આપવાથી વધુ ઉત્પાદનની સાથે વધુ નફો મેળવી શકાય છે.

ના.ફો.પો. ના હપ્તા	તબક્કો	ભલામણના ૭૫ % ફર્ટીગેશન દ્વારા (કિ.ગ્રા./હે.)			નોધ
		યુરીયા	૧૨:૬૧:૦૦ (મોનો એમોનિયમ ફોસ્ફેટ)	૦૦:૦૦:૫૦ (પોટેશિયમ સલ્ફેટ)	
પહેલો (૪૦:૨૦:૨૦ ટકા)	વાનસ્પતિક વૃધ્ધિ તબક્કે	૧૦૯.૪૯	૨૯.૫૨	૧૮.૦	ત્રણ સરખા ભાગ કરી અઠવાડીયાના આંતરે આપવા
બીજો (૩૦:૪૦:૪૦ ટકા)	ફૂલની કળી અવસ્થાએ	૭૨.૫૧	૫૯.૦૪	૩૬.૦	બે સરખા ભાગ કરી અઠવાડીયાના આંતરે આપવા
ત્રીજો (૩૦:૪૦:૪૦ ટકા)	ફૂલ અવસ્થાએ	૭૨.૫૧	૫૯.૦૪	૩૬.૦	બે સરખા ભાગ કરી અઠવાડીયાના આંતરે આપવા

નોંધ:

- ભલામણ કરેલ જથ્થાના ૨૫ % (યુરીયા: ૯૭.૬૫ કિલો, સિંગલ સુપર ફોસ્ફેટ: ૧૮૭.૫૦ કિલો અને પોટેશિયમ ક્લોરાઇડ: ૨૫.૦૫ કિલો/હેક્ટર) પાયાના ખાતર તરીકે આપવું.

	• ગાદી કયારા ઉપર ૭.૫ ટન/હે. જેટલા ડાંગરના પરાળનું આવરણ કરવું. **Suggestions : Approved** (Action: Prof.& Head, Dept. of FLA, ACH, NAU, Navsari)
19.4.1.20	**Collection and evaluation of fillers (asparagus)** The farmers of South Gujarat agro climatic zone growing asparagus (*Asparagus densiflorus* Sprengeri) as cut greens are recommended to grow in pot under 50 % green shade net house for getting higher cut foliage production and net profit. દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં શતાવરી (એસ્પેરેગસ ડેનસીફલોરસ સ્પ્રીન્જેરી) ની કટગ્રીન્સ તરીકે ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કુંડામાં ૫૦ % ગ્રીન શેડ નેટ હાઉસ હેઠળ ઉગાડવાથી કટ ફોલીએજ નુ વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Suggestions : Approved** (Action: Prof.& Head, Dept. of FLA, ACH, NAU, Navsari)
19.4.1.21	**Collection and evaluation of fillers (dracaena)** Farmers of South Gujarat agro climatic zone growing dracaena (*Dracaena fragrans* 'Massangeana') as cut foliage are recommended to grow in pot under 50 % green shade net house to obtain higher production and net realization. દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં ડ્રેસીના (ડ્રેસીના ફ્રેગ્રન્સ 'મેસેનજીના') ની કટ ફોલીએજ તરીકે ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કુંડામાં ૫૦ % ગ્રીન શેડ નેટ હાઉસ હેઠળ ઉગાડવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Suggestions : Approved** (Action: Prof.& Head, Dept. of FLA, ACH, NAU, Navsari)
19.4.1.22	**Collection and evaluation of fillers (ferns)** Farmers of South Gujarat agro climatic zone growing fern (*Nephrolepis exaltata*) as cut foliage are recommended to grow in pot under 50 % green shade net house to obtain higher production and net realization. દક્ષિણ ગુજરાતનાં ખેત આબોહવાકીય વિસ્તારમાં કટ ફોલીએજ તરીકે ફર્ન (નેફ્રોલેપીસ એક્સાલ્ટાટા)ની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કુંડામાં ૫૦ % ગ્રીન શેડ નેટ હાઉસ હેઠળ ઉગાડવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Suggestions : Approved** (Action: Prof.& Head, Dept. of FLA, ACH, NAU, Navsari)

19.4.1.23	**Effect of cycocel, GA_3 & saline irrigation water on African marigold (*Tagetes erecta*) cv. Pusa Narangi Gainda** The farmers of South Gujarat Agro climatic zone are recommended to grow marigold cv. Pusa Narangi Gainda by dipping 30 days old seedling roots in 1.0 ml/l cycocel (50 % v/v) solution for 10 seconds before transplanting and irrigate with < 2 ds m^{-1} EC water for better flower production, quality and higher net realization. દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારનાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ગલગોટાની પૂસા નારંગી ગેંદા જાતને ફેરરોપણી કરતાં પહેલા ૩૦ દિવસના ધરૂના મૂળને ૧ મિ.લિ./લિ. સાયકોસીલ (૫૦% વી/વી) ના દ્રાવણમાં ૧૦ સેકન્ડ બોળવાથી તેમજ <૨ ડીએસ/મિ. પાણીથી પિયત આપવાથી સારી ગુણવત્તા વાળા વધુ ફૂલોનું ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following Suggestions:** 1. Shift this recommendation from scientific to **'Farmers community'.** 2. Add economics table 3. Recast the recommendation text in both the version. (Action: Prof. & Head, Dept. of Hort, NMCA, NAU, Navsari)
19.4.1.24	**Effect of IBA and seasons on rooting of marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gainda cutting under poly tunnel** The farmers and nurserymen of the Gujarat growing marigold are advised that the lower portion of tip cuttings treated with IBA 1500 mg/L for 5 (five) seconds and insert in slanting position in sand under poly tunnel gave higher number of rooted cuttings, number of roots per rooted cutting and higher survival percentage of marigold in all the seasons. દક્ષિણ ગુજરાતમાં ગલગોટાની ખેતી કરતા ખેડૂતો અને નર્સરી વ્યવસાયિકોને ભલામણ કરવામાં આવે છે કે અગ્રકલિકા સાથેના કટકાઓના નીચેના ભાગને ઈન્ડોલ બ્યુટીરીક એસિડના (I BA) ૧૫૦૦ મિ.ગ્રા. પ્રતિ લિટરના દ્રાવણમાં ૫ સેકંડ સુધી માવજત આપી પોલી- ટનલમાં રેતીના ક્યારામાં ત્રાંસા રોપવાથી દરેક ઋતુમાં વધુ સંખ્યામાં, વધુ મુળવાળી અને વધુ ટકાઉ શક્તિવાળી ગલગોટાની કટકા કલમો મેળવી શકાય છે. **Approved with following Suggestion/s:** 1. Shift this recommendation to **'Farmers community'.** 2. Recast the recommendation text and add Gujarati version in text. (Action: Prof. & Head, Dept. of FLA, ACH, NAU, Navsari)
	PHT
********	Standardization of method for extraction of passion fruits (*Passiflora edulis*) juice. **Approved in Dairy Science and FPT group, only for information**

	Action: Prof.& Head, Dept. of PHT, ACH, NAU, Navsari
********	Development of value added blended spiced squash using passion (*Passiflora edulis*) and bael (*Aegle marmelos* L.) fruits **Approved in Dairy Science and FPT group , only for information** (Action: Prof.& Head, Dept. of PHT, ACH, NAU, Navsari)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Forestry)

19.4.1.25	**Effect of windbreak (*Casuarina equisetifolia* L.) on productivity of paddy in South Gujarat**
	The Farmers of South Gujarat heavy rainfall zone-I are recommended that paddy grown under single line windbreak of Casuarina (*Casuarina equisetifolia* L.) planted at 1 m spacing in north-south direction having average of height of 20 m and DBH of 28 cm on the farm boundary reduced the lodging damage and improved the paddy yield as well as soil quality as compared to paddy grown in open plot (without any windbreak). દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે તેમના ખેતરના સેઢા-પાળા ઉપર ઉત્તર-દક્ષિણ દિશામાં ૧ મી. ના અંતરે, સરેરાશ ૨૦ મી. ઉચાઇ અને ૨૮ સે.મી. વ્યાસ ધરાવતા શરૂ (કેજ્યુરીના ઇક્વિસેટિફોલિયા) વૃક્ષોની એક હરોળ પવન અવરોધક તરીકે વાવેતર કરવાથી ડાંગરના પાકનું નમી જવાથી થતું નુકસાન ઓછું થાય છે તથા ઉત્પાદન તેમજ જમીનની ગુણવત્તા પવન અવરોધક વીનાના ખેતરની સરખામણીએ સુધારે છે. **Suggestions : Approved** (Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)

SARDARKRUSHINAGAR DANTIVADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.4.1.26	**Effect of sowing time and spacing on growth, yield and quality of beetroot (*Beta vulgaris* L.) under North Gujarat condition** The farmers of North Gujarat Agro-climatic Zone IV growing beetroot are recommended to sow the crop in 3rd week of October at the spacing of 15 cm x 10 cm for getting higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ ૪ માં બીટની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઓકટોબર માસના ત્રીજા અઠવાડિયામાં ૧૫ સે.મી. x ૧૦ સે.મી. ના અંતરે વાવણી કરવાથી વધુ ઉત્પાદન અને નફો મળે છે. **Suggestions: Approved** (Action: Principal, College of Horticulture, SDAU, Jagudan)
19.4.1.27	**Effect of different plant growth regulators on growth, flowering and yield of bitter gourd (*Momordica charantia L.*)** The farmers of North Gujarat Agro climatic Zone IV growing bitter gourd are recommended to spray NAA @ 125 ppm (1.25 g/10 liter) or ethrel @ 200 ppm (2.00 ml/10 liter) or GA_3 @ 40 ppm (0.4 g/10 liter) solution at 2 to 3 true leaf stage for getting higher number of female flowers, higher fruit yield as well as net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ ૪ માં કારેલાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કારેલાના છોડ ને ૨-૩ પાન અવસ્થાએ (દલપત્ર બાદ) એનએએ ૧૨૫ પીપીએમ (૧.૨૫ ગ્રા./૧૦ લિ.) અથવા ઇથરેલ ૨૦૦ પીપીએમ (૨.૦૦ મિ.લી./૧૦ લિ.) અથવા જીબ્રેલીક એસિડ ૪૦ પીપીએમ (૦.૪ ગ્રા./૧૦ લિ.)નો છંટકાવ કરવાથી કારેલાના છોડ ઉપર વધારે માદા ફુલ, વધુ ઉત્પાદન અને નફો મળે છે. **Suggestions: Approved** (Action: Principal,College of Horticulture, SDAU, Jagudan)
19.4.1.28	**Effect of different times and severity of pruning on *mrig bahar* of pomegranate (*Punica granatum* L.)** The farmers of North Gujarat Agro-climatic Zone IV growing pomegranate are recommended to prune the crop at 30 cm terminal end at the end of May for getting higher fruit yield, better quality and net profit in *mrig bahar*. ઉત્તર ગુજરાત ખેત આબોહવાકીય ઝોન ૪ માં દાડમની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે દાડમના છોડની છટણી મે માસના

	અંતમાં ટોચથી ૩૦ સે.મી.એ કરવાથી મૃગ બહારમાં વધુ ઉત્પાદન, ગુણવત્તા યુક્ત ફળ અને ચોખ્ખી આવક મળે છે. **Suggestions: Approved** (Action: Principal,College of Horticulture, SDAU, Jagudan)
19.4.1.29	**Effect of different times and severity of pruning on *hasta bahar* of pomegranate (*Punica granatum* L.)** The farmers of North Gujarat Agro-climatic Zone IV growing pomegranate are recommended to prune the crop at 30 cm terminal end at the end of September for getting higher fruit yield, better quality and net profit in *hasta bahar*. ઉત્તર ગુજરાત ખેત આબોહવાકીય ઝોન ૪ માં દાડમની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે દાડમના છોડની છટણી સપ્ટેમ્બર માસના અંતમાં ટોચથી ૩૦ સે.મી. એ કરવાથી હસ્ત બહારમાં વધુ ઉત્પાદન, ગુણવત્તાયુક્ત ફળ અને ચોખ્ખી આવક મળે છે. **Suggestions: Approved** (Action: Principal,College of Horticulture, SDAU, Jagudan)
19.4.1.30	**Effect of different times and methods of grafting in custard apple cv.Sindhan under north Gujarat condition** Custard apple growers and nurserymen interested in vegetative multiplication are recommended to adopt wedge grafting in second to fourth week of March and side grafting from second week of March to get higher survival and net realization. સીતાફળની ખેતી કરતા ખેડૂતો તેમજ નર્સરી ધારકોને ભલામણ કરવામાં છે કે, વાનસ્પતિક સંવર્ધનની વેજ ગ્રાફ્ટીંગ (ફાચર કલમ) પદ્ધતિથી માર્ચ મહિનાના બીજાથી ચોથા અઠવાડિયામાં અને સાઈડ ગ્રાફ્ટીંગ પદ્ધતિથી માર્ચ મહિનાના બીજા અઠવાડિયામાં કલમ કરવાથી વધુ સફળતા તેમજ વળતર મળે છે. **Suggestions: Approved** (Action: Principal,College of Horticulture, SDAU, Jagudan)

19.4.1.31	**Effect of different media on germination and growth of 'Desert Rose' (*Adenium obesum*)** The nurserymen are recommended to use cocopeat or sand as media for getting fast and higher germination percentage of adenium seeds and transplant seedlings in cocopeat + vermicompost (1:1 v/v) or sand + vermicompost (1:1 v/v) media for getting good quality adenium plants and higher economic returns. નર્સરી ધારકોને ભલામણ કરવામાં આવે છે કે એડેનીયમનાં બીજને કોકોપીટ અથવા રેતીમાં વાવવાથી ઝડપી અને વધારે સંખ્યામાં અંકુરીત છોડ મળે છે અને આ ધરુને કોકોપીટ + વર્મીકંપોસ્ટ (1:1 v/v) અથવા રેતી + વર્મીકંપોસ્ટ (1:1 v/v) માં રોપવાથી ઝડપી વૃધ્ધિ, તેમજ સારા ગુણવત્તાવાળા છોડ અને વધુ નફો મળે છે. **Suggestions: Approved** (Action: Principal,College of Horticulture, SDAU, Jagudan)
19.4.1.32	**Effect of spacing and nitrogen fertilizer on growth, yield and quality of tuberose** The farmers of North Gujarat Agro Climatic Zone IV growing tuberose are recommended to plant tuberose at 45 cm x 30 cm and apply 200 kg N/ha in six equal splits at two months interval from June to April to get higher yield and net return. The FYM @ 20 t/ha and phosphorus and potash each @ 200 kg/ha should be given as basal dose. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, રજનીગંધાની ૪૫ સે.મી. X ૩૦ સે.મી.ના અંતરે રોપણી કરી, ૨૦૦ કિ.ગ્રા. નાઇટ્રોજન/હેક્ટર ખાતરના છ સરખા હપ્તામાં જૂનથી એપ્રિલ માસ દરમ્યાન બે માસના અંતરે આપવાથી વધુ ઉત્પાદન અને નફો મળે છે. ૨૦ ટન છાણિયું ખાતર અને ૨૦૦ કિ.ગ્રા. ફોસ્ફરસ તેમજ પોટાશ પ્રતિ હેક્ટરમાં પાયામાં આપવુ. **Suggestions: Approved** (Action: Assistant Research Scientist, FRS, SDAU, Dehgam)
19.4.1.33	**Impact of different levels of potash and sulphur on growth, yield and quality of onion for North Gujarat** The farmers of North Gujarat Agro-climatic Zone IV growing onion are recommended to apply 60 kg potash (MOP) and 20 kg sulphur (Bentonite) per hectare as basal in addition to recommended dose of nitrogen

	and phosphorus (100:50 NP kg/ha) for getting higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ ૪ના ડુંગળી ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે ભલામણ કરેલ નાઈટ્રોજન અને ફોસ્ફરસ (૧૦૦:૫૦ કિ.ગ્રા./હે.) ની સાથે ૬૦ કિલોગ્રામ પોટાશ (મ્યુરાટ ઓફ પોટાશ) અને ૨૦ કિલોગ્રામ સલ્ફર (બેન્ટોનાઇટ) પ્રતિ હેકટર પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Suggestions: Approved** (Action: Scientist, KVK, Sabarkantha, SDAU, Khedbhahma)
19.4.1.34	**Integrated Nutrient Management in ardusa (*Alianthus execelsa* L.) based agroforestry system under drip irrigation.** The farmers of North Gujarat Agro-climatic zone IV growing *Ardusa* are recommended to apply 3 kg FYM +1.5 kg vermicompost + 25 g *Azospirilium* per plant every year on onset of monsoon for obtaining higher wood and net returns. It also improves soil fertility status. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪ના અરડુસાની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે અરડુસાને ઝાડ દીઠ ૩ કિ.ગ્રા. છાણીયું ખાતર + ૧.૫ કિ.ગ્રા. વર્મીકમ્પોસ્ટ + ૨૫ ગ્રા.એઝોસ્પિરિલમ દર વર્ષે ચોમાસુ બેસતા આપવાથી વધુ લાકડુ અને નફો મળે છે તેમજ જમીનની ફળદ્રુપતા સુધારે છે. **Suggestions: Approved** (Action: Research Scientist, Agrofestry,, SDAU, Sardarkrushinagar)
19.4.1.35	**Varietal trial on fig (*Ficus carica* L)** The farmers of North Gujarat Agroclimatic Zone IV are recommended to grow the Poona Fig variety for higher fruit yield and net profit. ઉત્તર ગુજરાતના ખેત આબોહવાકીય વિભાગ-૪ના અંજીર ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટેપૂના અંજીર જાતની રોપણી કરવાની ભલામણ કરવામાં આવે છે. **Suggestions: Deferred for one year** **Suggested to propose in next year AGRESCO of crop improvement sub committee** (Action: Research Scientist, Agrofestry,, SDAU, Sardarkrushinagar)

19.4.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

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JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

19.4.2.1	**Effect of time of irrigation and level of pruning on yield and quality of off seasonal custard apple (*Annona squamosa* L.) cv. GJCA-1** It is inform to scientific community that the custard apple should not be irrigated after completion of rest in the month of March resulted to dropping of flowering and fruit setting due to higher temperature with lower humidity. **Suggestions: Approved** (Action: Principal and Dean, CoH, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Horticulture)

19.4.2.2 **Effect of seed soaking and time of sowing on germination and seedling vigour on Sapota**

It is inform to scientific community that sowing of sapota seeds can be done after soaking in cow dung slurry (250g cow dung per liter water) for 24 hours during January for higher seed germination, growth and survival of seedlings.

Suggestions: Approved

(Action: Res. Scientist, RHRS, ACH, NAU, Navsari)

19.4.2.3 **Validation of customized fertilizers in sweet potato**

It is inform to scientific community that soil application of "customized fertilizer" (325 kg/ha) two times as basal and 1 month after planting as well as foliar application of "micronol sweet potato"(5 ml/lit) three times on 15, 30 and 45 days after planting should be done for getting higher yield in sweet potato.

Customized Fertilizer (%):

N	P	K	Ca	Mg	Zn	B
11	7	11	6	3	0.4	0.1

Micronol sweet potato (%):

Zn	Cu	B	Fe	Mn
2	0.6	0.2	0.5	0.25

Suggestions: Approved

(Action: Prof. (Pl. Breeding), Dept. of Veg. Sci., ACH, NAU, Navsari)

19.4.2.4 **Integrated weed management in African marigold (*Tagetes erecta* L.) var. Pusa Narangi Gainda**

It is inform to scientific community that spray of early post emergence

	pendimethalin 30 % EC@ 0.75 kg a.i./ha (3.33 L/ha) within 24 hours of transplanting followed by mulching of paddy straw (5 cm thickness layer) and one hand weeding at 50 days after transplanting effectively controls weed and gives higher yield in African marigold var. Pusa Narangi Gainda during *Kharif* season. **Suggestions: Approved** (Action: Prof.& Head, Dept. of FLA, ACH, NAU, Navsari**)**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Forestry)

19.4.2.5	**Phenological study of Lesser known and Threatened tree species of South Gujarat**

Among 15 tree species studied, nine tree species such as *Sterculia urens, Sterculia villosa, Dalbergia lanceolaria, Oroxylum indicum, Soymida febrifuga, Dalbergia latifolia, Stereospermum chelonoides* and *Albizia procera* are deciduous in nature; however, species such as *Bauhinia malabarica, Pterocarpus marsupium, Ougeinia dalbergioides* and *Miliusa tomentosa* showed leaf fall and leaf renewal events but not shown leafless condition. Further, *Mallotus philippensis*is found to be typical evergreen species. Vegetative phenology and reproductive phenology like flowering, fruiting and fruit/ seed fall information can be used for collection of seeds for nursery practice (as in the given table). This information can also be useful for conservation and management of these species

Sr. no.	**Tree Name**	**Nature of Tree species**	**Leaf fall period**	**Leaf renewal period**	**Leafless period**	**Flowering period**	**Fruiting period**	Fruit fall period
1.	*Semicarpus anacardium*	Deciduous	Nov-Apr	May-Jul	Apr-May	Jun-Sept	Sept-Feb	Feb-Mar
2.	*Sterculia urens*	Deciduous	Sept-Dec	May-Jul	Jan-Apr	Dec-Feb	Jan-Mar	Mar-May
3.	*Sterculia villosa*	Deciduous	Nov-Feb	May-Jul	Feb-May	Jan-Mar	Mar-Apr	Apr-May
4.	*Dalbergia lanceolaria*	Deciduous	Nov-Mar	May-Jul	Apr	Apr-May	May-Jul	Jan-Mar
5.	*Oroxylum indicum*	Deciduous	Nov-Mar	May-Jul	Apr	Jul-Oct	Nov-Feb	Mar-Apr
6.	*Soymida febrifuga*	Deciduous	Jan-Mar	May-Jul	Apr	Mar-Apr	Apr-May	Jun
7.	*Dalbergia latifolia*	Deciduous	Nov-Mar	May-Jun	Apr	Apr-May	Apr-Jun	Dec-Mar
8.	*Stereospermum chelonoides*	Deciduous	Nov-Mar	Apr-Jun	April	Mar-May	May-Aug	Nov-Dec
9.	*Albizia procera*	Deciduous	Nov-Mar	Apr-July	Mar-Apr	Jul-Aug	Sept-Oct	Mar-May
10.	*Bauhinia malabarica*	Nearly evergreen	Nov-Mar	Apr-Jun	-	Sept-Oct	Nov-Feb	Mar-May
11.	*Pterocarpus marsupium*	Nearly evergreen	Nov-Apr	Apr-Jun	-	Oct-Dec	Nov-Feb	Feb-Apr

12.	*Ougeinia dalbergioides*	Nearly evergreen	Jan-Mar	Apr-Jun	-	Feb-Apr	Apr-May	May
13.	*Miliusa tomentosa*	Nearly evergreen	Jan-Mar	Mar-Jun	-	Apr-May	May-Jun	Jun-Jul
14.	*Hardwickia binata*	Nearly evergreen	Nov-May	Dec-Jul	-	-	-	-
15.	*Mallotus philippensis*	Evergreen	Aug-May	Feb-July	-	Nov-Jan	Jan-Mar	Mar-May

Suggestions: Approved

(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)

19.4.2.6 Assessment of physical and anatomical properties of different bamboo species

Bamboo can be identified mainly at genus level by knowing the types of vascular bundles in cross-section based on its size, shape and distribution patterns as per Liese classification. However, it can be identified at species level by measuring the important physico-anatomical properties such as basic density, fibre length, cell wall thickness, vessel element length and vascular bundle frequency.

Physico-anatomical key for identification of 20 important bamboo species

1	Vascular bundle II & III	2
1	Vascular bundle type III alone	3
1	Vascular bundle type III & IV	4
1	Vascular bundle type I, III & IV	5
2	Thin wall bamboo having basic density more than 0.600 g/cc, fibre length varies from 3000 µm to 4000 µm and cell wall thickness more than 10 µm.	*Melocanna baccifera*
2	Thin-wall bamboo having basic density less than 0.600 g/cc, fibre length varies from 2000 µm to 3000 µm and cell wall thickness less than 10 µm.	*Oxytenanthera parvifolia*
3	Medium thick-wall bamboo having basic density more than 0.550 g/cc, vascular bundle frequency 3/mm^2, fibre length varies from 3000 µm to 3500 µm and cell wall thickness more than 10 µm.	*Dendrocalamus giganteus*
3	High thick-wall bamboo having basic density less than 0.500 g/cc, vascular bundle frequency 1/mm^2, fibre length varies from 2000 µm to 3000 µm and cell wall thickness less than 10 µm.	*Dendrocalamus hamiltonii*
3	Medium thick-wall and long internode bamboo having basic density less than 0.500 g/cc and vessel element length	*Schizostachyum pergracile*

		varies between 500 to 600 µm.	
	3	Thin-wall and long internode bamboo having basic density ranged from 0.500 to 0.600 g/cc and vessel element length varies between 700 to 900 µm.	*Schizostachyum dulloa*
	3	High thick-wall bamboo with basic density of 0.600 to 0.700 g/cc having vessel element length more than 1000 µm and vascular bundle frequency 2/mm^2.	*Bambusa vulgaris* var. *vulgaris*
	3	High thick-wall bamboo, fibre length varies from 2500 to 3500 µm and vascular bundle frequency ranged from 3 to 4/ mm^2.	*Bambusa pallida*
	3	Very high thick-wall to solid bamboo, fibre length varies from 2000 to 2500 µm and vascular bundle frequency 1/ mm^2.	*Bambusa nutans*
	4	Medium thick-wall bamboo, basic density ranges from 0.600 to 0.800 g/cc, cell-wall-thickness more than 10 µm and vascular bundle frequency varies from 2 to 3/ mm^2.	*Dendrocalamus longispathus*
	4	Medium thick-wall bamboo, basic density ranges from 0.500 to 0.550 g/cc, vessel element length varies from 400 to 600 µm.	*Dendrocalamus brandisii*
	4	Medium thick-wall bamboo, basic density less than 500 g/cc, cell wall thickness varies from 5 to 7 µm and vascular bundle frequency ranged from 2 to 4/mm$^{2.}$	*Dendrocalamus sikkimensis*
	4	Very high thick-wall to solid bamboo, basic density ranged from 0.550 to 0.650 g/cc, fibre length varies from 2500 to 3000 µm and vessel element length ranged from 500 to 700 µm	*Dendrocalamus strictus*
	4	Solid bamboo, basic density ranged from 0.650 to 0.750 g/cc, fibre length varies from 3000 to 3500 µm and vessel element length ranged from 700 to 1000 µm.	*Dendrocalamus stocksii*
	4	High thick-wall bamboo basic density ranged from 0.550 to 0.700 g/cc.	*Bambusa balcooa*
	4	High thick-wall bamboo basic density ranged from 0.400 to 0.550 g/cc.	*Bambusa bambos*
	4	High thick-wall bamboowith hollowness proportion ≤ 10%	*Bambusa polymorpha*
	4	High thick-wall bamboo with	*Thyrsostachys oliveri*

	hollowness proportion ≥30%	
4	Medium thick-wall bamboo, fibre length ≥ 4000 µm	*Gigantochloa atroviolacea*
5	High thick-wall bamboo, basic density ranges from 0.450 to 550g/cc,fibre length varies from 2500 to 3000 µm and vascular bundle frequency 3/mm^2	*Guadua angustifolia*

Suggestions: Approved

(Action: PI & HOD, Forest Products and Utilization Department, CoF, ACHF, NAU, Navsari)

19.4.2.7 Air pollution tolerance index (APTI) of selected tree species of Navsari

Air pollution tolerance index (APTI) values of selected trees from highest to lowest was observed as follows: *Ficus religiosa* L. > *Azadirachta indica* A. Juss > *Acacia auriculiformis* A. Cunn. > *Kigelia pinnata* Roxb. > *Cassia fistula* L. > *Syzygiumcumini* L. > *Ficus benghalensis* L.> *Sterculia foetida* L. > *Samaneasamen*Jacq. Trees showing intermediate tolerance i.e *Ficus religiosa* along with *Azadirachta indica A. Juss* and *Acacia auriculiformis* can be promoted for plantation by local municipal corporation at Navsari.

Suggestions: Approved

(Action: PI & HOD, Natural Resource Management Department, CoF, ACHF, NAU, Navsari)

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19.4.2.8 African marigold germplasm collection from major marigold growing areas of Gujarat and evaluating them for different characters

Significant diversity is available among twenty different marigold germplasm for different morphological characters. Genotypes J9, J37, J30 were found significantly superior for yield.

Suggestions: Approved

(Action: Principal,College of Horticulture, SDAU, Jagudan)

19.4.2.9 Evaluation of Carbon Sequestration Potential of Different Multipurpose Tree Species

Among the different tree species, the plant height, diameter at breast height and green biomass were higher under *Eucalyptus camaldulensis* (Nilgiri) followed by *Casurina equistifolia* (Sharu). Significantly higher carbon content and sequestration were recorded by the *Eucalyptus camaldulensis* (Nilgiri) followed by *Casurina equistifolia* (Sharu) and *Melia azadiracht* (Bakyan) after nine years old planting. Significantly higher bulk densities and water holding capacity were recorded by *Swietenia mahagoni* (Mahagani) and *Tectona grandis* (teak), respectively. Significantly the highest organic carbon was recorded under *Casurina equistifolia* (Sharu) tree

	while phosphorus and potash in the soil were higher under *Gmelina arborea* (Seven) and *Casurina equistifolia* (Sharu), respectively. **Suggestions: Approved** (Action: Research Scientist, Agrofestry, SDAU, Sardarkrushinagar)
19.4.2.10	**Evaluation of Carbon Sequestration Potential of Different Multipurpose Tree Species** Among the different tree species, the plant height and green biomass were higher under *Ailanthus excels* (Ardusa) followed by *Azadirachta indica* (Neem), *Hardwikia binate* (Anjan) and *Dalbergia sisoo* (Shisam). The carbon sequestration of Ardusa, Neem, Anjan and Shisam species did not differ significantly at the age of twenty seven years. The chemical properties *viz*; pH, OC, P_2O_5 and K_2O under Ardusa, Neem, Anjan and Shisam were significantly higher as compared to open field. **Suggestions: Approved** (Action: Research Scientist, Agrofestry, SDAU, Sardarkrushinagar)
19.4.2.11	**Physiochemical study of olive (*Oleae europaea* L.) leaves during different months of the year** The nutrient content (Lipid, Protein, Ash and Carbohydrate), total polyphenolic content and antioxidant activity of dried olive leaf was higher than fresh leaves. The nutrient content, total polyphenolic content and antioxidant activity was found higher in olive leaves collected during February. **Suggestions: Approved** (Action: Research Scientist, Agrofestry, SDAU, Sardarkrushinagar)

19.4.3 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title of Experiment	Suggestion/s
19.4.3.1	Nutrient management in dragon fruit (*Kamalam*)	**Accepted with following suggestion/s** 1. Application of fertilizer should be given in June, September, November and April 2. Add duration of experiment : 3 years (Action: Professor & Head, Dept. of Horticulture)
19.4.3.2	Effect of different time of transplanting and spacing on growth and yield of knol-khol under middle	**Accepted with following suggestion/s** 1. Factor 1: Time of transplanting T_1 1st week of November T_2 3rd week of November

	Gujarat conditions	T_1 1st week of December T_1 3rd week of December (Action: Principal &Dean, COH AAU, Anand)
19.4.3.3	Effect of different growing condition and media on growth and flowering of orchid.	**Accepted with following suggestion/s** 1. Add observation: Rachis length (cm) 2. Micronutrient & Ca should be added 3. Longevity of spike (add unit **days**) (Action: Principal & Dean, COH AAU, Anand**)**
19.4.3.4	Effect of different growing media and fertilizer on palak under terrace vegetable cultivation	**Accepted with following suggestion/s** 1. Recast experimental title **Effect of different growing media and fertilizer on palak on terrace vegetable cultivation** 2. Correct treatment F3. 19:19;19: NPK 5g/bag instead of 10g/bag 2. Novel organic liquid **nutrient** (Action: Principal, Polytechnic in Hort. Vadodara)
19.4.3.5	Effect of different growing media and fertilizer on fenugreek under terrace vegetable cultivation	**Accepted with following suggestion/s** 1. Recast experimental title **Effect of different growing media and fertilizer on fenugreek on terrace vegetable cultivation** 2. Correct treatment F3. 19:19;19: NPK 5g/bag instead of 10g/bag 3. Novel organic liquid **nutrient** 4. Add water quantity required per day should be mention. (Action: Principal, Polytechnic in Hort. Vadodara)
19.4.3.6	Effect of Pre-sowing treatment on germination and growth of royal palm (*Roystonea regia*) Local	**Not Accepted** (Action: Principal, Polytechnic in Hort. Vadodara)
19.4.3.7	Effect of Pre-sowing treatment on germination and growth of areca palm (*Dypsis lutescens*) Local	**Not Accepted** (Action: Principal, Polytechnic in Hort. Vadodara)
19.4.3.8	Effect of different spacing and number of plant per pole on growth, flowering and fruiting of dragon fruit (*Kamalam*)	**Accepted with following suggestion/s** 1. Add one more spacing: 2.5 x 2.5 m 2. 4 plants/pole should be common for all spacing 3. Delete **'2nd year'** word in yield parameter. (Action: Principal, Polytechnic in Hort. Vadodara)
19.4.3.9	Effect of N, P and K	**Accepted with following suggestion/s**

	application on yield of okra	1. Spacing should be **45 x 30 cm** accordingly calculate plot size (Action : Principal, COA, AAU, Jabugam)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title of Experiment	Suggestion/s
19.4.3.10	Effect of foliar application of nano urea on growth, yield and quality of mango cv. Sonpari	**Approved with following suggestions:** 1. Modify the treatments as T_3 75 % RDN + 0.3% Nano urea, T_4 75 % RDN + 0.4% Nano urea, T_6 75 % RDF + 2 % urea spray, T_7 Control (RDF + Water spray) 2. 1st spray at initiation of flowering instead of before flowering 4. Conversion of fertilizer dose as per HDP as 68- 14-68 NPK g/plant 5. Take incremental observation in growth (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.11	Effect of different pollination methods on fruit set and yield in custard apple cv. Sindhan (*Annona squamosa* L.)	**Approved** (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.12	Effect of pruning and growth retardants on flowering, quality and yield in mango cv. Kesar	**Approved with following suggestions:** 1. Title change: **Effect of pruning and chemicals on flowering, quality and yield in mango cv. Kesar** 2. Write fruit diameter instead of fruit girth. 3. Take KNO_3 3% instead of KNO_3 4% 4. Mention spray time. (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.13	Effect of supplementary pollen on fruit set and yield in coconut cv. Dwarf Green	**Approved with following suggestions:** 1. Title change: **Effect of supplementary pollination on fruit set and yield in coconut cv. Dwarf Green** 2. Write yield nut/palm 3. Correct treatment like 100 mg pollen/liter etc. (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.14	Effect of different rootstock and salinity levels on growth and graft	**Approved with following suggestions:** 1. write T_1– normal water instead of 1ds m-1 2. Give coding to different root stock as JAU-

	success in mango	1,2,3,4 and 5 **3.** Observation 5 and 7: Write only survival %. (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.15	Effect of different growing media in cucumber under polyhouse condition	**Approved with following suggestions:** 1. Title change: **Effect of different growing media on growth and yield of cucumber under polyhouse condition** 2. In observation remove female flower. 3. Add in observation days to first flower opening. (Action: Principal & Dean, CoH, JAU, Junagadh)
19.1.3.16	Evaluation of different varieties and genotypes for growth, yield and quality of guava	**Approved with following suggestions:** 1. Give coding of genotypes in treatment. 2. Morphological characters as per DUS guidelines should be incorporated 3. Shifted to **<u>Crop Improvement Sub Committee</u>** (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.17	Standardization of *hast bahar* in pomegranate under Saurashtra region	**Approved with following suggestions:** **1.** Title change: **Effect of different treatments on *hast bahar* regulation in pomegranate under Saurashtra region** 2. Remove treatment No. 5,6 and 8 3. Remove observation fruit set percent and aril weight per fruit (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.18	Evaluation of different varieties and genotype of guava under meadow condition	**Approved with following suggestions:** 1. Write ultra-high density instead of meadow in title 2. Morphological characters as per DUS guidelines should be incorporated 3. Remove physical parameter 2,3,4,5 and 7 (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.19	Effect of paclobutrazol on reproductive attributes for *hasta bahar* in acid lime	**Approved with following suggestions:** **1.** Modify the dose of paclabutrazol dose as T_1- 2 ml/plant, T_2- 4ml/plant T_3- 6ml/plant (Action: Principal & Dean, CoH, JAU, Junagadh)
19.4.3.20	Effect of different growing media on germination and seedling quality of coconut	**Approved with following suggestions:** 1. Use saw dust instead of mica in treatment T_7

	(*Cocos nucifera* L.) cv. West Coast Tall (B. H. 12586)	2. Keep only two observations (1) days to germination and (2) Germination % in observation of seed nut 3. Remove total chlorophyll content 4. Quality seedling in score (Action: Research Scientist, ARS (FC) J.A.U., Mahuva)
19.4.3.21	Effect of different growing media on germination and seedling quality of coconut (*Cocos nucifera* L.) cv. Dwarf green	**Approved with following suggestions:** 1. Use saw dust instead of mica in treatment T_7 2. Keep only two observation (1) days to germination and (2) Germination % in observation of seed nut 3. Remove total chlorophyll content 4. Quality seedling in score (Action: Research Scientist, ARS (FC) J.A.U., Mahuva)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Horticulture)

Sr. No.	Title of Experiment	Suggestion/s
19.4.3.22	Flower phenology study in dragon fruit	**Approved with following Suggestions:** 1. Observations should be taken from June flowering (Action: Professor and Head, Dept of Fruit Science, ACH, NAU**)**
19.4.3.23	Comparative performance of natural and organic farming module in mango	**Approved with following Suggestions:** 1. In treatment details, replace Module –V as per organic farm recommendation 2. Replace 'Gliricidia' with 'Gliricidia leaf extract' in treatment as well in methodology. 3. In observation, soil nutrient status and microbial count should be taken before and after experiment. (Action: Professor and Head, Dept of Fruit Science, ACH, NAU)
19.4.3.24	Effect of pre-harvest bagging on fruit quality of guava	**Approved with following Suggestions:** 1. Mention planting spacing 3 x 3 m (Action: Professor and Head, Dept of Fruit Science, ACH, NA**U)**
19.4.3.25	Multilocation testing of	**Considered as AICRP trial**

	new papaya hybrids (MLT-II)	(Action: Associate Research Scientist, FRS, NAU, Gandevi)
19.4.3.26	Evaluation of new introduction of banana NRCB selection 14 (MLT-5)	**Considered as AICRP trial** (Action: Associate Research Scientist, FRS, NAU, Gandevi)
19.4.3.27	Development of cashew based cropping system for South Gujarat	**Approved with following Suggestions:** 1. Mention the fertilizer dose for both the crops 2. Mention plot size and number of crops per plot 3. Add Yield Equivalent ratio in observation (Action: Research Scientist, AES, NAU, Paria)
19.4.3.28	Feasibility of rubber plantation under South Gujarat agro-climatic conditions	**Approved with following Suggestions:** 1. In Experimental details, Replace 'Design - Correlation with weather through t-test' with 'Statistical technique - Correlation with weather parameters' **2.** Remove plants/replication and total plants per treatment in experimental details (Action: Research Scientist, AES, NAU, Paria)
19.4.3.29	Evaluation of rubber-based farming system under South Gujarat agro-climatic conditions	**Approved with following Suggestion/s:** 1. Specify variety of custard apple in treatment details 2. Remove Treatment T_3 3. Mention plot size and specify no. of plants as per spacing for each crop. (Action: Research Scientist, AES, NAU, Paria)
19.4.3.30	Effect of epicotyl thinning and spray of GA_3 on growth of polyembryonic mango genotypes	**Approved** (Action: Research Scientist, AES, NAU, Paria)
19.4.3.31	Impact of different time of grafting in custard apple cv. Sindhan	**<u>Not Approved</u> with following Suggestions:** **Recommendation from SDAU in this year** (Action: Principal, Agriculture Polytechnic, NAU, Vyara)

19.4.3.32	Study of planting geometry and date of transplanting on growth, yield and quality of brinjal (*Solanum melongena* L.) under South Gujarat condition	**Approved** (Action: Head, Vegetable Science, NAU, Navsari)
19.4.3.33	Growth and yield performance of pointed gourd (*Trichosanthes dioica* Roxb.) on different types of staking and mulching	**Approved with following Suggestions:** 1. In observations, modify observation 1 and 2 as (1) Day to first female flower (2) Node number of first female flower (3) Day to first male flower (4) Node number of first male flower. (Action: Head, Vegetable Science, NAU, Navsari)
19.4.3.34	Yield loss assessment in elephant foot yam due to collar rot disease	**Not Approved** **<u>This NTP was presented in Crop Protection Subcommittee where it was not approved.</u>** (Action: Head, Vegetable Science, NAU, Navsari)
19.4.3.35	Effect of ethrel in rooting behavior of tip cuttings of Kamini under poly tunnel	**Approved** (Action: Professor and Head, FLA, ACH, NAU, Navsari)
19.4.3.36	Standardization of growing media on seed germination of dianthus (*Dianthus chinensis*) and zinnia (*Zinnia elegans*)	**Approved with following Suggestions:** 1. Replace the crop <u>'dianthus and zinnia' with 'pansy'</u> (Action: Professor and Head, FLA, ACH, NAU, Navsari)
19.4.3.37	Testing of new genotypes of China aster	**<u>Shifted to Crop Improvement Subcommittee</u>** (Action: Professor and Head, FLA, ACH, NAU, Navsari)
19.4.3.38	Effect of different growing media for *Zamioculcus zamifolia* plant.	**Approved** (Action: Professor and Head, FLA, ACH, NAU, Navsari)

********	Standardization of process formulation for preparation of Aloe vera - Aonla blended juice	**It was presented for information in Hort. Sub Committee Group** **It was presented and approved in FPT group** and will be **included in FPT Group** (Action: Professor and Head, PHT, ACH, NAU, Navsari)
19.4.3.39	Knowledge and adoption of Novel-Organic Liquid Nutrient and Novel plus in okra & brinjal in Surat district.	**Deferred for one year** **This NTP was shifted to the Social Sciences Subcommittee and shall be presented next year in that group.** (Action: Senior Scientist and Head, KVK, Surat)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI (Forestry)

Sr. No.	Title of Experiment	Suggestion/s and Action
19.4.3.40	Influence of various spacing and foliar application of novel organic liquid nutrients on performance of Cowpea (*Vigna unguiculata* L.) under mango-based agroforestry system	**Approved with following Suggestions:** 1. Replace var. Anand Vegetable Cowpea 1 with summer season variety GVC-9 2. In factor A, keep spacing for S_2 40 cm x 30 cm (Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)
19.4.3.41	Evaluation of growth performance of coppice shoots of Teak (*Tectona grandis* L. f.).	**Approved** (Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)
19.4.3.42	Evaluation of different bamboo species for charcoal production	**Approved with following Suggestions:** 1. Remove 'correlation' from observations (Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)
19.4.3.43	Evaluation of different bamboo	**Approved**

	species for vinegar production and nutritive value	(Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)
19.4.3.44	Evaluation of different bamboo species for biochar production	**Approved** (Action: PI & HOD, Silviculture and Agroforestry Department, CoF, ACHF, NAU, Navsari)
19.4.3.45	Selection, propagation and clonal evaluation of *Bambusa bambos* (L.) Voss. and *Dendrocalamus strictus* (Roxb.) Nees germplasm for growth and biomass productivity.	**Approved** (Action: PI & HOD, Forest Biology and Tree Improvement Department, CoF, ACHF, NAU, Navsari)
19.4.3.46	Quantitative and cross-cultural Ethnobotanical studies of plants used byKukna tribe of South Gujarat	**Approved** (Action: PI & HOD, Forest Products and Utilization Department, CoF, ACHF, NAU, Navsari)
19.4.3.47	Air pollution tolerance index (APTI) of selected trees of different cities in south Gujarat	**Approved** (Action: PI & HOD, Natural Resource Management Department, CoF, ACHF, NAU, Navsari)

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Sr. No.	Title of Experiment	Suggestion/s and Action
19.4.3.48	Effect of different spacing and plant growth regulators on golden rod (*Solidago canadensis* L.)	**Approved with following Suggestions:** 1. Add observation : 1) Number of cuttings per year 2) Plant height at the time of panicle initiation 3) Width of panicle 4) Spray schedule decided by PI (Action: Principal, College of Horticulture, Jagudan)
19.4.3.49	Effect of organic manures and bio enhancers on tuberose (*Polianthustuberosa* L.)	**Approved with following Suggestions:** 1. Title changed**: Effect of organic inputs and bio enhancers on tuberose (*Polianthus tuberosa* L.)** 2. Mention the time of drenching of jeevamrut in note 3. Add analysis of organic input and bio enhancers

		(Action: Principal, College of Horticulture, Jagudan)
19.4.3.50	Standardization of suitable time for wedge grafting in guava under North Gujarat condition	**Not approved** (Action: Principal, College of Horticulture, Jagudan)
19.4.3.51	Effect of various mulches on yield and quality of pomegranate cv. Bhagawa	**Approved with following Suggestions:** 1. Write word Clean basin in bracket in the first treatment i.e. No mulch 2. Specify mulch quantity per plant or hectare in treatment No. 2,3 and 4 (Action: Principal, College of Horticulture, Jagudan)
19.4.3.52	Effect of different media on growth, yield and quality of microgreens	**Approved with following Suggestions:** 1.Add observation on "per day productivity" 2.Write "spinach" instead of palakh 3.Remove word chemical fertilizer from treatment details (Action: Principal, College of Horticulture, Jagudan)
19.4.3.53	Effect of seed storage condition and period on germination and seedling growth of phalsa (*Grewia asiatica* L.)	**Approved with following Suggestions:** 1. Mention the temperature in refrigerated condition 2. Add observation on survival percentage at 90 DAS (Action: Professor & Head, Dept. of Horti., CPCA, SDAU, Sardarkrushinagar)
19.4.3.54	Effect of organic manure and bio-enhancers on growth, yield and quality of African marigold	**Approved with following Suggestions:** **1.** Title changed**: Effect of organic input and bio-enhancers on growth, yield and quality of African marigold** 2. Mention time of application of Jeevamrut 3. Write "No application" instead of "No treatment" in treatment no.1 4. Add potash in nutrient status analysis (Action: Assitt. Res. Scientist, Fruit Research Station, SDAU, Dehgam)
19.4.3.55	Effect of different covering	**Approved with following Suggestions:**

	material and time of planting on watermelon production under low tunnel	1. Title change: Effect of covering materials of low tunnel and time of planting on watermelon production 2. Large plot technique (CRD with factorial concept) should be taken as design 3. Remove economics in observation 4. Add observation: Total sugar (%) (Action: Sr. Scientist & Head, KVK, Banaskantha – I, SDAU, Deesa)
19.4.3.56	Effect of different liquid organic manures and bioagents on management of vegetable waste	**Approved with following Suggestions:** 1. Delete word 'different" from title and objectives 2. Mention the use of waste decompose Specify the point no.3 in note (Action: Sr. Scientist & Head, KVK, Banaskantha – I, SDAU, Deesa)
19.4.3.57	Effect of nitrogen, phosphorus and potash level on growth and yield of onion for North Gujarat	**Approved with following Suggestions:** 1. Add observations - Sprouting at one month interval - PLW % at one month interval - Days to maturity 2. Mention nitrogen and phosphorus will be added in form of urea and DAP (Action: Sr. Scientist& Head, KVK, Sabarkantha, SDAU, Khedbrahma)
19.4.3.58	Performance of fodder crops with *Melia dubia* based Silvipastural system under North Gujarat conditions	**Approved with following Suggestions:** 1. Only take the observation on yield for all the intercrops. 2. Confirm the design with statistician Write "fodder grass" instead of "CoFS 29" 3. Confirm plot size under large plot technique (Action: Res. Scientist. Agroforestry Res. Station, SDAU, Sardarkrushinagar)
19.4.3.59	Performance of agricultural crops with Anjan based agri silvicultural system under North Gujarat conditions	**Approved with following Suggestions:** 1. Only take the observation on yield for all the intercrops. 2. Confirm the design with statistician 3. Confirm plot size under large plot technique (Action: Res. Scientist. Agroforestry Res. Station, SDAU, Sardarkrushinagar)

19.5 AGRICULTURAL ENGINEERING AND AIT

Date: May 05, 06 & 08, 2023

Chairman	**:**	Prof.(Dr.) N. K. Gontia, Dean (CAET), JAU, Junagadh
Co-chairman-1	**:**	Dr. D. R. Kathiriya, Director (IT), AAU, Anand
Co-chairman-2	**:**	Dr. S. H. Sengar, Principal (CAE), NAU, Dediapada
Rapporteur-1	**:**	Dr. Navneet Kumar, AAU
Rapporteur-2	**:**	Dr. G. V. Prajapati, JAU
Rapporteur-3	**:**	Dr. A. P. Lakkad, NAU
Rapporteur-4	**:**	Dr. B. S. Parmar, SDAU
Statistician	**:**	Dr. Alok Srivastava, Professor & Head, NAU

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1.	Dr. Pankaj Gupta	Professor & Head, Dept. of FMPE, CAET, AAU, Godhra
2.	Dr. H. D. Rank	Professor & Head, Department of Soil & Water Conservation Engg., CAET, JAU, Junagadh
3.	Dr. Parag Pandit	Assistant Professor (PHTC), Center of Excellence on Post Harvest Technology, NAU, Navsari.
4.	Dr. V. M. Modi	Associate Professor, Dept. of Renewable Energy, College of RE & EE, SDAU, Sardarkushinagar

Summary of the Recommendations

Name of University	Proposed		Approved	
	Farmer	Scientific	Farmer	Scientific
AAU	05	03	04	03
JAU	10	03	10	03+01*
NAU	04	06	02+01**	05
SDAU	05	01	05	01
Total	**24**	**13**	**22**	**13**

**A farmers' recommendation was approved as one farmers' recommendation and one scientific information*

*** Proposed as scientific recommendation but approved as farmers' recommendation*

19.5.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

19.5.1.1	**Optimization of process parameters for protein fortified Kesar mango leather** Farmers and fruit processors are advised to use the technology developed by Anand Agricultural University for manufacturing of protein fortified kesar

	mango leather (Aam Papad) by incorporating whey protein concentrate, sugar and citric acid @ 4.92, 12.5 and 0.45 g/100g of pulp respectively followed by tray drying at 65 °C temperature in 5 mm thick layer or by sun drying in 6 mm thick layer. The developed mango leather contains 9.9 to 11.4 g/100g of protein and can be stored in laminated aluminium foil bags with vacuum packaging for 4-months. ખેડૂતોઅને ફ્રૂટ પ્રોસેસરને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ટેકનિકથી કેસર કેરીમાં થી પ્રોટીન યુક્ત આમ પાપડ (મેંગોલેધર) બનાવવા માટે વ્હે પ્રોટીન કોન્સંટ્રેટ, ખાંડ અને સાયટ્રિક ઍસિડ@ ૪.૯૨, ૧૨.૫ અને ૦.૪૫ ગ્રામ પ્રતિ ૧૦૦ ગ્રામ પલ્પમાં ઉમેરી ટ્રે ડ્રાયરમાં ૬૫-ડિગ્રી સેલ્સિયસ તાપમાન અને ૫-મિલીમીટર થરમાં અથવા ૬-મિલીમીટર થરમાં તડકામાં રાખી સુકવણી કરવાની ભલામણ કરવામાં આવે છે. આ ટેકનિકથી વિકસાવેલ આમ પાપડમાં ૯.૯ થી ૧૧.૪ ગ્રામ/૧૦૦ ગ્રામ જેટલું પ્રોટીન મળે છે અને આમ પાપડને લેમિનેટેડ એલ્યુમીનીયમ ફોઈલ બેગમાં વેક્યૂમ પેક કરી ૪-મહિના સુધી સારી ગુણવતામાં સંગ્રહ કરી શકાઈ છે. **Approved with following suggestions:** 1. Combine sun drying and tray drying recommendations. 2. Check units in tables. 3. Recast Gujarati & English recommendations paragraphs as per suggestions given by house. (Action: Head, Department of PFE, CAET, AAU, Godhra)
19.5.1.2	**Design and development of tractor-drawn potato harvester with integrated cart elevator** A tractor drawn (50 to 60 hp) potato harvester with cart elevator developed by Anand Agricultural University is recommended for farmers' use and interested farm machinery manufacturers which performs efficient digging and conveying of the potato in the trolley (operated by another tractor) running along with the machine. The machine has about 0.21 ha/h field capacity and saves about 86 % time and 30 % cost required for digging and collecting the potatoes as compared with tractor drawn potato digger. આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ટ્રેક્ટરથી (૫૦ થી ૬૦ હો.પા.) ચાલતું કાર્ટ એલિવેટર સાથેનું બટાટા હાર્વેસ્ટર ખેડૂતોના ઉપયોગ અને રસ ધરાવતા ફાર્મ મશીનરી ઉત્પાદકો માટે ભલામણ કરવામાં આવે છે જે બટાટા ખોદવાનું અને મશીનની સાથે ચાલતી ટ્રોલીમાં (બીજા ટ્રેક્ટર દ્વારા સંચાલિત) સુધી પહોંચાડવાનું કામ કાર્યક્ષમ રીતે કરે છે. આ મશીનની કાર્યક્ષમતા આશરે ૦.૨૧ હેક્ટર/કલાકની છે અને તે ટ્રેક્ટરથી ચાલતું બટાટા ખોદવાના મશીનની સરખામણીમાં બટાટા ખોદવાની અને વિણવાની કામગીરીમાં આશરે ૮૬% સમય અને ૩૦% ખર્ચની બચત થાય છે. **Approved with following suggestions:** 1. Add machine field capacity in the recommendation text. 2. Add "farmers' use" in the recommendation text. 3. Add word "collecting the potatoes" in English and "બટાટા વિણવાની"in Gujarati recommendation text. (Action: Head, Department of FMPE, CAET, AAU, Godhra)
19.5.1.3	**Development of battery operated cutter**

	A battery operated crop cutting device developed by Anand Agricultural University is recommended for farmers' use and interested farm machinery manufacturers which is suitable for cutting stems of crops, viz. wheat, paddy and maize. It saves about 53%, 42% & 46 % time and 26%, 9% & 15% cost of cutting maize, paddy and wheat, respectively as compared to traditional method by sickle. આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ બેટરી સંચાલિત ક્રોપ કટિંગ સાધન ખેડૂતોના ઉપયોગ અને રસ ધરાવતા ફાર્મ મશીનરી ઉત્પાદકો માટે ભલામણ કરવામાં આવે છે જે ઘઉં, ડાંગર અને મકાઈ પાકની કાપણી માટે ઉપયોગી છે. આ મશીનથી ઘઉં, ડાંગર અને મકાઈ પાક કાપવામાં અનુક્રમે ૫૩%, ૪૨% અને ૪૬% સમય અને ૨૬%, ૯% અને ૧૫% ખર્ચમાં દાતરડાથી કાપણીની પરંપરાગત પદ્ધતિની સરખામણીએ બચત થાય છે. **Approved with following suggestions:** 1. Add "farmers' use" in the recommendation text. 2. Recast Gujarati & English recommendations paragraph as per suggestions given by house. (Action: Head, Department of FMPE, CAET, AAU, Godhra)
19.5.1.4	**Design and development of mini tractor drawn two row automatic potato planter cum fertilizer applicator** A mini tractor drawn two row automatic potato planter cum fertilizer applicator developed by Anand Agricultural University is recommended for farmers' use and interested farm machinery manufacturers which places potato tubers and fertilizer at recommended depth in the soil and saves about 22 % cost for sowing of potatoes as compared to available mini tractor drawn two row semi automatic potato planter cum fertilizer applicator. આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ મીની ટ્રેક્ટરથી ચાલતું બે હાર વાળું ઓટોમેટિક પોટેટો પ્લાન્ટર કમ ફર્ટિલાઈઝર એપ્લીકેટર ખેડૂતોના ઉપયોગ અને રસ ધરાવતા ફાર્મ મશીનરી ઉત્પાદકો માટે ભલામણ કરવામાં આવે છે જે બટાટાના બીજ અને ખાતરને જમીનમાં ભલામણ કરેલ ઊંડાઈએ મુકે છે અને ઉપલબ્ધ મીની ટ્રેક્ટરથી ચાલતા બે હાર વાળા સેમી ઓટોમેટિક પોટેટો પ્લાન્ટર કમ ફર્ટિલાઇઝર એપ્લીકેટરની સરખામણીમાં બટાટાની વાવણી માટે આશરે ૨૨% ખર્ચની બચત થાય છે. **Approved with following suggestions:** 1. Add "farmers' use" in the recommendation text. 2. Use "Recommended depth" instead of "Appropriate depth" in Eng. Para. (Action: Head, Department of FMPE, CAET, AAU, Godhra)

JUNAGADH AGRICULTURAL UNIVERSITY

19.5.1.5	**Identification of potential groundwater recharge zones in ozat river basin** It is recommended to the Farmers, NGOs and Government line departments that the Ozat river basin is divided in to five groundwater potential recharge zones namely excellent, good, moderate, poor and very poor having an area of 220.14km^2 (6.93%), 2094.81 km^2 (65.95%), 430.05 km^2 (13.54%), 430.87 km^2 (13.57%) and 0.36 km^2 (0.01%) respectively.

ખેડૂતો, એનજીઓ અને સરકારી લાઇન વિભાગોને ભલામણ કરવામાં આવે છે કે ઓઝત નદીના તટ પ્રદેશને પાંચ પોટેંશીયલ ભૂગર્ભજળ રિચાર્જ ઝોનમાં વિભાજિત કરવામાં આવે છે, જેમ કે ઉત્તમ, સારા, મધ્યમ, નબળા અને અત્યંત નબળાઝોન જે ઝોન હેઠળનો વિસ્તાર અનુક્રમે ૨૨૦.૧૪ચો. કિમી. (૬.૯૩%), ૨૦૯૪.૮૧ચો. કિમી. (૬૫.૯૫%), ૪૩૦.૦૫ચો. કિમી. (૧૩.૫૪%), ૪૩૦.૮૭ચો. કિમી. (૧૩.૫૭%) અને ૦.૩૬ચો. કિમી.(૦.૦૧%) છે.

Approved with following suggestions:

1. Remove "Planning for recharging….zone line" from recommendation
2. Propose the paragraph **"**Planning for recharging….zone line" as information for scientific community.
3. First four lines be suggested for farmers recommendations and remaining lines be suggested for scientific information.

(Action: HoD, IDE, CAET, JAU, Junagadh)

19.5.1.6 Cotton crop response to drip fertigation

The farmers of South Saurashtra Agro-Climatic zone growing Bt. cotton crop are recommended to apply 25 % of RDF (240 N:50 P_2O_5:150 K_2O kg/ha) as basal doze and remaining NPK through drip fertigation in 12 equal splits after 30-45 days of sowing at 9 days interval using following drip irrigation system to get higher yield, net return, and water productivity as compared to conventional fertilizer applications adopted by farmers.

Specifications of drip irrigation system and its operating time

Drip irrigation system details			**Drip irrigation system operating time at every 3 days**		
SN	**System components**	**Specification**	**SN**	**Month**	**Operating time (minute.)**
1	Lateral size	16mm(OD)	1	September	60
2	Dripper rate	4lph	2	October	90 to 125
3	Lateral type	Inline Drip	3	November	90 to 120
4	Dripper spacing	0.5m	4	December	70 to 90
5	Lateral spacing	1.2 m	5	January	70 to 90
6	Nos. of rows /drip line	1 no.			

દક્ષિણ સૌરાષ્ટ્ર ખેત-આબોહવાકીય વિસ્તારમાં બીટી કપાસનું વાવેતર કરતા ખેડૂતો ને ખાતર આપવાની પરંપરાગત પધ્ધતિ ની સરખામણીએ વધુ ઉત્પાદન, વળતર અને પાણી-ઉત્પાદકતા મેળવવા માટે ભલામણ થયેલ રસાયણિક ખાતર (નાઇટ્રોજન:ફોસ્ફોરસ:પોટાશ::૨૪૦:૫૦:૧૫૦ કિગ્રા/હેક્ટર) નાં ૨૫ ટકા પાયામાં અને બાકીનું ૭૫% ખાતર વાવેતરનાં ૩૦-૪૫ દિવસ બાદ નવ દિવસ નાં અંતરે એક સરખા બાર હપ્તામાં નીચે મુજબની ટપક પિયત પધ્ધતિથી આપવાની ભલામણ કરવામાં આવે છે.

ડ્રીપ સિચાઈ પદ્ધિતીની વિગત

ટપક પિયત પધ્ધતિ વિગત			**દર ૩ દિવસે ટપક સિંચાઈ સિસ્ટમના સંચાલનનો સમય**		
ક્રમ	**પધ્ધતિ ભાગ**	**વિગત**	**ક્રમ**	**માસ**	**સંચાલનનો સમય**

					(મીનીટ)
૧	લેટરલ પ્રકાર	ઇનલાઈન ડ્રીપ	૧	સપ્ટેમ્બર	૬૦
૨	ઇનલાઈન ડ્રીપવ્યાસ	૧૬ મિમિ	૨	ઓક્ટોબર	૯૦ થી ૧૨૫
૩	ડ્રીપર કેપેસિટી	૪ લી/ક	૩	નવેમ્બર	૯૦ થી ૧૨૦
૪	બે ડ્રીપર વચ્ચેનું અંતર	૦.૫ મી	૪	ડીસેમ્બર	૭૦ થી ૯૦
૫	બે ઇનલાઈન ડ્રીપ વચ્ચેનું અંતર	૧.૨ મિ	૫	જાન્યુઆરી	૭૦ થી ૯૦
૬	એક લેટરલ દીઠ પાકની હારો	૧ નંગ			

Approved with following suggestion:

1. Recast Guajarati & English recommendations paragraphs as per suggestions given by house.

(Action: HoD, IDE, CAET, JAU, Junagadh)

19.5.1.7 Influence of crop cultivation method and slope on runoff and soil loss under natural rainfall condition

The farmers of south Saurashtra agro climatic zone growing cotton and groundnut are recommended to keep the land slope upto 0.75% to conserve more water into the medium black soil. In order to reduce the soil loss, they are recommended to cultivate groundnut crop along land slope upto 0.5% and across the land slope upto 0.75%.

દક્ષિણ સૌરાષ્ટ્રના કૃષિ આબોહવાકીય ક્ષેત્રના કપાસ અને મગફળી વાવતા ખેડૂતોને જમીનમાં વધુ પાણીનો સંગ્રહ કરવા માટે મધ્યમ કાળી જમીનનો ઢાળ ૦.૭૫% સુધી રાખવાની ભલામણ કરવામાં આવે છે. જમીનનુ ધોવાણ ઘટાડવાનાં હેતુ માટે, ખેડૂતોને ૦.૫૦% સુધી જમીનના ઢાળમાં તેમજ ૦.૭૫% સુધીનાં ઢાળ વાળી જમીન પર ઢાળની આડી દિશામાં મગફળી વાવવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestion:

1. Remove the line "If the land slope is more than 0.5%, the farmers are recommended to avoid growing cotton crop to reduce soil loss" from recommendation.

(Action: HoD, SWCE, CAET, JAU, Junagadh)

19.5.1.8 Response of fertigation under different irrigation systems on sweet corn

Farmers of Saurashtra region growing sweet corn during rabi season are recommended to apply 100% phosphorous of 75% RDF (90:45:45 $N:P_2O_5:K_2O$) and 25% N and K of 75 % RDF as a basal dose and rest N and K through sub surface drip irrigation (installed at 30cm depth) in 10 equal splits after 25 days of sowing at 6 days interval to obtain higher yield, fertilizer use efficiency, water use efficiency and net return.

Details of drip system	Irrigation scheduling
Lateral spacing :1.2 m Dripper spacing: 0.40 m	At 0.8 ETc with 3 days interval a) November : 40 min

Dripper discharge: 4 lph Operating pressure: 1.2 kg/cm^2	b) December : 1hr 5 min c) January : 1 hr 20 min d) February : 2 hr 10 min

સૌરાષ્ટ્ર વિસ્તારમાં શિયાળાની ઋતુમાં સ્વીટ કોર્નનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સ્વીટ કોર્નના પાકમાં ભલામણ કરવામાં આવેલ રસાયણિક ખાતર (૯૦:૪૫:**૪૫** N:P_2O_5:K_2O)ના ૭૫% નો ૧૦૦% ફોસ્ફરસ અને ૨૫% નાઈટ્રોન અને પોટાશનો જથ્થો વાવેતર સમયે આપવો અને બાકીનો નાઈટ્રોન અને પોટાશનો જથ્થો વાવેતરના ૨૫ દિવસ બાદ ૧૦ સરખા ભાગમાં દર ૬ દિવસના અંતરાલે ભૂમિગત ટપક સિંચાઈ (૩૦ સેમી ઊંડાઈ પર ફીટ કરેલ) પધ્ધતિ દ્વારા નીચે મુજબ આપવાથી વધુ ઉત્પાદન, ખાતર વપરાશની કાર્યક્ષમતા, પાણી વપરાશની કાર્યક્ષમતા અને વધુ ચોખ્ખી આવક મેળવી શકાય છે.

ટપક પધ્ધતિ **અંગેની માહિતી**	**ડ્રીપ ચલાવવાનો સમય**
લેટરલનું અંતર : ૧.૨ મી ડ્રીપર નું અંતર :૦.૪૦ મી ડ્રીપરનો પ્રવાહ દર : ૪ લી/કલાક પરીસંચલન દબાણ: ૧.૨ કિગ્રા/ચો.સેમી	૦.૮ ઈટીસી લેવલે ત્રણ દિવસના અંતરાલે નીચે મુજબ પિયત આપવું અ) નવેમ્બર: ૪૦ મિનીટ બ) ડીસેમ્બર: ૧ કલાક ૫ મિનીટ ક) જાન્યુઆરી: ૧ કલાક ૨૦ મિનીટ ડ) ફેબૃઆરી : ૨ કલાક ૧૦ મિનીટ

House approved the recommendation

(Action: Research Scientist (Agril. Engg.), JAU, Junagadh)

19.5.1.9 Techno-economic performance of solar pump

Farmers of south Saurashtra agroclimatic zone are recommended to use the solar photovoltaic pump for getting higher water horse power, discharge, array efficiency and overall efficiency during 10 am to 4 pm as the period is feasible to apply irrigation in field. The total cost of solar photovoltaic pump is lower as compared to electric motor pump and diesel engine pump and it is eco friendly.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સવારના ૧૦ વાગ્યાથી સાંજના ૪ વાગ્યા સુધીમાં સૌર ઉર્જા સંચાલિત પિયત પંપ વાપરવાથી વધુ વોટર હોર્સપાવર, પ્રવાહ દર, પેનલની કાર્યક્ષમતા, એકંદરે વધુ કાર્યક્ષમતા મળે છે અને આ સમય ગાળા દરમ્યાન પિયત કરવું શક્ય છે. ઇલેક્ટ્રિક મોટર પિયત પંપ તેમજ ડીઝલ એન્જીન પિયત પંપની સરખામણીમાં સૌર ઉર્જા સંચાલિત પિયત પંપનો વપરાશ ખર્ચ ઓછો આવે છે અને તેનો ઉપયોગ પર્યાવરણ મિત્ર છે.

Approved with following suggestions:

1. Write Rs/hr in table of cost economics.
2. Mentions “polycrystalline solar panel” in report
3. Correct PV array efficiency formula
4. Use word “total cost” instead of “operating cost” in Eng. Para.

(Action: Research Scientist (Agril. Engg.), JAU, Junagadh)

19.5.1.10

Hydraulic study of rain pipe irrigation system under solar photovoltaic pump

Farmers of south Saurashtra agroclimatic zone are recommended to use solar photovoltaic pump operated rain pipe irrigation system to irrigate the field during 10 am to 4 pm.

Particular	**:**	**Details**
Solar photovoltaic pump	:	5 hp AC
Solar Panel output	:	4800 W
Rain pipe	:	Diameter: 32 mm Wall thickness: 300 micron
Operating pressure	:	0.5 kg/cm^2
Length of rain pipe	:	30m
Spacing between two rain pipe	:	5m

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને સવારના ૧૦ વાગ્યાથી સાંજના ૪ કલાક દરમ્યાન નીચેની વિગતે સૌર ઉર્જા પિયત પંપ સંચાલિત રેઇન પાઈપ પિયત પધ્ધતિના ઉપયોગથી પિયત કરવાની ભલામણ કરવામાં આવે છે.

સૌર ઉર્જા પિયત પંપ	:	૫ હો.પા
સોલાર પેનલ આઉટપુટ	:	૪૮૦૦ વોટ
રેઇન પાઈપ	:	વ્યાસ : ૩૨મી.મી જાડાઈ: ૩૦૦ માઈક્રોન
પરીસંચલન દબાણ	:	૦.૫ કિગ્રા/ચો.સેમી
રેઇન પાઈપ	:	૩૦ મીટર
બે રેઇન પાઈપ વચ્ચેનું અંતર	:	૫ મીટર

Approved with following suggestions:

1. Write specification of pump and geometry of rain pipe irrigation system in table, below the recommendation
2. Recast Gujarati & English recommendations paragraphs as per suggestions given by house, such as **પરીસાંચાલન દબાણ ૦.૫ કિગ્રા/ચો. સેમી.**

(Action: Research Scientist (Agril. Engg.), JAU, Junagadh)

19.5.1.11

Adaption to climate change: Effect of hydrogel and organic manures to mitigate biotic stress in Bt. cotton

The farmers of north Saurashtra agro-climatic zone growing Bt. Cotton (G. cot Hybrid-8 BG-II) under dry farming conditions are recommend to apply hydrogel @ 2.5 kg/ha before sowing (1:10 mixture of Pusa hydrogel and sand through drilling in the furrow) or FYM @ 10 t/ha to minimize moisture stress during dry spells and obtaining maximum rain water use efficiency, higher productivity and net returns.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના સુકી ખેતીની પરિસ્થિતિમાં બીટી કપાસ(G. cot Hybrid-8 BG-II)નું વાવેતર કરતા ખેડૂતોને બે વરસાદ વચ્ચેના સુકાગાળા દરમિયાન પાકને ભેજની ખેંચ ઓછી કરવા તેમજ વધારે ઉત્પાદન અને આર્થીક વળતર સાથે વરસાદના પાણીની મહત્તમ કાર્યક્ષમતા મેળવવા માટે વાવણી પહેલા ૨.૫ કિલોગ્રામ પ્રતિ હેક્ટર હાઇડ્રોજેલ (૧:૧૦ ના

	પ્રમાણમાં પૂસા હાઈડ્રોજેલ અને રેતી મીક્ષ કરી ચાસમાં ઓરીને આપવા) અને ૧૦ ટન છાણીયું ખાતર પ્રતિ હેક્ટર પ્રમાણે આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion:** 1. Write "to minimize" word instead of "for mitigation" in English recommendation (Action: Research Scientist (DFRS), JAU, Targhadia)
19.5.1.12	**Development of biodegradable packaging film based on whey protein isolate** The entrepreneurs and industrialists are recommended to adopt a process technology developed by Junagadh Agricultural University for the preparation of biodegradable plastic film based on whey protein isolate by using 1.4:1 WPI to glycerol ratio, 6.6 pH and 93 % ultra sonication power by casting method to replace synthetic plastic to use as carry bag and dry matter packaging film. પ્લાસ્ટિક ઉત્પાદન કરતા ઉદ્યોગ સાહસિકો અને ઉદ્યોગકારોને જુનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસવવામાં આવેલ પદ્ધતિ મુજબ ૧.૪:૧ના પ્રમાણમાં વ્હે પ્રોટીન આઈસોલેટ:ગ્લીશરોલ, ૬.૬ પીએચ અને ૯૩% જેટલા અલ્ટ્રા સોનીકેશન પાવરનો ઉપયોગ કરી જૈવિક રીતે વિઘટન થઇ શકે તેવી વ્હે પ્રોટીન આધારિત પ્લાસ્ટીક બનાવવા ભલામણ કરવામાં આવે છે જેમનો ઉપયોગ સિન્થેટિક પ્લાસ્ટિકની જગ્યાએ હાથમાં લઈ જવાય તેવી થેલી બનાવવામાં અને સુકી વસ્તુઓના પેકેઝીંગ ફીલ્મ બનાવવામાં કરી શકાય. **Approved with following suggestions:** 1. The percentage deviation should be as compared to experimental value 2. Round off the values in recommendation. (Action: HoD, PFE, CAET, JAU, Junagadh)
19.5.1.13	**Modification of gel expulsion machine for aloe vera leaves** The farmers and entrepreneurs are recommended to use aloe vera gel expulsion machine developed by Junagadh Agricultural University to get maximum gel recovery (39 %), gel expulsion efficiency (79 %) and output capacity (98 kg/h) with better quality of gel to operate at 75 rpm expulsion roller speed for aloe vera leaves having thickness more than 20 mm to reduce 79 % cost of expulsion. ખેડૂતો અને ઉદ્યોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે કુંવાર પાઠાના પાનમાંથી જેલ(માવો) મેળવવા માટે જુનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસવવામાં આવેલ એલોઈ વેરા જેલ એક્સપલ્શન મશીન વાપરવા માટે ભલામણ કરવવામાં આવે છે જે ૭૫ આરપીએમ પર એક્સપલ્શન રોલર ચલાવવાથી ૨૦ મિલીમીટરથી વધારે જાડાઈ વાળા પાનમાંથી વધુમાં વધુ જેલની પ્રાપ્તિ (૩૯%), કાર્યદક્ષતા (૭૯%) અને કાર્યક્ષમતા (૯૮ કિગ્રા પ્રતિ કલાક) સાથે સારી ગુણવતા વાળો જેલ મળે છે. જેથી જેલ મેળવવાના ખર્ચમાં ૭૯% જેટલો ઘટાડો કરી શકાય છે. **House approved the recommendation** (Action: HoD, PFE, CAET, JAU, Junagadh)
19.5.1.14	**Development and evaluation of defatted sesame flour incorporated protein enriched extruded products** The extrudate manufacturing units and farmers are recommended to

	adopt the process technology developed by Junagadh Agricultural University for making corn based protein enrich extrudates products using defatted sesame flour. The extrudates should be produce by taking a proportion of defatted sesame flour and corn flour as 23:77 to increase the protein content of extrudates by using twin screw extruder machine. The suggested optimum condition to prepare extrudates using defatted sesame flour is feed moisture content : 15.60% (wb), die head temperature : 130°C, feed temperature : 60°C, barrel temperature : 100°C and screw speed : 250 rpm. The developed method givegood quality extrudates with 19.21 % high protein content. આથી એકસ્ટ્રુડેટ્સ પ્રોડકટ સાથે સંકળાયેલા ઉત્પાદકો અને પ્રોસેસિંગ કરતા ખેડૂતોને, મકાઈ આધારિત એકસ્ટ્રુડેટ્સ પ્રોડક્ટમાં તેલરહિત તલનો લોટનો ઉપયોગ કરી પ્રોટીનની માત્રામાં વધારો કરવા જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ પધ્ધતિ અપનાવવા માટે ભલામણ કરવામાં આવે છે. મકાઈ આધારિત એકસ્ટ્રુડેટ્સમાં પ્રોટીનની માત્રામાં વધારો કરવા તેલ રહિત તલનો લોટ (ડી ફેટેડ સીસેમી ફલોર) તથા મકાઈનો લોટને ૨૩:૭૭ના પ્રમાણમાં લઈ ટવીન સ્ક્રુએકસ્ટ્રુડરની મદદથી એકસ્ટ્રુડેટ્સ બનાવવા જોઈએ. આ પદ્ધતિમાં એકસ્ટ્રુડેટ્સ બનાવવા માટેની અનુકૂળ પરિસ્થિતિ મેળવવા મિશ્રિત લોટમાં ભેજનું પ્રમાણ ૧૫.૬૦%, ડાઈના મથાળાના ભાગે ૧૩૦°સે. તાપમાન, ફીડરના ભાગે ૬૦°સે. તાપમાન અને બેરલના ભાગે ૧૦૦° સે. તાપમાન તેમજ સ્ક્રુનીઝડ પર ૫૦ આર.પી.એમ. રાખવાનું ભલામણ કરવામાં આવે છે. આ પદ્ધતિ દ્વારા સારી ગુણવતા ધરાવતા ૧૯.૨૧% જેટલા ઉચ્ચ પ્રોટીન સાથેના એકસ્ટ્રુડેટ્સ તૈયાર કરી શકાય છે. **Approved with following suggestions:** 1. Replace"આથી એકસ્ટ્રુડેટ્સ પ્રોડકટસન સાથે સંકળાયેલા ઉત્પાદકોને"with "આથી એકસ્ટ્રુડેટ્સ **પ્રોડકટ** સાથે સંકળાયેલા ઉત્પાદકો અને પ્રોસેસિંગ કરતા ખેડૂતો" in Guajarati recommendation para. 2. Replace"મકાઈ આધારિત એકસ્ટ્રુડેટ્સમાં" with "મકાઈ આધારિત એકસ્ટ્રુડેટ્સ **પ્રોડક્ટ**માં" in Guajarati recommendation para. (Action: Research Scientist, ARS, JAU, Amreli)

NAVSARI AGRICULTURAL UNIVERSITY

19.5.1.15	**Evaluation of tillage practices for green gram** The farmers of South Gujarat growing green gram (CO-4) in *rabi* season are recommended to use mini tractor operated seed drill having capacity of 0.21 ha/h for sowing at *vaspa* condition of soil which save 85% and 40% of labour and time, respectively, along with higher yield and net income. દક્ષિણ ગુજરાતનાં શિયાળુમાં મગ (સી. ઓ.- ૪)નુ વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે, કે જમીનમાં વરાપ આવી ગયા પછી મીની ટ્રેક્ટર સંચાલિત વાવણીયાના ઉપયોગથી ૦.૨૧ હે. પ્રતિ કલાકે વાવણી થઈ શકે છે, જેમાં અનુક્રમે, ૮૫% અને ૪૦% મજુર અને સમયની બચત સાથે વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. **Approved with following suggestions:** 1. Replace the word "advised" with "recommended" in English para. 2. Replace the sentence "seven days after irrigation" with "during workable conditions of soil after irrigation".

3. Mention mini tractor used for sowing & labour saving in percent in English & Guajarati para.
4. Recast Guajarati & English recommendations paragraphs as per suggestions given by house.

(Action: Head, Dept. of Ag. Engg, COA, NAU, Waghai)

19.5.1.16

Effect of different conservation practices on yield and water use efficiency of linseed

Farmers of south Gujarat growing linseed are recommended to adopt sunhemp green manuring during *kharif* season and ploughing at vapsa condition of soil followed by planking and rice straw mulching after sowing as conservation practices for improving yield, 8.15 kg/ha/mm water use efficiency and higher net realization.

દક્ષિણ ગુજરાતના અળસી નુ વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વધુ ઉત્પાદન, ૮.૧૫ કિ.ગ્રા./હે./મીમી પાણીના કાર્યક્ષમ ઉપયોગ અને વધુ ચોખ્ખી આવક મેળવવા માટે ચોમાસા દરમ્યાન શણનો લીલો પડવાશ કરવો અને જમીનમાં વરાપ આવ્યા બાદ હળથી ખેડ અને પાટિયુ ફેરવી અને વાવણી બાદ ડાંગરની પરાળ પાથરવી.

Approved with following suggestions:

1. Revised the tables in report as suggested by house.
2. Recast the recommendation according to treatment "T6"

(Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)

19.5.1.17

Design and development of battery operated NSKE sprayer

Withheld with following suggestions:

1. Form Release committee and submit its report.
2. Advised to propose it in next year after completion of patent process.

(Action: Head, Dept. of Ag. Engg., College of Agriculture, Waghai)

19.5.1.18

Development of sapota chips mix frozen dessert

Withheld with following suggestion:

1. Advised to propose it in next year after completion of patent process.

(Action: Head, PHTC, ACH, NAU Navsari)

19.5.1.19

Efficacy of drip irrigation on Malabar neem *(Melia composita wild*)

Farmers of South Gujarat Zone II, who intend to grow Malabar Neem **(***Melia composita* Wild.**)** are recommended to grow **at** 2 m x 2 m spacing, for industrial Agro-forestry, should follow check basins method of irrigation. The dimensions of check basins should be 2m top width, 1.7m bottom width and 0.15m height, for getting higher biomass production from 5 years old treeplantation, with 6.97BCR. The irrigation schedule to be adopted at weekly interval in various months is as follows:

Month	**February**	**March-April**	**May**	**October-November**	**December-January**
Depth (mm)	50	70	80	50	30

દક્ષિણ ગુજરાત ઝોન-IIના ખેડૂતો કે જે ઔદ્યોગિક કૃષિ-વનીકરણ માટે માલાબાર લીમડો

(મેલિયા કમ્પોઝિટ વાઇલ્ડ) ઉગાડવાનો ઇરાદો ધરાવતા હોય, તેઓને ૨ મીટર x ૨ મીટરનું અંતર જાળવવાની સાથે ૨ મીટર ટોચની પહોળાઈ, ૧.૭ મીટર તળિયાની પહોળાઈ અને ૦.૧૫ મીટર ઊંચાઈ ધરાવતા ચેક બેસિન પધ્ધતિ મારફત નીચે જણાવેલ સમય સારણીમાંના મહિનાઓમાં સાપ્તાહિક અંતરાલ પર સિંચાઈ આપવાની ભલામણ કરવામાં આવે છે, જેથી ૫ વર્ષ જૂના વૃક્ષમાંથી વધુ બાયોમાસ ઉત્પાદન સાથે ૬.૯૭ ગણું વળતર મેળવી શકાય.

મહિનો	ફેબ્રુઆરી	માર્ચ-એપ્રિલ	મે	ઓક્ટોબર-નવેમ્બર	ડિસેમ્બર-જાન્યુઆરી
ઊંડાઈ (મીમી)	૫૦	૭૦	૮૦	૫૦	૩૦

Approved with following suggestions:

1. Recommended it for Farmer community instead of scientific community.
2. Remove the word "sufficient good quality water" from recommendation Paragraph
3. Add the name of Agro-climatic zone in recommendation para.
4. Replace words "to get maximum fresh biomass" with "for getting better biomass production"
5. Add Gujarati paragraph of recommendation as per suggestions given by house.
6. Add month-wise depth of irrigation in table form at the end of recommendation para.
7. Recast Gujarati & English recommendations paragraphs as per suggestions given by house.

(Action: Head, Dept of SWCE, CAET, NAU, Dediapada)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

19.5.1.20

Optimization of mini sprinkler irrigation scheduling for wheat

The Farmers of North Gujarat Agro climatic Zone-IV irrigating wheat through mini sprinkler irrigation system are recommended to adopt following irrigation schedule beside two irrigation for germination to acquire higher yield and net realization.

Details of mini sprinkler irrigation system	**Irrigation schedule**
Mini sprinkler spacing: 9 m × 9 m Sprinkler discharge: 450 lit/hr Sprinkler operating pressure: 2.0 kg/cm^2	At every fourth day a. December: 109 min b. January: 115 min c. February: 160min d. March: 184 min

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪માં ઘઉંના પાકમાં મીની સ્પ્રિંકલર સિંચાઈ પધ્ધતિથી પિયત આપતા ખેડૂતોએ વધારે ઉત્પાદન અને આવક મેળવવા અંકુરણ માટેના બે પિયત પછી નીચે જણાવ્યા મુજબ પિયત આપવા ભલામણ કરવામાં આવે છે.

મીની સ્પ્રિંકલર સિંચાઈ પધ્ધતિની વિગત	પિયત સમય પત્રક

મીની સ્પ્રિંકલર વચ્ચેનું અંતર : ૯ મી X ૯ મી સ્પ્રિંકલરનો પ્રવાહ દર: ૪૫૦લી/કલાક સ્પ્રિંકલરનું સંચાલન દબાણ : ૨.૫ કિ.ગ્રા./સે. મી.^{૨}	દર ચોથા દિવસે અ. ડિસેમ્બર : ૧૦૯ મિનિટ બ. જાન્યુઆરી : ૧૧૫ મિનિટ ક. ફેબ્રુઆરી : ૧૬૦ મિનિટ ડ. માર્ચ : ૧૮૪ મિનિટ

Approved with following suggestion:

1. Replace words "three days interval" with "at every fourth day" in table of recommendation; and accordingly in Gujarati para also.

(Action: RS, CNRM, SDAU, SK Nagar)

19.5.1.21

Feasibility of rabi crops using harvested rain water through MIS

The farmers of North Gujarat Agroclimatic zone IV are recommended to construct 615 m3 storage capacity lined farm pond for 1.0 ha catchment and use harvested water to grow any one of the following rabi crops through sprinkler irrigation system as under in average seasonal rainfall condition.

Crops	IW/CPE ratio	Irrigation details for germination		Irrigation details for crop growth		Area of cultivation, ha
		No. of irrigation	Depth of irrigation, mm	No. of irrigation	Depth of irrigation, mm	
Cumin	0.5	1+2	50+25 each	5	30	0.17
Mustard	0.6	1	50	5	30	0.19
Dilseed	0.5	1	50	5	30	0.20

Sprinkler irrigation system Details

Lateral spacing	:	9 m
Sprinkler spacing	:	9 m
Sprinkler discharge	:	450 lph
Operating pressure		2.5 kg/cm^2

ઉત્તર ગુજરાત ખેત હવામાન આબોહવાકીય વિભાગ-૪ના ખેડૂતોને પ્રતિ હેક્ટર કેચમેન્ટ વિસ્તાર માટે ૬૧૫ ઘનમીટર સંગ્રહ ક્ષમતાની આચ્છાદિત ખેત તલાવડી બનાવી સરેરાશ વરસાદની પરિસ્થિતિમાં ફુવારા પધ્ધતિથી પિયત આપી નીચે મુજબના રવી પાકો પૈકી એક પાકનું વાવેતર કરવા ભલામણ કરવામાં આવે છે.

પાક	પિયત પાણી /બાષ્પીભવનગુણાંક	ઓરવણ માટેના પિયતની વિગત		પાકના વિકાસ માટેના પિયતની વિગત		વાવેતર વિસ્તાર, હેક્ટર
		પિયતની સંખ્યા	પિયતની ઊંડાઈ, મીમી	પિયતની સંખ્યા	પિયતની ઊંડાઈ, મીમી	
જીરું	૦.૫	૧+૨	૫૦ +	૫	૩૦	૦.૧૭

			૨૫દરેક			
રાયડો	૦.૬	૧	૫૦	૫	૩૦	૦.૧૯
સુવા	૦.૫	૧	૫૦	૫	૩૦	૦.૨૦

ફુવારા સિંચાઇ પધ્ધતિની વિગત:

પ્રશાખાનું અંતર	:	૯ મી.
ફુવારાનું અંતર	:	૯ મી.
ફુવારાનો પ્રવાહ દર	:	૪૫૦ લિટર/ કલાક
ફુવારા સિસ્ટમનું દબાણ		૨.૫ કિગ્રા/સે.મી.^{૨}

Approved with following suggestions:

1. Write "daily rainfall" in place of "rainfall events" in the title of Table 2.
2. Plot exponential equation instead of linear (Figure 2, Equation 1.)
3. Write IW/CPE ratio with correct decimal digits in table of recommendation in report

(Action: RS, CNRM, SDAU, SK Nagar)

19.5.1.22

Drip irrigation scheduling for potato crop

The farmers of the North Gujarat Agro Climatic Zone-IV using drip irrigation system are recommended to use tensiometer and irrigate at 30 kPa soil moisture tension for 1 hour 8 minute to acquire higher tuber yield of potato and net realization through drip irrigation system as under.

Drip irrigation system Details		
Lateral spacing	**:**	75 cm
Emitter spacing	**:**	40 cm
Emitter discharge	**:**	2 lph
Operating pressure		1.2 kg/cm^2

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪ના ટપક પદ્ધતિ નો ઉપયોગ કરતાં ખેડૂતોને બટાટાના પાકનું વધુ ઉત્પાદન અને નફો મેળવવા ટેન્શિયોમીટરનો ઉપયોગ કરી ૩૦ કિલો પાસ્કલના નકારાત્મક દબાણે ૧ કલાક ૮ મિનિટ માટે નીચે મુજબ ટપક પધ્ધતિથી પિયત આપવા ભલામણ કરવામાં આવે છે.

પ્રશાખાનું અંતર	૭૫ સેમી
ડ્રિપર અંતર	૪૦સેમી
ડ્રિપરપ્રવાહ દર	૨ લિટર /કલાક
ટપક પદ્ધતિનું દબાણ	૧.૨ કિગ્રા /સેમી^{૨}

Approved with following suggestions:

1. Remove depth of tensiometer installation in recommendation para.
2. Recast Gujarati & English recommendations paragraphs as per suggestions given by house

(Action: RS, CNRM, SDAU, SK Nagar)

19.5.1.23

Sprinkler irrigation scheduling for potato crop

The farmers of the North Gujarat Agro Climatic Zone-IV using sprinkler irrigation system are recommended to use tensiometer and irrigate at 30 kPa soil moisture tension for 1 hour 50 minute to acquire higher tuber yield of potato and net realization through sprinkler irrigation system as under.

Lateral spacing	9 m
Sprinkler spacing	9 m
Sprinkler discharge	450lph
Operating pressure	2.5 kg/cm^2

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિભાગ-૪ના ફુવારા પદ્ધતિનો ઉપયોગ કરતાં ખેડૂતોને બટાટાના પાકનું વધુ ઉત્પાદન અને નફો મેળવવા ટેન્શિયોમીટરનો ઉપયોગ કરી ૩૦ કિલો પાસ્કલના નકારાત્મક દબાણે ૧ કલાક ૫૦ મિનિટ માટે નીચે મુજબ ફુવારા પધ્ધતિથી પિયત આપવા ભલામણ કરવામાં આવે છે.

પ્રશાખાનું અંતર	૯ મી.
ફુવારાનું અંતર	૯ મી.
ફુવારાનો પ્રવાહદર	૪૫૦ લિટર/કલાક
ફુવારા સિસ્ટમનું દબાણ	૨.૫ કિગ્રા/સે.મી.^{૨}

Approved with following suggestions:

1. Remove depth of tensiometer installation in recommendation para.
2. Recast Gujarati & English recommendations paragraphs as per suggestions given by house.

(Action: RS, CNRM, SDAU, SK Nagar)

19.5.1.24

Development of eco-friendly pot making machine

It is recommended to use "Pot Making Machine-1" developed by the Sardarkrushinagar Dantiwada Agricultural University for making biodegradable pots of 5 inch diameter with a capacity of about 24 pots per hour.

સરદાર કૃષિનગર દાંતીવાડા કૃષિ યુનિવર્સિટી ખાતે વિકસાવવામાં આવેલ "કુંડા બનાવવાનું મશીન-૧" નો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ મશીન દ્વારા ૫ ઇંચ વ્યાસના અંદાજીત ૨૪ કુંડા પ્રતિ કલાક બનાવી શકાય છે.

Approved with following suggestions:

1. Remove College name from recommendation para and recast language of recommendation accordingly.
2. સદર મશીનની જગ્યાએ "આ મશીન" લખવું
3. Recast Gujarati & English recommendations paragraphs as per suggestions given by house.

(Action: Principal, CREEE, SDAU, SK Nagar)

19.5.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY ANAND AGRICULTURAL UNIVERSITY

19.5.2.1	**Development of pest & disease video classification model Using deep learning (CNN)** Scientists are advised to use the developed CNN Architecture based Models (VGG19, DENSENET201 and 5 CNN + 4 Dense Layer) for the video classifier. The classifiers are developed with following parameters. o No. Of Hidden Layers: Four o Dropout: 0.20 o Activation Function: ReLU, Softmax o No. Of Epoch: 25 o Batch size: 32 o Optimizer: Adam o [Learning Rate: 0.001, decay rate(beta1):0.9 decay rate(beta 2):0.999, epsilon: 10e-8] o Data Augmentation: [Random Flip: Horizontal and Vertical o Random Rotation: 0.1, Random Zoom: 0.1, Random Contrast: 0.1] o Rescaling: 1.0/255 o Loss Function: Sparse Categorical Cross Entropy **Approved with following suggestions:** 1. Recheck the data and include the details in report as suggested by house 2. Revise English para as "Scientists are advised to use…." As suggested by house. (Action: Head, Dept. of AIT, CAIT, AAU, Anand)
19.5.2.2	**Neural network to estimate the rice yield of Kheda district using weather parameters** Scientists are advised to use the developed ANN model (Neural Networks: 09-10-01, consisting of 9 input variables namely average bright sunshine hours of 27th,30th, and 31st meteorological standard weeks (MSW), total rainfall of 40th MSW, average minimum temperature of 28th, 36th, and 39th MSW, average relative humidity of 32nd and 37th MSW; 10 neurons in the hidden layer and 1 output variable i.e. Rice Yield; Logistic Sigmoid and Linear activation functions for the hidden and output layers respectively; Training algorithm: Levenberg-Marquardt (trainlm)) to estimate the rice yield of Kheda district using weekly weather parameters. **Approved with following suggestions:** 1. Recast the recommendation text by adding Learning Algorithm 2. Include R^2 in Table 6. 3. Revise English para as "Scientists are advised to use…." As suggested by house. (Action: Head, Dept. of Dept. of Agril. Science, CAIT, AAU, Anand)
19.5.2.3	**OSBORNE index selection for poultry** Scientists are advised to use a web-based software developed by Anand Agricultural University for generation of Osborne index for selection of birds (progenies) for improvement in egg production over generations. **Approved with following suggestions:**

	1. Recast recommendation text as 'Scientists are advised to use …' (Action: Head, Dept. of AIT, CAIT, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

19.5.2.4 Soil moisture based irrigation water management in canal command using remote sensing technology

The Planners, NGOs and Government Departments of South Saurashtra Agro Climatic region are recommended to use the following relationship of surface soil moisture with remote sensing images based Temperature Vegetation Dryness Index (TVDI) to find out the spatial surface soil moisture for the estimation of crop water requirement for the agricultural fields.

Surface Soil Moisture (%) = -45.457 TVDI + 43.71

Where,
TVDI = Temperature Vegetation Dryness Index

House approved the recommendation

(Action: HoD, SWCE, CAET, JAU, Junagadh)

19.5.2.5 Influence of crop cultivation method and slope on runoff and soil loss under natural rainfall condition

On availability of daily rainfall data, the following empirical rainfall-runoff models are recommended for the hydrologic design of water harvesting/conservation structures to estimate the runoff from the field of cotton and groundnut crop cultivation either along or across the land slope up to 1% for medium black soil.

Crop	Cultivation practices	Rainfall-runoff model	R^2
Cotton	Along	RO = 0.6307(RF) - 7.7509	0.901
Cotton	Across	RO = 0.5908(RF) - 7.3239	0.898
Groundnut	Along	RO = 0.5752(RF) - 7.1512	0.895
Groundnut	Across	RO = 0.5195(RF) - 6.4703	0.888
Where, RO is daily runoff (mm) and RF is the daily rainfall (mm)			

On the availability of daily rainfall and land slope data, following empirical models are recommended to estimate the runoff from the fields of cotton and groundnut crop cultivation either along or across the land slope up to 1% for medium black soil.

Cultivation practices	Model	R^2
Cotton Along	$RO = 0.2546\ (RF)^{1.1787}\ (S)^{0.2450}$	0.885
Cotton Across	$RO = 0.2404\ (RF)^{1.1787}\ (S)^{0.2759}$	0.882
Groundnut Along	$RO = 0.2535\ (RF)^{1.1774}\ (S)^{0.3900}$	0.878
Groundnut Across	$RO = 0.2167\ (RF)^{1.1720}\ (S)^{0.2571}$	0.866
Where, RO is the predicted daily runoff (mm), RF is the daily rainfall (mm) and S is the slope of the bed (%).		

Approved with following suggestion:

1. Mention the R^2 value with model in the tables of recommendation paragraph.

(Action: HoD, SWCE, CAET, JAU, Junagadh)

19.5.2.6 Influence of crop cultivation method and slope on runoff and soil loss under natural rainfall condition

On the availability of annual rainfall and land slope data, the following empirical models are recommended to estimate the annual soil loss from the fields of cotton and groundnut crop cultivation either along or across the land slope up to 1% for medium black soil.

Cultivation practices	Model	R^2
Cotton Along	$AS_L = 1.1669(ARF)^{0.2281} (S)^{0.2269}$	0.904
Cotton Across	$AS_L = 2.0660(ARF)^{0.1356} (S)^{0.2397}$	0.961
Groundnut Along	$AS_L = 1.1016(ARF)^{0.2277} (S)^{0.3603}$	0.951
Groundnut Across	$AS_L = 0.6235(ARF)^{0.2910} (S)^{0.2532}$	0.956
Where, AS_L is the annual soil loss (ton/ha/year), S is the slope of the bed (%) and ARF is the annual rainfall (mm).		

Approved with following suggestion:

1. Mention the R^2 value with model in the tables of recommendation paragraph.

(Action: HoD, SWCE, CAET, JAU, Junagadh)

19.5.2.7 Identification of potential groundwater recharge zones in ozat river basin

The scientific communities are infromed that the planning for recharging of 610.18 MCM runoff (75% dependibility) of Ozat basin may be done by recharging through 4520 check dams, 51113 farm ponds, 22599 open wells, 5650 tube wells in excellent and good groundwater recharge potential zones, while 10496Gabion/loose rock dams in moderate groundwater potential zones.

House approved the information for scientific community

(Action: HoD, IDE, CAET, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

19.5.2.8 Estimation of wet and dry spells in Sagbara region using stochastic analysis of long-term weather data

Scientists are informed to use following table for estimation of dry and wet spell of Sagbara, Navsari and Waghai region.

SN	Particular/Detail	Sagbara Region	Navsari Region	Waghai Region
1.	Probability of occurrence of two successive wet days	6 to 25%	12 to 20%	5 to 25%
2.	Probability of occurrence of four successive dry days	20 to 60%.	10 to 50%.	20 to 60%.
3.	Probability of occurrence of dry day followed by dry day	65 to 75%	60 to 75%	65 to 75%
4.	Probability of occurrence of dry day followed by two wet days	60 to 75%.	65 to 70%	60 to 75%.
5.	Weeks of the year having maximum probability of occurring two consecutive wet weeks	20th to 30th	20th to 30th	20th to 30th
6.	Maximum temperature range having highest probability of occurrence	33-35°C	33-35°C	33-35°C

7.	Weeks of the year having 90% probability of getting 250 mm rainfall	30th to 32nd	25th to 32nd	32nd to 35th

Approved with following suggestion:

1. Provide recommendation details in table form.

(Action: Head, Dept of IED, CAET, NAU, Dediapada)

19.5.2.9 Evaluation of CERES- Rice model for the crop performance of various rice genotypes under different environment

Scientists are informed to use following calibrated genetic coefficients with definitions for simulation of the rice yield under South Gujarat condition with 'CERES-Rice' model.

Coefficients	Definition of Coefficients	GNR-3	GNR-7	Gujari
P1	Time period (expressed as growing degree days [GDD] in ºC-d above a base temperature of 9ºC) from seedling emergence during which the rice plant is not responsive to changes in photoperiod. This period is also referred to as the basic vegetative phase of the plant.	610.0	650.0	620.0
P2R	Extent to which phasic development leading to panicle initiation is delayed (expressed as GDD in ºC-d) for each hour increase in photoperiod above P2O.	45.0	40.0	40.0
P5	Time period in GDD ºC-d) from beginning of grain filling (3 to 4 days after flowering) to physiological maturity with a base temperature of 9ºC.	120.8	150.8	120.8
P2O	Critical photoperiod or the longest day length (in hours) at which the development occurs at a maximum rate. At values higher than P2O developmental rate is slowed, hence there is delay due to longer day lengths.	12.0	12.0	12.0
G1	Potential spikelet number coefficient as estimated from the number of spikelets per g of main culm dry weight (less leaf blades and sheaths plus spikes) at anthesis.	60.8	50.8	60.8
G2	Single grain weight (g) under ideal growing conditions, i.e. non limiting light, water, nutrients, and absence of pests and diseases.	.0220	.0218	0.210
G3	Tillering coefficient (scalar value) relative to IR64 cultivar under ideal conditions.	1.00	1.00	1.00
PHINT	Phyllochron Interval (ºC-d). Time interval in degree-days for each leaf-tip to appear under non-stressed conditions.	80.0	80.0	80.0
THOT	Temperature (ºC) above which spikelet sterility is affected by high temperature.	30.3	30.3	30.3
TCLDP	Temperature (ºC) below which panicle initiation is further delayed (other than	15.0	15.0	15.0

	P1, P2O and P2R) by low temperature			
TCLDF	Temperature (°C) below which spikelet sterility is affected by low temperature.	15.0	15.0	15.0

House approved the recommendation

(Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)

19.5.2.10

Analysis of land cover changes in dang district using remote sensing and GIS

Scientists are informed to prefer geospatial techniques for assessment of change in LULC and to estimate the surface runoff potential in ungauged watersheds using SCS-CN method.

a) Assessment of change in LULC of Dang district for 25 years period (1990 to 2015) indicated that, the area under forest was reduced from 1512.9 km^2 (85.77%) to 1192.4 km^2 (67.60%) resulting in increase in area under agriculture (6.04% to 19.59%), built-up land (3.83% to 6.37%) and barren land (0.43% to 2.11%).

b) Estimation of surface runoff potential of Dang district for 32 years period (1982 to 2013) using SCS-CN method indicated the runoff coefficient of 24.40% (446.88mm) for Purna watershed and 22.80% (419.35mm) for Ambika watershed representing average annual rainfall of 1833mm. Runoff estimation is helpful in design and planning of the soil and water conservation structures in the watershed.

The following Runoff equations based on the average annual rainfall between 1062 mm to 3823 mm can be used to estimate runoff from Dang district:

	AMC-I	**AMC-II**	**AMC-III**
Purna Watershed	$Q=\frac{(P-149.85)^2}{(P+349.6)}$	$Q=\frac{(P-65.65)^2}{(P+153.17)}$	$Q=\frac{(P-28.01)^2}{(P+65.42)}$
Ambika Watershed	$Q=\frac{(P-145.46)^2}{(P+339.36)}$	$Q=\frac{(P-63.75)^2}{(P+148.74)}$	$Q=\frac{(P-27.20)^2}{(P+63.45)}$

Where, Q is runoff (mm) and P is rainfall (mm).

Approved with following suggestions:

1. Mention the resolution of RS image in report.
2. Define Q and P parameters below the table in the recommendation paragraph.
3. Mention the full form of TM in the report
4. Remove figure from recommendation.

(Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)

19.5.2.11

Study the effect of SPV roof top power plant on space cooling under the roof

Scientists are informed that during March to August, in Dediapada climate (latitude 21.66˚ N), use of Grid connected solar roof top system, having lower end of Polycrystalline solar module (with 20° tilt angle) installed at 12 cm height from roof surface, on the shadow free, flat RCC roof having china mosaic (at around 10 m from ground level), to minimize/reduce the

	electrical energy consumption upto 27.74 kWh per kW of SPV system for 1°C reduction in space cooling, with average 69% of rated power generation of the system. **Approved with following suggestions:** 1. Recheck data of Table 1. 2. In Table 3 column '2' write "Average solar radiation" instead of "total solar radiation. 3. In the recommendation paragraph use the word "Flat RCC roof having china mosaic" instead of only "Flat RCC roof" and recast the Recommendation Para. (Action: Head, Dept of RE, CAET, NAU, Dediapada)
19.5.2.12	**Effect of land use/ land cover changes on groundwater resources of Dediapada block** Scientists are informed that, 1. Area under forest land reduced from 443.64 km^2 (43.18%) to 272.99 km^2 (26.57 %) while fallow land increased from 13.05 km^2 (1.27%) to149.59 km^2 (14.56 %) during last 20 years duration (1999 to 2020) in Dediapada block. 2. The rate of deforestation was observed as 71.46 % during 1999 to 2009 while it was observed as 86.08% in the next decade, 2009 to 2020, which shows that the deforestation in study area increased with higher rate in second decade as compared to the first decade. It was observed that, shifting cultivation may be the main reason behind deforestation in this tribal region of Dediapada block. 3. The average annual groundwater recharge of Dediapada block is estimated as 75.71 MCM which is about 5.25 % of total annual rainfall for Dediapada block. 4. Out of total land of Dediapada block, 912.03 ha. (0.90 %) area have very good groundwater recharges potential followed by 17945.06 ha. (17.50 %) have good, 61777.91 ha. (60.10 %) have moderate and 22107.33 (21.50 %) have poor groundwater recharges potential. Soil conservation and water harvesting structures needs to be established to regenerate and restore the vegetative layer/forest cover in the Dediapada block which can protect the land against soil erosion and further land degradation. **Approved with following suggestion:** 1. Revisit estimation of ground water recharge. (Action: Head, Dept of SWCE, CAET, NAU, Dediapada)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

19.5.2.13	**Reduction of chemical oxygen demand of effluent generated from pigment industry** Pigment manufacturing industries are informed that by treating the effluent generated from production of pigment red 49:1 (Suthol red) with 1% conc. HCL (%v/v) followed by filtration with sand and activated carbon for 30-minute aeration will reduce COD below 250 mg/l as per the standard given by Central Pollution Control Board. **Approved with following suggestions:**

	1. Incorporate statistical analysis of results suggested by house 2. Recast language as scientific information (Action: Principal, CREEE, SDAU, SKNagar)

19.5.3 NEW TECHNICAL PROGRAMMES

Summary of New Technical Programmes

Name of University	Proposed	Approved	Not Approved
AAU	15	15+1*	0
JAU	11	11	0
NAU	10	09	1
SDAU	07	07	0
Total	**43**	**42+1***	**1**

** As per suggestion in plenary session, one NTP shifted from Dairy Science and FPT& BE subcommittee and listed here.*

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
19.5.3.1	Partial dehydration of blanched sweet potato (*Ipomoea batatas*) slices for shelf life extension	**Approved with following suggestions:** 1. The thickness of slices should be changed to 15 mm in place of 10 mm. 2. Mention statistical design as FCRD in treatment details information. (Action: Head, Department of PFE, CAET, AAU, Godhra)
19.5.3.2	Standardization of process parameters for preparation of dragon fruit leather	**Approved with following suggestions:** 1. The treatment details should be checked and corrected. 2. Use word "Peel crush" instead of "Peel" in process parameters. (Action: Head, Department of PFE, CAET, AAU, Godhra)
19.5.3.3	Development of battery operated inter and intra row weeder	**Approved with following suggestions:** 1. Recast the title as 'Development of battery operated inter and intra row weeder'. 2. Add the units of observations to be taken. 3. Incorporate details suggested by house. (Action: Head, Department of FMPE, CAET, AAU, Godhra)
19.5.3.4	Estimation of spatio-temporal surface soil moisture using multispectral remote sensing, GIS and deep learning techniques	**Approved with following suggestion:** 1. Add one objective having application of estimated moisture content, *i.e.* evaporation loss of canal command area. (Action: Head, Department of SWCE, CAET, AAU, Godhra)

19.5.3.5	Analysis of land use and land cover using machine learning algorithms and Google Earth Engine for Panchmahals district	**Approved with following suggestion:** 1. Add one objective on application of analysis of land use and land cover. (Action: Head, Department of IDE, CAET, AAU, Godhra)
19.5.3.6	Development of centrifugal fruit juice extractor	**Approved with following suggestions:** 1. Mention the capacity of extractor. 2. Add details of treatments (RPM etc.). (Action: Head, Department of BEAS, CAET, AAU, Godhra)
19.5.3.7	Estimation of wheat yield at different stage using ensemble regression machine learning approach for Anand district	**Approved.** (Action: Head, Dept. of Agril. Science, CAIT, AAU, Anand)
19.5.3.8	Development of Artificial Intelligence based plant diseases and pests (Okra) advisory for the farmers	**Approved.** (Action: Head, Dept. of AIT, CAIT, AAU, Anand)
19.5.3.9	Development and evaluation of information retrieval and selling system for medicinal and aromatic plants	**Approved with following suggestion:** 1.Give methodology in detail (Action: Head, Dept. of AIT, CAIT, AAU, Anand)
19.5.3.10	Development and evaluation of contractual Human Resource Management System – HRMS	**Approved with following suggestion:** 1.Give methodology in detail (Action: Director, IT, AAU, Anand)
19.5.3.11	Development and evaluation of state varietal enrolment portal for Government of Gujarat	**Approved with following suggestions:** 1. Include database design, attributes and observations. 2. Reframe objectives. (Action: Director, IT, AAU, Anand)
19.5.3.12	Development and evaluation of agribot for AAU recommendations	**Approved with following suggestion:** 1. Give methodology including evaluation in detail. (Action: Director, IT, AAU, Anand)
19.5.3.13	Development and evaluation of E-diary for farmers	**Approved with following suggestions:** 1. Include Database design, attributes and observations. 2. Give methodology in detail. (Action: Director, IT, AAU, Anand)

19.5.3.14	Development of a mobile app for millet crops	**Approved with following suggestions:** 1. Include database design and data source. 2. Give methodology in detail. (Action: Head, Dept. of AIT, CAIT, AAU, Anand)
19.5.3.15	Development of perforated storage bin for garlic	**Approved with following suggestions:** 1. Add empty bulb percentage in the observations. 2. Four replications may be taken. (Action: Head, Department of PFE, CAET, AAU, Godhra)
19.5.3.16*	Performance evaluation of developed Internet of Things (IoT) based system	**Approved with following suggestions:** 1. Commodities to be used in the performance evaluation to be mentioned. 2. Performance evaluation of the fabricated large scale system to be designed systematically. (Action: PI &Head, Dept. of FPE, CoFPTBE, AAU, Anand)

** As per suggestion in plenary session, this NTP shifted from Dairy Science and FPT& BE subcommittee and listed here.*

JUNAGADH AGRICULTURAL UNIVERSITY

19.5.3.17	Assessment of farm mechanization in pearl millet crop for Saurashtra region	**Approved with following suggestions:** 1. Modify title as "Assessment of farm mechanization in pearl millet crop for Saurashtra region". 2. Modify the objective no. 2 as "To assess existing suitable machinery for sowing, inter-culturing, spraying, harvesting and threshing operations for pearl millet crop" 3. Mention the procedure for selection of district, taluka, village, farmers for study. 4. Mention the season of crop. (Action: HoD, FMPE, CAET, JAU, Junagadh)
19.5.3.18	Simulating the climate change impacts on water footprint of chickpea using aquacrop model	**Approved with following suggestions:** 1. Add NSM**E**, R^2 for comparing observed and model data 2. Mention the no. of plant /treatment. 3. Mention the validation basis. (Action: HoD, IDE, CAET, JAU, Junagadh)
19.5.3.19	Crop monitoring using ground based Normalized Difference Vegetation Index (NDVI) meter	**Approved with following suggestions:** 1. Revise title as: Crop monitoring using ground based Normalized Difference Vegetation Index (NDVI) meter. 2. Modify objective No. 1 as "To prepare the NDVI profile of the major crops". (Action: HoD, SWCE, CAET, JAU, Junagadh)

19.5.3.20	Identification of groundwater recharge potential zones of Shetrunji river basin using Remote Sensing and GIS.	**Approved with following suggestion:** 1. Reduce number of Co-PI as suggested (Action: HoD, SWCE, CAET, JAU, Junagadh)
19.5.3.21	Response of drip-irrigated wheat (*Triticum Astivum* L.) to polymer-based NPK nano fertilizers	**Approved with following suggestions:** 1. Merge T1 and T9 2. Write "NPK nano fertilizer" instead of "nano fertilizer" in treatment 3. Write "To suggest" instead of "To access the optimal" in objective number 3. (Action: Research Scientist (Agril. Engg.), JAU, Junagadh)
19.5.3.22	Performance of solar photovoltaic pump operated rain pipe irrigation system for garlic (*Allium sativum* L.)	**Approved.** (Action: Research Scientist (Agril. Engg.), JAU, Junagadh))
19.5.3.23	Soil salinity mapping and modeling using remote sensing and GIS for coastal belt of Saurashtra region	**Approved with following suggestion:** 1. Correct the year of starting and completion for the project. (Action: Research Scientist (Agril. Engg.), JAU, Junagadh)]
19.5.3.24	Development of Combined Agricultural Drought indicator and kharif crop yield prediction for Saurashtra region using remote sensing and machine learning	**Approved with following suggestions:** 1. Mention the year of starting and completion for the project. 2. Add statistical tools, AIC, BIC for yield prediction models. 3. Mention the observation time (Action: Research Scientist (Agril. Engg.), JAU, Junagadh)
19.5.3.25	Effect of hydrogel with organic manures on growth and yield of soybean under rainfed condition	**Approved with following suggestions:** 1. Write FYM @ 5 t/ha. in control treatment 2. Add vermi compost @1 t/ha. as treatment no. 8. 3. Change layout of the experiment accordingly. (Action: Research Scientist (DFRS), JAU, Targhadia)
19.5.3.26	Processing of green tender sorghum, wheat and chickpea	**Approved with following suggestions:** 1. Write "Roasting" in place of "Processing" in title 2. Add nutritional parameters in observation. 3. Add DAS of fetching sample for Paunk 4. Incorporate damage% and calculate over roasted, under roasted, proper roasted (Action: HoD, PFE, CAET, JAU, Junagadh)

19.5.3.27	Optimization of process parameters for protein extraction from defatted peanut flour through fermentation	**Approved with following suggestion:** 1. Add sample size and mention raw material supplier (Action: HoD, PFE, CAET, JAU, Junagadh)

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19.5.3.28	Response of papaya fruit under partial root zone irrigation	**Approved with following suggestions:** 1. Revise title as: Response of papaya fruit under partial root zone irrigation. 2. Revise second objectives as: To developed suitable partial root zone irrigation schedule for Papaya crop. 3. Re-write the third objective of comparison of PRD with all the irrigation system RDI & suggest the suitable schedule for papaya crop as suggested by house. 4. Define control treatment clearly. 5. Add no. of irrigations and volume of water applied/ irrigation in methodology/ treatment details. (Action: Head, Dept of IED, CAET, NAU, Dediapada)
19.5.3.29	Development of battery operated single row multi crop planter	**Approved with following suggestions:** 1. Mention the type of motor to be used as "variable drive electric motor." 2. Revise title as "Development of battery operated single row multi crop planter". 3. Revise objectives and methodology as suggested by house. 4. Add male and female ergonomic study 5. Incorporate conceptual drawing (Action: Head, Dept of FPME, CAET, NAU, Dediapada)
19.5.3.30	Identification of suitable sites for rainwater harvesting in Dediapada taluka of Narmada (Gujarat)	**Approved with following suggestion:** 1. Revise the objectives and methodology by considering thematic map, site selection and geomorphological parameters. (Action: Head, Dept of SWCE, CAET, NAU, Dediapada)
19.5.3.31	Development of automatic plant target liquid fertilizer sprayer for banana crop	**Approved with following suggestions:** 1. Revise title as suggested by house. 2. Revise first objective as: To develop a plant sensing system and data acquisition system using proximity sensor. 3. Revise second objective as: To design and develop a mini tractor operated fertilizer sprayer. 4. Revise third objective as: To evaluate the prototype automatic plant target fertilizer sprayer for banana

		crop 5. Reduce number of investigators as suggested by house 6. Give details about observation to be recorded for performance evaluation. (Action: Head, Dept. of Ag. Engg, CoA, NAU, Waghai)
19.5.3.32	Influence of leveling and irrigation scheduling on turmeric crop in black soil of south Gujarat	**Approved with following suggestions:** 1. Modify the title – "Influence of leveling and irrigation scheduling on Turmeric crop in black soil of south Gujarat". 2. Add volume of water applied and economics in observation to be recorded. 3. Keep irrigation levels as suggested by house. 4. Reduce number of investigators as suggested by house 5. Revise Objectives as: 1) To investigate the effect of different leveling methods on growth and yield of turmeric crop. 2) To test the effect of irrigation scheduling on water saving and water productivity of turmeric crop. 6. Mention furrow irrigation method in methodology. 7. Remove traditional leveling from treatment: leveling types and add 0.3 and 0.5 as leveling treatments. 8. Revise Observation to be taken: Collect soil moisture content before & after irrigation. (Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)
19.5.3.33	Influence of tillage & drainage practices on growth and yield of papaya in heavy rainfall zone of south Gujarat	**Approved with following suggestions:** 1. Revise Objectives as: 1) To determine the effect of tillage on soil physical properties. 2) To determine tillage and drainage practices on growth & yield of papaya. 3) Remove 3rd objective. 2. Specify the drainage spacing instead of drainage depth 3. Reduce number of investigators as suggested by house 4. Mention fertilizer dose in form of NPK. 5. Mention ploughing instrument used for ploughing in methodology. 6. Correct pair row spacing, include drainage co-efficient in observations and give layout of experiment. (Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)

19.5.3.34	Monitoring and assessment of soil pH, salinity, and soil chemical properties in agricultural land of Navsari district using remote sensing and GIS based machine learning technique	**Approved with following suggestions:** 1. Combine projects, 19.5.3.34 & 19.5.3.35 as one project. 2. Suggested title is 'Monitoring and assessment of soil pH, Salinity, and soil chemical properties in agricultural land of Navsari district using remote sensing and GIS based machine learning technique.' 3. Revise Objectives as suggested by house such as: 1) To generate the thematic map of study area. 2) To analyze the soil EC, pH and soil chemical parameters of study area. (Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)
19.5.3.35	Monitoring and assessment of salinity and soil chemicals in agricultural land of Navsari district by remote sensing technique	**Not approved with following suggestion:** 1. Combine projects, 19.5.3.34 & 19.5.3.35 as one project. (Action: Head, Dept. of Ag. Engg, NMCA, NAU, Navsari)
19.5.3.36	Design and development of continuous type mango de-sapping machine	**Approved with following suggestions:** 1. Reframe objectives as suggested by house to optimize machine parameters 2. Add source of power 3. Add statistical analysis (Action: Head, PHTC, ACHF, Navsari)
19.5.3.37	Design and development of tender green sweet sorghum grain (*paunk*) roasting machine	**Approved with following suggestions:** 1. Reframe objectives as suggested by house 2. Include stage of maturity of sorghum for roasting. 3. Add sensory evaluation 4. Include schematic drawing in report. (Action: Head, PHTC, ACHF, Navsari)

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19.5.3.38	Water harvesting planning of Saraswati river basin using geospatial techniques	**Approved with following suggestions:** 1. Revised title as: water harvesting planning of Saraswati River basin using geospatial techniques. 2. Recast objectives as suggested by house during discussion 3. Mention observations to be collected and ground truth verification details in report (Action: RS, CNRM, SDAU, SK Nagar)
19.5.3.39	Response of drip irrigation level and mulching on growth and yield of turmeric (Curcuma longa L.)	**Approved with following suggestions:** 1. Replace word "Effect" with "Response" in title 2. Add "drip" before irrigation in objective 1. 3. Replace word "optimize" with "suggest" in objective 2.

	under natural farming	4. Remove treatment : I4. 5. In column 7.8 if possible, include reference of manuring. (Action: RS, CNRM, SDAU, SK Nagar)
19.5.3.40	Strip intercropping of groundnut and green gram under dryland condition	**Approved with following suggestions:** 1. Mention name of crops in title 2. Write only "Large plot technique" in experimental design 3. Write RDF in manuring and fertilizers' column 4. Write full name of LER in observations to be recorded (Action: RS, CNRM, SDAU, SK Nagar)
19.5.3.41	Feasibility of medicinal and fruit crops using farm pond water through drip irrigation	**Approved with following suggestions:** 1. Replace word "harvested water" with "farm pond water" in title 2. Give details of drip irrigation system 3. Mention approach of water to be applied in treatments 4. Write full name of LER in observations to be recorded. (Action: RS, CNRM, SDAU, SK Nagar)
19.5.3.42	Drying kinetics and quality assessment of turmeric by using hybrid solar tunnel dryer	**Approved with following suggestions:** 1. Rhizome size should be similar and specify the thickness of slices. 2. Compare with traditional practices (Action: Principal, CREEE, SDAU, SK Nagar)
19.5.3.43	Evaluation of solar hybrid dryer for tomato slices	**Approved with following suggestions:** 1. Recast title as "Evaluation of solar hybrid dryer for tomato slices" 2. Revise objectives by adding word "Solar hybrid dryer" 3. Add microbial observation and other quality parameters 4. Use 100 micron packaging material for storage (Action: Principal, CREEE, SDAU, SK Nagar)
19.5.3.44	Prioritization of agricultural sub-watersheds in semi-arid region of North Gujarat using RS and GIS	**Approved with following suggestion:** 1. Add compound parameter or multi-criterion decision analysis or any other similar method in methodology (Action: Principal, CREEE, SDAU, SK Nagar)

19.6 ANIMAL SCIENCE (ANIMAL HEALTH, ANIMAL PRODUCTION AND FISHERIES SCIENCE)

DATE: MAY 05, 06 and 08, 2023

Chairman	Dr. N. H. Kelawala, VC, KU
Co- Chairman	Dr. D. B. Patil, DR, KU Dr. B. P. Brahmkshtri, Principal, Vet. College, KU, Himmatnagar
Rapporteurs	Dr. F. P. Savaliya, AAU, Anand Dr. M. M. Islam, KU, Anand Dr. K. A. Sadariya, KU, Anand Dr. B.G. Chudasama, KU, Veraval Dr. G. B. Solanki, JAU
Statistician	Dr. A. N. Khokhar, Assoc. Professor, AAU
Venue	Training Hall, EEI, AAU, Anand
Presentation	Respective Conveners of AAU, JAU, NAU, SDAU and KU

At the onset, Dr. K. N. Wadhwani, Convener of the Animal Science Sub-committee and Research Scientist, LRS, AAU, Anand welcomed Dr. N. H. Kelawala, Hon'ble Vice Chancellor, KU, Gandhinagar and Chairman of the session; Dr. D. B. Patil, Director of Research, KU, Gandhinagar and Dr. B. P. Brahmkshtri, Principal, Vet. College, KU, Himmatnagar, as Co-Chairman, Rapporteurs, Statistician, Deans, University officers, Conveners of sub-committee of the respective Universities and all scientists attending the virtual meeting from various SAUs and KU progression.

Dr. N. K. Kelawala, Hon. Vice Chancellor, Kamdhenu University, Gandhinagar acted as a chairman and welcomed all scientist and learned members. He congratulated the efforts of all the faculty for showing hard work, dedication and undaunted efforts for proposing 10 recommendations for farmer's community and 27 for scientific fraternity. He also complimented the experts for articulating 83 New Technical Programmes and urged for their thorough churning and scrutiny. He highlighted the progression of Kamdhenu University by 30 MoUs are being signed with esteemed institutions across the country and abroad; reimbursement of publication charges to scientist for articles published in journals with NAAS Rating above 5.0. So far, 30 Kamdhenu University researchers were benefitted and the amount paid was Rs. 2.92 Lakh. and during the financial year 2022-23, in total 240 faculties in Veterinary, Dairy and Fisheries were permitted for different trainings/ workshops/ seminars/ conference etc. at State, National & International level through online and offline mode. Out of which, few are bestowed with fellowship, Thesis awards, young scientist and best research awards also.

Dr. N. H. Kelawala, Hon. Vice chancellor, KU, Gandhinagar in his concluding remarks thanked all scientists for their patience, constructive scientific screening and whole hearted participation during this marathon session. He pointed out some general suggestions *viz.*, names of contractual staff should not be inscribed in research projects, prior permission of research from governing bodies/boards, calendar year shall be considered for duration of experiment not academic year. He expressed his joy and satisfaction for thorough, productive and in-depth discussion of research proposals viz., NTPs on LSD, use of non-conventional feeds, PCR based diagnosis of haemoprotozoan

diseases and echocardiography in canines are as per the field requirements and recommended all the esteemed members to disseminate their findings from lab to land, so that ultimate users can be benefitted.

Presentation of recommendations and new technical programmes by Conveners of SAUs & KU

Sr. No.	Name	Designation & University
1	Dr. K. N. Wadhwani	Research Scientist, LRS, Veterinary College, KU, Anand
2	Dr. Sanjay Pradhan	Assistant Professor, Animal Science, NMCA, NAU, Navsari
3	Dr. H. H. Panchasara	Research Scientist, Livestock Research Station, SDAU, SKNagar
4	Dr. P. V. Patel (Animal Health)	Professor & Head, Veterinary Parasitology, College of Veterinary Science & A.H., KU, Anand
5	Dr. P. R. Pandya (Animal Production)	Professor & Head, Animal Nutrition, College of Veterinary Science & A.H., KU, Anand
6	Dr. S. K. Mohapatra (Animal Health)	Assistant Professor & Head, Animal Biotechnology, College of Veterinary Science & A.H., KU, SKNagar
7	Dr. A. K. Srivastava (Animal Production)	Assistant Professor, LPM, College of Veterinary Science & A.H., KU, SKNagar
8	Dr. M. D. Patel (Animal Health)	Associate Professor, Veterinary Medicine, College of Veterinary Science & A.H., KU, Navsari
9	Dr. Rana Ranjeet Singh (Animal Production)	Associate Professor, Livestock Production Management, College of Veterinary Science & A.H., KU, Navsari
10	Dr. B. B. Javia (Animal Health)	Asso. Professor, Veterinary Microbiology, College of Veterinary Science & A.H., KU, Junagadh
11	Dr. G. P. Sabapara (Animal Production)	Asso. Professor, Livestock Products Technology, College of Veterinary Science & A.H., KU, Junagadh
12	Dr. D. T. Vaghela (Fisheries Science)	Associate Professor, Aquatic Environment Management, College of Fisheries Science, KU, Veraval

Executive Summary of Recommendations and New Technical Programmes of SAUs and KU

Name of University	No. of Recommendations				New Technical Programs	
	Farmers/Entrepreneurs/ Industry		Scientific			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	4	5	3	3	-	-
JAU	-	-	-	-	-	-
NAU	1	-	1	1	-	-
SDAU	1	1	1	1	-	-
KU	**4** (AH-2, AP-2)	**4** (AH-2, AP-2)	**22** (AH-12, AP-08, F-02)	**22** (AH-12, AP-08, F-02)	83	82 (1 dropped)
Total	**10**	**10**	**27**	**27**	**83**	**82**

19.6.1 RECOMMENDATION FOR FARMING COMMUNITY/PET OWNERS

ANAND AGRICULTURAL UNIVERSITY

19.6.1.1	**Performance of preweaned crossbred calves (HF X K) under different milk feeding methods and frequencies (AP/LRS/2021/02)** Progressive dairy farmers are recommended that preweaned crossbred (75% HF x 25% Kankrej) calves from birth to five, six to eight, and nine to twelve weeks of age should be fed 7.0, 5.0 and 3.0 kg milk per day, respectively using nipple bucket twice a day to improve growth rate, feed and nutrient intake and feed conversion ratio significantly without affecting health of crossbred calves. પ્રગતિશીલ પશુપાલકોને ભલામણ કરવામાં આવે છે કે જન્મથી પાંચ, છ થી આઠ અને નવ થી બાર અઠવાડિયાની ઉંમરના સંકર (૭૫% એચ.એફ. x ૨૫% કાંકરેજ) બચ્ચાંઓને અનુક્રમે દૈનિક સાત, પાંચ અને ત્રણ કિ.ગ્રા. દૂધ નીપલ પદ્ધતિથી બે વાર પીવડાવવાથી તેના સ્વાસ્થ્યને અસર કર્યા સિવાય તેના વિકાસ દર, ખોરાક ગ્રહણ તથા ખોરાક રૂપાંતરણ ક્ષમતામાં નોંધપાત્ર વધારો જોવા મળે છે. **Approved with following suggestions:** **1.** "Adversely" word is to be removed **2.** Progressive dairy farmers instead of dairy farmers is to be written (Action: Research Scientist and Head, LRS, VDU, AAU, Anand)
19.6.1.2	**Optimization of concentrate roughage ratios in total mixed ration for preweaned crossbred (HF X Kankrej) calves (AP/LRS/2021/04)** Dairy farmers are recommended to feed a total mixed ration with 65:35 concentrate roughage (Dry matter basis) ratio to milk-fed crossbred

	calves which notably improves daily weight gain, feed conversion ratio and lower cost of feeding for each kilogram live weight gain in comparison to conventional feeding system. પશુપાલકોને ભલામણ કરવામાં આવે છે કે દૂધ પર નભતા સંકર બચ્ચાંઓને દાણ, સુકા અને લીલા ઘાસચારાને અલગ-અલગ ખવડાવવા કરતાં ૬૫ ટકા દાણ અને ૩૫ ટકા ઘાસચારા (સુકા ઘટકોની ગણતરીએ) વાળો કુલ મિશ્રિત આહાર ખવડાવવાથી તેના દૈનિક વૃદ્ધિ દરમાં, ખોરાક રૂપાંતરણ ક્ષમતામાં અને પ્રતિ કિલોગ્રામ વૃદ્ધિદર માટે ખોરાકીય ખર્ચમાં નોંધપાત્ર ઘટાડો થાય છે. **Approved with following suggestions:** **1.**Percentages is to be removed and notable (**નોંધપાત્ર**) word is to be mentioned (Action: Research Scientist and Head, LRS, VDU, AAU, Anand)
19.6.1.3	**Optimization of the age at maturity in Surti buffalo heifers supplemented with bypass protein and bypass fat (No. AP/RBRU/2020/01)** Dairy farmers are recommended to feed bypass protein concentrate to Surti buffalo heifers starting from the age of puberty to significantly improve daily weigh gain, reduce the age at maturity, age at first calving and feed cost per kg weight gain. પશુપાલકોને ભલામણ કરવામાં આવે છે કે સુરતી ભેંસની ઉછરતી પાડીઓને બાયપાસ પ્રોટીન યુક્ત દાણ ખવડાવવાથી દૈનિક વૃદ્ધિદરમાં નોંધપાત્ર વધારો તેમજ જાતીય પુખ્તતાની ઉમર, પ્રથમ વિયાણની ઉંમર અને પ્રતિ કિલોગ્રામ વૃધ્ધિ દીઠ ખોરાકીય ખર્ચમાં નોંધપાત્ર ઘટાડો થાય છે. **Approved with following suggestions:** 1. 30% protein requirement is to be removed (Action: Research Scientist and Head, RBRU, VDU, AAU, Anand)
19.6.1.4	**Reproductive and productive performance of Surti buffaloes as influenced by feeding of different protein levels around parturition. (AP/RBRU/2021/02)** Feeding of 25 % high protein concentrate than the requirement during 30 days before and 90 days after parturition in Surti buffaloes leads to significantly increase in milk yield and fat %, and reduces the cost of feeding per kg milk production. સુરતી ભેંસોને વિયાણ પહેલા ૩૦ દિવસ અને વિયાણ બાદ ૯૦ દિવસ સુધી પ્રોટીનની જરૂરિયાતના ૨૫ ટકા જેટલું વધારે પ્રોટીન યુકત દાણ

	આપવાથી દૂધ અને ફેટ ઉત્પાદનમાં નોધપાત્ર વધારો થાય છે જેને લીધે પ્રતિ કિલો દૂધ ઉત્પાદન માટે થતા ખોરાકીય ખર્ચમાં નોંધપાત્ર ઘટાડો થાય છે. **Approved** (Action: Research Scientist and Head, RBRU, VDU, AAU, Anand)
19.6.1.5	**Optimization of dietary protein and energy level of Ankaleshwar breed of poultry (AP/Poultry/2021/01)** **Recommendation for farming community (Poultry feed manufacturers)-5:** Poultry feed manufacturers are recommended to prepare chick mash (0-8 weeks) with 19 % CP and 2800 Kcal/kg ME and Grower mash (9-16 weeks) with 15 % CP and 2500 Kcal/kg ME for poultry farmers rearing "Ankaleshwar" breed of chicken for meat purpose to get highest Return Over Feed Cost at 16 weeks of age. **પશુપાલકો માટે ભલામણ (પોલ્ટ્રી ફીડ મેન્યુફેક્ચરર્સ) :** "અંક્લેશ્વર" જાતના મરઘાંને માંસ માટે ઉછેરતા મરઘાંપાલકોને ૧૬ અઠવાડીયાની ઉંમરે ખોરાક ખર્ચ પર મહત્તમ વળતર (રીટર્ન ઓવર ફીડ કોસ્ટ) મળે તે હેતુસર પોલ્ટ્રી ફીડ મેન્યુફેકરર્સ ને ૧૯% ક્રુડ પ્રોટીન (CP) અને ૨૮૦૦ કીલો કેલેરી/કી.ગ્રા. મેટાબોલાઇજેબલ એનર્જી (ME) વાળું ચીકમેશ (૦-૮ અઠવાડીયા) તથા ૧૫% ક્રુડ પ્રોટીન (CP) અને ૨૫૦૦ કીલો કેલેરી/કી.ગ્રા. મેટાબોલાઇજેબલ એનર્જી (ME) વાળું ગ્રોવરમેશ (૯-૧૬ અઠવાડીયા) બનાવવા ભલામણ કરવામાં આવે છે. **Approved** (Action: Principal Scientist and Head, PRS, VDU, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY-NIL

NAVSARI AGRICULTURAL UNIVERSITY

19.6.1.6	**Effect of boron supplementation through drinking water on performance in commercial broilers** **Dropped** (Action: PI through Head, Dept. of Animal Science, NMCA, NAU)

S.D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.6.1.7	**Effect of Ashwagandha (*Withania somnifera*) on sexual behavior and seminal characteristics in Kankrej (*Bos indicus*) bull** It is recommended to feed Ashwgandha @ 10 g/day for a minimum

	period of 60 days to improve libido and fertility in Kankrej breeding bulls. કાંકરેજ ફળાઉ સાંઢની ઉત્તેજના અને ફળદ્રપુતા વધારવા માટે સાંઢને ઓછામાં ઓછા ૬૦ દિવસ સુધી દૈનિક ૧૦ ગ્રામ શુધ્ધ અશ્વગંધા પાવડર ખવડાવવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestions:** 1. 10 g/day is to be written instead of 10 gram/bull/ day. (Action: Research Scientist and Head, LRS, SDAU, SK Nagar)

KAMDHENU UNIVERSITY, GANDHINAGAR: 04

ANIMAL HEALTH GROUP-02	
College of Veterinary Science & A.H., Anand -01	
19.6.1.1	**Studies on ear mites in cats and its therapeutic management** (NTP-V-AH-AND-19-2022) Persian cats, aging two months and above be subjected to regular preventive medical examination as it is prone for ear mite (*Otodectes cynotis*) infestation. બે મહિના કે તેથી વધુ ઉંમરની પર્શિયન બિલાડીઓના કાનમાં સૂક્ષ્મ પરોપજીવી જીવાતની (ઓટોડેકટેસ) હાજરી હોવાની શકયતા વધુ જણાતી હોઇ કાનની નિયમિત તબીબી તપાસ કરાવવી હિતાવહ છે. **The recommendation is approved with following suggestions:** **1.** Text should be kept similar in English and Gujarati. **2.** "otoscopic" word is to be remove (Action: PI, Vet. Clinical Complex, Vet. College, Anand)
College of Veterinary Science & A.H., Navsari -01	
19.6.1.2	**To study electrocardiographic and echocardiograhic features of cardiac diseases in dogs of south Gujarat (VCC-01/2021)** Dog owners are advised to visit referral hospital for electrocardiography (ECG) and echocardiography for confirmatory diagnosis of cardiac diseases in dogs aged above 6 years specifically males with indicative signs of exercise intolerance, dyspnea, coughing, progressive inappetence and weakness. છ વર્ષથી મોટી ઉંમરના શ્વાનોમાં, ખાસ કરીને નર શ્વાનમાં કસરત દરમ્યાન હાંફ ચડવો, અકારણ શ્વાસ ફૂલવો, ખાંસી, ખોરાકમાં વધતી જતી અરુચિ અને શારીરિક કમજોરી જેવા લક્ષણો જણાય તો તેને હૃદય રોગની શક્યતા રહેલી હોવાથી તેના સચોટ નિદાન માટે ઈલેકટ્રોકાર્ડીઓગ્રામ **(ECG)** અને ઇકોકાર્ડીઓગ્રાફી **(Echocardiography)** રેફરલ હોસ્પિટલ ખાતે કરાવવાની શ્વાન પાલકોને ભલામણ કરવામાં આવે છે. **Suggestions: Approved** (Action: PI, Vet. Clinical Complex, Vet. College, Navsari)

ANIMAL PRODUCTION GROUP-02	
College of Veterinary Science & A.H., Anand-02	
19.6.1.3	**Development of environment friendly feeding regimes for dairy cattle to mitigate methane emission and enhance productivity** a) Livestock owners are recommended that feeding Total Mixed Ration (TMR) with 40% Moth bean straw and 60% concentrate mixture instead of 40% wheat straw based Total Mixed Ration to lactating crossbred cows significantly increases milk production and daily income from the sale of milk. b) Livestock owners are recommended that feeding Total Mixed Ration with 8% sea weed to lactating crossbred cows has no adverse effect on performance of animals. a) પશુપાલકોને ભલામણ છે કે દૂધાળ સંકર ગાયોને ૪૦% ઘઉં કુંવળને બદલે ૪૦% મઠ ગોતર અને ૬૦% દાણ લઈને બનાવેલ ફૂલ મિશ્રિત આહાર આપવાથી તેના દૂધ ઉત્પાદનમાં તેમજ દૈનિક દૂધની આવકમાં નોંધપાત્ર વધારો જોવા મળે છે. b) પશુપાલકોને ભલામણ છે કે દૂધાળ સંકર ગાયોને ૮ % દરિયાઇ વનસ્પતિ લઈને બનાવેલ ફુલ મિશ્રિત આહાર આપવાથી તેની ઉત્પાદન ક્ષમતા ઉપર કોઇ આડ અસર જોવા મળતી નથી. **Suggestions: Approved** (Action: PI & Prof & Head, Dept of. Animal Nutrition, Vet. College, Anand)
19.6.1.4	**Effects of varying levels of dietary energy and crude protein on juvenile growth performance and economics of rearing "Ankaleshwar" chicken** Poultry farmers rearing Ankaleshwar breed of chicken are recommended to offer the chick mash and grower mash as per BIS, 2007 layer feeding standards during 0-8 and 9-12 weeks of age, respectively, to get maximum Return Over Feed Cost. "અંકલેશ્વર" જાતના મરઘાં ઉછેરતા મરઘાંપાલકોને ૧૨ અઠવાડિયાની ઉંમરે ખોરાક ખર્ચ પર મહત્તમ વળતર (રીટર્ન ઓવર ફીડ કોસ્ટ) મેળવવા માટે ભારતીય માનક સંસ્થા-૨૦૦૭ (BIS-2007) મુજબનું લેયર ફીડીંગ સ્ટાન્ડર્ડવાળું ચીકમેશ તથા ગ્રોવરમેશ અનુક્રમે ૦-૮ તથા ૯-૧૨ અઠવાડિયા સુધી ખવડાવવા ભલામણ કરવામાં આવે છે. **Suggestions: Approved** (Action: PI & ARS, PRS, Vet. College, Anand)

19.6.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.6.2.1	**Study on Comparative Efficiency of Different Estrus/Ovulatory Synchronization Protocols in Surti Goats** (AP/PSK, RamnaMuvada/2021/01) Surti does were successfully synchronized for estrus with cent per cent efficacy using double $PGF_2\alpha$ injection, progesterone releasing vaginal sponge and ovsynch protocols. Using double $PGF_2\alpha$ injection (Cloprostenol Sodium @ 125 µg/doe) protocol, 80 and 100 per cent pregnancy rates were achieved in the first cycle (synchronized estrus) and an overall of three cycles, respectively, in Surti does. Hence, double $PGF_2\alpha$ injection-based synchronization protocol is recommended for better fertility in Surti does. **Approved with following suggestions:** 1. Dose rate of $PGF_2\alpha$ injection is to be mentioned 2. Progesterone releasing vaginal sponge instead of vaginal sponge is to be mentioned (Action: Research Scientist and Head, PSK, VDU, AAU, Anand)
19.6.2.2	**Accuracy of Three Different Techniques for Early Pregnancy Diagnosis in Surti goats (**AP/PSK, RamnaMuvada/2021/02) B-mode trans-abdominal ultrasonography is recommended as a reliable, safe, accurate, and non-invasive method for viability of embryo at day 35 post-breeding with an accuracy of 93.33% and estimation of pregnancy associated glycoprotein on day 26 is recommended with an accuracy of 100 % for pregnancy diagnosis in Surti does. **Approved with following suggestions:** 1. No. of Surti does are less or more is to be removed (Action: Research Scientist and Head, PSK, VDU, AAU, Anand)
19.6.2.3	**Optimization of dietary protein and energy level of Ankaleshwar breed of poultry** (AP/Poultry/2021/01) Ankaleshwar breed of chicken reared for egg purpose fed chick mash (0-8 weeks) with 19 % CP & 2700 Kcal/kg ME; grower mash (9-16 weeks) with 15 % CP & 2400 Kcal/kg ME; layer mash-I (17-40 weeks) with 17 % CP & 2500 Kcal/kg ME and layer mash-II (41-64 weeks) with 15 % CP & 2300 Kcal/kg ME produced the highest egg number (168.08) with the highest Return Over Feed Cost (Rs.519.53) up to 64 weeks of age and highest fertility (96.05 %) as well as hatchability on the basis of total egg set (71.05 %) as compared to birds fed with higher dietary levels of CP and ME during various stages of age. **Approved** (Action: Principal Scientist and Head, PRS, VDU, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY-NIL

NAVSARI AGRICULTURAL UNIVERSITY

19.6.2.4	**Effect of boron supplementation through drinking water on performance in commercial broilers**
	Supplementation of boron @ 50 ppm (Boric acid with 17.48 % elemental boron) through drinking water improves the body weight (4.5%), feed intake (3.17 %) and feed conversion ratio (1.6 %), whereas, 100 ppm of boron supplementation affects the performance indices in commercial broiler. **Approved with following suggestions:** 1.@ 50 ppm is to be written instead of at 50 ppm. (Action: PI through Head, Dept. of Animal Science, NMCA, NAU)

S.D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.6.2.5	**Effect of Ashwagandha (*Withania somnifera*) on sexual behavior and seminal characteristics in Kankrej (*Bos indicus*) bull** Feeding of Ashwgandha @ 10 g/day along with basal diet for a period of 60 days (to complete a spermatogenic cycle) improved libido, mass activity, initial motility, post thaw motility, live sperm percentage and reduced reaction time, total time to donate semen as well as abnormal sperm in the ejaculate and thereby improved overall fertility in Kankrej breeding bulls. **Approved with following suggestions:** 1. 10 g/day is to be written instead of 10 gram/bull/ day. (Action: Research Scientist and Head, LRS, SDAU, SK Nagar)

KAMDHENU UNIVERSITY, GANDHINAGAR:

19.6.2 RECOMMENDATIONS FOR SCIETIFIC COMMUNITY-22	
ANIMAL HEALTH GROUP-12	
19.6.2.1	**To evaluate immunomodulatory activity of cinnamon oil (*Cinnamomum zeylanicum*) in broiler** (Approved NTP-V-AH-And-1-2022) Cinnamon oil (*Cinnamomum zeylanicum*) supplementation augments cell mediated and humoral immune response, hence recommended to use cinnamon oil as an immunostimulant at dose rate of 400 mg/kg feed as dietary supplement in broiler. **Approved** (Action: PI, Dept. of Vet. Pharmacology and Toxicology, Vet. College, Anand)
19.6.2.2	**To evaluate growth promoting effects of clove oil (*Syzygium aromaticum*) in broiler** (Approved NTP-V-AH-And-2-2022) Supplementation of clove oil *(Syzygium aromaticum)* in feed improves body weight gain and feed conversion ratio, hence recommended to use clove oil at dose rate of 400 mg/kg feed as growth promoter in broiler.

	Approved with following Suggestions: **1.** Scientific name of clove oil is to be written in recommendation text (Action: PI, Dept. of Vet. Pharmacology and Toxicology, Vet. College, Anand)
19.6.2.3	**Applicability of Conventional, CASA and Flow Cytometry Based *In Vitro* Sperm Function Assays in Predicting Field Fertility of Cryopreserved Bovine Semen** (Approved NTP-V-AH-And-13-2022) To predict fertility in Mehsana and Kankrej breed bulls, post thaw sperm function assays measured using microscopic, CASA, and flow cytometric methods generated following two prediction models. Mehsana bulls: **CR** = [84.293 + (0.617 × Acrosome intact %) - (1.827 ×Abnormal sperm % - (0.246 ×Mito+) - (0.476 × Slow motile sperm %) - (0.678 × VSL)] Kankrej bulls: **CR** = [40.189 + (0.112 × post-thaw motility) - (1.886 ×Abnormal sperm) + (0.262 HOS +ve)] **Approved with following Suggestions:** **1.** Word "bull" is to be incorporated in recommendation text (Action: PI, Dept. of Vet. Gynaecology & Obstetrics, Vet. College, Anand)
19.6.2.4	**Surgical management of canine mammary neoplasia along with adjuvant Doxorubicin chemotherapy** (Approved NTP-V-AH-And-16-2022) In canine malignant mammary tumour, administration of doxorubicin HCl @ 10 mg/m^2 body surface area intravenously on 7th and 14th postoperative days, reduces reoccurrence and increases survival time. **Approved with following Suggestions:** **1.** "Administration of" instead of "use of" **2.** (BSA) is to be removed (Action: PI, Dept. of Vet. Surgery & Radiology, Vet. College, Anand)
College of Veterinary Science & AH, KU, SKNagar-02	
19.6.2.5	**Surveillance of COVID-19 in non-human host** During recent COVID-19 pandemic, SARS - CoV-2 antigen and antibodies were prevalent at the rate of 23 and 14 %, respectively in dogs. **Approved** (Action: PI, Dept. of Vet. Microbiology, Vet. College, S K Nagar)
19.6.2.6	**To study the efficacy of herbal preparations of *Ficus religiosa*, *Punica granatum* and *Aloe vera* in canine skin disorders** *In vitro* evaluation of acetone extract of fruit peel of *Punica granatum* (Pomegranate) showed higher antimicrobial activity at concentration of 0.5 mg/ml in comparison to *Ficus religiosa* (Peepal) and *Aloe vera* (Aloe vera)

against *Staphylococcus aureus* (ATCC-29213) and Methicillin-resistant *Staphylococcus aureus* (MRSA).

Approved

(Action: PI, Dept. of Vet. Medicine, Vet. College, S K Nagar)

College of Veterinary Science & AH, KU, Navsari-05

19.6.2.7 **Postnatal gross anatomical and histomorphological studies on the heart of goat (*Capra hircus*)** (VAN-1/2021)

The mean values of length, width, circumference at base of the goat heart increased significantly from birth to 3 years. The length of cranial and caudal borders of the heart as well as length and width of right and left ventricles showed significant increase with age. The mean heart weight and mean volume were 160.17±15.02 g and 162.13±14.53 cc, respectively at adulthood.

Approved

(Action: PI, Dept. of Vet. Anatomy, Vet. College, Navsari)

19.6.2.8 **Study on antibiogram pattern of bacterial organisms associated with pyoderma infection in dogs**

In canine pyoderma, *Staphylococcus* spp. was found as the predominant bacterial agent in 86.48 % cases consisting of *S. pseudintermedius* (35.13%), *S. schleiferi* subspecies *coagulans* (15.62%), *S. aureus* (12.5%), *S. hominis* (9.37%), *S. capitis* (6.25%) and *S. gallinarum* (3.12%). The highest *in vitro* sensitivity was observed against Cefalexin (65.63%), followed by Methicillin (62.50%) and Amoxyclav (53.13%), while higher *in vitro* resistance was noticed against Clindamycin and Cefpodoxime (59.38%, each).

Approved

(Action: PI, Dept. of Vet. Microbiology, Vet. College, Navsari)

19.6.2.9 **Evaluation of *in vitro* antibacterial effect of Linalool combined with Enrofloxacin, Gentamicin and Ceftriaxone** (VPT-1/2020)

Linalool has synergistic antibacterial effect with ceftriaxone, gentamicin and enrofloxacin against following bacteria:

Organisms	MIC values (µg/ml)		
	Linalool + Ceftriaxone	Linalool + Gentamicin	Linalool + Enrofloxacin
Escherichia coli	19.53 + 0.03	625.0 + 0.98	1250.0 + 0.002
Proteus mirabilis	625.0 + 0.002	625.0 + 0.49	625.0 + 0.002
Bacillus subtilis	625.0 + 0.004	312.5 + 1.95	625.0 + 0.02
Staphylococcus aureus	-	-	625.0 + 0.002
Salmonella typhimurium	-	78.13 + 1.95	-

Approved

(Action: PI, Department of Pharmacology & Toxicology, Vet. College,

Navsari)

19.6.2.10 ***In vitro* antibacterial effect of Catechin combined with Enrofloxacin, Gentamicin and Ceftriaxone** (VPT-2/2020)

Catechin has synergistic antibacterial effect with ceftriaxone, gentamicin and enrofloxacin against following bacteria:

Organisms	MIC values (µg/ml)		
	Catechin + Ceftriaxone	Catechin + Gentamicin	Catechin + Enrofloxacin
Escherichia coli	78.13 + 0.03	312.5 + 0.98	78.13 + 0.004
Proteus mirabilis	625.0 + 0.12	1250.0 + 1.95	-
Salmonella typhimurium	-	625.0 + 0.24	1250.0 + 0.03
Staphylococcus aureus	-	78.13 + 0.98	-

Approved

(Action: PI, Department of Pharmacology & Toxicology, Vet. College, Navsari)

19.6.2.11 **To study electrocardiographic and echocardiographic features of cardiac diseases in dogs of south Gujarat** (VCC-01/2021)

Dogs with exercise intolerance, dyspnea and weakness along with pale conjunctival mucous membrane, tachycardia, murmurs and pulse deficit are indicative of cardiac diseases; and in such animals with following echocardiographic parameters, it is suggestive of dilated cardiomyopathy.

Sr. No.	Parameters	Dogs affected with Dilated cardiomyopathy (n=24)	Reference Values
1	LVDd	5.54±0.13	3.22±0.26
2	LVDs	4.62±0.15	2.18±0.21
3	LA	4.12±0.14	2.38±0.07
4	LA/Ao ratio	2.17±0.07	1.08±0.01
5	EPSS	1.60±0.13	0.40±0.02
6	IVSs	0.71±0.04	1.19±0.09
7	LVPWs	0.81±0.05	1.20±0.06
8	EF	34.87±1.96	61.50±1.39
9	FS	17.06±1.13	32.80±1.50

Approved

(Action: PI, Dept. of Vet. Clinical Complex, Vet. College, Navsari)

College of Veterinary Science & AH, KU, Junagadh-01

19.6.2.12 **Standardization and Application of Infrared Thermography in Musculo-skeletal Disorders of Horses and Dogs**

The clinical thermography in horses and dogs is an effective, non-invasive, and safe technique without physical contact with animals for early prediction and diagnosis of acuteness of musculoskeletal disorders. The temperature differences in various musculoskeletal disorders were observed

as follows:

Symptoms or origin of disease in dogs	Temperature difference °C Minimum to Maximum	Symptoms or origin of disease in horses	Temperature difference °C Minimum to Maximum
Fracture of long bone	32.2 to 38.8	Laminitis	30.3 to 46.0
Lameness	31.3 to 37.8	Hock joint inflammation	34.0 to 35.5
Strain	35.9 to 37.3	Inflammation of right thigh region	34.7 to 35.3
Hip dysplasia	32.4 to 34.5	Radial nerve paralysis	35.1 to 36.1
		Coxitis	34.5 to 35.6
		Traumatic injury	32.8 to 33.6
		Bowed tendinitis	34.2 to 36.3
		Inflammation of gluteal muscles	33.6 to 34.6
		Right shoulder inflammation	34.8 to 35.3

Approved with following Suggestions:

1. Word "The clinical" is to be used instead of "application of"

(Action: PI, Dept. of Veterinary Surgery and Radiology, Vet. College, Junagadh)

ANIMAL PRODUCTION GROUP-08

College of Veterinary Science & AH, KU, Anand-05

19.6.2.13 **Growth performance of post weaned Kankrej calves on direct-fed microbials based ration** [Approved NTP-VAP-AND-06 (2022)]

Supplementation of direct-fed microbials @2% in the Total Mixed Ration of Kankrej calves increases growth rate by 28%, feed efficiency by 27% and rumen TVFA by 54 % and Total Nitrogen concentration by 35% in stall fed animals.

Approved

(Action: PI & ARS, Dept of. Animal Nutrition, Vet. College Anand)

19.6.2.14 **Development of environment friendly feeding regimes for dairy cattle to mitigate methane emission and enhance productivity**

a. Crossbred dairy cows offered Total Mixed Ration (TMR) with 40% Moth bean straw and 60% concentrate mixture emits 14% less methane

	than the cows offered wheat straw based Total Mixed Ration. b. Inclusion of 8% Seaweeds (*Sargassum johnstonii)* in the TMR of crossbred dairy cows emits 15% less methane without any adverse effect. **Approved** (Action: PI & Prof & Head, Dept of. Animal Nutrition, Vet. College, Anand)
19.6.2.15	**SNPs identification in GHR, IGF-I, OCX-32 and GDF9 genes and their association with egg production in Anand Synthetic White Leghorn and Anand Bantamised White Leghorn Chicken** (Sr. No. 18.6.3.61/ NTP-VAP-AND-18 (2022) The SNPs, rs318030570, T21912084G and C21912423A present in OCX-32 gene were significantly ($p<0.05$) associated with EP64 in ABWLH as well as ASWLH chicken. Hence, these three SNPs can be used as marker for selection of egg production in ABWLH and ASWLH chicken. **Approved** (Action: PI, AGB, Vet. College, Anand)
19.6.2.16	**SNPs identification in GHR, IGF-I, OCX-32 and GDF9 genes and their association with egg production in Anand Synthetic White Leghorn and Anand Bantamised White Leghorn Chicken** (Sr. No. 18.6.3.61/ NTP-VAP-AND-18 (2022) The SNP, C13415980T present in GHR gene was significantly ($p<0.05$) associated with EP64 in ABWLH chicken. Hence, this SNP can be used as marker for selection of egg production in ABWLH chicken. **Approved** (Action: PI, AGB, Vet. College Anand)
19.6.2.17	**Growth performance of crossbred heifers on high plane of nutrition** (approved NTP-VAP-AND-8-2022) It is recommended to feed 25% higher crude protein than ICAR, (2013) feeding standard to crossbred heifers (75% HF x 25% K) in total mixed ration to improve 10.34% daily body weight gain (0.736 vs. 0.667 kg) and 12.53% reduction in feed cost per kg gain (283.62±13.84 vs. 324.37±14.01₹) without any adverse effect on the blood haematology (WBCs, RBCs, Haemoglobin) and serum biochemical parameters (glucose, albumin, globulin, blood urea nitrogen), liver function (aspartate aminotransferase, alanine aminotransferase), kidney function (creatinine) and cholesterol profile (total cholesterol, HDL, LDL). **Approved** (Action: PI, LRS, Vet. College Anand)
19.6.2.18	**Relative gene expression of Interferon tau stimulated genes in Jaffarabadi Buffalo (16.2.1.2)** (a) The mean serum IFN- τ concentration estimated through ELISA was 8.6 ± 0.9 pg/ml on the day of AI which significantly ($P<0.01$) increased to 43.5 ± 3.6 pg/ml on 18th day Post AI in pregnant Jaffarabadi buffaloes. (b) Relative gene expression of Interferon Stimulated Genes, viz., OAS 1,

MX 1 and ISG 15 in PBMCs of pregnant Jaffarabadi buffaloes significantly increased (P<0.01) by 3.80, 4.37 and 4.06 folds, respectively on 18th day post AI against the day of AI. Moreover, significant increase (P<0.01) has also been observed on 24th day post AI compared to the day of AI for MX 1 and ISG 15 genes (3.15 and 3.12 folds, respectively).

Approved

(Action: PI, AGB, Vet. College Junagadh)

19.6.2.19 **Genetic variation of Prolactin promotor & receptor genes in Gir Cattle (16.2.1.5)**

The prolactin promoter and prolactin receptor regions from genome of Gir cattle amplified with following primers and digested with EcoRV and XbaI for prolactin promoter and EcoNI for prolactin receptor have been found to be monomorphic.

No	Name	Sequence	Amplicon Length
1	Prolactin Promoter Forward	5'-GAAAGTCATCAGCAACTTGG - 3'	262
	Prolactin Promoter Reverse	5'-CACACACACATACACACAC- 3'	
2	Prolactin Receptor Forward	5'-AACTGTATTGTGACTTGCCC - 3'	184
	Prolactin Receptor Reverse	5'-ATTGCCCTCTGACACTTCC - 3'	

Approved

(Action: PI, AGB, Vet. College Junagadh)

19.6.2.20 **Study of growth and lactation performance traits of Gir cattle and Jaffarabadi buffalo at B.M.F., JAU, Amreli** (approved in 15th AGRESCO-2019: Sr.: 15.2.3.1)

Over-all weekly peak yield is attained in 9.57 (61.99 ± 2.35 lit/week) and 13.00 (66.69 ± 3.70 lit/week) weeks in Gir cows and Jaffarabadi buffaloes, respectively. Over-all persistency, in terms of weekly milk yield is estimated to be 93.83±1.25% (rate of decline 6.17 % per week) in Gir cows and 96.08±1.34% (rate of decline 3.92 % per week) in Jaffarabadi buffaloes. Monthly peak production is attained in 2.77 (245.51 ± 9.69 lit/month) and 3.39 (269.42 ± 14.80 lit/month) months of lactation in Gir cows and Jaffarabadi buffaloes, respectively.

Approved

(Action: PI, Bull Mother Farm, KU, Amreli)

FISHERIES SCIENCE GROUP-02

College of Fisheries Science, Navsari-01

19.6.2.21 **Target animal bio-safety evaluation of Florfenicol (FFC) in feed administration to *Cirrhinus mrigala* advance fingerlings**

The use of Florfenicol (FFC) at 10mg/kg of fish biomass as feed

additive for a period of 10 days is safe for advance fingerlings of mrigal.

Recommendation as per CIBRC format

Year	Species	Condition	Antibiotic name	Doses			Withdrawal period (Days)
				Quantity of Antibiotic	Duration of feeding	Quantity of Binder	
2022	*Cirrhinus mrigala*	Bacterial infections	Florfenicol	10 mg/kg of fish biomass	10 days	10-15 ml/ kg feed	-

Approved

(Action: PI and Ass. Professor, Dept. of Aquaculture, College of Fisheries Science, KU, Navsari)

Fisheries Research Station, KU, Sikka-01

19.6.2.22 **Effect of pH and temperature on the growth and survival of *Nerita* spp.**

It is observed that temperature (25^0C and 30^0C) does not exhibit any significant difference on survival of *Nerita spp*. While, pH exhibited significant effect on the survival, pH 8.1 shows highest survival (96.5%) compared to 7.8(89.83%) and 8.4(94.17%); while survival reduce significantly over time. Duration also exhibits significant effect on growth (Shell length, operculum width and weight), as shell length and operculum width and weight increase with time. However, pH and temperature does not have any significant effect on shell length, operculum width and weight.

Approved

(Action: PI & Asst. Prof. FRS, KU, Sikka)

19.6.3 NEW TECHNICAL PROGRAMMES

AAU, JAU, NAU, SDAU-Nil

KAMDHENU UNIVERSITY, GANDHINAGAR-83

ANIMAL HEALTH GROUP-47		
College of Veterinary Science & AH, KU, Anand-16		
Sr. No.	**Title**	**Suggestion/s and Action**
19.6.3.1	Assessment of blood cells' Immunocompetence of Surti goats bearing single and twin foetus during the peripartum period	**Approved** (Action: PI, Dept. of Veterinary Physiology & Biochemistry, Vet. College, Anand)

19.6.3.2	Whole genome sequencing of *Salmonella* Enteritidis isolates for analysis of virulence associated genes and antimicrobial resistance genes	**Approved** (Action: PI, Dept. of Veterinary Biotechnology, Vet. College Anand)
19.6.3.3	Exploring genomic diversity using whole genome sequencing and bioinformatic analysis in *canine parvovirus- 2* from diarrheic dogs	**Approved** (Action: PI, Dept. of Veterinary Biotechnology, Vet. College, Anand)
19.6.3.4	Decoding genetic potential of a novel camel rumen isolate *Clostridium spp*. through whole genome sequencing and bioinformatic analysis	**Approved** (Action: PI, Dept. of Veterinary Biotechnology, *Vet. College, Anand)*
19.6.3.5	Molecular detection of Lumpy skin disease virus in the cattle	**Approved with following Suggestion:** 1. Word "Molecular detection" is to be used instead of "Surveillance" (Action: PI, Dept. of Veterinary Microbiology, Vet. College, Anand)
19.6.3.6	Isolation and genotyping of *Avian orthoavulavirus 1* using next generation sequencing	**Approved** (Action: PI, Dept. of Veterinary Microbiology, Vet. College Anand)
19.6.3.7	Isolation, identification, and characterization of multiple drug resistant organisms from human, animal, and environment interphase	**Approved** (Action: PI, Dept. of Veterinary Public Health & Epidemiology, Vet. College, Anand)
19.6.3.8	Studying the role of essential oil nano emulsions in shelf-life extension of raw market meat	**Approved** (Action: PI, Dept. of Veterinary Public Health & Epidemiology, Vet. College Anand)
19.6.3.9	To evaluate growth promoting effect of cinnamon oil *(Cinnamomum zeylanicum)* in broiler	**Approved** (Action: PI & Prof & Head, Dept. of Pharmacology and Toxicology, Vet. College Anand)
19.6.3.10	Determination of *in vitro* antibacterial activity and minimum inhibitory concentration of thyme oil (*Thymus vulgaris*)	**Approved** (Action: PI, Dept. of Pharmacology and Toxicology, Vet. College Anand)

19.6.3.11	Early Pregnancy in Buffaloes with Reference to Luteal Blood Flow Area and Biomarkers	**Approved** (Action: PI & Prof & Head, Dept. of Vet. Gynaecology & Obstetrics, Vet. College, Anand)
19.6.3.12	Evaluation of the Cryoprotective Effect of Epigallocatechin-3-gallate (EGCG) Supplementation in TYFG Extender for Buffalo Bull Semen	**Approved** (Action: PI, Dept. of Vet. Gynaecology & Obstetrics, Vet. College, Anand)
19.6.3.13	Standardization of cardiac Indices using echocardiography and thoracic radiography in dogs	**Approved** (Action: PI & Prof & Head, Dept. of Veterinary Surgery and Radiology, Vet. College, Anand)
19.6.3.14	Clinical Studies on Incidence, Diagnosis and Management of Neoplasm in Canine	**Approved** (Action: PI & Prof & Head, Dept. of Veterinary Surgery and Radiology, Vet. College, Anand)
19.6.3.15	Comparative studies on Propofol, Ketofol, and Zolefol as induction agents in Atropine-Xylazine-Butorphanol Premedicated with Isoflurane as maintenance anaesthetic agent in dogs	**Approved** (Action: PI & Prof & Head, Dept. of Veterinary Surgery and Radiology, Vet. College, Anand)
19.6.3.16	Clinical Studies on Prostatic affections in dogs	**Approved with following Suggestions:** 1. SOP for treatment plan is to be mentioned. 2. Mention the name of antibiotic to be used for the treatment. (Action: PI, Dept. of VCC, Vet. College, Anand)
College of Veterinary Science & AH, KU, SKNagar-13		
19.6.3.17	Establishment and characterization of novel bovine cell lines	**Approved** (Action: PI, Dept. of Animal Biotechnology, Vet. College, SKNagar)
19.6.3.18	Male calves disposal pattern and associated problems in livestock farming	**Approved** (Action: PI & Prof & Head, Dept. of Vet. Extension Education, Vet. College, SKNagar)
19.6.3.19	Methicillin resistance in coagulase positive and coagulase negative staphylococci from skin affections of cattle and dogs	**Approved** (Action: PI, Dept. of Veterinary

		Microbiology, Vet. College, SKNagar)
19.6.3.20	Molecular identification of *Campylobacter fetus* from cattle, sheep, and goat	**Approved** (Action: PI, Dept. of Veterinary Microbiology, Vet. College, SKNagar)
19.6.3.21	To study the co-infection of Canine Coronavirus (CoCV), Canine Astrovirus (CaAstV), Canine Parvovirus (CPV) and SARS-CoV-2 in dogs	**Approved** (Action: PI, Dept. of Veterinary Micro. Vet. College, SKNagar)
19.6.3.22	Metformin toxicity on the intestine and gills of adult zebrafish (*Danio rerio*)	**Approved** (Action: PI, Dept. of Veterinary Pathology, Vet. College, SKNagar)
19.6.3.23	Patho-molecular investigation of abortion in cattle and buffalo	**Approved** (Action: PI, Dept. of Veterinary Pathology, Vet. College, SKNagar)
19.6.3.24	Etiopathological investigation of equine encephalitis in Gujarat	**Approved** (Action: PI, Dept. of Veterinary Pathology, Vet. College, SKNagar)
19.6.3.25	Production of polyclonal antisera against Goatpox virus	**Approved with following Suggestions:** 1. Number of rabbits may be increased from only 2, if feasible. (Action: PI, Dept. of Veterinary Pathology, RADIC, Vet. College, SKNagar)
19.6.3.26	Prevalence of *Anaplasma* spp. infection in bovine	**Not Approved with following Suggestions:** 1. Dropped (Action: PI & Prof & Head, Dept. of Parasitology, Vet. College, SKNagar)
19.6.3.27	Integration of PK – PD relationship of danofloxacin in poultry	**Approved** (Action: PI, PAH, Dept. of Veterinary Pharmacology and Toxicology, Vet. College, SKNagar)

19.6.3.28	Seasonal influence on Anti Mullarian Hormone (AMH) in equine during different reproductive status	**Approved with following Suggestions:** 1. Year of completion will be December 2023. (Action: PI, Dept. of Gynaecology, Vet. College, SKNagar)
19.6.3.29	Clinical efficacy of nebulization therapy in caprine pneumonia	**Approved** (Action: PI, Dept. of Medicine, Vet. College, SKNagar)
College of Veterinary Science & AH, KU, Navsari-08		
19.6.3.30	Gross and Histomorphological studies on the salivary glands of Surti Goat	**Approved** (Action: PI, Dept. of Veterinary Anatomy, Vet. College, Navsari)
19.6.3.31	Effect of rumen protected niacin supplementation on physio-biochemical and milk production parameters in peri-partum Surti Buffaloes	**Approved** (Action: PI, Dept. of Veterinary Physiology and Biochemistry, Vet. College, Navsari)
19.6.3.32	Development of a polymerase spiral reaction assay for rapid detection of Canine Monocytic Ehrlichiosis in Dogs	**Approved with following Suggestions:** 1. PSR and CME is to be removed from objectives. (Action: PI, Dept. of Veterinary Biotechnology, Vet. College, Navsari)
19.6.3.33	Detection of methicillin resistant *Staphylococcus pseudintermedius* (MRSP) in the dogs presented with pyoderma/ otitis externa/ urinary tract infection	**Approved** (Action: PI, Dept. of Veterinary Microbiology, Vet. College, Navsari)
19.6.3.34	Clinical evaluation on ketamine-midazolam-butorphanol and tiletamine-zolazepam-butorphanol combination as induction and isoflurane as maintenance anaesthetic agents in cats	**Approved** (Action: PI, Dept. of Veterinary Surgery & Radiology, Vet. College, Navsari)
19.6.3.35	Incidence, diagnosis, and management of neoplasms in dogs	**Approved** (Action: PI, Dept. of Veterinary Surgery & Radiology, Vet. College, Navsari)
19.6.3.36	Determination of acute and chronic renal diseases using ultrasonographic evaluation of renal cortical thickness to aorta diameter ratio in dogs	**Approved with following Suggestions:** 1. First objective is to be changed as “to measure ratio of RCT to AO” (Action: PI, Dept. of Veterinary Medicine, Vet. College, Navsari)

19.6.3.37	Doppler echocardiographic studies of dilated cardiomyopathy and mitral valve insufficiency in dogs	**Approved** (Action: PI, Dept. of Veterinary Clinical Complex, Vet. College, Navsari)
College of Veterinary Science & AH, KU, Junagadh-07		
19.6.3.38	Evaluation of activity of inflammatory cytokines in bovine mastitis	**Approved** (Action: PI, Dept. of Veterinary Pharmacology & Toxicology, Vet. College, Junagadh)
19.6.3.39	Evaluation of histopathological changes in adult zebrafish following exposure to Bisphenol-A	**Approved** (Action: PI, Dept. of Veterinary Pharmacology & Toxicology, Vet. College, Junagadh)
19.6.3.40	Evaluation of histopathological changes in gills, intestine and kidney of adult zebrafish following exposure to tributyltin	**Approved** (Action: PI, Dept. of Veterinary Pharmacology & Toxicology, Vet. College, Junagadh)
19.6.3.41	Evaluation of *in vitro* antibacterial activity of Chaksu (*Cassia absus* L.) seed powder	**Approved with following Suggestions:** 1. Common name is to be added in title. (Action: PI, Dept. of Pharmacology & Toxicology, Vet. College, Junagadh)
19.6.3.42	Sero-Prevalence of Bovine Tuberculosis in Gujarat State	**Approved** (Action: PI, Dept. of Veterinary Public Health & Epidemiology, Vet. College, Junagadh)
19.6.3.43	Clinical study on anaesthetic regimens of atropine sulphate and glycopyrrolate with butorphanol as preanesthetic and tiletamine - zolazepam as induction and maintenance anaesthesia for elective ovariohysterectomy in dogs	**Approved** (Action: PI, Dept. of Veterinary Clinical Complex, Vet. College, Junagadh)
19.6.3.44	Comparative efficacy of Sericin and Selenium nano-particles as additive on Freezability and fertility of Gir Bull Semen	**Approved** (Action: PI, Assistant Research scientist, Cattle breeding farm, Vet. College, Junagadh)
College of Veterinary Science & AH, KU, Himmatnagar-03		
19.6.3.45	Radiographic Morphometry of Stifle Joint in Goats (*Capra hircus*)	**Approved** (Action: PI, Dept. of Veterinary Anatomy & Histology, Vet. College, Himmatnagar)
19.6.3.46	Patho-epidemiological study of jaagsiekte sheep retrovirus infection in the sheep and goats' population in North Gujarat, India	**Approved** (Action: PI, Dept. of Veterinary Pathology, Vet. College, Himmatnagar)

19.6.3.47	Radiographic Evaluation of Cardiac Morphometry in German Shepherd and Labrador Retrievers Dogs	**Approved** (Action: PI, Dept. of Veterinary Surgery & Radiology, Vet. College, Himmatnagar)
ANIMAL PRODUCTION GROUP-23		
College of Veterinary Science & AH, KU, Anand-18		
19.6.3.48	Effect of supplementing *senna gardneri* on digestibility and methane emission in adult cattle	**Approved** (Action: PI & Prof & Head, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.49	Effect of dietary supplementation of soapnut shell powder on digestibility and rumen fermentation in cattle	**Approved** (Action: PI & Prof & Head, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.50	Effect of direct fed microbial and solid-state fermented biomass on digestibility and rumen fermentation in adult Surti buffaloes	**Approved** (Action: PI & Prof & Head, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.51	Effect feeding lentil straw and DFM on methane mitigation in cross-bred dairy cattle	**Approved with following Suggestions:** 1. DFM is to be added in title (Action: PI & Prof & Head, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.52	Effect of feeding Direct Fed Microbials (DFM) on nutrient digestibility and rumen parameters in adult sheep	**Approved** (Action: PI, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.53	Effect of coconut coir on digestibility, rumen fermentation and rumen microbes in Goat	**Approved** (Action: PI & Prof & Head, Dept. of Animal Nutrition, Vet. College Anand)
19.6.3.54	SNPs identification in MTNR1A, MC4R, VLDLR, PRLR and DRD1 genes and their association with egg production in Anand Synthetic White Leghorn and Anand Bantamised White Leghorn Chicken	**Approved** (Action: PI, Dept. of Animal Genetics & Breeding, Vet. College, Anand)
19.6.3.55	Effect of flushing ration on productive and reproductive performance of Surti goats under intensive system of rearing	**Approved with following Suggestions:** 1. Name of Dr. M. M. Trivedi is to be removed 2. Repeat breeder is to be added in observations (Action: PI, Dept. of Livestock Production Management, Vet. College Anand)
19.6.3.56	Standardization and evaluation of chicken cutlets prepared with Versha Dodi/ Jivanti (*Telosmapallida*) flowers	**Approved with following Suggestions:** 1. Name of Dr. M. N.

		Brahmbhatt is to be removed and others is to be justified by percentage of contribution. (Action: PI, Dept. of Livestock Products Technology, Vet. College Anand)
19.6.3.57	Growth performance of crossbred heifers on various combinations of energy and protein in total mixed ration	**Approved** (Action: PI, Dept. of Livestock Research Station, Anand)
19.6.3.58	Performance of post weaned crossbred calves fed roughage chaffed at different lengths under different feeding methods	**Approved with following Suggestions:** 1. "Theoretically" word is to be removed from treatment part (Action: PI & Prof & Head, Dept. of Livestock Research Station, Anand)
19.6.3.59	Performance of heifers rearing under different paddy straw feeding regimes	**Approved with following Suggestions:** 1. Blood profile is to be used instead biochemical profile in objective. (Action: PI & RS & Head, Dept. of Livestock Research Station, Anand)
19.6.3.60	Impact of egg weight on fertility, hatchability, and day-old chick's weight in native chicken of North Gujarat (Proposed as "Aravali")	**Approved** (Action: PI, Dept. of Poultry Research Station, Anand)
19.6.3.61	Study of chemical composition of eggs of Ankaleshwar, Kadaknath, White Leghorn (Anand Bantamized White Leghorn), native chicken of North Gujarat (Proposed as "Aravali") and free-range chicken (field condition)	**Approved with following Suggestions:** 1. Year of completion is to be increased to December, 2024 (Action: PI, Dept. of Poultry Research Station, Anand)
19.6.3.62	Comparative study of haemato-biochemical parameters in Ankaleshwar, Aseel, Kadaknath and native chicken of North Gujarat (Proposed as "Aravali") during summer and winter season	**Approved** (Action: PI, Dept. of Poultry Research Station, Anand)
19.6.3.63	Efficiency of different estrus synchronization protocols in Surti goats	**Approved** (Action: PI, Pashupalan Sanshodhan Kendra, Ramna Muvada)
19.6.3.64	Study on hormonal and biochemical profile for early pregnancy diagnosis in Surti buffaloes	**Approved with following Suggestions:** 1. First objective is to be refined, & second and last objective is to be removed. (Action: PI & RS & Head, Dept.

		of Reproductive Biology Research Unit, Anand)
19.6.3.65	Optimization of age at puberty in weaned Surti buffalo female calves by feeding different levels of protein	**Approved with following Suggestions:** 1. Completion year will be December, 2024. 2. Protein level of concentrate is to be mentioned (Action: PI & RS & Head, Dept. of Reproductive Biology Research Unit, Anand)
College of Veterinary Science & AH, KU, SKNagar-01		
19.6.3.66	Efficacy of Jamun (*Syzygium cumini*) leaves powder as a feed additive for broiler chickens	**Approved** (Action: PI, Dept. of Animal Nutrition, Vet. College, Sardarkrushinagar)
College of Veterinary Science & AH, KU, Navsari-01		
19.6.3.67	Chemical Composition and *In Vitro* estimation of Mushroom Cultivated Agro-industrial By-products	**Approved with following Suggestions:** 1. Word estimation is to be used instead of evaluation in title. 2. Protocol of oxalate estimation is to be mentioned. (Action: PI, Dept. of Animal Nutrition, Vet. College, Navsari)
College of Veterinary Science & AH, KU, Junagadh-03		
19.6.3.68	Effect of parity and stage of lactation on milk somatic cell count in Gir Cow	**Approved with following Suggestions:** 1. Correlation of somatic cell count with type of udder and teat to be studied if feasible. (Action: PI, Dept. of Livestock Production Management, Vet. College, Junagadh)
19.6.3.69	Effect of Supplementing Rumen Protected Niacin (RPN) on Production Performance and Postpartum Fertility in Periparturient Gir Cows	**Approved with following Suggestions:** 1. One more treatment is to be added with 24 g/day, if feasible. (Action: PI & Assistant Research Scientist, CBF, Vet. College, Junagadh)
19.6.3.70	Studies on nutritive value of Super Napier Grass-*Pakchong-I* in growing dry non pregnant Gir cows	**Approved with following Suggestions:** 1. "Bulls" is to be replaced by "dry non pregnant cows". (Action: PI & Assistant Research Scientist, CBF, Vet. College, Junagadh)

FISHERIES SCIENCE GROUP-13		
College of Fisheries Science, KU, Navsari-04		
19.6.3.71	Effect of fish meal and insect (Black soldier fly larval meal) based formulated diets on the growth and survival of fresh water prawn (*Macrobrachium rosenbergii*)	**Approved with following Suggestions:** 1. Varying source and different levels of protein is to be added. 2. Objectives need to be refined. (Action: PI, Dept. of Aquatic Environment Management, College of Fisheries Science, KU, Navsari)
19.6.3.72	Effect of fish meal replacement with black soldier fly larvae meal based formulated diets on growth and survival of *Oreochromis niloticus* fingerlings	**Approved with following Suggestions:** 1. Objectives need to be refined. (Action: PI, Dept. of Aquaculture, College of Fisheries Science, KU, Navsari)
19.6.3.73	The growth and proximate composition of black soldier fly larvae reared on common organic wastes	**Approved with following Suggestions:** 1. Common organic wastes is to be written in objective instead of only waste. (Action: PI, Dept. of Aquaculture, College of Fisheries Science, KU, Navsari)
19.6.3.74	Withdrawal period evaluation of Oxolinic acid (OA) in feed administration for *Cirrhinus mrigala* advance fingerlings	**Approved** (Action: PI, Dept. of Aquaculture, College of Fisheries Science, KU, Navsari)
PGIFER, KU, Rajpar (Nava), Himmatanagar-04		
19.6.3.75	Effect of black soldier fly larvae (BSFL) as a feed ingredient in the formulated diets substituting groundnut oil cake (GNOC) at varying percentages in growth performance of *Labeo rohita*	**Approved** (Action: PI -PGIFER, KU, Rajpur (Nava), Himmatnagar)
19.6.3.76	In silico identification of *Catla catla* growth modulator through molecular docking	**Approved with following Suggestions:** 1. Year of completion should be written as per format (Action: PI -PGIFER, KU, Rajpur (Nava), Himmatnagar)
19.6.3.77	Genotoxicity assessment of selected antiparasitic drugs in Guppy (*Poecilia reticulata*)	**Approved with following Suggestions:** 1. Year of completion should be written as per format (Action: PI -PGIFER, KU, Rajpur (Nava), Himmatnagar)

19.6.3.78	Evaluation of genotoxicity potential of water and sediment collected from Hathmati river at Rajpur site during the different seasons using guppy (*Poecilia reticulata*)	**Approved with following Suggestions:** 1. Year of completion should be written as per format (Action: PI -PGIFER, KU, Rajpur (Nava), Himmatnagar)
Fisheries Research Station, KU, Okha-01		
19.6.3.79	Influence of pre-drying treatments on quality of sun dry ribbon fish (*Lepturacanthus savala*, Cuvier, 1829)	**Approved** (Action: PI-Fisheries Research Station, KU, Okha)
Fisheries Research and Training Centre, KU, Mahuva-03		
19.6.3.80	Analysis of Trace Metals in Important Crustaceans Collected from the sea adjunction to Port of Pipava and Alang Ship breaking yard coast	**Approved with following Suggestions:** 1. "Metals" is to be written instead of "trace metals". (Action: PI-Fisheries Research and Training Center, KU, Mahuva)
19.6.3.81	Qualitative analysis of plankton in freshwater pond of Dhoripat area of Mahuva	**Approved** (Action: PI-Fisheries Research and Training Center, KU, Mahuva)
19.6.3.82	Evaluation of dietary supplementation of different level of *Kappaphycus alvarezii* sap on growth, survival, and immune response in *Metapenaeus kutchensis* juvenile shrimp	**Approved** (Action: PI-Fisheries Research and Training Center, KU, Mahuva)
Inland Fisheries Research Station, KU, Junagadh-01		
19.6.3.83	Study on effects of partial replacement of fishmeal with silkworm (*Bombyx mori*) pupae meal on growth, survival, and disease resistance in *Labeo rohita* fry	**Approved** (Action: PI- Inland Fisheries Research Station, KU, Junagadh)

19.7 DAIRY SCIENCE AND FOOD PROCESSING TECHNOLOGY & BIO ENERGY

April 25-27, 2023

Chairman	Dr. Atanu Jana, Principal, SMC College of Dairy Science, KU, Anand
Co- Chairmen	1. Dr. Samit Dutta, Dean, CoFPTBE, AAU 2. Dr. I. N. Patel, Dean, CoFT, SDAU
Rapporteurs	1. Dr. Bhavesh Joshi, AAU, Anand 2. Dr. Subrota Hati, KU, Anand 3. Dr. Bhavesh Jani, S.K.Nagar 4. Dr. Dev Raj, NAU
Statistician	Dr. V. B. Darji, Professor, AAU
Venue	Conference Hall, NAHEP CAAST, AAU, Anand
Presentation	Respective conveners of AAU, KU, SDAU and NAU

Summary

Name of University	No. of Recommendations				New Technical Programs	
	Farmers/Entrepreneurs/ Industry		Scientific			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	27	26@	03	03	14	14*
KU	-	-	01	01	13	13
SDAU	02	01	-	-	04	04
NAU	02	02	-	-	01	01
Total	**31**	**29**	**04**	**04**	**32**	**32**

Note: Since four (04) New Technical Programs, submitted to DS-FPTBE sub-committee by Kamdhenu University, Gandhinagar, are pertaining to Social Science Group. Hence, these technical programs were referred to Social Science sub-committee of Combined Agresco for further consideration.

***** As per suggestion in plenary session, NTP 19.7.3.3 shifted to **AE-AIT group**

@ As per suggestion in plenary session, recommendation number 19.7.1.1 shifted to AE- AET group **in publication of recommendation booklet**

19.7.1 RECOMMENDATIONS FOR FARMERS/ ENTREPRENEURS / INDUSTRIES

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.7.1.1	**Development of fuzzy logic controller for effective garden irrigation** The garden owners and entrepreneurs interested in automatic garden irrigation are advised to use the program based on fuzzy logic system developed by Anand Agricultural University, Anand. The programme is useful for the scheduling to improve the irrigation efficiency based on technical parameters such as moisture and temperature of soil and relative humidity of environment. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા જમીનમાં રહેલ પાણીનું પ્રમાણ અને જમીનનું તાપમાન તથા વાતાવરણના ભેજ જેવા તકનીકી પરિમાણો પર આધારિત વિકસાવેલ ફઝી

	લોજીક સિસ્ટમ, બગીચામાં સ્વસંચાલિત સિંચાઈ કરવા ઈચ્છતા માલિકો અને ઉદ્યોગસાહસિકોને ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. **The recommendation is approved with following suggestions:** 1. Specify the RH of the environment in the recommendation text. 2. As per suggestion in plenary session, this recommendation shifted to AE-AET group **in publication of recommendation booklet** (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.2	**Study on physical, thermal and storage properties of various biomass briquettes and its utilization in small food industries** Entrepreneurs and small scale food industry owners are advised to adopt the production technology of producing briquettes from sawdust and rice husk developed by Anand Agricultural University, Anand. There is about 24% savings in fuel cost and it is feasible to attain maximum temperature of 1160°C and 965°C within 2 h of combustion respectively when using sawdust and rice husk briquettes respectively. ઉદ્યોગસાહસિકો અને નાના પાયાના ખાદ્ય ઉદ્યોગના માલિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત કરેલ ફોતોરામાંથી બ્રિકેટ્સ બનાવવાની તાંત્રિકતા અપનાવવા ભલામણ કરવામાં આવે છે જેના દ્વારા બળતણ ખર્ચમાં આશરે ૨૪% બચત અને લાકડાનાં વેર અને ચોખાની ફોતરીમાંથી ઉત્પાદન મેળવેલ બ્રિકેટ્સમાંથી મહત્તમ તાપમાન અનુક્રમે ૧૧૬૦°સે અને ૯૬૫°સે બે કલાકની દહન પ્રક્રિયા દરમ્યાન મેળવી શકાય છે. **The recommendation is approved with following suggestions:** 1. Replace Rs. in data with symbol of rupees (₹) before the value in the data. 2. Add comma before 'respectively' in data. 3. Replace data with 'desired bulk density' in place of 'good bulk density'. 4. Data should be in two digits. 5. Replace '24.08%' in recommendation text with about 24 %. 6. Replace ફોતોરામાંથી બ્રિકેટ્સ બનાવવાની તાંત્રિકતા in place of લાકડાના વેર અને ચોખાની ફોતરીમાંથી બ્રિકેટ્સ બનાવવાની તાંત્રિક્તા અપનાવવા ભલામણ and correct text as "બળતણ ખર્ચમાં આશરે ૨૪ ટકા બચત" in the Gujarati text of recommendation. 7. Unit in Rs. should be written uniformly. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.3	**Performance assessment of two stage evaporative cooling system for transport of selected vegetables** The entrepreneurs involved in transportation of tomatoes are advised to use two-stage evaporative cooling system attachment technology developed by Anand Agricultural University, Anand. The developed cooling attachment maintains 19% lower than ambient temperature (36.17ºC) and 87.90% higher humidity with considerable saving in physiological weight loss with 3 days more shelf-life over control. The developed attachment can be disassembled. The vehicle/body manufacturers are advised to incorporate cooling attachment in transport vehicle when such requirement is demanded. ટામેટાંના પરિવહન સાથે સંકળાયેલા સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત બે-તબક્કાની બાષ્પીભવન ઠંડક પ્રણાલીની જોડાણ તાંત્રિકતાનો ઉપયોગ કરવાની સલાહ આપવામાં આવે છે. વિકસાવેલ ઠંડક પ્રણાલી-જોડાણ બહારના તાપમાન (૩૬.૧૭ °સે) કરતા ૧૯% નીચું તાપમાન અને ભેજમાં ૮૭.૯૦% વધારો જાળવી, વજનના ઘટાડામાં નોંધપાત્ર

	બચત સાથે કન્ટ્રોલ કરતા ૩ દિવસ વધારે સંગ્રહ કરી શકાય છે. આ વિકસાવેલ જોડાણને અલગ કરી શકાય છે. જ્યારે આવી જરૂરિયાતની માંગ કરવામાં આવે ત્યારે વાહન/બોડી મેન્યુફેક્ચરરને પરિવહન વાહનમાં કુલિંગ જોડાણ સામેલ કરવાની સલાહ આપવામાં આવે છે. **The recommendation is approved with following suggestions:** 1. Replace data with 'km/h' in place of kmph. 2. Replace data with 'h' in place of hr. 3. Replace recommendation text with "removed" in place of removed/disassemble and delete text when not required. 4. Replace "tomatoes" in place of tomato and delete "fruits" in the recommendation text. 5. Write evaporative cooling in bracket. 6. Difference in Temp. & RH in % should be mentioned in recommendation, mention ambient temperature in the recommendation text. All units for RH and other quantity should be uniform. 7. Replace ઉદ્યોગ સાહસિકો in place of સાહસિકો in the Gujarati text of recommendation. 8. Replace સંગ્રહશક્તિ in place of ટકાઉશક્તિ in the Gujarati text of recommendation. 9. Specify the duration of the study (i.e. months of the season). 10. Mention maximum or average word rather than exact figure when the observations are the average of the experiment duration. 11. Recast English/Gujarati text of recommendations (ઉક્ત સુધારા કરી ગુજરાતી ભલામણ સમજી શકાય તેવી રીતે લખવી તેમજ ભાષાંતર, વ્યાકરણ વગેરેનો ખ્યાલ રાખવો). (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.4	**Development of IoT-based system for storage parameters monitoring using low-cost sensors** Entrepreneurs associated with real time monitoring of respiratory parameters of tomato are recommended to use IoT based system developed by Anand Agricultural University, Anand. In this system, monitoring of respiratory parameters like measuring of temperature, mixed gas concentrations and relative humidity inside the chamber (acrylic) of 1 cubic foot under the ambient condition can be done along with assessing the data in personal computer and the server. ટામેટાંના રેસ્પિરેટરી પરિમાણોનું વાસ્તવિક સમયની સાથે મોનિટરિંગ કરવામાં રસ ધરાવતાં ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ ઇન્ટરનેટ ઓફ થિંગ્સ (આઈ.ઓ.ટી.) આધારિત સીસ્ટમનો ઉપયોગ કરવાની ભલામણ કરવાંમાં આવે છે. આ સીસ્ટમ અંતર્ગત ૧ ઘનફૂટ ચેમ્બર(એક્રેલીક)માં રેસ્પિરેટરી પરિમાણો જેવા કે તાપમાન, ગેસમિશ્રણની સાંદ્રતા અને ભેજનું મોનિટરિંગ સામાન્ય પરિસ્થિતિઓમાં કરી શકાય છે તેમજ અવલોકનોને કમ્પ્યુટર તથા સર્વરમાં મેળવી શકાય છે. **The recommendation is approved with following suggestions:** 1. Delete comma after Anand in the recommendation text. 2. Delete comma after conditions in the recommendation text. 3. Data in presentation and hard copy are mismatched. Correct the data. 4. Delete scientists and in the recommendation text.

	5. Mention the RH of chamber instead of tomatoes in the recommendation text. 6. Write storage in place of ripening in the report. 7. Recast recommendations as: Scientists and Entrepreneurs associated with real time monitoring of respiratory parameters of tomato are recommended to use IoT based system developed by Anand Agricultural University, Anand. In this system, monitoring of respiratory parameters like measuring of temperature, mixed gas concentrations and relative humidity of selected vegetable (tomato), stored inside the chamber (acrylic) of 1 cubic foot under the ambient conditions can be done along with assessing the data in personal computer and the server. 8. Recast text of Gujarati recommendations accordingly. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.5	**Technology for continuous microwave drying of senna leaves** Entrepreneurs and processors interested in the continuous production of dried senna leaves are recommended to use the processing technology developed by Anand Agricultural University, Anand. The continuous microwave heating system exhibits rapid drying as compared to sun, shade and fluidized bed drying systems. The technology involves continuous microwave drying of senna leaves (1.50 kg/h) using two magnetrons at a desired pulsating ratio to less than 7% moisture in 58 minutes. It results in good quality dried senna leaves with retention of about 85% of the inherent sennosides content. સેનાના પાનની સુકવણીમાં રસ ધરાવતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ માઇક્રોવેવ દ્વારા સુકવણીની પદ્ધતિનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. સન, શેડ અને ફ્લુડાઈઝડ બેડ ડ્રાઈંગ કરતા સતત માઇક્રોવેવ ડ્રાઈંગમાં જલ્દી સુકવણી થાય છે. આ પદ્ધતિમાં સેનાના પાનનું ૧.૫૦ કી.ગ્રા./કલાક ના દરે સતત માઇક્રોવેવ ડ્રાઈંગ, નક્કી કરેલ પલ્સેટીંગ રેશીયો પર બે મેગ્નેટ્રોનનો ઉપયોગ કરી ૫૮ મિનીટમાં ૭% થી ઓછા ભેજ સુધી કરી શકાય છે. આ પદ્ધતિના ઉપયોગથી સુકવેલા સેનાના પાનની ગુણવત્તા ઉતમ રહે છે અને તેમાં આશરે ૮૫% સુધી સેનોસાઇડ નામક આવશ્યક તત્વ જળવાઇ રહે છે. **The recommendation is approved with following suggestions:** 1. Delete “Continuous microwave drying takes lesser time compared to other drying systems.” from the recommendation text. In the recommendation text, mention the rapid drying technique. 2. Justify the results showing better retention of sennosides in other techniques used in studies compared to proposed continuous microwave drying. 3. તકનીકી કે તાંત્રિક્તાની જગ્યા એ સુકવણીની પદ્ધતિ શબ્દ વાપરવો. 4. Recast the text of Gujarati recommendation as “સેનાના પાનની સુકવણીમાં રસ ધરાવતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ માઇક્રોવેવ દ્વારા સુકવણીની પદ્ધતિનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ પદ્ધતિના ઉપયોગથી સુકવેલા સેનાના પાનની ગુણવત્તા ઉતમ રહે છે અને તેમાં આશરે ૮૫ ટકા સુધી સેનોસાઇડ નામક આવશ્યક તત્વ જળવાઇ રહે છે”.

	5. Recast English text of recommendation as per Gujarati text. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.6	**Production of premium quality powder with maximum retention of essential oil using cryogenic grinding of dill seed** Entrepreneurs and agro-processing units involved in grinding of dill seeds are advised to use the technology of cryogenic grinding developed by Anand Agricultural University, Anand to obtain superior quality dill seed powder with higher retention of essential oil. Cryogenic grinding of dill seed should be carried out at -60°C temperature, using sieve size of 0.8 mm and keeping feed rate of 6 kg/h for better retention of essential oil. The cryo-ground sample packed in aluminium laminated zip lock pouch and stored at refrigerated (7±1°C) condition retained higher essential oil as compared to storage at ambient temperature (33±2°C). સુવાના પાવડરનું ઉત્પાદન કરતા ઉદ્યોગ સાહસિકો તથા ઉદ્યોગકારોને ઉત્તમ ગુણવત્તાવાળા સુવા પાવડરનું ઉત્પાદન કરવા માટે આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ ક્રાયોજેનિક ગ્રાઇન્ડીંગ તકનીકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. ક્રાયોજેનિક ગ્રાઇન્ડીંગ તકનીકથી દળેલ સુવા પાવડરમાં બાષ્પશીલ તત્વની મહત્તમ માત્રા જળવાઇ રહે છે. સુવા પાવડરમાં મહત્તમ આવશ્યક તૈલીય પદાર્થને જાળવી રાખવા માટે સુવાને -૬૦°સે તાપમાને, ૦.૮ મીમીની ચાળણીનો ઉપયોગ કરી ૬ કિલોગ્રામ પ્રતિ કલાકના ફીડ રેટે દળવાની ભલામણ કરવામાં આવે છે. ક્રાયોજેનિક ગ્રાઇન્ડીંગ તકનીકથી દળેલ સુવા પાવડરને ઠંડી સ્થિતિ (૭±૧°સે)માં એલ્યુમિનિયમ લેમિનેટેડ ઝિપ લોક બેગમાં સંગ્રહ કરવાથી તેમાં સામાન્ય સ્થિતિ (૩૩±૨°સે)માં સંગ્રહની સરખામણીએ બાષ્પશીલ તત્વની વધારે માત્રા જળવાઈ રહે છે. **The recommendation is approved with following suggestions:** 1. Recast the recommendation text as "Cryogenic grinding of dill seed should be carried out at -60°C, sieve size of 0.8 mm and feed rate of 6 kg/h for better retention of essential oil" instead of "For higher retention of essential oil, the cryogenic grinding of dill seed at temperature of -60°C, sieve size of 0.8 mm and feed rate of 6 kg/h is recommended". 2. Replace એસેન્શિયલ ઓઇલ with આવશ્યક તૈલીય પદાર્થ in Gujarati recommendation text. 3. તાંત્રિકતા ની જગ્યા એ ક્રાયોજેનિક ગ્રાઇન્ડિંગ પદ્ધતિ અથવા તકનીક એવો શબ્દ પ્રયોગ કરવો. 4. Correct the data (Table 9, p. 57 of report) for temperature as -80°. 5. Mention ambient temperature in the recommendation text. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.1.7	**Standardization of drying technique for production of dried whole lime** The entrepreneurs and food processors interested in producing dried whole lime are recommended to adopt the drying technology developed by Anand Agricultural University, Anand. Fully matured non-treated fresh whole lime fruits dried using mechanical (tray) dryer at 60°C to below 8% (d.b.) moisture retained higher amount of ascorbic acid (135.31 mg/100 g). The dried whole lime packed in aluminum LDPE bags can be stored for at least 180 days under ambient condition. પરિપક્વ અને તાજા આખા લીંબુની સુકવણી કરવામાં રસ ધરાવતા ઉધોગ સાહસિકો

	અને ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ તકનીકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. મધ્યમ કદમાં અને તાજા આખા લીંબુને ટ્રે-ડ્રાયરમાં ૬૦°સે. ઉપર ૮% થી ઓછો ભેજ રહે ત્યાંસુધી સુકવણી કરવામાં આવે તો તેમાં વધુ માત્રામાં એસ્કોર્બિક એસિડ (૧૩૫.૩૧ મિ.ગ્રા./૧૦૦ ગ્રા.) રહેવા પામે છે. સુકવણી કરેલ આખા લીંબુ અલ્યુમીનમ LDPE બેગમાં ઓછામાં ઓછા ૧૮૦ દિવસ સારી રીતે સાચવી શકાય છે. **The recommendation is approved with following suggestions:** 1. Use Non-treated in place of without treatment in the data. 2. Write "OAA" in data of Table 2. 3. Correct (135.31 mg/100 g) in place of (135.31mg/100g) in the recommendation text (add space before unit). (Action: PI & Head, Dept. of FPT, Co FPTBE, AAU, Anand)
19.7.1.8	**Production technology of ready to eat extruded snack from aonla pomace powder** **The project to be continued and recommended next year.** 1. Presented RSM data is not justified, experiments need to be repeated. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.1.9	**Standardization of drying technology for guava leaves powder** The entrepreneurs and the agro processors interested in the production of guava leaves powder are recommended to use drying technology developed by Anand Agricultural University, Anand. The guava leaves dried using greenhouse dryer produces guava leaves powder having higher content of phenol, flavonoid and possessing greater antioxidant activity as compared to the tray dryer and fluidized bed dryer at 50, 60 and 70°C temperatures. The guava leaves powder packed in aluminum laminated bags can be stored up to 180 days in ambient condition. જામફળીના પાનનો પાવડર બનાવવા માટે રસ ધરાવતા ઉદ્યોગકારો અને એગ્રો પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તકનિકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. ૫૦, ૬૦ અને ૭૦°સે ડીગ્રી તાપમાને ટ્રે ડ્રાયર અને ફ્લૂડાઈઝડ બેડ ડ્રાયરમાં સુકવણી કરેલ પાનનાં પાઉડર કરતાં ગ્રીનહાઉસ ડ્રાયરમાં સુકવણી કરેલ પાનનાં પાઉડરમાં ફીનોલ, ફ્લેવેનોઈડ અને એન્ટીઓક્સિડન્ટ એકટીવીટી વધારે પ્રમાણમાં માલુમ પડેલ છે. આ પાઉડરને એલ્યુમિનિયમ લેમીનેટેડ બેગમાં ૧૮૦ દિવસ સુધી સંગ્રહ કરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Delete "content" from the table in report data. 2. Delete statement "superior quality" in the recommendation text. 3. Delete "dried" in the recommendation text for guava leaves powder. 4. Mention the greenhouse drying in the recommendation text (Specify the method of drying in the recommendation text). 5. The sample size used in the drying experiments is very small (100 g only). Therefore, house has suggested to carry out the experiments with 3 to 5 kg of sample size in the fluidized bed dryer and green house drying and also should report the temperature of green house and RH. The ambient temperature during the experiment should also report. 6. House suggested that in future, this kind of project should be conducted with bigger sample size. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)

19.7.1.10	**Standardization of drying technology for lime leaves powder** The entrepreneurs and agro processors interested in the production of lime leaves powder are recommended to use the drying technology developed by Anand Agricultural University, Anand. The lime leaves dried at 50°C temperature in fluidized bed dryer having higher content of flavanoid and possessing greater antioxidant activity. The lime leaves powder packed in aluminum laminated bags can be stored upto 180 days in ambient condition. લીંબુના પાનનો પાવડર બનાવવા માટે રસ ધરાવતા ઉદ્યોગકારો અને એગ્રો પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તકનિકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. ફ્લૂડાઈઝડ બેડ ડ્રાયરમા ૫૦°સે તાપમાને સુકવણી કરેલ પાનના પાઉડરમાં ફ્લેવેનોઈડ અને એન્ટીઓક્સિડન્ટ એકટીવીટી વધારે પ્રમાણમાં માલુમ પડેલ છે. આ પાઉડરને એલ્યુમિનિયમ લેમીનેટેડ બેગમાં વાતાવરણના તાપમાને ૧૮૦ દિવસ સુધી સંગ્રહ કરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Delete “content’ from the table in report data. 2. Delete statement “superior quality” in the recommendation text. 3. Mention the greenhouse drying in the recommendation text. 4. The sample size used in the drying experiments is very small (100 g only). Therefore, house has suggested to carry out the experiments with 3 to 5 kg of sample size in the fluidized bed dryer and green house drying and also should report the temperature of green house and RH. The ambient temperature during the experiment should also report. 5. House suggested that in future, this kind of project should be conducted with bigger sample size. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.1.11	**Development of production technology for bottle gourd based carbonated beverage** The entrepreneurs interested in the production of bottle gourd based carbonated beverage inclusive of pineapple and lime juices are advised to adopt the processing technology developed by Anand Agricultural University, Anand. The technology involves the formulation of the beverage at 13.92% of bottle gourd juice, 3.68 % of pineapple juice, 4.45 % of lime juice and 77.95% of 20 °Brix sugar syrup followed by thermal processing at 95°C for no hold and carbonation of beverage cooled to 4 ^{o}C at 120 psi. The developed beverage when packed in PET bottles can be stored for up to 90 days under ambient (30±2°C) condition. દુધી આધારીત પાઈનેપલ અને લીબુ રસ મિશ્રિત કાર્બોનેટેડ પીણાનાં ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગકારોને આણંદ કૃષિ વિશ્વવિદ્યાલય, આણંદ ધ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ તાંત્રિકતામાં પીણું બનાવવા માટે ૧૩.૯૨% દુધીનો રસ, ૩.૬૮% પાઈનેપલનો રસ, ૪.૪૫% લીંબુનો રસ અને ૭૭.૯૫% ખાંડની ૨૦ °બ્રીક્ષની ચાસણીને મિશ્રિત કરી ૯૫°સે. તાપમાને (નો હોલ્ડ) સુધી પ્રક્રિયા કરી ૪°સે. તાપમાને ઠારી ૧૨૦ પીએસઆઈ દબાણે કાર્બોનેશન કરી તૈયાર કરવામાં આવે છે. આ રીતે તૈયાર થયેલ પીણાને પેટ બોટલમાં ૯૦ દિવસ સુધી સામાન્ય તાપમાને (૩૦±૨°સે) સંગ્રહી શકાય છે. **The recommendation is approved with following suggestions:**

	1. Replace “shelf life” in objective no. 2 in place of self-life. 2. Mention “acidity in terms of citric acid” in data 3. Correct spelling of ascorbic acid in Table 2 in data given in the report. 4. Correct spelling of “coliform”. 5. Correct the data interpretation for microbial analysis of beverage (delete Table 2). 6. Delete “tender” word from the recommendation text. 7. Mention data in proportion (%). 8. Mention the ^{o}Brix of the syrup used in the beverage. 9. Mention the exact temperature instead of ambient temperature. 10. Mention ambient temp. range and cooling temperature for carbonation. 11. Recast the recommendation text as “It should be cooled to 4°C and carbonated at 120 psi”. 12. Recast the recommendation text as “૯૫°સે. તાપમાને (નો હોલ્ડ), and replace સરકાં in place of “સાચણી”. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.1.12	**Supercritical fluid extraction of essential oil from coriander seed** Entrepreneurs and agro-processing units involved in the production of superior quality of coriander seed essential oil are advised to use the supercritical fluid extraction technology developed by Anand Agricultural University, Anand. The technology involves liquid nitrogen as cryogenic grinding of coriander seeds to sieve size 1.5mm, followed by super critical fluid extraction using carbon dioxide, keeping pressure 300 bar, temperature 42°C and dynamic time of 117 min which yielded 5.75 % coriander seed essential oil. The cryoground coriander seed essential oil had 42.13 mg of linalool per 100 g. ધાણાના ઉત્કૃષ્ટ ગુણવત્તા ધરાવતા આવશ્યક તેલના ઉત્પાદન સાથે સંકળાયેલા ઉદ્યોગ-સાહસિકો અને કૃષિ-પ્રક્રિયા એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ સુપરક્રીટિકલ નિષ્કર્ષણ પદ્ધતિનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિમાં પ્રવાહી નાઇટ્રોજન ક્રાયોજેનિક ગ્રાઇન્ડીંગ પદ્ધતિ દ્વારા ધાણાનો પાવડર (૧.૫ મીમી ચાળણી દ્વારા ચાળી) કરી, કાર્બન ડાયોક્સાઈડ સુપરક્રીટિકલ નિષ્કર્ષણના ઉપયોગ દ્વારા ૩૦૦ બારના દબાણે, ૪૨°સે તાપમાને અને ૧૧૭ મિનટના ડાયનેમિક સમય પર ૫.૭૫% આવશ્યક તેલનું નિષ્કર્ષણ કરી શકાય છે. આ પ્રક્રિયાથી મળેલ ૧૦૦ ગ્રામ આવશ્યક તેલમાં, ૪૨.૧૩ મિલિગ્રામ લિનાલુલ હોય છે. **The recommendation is approved with following suggestions:** 1. Mention liquid N_2 as cryogenic in the recommendation text. 2. Mention “cryoground coriander seed” in the recommendation text. 3. Particle size to be checked and mentioned in the recommendation text. 4. Sphericity is a unitless quantity, accordingly delete unit in the report. (Action: PI & Head, Dept. of FSQA, CoFPTBE, AAU, Anand)
19.7.1.13	**Technology for development of unconventional beetroot leaves powder** The entrepreneurs and food processors interested in the production of beetroot leaves powder are recommended to use the processing technology developed by Anand Agricultural University, Anand. The technology involves blanching of beetroot leaves at 90°C for 90 s and tray dried at 70°C up to 5% moisture. The beetroot leaves powder can be stored up to 120 days at ambient temperature when packed in laminated aluminium pack. The

	optimised beetroot leaves powder is recommended for use in Manchow soup, palak paneer sabji, sweet and salty biscuit and *khakhra* at usage levels of 3.0, 4.0, 5.0 and 7.5%, respectively. બીટરૂટના પાંદડાની સૂકવણી કરવા ઇચ્છતા ઉદ્યોગસાહસિકો અને ખાદ્ય-ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ તાંત્રિકતામાં બીટરૂટના પાંદડાને ૯૦°સે. તાપમાને ૯૦ સેકન્ડ સુધી બ્લાન્ચીંગ કરી ટ્રે ડ્રાયરમાં ૭૦ °સે તાપમાને ૫% ભેજ સુધી સૂકવી, લેમીનેટેડ એલ્યુમિનિયમ પાઉચમાં પેક કરી રૂમ તાપમાને ૧૨૦ દિવસ સુધી સંગ્રહિત કરી શકાય છે. આ બીટરૂટના પાંદડાનો પાઉડર મનચાઉ સૂપ, પાલક પનીર સબ્જી, સ્વીટ એન્ડ સોલ્ટી બિસ્કીટ અને ખાખરામાં અનુક્રમે ૩.૦, ૪.૦, ૫.૦ અને ૭.૫% ના દરથી ઉમેરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Replace “S” with ‘s” the data given in the report and mention abbreviation of second in the recommendation text. 2. Correct spelling of dryer in data. 3. Replace over all with OAA in the data. 4. Mention the sensory score in range of 1 to 10. 5. Use term APC instead of SPC in microbial data. 6. Mention the refrigeration temperature. 7. Mention shelf life in days instead of months. 8. Delete word safe storage 9. Recast the text of recommendation. 10. As it is powder, shelf life should be recommended at ambient temperature. (Action: PI & Principal, PFSHE, AAU, Anand)
19.7.1.14	**Technology for development of unconventional cauliflower leaves powder** The entrepreneurs and food processors interested in the production of cauliflower leaves powder are recommended to use the processing technology developed by Anand Agricultural University, Anand. The technology involves blanching of cauliflower leaves at 100°C for 90 s and tray drying at 60°C up to 5% moisture. The cauliflower leaves powder can be stored up to 120 days at ambient temperature when packed in laminated aluminium pouches. The optimised cauliflower leaves powder is recommended for use in Manchow soup, palak paneer sabji, and *khakhra* at usage levels of 3, 4, and 5%, respectively. ફૂલગોબીના પાંદડાની સૂકવણી કરવા ઇચ્છતા ઉદ્યોગસાહસિકો અને ખાદ્ય-ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ તાંત્રિકતામાં ફૂલગોબીના પાંદડાને ૧૦૦ °સે. તાપમાને ૯૦ સેકન્ડ સુધી બ્લાન્ચીંગ કરી ટ્રે ડ્રાયરમાં ૬૦ °સે તાપમાને ૫% ભેજ સુધી સૂકવી, લેમીનેટેડ એલ્યુમિનિયમ પાઉચમાં પેક કરી, રૂમ તાપમાને ૧૨૦ દિવસ સુધી સંગ્રહિત કરી શકાય છે. આ બીટરૂટના પાંદડાનો પાઉડર મનચાઉ સૂપ, પાલક પનીર સબ્જી અને ખાખરામાં અનુક્રમે ૩, ૪ અને ૫% ના દરથી ઉમેરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Replace “S” with ‘s” the data given in the report and mention abbreviation of second in the recommendation text. 2. Correct spelling of dryer in data. 3. Replace over all with OAA in the data.

	4. Mention the sensory score in range of 1 to 10. 5. Use term APC instead of SPC in microbial data. 6. Mention the refrigeration temperature. 7. Mention shelf life in days instead of months. 8. Delete word safe storage 9. Recast the text of recommendation. 10. As it is powder, shelf life should be recommended at ambient temperature. (Action: PI & Principal, PFSHE, AAU, Anand)
19.7.1.15	**Development of millet based *farali* cake and muffins** Bakery industrialists and entrepreneurs interested in the production of *farali* (useful in fasting) cake and muffins are recommended to use the technology developed by Anand Agricultural University, Anand. Farali cake and muffins can be prepared by complete replacement of *maida* with a blend of *Moraiya* flour and *Rajgira* flour (80:20 w/w). *Farali* cake and muffins had higher levels of protein, ash, fiber, calcium and iron content of 2.18%, 1.04%, 0.41%, 53.76 mg% and 0.75 mg% of product respectively as compared to control cake and muffins. The antioxidant activity of *farali* cake and muffins was higher (79.26%) as compared to control products. *Farali* cake and muffins can be stored up to 8 days at ambient temperature when packed in laminated aluminium pouches. ફરાળી કેક અને મફીન્સના ઉત્પાદનમાં રસ ધરાવતા બેકરી ઉદ્યોગકારો અને ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ ધ્વારા વિકસાવવામાં આવેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ છે. જે મેંદાને બદલે ૮૦% મોરિયાનો લોટ અને ૨૦% રાજગરાના લોટના મિશ્રણ ધ્વારા તૈયાર કરી શકાય છે. સામાન્ય કેક અને મફીન્સ કરતાં ફરાળી કેક અને મફીન્સમાં અનુક્રમે ૨.૧૮%, ૧.૦૪%, ૦.૪૧%, ૫૩.૭૬ મિગ્રા% અને ૦.૭૫ મિગ્રા% વધુ પ્રોટીન, મીનરલ્સ, રેષા, કેલ્સિયમ અને લોહતત્વ મળે છે. ફરાળી કેક અને મફીન્સની એન્ટીઓક્ષીડેંટ એક્ટીવીટી સામાન્ય કેક અને મફીન્સ કરતા ૭૯.૨૬% વધારે મળેલ છે. ફરાળી કેક અને મફીન્સને એલ્યુમીનીયમ લેમીનેટેડ પાઉચમાં પેક કરી રૂમ તાપમાને ૮ દિવસ સુધી સંગ્રહી શકાય છે. **The recommendation is approved with following suggestions:** 1. Correct the spelling of “leavening”. 2. Delete full stop from each of the objective 3. Replace shown be with “had’ in the recommendation text. 4. Mention extent of higher antioxidant activity rather than “higher”. 5. Give space before unit in the recommendation text. 6. Use “complete replacement of maida” in place of replacing maida in the recommendation text. 7. Mention nutrition in percent in the recommendation text. (Action: PI & Principal, PFSHE, AAU, Anand)
19.7.1.16	**Osmotic drying of ultrasonic pretreated sapota** The entrepreneurs and food processors interested in production of dehydrated sapota slices are recommended to adopt the technology developed by Anand Agricultural University, Anand. This technology involves osmotic process (60°Brix, 8 h) of sapota slices (5 mm) followed by drying at 65°C using tray dryer up to 8.5 % (d.b.) moisture content. Dried sapota slices packed in HDPE bag are acceptable up to 150 days at Room temperature.

	ડીહાઇડ્રેટેડ ચીકુની સ્લાઇસના ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગસાહસિકો અને ફૂડ પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ ટેક્નોલોજી અપનાવવાની ભલામણ કરવામાં આવે છે. આ ટેક્નોલોજી મુજબ ચીકુની સ્લાઇસ (૫ મીમી) ને ઓસ્મોટિક પ્રક્રિયા (૬૦° બ્રિક્સ, ૮ કલાક) બાદ ૮.૫ % ભેજ રહે ત્યા સુધી ટ્રે ડ્રાયરમા ૬૫°સે. પર સૂકવણી કરવી. સુકવણી કરેલ ચીકુની સ્લાઇસ ને HDPE બેગમા ઓરડાના તાપમાને રાખવામા આવે તો તે ૧૫૦ દિવસ સુધી સ્વીકાર્ય છે. **The recommendation is approved with following suggestions:** 1. Replace “were further” with “should be” in the recommendation text. 2. Units in the date in the report to be corrected as “g” “min” and “h”. 3. Replace “thick” with “thickness”. 4. Data should be present in two decimal point. 5. Replace “solid gain” with “solids gain”. 6. Spelling of coliform to be corrected. 7. Verify the data of enzymatic browning in the data given in the report. 8. Replace ‘SPC’ with ‘APC’. 9. Mention temperature of osmotic dehydration. 10. Mention ratio of slices and syrup. 11. Mention the Room Temperature in the recommendation text. 12. Use abbreviation of unit in the recommendation text. 13. Correct the 8.5% moisture in place of 8.5 % in the recommendation text. 14. Recast the text of recommendation, Write ચીકુની સ્લાઇસ in Gujarati text of recommendation. Specify variety (Kalipatti). The recommendation text should be in present/simple present tense. (Action: PI & Head, Dept. of FPC, BACA, AAU, Anand)
19.7.1.17	**Comparative appraisal of mozzarella cheese analogues prepared using acid casein, rennet casein and their admixture** The entrepreneurs and cheese analogue manufacturers interested in producing Mozzarella cheese analogue are recommended to adopt the technology developed by Anand Agricultural University, Anand. Mozzarella cheese analogue prepared using acid casein and rennet casein (2:3 w/w) as the protein source and partially hydrogenated vegetable oil (melting point 32°C) as the fat source is suited for its end usage on pizza pie. The Mozzarella cheese analogue remains acceptable during refrigerated storage (7±1°C) for up to 35 days. મોઝેરેલા ચીઝ એનાલોગનું ઉત્પાદન કરવામાં રસ ધરાવતા ઉદ્યોગસાહસિકો અને ચીઝ એનાલોગ ઉત્પાદકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત ટેક્નોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. પ્રોટીન સ્ત્રોત તરીકે એસિડ કેસીન અને રેનેટ કેસીન (૨:૩ ના ગુણોત્તરમાં) તેમજ ચરબીના સ્ત્રોત તરીકે આંશિક રીતે હાઇડ્રોજીનેટેડ વનસ્પતિ તેલ (મેલ્ટિંગ પોઈન્ટ ૩૨°સે) નો ઉપયોગ કરીને તૈયાર કરાયેલ મોઝેરેલા ચીઝ એનાલોગને ૩૫ દિવસના રેફ્રિજરેટેડ સ્ટોરેજ (૭±૧°સે) સુધી પિઝા બનાવવા માટે ઉપયોગમાં લઇ શકાય. **The recommendation is approved with following suggestions:** 1. Recast the Recommendation in both the languages as suggested by house (Guajarati and English). (Action: PI & Head, Dept. of DT, SMCDSc, KU, Anand)

19.7.1.18	**Quality characteristics of mozzarella cheese as influenced by dry plasticizing methods** Anand Agricultural University, Anand recommends manufacturing Mozzarella cheese employing dry plasticizing of cheese curd using induction heating in place of wet plasticizing of curd utilizing hot water. Such manufacturing protocol aids in improving the recovery of milk solids in cheese and increased cheese yield. Incorporation of emulsifying salt to cheese curd during dry plasticizing is helpful in fat emulsification in cheese product. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા ગરમ પાણીનો ઉપયોગ કરીને મોઝેરેલા ચીઝના પરંપરાગત પ્લાસ્ટિસાઇઝિંગને બદલે ઇન્ડક્શન હીટિંગનો ઉપયોગ કરીને ચીઝનું પ્લાસ્ટિસાઇઝિંગ કરવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિથી બનાવેલ ચીઝમાં દૂધના ઘન પદાર્થોની પુનઃપ્રાપ્તિ અને ઉપજમાં વધારો થાય છે. આ પદ્ધતિથી બનાવેલ ચીઝમાં વાપરેલ ઇમલ્સિફાઇંગ સોલ્ટથી ફેટ ઇમલ્સિફિકેશનમાં મદદ થાય છે. **The recommendation is approved with following suggestions:** 1. Recast the Recommendation in both the languages (Guajarati and English). (Action: PI & Head, Dept. of DT, SMCDSc, KU, Anand)
19.7.1.19	**Technology for development of partially dehydrated peda mix** A technology for the manufacture of dried Peda mix with acceptable quality by vacuum drying method is recommended by Anand Agricultural University, Anand for the dairy industry and entrepreneurs involved in the production of khoa based traditional sweetmeats. The dried Peda mix requires to be rehydrated with potable water to obtain Peda/Burfi. The developed Peda mix when packaged in HDPE pouches (95 μ) had shelf life of up to 90 days when stored at 20±2°C. આણંદ કૃષિ યુનિવર્સિટી,આણંદ દ્વારા શૂન્યાવકાશમાં સુકવેલ પેંડા મિક્ષના ઉત્પાદન માટે પદ્ધતિ વિકસિત કરવામાં આવેલ છે. સુકવેલ પેંડા મિક્ષમાં જરુરી જથ્થામાં પીવાલાયક પાણી ઉમેરીને પેંડા/બરફી બનાવી શકાય. ભલામણ મુજબ વિકસિત કરવામાં આવેલ પેંડા મિક્ષને એચ.ડી.પી.ઇ. (૯૫ μ) પાઉચમાં પેક કરી ૨૦±૨°સે તાપમાને ૯૦ દિવસ સુધી સંગ્રહ કરી શકાય. **The recommendation is approved with following suggestions:** 1. Recast the Recommendation in English (Action: PI & Head, Dept. of DT, SMCDSc, KU, Anand)
19.7.1.20	**Evaluation of jaggery as value added ingredient in peda** A technology for manufacture of acceptable quality jaggery peda has been developed by Anand Agricultural University, Anand for the dairy plants and entrepreneurs producing Indigenous sweetmeats. Such technology involves replacing 60 % (w/w) sugar with brown jaggery. The jaggery peda packed in polypropylene boxes and stored at cabinet temperature (20±2°C) remained acceptable up to 28 days. આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસિત ટેક્નોલોજીનો ઉપયોગ કરીને, જરુરી ખાંડના ૬૦% (w/w) ગોળ ઉમેરીને સ્વીકાર્ય ગુણવત્તાયુક્ત ગોળના પેડા તૈયાર કરવાની ભલામણ કરવામાં આવે છે. આ રીતે ઉત્પાદન કરેલ પેંડા કેબિનેટ તાપમાને (૨૦±૨°સે) પોલી પ્રોપિલીન બોક્સમાં પેક કરવામાં આવે ત્યારે ૨૮ દિવસ સુધીની સંગ્રહ ક્ષમતા ધરાવે છે. **The recommendation is approved with following suggestions:**

	1. In Table -11, remove % from Hardness. 2. In Table -16, write “count” replacing with “score”. 3. Recast the Recommendation in both the languages (Guajarati and English). Also write the numerical in Gujarati replacing with numerical in English. (Action: PI & Head, Dept. of DT, SMCDSc, KU, Anand)
19.7.1.21	**Validation of qualitative tests for detection of selected carbohydrate based adulterants in khoa** Anand Agricultural University, Anand recommends the use of modified qualitative tests for the detection of selected carbohydrate based adulterants namely starch, glucose, maltodextrin, and sucrose in khoa for dairy industry. The adulterants spiked separately in milk at minimum 0.01% starch, 0.12% glucose, 0.05% maltodextrin and 0.12% sucrose could be detected in the khoa using modified Iodine test, Barfoed test, Iodine test and Seliwanoff test respectively. ખોઆ (માવા) માં સ્ટાર્ચ (કાંજી), ગ્લુકોઝ, માલ્ટોડેક્સ્ટ્રિન અને ખાંડ જેવા કાર્બોહાઇડ્રેટ આધારિત પદાર્થોની ભેળસેળની તપાસ માટે આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા સંશોધિત કરેલ ગુણાત્મક પરીક્ષણોનો ડેરી ઉદ્યોગ માટે ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. દૂધમાં ઓછામાં ઓછા ૦.૦૧% સ્ટાર્ચ (કાંજી), ૦.૧૨% ગ્લુકોઝ, ૦.૦૫% માલ્ટોડેક્સ્ટ્રિન અને ૦.૧૨% ખાંડ અલગ અલગ નાખીને બનાવેલ ખોઆમાં અનુક્રમે સંશોધિત આયોડિન ટેસ્ટ, બારફોઈડ ટેસ્ટ, આયોડિન ટેસ્ટ અને સેલિવનોફ ટેસ્ટનો ઉપયોગ કરીને ભેળસેળ શોધી શકાય છે. **The recommendation is approved.** (Action: PI & Head, Dept. of DC, SMCDSc, KU, Anand)
19.7.1.22	**Production of bioactive peptides with antioxidative activity from fermented camel milk** A technology has been developed by Anand Agricultural University, Anand for the production of peptides from fermented camel milk with antioxidative activity for the dairy industry. Selected Lactobacillus cultures (*Lb. fermentum* (KGL4), *Lb. plantarum* (KGL3A) and *Lb. casei* (NK9)) produced antioxidative peptides from fermented camel milk i.e. LLNEK, WYGQEK, IEYVHTK, LSSHPYLEQLYR when they were used at 2.5% inoculum rate and incubated at 37°C for 48 h. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા ડેરી ઉદ્યોગ માટે ઊંટડીના આથવેલ દૂધમાંથી એન્ટિઓક્સિડેટીવ એકટીવિટી ધરાવતા પેપ્ટાઇડ્સના ઉત્પાદન માટેની ટેકનોલોજી વિકસાવવામા આવેલ છે. ઊંટડીના આથવેલ દૂધમાં, પસંદ કરેલ લેકટોબેસિલસ કલ્ચર (*એલબી. ફર્મેન્ટમ* (KGL4), *એલબી. પ્લાન્ટેરમ* (KGL3A) અને *એલબી. કેસી* (NK9)) દ્વાર LLNEK, WYGQEK, IEYVHTK, LSSHPYLEQLYR એન્ટિઓક્સિડેટીવ પેપ્ટાઇડ્સનું ઉત્પાદન કરવામાં આવ્યું જ્યારે આ કલ્ચરને ૨.૫% દરે ઉમેરી, ૩૭°સે તાપમાને ૪૮ કલાક રાખવામાં આવ્યું હતું. **The recommendation is approved with following suggestions:** 1. Mention female camel as ઊંટડીના in Gujarati text of recommendation. (Action: PI & Head, Dept. of DM, SMCDSc, KU, Anand)
19.7.1.23	**Development of probiotic dietary preparation for prevention and treatment of obesity** Anand Agricultural University, Anand has developed a milk protein rich sugar free probiotic fermented beverage for the dairy industry. The

	product having acceptable sensory quality can be prepared using double toned milk, WPC-80, stevia and fermenting the mix using starter culture comprising of *S. thermophilus* MTCC 5460, *L. plantarum* M23, *L. rhamnosus* MTCC 5462 and probiotic *L. helveticus* MTCC 5463 at the rate of 2%. The beverage had a shelf life of 15 days when packaged in glass bottle and stored at refrigerated (7±1°C) conditions. The probiotic count at the end of shelf life of 15 days was greater than 9 log CFU/mL. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા ડેરી ઉદ્યોગ માટે દૂધ પ્રોટીન સમૃદ્ધ ખાંડ મુક્ત પ્રોબાયોટિક આથવેલ પીણું વિકસાવવામાં આવેલ છે. ડબલ ટોન્ડ મિલ્કમાં WPC-૮૦, સ્ટીવિયા અને ૨%ના દરે *સ્ટ્રેપ્ટોકોકસ થર્મોફિલસ* MTCC ૫૪૬૦, *લેક્ટોબેસિલસ પ્લાન્ટેરમ* M૨૩, *લેક્ટોબેસિલસ રેમનોસસ* MTCC ૫૪૬૨, પ્રોબાયોટિક *લેક્ટોબેસિલસ હેલ્વેટિકસ* MTCC ૫૪૬૩ સ્ટાર્ટર કલ્ચર ઉમેરી, આથવીને આ પીણું તૈયાર કરી શકાય છે, જે સ્વીકાર્ય સંવેદનાત્મક વિશેષતાઓ ધરાવે છે. કાચની બોટલમાં પેક કરેલ, આ પીણું રેફ્રિજરેટેડ પરિસ્થિતિઓ (૭±૧°સે) હેઠળ ૧૫ દિવસની શેલ્ફ લાઇફ ધરાવે છે. ૧૫ દિવસની શેલ્ફ લાઇફના અંતે પ્રોબાયોટિકની સંખ્યા ૯ લોગ CFU/mL થી વધુ હતી. **The recommendation is approved with following suggestions:** 1. Delete potential. 2. Recast the Recommendation in both the languages (Guajarati and English) (Action: PI & Head, Dept. of DM, SMCDSc, KU, Anand)
19.7.1.24	**Evaluation of probiotic cultures for their potential anti-obesity effects** A technology has been developed by Anand Agricultural University, Anand for the dairy industry. The probiotic fermented milk product can be prepared using toned milk and starter culture comprising of probiotic *L. helveticus* MTCC 5463, *S. thermophilus* MTCC 5462 and *L. rhamnosus* MTCC 5946 at the rate of 2%, enriched with 2% each of Whey Protein Concentrate and Soy protein isolate. The product is sensorially acceptable and contained probiotic count greater than 10^8 cfu/g. The fermented beverage had a shelf life of 14 days when packed in glass bottle and stored at 7±1°C. The product showed promising antiobesity effect through in vivo animal study. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા ડેરી ઉદ્યોગ માટે ટેક્નોલોજી વિકસાવવામાં આવી છે. પ્રોબાયોટિક આથો દૂધ ઉત્પાદન ૨% ના દરે પ્રોબાયોટિક એલ. હેલ્વેટિકસ એમટીસીસી ૫૪૬૩, એસ. થર્મોફિલસ એમટીસીસી 5462 અને એલ. રેમનોસસ એમટીસીસી 5946 ધરાવતાં ટોન દૂધ અને સ્ટાર્ટર કલ્ચરનો ઉપયોગ કરીને ૨% વ્હે પ્રોટીન કોન્સેન્ટ્રેટ અને ૨% સોયા પ્રોટીન આઇસોલેટ થી સમૃધ્ધિત આથવેલ પ્રોબાયોટિક દૂધ તૈયાર કરી શકાય છે. આ ઉત્પાદન સંવેદનાત્મક રીતે સ્વીકાર્ય છે અને તેમાં પ્રોબાયોટિક બેકટેરીયાની સંખ્યા ૧૦^{૮} cfu/g થી વધુ હતી. કાચની બોટલમાં પેક કરીને ૭±૧°સે પર સંગ્રહિત કરવામાં આવે ત્યારે આથોવાળા પીણાની શેલ્ફ લાઇફ ૧૪ દિવસની હોય છે. પ્રાણીઓ પરના અભ્યાસમાં આ આથાવેલ દૂધ દ્વારા આશાસ્પદ એન્ટિ-ઓબેસિટી અસર જોવા મળેલ છે. **The recommendation is approved with following suggestions:** 1. Delete WPC and SPI. 2. Recast the Recommendations. (Action: PI & Head, Dept. of DM, SMCDSc, KU, Anand)

19.7.1.25	**Process mechanization for manufacture of Thabdi** The entrepreneurs engaged with thabdi production are recommended to use the mechanized production system developed by Anand Agricultural University, Anand. For a batch size of 6 kg milk, steam pressure of 1.5 kg/cm^2, scraper speed of 25 rpm for stages I and II comprising of first boiling and pre-pat formation respectively. Stage III of holding without agitation and stopping steam supply for controlled colour and flavor development as well as stage IV for body and texture development of thabdi by keeping steam pressure and scraper speed of 2.5 kg/cm^2 and 10 rpm respectively. Thabdi produced in mechanized manner had superior sensory acceptability as compared to that made conventionally. થાબડી ઉત્પાદનના વ્યવસાય સાથે સંકળાયેલા ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત યાંત્રિક ઉત્પાદન પદ્ધતિનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિથી ૬ કીગ્રા દૂધ ને પ્રથમ અને બીજા તબક્કામાં ૧.૫ કી.ગ્રા./સેમી^{2} પ્રેશર પર ૨૫ આર.પી.એમ., ત્રીજા તબક્કામાં વરાળનો પ્રવાહ બંધ રાખી અને હલાવ્યા વગર નિયંત્રિત કલર અને સુગંધ વિકસાવવા માટે અને ચોથા તબક્કામાં થાબડીનું બોડી અને ટેક્ષચર વિકસાવવા માટે ૨.૫ કી.ગ્રા./સેમી^{2} વરાળનુ પ્રેશર અને ૧૦ આર.પી.એમ. સ્ક્રેપર સ્પિડ રાખવુ અનિવાર્ય છે. યાંત્રિક પદ્ધતિથી બનાવેલ થાબડી પરંપરાગત પદ્ધતિથી બનાવેલ થાબડી કરતા વધારે સારી ગુણવત્તા મેળવી શકાય છે. **The recommendation is approved with following suggestions:** 1. What are B. P, S? – Mention it properly 2. 3rd stage details are missing. 3. Mention holding temperature. (Action: PI & Head, Dept. of DE, SMCDSc, KU, Anand0
19.7.1.26	**In-container process development for extended shelf-life paneer** The entrepreneurs and dairy processing units interested in the production of extended shelf life paneer are recommended to use the technology developed by Anand Agricultural University, Anand. The paneer can be prepared by placing paneer in retortable pouch containing salt solution (1.4%) (Paneer:Brine; 40:60 w/w) and subjecting it to heat treatment of 110°C for 7.5 min. The packed paneer could be stored for up to about 60 days at room temperature (30±2°C). લાંબી શેલ્ફ લાઇફ ધરાવતા પનીરના ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગસાહસિકો અને ડેરી પ્રોસેસિંગ એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત ટેક્નોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. પનીરને રિટોર્ટેબલ પાઉચમાં ૧.૪% મીઠાના દ્રાવણમાં પનીરને (પનીર:મીઠાના દ્રાવણ; ૪૦:૬૦ w/w) ડુબાડીને તૈયાર કરી શકાય છે અને ઓરડાના તાપમાને (૩૦±૨°સે) પનીરની લગભગ ૬૦ દિવસની શેલ્ફ લાઇફ મેળવવા માટે સીલબંધ પાઉચને ૭.૫ મિનિટ માટે ૧૧૦°સે તાપમાને હીટ ટ્રીટમેન્ટ આપવામાં આવે છે. **The recommendation is approved with following suggestions:** 1. Remove “extended” from text of recommendation. 2. Convert 9 weeks to days. 3. Recast the Recommendation in both the languages (Guajarati and English). (Action: PI & Head, Dept. of DE, SMCDSc, KU, Anand)
19.7.1.27	**Process mechanization for the production of extended shelf life khoa** The entrepreneurs engaged in Khoa (Mawa) production are

	recommended to use the mechanized production system developed by Anand Agricultural University, Anand. Khoa was made from 45% TS vacuum concentrated milk and was converted to khoa utilizing steam pressure of 147.1 kPa and scraper speed of 0.33 rps and keeping post pat formation steam pressure at 49.03 kPa in the mechanized kettle. The khoa was further heat treated at 90ºC for 10 min and packed in tin and retort pouch. The sensory quality of khoa manufactured by the mechanized system was superior over khoa made using conventional method. The khoa packed in tin and retortable pouches, stored at ambient temperature (30±2ºC) remained acceptable up to 100 days and 80 days respectively. ખોઆ (માવા) ઉત્પાદનના વ્યવસાયમાં સંકળાયેલા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત યાંત્રિક ઉત્પાદન પ્રણાલીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. વિકસિત યાંત્રિક પ્રણાલી થકી ૪૫% ઘનતા ધરાવતા દૂધ ને ૧૪૭.૧ કિ. પાસ્કલ વરાળનુ પ્રેશર અને ૦.૩૩ આર.પી.એસ. સ્ક્રેપર સ્પિડ રાખી ગરમ કરી પેટ ફોરમેશન પછી ૪૯.૦૩ કિ.પાસ્કલ વરાળનુ પ્રેશર રાખતાં સારી ગુણવત્તા ધરાવતો ખોઆ (માવો) ઉત્પાદીત કરી શકાય છે. સદર ખોઆને ૯૦°સે તાપમાને ૧૦ મિનિટ માટે ગરમ કરી ટીન (ડબ્બા) અને રીટોર્ટ પાઉચમા પેક કરવો. પરંપરાગત પદ્ધતીની સરમામણીમા, યાંત્રિક પ્રણાલી દ્વારા સારી ગુણવત્તા ધરાવતો ખોઆ બનાબી શકાય છે. ટીન અને રીટોર્ટેબલ પાઉચમાં પેક કરેલા ખોઆની સામાન્ય તાપમાને (૩૦±૨ °સે) અનુક્રમે ૧૦૦ દિવસ અને ૮૦ દિવસ સુધીની સંગ્રહ ક્ષમતા મેળવી શકાય છે. **The recommendation is approved with following suggestions:** 1. Recast the recommendation with short and meaningful sentences. 2. Delete refrigeration temperature and storage temperature. (Action: PI & Head, Dept. of DE, SMCDSc, KU, Anand)

KAMDHENU UNIVERSITY, GANDHINAGAR- Nil

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S. K. NAGAR

19.7.1.28	**Technology development of juice containing wheat grass and basil leaves** **The project to be continued and recommend next year after incorporating following suggestions:** 1. More technological refinements need to be adopted to achieve minimum of 7 days shelf life of the product as the recommendation is for industry/entrepreneurs. 2. Follow recommended standards for juice and thermal treatment of it. 3. TSS of individual juices, when and how to add honey and blending etc. needs to be mentioned. *4.* Remove ANNOVA table from storage studies and add SEm, CD (0,05), CV values. (Action: PI & Head, FPT, CFT, SDAU, Sardarkrushinagar)
19.7.1.29	**Standardization of tomato based carbonated beverage** The entrepreneurs and food processing units interested in the production of fruit based carbonated beverage are recommended to use the technology developed by Sardarkrushinagar Dantiwada Agricultural

	University, Sardarkrushinagar. The beverage can be prepared utilizing 30 % tomato juice, 70 % sugar syrup (18°Brix) and carbonation at 100 psi. The prepared fruit based carbonated beverage was sensorily highly acceptable. ઉદ્યોગ સાહસિકો અને ફૂડ ઉદ્યોગકારો માટે સરદારકૃષિનગર દાંતીવાડા એગ્રીકલ્ચરલ યુનિવર્સીટી દ્વારા ફળ માંથી બનાવેલ કારબોનેટેડ પીણું જેમાં ૩૦% ટામેટા જ્યુસ અને ૭૦% ખાંડની ચાસણી (૧૮^{o}બ્રિક્સ) નું પ્રમાણ રાખી તેને ૧૦૦ પીએસઆઈ ના દબાણે કર્બોનેશન કર્યા બાદ બનેલ પીણાની ભલામણ કરવામાં આવે છે. જે સ્વાદિષ્ટ અને ગુણવતાસભર બને છે. **The recommendation is approved with following suggestions:** 1. Mention variety/level of maturity. 2. Process parameters to be optimized. 3. Compositional analysis (including TSS) and sensory attributes of final product to be studied. 4. pH/acidity data is not justified. 5. TSS data is not justified. 6. Statistical analysis of storage studies to be done and also verify the RSM data. 7. Include Aerobic Plate Count in place of Total Plate Count, units of different contents, mention exact time & temp., photographs. (Action: PI & Head, FPT, CFT, SDAU, Sardarkrushinagar)]

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

19.7.1.30	**Standardization of method for extraction of passion fruits (*Passiflora edulis*) juice** Processors and entrepreneurs associated with fruit juice processing are recommended to extract passion fruit juice by treating scooped pulpy seeds with combination of 0.05% pectinase and 0.05% cellulase keeping contact period of 2 hours to obtain higher juice recovery when compared to control method (29.33% vs. 20.15% for control). The juice after extraction is filtered, heated (96$\pm$1^{o}C), packed in glass bottles and thermally processed at 96$\pm$1°C for 30 min. The bottled passion fruit juice had storage stability of 6 months at ambient temperature (30±5°C). પ્રોસેસરો અને ફળોના રસ સાથે સંકળાયેલ ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે કે, કૃષ્ણફળનો બીજયુક્ત માવો એકઠો કરી તેમાં ૦.૦૫% પેક્ટીનેઝ અને ૦.૦૫% સેલ્યુલેઝ ઉમેરી ૨ કલાક માટે રાખ્યા બાદ રસ કાઢવામાં આવે તો રસની રીકવરી કંટ્રોલની સરખામણી કરતાં વધુ મળે છે (૨૯.૩૩% અને કંટ્રોલના ૨૦.૧૫%). ત્યારબાદ રસને ગાળી, ૯૬±૧°સે તાપમાને ગરમ કરી કાચની બોટલમાં ભર્યા બાદ ૯૬±૧°સે તાપમાને ૩૦ મીનીટ સુધી ગરમ કરવું. આ રીતે પેક કરેલ કૃષ્ણફળના રસને ૬ માસ સુધી સામાન્ય તાપમાને (૩૦±૫°સે) સંગ્રહ કરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Mention the acidity in terms of (citric acid or suitable method). 2. Compositional analysis (including TSS) and sensory attributes of final product to be incorporated.

	3. In sensory analysis use term ‘consistency’ in place of ‘body and texture’. 4. Add data of yeast and mold count. 5. Recast the text of recommendation. (Action: PI & Head, Dept. of PHT, NAU, Navsari)
19.7.1.31	**Development of value added blended spiced squash using passion (*Passiflora edulis*) and bael (*Aegle marmelos* L.) fruits** It is recommended to the processors, and entrepreneurs that passion and bael fruit pulp can be blended to produce value added spiced squash involving use of 25 % fruit pulp (5:20; passion: bael pulps) maintaining 45 ^{o}Brix TSS and 1 % acidity (citric acid) along with salt (salt 2 g, black salt 10 g), spices (black pepper 4.0 g, cumin 2.5 g, cardamom 2.0 g) and 10 ml each of mint juice and ginger juice per liter of squash. Potassium meta-bisulphite @ 700 ppm was added at the end of thermal treatment (96±1°C for 15 min), followed by hot filling in PET bottles. The blended spiced squash can be stored up to 9 months at ambient temperature (30±5°C). પ્રોસેસરો અને ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે કે, મસાલા સ્ક્વોશ બનાવવા માટે કૃષ્ણફળ અને બીલાના ફળનો ૨૫% માવો (કૃષ્ણફળ:બીલાનો માવો ૫:૨૦ પ્રમાણ મુજબ) મીક્ષ કરી ૪૫ °બ્રીક્ષ ટી.એસ.એસ. અને ૧% એસીડીટી (લીંબુના ફૂલ) નું પ્રમાણ જાળવી મીઠું ૨ ગ્રામ, સંચળ ૧૦ ગ્રામ, મસાલા (મરી ૪.૦ ગ્રામ, જીરુ ૨.૫ ગ્રામ, એલચી ૨.૦ ગ્રામ) અને ફુદીના અને આદુનો ૧૦ મીલી રસ પ્રતિ લીટર સ્ક્વોશ ઉમેરવા. ત્યારબાદ મસાલા સ્ક્વોશને ૯૬±૧°સે તાપમાને ૧૫ મીનીટ સુધી ગરમ કર્યા બાદ અંતમાં ૭૦૦ પી.પી.એમ. પોટેશીયમ મેટા બાય સલ્ફાઇટ ઉમેરી પ્લાસ્ટીક બોટલમાં ભરવું. આ રીતે તૈયાર કરવામાં આવેલ મસાલા સ્ક્વોશને ૯ માસ સુધી સામાન્ય તાપમાને (૩૦±૫°સે) સંગ્રહ કરી શકાય છે. **The recommendation is approved with following suggestions:** 1. Delete word spice and salt mentioned within bracket and rearrange properly. 2. Mention exact temperature in place of ambient temperature in the recommendation text. 3. Use term thermal treatment in place of pasteurization. 4. Mention the acidity data, colour value. 5. Print as total phenolic content. 6. Compositional analysis (including TSS) and sensory attributes of final product to be incorporated. 7. Mention Aerobic Plate Count as Absent/g of sample, add data of yeast and mold count. 8. Recast the text of recommendation. (Action: PI & Head, Dept. of PHT, NAU, Navsari)

19.7.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.7.2.1	**Study on performance of grid connected 20 kW solar photovoltaic system** Scientific information generated by Anand Agricultural University, Anand is useful for interested scientists and industrialists to install 20 kW grid-connected roof mounted solar PV system. The module and system efficiencies are 15% each, inverter efficiency is 97%, annual total energy yield of the plant is 20,268 kWh and saving of ₹ 1.41 lakh per year. **The recommendation is approved with following suggestions:** 1. Delete "about" from the recommendation text. 2. Replace "Rs. with "₹" 3. Year of the experiment duration should be mentioned specifically in the data tables (2019 to 2022 etc.). (Action: PI & Head, Dept. of FPE, FPTBE, AAU, Anand)
19.7.2.2	**Purification and characterization of antioxidative and antihypertensive peptides from whey protein hydrolysate** A technology is developed by Anand Agricultural University, Anand for the production of antihypertensive peptides (viz., MAFRGRRPEL, RGPPELYYDK, MWVRTTL and GQLRFGG) from 5% whey protein hydrolysate using Alcalase enzyme @ 2% at 65ºC for 8 h. **The recommendation is approved.** (Action: PI & Head, Dept. of DM, SMCDSc, KU, Anand)
19.7.2.3	**Effect of heat treatment on the rheological parameters of cream with varying fat percentages** Anand Agricultural University, Anand recommends to use the rheological data **a**nd the empirical equation for cream with varying fat content (i.e., 10 to 60% fat) and varying cream temperatures (i.e., 10–80ºC). **The recommendation is approved with following suggestions:** 1. Recast the recommendation by adding "With varying ranges", "rheological properties of cream are advised to use" 2. Recommendation text to be, "Scientists and equipment manufacturers associated with dairy and food sector are recommended to use (Action: PI & Head, Dept. of DE, SMCDSc, KU, Anand])

KAMDHENU UNIVERSITY, GANDHINAGAR

19.7.2.4	**Evaluation of techno-functional attributes of *Weissella* strains isolated from traditional fermented foods and human faecal matter** Food industries concerned with probiotic foods are recommended to use the Weissella strains identified at Kamdhenu University, Gandhinagar. Weissella strains such as *W. cibraia* MTCC 5947, *W. cibaria* MTCC 5948 and *W. confusa* F9 were found to be safe and possessing probiotic potential and techno-functional attributes making it suitable for food and health applications. **The recommendation is approved with following suggestions:** 1. Mention the university name in the recommendation text. (Action: PI & Head, Dept. of Dairy Microbiology, SMCDSc, Anand)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S. K. NAGAR – *Nil*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI – *Nil*

19.7.3 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
19.7.3.1	Effect of irradiation on pearl millet & sorghum	**Approved with following suggestion/s:** 1. Add "of" in objective no. 2 of the project. 2. Delete full stop from objectives. 3. Standardization of irradiation dose to be carried out based on some targeted responses and designs the studies systematically. 4. Include the microbiological analysis of flour after irradiation. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.3.2	Dehydration of green leaves of selected vegetables	**Approved with following suggestion/s:** 1. Delete 'selected' from objective no. 2 of the project. 2. CRD factorial to be used in the studies. 3. Mention variety of garlic to be studied. 4. Include microbial studies during storage. (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.3.3	Performance evaluation of developed Internet of Things (IoT) based system	**Approved with following suggestion/s:** 1. Commodities to be used in the performance evaluation to be mentioned. 2. Performance evaluation of the fabricated large scale system to be designed systematically. 3. **As per suggestion in plenary session, this experiment shifted to AE-AIT group** (Action: PI & Head, Dept. of FPE, CoFPTBE, AAU, Anand)
19.7.3.4	Development of reduced sugar aonla beverage utilizing stevia	**Approved with following suggestion:** 1. Correct the objective no. 2 as "To optimize substitution of sugar by stevia powder". (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)

19.7.3.5	Development of value-added farali extruded snack	**Approved with following suggestion/s:** 1. Reframe objective no. 1 of the project. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.3.6	Production technology of popped ready-to-eat snacks using kodo millet	**Approved with following suggestion/s:** 1. Correct objective no.1 by incorporating word "kodo millet" 2. Correct objective no. 2 by replacing word cereal grains with kodo millet. 3. Correct range of soaking time as 12-24-36-48 h. 4. Incorporate composition analysis of the product in to studies. 5. Incorporate microbial analysis during storage. 6. Include starch analysis in compositional analysis studies of product. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.3.7	Standardization of drying technology for bael leaves powder	**Approved with following suggestion/s:** 1. Reframe objectives Each objective should be started with "To". 2. Replace phenol with phenolics. 3. Correct unit abbreviations. 4. Sample size for the drying experiments to be **<u>3 to 5 kg</u>** for all types of drying. 5. Specify the colour values in the studies. 6. Record the temperature and RH data of greenhouse drying experiment. 7. Mention the methods of antioxidant and phenolics content analysis. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.3.8	Technology for production of Ready to Serve green tomato beverage	**Approved with following suggestion/s:** 1. Delete (RTS) from the title of project. 2. Objective no.2 should be reframed as "To standardize formulation and optimization of process parameters for the production of green tomato RTS". 3. Specify the antioxidant activities to be studied. 4. Use word 'thermal treatment' in place of 'pasteurization'. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)

19.7.3.9	Production technology for kodo millet based idli	**Approved with following suggestion/s:** 1. Correct objective no.1 as "To standardize soaking time for kodo millet and Black gram for idli batter preparation." 2. Record the batter fermentation temperature and time. 3. Incorporate the textural analysis of prepared Kodo millet based idli. (Action: PI & Head, Dept. of FPT, CoFPTBE, AAU, Anand)
19.7.3.10	Bio-chemical characterization of insulin plant leaves	**Approved with following suggestion/s:** 1. Reframe the objectives of project as follow: • To analyze proximate composition of insulin plant leaves. • To standardize of extraction parameters for bioactive compounds. • To characterize and identify bioactive compounds from the insulin plant leaves extract. 2. Bioactive compounds for three seasons throughout the year to be studied. 3. Use RSM for optimization of extraction parameters. 4. Specify responses/dependent variables. (Action: PI & Head, Dept. of FSQA, CoFPTBE, AAU, Anand)
19.7.3.11	Supercritical fluid extraction of cumin seed essential oil	**Approved with following suggestion/s:** 1. Delete word maximum from objective no. 2. 2. Revise the title of project as "Supercritical fluid extraction of cumin seed essential oil" (Action: PI & Head, Dept. of FSQA, CoFPTBE, AAU, Anand)
19.7.3.12	Development of pizza base incorporating millets	**Approved with following suggestion/s:** 1. Delete full stop(.) from the objectives. 2. Write the objective no. 3 in small case letters. 3. Incorporate texture analysis (hardness) studies for final product. 4. Replace phenol with phenolics. 5. Replace TPC with APC. 6. Add yeast and mold and coliform analysis. 7. Mention the process parameters to be standardized.

		8. Keep more than eight (8) judges for sensory analysis of products. (Action: PI & Principal, PFSHE, AAU, Anand)
19.7.3.13	Devising food exchange list for foods prepared using cereals and millets	**Approved with following suggestion:** 1. Reframe the objective no. 1. (Action: PI & Principal, PFSHE, AAU, Anand)
19.7.3.14	Development of nutribar using popped kodo and finger millet	**Approved with following suggestion/s:** 1. Revise title of the project by replacing word 'health bar' by 'nutribar'. 2. Reframe objective no. 2 as "To standardize nutribar process parameters. 3. Replace word 'health bar' with 'nutribar' from all objectives and texts. 4. Replace phenol with phenolics. 5. Include APC, yeast and mold analysis and coliform count in storage studies. (Action: PI & Principal, PFSHE, AAU, Anand)

KAMDHENU UNIVERSITY, GANDHINAGAR

Sr. No.	Title	Suggestion/s and Action
19.7.3.15	Evaluation of the anticancer effect of fermented milk postbiotic against colon cancer cell line	**Approved.** (Action: PI & Head, Dept. of Dairy Microbiology, SMCDSc, Anand)
19.7.3.16	Evaluation of antianemic activity of fermented cactus pear fruit (*Opuntia elatior* Mill.) beverage in laboratory animal model	**Approved with following suggestion/s:** 1. Keep control as unfermented cactus pear fruit beverage. (Action: PI & Head, Dept. of Dairy Microbiology, SMCDSc, Anand)
19.7.3.17	Development of dye based qualitative test for detection of rancid ghee adulteration in fresh ghee	**Approved with following suggestion/s:** 1. Delete full stop(.) from the objectives. 2. Remove the word "adulteration" from the title. Write as "Development of dye based qualitative test for detection of rancid ghee in fresh ghee". (Action: PI & Head, Dept. of Dairy Chemistry, SMCDSc, Anand)
19.7.3.18	Evaluation of oxidative stability of ghee incorporated with non-conventional plant sources	**Approved with following suggestion/s:** 1. Keep the powder in the ghee for more time or study effect of time as a treatment. (Action: PI & Head, Dept. of Dairy Chemistry, SMCDSc, Anand)

19.7.3.19	Technological means to manufacture chhana based cake using ghee residue and WPC	**Approved with following suggestion/s:** 1. Reframe the third objective. 2. Analyze the composition of ghee residue. 3. Revise the objective no. 3 by replacing microbial quality in place of microbial property. (Action: PI & Head, Dept. of Dairy Technology, SMCDSc, Anand)
19.7.3.20	Technology of kalakand utilizing aonla powder and its shelf-life studies	**Approved with following suggestion/s:** 1. Delete temperature from 4th objective 2. In Objective-1, write "utilizing" in place of "using". (Action: PI & Head, Dept. of Dairy Technology, SMCDSc, Anand)
19.7.3.21	Study of phase change materials' properties in cooling application	**Approved.** (Action: PI & Head, Dept. of Dairy Engineering, SMCDSc, Anand)
19.7.3.22	Study of rheological properties of ice cream mix	**Approved with following suggestion/s:** 1. Commercial stabilizer and emulsifier may be considered. 2. The study pertains to 'scientific community' as it will generate the scientific information. (Action: PI & Head, Dept. of Dairy Engineering, SMCDSc, Anand)
19.7.3.23	Development of whey based ginger honey-lemon drink	**Approved with following suggestion/s:** 1. Mention type of whey. 2. Keep consumer survey in last objective. 3. Replace word 'Lemon' with 'Lime' in title. Add "Kagzi lime" in Materials and Methods. 4. Add fresh lemon juice or concentrate after preparation in place of market lemon juice. 5. For any market bought sample, characterization of ingredients should be considered before use. (Action: PI & Head, Dept. of Dairy Technology, DSC, Amreli)
19.7.3.24	Development of synbiotic milk pudding using co-encapsulated probiotic culture and L-ascorbic Acid	**Approved with following suggestion/s:** 1. Delete the 1st objective of the project. (Action: PI & Head, Dept. of Dairy Microbiology, DSc, Amreli)

19.7.3.25	Evaluation of seasonal changes in microbial diversity of Patanwadi sheep milk Using metagenomics approach	**Approved with following suggestion/s:** 1. Modify the title. 2. Mention the name of breed of Sheep. 3. Focus the target genes or diversity of microflora using metagenomic approach. (Action: PI & Head, Dept. of Dairy Microbiology, DSc, Amreli)
19.7.3.26	Development of fluorescence spectroscopy based method to detect cotton seed oil in ghee	**Approved with following suggestion/s:** 1. Revise the title by deleting adulteration from title of the project. (Action: PI & Head, Dept. of Dairy Chemistry, DSC, Amreli)
19.7.3.27	Study of moisture sorption isotherms characteristics of Amrakhand and Greek yogurt	**Approved.** (Action: PI & Head, Dept. of Dairy Engineering, DSc, Amreli)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S. K. NAGAR

S. No.	Title	Suggestion/s and Action
19.7.3.28	Optimization of process parameter for the development of wood apple and lemongrass based carbonated beverage	**Approved with following suggestion/s:** 1. Do grammatical corrections. 2. Antioxidant potential with & without lemongrass. 3. WAP:LGE ratio should be finalized on the basis of filler trials. 4. Dependent variables for the optimization of the product to be specified. 5. Add heat treatment/thermal processing in flow-chart. 6. Specify the storage study with parameters. 7. Delete full stop from objective. (Action: PI & Head, FPT, CFT, SDAU, Sardarkrushinagar)
19.7.3.29	Preparation of millet flour blended masala *khakhra*	**Approved with following suggestion/s:** 1. Delete full stop from objective. 2. Filler trials for this year and show the results. Accordingly refine the experiment. 3. Crunchiness, color, appearance, packaging and storage study etc should also be there in the study. (Action: PI & Head, FPO, CFT, SDAU, Sardarkrushinagar)
19.7.3.30	Development of processing technology for the production of date palm fruit powder	**Approved with following suggestion/s:** 1. Write Aerobic Plate count word in place of total/standard plate count. 2. Remove TSS and reducing sugars from

		all observations. Add ascorbic acid in the shelf-life study. 3. Recast the title as "Development of production technology for the production of date palm fruit powder". 4. Recast objectives I & II as; 1) To analyze quality parameters of fresh date fruits 2) To optimize the production process and study the drying kinetics for date palm fruit powder 5. Instead of F-CRD, rewrite CRD (Factorial). 6. Write total carbohydrates. (Action: PI & Head, FPE, CFT, SDAU, Sardarkrushinagar)
19.7.3.31	Preparation of pasta using pomegranates arils powder	**Approved with following suggestion/s:** 1. Compositional analysis of the PAP (pomegranate arils powder) should be included. 2. In observations, add Body and the texture, final moisture content of the product. 3. Include alcoholic acidity (%) for wheat flour in analysis. 4. Remove length from observations. 5. Mention that "the product will be judged by the panelists" in sensory observation. 6. Cooking quality and moisture content for storage study dependent variables. Microbial analysis for the storage. (Action: PI & Head, FPT, CFT, SDAU, Sardarkrushinagar)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
19.7.3.32	Standardization of process technology for the preparation of aloe-vera and aonla blended juice	**Approved with following suggestion/s:** 1. Refine objectives as: • To analyze proximate composition of Aloe vera and Aonla juices • To standardize recipe for Aloe vera and Aonla juice blends • To optimize process parameters of Aloe vera and Aonla juice blends • To study composition analysis and storage stability of Aloe vera and Aonla juice blends 2. Mention juice instead of pulp in the texts.

		3. Interval of storage studies should be one month. 4. Replace body with consistency in the sensory parameters. 5. Add Yeast and Mould count in analysis. 6. Add sugar and its proportion in process parameters. 7. Individual juices and Final product TSS. 8. Replace Processing as Thermal treatment in the flow chart. 9. Recast the title as "Standardization of process technology for the preparation of Aloe-vera and Aonla blended juice" (Action: PI & Head, Dept. of PHT, NAU, Navsari)

19.8 BASIC SCIENCE & HUMANITY

DATE: 25 - 27 April, 2023

Chairman	Dr. M. K. Jhala, Director of Research, AAU, Anand
Co-Chairman-1	Dr. Y.M. Shukla, Dean (Agri.), AAU, Anand
Co-Chairman-2	Dr. V. H. Kanbi, Dean (Basic Sci.), SDAU, Sardarkrushinagar
Rapporteurs	1. Dr. Sushil Kumar, AAU 2. Dr. U. K. Kandoliya, JAU 3. Dr. A.V. Narwade, NAU 4. Dr. Kapil Tiwari, SDAU
Statistician	Dr. Mayur Sitap, JAU

Presentation of recommendations and new technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. J. J. Dhruv	Associate Professor & Head, Dept. of Biochemistry, BACA, AAU, Anand
2	Dr. H. P. Gajera	Professor & Head, Dept. of Biotechnology, JAU, Junagadh
3	Dr. Rajkumar Katagi	Assistant Research Scientist, Main Cotton Research Station, NAU, Surat
4	Dr. Anurag Yadav	Assistant Professor, Dept. of Microbiology, College of Basic Sci. & Humanities, SDAU, Sardarkrushinagar

Summary of the Recommendations

Name of University	No. of Recommendations				New Technical Programs	
	Farmers/Entrepreneurs/ Industry		Scientific			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	00	00	02	02	04	04
JAU	01	01	04	04	06	05*
NAU	03	03	04	03**	06	06
SDAU	01	01	08	08	04	04
Total	**05**	**05**	**18**	**17**	**20**	**19**

* One New technical Programme of Junagadh Agril. University was not approved.

** One scientific recommendation of Navsari Agril. University was not approved

19.8.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

19.8.1.1	**Preparing for climate change - Growth and development of arboreum cotton in response to growth regulators** The farmers of South Saurashtra Agro Climatic Zone growing arboreum cotton under irrigated condition are recommended to timely sow the crop with foliar spray of Salicylic Acid @ 70.00 ppm (0.70 g/10 lit. water) at 45 and 60 DAS for balance growth to obtain higher seed cotton yield and net return. દક્ષીણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં પિયત દેશી કપાસ (આર્બોરિયમ) નું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે સમયસર વાવેતર કરી સંતુલિત તોલન વૃદ્ધિ માટે ૪૫ અને ૬૦ દિવસે સેલિસિલિક એસીડ % ૭૦.૦૦ પીપીએમ (૦.૭૦ ગ્રામ/૧૦ લી.પાણી) નો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Suggestions: Approved with following suggestion** 1. In tables: remove ANOVA and replace SEd with SEm 2. Remove 21st June from recommendation text **3.** Accepted after addition of correlation yield with weather parameters**.** (Action: Cotton Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

19.8.1.2	**Response of different chemicals under rainfed conditions in cotton** Farmers of South Gujarat growing Bt cotton (G.Cot.Hy-10 BG-II) under rainfed conditions are recommended to apply four foliar sprays of 2% KNO_3 (13:00:45) (20g/l) at weekly intervals after 30 days of rain cessation for higher seed cotton yield and net return. દક્ષિણ ગુજરાતનાં બિનપિયતમાં બીટી કપાસ (જી. કોટ. સંકર-૧૦ બીજી-૨) ની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ચોમાસુ પૂર્ણ થયાના ૩૦ દિવસ બાદ ૨% પોટેશિયમ નાઇટ્રેટ (૧૩:૦૦:૪૫) (૨૦ગ્રામ/લી) નાં ચાર છંટકાવ અઠવાડીયાના અંતરે કરવાથી કપાસનું વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Suggestions: Approved with following correction**

	1. Recast recommendation **2.** Mention which Brassinolide used. **3.** Calculate B:C ratio (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.1.3	**Effect of fertilizer and growth regulator on physiology of cotton under High Density Planting System** Farmers of South Gujarat growing compact variety of cotton (GISV-272 and GSHV-180) under high density planting system (HDPS) at 60 x 15 cm spacing are recommended to apply 280 kg nitrogen/ha in five equal splits at 30, 60, 75, 90, and 105 days after sowing to achieve higher seed cotton yield and higher net return. In addition, it is advised to apply 5% mepiquat chloride at the rate of 20g a.i/ha (8.5ml/10L) at 60 and 75 days after sowing to control vegetative growth of cotton plants under high density planting system. દક્ષિણ ગુજરાતનાં સાંકડાગાળે વાવેતર પધ્ધતિમાં ૬૦ x ૧૫ સે.મી.નાં અંતરે કોમ્પેક્ટ કપાસ (જીઆઈએસવી-૨૭૨ અને જીએસએચવી-૧૮૦) નું વાવેતર કરતાં ખેડૂતોને કુલ ૨૮૦ કી.ગ્રા./હે. નાઇટ્રોજનનો જથ્થો પાંચ સરખા હપ્તામાં વાવણી બાદ ૩૦, ૬૦, ૭૫, ૯૦ અને ૧૦૫ દિવસે આપવાથી કપાસનું વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. વધુમાં, છોડની વૃદ્ધિ નિયંત્રણમાં રાખવા માટે ૫% મેપીક્વેટ ક્લોરાઈડ ૨૦ ગ્રામ સક્રીય તત્વ/હે. (૮.૫ મીલી/૧૦લી) વાવણી બાદ ૬૦ અને ૭૫ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Suggestions: Approved with following correction** **1.** Recast recommendation **2.** Calculate B:C ratio (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.1.4	**Evaluation of different methods for manure preparation from straw and threshing waste of rice** Farmers are recommended to use *Bacillus licheniformis* X6 (10^4 cfu/ml) and *Aspergillus terreus* XF9 (10^4 cfu/ml) to reduce 13 to 18 days manure preparation time and to get good quality manure by NADEP method from paddy straw/waste in 118-123 days. **<u>Detail Method for Manure Preparation:</u>** ➢ Prepare 15-20 cm thick paddy straw and threshing waste layer (60 – 70 kg of paddy waste). Sprinkle 25 L of 30 % cow dung slurry containing 0.1 % of *Bacillus licheniformis* X6 (10^4 cfu/ml) and *Aspergillus terreus* XF9 (10^4 cfu/ml) over paddy waste layer.

	➢ Fill the NADEP as per its capacity by repeating above mentioned paddy waste layers. ➢ Periodically sprinkle water to maintain moisture during manure preparation time. ડાંગરના પરાળમાંથી ૧૩ થી ૧૮ દિવસનો ખાતર બનાવવાનો સમય ઘટાડવા અને સારી ગુણવત્તાવાળું ખાતર ૧૧૮ થી ૧૨૩ દિવસે મેળવવા માટે ખેડૂતોને બેસિલસ લાઈકેનિફોર્મિસ **X6 (104 cfu/ml)** અને એસ્પરજીલસ ટેરીયસ **XF9 (104 cfu/ml)** નો ઉપયોગ કરી નાડેપ પદ્ધતિથી ખાતર બનાવવાની ભલામણ કરવામાં આવે છે. **ખાતર તૈયાર કરવા માટેની વિગતવાર પદ્ધતિ :** • ડાંગરના પરાળનું ૧૫-૨૦ સેમી જાડું સ્તર (૬૦ - ૭૦ કિલો ડાંગરની પરાળ) તૈયાર કરવું. તેના ઉપર ૨૫ લિટર ગાયના છાણની (૩૦%) સ્લરી અને ૦.૧ % બેસિલસ લાઈકેનિફોર્મિસ **X6 (104 cfu/ml)** અને એસ્પરજીલસ ટેરીયસ **XF9 (104 cfu/ml)** ભેળવી તેનો છંટકાવ કરવો. • આ રીતે નાડેપ ની ક્ષમતા પ્રમાણે ડાંગરના પરાળના સ્તરો તૈયાર કરવા. • ખાતર બનાવવાના સમય દરમિયાન, ભેજ જાળવવા માટે સમયાંતરે પાણીનો છંટકાવ કરવો **Suggestions: Approved with following correction** **1.** Recast recommendation **2.** Write unit for xylose enzyme **3.** Table 1.1 and 1.4 check interaction effect (Action: HOD, FQTL, NMCA, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K. NAGAR

19.8.1.5	**Effect of seed priming on cumin and coriander for seed germination and related parameters under field condition** Farmers of North Gujarat growing cumin and coriander are recommended for priming of the seeds with 25 ppm solution of Gibberellic acid (GA_3) for 10 hrs to get better germination and seedling vigour. ઉત્તર ગુજરાતના જીરૂ અને ધાણાની વાવણી કરતાં ખેડૂતોને સારૂ અંકુરણ અને જુસ્સેદાર છોડ મેળવવા માટે ૨૫-પીપીએમ જીબરેલિક એસિડ(જીએ૩) માં ૧૦ કલાક

	(ડૂબાડી ત્યારબાદ બિયારણ ને મૂળવજન સુધી સુકવવાનું) પ્રાઇમિંગના રુપે બીજ માવજત કરવાની ભલામણ કરવામાં આવે છે. **Suggestions: Approved with following suggestion** 1. Verify the result of root vigor considering vigor index I and II 2. Modify the Gujarati text as per suggestion (Action: Head, Dept. of Genetics and Plant Breeding, CPCA, Sardarkrushinagar)

19.8.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

19.8.2.1	**Standardization of soil less culture in *Stevia rebaudiana* Bertoni** Stevia plant grown under soil less drip (Dutch Bucket) system using half MS media nutrient solution gave higher leaf yield with better quality. In soil less drip system, stevia plant can be harvested thrice. Moreover, half MS media nutrient solution was found to give better plant growth in terms of primary branches per plant (5.0 at 3rd cutting), chlorophyll content (44.04 SPAD value at 2nd cutting), fresh leaf weight (39.22 g/plant at 2nd cutting; 36.84 g/plant at 3rd cutting), dry leaf weight (8.92 g/plant at 2nd cutting; 7.02 g/plant at 3rd cutting), total leaf fresh (80.49 g) and dry weight (17.24 g) per plant with maximum stevioside (9.01 % at 1st cutting; 10.12 % at 2nd cutting) and rebaudioside A (4.47 % at 1st cutting) content. Furthermore, Half MS media showed less expenditure as compared to other nutrient media. **Approved with following corrections** **1.** Replace the word hydroponic with "soil less culture (Dutch Bucket) system" **2.** Modify the text as per suggestions (Action: Associate Research Scientist and Head, M&APRS, AAU, Anand)
19.8.2.2	**Synthesis, stability analysis of nano-thymol and evaluation of its anti-microbial activity for development of axenic cultures in Rose, Datepalm and Tobacco** Synthesis of nanothymol has been standardized by Anand Agricultural University, Anand. Analytical grade thymol crystals and tween 20 as a surfactant can be used for the synthesis of nanothymol. Sonication for 10 mins at 60% amplitude frequency is sufficient for synthesis of stable nanoemulsion. The size of nanothymol (0.6%) was 15.43 nm with PDI value of 0.3 and zeta potential of -19.8 mV. The synthesized nanothymol exhibited good antifungal and antibacterial activity against various isolates of date palm

	and tobacco leaves and rose nodes under *in vitro* conditions. Explants of tobacco, date palm soft and hard leaves and rose nodes exposed to 10% nanothymol for five minutes exhibited good antimicrobial potential in overcoming contaminant issues encountered during axenic culture establishment. **Approved with following corrections** 1. Recast the text. 2. Add concentration of nanothymol (Action: Associate Professor & Head, Biotech, AAU, Anand)

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19.8.2.3 Development of biochemical and molecular markers for heat tolerance in chickpea

The chickpea genotype namely ICC-4958 was identified highly tolerant when exposed to 42/37 ^{o}C temperature at germination stage. This genotype had high antioxidant activity, ascorbic acid, glutathione, super oxide dismutase, ascorbate peroxidase, glutathione reductase along with Quinone oxidoreductase, glutaredoxine and heat shock protein 70. SSR markers namely Cam1536, TA27, TR 58 could also reveal this genotype different at DNA level. Hence, this genotype can be exploited in breeding to develop heat tolerant lines/varieties of chickpea.

Suggestions:

1. **Approved after modification of text**

(Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)

19.8.2.4 Biochemical analysis based lipid indices of edible, non edible and medicinal herbs oils

Scientific community involved in lipid indices of edible oil research is recommended to use the sets of following biochemical based fatty acids calculation for the quality of oils and their lipid indices.

Edible oils	DR	ODR	LDR	MUFA	PUFA	SFA	DU	UI	AI	TI
GG -20	0.009	0.247	0.001	63.72	20.64	15.64	105.0	590.5	0.14	10.32
GG-21	0.008	0.185	0.003	69.62	15.67	14.71	101.0	597.0	0.13	9.18
GG-3	0.009	0.451	0.001	44.47	35.93	19.6	116.3	562.8	0.19	13.30
Coconut seed oil	0.007	0.396	0.011	11.43	7.05	81.52	25.5	129.4	20.73	34.60
Corn oil	0.012	0.563	0.005	33.24	41.43	25.33	116.1	522.7	0.67	23.17
Cotton seed oil	0.003	0.645	0.035	26.01	40.88	33.11	107.8	468.2	2.19	28.78
Soybean	0.022	0.612	0.025	23.5	53.88	22.62	131.3	541.7	0.36	14.30
Sunflower	0.007	0.630	0.019	30.71	47.09	22.2	124.9	544.6	4.32	17.60
Brown mustard seed	0.181	0.647	0.439	57.51	30.26	12.23	118.0	614.4	0.06	40.74
White sesame	0.001	0.558	0.011	39.17	48.19	12.64	135.6	611.5	0.09	10.00
Black sesame	0.001	0.574	0.007	38.07	50.47	11.46	139.0	619.8	0.08	8.34

DR= Desaturation ratio; ODR= Oleic desaturation ratio; LDR= Linoleic desaturation ratio; MUFA= Monounsaturated fatty acid; PUFA= Polyunsaturated fatty acid; SFA = Saturated fatty acid; DU= Degree of unsaturation; UI= Index of unsaturation; AI= Atherogenic index; TI= Thrombogenic index

Suggestions:

1. **Approved**

(Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)

19.8.2.5 **Biochemical analysis based lipid indices of edible, non edible and medicinal herbs oils**

Scientific community involved in the essential oil research of the following crops are recommended to use marker bioactive compounds detected through GC MS platform

Name of crops	Important Marker Bioactive compounds
Black pepper (*Piper nigrum* L.)	Piperine (α.-Phellandrene, 4.64%) cis-sabinene (23.21%) Caryophyllene (13.58%) Caryophyllene oxide (0.33%) 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl) (20.84%)
Volatile oil of Cardamom	α-Terpinyl acetate (37.05%) Eucalyptol (25.79%) Sabinen (3.41%)
Volatile oil of Cinnamom	Cinnamaldehyde, (E) (77.55%) Copaene (2.98%)
Volatile oil from leaves of cinnamom	Phenol, 2-methoxy-3-(2-propenyl) (79.17%)., Spathulenol (3.26%) gamma.-Elemene (3.66%)., Caryophyllene (1.24 %)
Volatile oil of cloves	Caryophyllene (37.5%) and Phenol, 2-methoxy-3-(2-propenyl)-(44.04%)
Volatile oil of coriander leaves	LINALOOL (63.23%), 2,6-Octadien-1-ol, 3,7-dimethyl-, acetate(7.78%).,1,6-Octadien-3-ol, 3,7-dimethyl(2.64%).,(1R)-2,6,6-Trimethylbicyclo[3.1.1]hept-2-ene (2.59%)
Volatile oil of cumin seeds	Beta.-Pinene (19.09%) Benzene, 1-methyl-4-(1-methylethyl) (12.4%) 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl) (10.69%)Benzaldehyde, 4-(1-methylethyl) (26.8%) TERPIN-7-AL <GAMMA-> DB5-1106 (12.36%)
Volatile oil of curry leaves	Bicyclo[7.2.0]undec-4-ene, 4,11,11-trimethyl-8-methylene-,[1R-(1R@,4Z,9S@)] (29.28%) Caryophyllene (4.44%),.alpha.-Caryophyllene(4.88%) Azulene, 1,2,3,3a,4,5,6,7-octahydro-1,4-dimethyl-7-(1-methylethenyl)-(21.24%)

			[1R-.alpha.,3a.beta.,4.alpha.,7.beta.)]-Caryophyllene oxide (4.05%).
		Volatile oil of Dill seed	Tetrahydro carvone (19.82%) trans-dihydrocarvone (14.53%) cis-Carvyl acetate (25.7%) Eugenol (0.01%) And Apiol (Abotion drug) (17.59%)
		Volatile oil of Dry ginger	CURCUMENE (16.56%) Zingiberene (21.03%); FARNESENE <(E,E)-ALPHA (15.26%) beta-Sesquiphellandrene (7.61%) VALERIANOL (5.91%)
		Volatile oil of fennel seed	Fenchone (8.93%) Anisole, p-allyl(5.29%) (Estragole) cis-Anethol (68.56%)
		Volatile of Garlic oil	1,3-Dithiane (6.7%) Dimethyl trisulfide (7.43%) Diallyl disulphide (17.72%) Hydroperoxide, 1,4-dioxan-2-yl (26.34%) Trisulfide, di-2-propenyl (31.49%)
		Volatile oil of holy basil	1,6-Octadien-3-ol, 3,7-dimethyl (18.47%)/(Linalool) METHYL CINNIMATE (8.48%) and METHYL CINNIMATE <(E)-(45.94%)
		Volatile oil of mint leaves	Limonene (5%) 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, trans-(35.63%) 2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl) (31.59%) trans-Carveyl acetate (5.19%)
		Volatile oil of nutmeg	1R)-2,6,6-Trimethylbicyclo[3.1.1]hept-2-ene/ (α-Pinene-14.64%) Bicyclo[3.1.0]hexane, 4-methylene-1-(1-methylethyl)-(cis-sabinene-18.5%) Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (S)-(Limonene-5.84%) 1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-(α-Terpinene-5.13%) 3-Cyclohexen-1-ol, 4-methyl-1-(1-methylethyl)-((R)-(-)-; (-)-Terpinen-4-ol-8.05%) Benzene, 1,2-(methylenedioxy)-4-propenyl-, (E)-((β-Isosafrole-5.4%)
		Volatile oil of nutmeg mace	α-Pinene-(15.97%);. cis-sabinene-(17.66%);α-Terpinene-(6.23%), L-4-terpineol-(9.11%)

Turmeric oil & Oleoresin	Caryophyllene (6.74 %and 0.29,%) ZINGIBERENE (18.86% and 4.59%) Benzene, 1-(1,5-dimethyl-4-hexenyl)-4-methyl (9.49% and 0.45%) SESQUIPHELLANDRENE <BETA(14.25% and 1.17%) Tumerone (23.26% and 17.39%) Ar-tumerone (25.15% and 8.93%)

Suggestions: Approved with following suggestion

1. In table replace "Name of crops" with "Name of crops/compounds/derivatives"
2. Reposition the word "marker" in text at the end.
3. Do minor language corrections as per suggestions

(Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)

19.8.2.6 Diversity analysis of marine diatoms through SEM-EDX from surface microalgae of saurashtra coastal belt

The scientific community working on diatoms of coastal belt of Saurashtra are recommended to use diatoms diversity analysis done through Scanning electron microscopy as ready references. The diatom analysis of marine samples from three locations (Okha,Veraval and Aadri) identified fifty diatom species and most of them are pennate types. The *Cocconeis* spp, *Grammatophora* spp, *Fragilaria* sp, *Nitzschia* sp, *Navicula* sp., *Achnanthes* spp and *Licmophora* were found dominant diatoms on the surface of microalgae. Again, diatom abundance of *Cocconeis scutellum* was reported higher than 52% of total diatom considering three locations. The energy dispersive X-ray spectroscopy (EDS) graph prepared for individual species of diatoms from SEM images observed that the frustules of the diatoms were other than Si. It has many elements at various sites attached to them. The catalogue of diatoms and alfa-diversity index revealed many diverse rich populations in coastal belt of Saurashtra.

Suggestions: Approved with following suggestion

1. Recast the text
2. Correct the spelling of "coastle"

(Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)

General comments for JAU:

1. Table numbering is not proper
2. Provide reference where required in methodology

NAVSARI AGRICULTURAL UNIVERSITY

19.8.2.7	**Phytochemical screening and determination of antioxidant activity of different mango cultivars** Mango cv. Langra has considerable amount of nutraceuticals with highest amount of total polyphenols and ascorbic acid in the pulp and peel. Maximum total flavonoids were found in Langra peel with highest antioxidant activities in pulp, peel and kernel. Majority of phenolic acids were found in Langra cultivar. Phytochemicals in their relative abundance make the Langra superior than other selected cultivars and can be useful for further varietal improvement programme as well as for food purpose. **Suggestions: Approved with following correction** **1.** Recast recommendation **2.** Remove table from recommendation text. (Action: HOD, Fruits science, ACH, NAU, Navsari)

19.8.2.8	**Comparative study of biochemical parameters in dry and sprouted seed of green grams** Out of seven genotypes of green gram (GM-7, GBM-1, CO-4, GM-4, GM-6, MEHA, GAM-5) studied, raw GM-4 and sprouted CO-4 genotype are prominent for most of their quality parameters. Raw GM-4: Total sugar, total phenol, carotenoids, calcium, magnesium, sulphur, iron, manganese Sprouted CO-4: Total proteins, total phenol, moisture content, calcium, magnesium, manganese **Suggestions: Not approved** **1.** In the analysis, many values of protein and minerals were found imprecise. (Action: Principal, COA, NAU, Bharuch)
19.8.2.9	**Exploring cellulolytic bacteria as cotton stalk degrader** Bacterial isolates identified as *Pseudomonas putida* NAU-PP-2 and *Bacillus licheniformis* NAU-PP-9 at 1 x 10^8 CFU/ml were recorded with Carboxymethyl cellulase activity (µmol/min/ml) of 1.196 and 1.511, Filter paper cellulase activity (µmol/min/ml) of 0.1897 and 0.1888, cotton stalk weight loss (%) of 20.80 and 16.94 and moisture content (%) of 62.34 and 65.35, respectively during cotton stalk degradation study.

	Suggestions: Approved with following correction **1.** Recast recommendation **2.** Write full form for CMcase in the recommendation text. **3.** Mention bacterial count in the recommendation text. (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.2.10	**Biochemical changes associated with storage period in sweet potato** The sweet potato genotypes NSP2 for moisture, NSP 5 for strach, amylose, protein, antioxidant activity, NSP 18 for crude fiber, C-71 for ascorbic acid, are suitable for storage at average minimum room temperature of 11.92^{o}C and maximum of 29.32^{o}C due to their comparative lower nutrient loss during the storage period. **Suggestions: Approved with following correction** **1.** Recast recommendation **2.** Write amylose activity unit**.** (Action: HOD, Soil Sci & Agri Chem, NMCA, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K. NAGAR

19.8.2.11	**Effect of foliar application of zinc and iron fertilizer on grain quality and yield of mung bean (*Vigna radiata* L.)** Foliar application of 0.25 percent zinc sulphate monohydrate ($ZnSO_4.H_2O$) and 0.25 percent ferrous sulphate heptahydrate ($FeSO_4.7H_2O$) on 30 days mung crop is recommended to improve iron and zinc content in mung grain. **Suggestions: Approved with following suggestion** 1. Recast the text para 2. Mention the source of Zn and Fe in recommendation (Action: Head, Dept. of Biochemistry, CBSH, Sardarkrushinagar)
19.8.2.12	**Effect of soil application of zinc and iron fertilizer on grain quality and yield of mung bean (*Vigna radiata* L.)** Soil application of 10 Kg zinc sulphate monohydrate (ZnSO4.H2O) and 15 Kg ferrous sulphate heptahydrate (FeSO4.7H2O) before sowing of mungbean crop is recommended to improve iron content in mung grain. **Suggestions: Approved with following suggestion** 1. Recast the text para° 2. Confirm zinc and iron content in the soil before and after the experiment with soil scientist (Action: Head, Dept. of Biochemistry, CBSH, Sardarkrushinagar)

19.8.2.13

Characterization of colostrum fat globule membrane (CFGM) from Kankrej cow

The colostrum sample collected from Kankrej cow on 3rd day had significant amount of biologically active putative proteins viz., Mucin1, Xanthine oxidase (XO), Periodic Acid Schiff (PAS 3/4) and contained adequate amount of cholesterol and phospholipids as compared to mature milk.

Suggestions: Approved with following suggestion

1. Recast the text para
2. Add word "putative" before protein in the recommendation text.

(Action: Head, Dept. of Biochemistry, CBSH, Sardarkrushinagar)

19.8.2.14

Tagging of wilt Resistant gene(s) in castor

SSR Markers namely Castor_SSR_ 22, Castor_SSR_65, Castor_SSR_46 and Castor_SSR_ 244 found linked with qWilt 4.1, qWilt 6.1, qWilt 7.1/7.2 and 10.1/2 respectively are useful for fine mapping of wilt resistant genes as well as screening of genotypes for wilt resistance in castor.

S. N.	SSR	Primer F	Primer R	Amplicon Size (~bp)
1	Castor_SSR_22	GGAGTTTGAGGAAGGGAAGC	TCCATGGTCATGGGAACAGT	220-240*
2	Castor_SSR_65	CTGCGAGGGTTTCTTCTGTC	CCTGGTTCTAGGGAACACACA	260*-280
3	Castor_SSR_46	GCTTTGCTCGTCCATTCTTC	GCATGCATGTTGTGTGTCTG	265*-280
4	Castor_SSR_244	TTTTTGGCAGGGTAAAATGG	GAGAGAGTGTGCGCATGTGT	200*-220
*resistant allele				

Suggestions: Approved with following suggestion

1. Use "respectively" in text.
2. Add the list of primer name in the recommendation text.

(Action: HOD GPB/PMBB, CPCA, SDAU, Sardarkrushinagar)

19.8.2.15

DNA fingerprinting of date palm genotypes using SSR markers

Genome-wide SSR markers were identified and 66 were selected for genotyping. In the set of 48 date palm genotypes, 22 SSR markers were found polymorphic. Listed markers possessing PIC value greater than 0.50 are highly useful to differentiate date palm genotypes.

SN	SSR	Primer F	Primer R	Amplicon Size (~bp)
1	DP SSR 8	GCGCATGGAAATCAAAGCTG	TGCCTACGCAGCTTAACAC	190-250
2	DP SSR 9	ATTACCGTTTGGCCTCCGG	TGCCCGTCATGTGTGAGTTG	190-260
3	DP SSR 10	AGCCCAGTCTCTCTCTCTCTC	TCATGGGGGAAGTAGGTAGC	200-240
4	DP SSR 14	TACCCAGGAAACAGCAAGGC	ACGATGAATGGGTCTCACGAG	190-260
5	DP SSR 28	GTTATAGGTCATGGCCGCCC	ACAGGAGGAAACAGCTGACG	150-260
6	DP SSR 31	CCAAGGATGCTGCAAGACTG	GCTTCCAAATGTTTGCGTGC	110-200
7	DP SSR 33	TGAAAACCCTAACTGGTAGTCTG	GTGTAGTCTCCTTCCCCCAAG	110-250

8	DP SSR 46	CCGTACGTTGGATTGTACAATGAG	CCTCACAAACTCTAGCTCCCAG	200-220
9	DP SSR 49	GCCTCCACCTAGGTAATGGG	TGCATACCAATGTTCATATGCTCG	140-220
10	DP SSR 53	GGGGGAGACTTAATCGTCGC	TCCCTAGACCAGCGAAAACAG	140-230

Suggestions: Approved with following suggestion

1. Add the amplicon size in recommendation table
2. Recast the recommendation

(Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)

19.8.2.16 **Effect of different concentrations of pendimethalin and metsulfuron-methyl on beneficial soil bacterial population in wheat**

Application of pendimethalin (pre-emergence) had more inhibitory effect on soil beneficial bacteria (N-fixing bacteria, PSB, actinomycetes) at 10 DAS whereas application of metsulfuron-methyl (post-emergence at 30 DAS) had more inhibitory effect on soil beneficial bacteria (N-fixing bacteria, PSB, actinomycetes) at 40 DAS in wheat.

Suggestions: Approved with following suggestion

1. Recast the recommendation
2. Table 6: recheck the CD and DMRT

(Action: Head, Dept. of Microbiology, CPCA, SDAU, Sardarkrushinagar)

19.8.2.17 **Study of oil quality parameters of mustard genotypes**

To explore potential of mustard varieties and genotypes in breeding programme, the below mentioned genotypes/ varieties may be used for oil content, SKM 1329 (42.1 %), GM 2 (41.4 %), SKM 1319 (41.3 %), PM 67 (40.7 %); for oleic acid, T 27 (17.98 %); for linoleic acid, GDM 5 (16.91 %), Varuna (16.78 %), GDM 4 (16.67 %), SKM 1319 (16.42 %), PM 67 (16.23 %); for Linolenic acid, PM 25 (15.73 %); for Erucic acid, T 27 (46.39 %), PS 66 (57.44 %); for Glucosinolate, GDM 4 (85.7 µmol/g), PS 66 (89.9 µmol/g), for MUFA, T 27 (28.23 %) and for PUFA, PM 25 (31.45 %).

Suggestions: Approved with following suggestion

1. Recast the recommendation text.
2. Write “genotype/variety” instead of “genotypes”

(Action: Res. Scientist, Centre for Oilseed Research, SDAU, Sardarkrushinagar)

19.8.2.18 **Study of oil quality parameters of castor genotypes and hybrids**

To explore potential of castor genotype and hybrids under breeding programme, the genotypes SKP 84 contains 50.7 % Oil content, 88.26 % Ricinoleic acid, 691 (cp) Viscosity at 25°C, 0.1+0.4 Colour, 0.62 Acid value, 89 Iodine value, 184 Saponification value, 0.961 (g/cc) Specific gravity and 12.28 C:N ratio while the genotype SKP 42 contains 50.3 % Oil content,

	88.53 % Ricinoleic acid, 681 (cp) Viscosity at 25°C, 0.1+0.3 Colour, 0.59 Acid value, 89 Iodine value, 186 Saponification value, 0.962(g/cc) Specific gravity and 11.94 C:N ratio. **Suggestions: Approved with following suggestion** 1. Modify the recommendation by considering only SKP84 and SKP42. (Action: Res. Scientist, Centre for Oilseed Research, SDAU, Sardarkrushinagar)

19.8.3 New Technical Programmes

Anand Agricultural University

Sr. No.	Title	Suggestion/s and Action
19.8.3.1	Influence of tryptophan on nutraceutical potential of tomato (*Solanum lycopersicum* L.)	**Suggestions: Approved with following suggestion** 1. Add parameter: free amino acid in fruits (Action: Professor and Head, Department of Biochemistry, BACA, AAU, Anand)
19.8.3.2	Biofortification for provitamin D3 in tomato through CRISPER-Cas based genome editing	**Suggestions:** 1.Approved (Action: Research Scientist, Department of Agril Biotechnology, AAU, Anand)
19.8.3.3	Effect of different nitrogenous fertilizer sources on morpho physiological traits, gene expression and gas emission in wheat	**Suggestions: Approved with following suggestions** 1. Add parameter: Crude protein and gluten 2. Remove "green house" from title and recast the title 3. Replace tillers/row with effective tillers/row in parameter 4. Correct the title language (Action: Assoc. Research Scientist, CARPTC, AAU, Anand)

19.8.3.4	Effect of water stress and paclobutrazole on morpho-physiological growth and yield in groundnut (*Arachis hypogea* L.)	**Suggestions: Approved with following suggestions** 1. **Suggested title:** Effect of water stress and paclobutrazole on morpho-physiological growth and yield in groundnut (*Arachis hypogea* L.) (Action: Assistant Professor and Head, Plant Physiology, BACA, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
19.8.3.5	Genome wide Transcriptome analysis for identification of candidate genes under climate resilience in per millet	**Suggestions: Approved with following suggestion** 1. Instead of CRD use FCRD 2. Provide information on replications 3. Replace "climate resilience" with "heat stress" in title 4. Recast the objectives (Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)
19.8.3.6	Study of flowering gene dynamics in kesar after the application of peclobutrazole	**Suggestions: Approved with following suggestion** 1. Modify the title as per suggestion : Study of flowering gene dynamics in kesar after the application of peclobutrazole 2. Remove morphological parameters from study (Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)
19.8.3.7	Genome wide Transcriptome analysis of soyabean under varying water deficit conditions	**Suggestions: Approved with following suggestion** 1. Provide information about tissues and growth stage targeted for study 2. Add morpho-physiological parameters including root based traits

		3. Modify objective 1- Study of genotypes for various moroho-physiological traits under different water deficit stress (Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)
19.8.3.8	Microbial and meta-omics study on bio stimulants (*beejamrit* and *dravajivamrit*) and biorationals (*neemastra* and *dasha parni ark*)	**Suggestions: Approved with following suggestion** 1. Merge objective 1 and 2 reconfirm the use of term "*dravajivamrit"* 2. Remove word "organic" from objectives (Action: Professor and Head, Department of Biotechnology, JAU, Junagadh)
19.8.3.9	Agro-physiological management of the drought in Pearl millet genotypes (AICRP Trial)	**Suggestions: Not Considered** 1. Deferred due to AICRP experiment as such (Action: Research Scientist (Pearl Millet), Pearl Millet Research Station, JAU, Jamnagar)
19.8.3.10	Ameliorative responses of synthetic compounds on wheat (*Triticum aestivum* L.) under heat stress condition	**Suggestions: Approved with following suggestion** 1. Add "growth and yield of" before "wheat" in the title (Action: Research Scientist (Wheat), Wheat Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestion/s and Action
19.8.3.11	Study of biochemical and mineral composition of different vegetable microgreens and their mature greens	**Approved with following suggestions** 1. Add biochemical parameters – chlorophyll content, moisture content. 2. Perform analysis on fresh tissues rather than freeze dried tissue during experiment. 3. Write fully expended leaf instead of 7-15 days duration in the methodology. **4.** Mention number of observation per treatment and sample size. (Action: Principal, COA, NAU, Bharuch)

19.8.3.12	Effect of different defoliants on HDPS cotton	**Suggestions: Approved with following suggestions** 1. Add fibre quality parameters. **2.** Include soil data in the experiment**.** (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.3.13	Screening of cotton genotype for salinity tolerance	**Approved with following suggestions** 1. Use design FCRD. 2. Add moisture content observation. 3. Write 6 dsm EC soil instead of more than 6 dsm EC soil. 4. Add new observation - soil pH and EC at Initial and 45 days. 5. Include check G.Cot16 for salinity tolerance. 6. Use same EC/pH water for irrigation during experiment. (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.3.14	Study on bacterial decomposition of cotton stalk in the soil and its effect on cotton seedling growth	**Approved with following suggestions** 1. Add new observation – seedling length, dry weight. 2. Add new observation – soil EC and soil pH; and record these parameters before and after the experiment. (Action: Research Scientist (Cotton), MCRS, NAU, Surat)*]*
19.8.3.15	Study of multifunctional characters of endophytic bacteria isolated from wild cotton plant *Gossypium aridum*	**Approved with following suggestions** 1. **Add bacterial count number**, CFU observations for 3rd objective. 2. In treatment, write endophytic isolates instead of 13. (Action: Research Scientist (Cotton), MCRS, NAU, Surat)
19.8.3.16	Partial purification of IAA produced by the paddy rhizospheric bacteria	**Approved with following suggestions** 1. Change the title as "Isolation, characterization and partial purification of IAA produced by the paddy rhizospheric bacteria" 2. Merge objectives 1 and 2.

		(Action: HOD, Dept. of Agril. Microbiology, NMCA, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K. NAGAR

Sr. No.	Title	Suggestion/s and Action
19.8.3.17	Development of sex chromosome specific gene based multiplex PCR for differentiation of male and female genotypes in date palm	**Suggestions: Approved with following suggestion** 1. Remove "reaction" word from objective. 2. For DNA extraction, take seedling stage sample. (Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)
19.8.3.18	Development of fluorescence labelled SSR marker panel for differentiation of castor hybrids released from Gujarat	**Suggestions:** **Approved** (Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)
19.8.3.19	Method development and its validation for determination of multi-residues of pesticides in pomegranate	**Suggestions: Approved with following suggestion** 1. Present this program for technical input in Plant Protection group (Action: Unit Head, BSRC, SDAU, Sardarkrushinagar)
19.8.3.20	Effect of synthetic compound on growth, yield and yield attributes of pearl millet (*Pennisetum glaucum* L.) under heat stress condition	**Suggestions: Approved with following suggestion** 1. Replace "Responses" in title with "Effect" 2. Add parameters: moisture, canopy temperature (Action: Principal, Vanbandhu Polytechnic College, SDAU, Amirgadh)

19.9 SOCIAL SCIENCE SUB COMMITTEE

Particulars	Social Science
Dates	May 01-03, 2023
Chairmen	Dr. R. M. Chauhan, VC, SDAU
Co- Chairmen	1. Dr. H. B. Patel, DEE, AAU 2. Dr. H. M. Gajipara, DEE, JAU
Rapporteurs	1. Dr. J. B. Patel, AAU 2. Dr. S. B. Vekariya, JAU 3. Dr. Narendra Singh, NAU 4. Dr. J. J. Mistry, SDAU
Statistician	Dr. D. V. Patel, Assoc. Professor, JAU
Venue	Training Hall, EEI, AAU, Anand
Presentation	Respective Conveners of AAU, JAU, NAU, SDAU and KU

Summary

Name of University	No. of Recommendations						New Technical Programs	
	Farmers/ Entrepreneurs/ Industry		Scientific					
	Proposed	Approved	Proposed	Approved	With-Held *	Dropped	Proposed	Approved
AAU	00	00	02	03 #	01	00	33	33
JAU	00	00	13	09	02	02	04	04
NAU	00	00	07	06	00	01	24	24
SDAU	01	01	08	04	02	02	06	06
KU	00	00	00	00	00	00	04	04
Total	**01**	**01**	**30**	**22**	**05**	**05**	**71**	**71**

NOTE: # Three separate recommendations made from one recommendation

* The study extended for the next year (2023-24)

At the outset Dr. V. V. Prajapati, Senior Scientist & Head and Convener of Social Science Sub Committee welcomed Honorable Vice-Chancellor of SDAU, Dr. R. M. Chauhan and all the dignitaries, Co-Chairman, conveners, rapporteurs and members of this sub-committee of SAUs and KU

In his opening remarks Honorable Vice-Chancellor of SDAU, Dr. R. M. Chauhan greeted all the esteem members present in the sub-committee meeting. He appreciated the work done by the extension scientists and all the scientists of the social science sub-committee. He was of opinion that the role and responsibility of extension personnel is very much important when it comes to the transfer of research findings. He reiterated that this group have great role to disseminate important and useful research finding for

socioeconomics transformations of farming community of the state. He also informed the members that in the present combined joint sub-committee meet, 01 recommendation for Farming community, 22 for scientific recommendations and 71 new technical programmes shall be discussed.

The technical session began with the discussion of recommendations of AAU-Anand. Recommendations of the respective SAUs and KU were presented by conveners of the respective university.

Presentation of recommendations and New Technical Programs by the Conveners of SAUs

Sr. No.	Name and Designation	University
1.	**Dr A D Kalola** Associate Professor & Head, Dept. of Agril. Statistics, BACA, AAU, Anand	**AAU**
2.	**Dr. V. D. Tarpara** Professor & Head, Dept. of Agril. Economics, CoA, JAU, Junagadh	**JAU**
3.	**Dr. Narendra Singh** Professor & Head, Dept. of Agril. Economics, NMCA, NAU, Navsari	**NAU**
4.	**Dr. V. V. Prajapati** Senior Scientist & Head, Krishi Vigyan Kendra, SDAU, Deesa	**SDAU**

Summary of the Farmer & Scientific Recommendations

Name of University	No. of Recommendations					
	Farmers/Entrepreneurs/ Industry		Scientific			
	Proposed	Approved	Proposed	Approved	With-Held *	Dropped
AAU	00	00	02	03 #	01	00
JAU	00	00	13	09	02	02
NAU	00	00	07	06	00	01
SDAU	01	01	08	04	02	02
KU	00	00	00	00	00	00
Total	**01**	**01**	**30**	**22**	**05**	**05**

19.9.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY: NIL

JUNAGADH AGRICULTURAL UNIVERSITY: NIL

NAVSARI AGRICULTURAL UNIVERSITY: NIL

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.9.1.1	**Seasonality and market integration of castor seed in Gujarat** It is recommended to the farmers of Gujarat to sell their castor seed in market during August, September and November months. So, they can obtain maximum prices for their castor crop. આથી ગુજરાતમાં દિવેલાનો પાક લેતા ખેડૂતોને વધુ ભાવ લેવા માટે દિવેલા ઓગસ્ટ સપ્ટેમ્બર નવેમ્બર મહિનામાં વેંચાણ કરવા ભલામણ કરવામાં આવે છે. **Approved** (Action: Professor and Head, Dept. of Agril. Economics, CPCA, SDAU, Sardarkrushinagar)

19.9.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY/POLICY MAKERS/MESSAGE FOR EXTENSION FUNCTIONARIES

ANAND AGRICULTURAL UNIVERSITY, ANAND

19.9.2.1	**Evaluation and development of yardstick of CV% for Vegetable crops experiments** The yard stick of CV% for accepting the results of the vegetable crops experiment is now recommended as 16.78, *i.e.* 17 per cent for yield character in place of our previous recommendation of 17.73 per cent. **Withheld with following suggestion:** **1.** Add the experimental data of agronomy discipline and present in next AGRESCO. (Action: Professor and Head, Dept. of Agril. Statistics, BACA, AAU, Anand)
***	**Development and standardization of a scale to measure the horticultural farming adopting self-confidence of rural youth** **Approved with following suggestion:** House suggested to make three separate recommendations from one

recommendation. These are as under:

i. Development and standardization of a scale to measure the Orchard farming adopting self-confidence of rural youth
ii. Development and standardization of a scale to measure the Vegetable farming adopting self-confidence of rural youth
iii. Development and standardization of a scale to measure the Floriculture adopting self-confidence of rural youth

(Action: Professor and Head, Dept. of Agril. Extn. & Com., AAU, Anand)

19.9.2.2 Development and standardization of a scale to measure the Orchard farming adopting self-confidence of rural youth

Final statements for scale to measure self-confidence of rural youth for adopting orchard farming

Sr. No.	Statements	SA	A	UDA	DA	SDA
1	I have enough confidence to establish an orchard farm on my own. (+) મને મારી જાત ઉપર ફળ પાકોની ખેતી શરૂ કરવાનો પુરો વિશ્વાસ છે. (+)	5	4	3	2	1
2	I am not good at the maintenance of machinery used in my orchard farming (-). ફળપાકોની ખેતીમાં વપરાતી મશીનરીની મરામત હું સારી રીતે કરી શકતો નથી. (-)	1	2	3	4	5
3	I am confident to manage plant protection measures in orchard farming (+). મને ફળપાકોમાં જરૂરી પાક સંરક્ષણના પગલા લેવામાં વિશ્વાસ છે. (+)	5	4	3	2	1
4	Managing Integrated Pest Management in orchard farming is beyond my capacity (-) ફળપાકોમાં સંકલિત જીવાત વ્યવસ્થાપન કરવું એ મારી ક્ષમતા બહારની બાબત છે. (-)	1	2	3	4	5
5	I can handle plant protection appliances independently in orchard farming (+). હું ફળપાકોની ખેતીમાં પાક સંરક્ષણ માટે જરૂરી સાધનો ચલાવી શકું છું. (+)	5	4	3	2	1
6	I am not confident to do training in my fruit trees (-)	1	2	3	4	5

	ફળ ઝાડમાં ટ્રેનીગ (કેળવણી) કરવાનો મને વિશ્વાસ નથી. (-)					
7	I have self-confidence to handle Integrated Nutrient Management in orchard farming (+). મને ફળપાકોમાં સંકલિત પોષણ વ્યવસ્થા અપનાવવા માટે વિશ્વાસ છે. (+)	5	4	3	2	1
8	I am confident to include scientific methods in my orchard farming (+). ફળપાકોની ખેતીમાં વૈજ્ઞાનિક પધ્ધતિઓ અપનાવવા માટે મને વિશ્વાસ છે. (+)	5	4	3	2	1
9	I am confident to handle risks involved in orchard farming independently (+). ફળપાકોની ખેતી સાથે સંકળાયેલ જોખમને નિવારવાનો મને વિશ્વાસ છે. (+)	5	4	3	2	1
10	I am confident to choose the ideal varieties of fruit crops for my farm. (+) મારી વાડીના ફળપાકો માટે આદર્શજાતો પસંદ કરવા અંગે મને વિશ્વાસ છે. (+)	5	4	3	2	1
11	I am capable to produce quality fruit productions (+). હું સારી ગુણવત્તાવાળા ફળોનું ઉત્પાદન કરી શકું છું.(+)	5	4	3	2	1
12	I feel self-reliant in adopting orchard farming permanently (+). ફળ પાકોની ખેતી કાયમી ધોરણે અપનાવવાથી મને આત્મનિર્ભર હોવાનો અહેસાસ થાય છે. (+)	5	4	3	2	1

SA-Strongly Agree, A - Agree, UD - Undecided, DA - Disagree, SDA -Strongly Disagree

Approved

(Action: Professor and Head, Dept. of Agril. Extn. & Com., AAU, Anand)

19.9.2.3 **Development and standardization of a scale to measure the Vegetable farming adopting self-confidence of rural youth**

Final statements for scale to measure self-confidence of rural youth for adopting vegetables farming

Sr. No.	Statements	SA	A	UDA	DA	SDA
1	I have enough confidence to establish a	5	4	3	2	1

		vegetable farm on my own. (+) મને મારી પોતાની જાત ઉપર શાકભાજીની ખેતી શરૂ કરવા માટે વિશ્વાસ છે. (+)					
	2	I am confident to choose appropriate varieties of vegetable crops for my farm. (+) મારા ખેતર ઉપર થતા શાકભાજીના પાકોની આદર્શ જાતો પસંદ કરવા અંગે મને પૂર્ણ વિશ્વાસ છે. (+)	5	4	3	2	1
	3	I am self-confident in doing transplanting vegetable crops. (+) મને શાકભાજીના પાકોમાં ફેરરોપણી કરવાનો આત્મ વિશ્વાસ છે. (+)	5	4	3	2	1
	4	I am confident to guide other farmers about vegetable crop production. (+) હું શાકભાજી પાકોના ઉત્પાદન અંગે અન્ય ખેડૂતમિત્રોને માર્ગદર્શન આપવા સક્ષમ છું. (+)	5	4	3	2	1
	5	I feel independent in adopting vegetable farming permanently. (+) શાકભાજીની ખેતી કાયમી ધોરણે અપનાવવાથી હું આત્મનિર્ભરતા અનુભવું છું. (+)	5	4	3	2	1
	6	I have skill to handle Integrated Nutrients Management in vegetable cultivations. (+) શાકભાજીના પાકોમાં જરૂરી સંકલિત પોષણ વ્યવસ્થા કરવાની મારામાં કુશળતા છે. (+)	5	4	3	2	1
	7	I have enough confidence to handle risks involved in the cultivation of vegetables. (+) શાકભાજીની ખેતી સાથે સંકળાયેલ જોખમને નિવારવા હું જરૂરી વિશ્વાસ ધરાવું છું. (+)	5	4	3	2	1
	8	I am confident in handling post-harvest management in vegetables to reduce	5	4	3	2	1

	losses. (+) શાકભાજીની કાપણી/વીણી પછી થતુ નુકશાન ઘટાડવા, કાપણી પછીની વ્યવસ્થા (પ્રક્રિયાઓ) સંભાળવાનો મને વિશ્વાસ છે. (+)					
9	I am confident to sell vegetables in the market successfully. (+) શાકભાજીને બજારમાં સફળતાપૂર્વક વેચવાનો મારામાં વિશ્વાસ છે. (+)	5	4	3	2	1
10	I am confident to handle plant protection measures in vegetable crops. (+) મને શાકભાજીના પાકોમાં પાક સંરક્ષણના પગલાં લેવાનો વિશ્વાસ છે. (+)	5	4	3	2	1

SA-Strongly Agree, A - Agree, UD - Undecided, DA - Disagree, SDA -Strongly Disagree

Approved

(Action: Professor and Head, Dept. of Agril. Extn. & Com., AAU, Anand)

19.9.2.4 **Development and standardization of a scale to measure the Floriculture adopting self-confidence of rural youth**

Final statements for scale to measure self-confidence of rural youth for adopting floriculture

Sr. No.	Statements	SA	A	UDA	DA	SDA
1	I have enough confidence to establish a floriculture farm on my own. (+) ફુલ પાકોની ખેતી શરૂ કરવા માટે મને પૂરતો વિશ્વાસ છે. (+)	5	4	3	2	1
2	I have practical ability to carry out exercises associated with quality flower productions. (+) ગુણવત્તાવાળા ફુલોનું ઉત્પાદન કરવા જરૂરી ખેતી પધ્ધતિઓ વ્યવ્હારીક રીતે કરવાની ક્ષમતા ધરાવું છું (+)	5	4	3	2	1
3	I am self-confident to produce flowers in different seasons. (+) મને વિશ્વાસ છે કે, હું જુદી જુદી ઋતુઓમાં ફુલોનું ઉત્પાદન કરી શકું છું. (+)	5	4	3	2	1
4	I am self-confident to handle irrigation	5	4	3	2	1

		management associated with flower cultivations. (+) ફુલોની ખેતીમાં જરૂરી પિયત વ્યવસ્થા સંભાળવા હું સક્ષમ છું. (+)					
	5	I have the confidence to manage risks associated with the cultivation of flower crops. (+) ફુલોની ખેતી સાથે સંકળાયેલ જોખમને નિવારવાનો મને વિશ્વાસ છે. (+)	5	4	3	2	1
	6	I am confident in producing quality flowers under controlled conditions. (+) મને વિશ્વાસ છે કે, હું નિયંત્રિત પરિસ્થિતિમાં ગુણવત્તાવાળા ફુલોનું ઉત્પાદન કરી શકું છું. (+)	5	4	3	2	1
	7	I am confident to handle post-harvest management practices of flower cultivations. (+) ફુલોની વીણી/કાપણી બાદ, જરૂરી કાપણી બાદની વ્યવસ્થા સંભાળવા હું સક્ષમ છું. (+)	5	4	3	2	1
	8	I am confident in handling labors to manage a floriculture farm. (+) ફુલોની ખેતીમાં જરૂરી મજૂરોની વ્યવસ્થા હું વિશ્વાસપૂર્વક સંભાળી શકુ છું. (+)	5	4	3	2	1
	9	I am not confident in the marketing of flowers successfully. (-) ફુલોનું સફળતાપૂર્વક વેચાણ કરવા અંગે મને વિશ્વાસ નથી. (-)	5	4	3	2	1
	10	I have expertise to handle the harvesting of flowers as per the demand of the market. (+) બજારની જરૂરીયાત પ્રમાણે ફુલોની વીણી/કાપણી કરવાની આવડત મારામાં છે. (+)	5	4	3	2	1
	11	I am self-reliant in adopting floriculture farming as a profession permanently. (+) ફુલોની ખેતીને કાયમી વ્યવસાય તરીકે	5	4	3	2	1

	અપનાવવા હું આત્મનિર્ભર છું.(+)					
12	I am not good at the maintenance of tools and implements used in my floriculture farms. (-) ફુલોની ખેતીમાં વપરાતી મશીનરીની મરામતહું સારી રીતે કરી શકતો નથી. (-)	1	2	3	4	5

SA-Strongly Agree, A - Agree, UD - Undecided, DA - Disagree, SDA -Strongly Disagree

Approved

(Action: Professor and Head, Dept. of Agril. Extn. & Com., AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No	Growth, instability and decomposition analysis of major nutri-cereals production in Gujarat
19.9.2.5	It is recommended to the policy makers that the satisfactory yield growth rate of bajra and jowar about 2 to 4 per cent during last two decades in Gujarat even after less reduction in area and production as well as it's low to medium instabilities in major nutri-cereals growing districts. To enhance area and production of bajra and jowar in Gujarat, sustained focus needs to be given on the following districts as given below in particular season.

Crop	Season	Priority districts
Bajra	*Kharif*	Banaskantha, Bhavnagar, Anand, Kheda and Panchmahals
	Summer	Banaskantha, Patan, Junagadh, Anand, Kheda and Vadodara
Jowar	*Kharif*	Banaskantha, Surat, Narmada and Bharuch
	Rabi	Porbandar, Junagadh, Bharuch, Narmada and Vadodara

Approved

(Action: Professor & Head, Dept.of Agril. Economics, CoA, JAU, Junagadh)

19.9.2.6	**Forecasting area, production and productivity of cotton and groundnut in Gujarat**
	It is advised to scientific community that the area, production and productivity of cotton and groundnut can be precisely predicted using the hybrid model in comparison to ARIMA and TDNN for Gujarat state **Approved** (Action: Professor & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)
19.9.2.7	**Assessment of knowledge of agro-input dealers gained through certificate course on insecticide management**
	It is suggested that extension personnel to organize regular training programs/courses for agro-input dealers for effective transfer of agricultural

	technology at the grassroots level. **Approved** (Action**:** Professor & Head, Dept. of Agril. Ext. Edu., CoA, JAU, Junagadh)
19.9.2.8	**Financial literacy among the students of Junagadh Agricultural University**
	It is advised to the competent authority that for enhancing financial literacy of Junagadh Agricultural University students, training should be imparted on financial attitude, financial behavior and especially financial knowledge as low level is more prevalent in this area of financial literacy. **Approved** (Action: Principal, PGIABM, JAU, Junagadh)
19.9.2.9	**Effect of micro irrigation system on livelihood in Saurashtra region**
	Policy makers are suggested to advise farmers of the Saurashtra region to adopt and use micro irrigation system in their farm to reduce their poverty level and increase the financial and overall livelihood. **Withheld with the following suggestion:** The study should be extended for another year (*i.e*., 2023-24) to fulfill the mandate of recommended sample size (n=300). (Action: Principal, PGIABM, JAU, Junagadh)
19.9.2.10	**Business opportunities of exotic vegetables in Saurashtra**
	The entrepreneur of Saurashtra region is advised to grab the business opportunities for exotic vegetables by supplying timely and regularly highly demanded exotic vegetable like red and green bell pepper/capsicum, baby corn and broccoli in three-star hotels/restaurants. **Approved** (Action: Principal, PGIABM, JAU, Junagadh)
19.9.2.11	**Value chain analysis of Kesar mango in Saurashtra region**
	It is advised to the stakeholders and policy maker engaged in value chain of mango in Saurashtra region to set up a crop management system, develop post-harvest infrastructure, improve post-harvest operations to produce better quality and quantity of mango for the remunerative farming and consumer satisfaction. **Withheld with the following suggestion:** The study should be extended for another year (*i.e*., 2023-24) to fulfill the mandate of recommended sample size (n=300). (Action: Principal, PGIABM, JAU, Junagadh
19.9.2.12	**Knowledge of rural women regarding fruit processing and preservation in Amreli district**
	It is suggested to the extension functionaries to organize vocational/skill training programme for young, educated, having mass media exposure and innovative rural women on improved practices of processing

	and preservation of fruit crops. For effective and more participation of rural women training should be organised at village level in leisure time. It is important that women group should be linked with FPO for better marketing and branding of products. **Approved** (Action***:*** Principal, CoA, JAU, Mota Bhandariya)
19.9.2.13	**Usefulness of Agro-met advisory service to the farmers of Jamnagar district**
	The message approved for scientific community: Scientific community advised that the Agro-met advisory service in local language is useful to take precaution measures which reduce crop losses. For improving the advisory, include information on different farming systems along with market intelligence & price forecast and long-range forecast advisory at village level given for pre-seasonal crop planning. (Action: Senior Scientist & Head, KVK, JAU, Jamnagar)
19.9.2.14	**Information seeking behavior of organic farmers**
	Message dropped and study concluded (Action: Senior Scientist & Head, KVK, JAU, Amreli)
19.9.2.15	**Knowledge and adoption of the farmers about botanical pesticides in Amreli district**
	Message dropped and study concluded (Action: Senior Scientist & Head, KVK, JAU, Amreli)
19.9.2.16	**Attitude of farmers towards Agro-met advisory service**
	The message approved for extension functionaries: It is suggested to agro-met advisory providers to include information on post-harvest operations, market-related information, sources of seed material, and disseminate advisory services in audio-visual form. (Action: Senior Scientist & Head, KVK, JAU, Amreli)
19.9.2.17	**Training need of farmers regarding rainwater harvesting and groundwater recharge**
	The message approved for extension functionaries: It is advised to extension personnel to organize one day training program on rooftop water harvesting for farm irrigation and borewell recharge through demonstration and field visit along with information of various government schemes for higher adoption. (Action: Senior Scientist & Head, KVK, JAU, Amreli)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title/suggestions/ Action
19.9.2.18	**Total Factor Productivity Growth of Sugar Industry in South Gujarat Region**
	Recommendation dropped and study concluded (Action: Prof. & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)

19.9.2.19	**Time series analysis of cauliflower prices in the selected markets of Gujarat**
	It is suggested to use SARIMA model to develop dependable monthly wholesale price forecasts for cauliflower in selected markets of Gujarat *i.e.*Surat, Ahmedabad, Gandhinagar, Kheda and Vadodara as it found to be more effective as compared to various seasonal and non- seasonal models (*Viz.*Simple Non- Seasonal, Holts Linear Trend, Brown's Linear Trend, Damped Trends, GARCH and EGARCH) on the basis of different model selection criteria like minimum Mean Absolute Percentage Error (MAPE), minimum Bayesian Information Criterion (BIC) & R^2 values. **Approved** (Action***:*** Professor & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)
19.9.2.20	**Climate Change Impacts on Livestock and Adaptation Strategies for sustainable production**
	The scientists can work on adaptation measures such as change in herd size, change in breed, feed and fodder management, disease management, supplementary feed, crop and livestock interaction, change in animal shed structure and heat stress management in order to reduce the impact of climate change. **Approved** (Action: Professor & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)
19.9.2.21	**Role of Agricultural Infrastructure on Agricultural Efficiency in Gujarat**
	In order to achieve better agricultural efficiency, the government should target agricultural resource- based investments in the districts with poor agricultural efficiency such as Patan, Valsad, Dang, Dahod, Amreli and Navsari. **Approved** (Action: Associate Professor & Head. Dept. of Social Science, ACHF, NAU, Navsari)
19.9.2.22	**Estimating Total Factor Productivity of Banana in South Gujarat Region**
	A moderate TFP growth in the South Gujarat region suggests ample scope for increasing banana production through new technological breakthrough by means of augmenting investment in research, extension and natural resource management which were found to be important drivers of TFP growth. **Approved** (Action: Assistant Professor Dept. of Agril. Economics, COA, NAU,

	Bharuch)
19.9.2.23	**Estimation of Cotton Yield using Two-Phase Sampling approach**
	It is advised to adopt two phase sampling regression procedure under stratified two stage sampling design framework for more reliable and cost-effective estimates of average cotton yield than general crop estimation survey procedure. **Approved** (Action: Assistant Professor Dept. of Agril. Statistics, COA, NAU, Waghai)
19.9.2.24	**Evaluation and development of yardstick of CV% for mango crop experiments for South Gujarat region**
	The yardstick of CV (%) for accepting the results of mango experiments in South Gujarat region is up to 29.00 per cent for yield character. **Approved** (Action: Professor & Head. Dept. of Social Science, ACHF, NAU, Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

19.9.2.25	**Assessment of nutritional status of adolescent tribal girls of Sabarkantha district** Extension workers and nutrition experts are informed to disseminate information on balanced diet and malnutrition eradication through nutrition education so that dietary pattern and nutritional status of adolescent tribal girls' of Sabarkantha district can be improved. વિસ્તરણ કાર્યકર્તાઓ અને આહાર- પોષણ નિષ્ણાતોને જણાવવાનું કે સાબરકાંઠા જિલ્લાની આદિવાસી કિશોરીઓમાં પોષણ શિક્ષણ દ્વારા સંતુલિત આહાર અને કુપોષણ નિવારણ વિશેની માહિતી પહોચાડવામાં આવે તો તેમની આહારશૈલી અને પોષણસ્તરમાં સુધારો લાવી શકાય. (Action: Professor and Head, Dept. of Food Science & Nutrition, ASPEE college of nutrition and community science, SDAU, Sardarkrushinagar)
19.9.2.26	**Optimum size and shape of plots for field experiments on sesame** A plot of 18 m^2 size having shape of 6 rows each of 5 m length (5 m × 3.6 m) found optimum (net plot) with minimum 3 replications at 5 per cent standard error is recommended for field experiments on sesame crop. **Approved** (Action: Professor and Head, Dept. of Agril. Statistics, SDAU, Sardarkrushinagar)
19.9.2.27	**Gain and retention of knowledge of input dealers training organized by S.D. Agricultural University** 1. The study will continue for next year to cover all 280 respondents

	(Action: Directorate of Extension Education, SDAU, Sardarkrushinagar)
19.9.2.28	**Adoption of plant protection measures by the vegetable growers of Banaskantha District** **Message dropped and study concluded** (Action: Principal, Vanbandhu Polytechnic in Agriculture, SDAU, Amirgadh)
19.9.2.29	**Attitude of polytechnic students towards agricultural occupations** **Suggestion:** 1. The study will be continuing for next year and sample size will be 300 respondents. (Action: Principal, Polytechnic in Agriculture, SDAU, Deesa)
19.9.2.30	**Knowledge and adoption of white grub management technologies by groundnut growers in North Gujarat** **The message approved for extension agencies** The intensive extension efforts are needed to increase knowledge of seed treatment, mechanical and biological methods for management of white grub among groundnut growers. મગફળીની ખેતી કરતા ખેડૂતોમાં સફેદ ઘૈણ (મુંડા)ના વ્યવસ્થાપન માટે બીજ માવજત, યાંત્રિક અને જૈવિક પધ્ધતિઓ અંગેના જ્ઞાનમાં વધારો કરવા ઘનિષ્ઠ વિસ્તરણ પ્રયાસોની જરૂરીયાત છે. (Action: Professor & Head, Department of Agricultural Extension and Communication, College of Agriculture, SDAU, Tharad)
19.9.2.31	**Consumer awareness and food buying behaviour towards food labels in Palanpur city** **Message dropped and study concluded** (Action***:*** Professor & Head**,** ASPEE College of Nutrition& Community Science**,** SDAU)
19.9.2.32	**Growth performance and instability of major seed spice crops in Gujarat** Compared to area and production, the growth rate in productivity of coriander in Gujarat state is low (3.33%). Therefore, scientific community should focus on improving the productivity of coriander in Gujarat. Yield growth rate of fennel is about 2 to 3 per cent during the last two decades, even after reduction in area and production. To enhance area and production of fennel in Gujarat, sustained focus needs to be given in North Gujarat and Central Gujarat regions. **Approved** (Action: Professor & Head**,** Department of Agril. Economics**,** CPCA, SDAU,

	Sardarkrushinagar)

Summary of the New Technical Programmes

Name of University	New Technical Programs	
	Proposed	**Approved**
AAU	33	33
JAU	04	04
NAU	24	24
SDAU	06	06
KU	04	04
Total	**71**	**71**

19.9.3 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action	Remarks
19.9.3.1	An economic analysis of dragon fruit production in Gujarat	1. Merge 1st & 2nd objectives 2. Take maximum sample size to the extent possible (Action: Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)	**Approved**
19.9.3.2	Marketing and trade of millets grown in Gujarat	1. Modified title as: Export potentiality of millets grown in India 2. Remove 2nd objective (Action***:*** Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)	**Approved**
19.9.3.3	Growth in area, production and productivity of spices and flower crops in Gujarat	1. Take minimum 15 years of data 2. Mention the source of data (Action***:*** Professor & Head, Department of Agril. Econ., BACA, AAU, Anand)	**Approved**
19.9.3.4	Economic analysis of *rabi* pigeonpea production in Chhotaudepur District	Mention the measurement technique of resource use efficiency in methodology (Action: Principal, Department of Agril. Econ, CoA, Jabugam,	**Approved**

		AAU, Anand)	
19.9.3.5	Value chain analysis of Honey: A case study of Gujarat	Take sample size minimum 300 out of that take 50 bee keepers and remaining will be consumers (Action: Principal, IABMI, AAU, Anand)	**Approved**
19.9.3.6	Managerial ability and adaptation strategies of dairy farmers towards climate change in Middle Gujarat	Take four instead of two districts namely: Panchmahals, Mahishagar, Anand and Kheda (Action: Principal, IABMI, AAU, Anand)	**Approved**
19.9.3.7	Status of Government sponsored Godown SAHAY SUBSIDY SCHEME in non-tribal areas of Middle Gujarat	Modified title as: Status of Government sponsored Godown SAHAY SUBSIDY SCHEME in other than tribal areas of Middle Gujarat (Action: Principal, IABMI, AAU, Anand)	**Approved**
19.9.3.8	Status of Government sponsored Godown SAHAY SUBSIDY SCHEME in tribal area of Middle Gujarat	-Nil- (Action: Principal, IABMI, AAU, Anand)	**Approved**
19.9.3.9	Extreme rainfall events and their return period analysis of some stations of Gujarat	Estimate value of parameters (Action: Professor & Head, Department of Basic Sciences and Humanities, BACA, Anand)	**Approved**
19.9.3.10	Study on technological gap and utilization pattern of Sorghum among the farmers of Middle Gujarat	Modified title as: Technological gap in production technology and utilization pattern of Sorghum among the farmers (Action: Professor & Head, Dept. of Agril. Extn. &Com; BACA, AAU, Anand)	**Approved**
19.9.3.11	Group dynamics effectiveness of farmer producer companies in	-Nil- (Action: Professor & Head, Dept.	**Approved**

	Middle Gujarat	of Agril. Extn. &Com; BACA, AAU, Anand)	
19.9.3.12	Responses of the papaya growers towards contract farming	Modified title: Perception of the papaya growers towards contract farming (Action: Director, EEI, AAU, Anand)	**Approved**
19.9.3.13	Impact analysis of organic farming training programmes	-Nil- (Action: Director, EEI, AAU, Anand)	**Approved**
19.9.3.14	Development of scale to measure attitude of farmers towards use of drone technology in farming	-Nil- (Action: DEE, AAU, Anand)	**Approved**
19.9.3.15	Development of scale to measure attitude of farmers towards use of Nano fertilizer in farming	-Nil- (Action: DEE, AAU, Anand)]	**Approved**
19.9.3.16	Awareness of agro input dealers about eco-friendly agricultural management practices	1. Modified title as: Awareness of farmers about eco-friendly agricultural management practices 2. Change objectives wording as per title (Action: Director, Institute of Distance Education, AAU, Anand)	**Approved**
19.9.3.17	An explorative study on rooftop gardening in Ahmedabad city of Gujarat	-Nil- (Action: Director, Institute of Distance Education, AAU, Anand)	**Approved**
19.9.3.18	Adoption of natural farming practices by the farmers in Anand district	1. Increase the number of villages up to 30 and take 10 farmers from each village 2. Select the farmers who have adopted maximum components of natural farming	**Approved**

		(Action: Professor & Head, Department of Agricultural Science, CAIT, AAU, Anand)	
19.9.3.19	Responses of the tobacco growers towards contract farming	1. Modified title as: Perception of the tobacco growers towards contract farming 2. Change objectives wording as per title i.e. perception instead of responses (Action: Principal, College of Agriculture, AAU, Jabugam)	**Approved**
19.9.3.20	Study on technological gap and utilization pattern of Bajra crop among the farmers of Kheda District	Modified title as: Technological gap in production technology and utilization pattern of Bajra among the farmers (Action: Principal, Department of Agril. Extn. & Commu. CoA, AAU, Vaso)	**Approved**
19.9.3.21	Crisis management practices adopted by broiler poultry farmers	Minimum sample size should be 100 (Action: Principal, Polytechnic in Horticulture, AAU,Vadodara)	**Approved**
19.9.3.22	Knowledge of farmers of the Panchmahals District about Government schemes of farm mechanization related to agriculture	1. Modified title as: Awareness of farmers about Government schemes of farm mechanization among the farmers of Panchmahals District 2. Change objectives wording on per title i.e. Awareness instead of Knowledge (Action: Associate Research Scientist, ARS, AAU, Derol)	**Approved**
19.9.3.23	Adoption of natural farming practices by the farmers of Mahisagar District	1. Increase the number of villages up to 30 and take 10 farmers from each village 2. Select the farmers who have adopted maximum components of natural farming	**Approved**

		(Action: Research Scientist, Main Maize Research Station, AAU, Godhara)	
19.9.3.24	Consumption pattern and awareness about millets and their nutritional benefits among rural women	1. Modified title as: Awareness about millets, their nutritional benefits and consumption pattern among rural women in Ahmedabad District 2. Mention about numbers of villages covers under study in methodology (Action: Sr. Scientist and Head, KVK, AAU, Arnej)	**Approved**
19.9.3.25	Adoption of ectoparasites management practices by animal owners to improve animal health	Modified title as: Adoption of ectoparasites management practices by animal owners (Action: Sr. Scientist and Head, KVK, AAU, Arnej)	**Approved**
19.9.3.26	Awareness of buffalo owners about causes of infertility in buffaloes of Anand District	1. Modified title as: Awareness of buffalo owners about causes of infertility in Anand District 2. Add the objective of association between profile of buffalo owners and awareness (Action: Sr. Scientist and Head, KVK, AAU, Devataj)	**Approved**
19.9.3.27	Assessment of economic loss due to fish diseases from village pond fish culture in Anand District	1. Modified title as: Assessment of financial loss due to fish diseases from village pond fish culture in Anand District 2. Replace the word "fish farmers" by "Inland fish farmers" in 1st, 2nd and 4th objectives 3. Change objectives in line with revised title i.e. financial loss instead of economic loss (Action: Sr. Scientist and Head, KVK, AAU, Devataj)	**Approved**

19.9.3.28	Operational task functioning of members of organic FPO	Replace the word "FPO" by "organic FPO" in all the objectives (Action: Sr. Scientist and Head, KVK, AAU, Devataj)	**Approved**
19.9.3.29	Performance of existing Primary Agriculture Cooperative Societies (PACS) working in agricultural development in Chhotaudepur District of Gujarat	1. Modified title as: Performance of Primary Agriculture Cooperative Societies working in agricultural development in Chhotaudepur District of Gujarat 2. Replace the 2nd objective as to study the types and extent of services provided by PACS to the members 3. Replace the 3rd objective as to study the role and financial performance of PACS in respect of agriculture credit (Action: Sr. Scientist and Head, KVK, Mangalbharti, Vadodara-Chhotaudepur)	**Approved**
19.9.3.30	Training need assessment of Artificial Insemination technicians of Dahod District	All the AI technicians of Dahod district should be covered in the study (Action: Sr. Scientist and Head, KVK, AAU, Dahod)	**Approved**
19.9.3.31	Determinants for discontinuing minor millets cultivation by the tribal farmers of Dahod District	-Nil- (Action***:*** Head, Agri. - Polyclinic & TFTC, Muvaliya Farm, AAU, Dahod)	**Approved**
19.9.3.32	Vocational training needs of tribal women for self-reliance	1. Modified title as: Vocational training needs of tribal women for self-reliance in Dahod Districts 2. Mention about multistage random sampling in sampling design (Action***:*** Head, TRTC & TFWWTC, AAU, Devgadhbaria)	**Approved**

19.9.3.33	Technological gap among Tomato growers	Modified title as: Assessment of technological gap among Tomato growers of Kheda District (Action: Head, FTTC, AAU, Sansoli-Nenpur)	**Approved**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

NTP No.	NTP Title	Suggestions	Remarks
19.9.3.34	Changing cost structure and total factor productivity growth of onion in Gujarat	-Nil- (Action: Professor & Head, Dept.of Agril. Economics, CoA, JAU, Junagadh)	**Approved**
19.9.3.35	Credit flow and its utilization behavior among farmers in Saurashtra region, Gujarat	-Nil- (Action: Professor & Head, Dept.of Agril. Economics, CoA, JAU, Junagadh)	**Approved**
19.9.3.36	Hectarage prediction models for major oilseed crops of Gujarat - An empirical investigation	-Nil- (Action: Professor & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)	**Approved**
19.9.3.37	Social media usage and academic performance of students of Junagadh Agricultural University	1. Modified title as: Social media usage pattern of students of Junagadh Agricultural University 2. Mention details of variables in methodology (Action: Principal, PGIABM, JAU, Junagadh)	**Approved**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action	Remarks
19.9.3.38	Adoption of organic farming among farmers of Navsari District	1. Modified title as: Knowledge of farmers about organic farming in Navsari District 2. Change the objectives in line with revised title.	**Approved**

		3. Increase the sample size upto 300 respondents and accordingly select the villages. 4. The methodology should be more precise. (Action: Senior Scientist & Head, KVK, NAU, Navsari)	
19.9.3.39	Role of farm women in decision making activities of agriculture in Navsari district	1. Modified title as: Role of farm women in decision making of agricultural activities in Navsari district 2. Change the objectives in line with revised title 3. Increase the sample size up to 300 respondents (Action: Senior Scientist & Head, KVK, NAU, Navsari)	**Approved**
19.9.3.40	Farmers' response on performance of improved cultivars of major crops in different agro- ecological system in Narmada District	1. Modified title as: Farmers' response on performance of improved cultivars of major crops in Narmada District 2. Use Stratified Random sampling method. 3. Increase the sample size up to 300 respondents 4. Revise the third objective as "To study the farmers preference of distinguished characteristics of improved major crop cultivars" (Action: Senior Scientist & Head, KVK, NAU, Dediapada)	**Approved**
19.9.3.41	Training needs and information seeking behavior of the farmers about natural farming in South Gujarat	1. Add the fourth objective as "To examine relationship between dependent and independent variables". 2. Increase the sample size up to 300 respondents. 3. The duration of the study will be two years (Action: HOD, Agril. Extn. & Communication, NMCA, NAU, Navsari)	**Approved**

19.9.3.42	Attitude of farmers towards the export of banana in Bharuch District	Remove the word "personal" from first objective (Action: Assoc. Prof. & Head, Agri. Extn. Education, COA, Bharuch)	**Approved**
19.9.3.43	Knowledge and adoption of value-added products of millets by rural women of Surat district	1. Modified title as: Knowledge and adoption of value addition in millets among rural women of Surat district 2. Remove the word "personal" from first objective 3. Use Multistage Random sampling method 4. Increase the sample size up to 300 respondents 5. Add "training received for value added products" as one independent variable (Action: Senior Scientist & Head, KVK, NAU, Surat)	**Approved**
19.9.3.44	Knowledge and adoption of farmers about mushroom production technologies in the Dang District	Increase the sample size up to 300 respondents (Action: Senior Scientist & Head, KVK, NAU, Waghai)	**Approved**
19.9.3.45	Soft skills among final year students of B. Sc (Hons) and Polytechnic in Agriculture Waghai	1. Modified title as: Assessment of perceived soft skills among the students of Polytechnic in agriculture of NAU 2. Change the objectives in line with revised title (Action: Polytechnic in Agriculture, COA, NAU, Waghai)	**Approved**
19.9.3.46	Adoption of Oyster Mushroom production technologies by farmers in Tapi district of South Gujarat	1. Modified title as: Knowledge and Adoption of Oyster Mushroom production technologies by farmers in Tapi district of South Gujarat 2. Increase the sample size up to 300 respondents	**Approved**

		3. Add the objective of knowledge (Action: Senior Scientist & Head, KVK, NAU, Vyara (Tapi)	
19.9.3.47	Techno economic empowerment through digital extension among farmers in Tapi district of South Gujarat	1. Modified title as: Role of digital extension on Techno economic empowerment among farmers in Tapi district of South Gujarat 2. Select 15 farmers from each village to make sample size up to 315 farmers 3. Remove the words "and communication" from first objective [***Action:*** Polytechnic in Agriculture, NAU, Vyara]	**Approved**
19.9.3.48	Perception of farmers about Natural Farming in South Gujarat	Increase the sample size up to 300 respondents (Action: HOD, Agril. Extn. & Communication, NMCA, NAU, Navsari)	**Approved**
19.9.3.49	Economics, Marketing and Trends of Non - Timber Forest Products in the Dang district of Gujarat	1. Modified title as: Marketing and Trends of major Non -Timber Forest Products in the Dang district of Gujarat 2. Change the objectives in line with revised title (Action: Professor & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)	**Approved**
19.9.3.50	Time series analysis of cabbage prices in the selected markets of Gujarat	1. **S**elect region wise market on the basis of maximum arrivals 2. The duration of the study will be two years. (Action: Professor & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)	**Approved**

19.9.3.51	Temporal Business Opportunities and Price Forecasting of Tomato, Onion and Potato (TOP) Vegetables for Major Markets of Gujarat Using Neural Network Model	The duration of the study will be two years (Action: Professor & Head. Dept. of Agril. Economics, NMCA, NAU, Navsari)	**Approved**
19.9.3.52	Water use efficiency of water intensive crops: a study of borewell owning farmers of South Gujarat	Increase the sample size up to 300 respondents (Action: Professor & Head. Dept. of Social Science, ACHF, NAU, Navsari)	**Approved**
19.9.3.53	Trade performance of Wood Products of India	Consider both import and export in the study (Action: Professor & Head. Dept. of Social Science, ACHF, NAU, Navsari)	**Approved**
19.9.3.54	Assessment of post-harvest loss of Papaya on farmers income in south Gujarat	1. Increase the sample size up to 300 respondents 2. Add the objective of association between independent and dependent variable (Action: Planning Officer, DR Office, Navsari)	**Approved**
19.9.3.55	Factors influencing farmers' decision to select a bank for availing an agricultural loan in Navsari District	Increase the sample size up to 300 respondents (Action: Planning Officer, DR Office, Navsari)	**Approved**
19.9.3.56	Growth Performance and decomposition analysis of nutria-cereals in Gujarat	1. Modified title as: Growth Performance and decomposition analysis of nutri-cereals in India 2. Change the objectives in line with revised title (Action: Assistant Professor Dept. of Agril. Economics, COA, NAU, Bharuch)	**Approved**

19.9.3.57	Yield gap and resource use efficiency of chilli cultivation in Tapi District of Gujarat	1. Increase the sample size up to 300 respondents 2. Add MVP in methodology (Action: Principal PIA, Vyara)	**Approved**
19.9.3.58	Consumer perception and behavior regarding Millets and its value-added products in south Gujarat	1. Modified title as: Consumer perception and behavior regarding Millets and their value-added products in south Gujarat 2. Revise the second objective as "To assess the awareness and consumer behavior of various millets and their value-added products" 3. The duration of the study will be two years (Action: Principal AABMI, Navsari)	**Approved**
19.9.3.59	Dynamics of wholesale prices and arrivals of Pointed Gourd in major markets of Gujarat	-Nil- (Action: Principal AABMI, Navsari)	**Approved**
19.9.3.60	Population dynamics and patterns of mango hopper and fruit fly through the statistical models	-Nil- (Action: Professor & Head. Dept. of Agril. Statistics, NMCA, NAU, Navsari)	**Approved**
19.9.3.61	Estimation of 305-day milk yield from cumulative monthly and bimonthly test day records in Surti Buffalo	1. Modified title as: Estimation of lactation period milk yield from cumulative monthly and bimonthly test day records in Surti Buffalo 2. Polynomial Regression should also be used to analyze the data 3. Five-year data should be used for analysis (Action: Assistant Professor Dept. of Agril. Statistics, COA, NAU, Waghai)	**Approved**

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

Sr. No.	Title	Suggestion/s and Action	Remarks
19.9.3.62	Study the feeding and breeding practices followed by farmers rearing Kankrej cattle in adopted villages of KVK Deesa	1. Modified title as: Knowledge and adoption of feeding and breeding practices followed by farmers in rearing Kankrej cattle 2. The objectives of the study will be as under i. To study the profile of the farmers ii. To know the knowledge and adoption level of feeding and breeding practices followed by farmers in rearing Kankrej cattle iii. To study the opinion of the farmers about rearing of Kankrej cattle iv. To identify the constraints faced by the farmers in rearing Kankrej cattle and suggestions to overcome the constraints faced by them (Action: Senior Scientist & Head, KVK, SDAU, Deesa)	**Approved**
19.9.3.63	Export performance of major seed spices from India	1. The period of study should be extended to the availability of latest data 2. The duration of the study will be one year 3. Study should be decade wise (Action: Professor & Head, Department of Agril. Econ., CPCA, SDAU, Sardarkrushinagar)	**Approved**
19.9.3.64	Adoption of Plug tray seedling technology in watermelon	1. The selection of farmers will be 150 who have adopted plug tray technology in watermelon and 150 who have not adopted plugtray	**Approved**

		technology in watermelon 2. The objective of correlation should be added (Action: Directorate of Extension Education, SDAU, Sardarkrushinagar)	
19.9.3.65	Comparison of different forecast models for predicting area, production and productivity of sorghum in Banaskantha district	1. Replace the word "forecast" by "to find out" in 2nd objective 2. Change the sequence of 2nd and 3rd objectives (Action: Professor & Head, Department of Agril. Statistics, CPCA, SDAU, Sardarkrushinagar)	**Approved**
19.9.3.66	A study on market arrivals and price behavior of mustard in India	1. Modified title as: Price behaviour and market integration of mustard in India 2. Analysis should be decade wise (Action: Professor & Head, Department of Agril. Economics, CPCA, SDAU, Sardarkrushinagar)	**Approved**
19.9.3.67	Technological gap perceived by the pomegranate growers in adoption of recommended pomegranate cultivation practices of Banaskantha district	1. Modified title as: Technological gap in adoption of recommended pomegranate cultivation practices by the pomegranate growers of Banaskantha district 2. Remove "if any" from 3rd objective 3. The objective of correlation should be added (Action: Directorate of Extension Education, SDAU, Sardarkrushinagar)	**Approved**

KAMDHENU UNIVERSITY, GANDHINAGAR

Sr. No.	Title	Suggestion/s and Action	Remarks
19.9.3.68	Development and standardization of scale to measure attitude of dairy farmers towards value addition in milk	-Nil- (Action: Assistant Professor, Dairy Business Management Department, SMC College of Dairy Science, KU, Anand)	**Approved**
19.9.3.69	Development and standardization of scale to measure attitude of farmers towards internet exposure	Modified title as: Development and standardization of scale to measure attitude of dairy farmers towards mobile extension (Action: Assistant Professor, Dairy Business Management Department, SMC College of Dairy Science, KU, Anand)	**Approved**
19.9.3.70	Development and standardization of scale to measure attitude of dairy farmers towards control of ectoparasites	Modified title as: Development and standardization of scale to measure attitude of dairy farmers towards management of parasites (Action: Assistant Professor, DVK, SMC College of Dairy Science, KU, Anand)	**Approved**
19.9.3.71	Socio-economic profile of dairy farmers of North Saurashtra Agro Climatic Zone of Gujarat state	1. Modified title as: Economic performance of dairy farmers in Amreli district 2. Objectives of the study will be: i. To study profile of dairy farmers ii. To find out the economic performance of dairy farmers iii. To find out the relation between profile of dairy farmers and their	**Approved**

		economic performance iv. To study the constraints faced by the dairy farmers 3. Sample size should be 360 4. Study duration will be 1 year (2023-24) (Action: Assistant Professor & Head, Department of Dairy Business Management, College of Dairy Science, Amreli)	

Proceedings of 19th Combined AGRESCO meeting of SAUs and Kamdhenu University (Virtual Mode) (April 25 to May 17, 2023)

PLENARY SESSION

Date: 17/05/2023 **Time: 09.00**

Chairman	:	Dr. K. B. Kathiria , Hon'ble Vice Chancellor, AAU
Co-Chairmen		Dr. R. M. Chauhan, Hon'ble VC, SDAU, Sardarkrushinagar Dr. Z. P. Patel, Hon'ble VC, NAU, Navsari Dr. V. P. Chovatia, Hon'ble VC, JAU, Junagadh Dr. N. H. Kelawala, Hon'ble VC, KU, Gandhinagar
Rapporteurs		Dr. S. N. Shah, ADR, AAU Dr. R. B. Madariya, ADR, JAU Dr. Lalit Mahatma, ADR, NAU Dr. C. K. Patel, ADR, SDAU

Technical Session I

The plenary session of 19th Combined AGRESCO meeting was chaired by Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU, Anand. At the outset, Dr. M. K. Jhala, Director of Research and Dean PG Studies welcomed the Chairman and all the Vice Chancellors, Directors of Research, Associate Directors of Research, Deans of various faculties, Conveners, Rapporteurs and Scientists of SAUs and KU. He also welcome Director of Horticulture, GoG. Gandhinagar. He felicitated Dr. K. B. Kathiria, Hon'ble Vice Chancellor, AAU, Anand and Chairman of the plenary session with bouquet of flowers. The Directors of Research of all other SAUs and KU also felicitated Hon'ble Vice Chancellors of respective University by flower bouquet.

Following the welcome, the presentation of proceedings of each sub committees by the respective conveners was made, wherein recommendations and new technical programmes of different sub committees were discussed and approved as per the following details.

Dr. R. R. Acharya, Convener, Crop Improvement, AAU presented the summary of Crop Improvement AGRESCO sub-committee. Out of the 29 release proposals of improved crop varieties/hybrids, 26 including 8, 7, 9 and 2 from AAU, JAU, NAU and SDAU, respectively, were approved. Besides the variety release proposal, one recommendation for farming community and 3 for scientific community were proposed, and all were approved. Total 4 new technical programmes were proposed and same were approved.

(**Action:** Concerned Conveners of SAUs)

Dr. M. B. Viradiya, Convener, Crop Production, AAU presented the summary of Crop Production and Natural Resource Management sub-committee. Total 71 recommendations for farming and 14 recommendations for scientific community were proposed; out of which 65 and 11 recommendations for farming and scientific community,

respectively, were approved by the house. Total 94 new technical programmes including 1 NTP presented by SDAU during the session were also approved.

(**Action:** Concerned Conveners of SAUs)

Dr. R. K. Thumar, Convener, Crop Protection, AAU presented the summary of the Plant Protection/Crop Protection subcommittee. Out of the 39 and 49 proposals for farming and scientific community respectively; 34 and 51 recommendations for farming and scientific community were approved. Total 129 new technical programmes from all the SAUs were
also approved.

(Action: Concerned Conveners of SAUs)

Dr. J. S. Patel, Convener, Horticulture and Forestry, AAU presented the proceeding of Horticulture and Forestry research sub-committee of SAUs. Out of 32 and 14 proposals of recommendations for farming and scientific community, respectively, the committee approved 33 recommendations for farmers and 11 recommendations for scientific community. Total 48 new technical programmes were also approved.

(Action: Concerned Conveners of SAUs)

Dr. Pankaj Gupta, Convener, Agricultural Engineering and AIT, AAU presented the recommendations and new technical programmes finalized by Agricultural Engineering and AIT sub-committee. He presented 24 and 13 recommendations for farming community and scientific community, respectively. Out of them, 22 recommendations for farming and 13 recommendations for scientific community were approved. Total 42 new technical programmes from all SAUs were also approved. After detailed discussion about technical programmes of AIT, the house has taken decision to dissolve the committee constituted in 17th Combined AGRESCO meeting for formulation of guidelines for new technical programmes of AIT.

(Action: Concerned Conveners of SAUs)

Dr. J. J. Dhruv, Convener, Basic Science and Humanities, AAU presented the recommendations and new technical programmes finalized by Basic Science and Humanities sub-committee. He presented 5 and 18 recommendations for farming community and scientific community, respectively and 5 and 17 recommendations for farming and scientific community were approved. Total 19 new technical programmes from all the SAUs were also approved.

(Action: Concerned Conveners of SAUs)

Dr. A. D. Kalola, Convener, Social Science, AAU presented the proceedings of Social Science sub-committee. He presented 1 and 30 recommendations for farming community and scientific community/ Policy Makers/ Message for Extension Agencies, respectively. Out of them, 1 recommendation for farming community and 22 for scientific community/ Policy Makers/ Message for Extension Agencies were approved by the house. Further, 71 new technical programmes were also approved by the house.

(Action: Concerned Conveners of SAUs)

Dr. K. N. Wadhvani, Convener, Animal Science, AAU presented the summary of Animal Health, Animal Production and Fisheries Science sub-committee. Total 10 recommendations for farming and 27 for scientific community were proposed; out of which, 10 recommendations for farming and 27 for scientific community were approved.

Total 82 new technical programmes from all SAUs and Kamdhenu University were also approved.

(Action: Concerned Conveners of SAUs)

Dr. S. H. Akabari, Convener, Dairy & Food Technology/ Dairy Science, FPT and Bioenergy, AAU, presented the recommendations and new technical programmes finalized by Dairy Science and Food Processing Technology & Bioenergy sub-committee. He presented 31 recommendations for farming community / entrepreneurs and 04 for scientific community; out of which 29 recommendations for farming community / entrepreneurs and 04 for scientific community were approved. Apart from recommendations, 32 new technical programmes were approved by the house. Further, as per suggestion NTP 19.7.3.3 shifted to AE-AIT group and recommendation number 19.7.1.1 shifted to AE-AET group in publication of recommendation booklet.

(Action: Concerned Conveners of SAUs)

Session-II (Concluding Remarks):

Shri Raghvjibhai Patel, Chief Guest of the event and Hon'ble Minister, Agriculture, Animal Husbandry, Cow Breeding and Fisheries, GoG, Gandhinagar addressed the house through recorded video message. He appreciated and congratulated all the scientists and staff of SAUs and KU for development of varieties in different crops, farm implements and generation of production technologies for benefit of farming community of Gujarat as well for entrepreneurs and scientific community and approval of sizable number of new technical programmes.

He emphasised the effect of global warming and climate change resulting in cyclone, unseasonal rain and heavy rain. For mitigating such adverse effect on agriculture and farming community, he urged the agricultural scientists for development of such varieties and technologies which can withstand such adverse effects and reduce the losses of farm produce. He also advised to organise such scientific meeting and prepare action plan for such type of adverse effect well in advance, so as to save farm produce and livelihood of farming community. Further, he added that chemical fertilizers and pesticides harm the nature, soil and human being and so natural farming is the option for reducing usage of such chemicals. At the end, he appealed the scientists to undertake research for confidence building of the farmers.

Dr. V.P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh expressed his view that the recommendations should be in proper and easy language. He also opined on development of formula for calculation of nano fertilizer requirement, so as to obviate need of conducting trials of nano fertilizer on each crop.

Dr. R. M. Chauhan, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar expressed thanks to all the Hon. Vice chancellors for the cooperation and timely completion of all the sub-committee meetings and finally the plenary session of 19th Combined AGRESCO. He said that it is a matter of pride that all together 226 farmers recommendations including 26 varieties, 159 scientific recommendations and 521 new technical programmes have been finalized by all SAUs and KU. It is encouraging to note that with so many odds especially paucity of scientific man power, our scientists are working hard to fulfil the aspiration of farmers. He congratulated all the scientists and also AAU for successfully hosting this mega event in a scientific way.

Dr. T N. Ahlawat, I/c Hon'ble Vice Chancellor, NAU, Navsari in his concluding remarks indicated that farmers adoption study on the recommendations should be taken up by the Social Science group. He also appreciated all the scientists for their commendable contribution during the entire programme of 19th AGRESCO.

Dr. N. H. Kelawala, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar in his address appreciated the efforts of scientific faculty for bringing recommendations to the farming and scientific communities and also suggested to churn the new technical programmes as per the need and feedback. He also explained the vital role of Animal Husbandry, Fisheries science and dairy technology and their prospects for improving farmers welfare.

Dr. K. B. Kathiria, Chairman and Hon'ble Vice Chancellor, AAU, Anand emphasized for multi-disciplinary/multi university research and for that the NTPs to be formulated as per the needs of farmers and small entrepreneur through brain storming. He was happy to announce that during this year, large number of varieties with unique features are going to be released for farming community as well as large number of technologies for farming and scientific community in spite of shortage of scientific manpower. He expressed thanks to all the Hon. Vice Chancellors for the cooperation and all the Chairmen for their inputs. He congratulated AAU Team especially the Office of the Director of Research for successfully organizing the 19th Combined AGRESCO through virtual mode.

At last, he expressed his gratitude to all the Scientists, Deans, Directors and researchers for being instrumental in realizing the set goal.

The meeting ended with vote of thanks to the Chair and the esteemed members of the 19th Combined AGRESCO of SAUs and Kamdhenu University by Dr. S. N. Shah, Associate Director of Research (Agri.), AAU, Anand.

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19th Combined AGRESCO Meeting of SAUs and Kamdhenu University of Gujarat
Organized by AAU through virtual mode during April 25 to May 17, 2023

Summary of the approved Recommendations and New Technical Programmes

Name of University	Crop Improvement	Crop Production/ Natural Resource Management	Plant Protection/ Crop Protection	Horticulture & Forestry	Agriculture Engineering and AIT	Animal Science (Animal Health, Animal Prod. and Fisheries Science)	Dairy Science/Food tech. and FPT&BE	Basic Science	Social Science	Total
Varieties and Farmer Recommendations										
AAU	08*+ 00	19	08	07	04	05	26	-	-	**77**
JAU	07* + 01	15	06	04	10	-	-	01	-	**44**
NAU	09* + 00	18	08	12 (Horti) 01(Forestry)	03	-	02	03	-	**56**
SDAU	02* + 00	13	12	09	05	01	01	01	01	**45**
KU	-	-	-	-	-	04	-	-	-	**04**
Total	**26* + 01**	**65**	**34**	**33**	**22**	**10**	**29**	**05**	**01**	**226**
Scientific Recommendations										
AAU	01	04	28	-	03	03	03	02	03	**47**
JAU	-	03	04	01	04	-	-	04	09	**25**
NAU	-	02	10	03 (Horti) 03(Forestry)	05	01	-	03	06	**33**
SDAU	02	02	09	04	01	01	-	08	04	**31**
KU	-	-	-	-	-	22	01	-	-	**23**
Total	**03**	**11**	**51**	**11**	**13**	**27**	**04**	**17**	**22**	**159**
New Technical Programmes										
AAU	01	26	43	07	15	-	14	04	33	**143**
JAU	02	20	30	10	11	-	-	05	04	**82**
NAU	-	24	20	12 (Horti) 08(Forestry)	09	-	01	06	24	**104**
SDAU	01	24	36	11	07	-	04	04	06	**93**
KU	-	-	-	-	-	82	13	-	04	**99**
Total	**04**	**94**	**129**	**48**	**42**	**82**	**32**	**19**	**71**	**521**

* Indicate no. of crop varieties released