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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 16th Combined AGRESCO of SAUs and KU ...regarding

With reference to above cited subject, please find enclosed herewith the proceeding of the **16th Combined AGRESCO meeting** of SAUs and Kamdhenu University held during 18th June to 30th July, 2020 through Video Conferencing. This is for your information and necessary 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
16th Meeting of Combined AGRESCO of SAUs and Kamdhenu University of Gujarat

Organised By

NAVSARI AGRICULTURAL UNIVERSITY

NAVSARI

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16.1. CROP IMPROVEMENT

Date : 8th -9th July, 2020 **Time: 9:00 a.m. onwards**

The 16th Combined Joint AGRESCO Crop Improvement Sub-committee for recommendations / release proposals was held on 8th -9th July, 2020 via online video conferencing by NAU, Navsari.

At the outset, Dr. S. R. Chaudhary, Honorable Vice Chancellor, NAU, Navsari welcomed the chairman, co-chairman, conveners of crop improvement sub-committee and scientists. In his welcome speech, he appreciated the research activities and releasing new varieties carried out by different scientists. Dr. V. P. Chovatia, Honorable Vice Chancellor, JAU, Junagadh highlighted the efforts of scientists for coming up with need based recommendations/ release proposals.

All the recommendations/ release proposals presented by different conveners were thoroughly screened by the house and approved with some suggestions are as under.

Chairman	Dr. V. P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh
Co-Chairmen	1. Dr. M.A. Vaddoria, Principal, JAU, Junagadh 2. Dr. R. M. Chauhan, Research Scientist (Seed), SDAU, SKNagar
Rapporteurs	1. Dr. P. B. Patel, Associate Research Scientist, MRRC, NAU, Navsari 2. Dr. H. L. Dhaduk, Associate Research Scientist, M&AP, AAU, Anand 3. Dr. R. B. Madariya, Research Scientist, MORS, JAU, Junagadh 4. Dr. M. P. Patel, Research Scientist, PRS, SDAU, SKNagar

Presentation of recommendations and technical by Conveners of SAUs

SN	Name	Designation & University
1	Dr. H. L. Dhaduk	Assoc. Research Scientist & Head, M&AP, AAU, Anand
2	Dr. R. B. Madariya	Research Scientist (Groundnut), MORS, JAU, Junagadh
3	Dr. P. B. Patel	Assoc. Res. Scientist, Main Rice Research Centre, NAU, Navsari
4	Dr. M. P. Patel	Research Scientist, Pulses Research Station, SDAU, SKNagar

Summary

Name of University	No. of Recommendations			
	Farming Community		Scientific Community	
	Proposed	Approved	Proposed	Approved
JAU, Junagadh	04 + 02	04 + 02	00	00
SDAU, SKNagar	06	04	00	00
AAU, Anand	07	05	01	01
NAU, Navsari	10	09	00	00
Total	**27 +02**	**22 + 02**	**01**	**01**

16.1.1 RECOMMENDATION/ RELEASE PROPOSAL OF VARIETIES/ HYBRIDS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

16.1.1.1	**Groundnut Variety: Gujarat Groundnut-23 (GG-23: Sorath Kiran)**
	The farmers of Gujarat state growing groundnut during *kharif* season are advised to grow virginia bunch groundnut variety Gujarat Groundnut 23 (GG 23). This variety has recorded mean pod yield of 2800 kg/ha, which was 13.85 and 17.17% higher over the check varieties, GJG 22 (2459 kg/ha) and GG 20 (2390 kg/ha), respectively. This variety has also recorded higher kernel yield, oil yield and number of pods per plant over the check varieties. This variety was found comparable to the check varieties against tikka, rust, stem rot and collar rot diseases. The damage due to leaf defoliators was lower in GG 23 than the check varieties.
	ગુજરાત રાજ્યમાં ચોમાસું ઋતુમાં મગફળી ઉગાડતા ખેડૂતોને અર્ધ વેલડી પ્રકારની મગફળીની જાત ગુજરાત મગફળી ૨૩ (જીજી ૨૩) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના ડોડવાનું સરેરાશ ઉત્પાદન ૨૮૦૦ કિ.ગ્રા. પ્રતિ હેક્ટર મળેલ છે, જે અંકુશ જાતો જીજેજી ૨૨ (૨૪૫૯ કિ.ગ્રા/.હે) અને જીજી ૨૦ (૨૩૯૦ કિ.ગ્રા/.હે) કરતા અનુક્રમે ૧૩.૮૫ અને ૧૭.૧૭% વધારે માલુમ પડેલ છે. અંકુશ જાતોની સરખામણીએ આ જાતમાં દાણાનું ઉત્પાદન, તેલનું ઉત્પાદન અને છોડ દીઠ ડોડવાની સંખ્યા વધારે મળેલ છે. આ જાતમાં પાનના ટપકા, ગેરૂ, થડનો સુકારો અને ઉગસુકના રોગોનું પ્રમાણ અંકુશ જાતો જેટલું જોવા મળેલ છે. આ જાતમાં પાન ખાનારી ઈયળોથી થતું નુકસાન અંકુશ જાતો કરતા ઓછું જોવા મળેલ છે.
	Release proposal was accepted by the house. ***[Action: Research Scientist (Groundnut), MORS, JAU, Junagadh]***
16.1.1.2	**Groundnut variety: Gujarat Groundnut-35 (GG-35: Sorath Gold)**
	The farmers of Gujarat state growing groundnut during *kharif* season are advised to grow spanish bunch groundnut variety Gujarat Groundnut 35 (GG 35). This variety has recorded mean pod yield of 3177 kg/ha, which was 29.54, 28.59 and 15.17% higher over the check varieties, GG 7 (2452 kg/ha), GJG 9 (2471 kg/ha) and TG 37A (2758 kg/ha), respectively. This variety has also recorded high kernel yield, oil yield and number of pods per plant over the check varieties. This variety was found comparable to the check varieties against tikka, rust, stem rot and collar rot diseases. The damage due to leaf defoliators was also lower in GG 35 than the check varieties.
	ગુજરાત રાજ્યમાં ચોમાસું ઋતુમાં મગફળી ઉગાડતા ખેડૂતોને ઉભડી પ્રકારની મગફળીની જાત ગુજરાત મગફળી ૩૫ (જીજી ૩૫) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના ડોડવાનું સરેરાશ ઉત્પાદન ૩૧૭૭ કિ.ગ્રા. પ્રતિ હેક્ટર મળેલ છે, જે અંકુશ જાતો જીજી ૭ (૨૪૫૨ કિ.ગ્રા/.હે), જીજેજી ૯ (૨૪૭૧ કિ.ગ્રા/.હે) અને ટીજી ૩૭એ (૨૭૫૮ કિ.ગ્રા/.હે) કરતા અનુક્રમે ૨૯.૫૪, ૨૮.૫૯ અને ૧૫.૧૭% વધારે માલુમ પડેલ છે. અંકુશ જાતોની સરખામણીએ આ જાતમાં દાણાનું ઉત્પાદન, તેલનું ઉત્પાદન અને છોડ દીઠ ડોડવાની સંખ્યા વધારે મળેલ છે. આ જાતમાં પાનના ટપકા, ગેરૂ, થડનો સુકારો અને ઉગસુકના રોગોનું પ્રમાણ અંકુશ જાતો જેટલું જોવા મળેલ છે. આ જાતમાં પાન ખાનારી ઈયળોથી થતું નુકસાન અંકુશ જાતો કરતા ઓછું જોવા મળેલ છે.
	Release proposal was accepted by the house. ***[Action: Research Scientist (Groundnut), MORS, JAU, Junagadh]***
16.1.1.3	**Brinjal variety: Gujarat Round Brinjal -7 (GRB-7: Sorath Ravaiya)**
	The farmers of Gujarat State growing brinjal crop during late *kharif* season (15th August to 15th September) are advised to grow brinjal variety Gujarat Round Brinjal-

	7 (GRB-7). The proposed variety has recorded the mean fruit yield of 401.46 q/ha, which was 20.47, 30.61 and 28.68 per cent higher over check varieties; GJB-3 (333.25 q/ha), GRB-5 (297.30 q/ha) and GNRB-1 (301.74 q/ha), respectively. The fruits of GRB-7 are medium in size with medium round shape and pink purple in colour and good shining. This variety contains higher protein content. The variety has cluster fruit bearing habit. The proposed variety was found comparable with checks for insect-pests and diseases.
	ગુજરાત રાજયમાં મોડી ખરીફ ઋતુ માટે (૧૫ ઓગસ્ટ થી ૧૫ સપ્ટેમ્બર) રીંગણનો પાક ઉગાડતા ખેડતોને રીંગણની ગુજરાત ગોળ રીંગણ-૭ (જીઆરબી-૭) જાતનું વાવેતર માટે ભલામણ કરવામાં આવે છે. આ જાતના ફળોનું સરેરાશ ઉત્પાદન ૪૦૧.૪૬ કિવ./હે. મળેલ છે. જે ૨૦.૪૭, ૩૦.૬૧ તથા ૨૮.૬૮ ટકા અનુક્રમે અંકુશ જાતો; ગુજરાત જૂનાગઢ રીંગણ-૩ (૩૩૩.૨૫ કિવ./હે.), ગુજરાત ગોળ રીંગણ-૫ (૨૯૭.૩૦ કિવ./હે.) અને ગુજરાત નવસારી ગોળ રીંગણ-૧ (૩૦૧.૭૪ કિવ./હે.) થી વધારે માલુમ પડેલ છે. આ જાતના ફળો મધ્યમ કદના, મધ્યમ ગોળ આકારના અને ગુલાબી જાંબલી રંગના તેમજ સારા ચળકાટ વાળા છે. આ જાત પ્રોટીનની વધુ માત્રા ધરાવે છે. આ જાતમાં ફળો ઝૂમખામાં આવે છે. આ જાતમા રોગ-જીવાતનું પ્રમાણ અંકુશ જાતો જેટલું જ જોવા મળેલ છે.
	Release proposal was accepted by the house. ***[Action: Research Scientist (Onion-Garlic), VRS, JAU, Junagadh]***
16.1.1.4	**Pearl Millet Hybrid: Gujarat Hybrid Bajara-1231 (GHB-1231: Sorath Shakti)**
	The farmers of Gujarat state growing pearl millet during *kharif* season are recommended to grow GHB 1231 as a late type dual purpose (grain and fodder) bio-fortified hybrid. This hybrid recorded mean grain yield of 2760 kg/ha which was 9.22 per cent higher than check hybrid GHB 732 (2527 kg/ha). It has also recorded 7471 kg/ha dry fodder yield which was 16.1 per cent higher than check hybrid GHB 732 (6434 kg/ha). This hybrid also gave higher grain and dry fodder yield than public sector check hybrid GHB 558 and private sector check hybrid. The proposed hybrid is resistant to major pearl millet disease and pest. The grain of this hybrid possess higher content of Fe and Zn (> 70 PPM and > 40 PPM) which is additional benefit of pearl millet to the farming and consumer community for their nutritional security.
	ગુજરાત રાજ્યમાં ચોમાસુ બાજરાનું વાવેતર કરતા ખેડૂતોને મોડી અવધિમાં પાકતી દ્વીહેતુ (દાણા તથા સુકો ચારો) માટેની બાયો-ફોર્ટીફાઈડ સંકર જાત, જીએચબી ૧૨૩૧ નું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું ઉત્પાદન ૨૭૬૦ કી.ગ્રા/હે. મળેલ છે, જે અંકુશ સંકર જાત જીએચબી ૭૩૨ (૨૫૨૭ કિ.ગ્રા/હે.) કરતા ૯.૨૨ ટકા વધારે છે. આ જાતમાં સુકા ચારાનું ઉત્પાદન ૭૪૭૧ કિગ્રા/હે. મળેલ છે, જે અંકુશ સંકર જાત જીએચબી ૭૩૨ (૬૪૩૪ કિ.ગ્રા/હે.) કરતા અનુક્રમે ૧૬.૧ ટકા વધારે છે. આ જાતે તેની ચકાસણી દરમ્યાન જાહેર ક્ષેત્રની અંકુશ સંકર જાત જીએચબી ૫૫૮ અને ખાનગી કંપનીની અંકુશ સંકર જાત કરતા પણ વધુ ઉત્પાદન આપેલ છે. આ સંકર જાત બાજરાના રોગો તેમજ જીવાત સામે પ્રતિકારક શક્તિ ધરાવે છે. આ સંકર જાતના દાણામા લોહ અને જસત તત્વોનુ પ્રમાણ વધારે છે (અનુક્રમે >૭૦ પીપીએમ અને >૪૦ પીપીએમ) જે બાજરાના વાવેતર કરતા ખેડૂત તથા ઉપભોક્તા સમુદાય માટે તેમની પોષણ સુરક્ષા માટે વધારાનો ફાયદો આપે છે.
	Release proposal was accepted by the house. ***[Action: Research Scientist (Pearl Millet, MPMRS, JAU,Jamnagar]***
RECOMMEATION FOR FARMING COMMUNITY	
16.1.1.5	**Effect of micronutrient application on seed yield and quality of coriander (*Coriandrum sativum* L.)**
	The farmers of South Saurashtra Agro-cimatic Zone associated with seed production of coriander are advised to apply $FeSO_4$ @ 25 kg/ha as soil application at the time of sowing or foliar application of $FeSO_4$ @ 0.5% (75 g/15 litre) + 0.1% Citric Acid (15gm/15 litre) at 30 & 45 DAS along with recommended dose of fertilizer to obtain higher seed yield with high germination and seedling

	vigour.
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ધાણાના બીજ ઉત્પાદન સાથે સંકળાયેલા ખેડૂતોને સલાહ આપવામાં આવે છે કે ધાણામાં સારા બીજાંકુરણ અને ઓજવાળું મહત્તમ બીજ ઉત્પાદન મેળવવા માટે વાવણીના સમયે ભલામણ કરેલ ખાતરના પુરતા જથ્થા સાથે ફેરસ સલ્ફેટ ૨૫ કિલો /હેકટર મુજબ વાવણીના સમયે આપવાની અથવા ફેરસ સલ્ફેટ ૦.૫% (૭૫ ગ્રામ/ ૧૫ લીટર) + ૦.૧% સાઇટ્રીક એસીડ (૧૫ ગ્રામ/ ૧૫ લીટર) નો વાવણી બાદ ૩૦ અને ૪૫ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.
	The recommendation is approved with the following suggestions: 1. In English paragraph, replace the word 'along with' by 'in addition to'. 2. Correct Gujarati version of recommendation as per English version. ***[Action: Prof. & Head, Dept. of SST, JAU, Junagadh]***
16.1.1.6	**Study the fresh seed dormancy in sesame**
	Sesame growing farmers of Saurashtra region are advised that freshly harvested seeds of white seeded sesame varieties GT-2, GT-3, TKG 22, Pragati and GT-5 could not be utilized for sowing, as seed dormancy was found in these varieties and it was released after 115, 115, 95, 105 and 105 days after harvesting, respectively. However, black seeded variety GT 10 could be utilized for sowing in the next season, as it released the dormancy after at 35 days after harvesting (DAH).
	આથી સૌરાષ્ટ્ર વિસ્તારના તલ ઉગાડતા ખેડૂતોને સલાહ આપવામાં આવે છે કે સફેદ તલ ની જીટી-૨, જીટી-3, ટીકેજી-૨૨, પ્રગતિ અને જીટી-૫ માં કાપણી બાદ સુષુપ્ત અવસ્થા અનુક્રમે ૧૧૫, ૧૧૫, ૯૫, ૧૦૫ અને ૧૦૫ દિવસ બાદ દુર થતી હોય આ જાતોના તાજા બિયારણોનો વાવેતર માટે ઉપયોગ ત્યાર પછીની આવનાર ઋતુમાં કરવો નહિ. જયારે કાળા તલની જાત ગુજરાત તલ-૧૦ માં સુષુપ્ત અવસ્થા કાપણી બાદ ૩૫ દિવસમાં દુર થતી હોય તેનો ઉપયોગ પછીની ઋતૂમાં વાવેતર તરીકે કરી શકાય.
	The recommendation is approved with the following suggestions: 1. Analyse the data and recast the recommendation accordingly. 2. Location wise and year wise data should be mentioned in the tables. 3. Include Regression co-efficient analysis if possible. ***[Action: Prof. & Head, Dept. of SST, JAU, Junagadh]***

S.D. AGRICULTURAL UNIVERSITY, S.K.NAGAR

16.1.1.7	**GUAR VARIETY : Gujarat Guar 3 (BANAS UDAY)**
	The proposed variety Gujarat Guar 3 (BANAS UDAY) is recommended for Gujarat state. It exhibited 1340 kg/ha grain yield which was 18.16 and 26.65 per cent higher than the checks GG 1 and GG 2, respectively. It is an early maturing, having high test weight, attractive grey colour and high gum content (29.40 %). It showed less infection to bacterial leaf blight.
	ગુજરાત રાજયમાં ગુવારનું વાવેતર કરતાં ખેડૂતો માટે ગુજરાત ગુવાર 3(બનાસ ઉદય) જાતની ભલામણ કરવામાં આવે છે. જે નિયંત્રણ જાતો ગુજરાત ગુવાર ૧ અને ગુજરાત ગુવાર ૨ કરતાં અનુક્રમે ૧૮.૧૬ અને ૨૬.૬૫ ટકા વધુ ઉત્પાદન (૧૩૪૦ કી.ગ્રા./હે.) આપે છે. આ જાત વહેલી પાકતી ,દાણાનું વધારે વજન ધરાવતી તેમજ આકર્ષક રાખોડી રંગ ના દાણા અને વધારે ગુંદર (૨૯.૪૦%) ધરાવે છે. આ જાતમાં થતા બેક્ટેરિયલ બ્લાઇટ રોગ નો ઉપદ્રવ ઓછો જોવા મળે છે.
	Release proposal was accepted by the house with following suggestions: 1. Sub-heading is not required in introduction paragraph. 2. Year wise % increase over checks should be mentioned in table 1. 3. Gum content on hectare basis should be mentioned. 4. Replace the word 'grain yield' with 'seed yield' in whole proposal.

	5. Zone wise yield table should be incorporated. ***[Action: Research Scientist, PRS, SDAU, S.K.NAGAR]***
16.1.1.8	**COWPEA VARIETY : Gujarat Cowpea 7 (BANAS TEJAS)**
	The proposed variety Gujarat Cowpea 7 (BANAS TEJAS) is recommended in Gujarat state for *kharif* and summer seasons. It exhibited 1092 kg/ha grain yield which was 22.83, 14.83, 14.47 and 10.33 per cent higher than the checks *viz.,* GC 3, GC 4, GC 5 and GC 6, respectively. It is an early maturing, having medium seed size and attractive lustrous light brown seed colour. It showed less infection against YMV and root rot diseases. It also showed lower infestation of whitefly.
	ગુજરાત રાજ્ય માં ચોમાસુ અને ઉનાળુ ઋતું દરમ્યાન ચોળી નું વાવેતર કરતાં ખેડૂતો ને ગુજરાત ચોળી ૭ (બનાસ તેજસ) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે৹આ જાત ૧૦૯૨ કિ.ગ્રા./હે ઉત્પાદન આપે છે. જે જી.સી. ૩, જી.સી. ૪, જી.સી. ૫, અને જી.સી. ૬ કરતાં અનુક્રમે ૨૨.૮૩,૧૪.૮૩,૧૪.૪૭ અને ૧૦.૩૩ ટકા વધુ ઉત્પાદન આપે છે. આ જાત વહેલી પાકતી તેમજ આછા ભૂરા રંગના મધ્યમ કદના ચળકતા દાણા ધરાવે છે.આ જાત માં પાનના પંચરંગીયા અને મૂળના કહોવારાના રોગનો તેમજ સફેદ માખીનો ઉપદ્રવ ઓછો જોવા મળે છે.
	Release proposal was accepted by the house with following suggestions: 1. Sub-heading is not required in introduction paragraph. 2. Year wise per cent increase over checks should be mentioned in table 1. 3. Details of pedigree should be mentioned in point no. 5a of release proposal. 4. Zone wise table should be incorporated. 5. YMV data in release proposal should be check. ***[Action: Research Scientist, PRS, SDAU, S.K.NAGAR]***
16.1.1.9	**MUSTARD VARIETY : Gujarat Mustard 6 (Banas Sona)**
	The proposed variety Gujarat Mustard 6 (Banas Sona) is recommended for mustard growing farmers of Gujarat state in irrigated conditions. This variety gave 2541 kg/ha average seed yield with a tune of 14.20, 13.98 and 11.94 per cent higher than check varieties Kranti, GM 3 and GDM 4, respectively. Moreover, this variety having 38.89 per cent oil content, 5.66 g 1000 seed weight and 12.51 per cent oleic acid content.
	ગુજરાત રાજ્યના પિયત રાઈની વાવણી કરતાં ખેડૂતો માટે ગુજરાત રાઈ ૬ (બનાસ સોના) જાત નું વાવેતર કરવા આથી ભલામણ કરવામાં આવે છે.આ જાતના દાણાનું સરેરાશ ઉત્પાદન ૨૫૪૧ કિ.ગ્રા./હે છે.જે અંકુશ જાતો ક્રાંતિ , ગુજરાત રાઈ ૩ અને ગુજરાત દાંતીવાડા રાઈ ૪ કરતાં અનુક્રમે ૧૪.૨૦, ૧૩.૯૮ અને ૧૧.૯૪ ટકા વધારે છે. વધુમાં આ જાતમાં તેલનું પ્રમાણ ૩૮.૮૯ ટકા, ૧૦૦૦ દાણાનું વજન ૫.૬૬ ગ્રામ અને ઓલિક એસિડ નું પ્રમાણ ૧૨.૫૧ ટકા છે.
	Release proposal was accepted by the house with following suggestions: 1. Subheading is not required in introduction paragraph. 2. Distinguish morphological features should be incorporated in Salient feature of released proposal. 3. Write information in point no. 7a. 4. In proposal, name of the sub-centre scientists/ officers is written but no data from that centres included, if data is available from that centres then include the data otherwise remove the name of the sub-centre scientists/ officers. ***[Action: Research Scientist, (C&M Research Station), SDAU, S.K.NAGAR]***
16.1.1.10	**SORGHUM VARIETY : Gujarat Dantiwada Jowar 1 (BANAS SURYA)**
	The proposed dual-purpose sorghum variety Gujarat Dantiwada Jowar 1

	(Banas Surya) is recommended for release in north Gujarat for *kharif* season. Under normal condition this variety gave 2576 kg/ha grain yield and 229 q/ha dry fodder yield. It has tall height with very long and broad leaves. It is moderately resistance to diseases like leaf blight, anthracnose, grain mold, ergot and lower infestation of shoot fly and stem borer than checks. It also contains good amount of protein in both grain and dry fodder. The grain also having low tannin content.
	ઉત્તર ગુજરાતમાં ચોમાસુ જુવારનું વાવેતર કરતા ખેડૂતોને ગુજરાત દાંતીવાડા જુવાર-૧(બનાસ સુર્યા) જાત વાવતેર માટે ભલામણ કરવામાં આવે છે. આ જાત સામાન્ય પરિસ્થિતિમાં હેકટરે ૨૫૭૬ કિગ્રા દાણા તથા ૨૨૯ કિવન્ટલ સુકી કડબનુ ઉત્પાદન આપે છે. આ ઉપરાત 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 તેમાં સાંઠાની માખી અને સાંઠાના વેધકનો ઓછો ઉપદ્રવ જોવા મળેલ છે. ગુણવત્તતાની દ્રષ્ટીએ આ જાત દાણા તથા સુકી કડબમાં સારી માત્રામાં પ્રોટીન ધરાવે છે તેમજ દાણામાં ટેનીન ની માત્રા ઓછી છે.
	Release proposal was accepted by the house with following suggestions: 1. Subheading is not required in introduction paragraph. 2. Dry matter percentage should be included. 3. Frequency in top non significant groups should be added. 4. Spacing should be properly mentioned. 5. Replace word 'seed yield' with 'grain yield' in whole proposal. 6. AICRP disease and pest data should be incorporated. ***[Action: Assistant Research Scientist, SRS, SDAU, Deesa]***
16.1.1.11	**ASHWAGANDHA VARIETY : GA 2 (BANAS SHAKTI)**
	The farmers of Gujarat state interested in Ashwagandha growing are recommended for cultivation of Ashwagandha variety, GA 2 (Banas Shakti) in timely sown irrigated condition. This variety possessed a good average dry root yield of 560 kg/ha which is higher over the standard check AWS 1 by 38.21 per cent. The total alkaloid content of GA2 is 1.61 per cent which is an increase over the standard check AWS 1 by 15.94 per cent.
	ગુજરાત રાજ્યના પિયત વિસ્તારમાં અશ્વગંધા ની વાવણી માટે રસ ધરાવતા ખેડૂતો માટે અશ્વગંધા ની જાત જી.એ. ૨ (બનાસ શક્તિ)નું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. જે અંકુશ જાત એ.ડબલ્યુ.એસ.૧ કરતાં ૩૮.૨૧ ટકા વધારે ઉત્પાદન આપે છે.આ જાત માં આલ્કલોઈડ નું પ્રમાણ ૧.૬૧ ટકા છે. જે અંકુશ જાત , એ.ડબલ્યુ.એસ.૧ કરતાં ૧૫.૯૪ ટકા વધારે છે.
	The variety was differed and the house suggested to evaluate the variety for one more year with following suggestions: 1. Quality analysis of starch, withanolide and crude fibre content should be incorporated. 2. Observation of diseases and pest should be recorded. 3. Check variety used in the varietal development programme should be corrected. 4. The concern scientist should discuss to Research Scientist, Medicinal and Aromatic Plants Research Station, AAU, Anand regarding details of observations to be recorded. ***[Action: Professor & Head, Dept. of G&PB, SDAU, S.K.Nagar]***
16.1.1.12	**BAJRA HYBRID : Gujarat Hybrid Bajra 1 (BANAS KANCHAN)**
	The proposal of this variety was not accepted by the house. ***[Action: Associate Research Scientist, CCI, SDAU, S.K.Nagar]***

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16.1.1.13	**CLUSTER BEAN VARIETY: (GAVCB 11: Anand Bahar)**
	The proposed genotype GAVCB 11 registered 148.15 q/ha green pod yield and showed 27.10 per cent higher than the national check variety Pusa Navbahar (116.56 q/ha) over the locations. The genotype has dark green pod colour with sparse serration of leaf, long pod with usually non branching pattern and prominent pod construction in cluster. This genotype has less prevalence of alternaria blight and BCMV diseases as well as low infestation of jassid, aphid and whitefly than the national check Pusa Navbahar. The genotype contains higher fibre (0.513%), crude protein (4.121%), phenol (0.228%) and flavanoid (0.171%) as compared to the national check Pusa Navbahar. The proposed genotype is released in Gujarat for Late *Kharif* season under irrigated condition.
	ગુવારની જાત જી.એ.વી.સી.બી.૧૧નુ સરેરાશ ઉત્પાદન ૧૪૮.૧૫ ક્વી/હેક્ટર જોવા મળેલ છે જે રાષ્ટ્રીય અંકુશ જાત પુસા નવબહાર (૧૧૬.૫૬ ક્વી/હેક્ટર) કરતા ૨૭.૧૦ ટકા વધારે લીલી શીંગ ની ઉપજ આપે છે. આ જાતની શીંગો લાંબી, ઘેરા લીલા રંગની અને વધારે જુમખાવાળી તથા છોડ સામાન્ય રીતે બબ્નન શાખા વાળો હોય છે. આ જાત માં પાનના ટપકા અને પચરંગીયા રોગનો વ્યાપ તેમજ તડતડીયા, મોલો અને સફેદમાખી નો ઉપદ્રવ રાષ્ટ્રીય અંકુશ જાત પુસા નવબહાર કરતાં ઓછો જણાયેલ છે. આ જાત માં રેસા (0.૫૧3%), ક્રૂડ પ્રોટીન (૪.૧૨૧%), ફીનોલ (0.૨૨૮%) અને ફલેવેનોઇડ (0.૧૭૧%) નુ પ્રમાણ રાષ્ટ્રીય અંકુશ જાત પુસા નવબહાર કરતાં વધુ જોવા મળેલ છે. આ જાત ચોમાસુ ઋતુમાં મોડી વાવણી કરવા માટે સમગ્ર ગુજરાતમાં ભલામણ કરવામા આવે છે.
	Release proposal was accepted by the house with following suggestions: 1. The proposed name of the variety is renamed as Gujarat Vegetable Guar 11 (GVG 11: Anand Bahar). 2. Give zone name instead of centre name (Waghai Centre) in Table 5. 3. Consumer preference should be included in the released proposal. ***[Action: Research Scientist (Veg.), MVRC, AAU, Anand]***
16.1.1.14	**PIGEON PEA VARIETY : GUJARAT TUR-106 (GT-106: Mahi)**
	The average yield of pigeon pea variety AAUVT-13-20 (GT-106) is 1842 kg/ha. It exhibited overall yield advantage of 50.72, 21.44, 23.63 and 12.68 per cent over the checks BDN 2, AGT 2, Vaishali and GJP 1, respectively under middle Gujarat. Under north Gujarat, average yield of this genotype is AAUVT-13-20 (GT-106) is 1853 kg/ha. It exhibited 23.16, 25.37, 20.73, and 22.33 per cent higher yield over the checks BDN 2, AGT 2, Vaishali and GJP1, respectively. The variety GT-106 mature within 170 (165-175) days (Medium group) with semi-spreading in nature, yellow flower colour, green pod, 4-6 seeded with cream colour. It has high yield potential and resistant against Wilt & moderately resistance against SMD under field condition. The pigeon pea variety GT-106 is recommended for *kharif* season under Middle & North Gujarat.
	તુવેરની એ.એ.યુ.વી.ટી.-૧૩-૨૦ (જી.ટી.૧૦૬)નું મધ્ય ગુજરાતમાં સરેરાશ ઉત્પાદન ૧૮૪૨ કિગ્રા પ્રતિ હેક્ટર છે. જે અંકુશ જાતો બીડીએન ૨, એજીટી ૨, વૈશાલી અને જી.જે.પી ૧ કરતાં ૫૦.૭૨ ૨૧.૪૪, ૨૩.૬૩, અને ૧૨.૬૮ ટકા વધારે ઉત્પાદન આપે છે. અને ઉત્તર ગુજરાતમાં સરેરાશ ઉત્પાદન ૧૮૫૩ કિગ્રા/હે. છે. જે અંકુશ જાતો બીડીએન ૨, એજીટી ૨, વૈશાલી અને જી.જે.પી ૧ કરતાં ૨૩.૧૬,૨૫.૩૭, ૨૦.૭૩ અને ૨૨.૩૩ ટકા વધારે ઉત્પાદન આપે છે. આ નવી જાત ૧૭૦ (૧૬૫-૧૭૫) દિવસમાં પાકતી હોય મધ્યમ પાકતી જાતોના વર્ગમાં સમાવેશ થાય છે. આ જાત મદયમ ઘેરાવો, પીળા ફૂલવાળી અને લીલા રંગની શીંગો અને ૪-૬ દાણા ધરાવે છે. આ જાતની ઉત્પાદન શકિત વધારે છે તેમજ સુકારા સામે પ્રતિકારકતા તથા વંધત્વના રોગ સામે અંશતઃ પ્રતિકારકતા ધરાવે છે. તુવેરની જીટી ૧૦૬ જાતને મધ્ય અને ઉત્તર ગુજરાતમાં ચોમાસુ ઋતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted by the house with following suggestions:

	1. Correct point no. 11b in the release proposal. 2. Mention the details of germplasm collection in point no. 5a of release proposal. 3. Delete Table 8(c) in the release proposal. 4. Verify the data of wilt disease mentioned in Table 6(b) (Include the data of sick plot). 5. Add name of the scientists/ officers from all the centres where the experiment was conducted. ***[Action: Associate Research Scientist (Pulses), PRC, AAU, Vadodara]***
16.1.1.15	**BLACK GRAM VARIETY : Gujarat Anand Blackgram 4 (GABG 4)**
	The proposed genotype JAUG 2 (GABG 4) gave 1044 kg/ha and 924 kg/ha grain yield in *kharif* and summer season, respectively. It exhibited yield advantage of 22.50 per cent and 25.44 per cent in *kharif* as well as 20.83 and 25.03 per cent in summer over the checks T 9 and GU 1, respectively. The variety GABG 4 matures within 76.00 (70.0-82.0) in *kharif* and 70 (65-75) days in summer season with semi erect in nature, hairy pod, 5-7 seeded and resistant against YMD under natural field condition. The Black gram variety GABG 4 is recommended for cultivation in summer and *kharif* season in Middle Gujarat.
	ગુજરાત આણંદ અડદ ૪ મધ્ય ગુજરાત વિસ્તારમાં અડદની નવી જાત જે.એ.યુ.જી.૨ (જી.એ.બી.જી. ૪) દાણાનું સરેરાશ ઉત્પાદન ૧૦૪૪ ફક.ગ્રા./હે. અને ૯૨૪ ફક.ગ્રા./હે. અનુક્રમે ચોમાસુ અને ઉનાળુ ઋતુમાં આપે છે. જે અંકુશ જાતો ટી-૯ અને ગુજરાત અડદ-૧ કરતાં અનુક્રમે ૨૨.૫૦ અને ૨૫.૪૪% ચોમાસુ ઋતુમાં તેમજ ૨૦.૮૩ અને ૨૫.૦૩ ટકા ઉનાળુ ઋતુમાં વધારે ઉત્પાદન આપે છે. આ નવી જાત ચોમાસુ ઋતુમાં ૭૬ (૭૦-૮૨) અને ઉનાળાની ઋતુમાં ૭૦ (૬૫-૭૫) દિવસમાં પાકી જાય છે અને વધુ ઉત્પાદન, ૫-૭ દાણાવાળી અને પચરંગીયાના રોગ સામે પ્રતિકારક છે. અડદની જાત જી.એ.બી.જી.૪ને મધ્ય ગુજરાતમાં ઉનાળુ અને ચોમાસુ ઋતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety was differed and the house suggested to evaluate the variety for one more year. ***[Action: Associate Research Scientist (Pulses), PRC, AAU, Vadodara]***
16.1.1.16	**RICE VARIETY : GUJARAT RICE 18 (Vatrak)**
	The *kharif* transplanted rice growing farmers of the Gujarat state are recommended to grow Gujarat Rice 18 (GR 18). The average yield of this variety is 5137 kg/ha, and maximum yield potential is 6014 kg/ha. It is having moderate resistance against major insect-pests *viz.,* WBPH, YSB, and LF and major diseases *viz.,* BLB, LB, NB, ShR and GD. It possesses medium slender grain type, compact panicle, good tillering ability, mid-early maturity, good cooking and grain qualities and rice contain high amount of Fe and medium amount of Zn.
	ગુજરાત રાજ્યના ખરીફ રોપાણ ડાંગર ઉગાડતા ખેડુતોને ગુજરાત ડાંગર ૧૮ (જી.આર.૧૮) જાતનું વાવેતર કરવાની ભલામણ કરવામાં આવે છે. આ જાતનુ સરેરાશ ઉત્પાદન ૫૧૩૭ કિ.ગ્રા./હે. ક્ષમતા ધરાવે છે અને મહત્તમ ઉત્પાદન ક્ષમતા ૬૦૧૪ કિ.ગ્રા./હે. છે. આ જાત ડાંગરની મુખ્ય જીવાતો જેવીકે, સફેદ પીઠવાળા ચુસિયા, પાનવાળનાર ઇયળ અને ગાભમારાની ઇયળ તથા મુખ્ય રોગો જેવા કે, કરમોડી, જીવાણુ જન્ય સુકારો, પણગચ્છેદનો કોહવારો અને ભૂખરા દાણાના રોગ સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. આ મધ્યમ વહેલી પાકતી જાત મધ્યમ પાતળો દાણો, ભરાવદાર કંટી, દાણા અને રાંધવાની સારી ગુણવત્તા તેમજ ચોખામાં વધુ માત્રામાં લોહ અને મધ્યમ માત્રામાં ઝીંક ધરાવે છે.
	The variety was differed and the house suggested to evaluate the variety for one more year. ***[Action: Associate Research Scientist (Rice), MRRS, AAU, Nawagam]***
16.1.1.17	**DESI COTTON VARIETY : GADC 4: Wagad Resham**
	Farmers of North West Agro climatic Zone - V and Bhal and Coastal Agro

	climatic Zone-VIII growing desi cotton are advised to cultivate long linted variety Gujarat Anand Desi Cotton 4 (GADC 4: Wagad Resham). This variety gave seed cotton yield (1313 kg/ha) over check varieties G Cot 21 (1232 kg/ha) and GADC 2 (1144 kg/ha), which is higher by 19.8 per cent and 17.3 per cent, respectively. It has recorded average ginning out turn 34.3 percent, upper half mean length 29.4 mm, micronaire value 4.5 and tenacity 30.6 g/tex in HVI mode.
	ઉત્તર પશ્ર્ચિમ ખેતઆબોહવાકીય વિભાગ-૫ અને ભાલ અને દરિયાકાંઠા ખેતઆબોહવાકીય વિભાગ-૮ના બિનપિયત દેશી કપાસ (હબેશીયમ) વાવતાં ખેડૂતોને રૂની સારી ગુણવત્તા ધરાવતી જાત ગુજરાત આણંદ દેશી કપાસ–૪ (વાગડ રેશમ)ની ખેતી કરવા ભલામણ કરવામાં આવે છે. આ નવી જાતની કપાસની ઉત્પાદક્તા (૧૩૧૩ કિલો/હેકટર) અન્ય નિયંત્રણ હેઠળની જાતો જી.કોટ.૨૧ (૧૨૩૨ કિલો/હેકટર) અને જીએડીસીર (૧૧૪૪ કિલો/હેકટર) કરતા કપાસની વધુ ઉપજ આપે છે. વાગડ રેશમ જાતની સરેરાશ રૂની ટકાવારી ૩૪.૩, તારની લંબાઇ ૨૯.૪ મિ.મી., માઇક્રોનીયર ૪.૫ એમ.વી. અને ટેનાસીટી ૩૦.૬ ગ્રામ/ટેક્ષ ધરાવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Remove the AICRIP (IET) data from the Table 1 (a). 2. Remove all the supporting letters of cooperatives/ private parties from release proposal. 3. Add name of the scientists/ officers from all the centres where the experiment was conducted. ***[Action: Associate Research Scientist, RCRC, AAU, Viramgam]***
16.1.1.18	**KODO MILLET VARIETY : Gujarat Kodo millet 4 (GK 4: Dahod Kodra 1)**
	The proposed variety of Gujarat Kodo millet 4 (GK 4: Dahod Kodra 1) revealed an average grain yield of 2738 kg/ha which is 28.90, 12.91 and 35.54 per cent higher than the check varieties GK2, GAK3 and GPUK3, respectively in the Gujarat state. In middle Gujarat it exhibited 31.59, 14.08 and 35.21 per cent higher grain yield over the check varieties GK 2, GAK 3 and GPUK 3 respectively whereas in south Gujarat it recorded 21.90, 10.79 and 36.40 per cent increase in grain yield over the check varieties GK 2, GAK 3 and GPUK 3, respectively. The proposed variety is nutritionally superior to the check varieties and also exhibited moderate resistance to pests and diseases as compared to the checks The proposed variety of Gujarat Kodo millet 4 (GK 4: Dahod Kodra 1) is recommended for release in the kodo millet growing regions of Gujarat state.
	ગુજરાત રાજયમાં કોદરાના પાકમાં એક નવી જાત ગુજરાત કોદરા ૪ (જી.કે. ૪: દાહોદ કોદરા ૧) ભલામણ કરવામાં આવે છે જે સરેરાશ ઉત્પાદન હેકટરે ૨૭૩૮ કિ.ગ્રા. ધરાવે છે. આ જાત અંકુશ જાતો જેવી કે જી.કે. ૨, જી.કે. 3 અને જી.પી.યુ.કે. 3 કરતાં અનુક્રમે ૨૮.૯૦, ૧૨.૯૧ અને ૩૫.૫૪ % વધારે આપે છે. આ જાત મધ્ય ગુજરાતમાં અંકુશ જાતો જેવી કે જી.કે. ૨, જી.કે. 3 અને જી.પી.યુ.કે. 3 કરતાં અનુક્રમે ૩૧.૫૯, ૧૪.૦૮ અને ૩૫.૨૧ % વધારે ઉત્પાદન આપે છે જ્યારે દક્ષિણ ગુજરાતમાં, અંકુશ જાતો જેવી કે જી.કે. ૨, જી.કે. 3 અને જી.પી.યુ.કે. 3 કરતાં અનુક્રમે ૨૧.૯૦, ૧૦.૭૯ અને ૩૬.૪૦ % વધારે ઉત્પાદન જોવા મળેલ છે. આ આશાસ્પદ જાત અંકુશ જાતો કરતાં પોષક પ્રમાણમાં શ્રેષ્ઠ અને વધુમાં રોગ જીવાત સામે મધ્યમ પ્રતિકારક છે. ગુજરાત રાજ્યમાં કોદરાની વાવણી કરતા વિસ્તાર માટે આ આશાસ્પદ જાત ગુજરાત કોદરા ૪ (જી.કે. ૪: દાહોદ કોદરા ૧) ની ભલામણ કરવામાં આવે છે.
	Release proposal was accepted by the house with following suggestions: **1.** Proposed variety should be renamed as GK 4: DAHOD KODRA 4. **2.** AICRP yield data should be included in Table 11(b) point of released proposal. **3.** Specify the name of disease in recommendation paragraph. ***[Action: Research Scientist, HMRC, AAU, Dahod]***

16.1.1.19	**GUAVA VARIETY : GUJARAT ANAND RED FLESH GUAVA 1 (GARFG 1: Lal Bahadur)**
	The proposed genotype (GARFG 1) at Anand, 4 to 6 years old plants gave 35.85 kg/plant (14.34 t/ha) fruit yield, which exhibited 91.1 and 57.8 per cent higher than the red flesh check Lalit (18.76 kg/plant) and white flesh check Dholka Local (22.72 kg/plant), respectively. Fruit has oval shape, medium size, cluster fruiting habit and pale green to yellowish colour pericarp when mature with pinkish red flesh. This genotype contains higher carotenoid (19.41 mg/100g pulp) and TSS (14.33 ^{0}Brix) as compared to both the checks Lalit and Dholka Local. The proposed genotype also contains higher micronutrients like Zn and Mn as compared to both the checks Lalit and Dholka Local. The Guava variety GARFG 1 is recommended for *mrigbaha*r (June-July) cultivation under middle Gujarat.
	આ જાત (જીએઆરએફજી ૧) આણંદ કેન્દ્ર ખાતે ચોથા થી છઠ્ઠા વર્ષે ૩૫.૮૫ કિ.ગ્રા./છોડ (૧૪.૩૪ ટન/હે.) ફળનું ઉત્પાદન આપે છે જે લાલ માવાવાળી જાત લલીત (૧૮.૭૬ કિ.ગ્રા./ છોડ) અને સફેદ માવાવાળી સ્થાનિક જાત ધોળકા (૨૨.૭૨ ફક.ગ્રા. પ્રબત છોડ) કરતા અનુક્રમે ૯૧.૧ અને ૫૭.૮ ટકા વધારે છે. આ જાતના ફળ લંબગોળ, મધ્યમ કદના, જુમખામાં અને પાક્વાંના સમયે આછા લીલા થી પીળાશ રંગની છાલ ધરાવતા અને માવો ગુલાબી-લાલાશ પડતો હોય છે. આ જાતમાં કેરોટીનોઇડ્સ (૧૯.૪૧ બમ.ગ્રા./૧૦૦ ગ્રામ માવો) અને શુષ્ક પદાર્થ (૧૪.૩૩૦ બ્રીક્સ)નું પ્રમાણ બન્ને અંકુશ જાતો લલીત અને ધોળકા કરતાં વધુ જોવા મળેલ છે. આ જાતમા સુક્ષ્મતત્વ જેવાકે જસત અને મેંગેનીઝનું પ્રમાણ પણ અંકુશ જાતો લલીત અને ધોળકા કરતાં વધુ જોવા મળેલ છે.
	Release proposal was accepted by the house with following suggestions: **1.** In recommendation text, lower infestation of fruit fly should be mentioned. **2.** Detail information should be included on point 5a of released proposal. ***[Action: Professor and Head, Dept. of Horticulture, BACA, AAU, Anand]***

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16.1.1.20	**RICE VARIETY : NVSR-396 [GNR-8 (Aarti)]**
	The early maturing rice culture, NVSR-396 (4700 kg/ha) performed very well in South Gujarat under aerobic condition and it exhibited average 18.6 per cent and 15.2 per cent grain yield superiority with easy threshability over the checks NAUR-1 and GNR-3, respectively. It has long bold grain, more productive tillers and more number of grains per panicle. It contains intermediate amount of amylose content (24.42%), protein content (6.52%) and high head rice recovery (64.2%). The proposed variety is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. The proposed variety showed tolerant reaction to brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite. Rice variety NVSR-396 is recommended for aerobic cultivation in South Gujarat areas as GNR-8 (Aarti).
	ડાંગરની વહેલી પાકતી જાત એન.વી.એસ.આર.-૩૯૬નું એરોબીક પરિસ્થિતિમાં દક્ષિણ ગુજરાતમાં સરેરાશ ઉત્પાદન ૪૭૦૦ કિલોગ્રામ/હેકટર છે જે અંકુશ જાતો એન.એ.યુ.આર-૧ અને જી.એન.આર.-૩ કરતાં અનુક્રમે ૧૮.૬ ટકા અને ૧૫.૨ ટકા વધુ ઉત્પાદન આપે છે. આ જાતનો દાણો લાંબો અને જાડો, ફુટ તેમજ કંટીમાં દાણાની સંખ્યા વધુ છે. આ જાતના દાણામાં મધ્યમ એમાઇલોઝ (૨૪.૪૨%), પ્રોટીન (૬.૫૨%) તેમજ વધુ આખા દાણાનું પ્રમાણ (૬૪.૨%) ધરાવે છે. એન.વી.એસ.આર.-૩૯૬ ડાંગર જાત સુકારા, ભુખરા દાણાનો રોગ અને પર્ણચ્છેદના કહોવારા સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની સુચિત જાત બદામી ચુસીયા સામે પ્રતિકારક તેમજ ગાભમારાની ઈયળ, પાનવાળનારી ઈયળ અને પર્ણતલ કથીરી સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની જાત એન.વી.એસ.આર.-૩૯૬ને દક્ષિણ ગુજરાતના એરોબીક ડાંગર વિસ્તાર માટે

જી.એન.આર.-૮ (આરતી) તરીકે ભલામણ કરવામાં આવે છે.

Release proposal was accepted by the house with following suggestions:

1. Mention the ‘a’ and ‘b’ on the name of checks used in Table 1 and 2.

[Action: Associate Research Scientist, MRRC, NAU, Navsari]

16.1.1.21 RICE VARIETY : NVSR-6150 [GR-19 (Auranga)]

The salt tolerant rice culture NVSR-6150 (5305 kg/ha) performed very well in Gujarat where it exhibited average 16.0 per cent and 12.1 per cent grain yield superiority over the checks Dandi and GNR-5, respectively. It has short bold grain, more productive tillers and more number of grains per panicle. It contains intermediate amount of amylose content (25.2%), protein content (6.7%) and high head rice recovery (62.8%). The proposed variety is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. The proposed variety showed tolerant to brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite. Rice variety NVSR-6150 is recommended for transplanted rice growing salt affected areas of Gujarat as GR-19 (Auranga).

ડાંગરની ક્ષાર પ્રતિકારક જાત એન.વી.એસ.આર-૬૧૫૦નું ગુજરાતમાં સરેરાશ ઉત્પાદન ૫૩૦૫ કિલો/હેકટર છે. જે અંકુશ જાતો દાંડી અને જી. એન. આર.- ૫ કરતાં અનુક્રમે ૧૬.૦ ટકા અને ૧૨.૧ ટકા વધુ ઉત્પાદન આપે છે. આ જાતનો દાણો નાનો અને જાડો, ફુટ તેમજ કંટીમાં દાણાની સંખ્યા વધુ છે. આ જાતના દાણામાં મધ્યમ એમાઇલોઝ (૨૫.૨%), પ્રોટીન (૬.૭%) તેમજ વધુ આખા દાણાનું પ્રમાણ (૬૨.૮%) ધરાવે છે. ડાંગરની સુચિત જાત સુકારા, ભુખરા દાણાનો રોગ અને પર્ણચ્છેદના કહોવારા સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની સુચિત જાત બદામી ચુસીયા સામે પ્રતિકારક તેમજ ગાભમારાની ઈયળ, પાન વાળનારી ઈયળ અને પર્ણતલ કથીરી સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની જાત એન.વી.એસ.આર-૬૧૫૦ને ગુજરાતમાં રોપાણ ડાંગરનાં ક્ષારીય વિસ્તાર માટે જી.આર.-૧૯ (ઔરંગા) તરીકે ભલામણ કરવામાં આવે છે.

Release proposal was accepted by the house with following suggestions:

1. Add data of check Pankhali in table 5a for leaf blast disease.
2. Add seedling tolerance data with different salinity levels under laboratory condition.

[Action: Associate Research Scientist, MRRC, NAU, Navsari]

16.1.1.22 RICE VARIETY : NVSR-2528 [GR-20 (Devli Kolam)]

The rice variety NVSR-2528 (5462 kg/ha) performed well in Gujarat state where it exhibited average 29.1 per cent and 8.4 per cent grain yield superiority over check varieties GR-4 and Mahisagar, respectively. Medium slender grain rice variety NVSR-2528 contains intermediate amylose (22.9%) and high head rice recovery (61.8%). The proposed variety showed moderately resistant reaction against leaf blast, grain discoloration and sheath rot. The proposed variety was moderately tolerant to white backed plant hopper, leaf folder, stem borer and sheath mite. Rice variety NVSR-2528 recommended for transplanted rice growing areas of Gujarat as GR-20 (Devli Kolam).

ગુજરાતમાં ડાંગરની જાત એન.વી.એસ.આર- ૨૫૨૮નું સરેરાશ ઉત્પાદન ૫૪૬૨ કિલો/હેકટર છે. જે અંકુશ જાતો જી.આર.-૪ અને મહીસાગર કરતા અનુક્રમે ૨૯.૧ ટકા અને ૮.૪ ટકા વધુ ઉત્પાદન આપે છે. આ ડાંગર જાતનો દાણો મધ્યમ પાતળો તેમજ વધુ આખા ચોખાનું પ્રમાણ (૬૧.૮ %) ધરાવે છે. ડાંગરની સુચિત જાત પાનનો કરમોડી, ભુખરા દાણાનો રોગ તેમજ પર્ણચ્છેદના કહોવારા સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની સુચિત જાત પાનના સફેદ પીઠવાળા ચુસીયા, પાનવાળનારી ઇયળ, ગાભમારાની ઇયળ તેમજ પર્ણતલ કથીરી સામે સહય પ્રતિકારક શકિત ધરાવે છે. ડાંગરની જાત એન.વી.એસ.આર- ૨૫૨૮ને ગુજરાતમાં રોપાણ ડાંગર વિસ્તાર માટે

	જી.આર.-૨૦ (દેવલી કોલમ) તરીકે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Change the name of variety as GR-18 instead of GR-20. 2. Add data of per day productivity 3. Remove the column of 'Top ranking of NVSR 2528 over checks' given in Table 1. 4. Mention the 'a' and 'b' on the name of checks used in Table 1 and 2. ***[Action: Associate Research Scientist, RRRS, NAU, Vyara]***
16.1.1.23	**MANGO GINGER VARIETY: NVMG-3 [GNMG-1 (Amravanti)]**
	The mango ginger genotype, NVMG-3 recorded 14.08 t/ha average green rhizome yield in South Gujarat. It exhibited overall 33.59 per cent green rhizome yield superiority over check Chikhli local. The other rhizome yield contributing characters with this genotype is having more number of tillers per plant, numbers of mother as well as finger rhizomes, higher rhizome length and width. The strong mango like aroma, presence of curcumin content, higher total oil content, high dry rhizome weight, powder recovery per cent and lower fiber content are the value added traits. NVMG-3 is resistant to rhizome rot and moderately resistant to leaf blight. Mango ginger genotype NVMG-3 is recommended for mango ginger growing areas of South Gujarat as GNMG-1 (Amravanti).
	દક્ષિણ ગુજરાતની પરિસ્થિતિમાં આંબા હળદરની જાત એન.વી.એમ.જી.-૩માં લીલા ગાંઠીયાનુ સરેરાશ ઉત્પાદન ૧૪.૦૮ ટન/હેકટર આવે છે. આ જાત એકંદરે સ્થાનિક જાત ચીખલી લોકલ કરતાં ૩૩.૫૯ ટકા જેટલુ વધારે લીલા ગાંઠીયાનું ઉત્પાદન આપે છે. આ જાતમાં વધુ ફુંટની સંખ્યા, માતૃ અને અંગુલી ગાંઠોની સંખ્યા, વધુ ગાંઠોની લંબાઇ અને પહોળાઇ ધરાવતી હોવાથી વધુ ઉત્પાદન આપે છે. કેરી જેવી તીવ્ર સુવાસ અને કર્કુમીન તેમજ વધુ સુકા ગાંઠીયાનું વજન અને પાવડરનું પ્રમાણ આ જાતના મૂલ્યવર્ધક ગુણો છે. આ જાત ગાંઠના સળા સામે પ્રતિકારક અને પાનના સુકારા સામે મધ્યમ રોગપ્રતિકારક શક્તિ ધરાવે છે. આંબા હળદરની જાત એન.વી.એમ.જી.-૩ને દક્ષિણ ગુજરાતમાં આંબા હળદરની ખેતી કરતા વિસ્તાર માટે જી.એન.એમ.જી.-૧ (આમ્રવંતી) તરીકે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Mention year of germplasm collection in point no. 5b of release proposal. 2. Merge table 1 and 2. 3. Give year wise mean and per cent increase over check in table 1. ***[Action: Professor, Dept. of GPB, NMCA, Navsari]***
16.1.1.24	**ELEPHANT FOOT YAM VARIETY: NEFY-7 [GEFY-1 (Swagata)]**
	Elephant foot yam genotype NEFY-7 recorded 44.84 t/ha mean corm yield in Gujarat, where it exhibited overall 26.10 per cent corm yield superiority over national check Gajendra. Its light orange fleshed corm is reported to have appreciable amount of starch, dietary fiber, carbohydrate content, protein, vitamin A, iron, manganese, zinc and calcium in comparison to national check. The acridity feels same like "Gajendra" while consumption. The proposed genotype showed resistant reaction against collar rot disease. Elephant foot yam variety NEFY-7 is recommended for elephant foot yam growing areas of Gujarat as GEFY-1 (Swagata).
	સુરણની જાત એન.ઈ.એફ.વાય-૭નું ગુજરાતમાં સરેરાશ ઉત્પાદન ૪૪.૮૪ ટન/હેકટર નોંધાયેલ છે, જે રાષ્ટ્રિય અંકુશ જાત ગજેન્દ્ર કરતાં ૨૬.૧૦ ટકા વધુ ઉત્પાદન આપે છે. આ જાત ઝાંખા નારંગી ગર્ભ ધરાવતી તેમજ આ જાતમાં સ્ટાર્ચ, સુપાચ્ય રેસા, કાર્બોહાઇડ્રેટ, પ્રોટીન, વીટામીન-એ, લોહતત્વ, મેંગેનીઝ, જસત અને કેલ્શીયમનું પ્રમાણ રાષ્ટ્રિય અંકુશ જાત કરતા વધારે છે. આ કંદ ખાતા ગળામાં થતી બળતરા અંકુશ જાત ગજેન્દ્ર જેવી જ હોય છે. આ જાત ઉગસુકના

રોગ સામે પ્રતિકારક શક્તિ ધરાવે છે. સુરણની જાત એન.ઈ.એફ.વાય-૭ ને ગુજરાત રાજયમાં સુરણ વાવેતર વિસ્તાર માટે જી.ઇ.એફ.વાય.-૧ (સ્વાગતા) તરીકે ભલામણ કરવામાં આવે છે.

Release proposal was accepted by the house with following suggestions:

1. Significant data with respect to the checks should be mentioned in Table 1.
2. Write the 'Morpho-physiological' instead of writing 'Ancillary' in Table 4.
3. Salient features should be incorporated in the released proposal proforma.
4. Add quality data of check Chikhali local.

[Action: Associate Research Scientist, HMRS, NAU, Waghai]

16.1.1.25 SORGHUM VARIETY: SRF-332 [GFS-7 (Tapi Chari)]

The fodder sorghum variety SRF-332 recorded average 40022 kg/ha green fodder & 13212 kg/ha dry fodder yield, which is 29.3 per cent, 29.3 per cent, 13.2 per cent and 17.1 per cent higher in green fodder yield and 29.5 per cent, 24.4 per cent, 14.7 per cent, and 19.4 per cent in dry fodder as compared to the check varieties *viz.,* GFS-5, GAFS-12, GFS-6 and CSV-21F (NC), respectively. This variety showed superiority over the checks in respect to lower infestation of sorghum shoot fly and stem borer and found moderately resistant to the leaf diseases with good fodder quality parameters. The single cut fodder sorghum variety SRF-332 is recommended for *kharif* season in fodder growing area of Gujarat state as GFS-7 (*Tapi Chari*).

ઘાસચારા જુવારની એસ.આર.એફ.-૩૩૨ જાત સરેરાશ ૪૦૦૨૨ કિ./હે. લીલા ઘાસચારાનું તથા ૧૩૨૧૨ કિ./હે. સુકા ઘાસચારાનું ઉત્પાદન આપે છે, જે લીલા ઘાસચારામાં અંકુશ જાતો જેવી કે જી.એફ.એસ.-૫, જી.એ.એફ.એસ.-૧૨, જી.એફ.એસ.-૬ અને સી.એસ.વી.-૨૧એફ. કરતા અનુક્રમે ૨૯.૩ ટકા, ૨૯.૩ ટકા, ૧૩.૨ ટકા અને ૧૭.૧ ટકા અને સુકા ઘાસચારામાં અનુક્રમે ૨૯.૫ ટકા, ૨૪.૪ ટકા, ૧૪.૭ ટકા અને ૧૯.૪ ટકા વધારે ઉત્પાદન આપે છે. આ જાતમાં સાંઠાની માખી અને ગાભમારાની ઈયળનો ઉપદ્રવ ઓછો અને પર્ણ રોગો સામે આંશિક પ્રતિકારક શક્તિ ધરાવે છે તથા ઘાસચારાની પણ સારી ગુણવતા ધરાવે છે. એક કાપણી વાળી ઘાસચારા જુવારની જાત એસ.આર.એફ.-૩૩૨ને ચોમાસુ ઋતુમાં સમગ્ર ગુજરાત રાજયમાં ઘાસચારા ઉગાડતા વિસ્તાર માટે જી.એફ.એસ.-૭ (તાપી ચારી) તરીકે ભલામણ કરવામાં આવે છે.

Release proposal was accepted by the house with following suggestions:

1. Remove regional performance from point 11a of proposal.
2. 'Green Fodder Yield' should be mentioned in title of Table 1 instead of 'Yield'.

[Action: Research Scientist, MSRS, NAU, Surat]

16.1.1.26 SORGHUM VARIETY: SR-2980 [GJ-44 (Madhu)]

The grain sorghum variety SR-2980 is high yielding as compared to state and national checks. It produced average 2762 kg/ha grain yield in Gujarat state with increment of 18.1 per cent, 8.4 per cent and 22.3 per cent in grain yield over grain sorghum state checks GJ-42, GNJ-1 and National check CSV 20. The average dry fodder yield of SR-2980 is 11836 kg/ha. This variety showed superiority over the checks in respect to lower stem borer infestation and found moderately resistant to the Grain Mold, Ergot, Anthracnose and Leaf blight disease. The grain sorghum variety SR-2980 is recommended for *kharif* season in grain sorghum growing area of Gujarat state as GJ-44 (*Madhu*).

દાણા જુવારની જાત એસ.આર.-૨૯૮૦ રાજ્ય અને રાષ્ટ્રિય અંકુશ જાતો કરતા વધારે ઉત્પાદન આપે છે. જુવારની આ જાત સરેરાશ ૨૭૬૨ કિ./હે. દાણાનું ઉત્પાદન આપે છે. જે દાણામાં રાજ્ય અંકુશ જાતો જી.જે.-૪૨ અને જી.એન.જે.-૧ તથા રાષ્ટ્રિય અંકુશ જાત સી.એસ.વી. ૨૦ કરતા અનુક્રમે ૧૮.૧ ટકા, ૮.૪ ટકા અને ૨૨.૩ ટકા વધારે ઉત્પાદન આપે છે. આ જાત સરેરાશ ૧૧૮૩૬ કિ./હે. સુકા ઘાસચારાનું ઉત્પાદન આપે છે. આ જાતમાં ગાભમારાની ઈયળનો ઉપદ્રવ ઓછો તથા

	દાણાની ફૂગ, ગુંદરીયો, કાલવ્રણ, પાનના સુકારા જેવા રોગો સામે આંશિક પ્રતિકારક શક્તિ ધરાવે છે. દાણા જુવારની જાત એસ.આર.-૨૯૮૦ ને ચોમાસુ ઋતુમાં સમગ્ર ગુજરાત રાજયમાં દાણા માટે જુવાર ઉગાડતા વિસ્તાર માટે જી.જે.-૪૪ (મધુ) તરીકે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted by the house with following suggestions: 1. Remove table 7 from release proposal. 2. Give only 4 to 5 characters in point no. 9 b in release proposal. 3. Add table of ancillary observations. 4. Add year wise mean and per cent increase over data in table 1.1, 1.2, 2.1 and 2.2. ***[Action: Research Scientist, MSRS, NAU, Surat]***
16.1.1.27	**SORGHUM VARIETY: CRS-13 [GJ-45 (Madhu Moti)]**
	The *rabi* sorghum variety CRS-13 is high yielding as compared to State and National checks. It produced average 2680 kg/ha grain yield with grain yield increment of 21.4 per cent, 23.4 per cent, 13.7 per cent and 36.4 per cent over local check varieties Nizer Goti, BP-53, Phule Revati and national check CSV 216R, respectively. In dry fodder yield, CRS-13 (7029 kg/ha) exhibited yield increment of 6.2 per cent, 4.1 per cent and 2.6 per cent over checks BP-53, Phule Revati and CSV-21 6R, respectively. This variety showed superiority over the checks with respect to lower infestation of shoot fly and stem borer. The *rabi* sorghum variety CRS-13 is recommended for *rabi* cultivation under irrigation as well as conserved moisture condition in the Gujarat state as GJ-45 (*Madhu Moti*).
	શિયાળુ જુવારની જાત સી.આર.એસ.-૧૩ રાજ્ય અને રાષ્ટ્રિય અંકુશ જાતો કરતા વધારે ઉત્પાદન આપે છે. શિયાળુ જુવારની નવી જાત સી.આર.એસ.-૧૩નું ગુજરાત રાજયમાં પિયત પરીસ્થિતિમાં સરેરાશ ૨૬૮૦ કિ.ગ્રા./હે. દાણાનું તથા ૭૦૨૯ કિ.ગ્રા./હે. સુકાચારાનું ઉત્પાદન આપે છે, જે અંકુશ જાતો નિઝર ગોટી, બી.પી.-૫૩, ફુલે રેવતી અને રાષ્ટ્રીય અંકુશ જાત સી.એસ.વી. ૨૧૬ આર કરતાં અનુક્રમે ૨૧.૪ ટકા, ૨૩.૪ ટકા, ૧૩.૭ ટકા અને ૩૬.૪ ટકા વધારે ઉત્પાદન આપે છે. જે સુકાચારામાં પણ અંકુશ જાતો બી.પી.-૫૩, ફુલે રેવતી અને સી.એસ.વી. ૨૧૬આર કરતાં અનુક્રમે ૬.૨ ટકા, ૪.૧ ટકા અને ૨.૬ ટકા વધારે ઉત્પાદન આપે છે. આ જાતમાં સાંઠાની માખી તથા ગાભમારાની ઈયળનો ઉપદ્રવ પણ ઓછો આવે છે. શિયાળુ જુવારની નવી જાત સી.આર.એસ.-૧૩ને સમગ્ર ગુજરાત રાજયમાં શિયાળુ ઋતુમાં પિયત તેમજ સંગ્રહીત ભેજમાં વાવેતર માટે જી.જે.-૪૫ (મધુ મોતી) તરીકે ભલામણ કરવામાં આવે છે.
	The variety was differed and the house suggested to evaluate the variety for one more year with following suggestion **1.** Take observation on diseases and pest for one more year. ***[Action: Research Scientist, MSRS, NAU, Surat]***
16.1.1.28	**COTTON VARIETY : GSHV-172 (G.Cot.40) (Endorsement)**
	The *hirsutum* cotton variety GSHV 172 recorded 2505 kg/ha average seed cotton yield in Gujarat where it exhibited seed cotton yield advantage of 78.2, 36.2, 18.9, 36.4, 26.8 and 30.4 per cent higher than G.Cot.10, G.Cot.16, G.Cot.18, G.Cot.20, GN.Cot.22 and zonal check, respectively under irrigated condition. The average lint yield in GSHV 172 was 901 kg/ha which was due to higher ginning outturn (36.1 %). GSHV 172 showed disease free to moderately resistant reaction against Bacterial Leaf Blight as well as Alternaria Leaf Spot and disease free to moderately susceptible for grey mildew. The sucking pests and open boll / locule damage in GSHV 172 was below ETL as compared to checks. ETL population of leaf hopper with JIG (Grade I) was found below ETL. Thus, *hirsutum* cotton variety GSHV 172 is recommended for endorsement in Gujarat as “G.Cot.40”.

	ગુજરાત રાજ્યના પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત જી.એસ.એચ.વી. ૧૭૨ નું સરેરાશ ઉત્પાદન ૨૫૦૫ કિ.ગ્રા./હેક્ટર મળેલ છે. જે પ્રચલિત નિયંત્રિત જાતો જેવી કે જી.કોટ.૧૦, જી.કોટ.૧૬, જી.કોટ.૧૮, જી.કોટ.૨૦, જી.એન.કોટ.૨૨ અને ઝોનલ ચેક કરતાં અનુક્રમે ૭૮.૨, ૩૬.૨, ૧૮.૯, ૩૬.૪, ૨૬.૮ અને ૩૦.૪ ટકા વધુ ઉત્પાદન છે. જી.એસ.એચ.વી. ૧૭૨નું રૂ સરેરાશ ઉત્પાદન ૯૦૧ કિ.ગ્રા./હેક્ટર મળેલ છે. જે આ જાતની ઉંચી ટકાવારી (૩૬.૧ ટકા) ને કારણે છે. આ જાત પાનના ટપકાંના રોગ અને પાનના સુકારાના રોગ સામે મધ્યમ રોગપ્રતિકારક જ્યારે દહિયો/છાસિયો રોગ સામે નહિવત થી મધ્યમ સંવેદંશીલ લક્ષણો જણાયેલ છે. જી.એસ.એચ.વી. ૧૭૨માં ચુસિયા જીવાતો, ખુલ્લા જીંડવા અને કાલાનું નુક્શાન આર્થિક ક્ષમ્ય માત્રા કરતાં ઓછું આવે છે. જેથી ગુજરાતનાં પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત જી.એસ.એચ.વી. ૧૭૨ ને “જી.કોટ.૪૦” તરીકે એન્ડોર્સમેન્ટ માટે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted for endorsement by the house with following suggestions. 1. Recast proposal as per standard performa ***[Action: Research Scientist, MCRS, NAU, Surat]***
16.1.1.29	**COTTON VARIETY : GSHV-180 (G.Cot.42) (Endorsement)**
	The *hirsutum* cotton variety GSHV 180 recorded 2542 kg/ha average seed cotton yield in South Gujarat under rainfed condition where it exhibited cotton yield advantage of 32.2, 56.8, 23.7 and 4.0 per cent over check varieties G.Cot.16, G.Cot.20, Suraj and G.Cot.34, respectively with narrow spacing at 60 x 15 cm. The average lint yield in GSHV 180 was 815 kg/ha. It has 32.4 per cent ginning outturn. GSHV 180 showed disease free reaction for Bacterial Leaf Blight and disease free to susceptible for Alternaria Leaf Spot. It showed moderate to lower population of leaf hopper where as boll worm damage was found below ETL. This variety is medium late in maturity. Thus, *hirsutum* cotton variety GSHV 180 is recommended for endorsement in South Gujarat under rainfed conditions for high density planting as “G.Cot.42”.
	દક્ષિણ ગુજરાતનાં બિન પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત જી.એસ.એચ.વી ૧૮૦ ને ૬૦ x ૧૫ સેમી. નાં સાંકડાગાળે વાવવાથી તેનુ સરેરાશ ઉત્પાદન ૨૫૪૨ કિ.ગ્રા./ હેકટર મળેલ છે. જે પ્રચલિત નિયંત્રીત જાતો જેવી કે, જી.કોટ.૧૬, જી.કોટ.૨૦, સુરજ અને જી.કોટ.૩૪ કરતાં અનુક્રમે ૩૨.૨, ૫૬.૮, ૨૩.૭ અને ૪.૦ ટકા વધુ ઉત્પાદન છે. જીએસએચવી ૧૮૦ નું રૂ નુ સરેરાશ ઉત્પાદન ૮૧૫ કિ.ગ્રા./ હેકટર મળેલ છે. આ જાતની રૂ ની ટકાવારી ૩૨.૪ ટકા છે. આ જાતમાં પાનનાં સુકારાનો રોગના લક્ષણો જણાયેલ નથી અને પાનનાં ટપકાંના રોગ સામે નહિવત થી સંવેદનશીલ લક્ષણો જણાયેલ છે. આ જાતમાં ચુસિયા પ્રકારની જીવાત તડ્તડીયાનું નુકશાન મધ્યમથી નીચુ રહેલ હતું જ્યારે જીંડવાની ઈયળથી થયેલ નુક્શાન આર્થિક ક્ષમ્ય માત્રા કરતા ઓછુ જણાયેલ છે. આ જાત મધ્યમ મોડી પાક્તી જાત છે જેથી દક્ષિણ ગુજરાતનાં બિન પિયત વિસ્તારમાં હિરસુટમ કપાસની જાત જી.એસ.એચ.વી ૧૮૦ ને ઘનિષ્ઠ પાક પધ્ધતિમાં વાવેતર કરવા “જી.કોટ.૪૨” તરીકે એન્ડોર્સમેન્ટ માટે ભલામણ કરવામાં આવે છે.
	Release proposal was accepted for endorsement by the house with following suggestions. 1. Recast proposal as per standard performa 2. Replace word 'closer spacing' with ‘high density planting’. ***[Action: Research Scientist, MCRS, NAU, Surat]***

16.1.2 RECOMMEDATION FOR SCIENTIFIC COMMUNITY

<table>
<tr><td rowspan="3">16.1.2.1</td><td>Title: Study the effect of storage container, polymer film coating, fungicide and insecticides on storability of green gram var. GAM 5</td></tr>
<tr><td>Recommendation text: It is recommended that seeds should be treated with imidacloprid 48% FS @2.5 ml/kg seeds, thiram 75% WS @ 3g/kg seed and polymer seed coating @5 ml/kg seeds followed by storage in polythene bag (700 gauge) or Double lined poly bags or Non-woven bag for retaining higher seed germination per cent in Green Gram seeds at the end of nine months of storage period.</td></tr>
<tr><td>The recommendation is approved.
[Action: Asst. Professor, Dept. of Seed Science & Technology, BACA, AAU, Anand]</td></tr>
<tr><td colspan="2">Recommendation for information of basic science subcommittee</td></tr>
<tr><td rowspan="2">Title</td><td>Biochemical traits in relation to insect tolerance of wild species and cross derivatives involving wild species of cotton</td></tr>
<tr><td>The recommendation is approved.
[Action: Research Scientist, MCRS, NAU, Surat]</td></tr>
</table>

16.1.3 NEW TECHNICAL PROGRAMMES

Date : 28th May, 2020 **Time: 9:30 a.m. onwards**

The 16th Combined Joint AGRESCO Crop Improvement Sub-committee meeting for New technical programme was held on 28/05/2020 at AAU, Anand.

At the outset, Dr. R. M. Chauhan, Research Scientist (Seed), SDAU, S. K. Nagar welcomed the chairman, co-chairman, conveners of crop improvement sub-committee and scientists. In his welcome speech, he highlighted the research activities carried out by different scientists. Dr. V. P. Chovatia, Hon. Vice Chancellor, JAU, Junagadh appreciated the efforts of scientists for coming up with need based new technical programmes.

All the new technical programmes presented by different conveners were thoroughly screened by the house and approved with some suggestions. The proceeding is given in tabular form as under:

Chairman	Dr. V. P. Chovatia, Hon'ble Vice Chancellor, JAU, Junagadh
Co-Chairmen	1. Dr. M.A. Vaddoria, Principal, JAU, Junagadh 2. Dr. R. M. Chauhan, Research Scientist (Seed), SDAU, SKNagar
Rapporteurs	1. Dr. P. B. Patel, Associate Research Scientist, MRRC, NAU, Navsari 2. Dr. H. L. Dhaduk, Associate Research Scientist, M&AP, AAU, Anand
Statistician	Dr. D. J. Parmar, Professor, AAU, Anand

Presentation of technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. H. L. Dhaduk	Assoc. Research Scientist & Head, M&AP, AAU, Anand
2	Dr. R. B. Madariya	Research Scientist (Groundnut), MORS, JAU, Junagadh
3	Dr. P. B. Patel	Assoc. Res. Scientist, Main Rice Research Centre, NAU, Navsari
4	Dr. M. P. Patel	Research Scientist, Pulses Research Station, SDAU, S K Nagar

Summary

Name of University	New Technical Programmes	
	Proposed	**Approved**
AAU, Anand	01	01
JAU, Junagadh	02	1+1*
NAU, Navsari	02	01
SDAU, SKNagar	00	00
Total	**05**	**04**

* Filler trial

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
16.1.3.1	Effect of mechanical scarification and biofertilizer treatments on seed quality enhancement in senna (*Senna alexandrina* Mill.)	**Approved with following suggestion/s:** 1. Mention the details of mechanical scarification technique in proposal 2. Take experiment for three years 3. Use fresh seed for experimentation 4. Add observations – Root length (cm), Shoot length (cm) and Root: shoot ratio *[**Action:** Head, Dept. of Seed Science and Technology, BACA, AAU, Anand]*

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
16.1.3.2	Heat stress mitigation through seed priming in wheat	**Approved with following suggestion/s:** 1. Add absolute control in treatment 2. Mention scientific name in title 3. Add observation of field emergence (%) *[**Action:** Professor, Department of Seed Science and Technology, JAU, Junagadh]*
16.1.3.3	Induction of rooting through biological materials and plant growth regulator in stem cutting of Rose	**Approved with following suggestion/s:** 1. Take the experiment as 'filler trial' 2. Change design : RBD to CRD 3. Modified treatments T_3 and T_4 using powder form of *Aloe vera* and potato. 4. Remove treatment T_5 (Leaf mould) 5. Use net house with fogger for experimentation 6. Mention method and time of each observation *[**Action:** Professor, Department of Genetics & Plant Breeding, JAU, Junagadh]*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
16.1.3.4	Development and characterization of EMS based mutant for improved floral traits for higher out crossing in Rice.	**Not approved:** 1. Continue it as departmental research work and not as new technical program *[**Action:** Asso. Research Scientist, Regional Rice Research Station, NAU, Vyara]*
16.1.3.5	Effect of row ratio on seed setting and seed yield of hybrid rice under hybrid seed production.	**Approved with following suggestion/s:** 1. Use 'Large Plot Technique' for experimentation 2. Take five spot sampling of 0.90 x 2 m^2 in A line from each treatment 3. Change design : RBD to CRD *[**Action:** Asso. Research Scientist, Regional Rice Research Station, NAU, Vyara]*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR:

There was no new technical program

General suggestions:

1) The release proposals should be in proper format as distributed by Convener, Crop improvement and Research Scientist (groundnut), JAU, Junagadh during 2018, however the copy of the format is distributed to all DRs and Conveners of Crop Improvement Sub-committee of SAUs.
2) Standard procedure should be followed for evaluation of the genotypes *i.e.,* One year PET followed by one year SSVT and two years of LSVT with multi locations for all agricultural and horticultural crops (Excluding plantation and forest crops).
3) In yield data table, year wise mean and per cent increase over should be mentioned.
4) Anand and Navsari centre has to rewrite the recommendation paragraph (English and Gujarati) as per Junagadh or Dantiwada centre'
5) Mention SEm ±, CD at 5% and CV % in all the tables.
6) Disease and pest data table should be given as per the format and the range of the same should be given instead of mean.
7) Proposal should contain minimum one year AICRP testing data for crops covered under AICRIP testing, DNA fingerprinting and National Identity number, otherwise the proposal will not be considered for recommendation.
8) Include name of all sub-station scientists who has contributed in evaluation.
9) In table of ancillary observations, mean along with range should me mentioned.

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16.2 Crop Production/Natural Resource Management

Date:- 19th -20th June, 2020

Discipline	**:**	Crop Production/Natural Resource Management
Date	**:**	June 19-20, 2020
Organized by	**:**	Navsari Agricultural University
Chairman	**:**	Dr. B.K. Sagarka, DEE, JAU, Junagadh
Co-chairman	**:**	Dr. V.P. Ramani, ADR, AAU
		Dr. M.K. Arvadia, Principal, NMCA, NAU
Conveners	**:**	Dr. J. D. Thanki, Prof. & Head (Agron.), NMCA, NAU
		Dr. S. G. Savalia, Prof. & Head (Ag. Chem. & SS), COA, JAU
		Dr. N. J. Jadav, Prof. & Head (Ag. Chem. & SS), COA, AAU
		Dr. J. S. Jat, Assoc. Res. Sci., Arid Res. Station, SDAU
Rapporteurs	**:**	Dr. R. B. Ardeshna, Assoc. Professor, NAU
		Dr. R.M. Solanki, Assoc. Professor, JAU
		Dr. V. J. Patel, Assoc. Professor, AAU
		Dr. D. M. Patel, Assoc. Professor, SDAU
Statistician	**:**	Dr. D. J. Parmar, Assoc. Professor, AAU

SUMMARY OF RECOMMENDATIONS

Name of Univ.	**No. of proposed recommendations**		**No. of approved recommendations**		**No. of recommendations**		
	Farmers	**Scientific**	**Farmers**	**Scientific**	**Confirmation***	**Withheld**	**Dropped**
AAU	10	-	9	01	-	01	-
JAU	12	06	11	03	02	01	01
NAU	19	02	18	02	-	-	01
SDAU	15	04	09	05	-	05	-

*Confirmation of earlier recommendations

16.2.1 RECOMMENDATIONS FOR FARMERS

Anand Agricultural University

16.2.1.1 Evaluation of nutrient composition of bacterial biodegraded crop residues

Withheld.

Suggestions:

1) Use the word ‘biodecomposer’ in place of ‘biodegrader’.
2) Specify whether it is 200 kg slurry or slurry of 200 kg dung.
3) Verify the data as the differences in initial values were reflected throughout in most of the periodic observations.

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

16.2.1.2 Integrated weed management in summer groundnut (*Arachis hypogaea* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing summer groundnut are recommended to adopt pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC 180 g a.i./ha (15.3 ml/10 litre of water) *fb* post-emergence (25-30 DAS) application of imazethapyr 10% SL 100 g a.i./ha (20 ml/10 litre of water) or pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC 180 g a.i./ha (15.3 ml/10 litre of water) *fb* post-emergence (25-30 DAS) application of imazethapyr

35% + imazamox 35% WG (premix) 70 g a.i./ha (2 g/10 litre of water) or pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC 180 g a.i./ha (15.3 ml/10 litre of water) *fb* interculturing and hand weeding at 40 DAS or early post-emergence (10-15 DAS) application of imazethapyr 10% SL 100 g a.i./ha (20 ml/10 litre of water) *fb* interculturing and hand weeding at 40 DAS or early post-emergence (10-15 DAS) application of fluazifop-p-butyl 11.1% w/w + fomesafen 11.1w/w SL (premix) 250 g a.i./ha (20 ml/10 litre of water) *fb* interculturing and hand weeding at 40 DAS or interculturing and hand weeding at 20 and 40 DAS for effective management of complex weed flora and higher net return without any herbicide residues in produce and soil. There was no adverse effect of herbicides applied in summer groundnut on succeeding crops *viz*., cotton, maize and greengram.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ha	Quantity of formulation (g or ml) /ha	Conc. (%)				
2020	Summer groundnut	Complex weed flora	Oxyfluorfen 23.5% EC *fb* Imazethapyr 10% SL	180 *fb* 100	765 *fb* 1000	0.036 *fb* 0.02	500 litres	Pre-emergence (2-3 DAS) *fb* post-emergence (25-30 DAS)	- 102	
			Oxyfluorfen 23.5% EC *fb* imazethapyr 35% + imazamox 35% WG (premix)	180 *fb* 70	765 *fb* 100	0.036 *fb* 0.014		Pre-emergence (2-3 DAS) *fb* post-emergence (25-30 DAS)	- 83	
			Oxyfluorfen 23.5% EC *fb* interculturing and hand weeding at 40 DAS	180	765	0.036		Pre-emergence (2-3 DAS)	-	
			Imazethapyr 10% SL *fb* interculturing and hand weeding at 40 DAS	100	1000	0.02		Early post-emergence (10-15 DAS)	102	
			Fluazifop-p-butyl 11.1% w/w + fomesafen 11.1w/w SL (premix) *fb* interculturing and hand weeding at 40 DAS	250	1000	0.05		Early post-emergence (10-15 DAS)	71	
			Interculturing and hand weeding at 20 and 40 DAS	-	-	-		-	-	

મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ઉનાળુ મગફળીના પાકમાં અસરકારક નીંદણ વ્યવસ્થાપન અને વધુ નફો મેળવવા માટે વાવણી બાદ ૨-૩ દિવસે ઓક્સિફ્લૂર્ફેન ૨૩.૫% ઈ.સી. ૧૮૦ ગ્રામ સક્રિય તત્વ/હે (૧૫.૩ મિ.લિ./૧૦ લિટર પાણી) અને વાવણી બાદ ૨૫-૩૦ દિવસે ઈમાઝેથાપાયર ૧૦% એસ.એલ. ૧૦૦ ગ્રામ સક્રિય તત્વ/હે (૨૦ મિ.લિ./૧૦ લિટર પાણી) અથવા વાવણી બાદ ૨-૩ દિવસે ઓક્સિફ્લૂર્ફેન ૨૩.૫% ઈ.સી. ૧૮૦ ગ્રામ સક્રિય તત્વ/હે (૧૫.૩ મિ.લિ./૧૦ લિટર પાણી) અને વાવણી બાદ ૨૫-૩૦ દિવસે ઈમાઝેથાપાયર ૩૫% + ઈમાઝામોક્ષ ૩૫% ડબલ્યુ.જી. (પૂર્વ મિશ્રિત) ૭૦ ગ્રામ સક્રિય તત્વ/હે (૨ ગ્રામ/૧૦ લિટર પાણી) અથવા વાવણી બાદ ૨-૩ દિવસે ઓક્સિફ્લૂર્ફેન ૨૩.૫% ઈ.સી. ૧૮૦ ગ્રામ સક્રિય તત્વ/હે (૧૫.૩ મિ.લિ./૧૦ લિટર પાણી) અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ અથવા વાવણી બાદ ૧૦-૧૫ દિવસે ઈમાઝેથાપાયર ૧૦% એસ.એલ. ૧૦૦ ગ્રામ સક્રિય તત્વ/હે (૨૦ મિ.લિ./૧૦ લિટર પાણી) અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ અથવા વાવણી બાદ ૧૦-૧૫ દિવસે ફ્લૂઆઝીફોપ-પી-બ્યૂટાઈલ ૧૧.૧% ડબલ્યુ/ડબલ્યુ + ફોમેસાફેન ૧૧.૧% ડબલ્યુ/ડબલ્યુ એસ.એલ. (પૂર્વ મિશ્રિત) ૨૫૦ ગ્રામ સક્રિય તત્વ/હે (૨૦ મિ.લિ./૧૦ લિટર પાણી) અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ અથવા ૨૦ અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ પૈકી કોઈપણ એક માવજત અપનાવવાની ભલામણ કરવામાં આવે છે. ઉનાળુ મગફળીમાં છંટકાવ કરેલ નીંદણનાશકોની તે પછીના કપાસ, મકાઈ અને મગના પાકોમાં કોઈ આડઅસર જોવા મળેલ નથી. ઉનાળુ મગફળીના ઉત્પાદન અને જમીનમાં નીંદણનાશકના અવશેષ પણ નોંધાયેલ નથી.

સી.આઈ.બી.ની પી.એચ.આઈ .માટેની માર્ગદર્શિકા મુજબ ભલામણ										
વર્ષ	પાક	જીવાત	નીંદણનાશક	પ્રમાણ			પાણી	છંટકાવનો સમય	પ્રતીક્ષા સમય (દિવસ)	રીમાર્કસ
				સ .ત . ગ્રામ/હે.	નીંદણનાશકનું પ્રમાણ (ગ્રામ/ મિ.લિ./હે.)	માત્રા)%(				
૨૦૨૦	ઉનાળુ મગફળી	નીંદણ	ઓક્સિફ્લૂર્ફેન ૨૩.૫ % ઈ.સી. અને ઈમાઝેથાપાયર ૧૦ % એસ.એલ.	૧૮૦ અને ૧૦૦	૭૬૫ અને ૧૦૦૦	૦.૦૩૬ અને ૦.૦૨	૫૦૦ લિટર	વાવણી બાદ ૨-૩ દિવસે અને વાવણી બાદ ૨૫-૩૦ દિવસે	- ૧૦૨	-
			ઓક્સિફ્લૂર્ફેન ૨૩.૫ % ઈ.સી. અને ઈમાઝેથાપાયર ૧૦ %એસ.એલ.	૧૮૦ અને ૭૦	૭૬૫ અને ૧૦૦	૦.૦૩૬ અને ૦.૦૧૪		વાવણી બાદ ૨-૩ દિવસે અને વાવણી બાદ ૨૫-૩૦ દિવસે	- ૮૩	-
			ઓક્સિફ્લૂર્ફેન ૨૩.૫ % ઈ.સી .અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ	૧૮૦	૭૬૫	૦.૦૩૬		વાવણી બાદ ૨-૩ દિવસે	-	-
			ઈમાઝેથાપાયર ૧૦ % એસ.એલ .અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ	૨૫૦	૧૦૦૦	૦.૦૨		વાવણી બાદ ૧૦ -૧૫ દિવસે	૧૦૨	-
			ફ્લૂઆઝીફોપ-પી-બ્યૂટાઈલ ૧૧.૧ %ડબલ્યુ/ડબલ્યુ + ફોમેસાફેન ૧૧.૧ % ડબલ્યુ/ડબલ્યુ એસ.એલ . (પૂર્વ મિશ્રિત)અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ	૨૫૦	૧૦૦૦	૦.૦૫		વાવણી બાદ ૧૦ -૧૫ દિવસે	૭૧	-
			૨૦અને ૪૦ દિવસે આંતરખેડ તથા હાથ નીંદામણ	-	-	-		-	-	-

(**Action:** *Agronomist, AICRP on Weed Management, BACA, AAU, Anand*)

16.2.1.3 Effect of different date of transplanting and spacing on herbage yield and quality of Basil (*Ocimum basilicum* L.)

The farmers of Middle Gujarat Agro-climatic Zone cultivating sweet basil (*Ocimum basilicum* L.) (GAB 1) in *Kharif* season are recommended to transplant 30-35 days old seedling of basil during 3rd week of July with spacing of 60 cm x 45 cm for securing higher dry herbage yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ ઋતુમાં મીઠા ડમરા (*Ocimum basilicum* L.)ની (ગું.આ.બા .૧) ખેતી કરતા ખેડૂતો ને સુકા દ્રવ્યનું વધુ ઉત્પાદન અને નફો મેળવવા માટે 30-૩૫ દિવસના ડમરા ધરુની ફેરરોપણી જુલાઈ માસના ત્રીજા અઠવાડીયામાં ૬૦ સે.મી. x ૪૫ સે.મી .નુ અંતર રાખીને કરવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Research Scientist, AICRP on Medicinal Aromatic Plant Research Station, AAU, Anand*)

16.2.1.4 Efficacy testing of native *Rhizobium* isolates in summer groundnut (*Arachis hypogaea*)

The farmers of Middle Gujarat Agro-climatic Zone cultivating organically summer groundnut are recommended to apply FYM 5 t/ha along with seed treatment of *Rhizobium* culture (AAUGNR 2) 5 ml/kg seed for getting higher yield and net return.

OR

The farmers of Middle Gujarat Agro-climatic Zone cultivating summer groundnut are recommended to apply 12.5 kg N and 50 kg P_2O_5 as basal dose as well as seed treatment of *Rhizobium* culture (AAUGNR 2) 5 ml/kg seed for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રીય ખેતીથી ઉનાળુ મગફળી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે હેક્ટર દીઠ ૫.૦ ટન છાણીયું ખાતર આપવું તથા રાઈઝોબિયમ કલ્ચર (એએયૂજીએનઆર ૨) ૫ મિ.લિ./કિ.ગ્રા.ની બીજ માવજત આપવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે.

અથવા

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ મગફળી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે હેક્ટર દીઠ ૧૨.૫ કિ.ગ્રા. નાઈટ્રોજન અને ૫૦ કિ.ગ્રા .ફોસ્ફરસ પાયામાં આપવા ઉપરાંત બીજને રાઈઝોબિયમ કલ્ચર (એએયૂજીએનઆર ૨) ૫ મિ.લિ./કિ.ગ્રા.ની બીજ માવજત આપવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે.

(**Action:** *Principal, College of Agriculture, AAU, Jabugam*)

16.2.1.5 Nutrient management through organic sources in summer green gram (*Vigna radiata* L.) var. GAM 5

The farmers of Middle Gujarat Agro-Climatic Zone growing summer green gram organically are recommended to apply either FYM 4.0 t/ha or FYM 2.0 t/ha + vermicompost 0.5 t/ha or FYM 2.0 t/ha + castor cake 0.25 t/ha for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળું મગની સેન્દ્રિય ખેતી કરતાં ખેડૂતોને વધુ આવક અને નફો મેળવવા માટે પ્રતિ હે. છાણિયુ ખાતર ૪ ટન અથવા છાણિયુ ખાતર ૨ ટન + વર્મિકંપોસ્ટ ૦.૫ ટન અથવા છાણિયુ ખાતર ૨ ટન + દિવેલીનો ખોળ ૦.૨૫ ટન આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Associate Professor, Horticultural Research Station, AAU, Khambhodaj*)

16.2.1.6 Nutrient management through organic source in summer green gram (*Vigna radiata* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing summer green gram (GAM 5) through organic sources are recommended to apply either FYM 2.0 t/ha + Bio NP 1 L/ha or vermicompost 0.50 t/ha + Bio NP 1 L/ha or FYM 2.0 t/ha + vermicompost 0.50 t/ha for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના ઊનાળું મગનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા મગના પાકને સેન્દ્રીય સ્ત્રોત તરીકે છાણિયું ખાતર ૨ ટન/હે. + બાયો એન.પી. ૧ લી./હે. અથવા વર્મીકંપોસ્ટ ૦.૫ ટન/હે. + બાયો એન.પી. ૧ લી./હે. અથવા છાણિયું ખાતર ૨ ટન/હે. + વર્મીકંપોસ્ટ ૦.૫ ટન/હે. આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Asstt. Research Scientist, Agricultural Research Station for Irrigated Crops, AAU, Thasra*)

16.2.1.7 Nutrient management through organic source in grain Amaranthus (*Amarathus hypochondriacus* L.) under middle Gujarat conditions

The farmers of Middle Gujarat Agro-climatic Zone growing grain amaranthus through organic sources are recommended to apply FYM 4.0 t/ha or vermicompost 1.0 t/ha for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના રાજગરાનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે સેન્દ્રીય સ્ત્રોત તરીકે છાણિયું ખાતર ૪.૦ ટન/ હે અથવા વર્મીકમ્પોસ્ટ ૧.૦ ટન/હે આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Asstt. Research Scientist, Agricultural Research Station for Irrigated Crops, AAU, Thasra*)

16.2.1.8 Integrated weed management in blackgram (*Vigna mungo* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing *kharif* blackgram are recommended to adopt post-emergence (20-25 DAS) application of propaquizafop 10% EC 75 g a.i./ha (15 ml/10 liter of water) *fb* IC + HW at 30 DAS **or** post-emergence (20-25 DAS) application of fenoxaprop-p-ethyl 9% EC 67.5 g a.i./ha (15 ml/10 liter of water) *fb* IC + HW at 30 DAS **or** post-

emergence (20-25 DAS) application of quizalofop-ethyl 5% EC 50 g a.i./ha (20 ml/10 liter of water) *fb* IC + HW at 30 DAS for effective weed management of complex weed flora and higher net return without any herbicide residues in produce and soil. There was no any adverse effect of herbicides applied in blackgram on succeeding maize, chickpea and wheat crops.

Table: Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)
				g a.i./ha	Quantity of formulation (g or ml) /ha	Conc. (%)			
2020	*Kharif* Blackgram	Complex weed flora	Propaquizafop 10% EC 75 g a.i./ha *fb* IC + HW	75	750	0.015	500 litres	Post-emergence (20-25 DAS)	21
			Fenoxaprop-p-ethyl 9% EC 67.5 g a.i./ha *fb* IC + HW	67.5	750	0.014		post-emergence (20-25DAS)	43
			Quizalofop-ethyl 5% EC 50 g a.i./ha *fb* IC + HW	50	1000	0.01		post-emergence (20-25 DAS)	52

મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ચોમાસુ અડદ પાકમાં અસરકારક નીંદણ વ્યવસ્થાપન અને વધુ નફો મેળવવા માટે વાવણી બાદ ૨૦-૨૫ દિવસે પ્રોપાક્વિઝાફોપ ૧૦% ઈ.સી. ૭૫ ગ્રામ સક્રિય તત્વ/ હે. (૧૫ મિ. લિ./૧૦ લિટર પાણી) અને વાવણી બાદ ૩૦ દિવસે આંતરખેડ અને હાથ નીંદામણ અથવા વાવણી બાદ ૨૦-૨૫ દિવસે ફિનોક્સાપ્રોપ–પી-ઈથાઈલ ૯% ઈ.સી. ૬૭.૫ ગ્રામ સક્રિય તત્વ/હે. (૧૫ મિ.લિ./૧૦ લિટર પાણી) અને વાવણી બાદ ૩૦ દિવસે આંતરખેડ અને હાથ નીંદામણ અથવા વાવણી બાદ ૨૦-૨૫ દિવસે ક્વિઝાલોફોપ ઈથાઈલ ૫% ઈ.સી. ૫૦ ગ્રામ સક્રિય તત્વ/હે. (૨૦ મિ.લિ./૧૦ લિટર પાણી) અને વાવણી બાદ ૩૦ દિવસે આંતરખેડ અને હાથ નીંદામણ પૈકી કોઈપણ એક માવજત અપનાવવાની ભલામણ કરવામાં આવે છે. ચોમાસું અડદમાં છંટકાવ કરેલ નીંદણનાશકોની તે પછીના મકાઈ, ચણા અને ઘઉંના પાકોમાં કોઈ આડઅસર જોવા મળેલ નથી. ચોમાસું અડદના ઉત્પાદન અને જમીનમાં નીંદણનાશકના અવશેષ પણ નોધાયેલ નથી.

Table: Recommendation for PHI as per CIB guidelines (Gujarati)

વર્ષ	પાક	જીવાત	નીંદણનાશક	પ્રમાણ			પાણી	છંટકાવનો સમય	પ્રતીક્ષા સમય (દિવસ)
				સ .ત . ગ્રામ/હે.	નીંદણનાશકનું પ્રમાણ (ગ્રામ/ મિ.લિ./હે.)	માત્રા (%)			
૨૦૨૦	ચોમાસુ અડદ	નીંદણ	પ્રોપાક્વિઝાફોપ ૧૦ %ઈ.સી .૭૫ ગ્રામ સક્રિય તત્વ/હે.	૭૫	૭૫૦	૦.૦૧૫	૫૦૦ લિટર	વાવણી બાદ ૨૦- ૨૫ દિવસે	૨૧
			ફિનોક્સાપ્રોપ–પી-ઈથાઈલ ૯ % ઈ.સી. ૬૭.૫ ગ્રામ સક્રિય તત્વ/હે	૬૭.૫	૭૫૦	૦.૦૧૪		વાવણી બાદ ૨૦- ૨૫ દિવસે	૪૩
			ક્વિઝાલોફોપ ઈથાઈલ ૫% ઈ.સી. ૫૦ ગ્રામ સક્રિય તત્વ/હે.	૫૦	1000	૦.૦૧		વાવણી બાદ ૨૦- ૨૫ દિવસે	૫૨

(**Action:** *Associate Research. Scientist, ARS, AAU, Derol*)

16.2.1.9 Nitrogen management in early rice varieties of middle Gujarat

The farmers of AES-V (Nawagam area) and AES-II (Thasara area) of Middle Gujarat Agro-climatic Zone are recommended to apply FYM 10 t/ha along with 100 kg N/ha (40% basal, 40% tillering and 20% panicle initiation stage) in early maturing rice varieties either Gurjari or Mahisagar for getting higher yield and net return. Whereas, the farmers of AES-XI (Dabhoi area) growing early maturing rice variety Gurjari are recommended to apply FYM 10 t/ha along with 120 kg N/ha (40% basal, 40% tillering and 20% panicle initiation stage) for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના AES-V (નવાગામ વિસ્તાર) અને AES-II (ઠાસરા વિસ્તાર)માં ડાંગરની વહેલી પાકતીગુર્જરી અથવા મહીસાગરજાતની ફેરરોપણીકરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા છાણીયુ ખાતર ૧૦ ટન/હેક્ટરે તથા ૧૦૦ કિ.ગ્રા. નાઈટ્રોજન/હેક્ટરે (૪૦ ટકા પાયામાં, ૪૦ ટકા ફૂટ અવસ્થાએ અને ૨૦ ટકા કંટી અવસ્થાએ) આપવાની ભલામણ કરવામાં આવે છે. વધુમાં AES-XI (ડભોઈ વિસ્તાર)માં ડાંગરની વહેલી પાકતી ગુર્જરી જાતની ફેરરોપણી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા છાણીયુ ખાતર ૧૦ ટન/હેક્ટરે તથા ૧૨૦ કિ.ગ્રા. નાઈટ્રોજન/હેક્ટરે (૪૦ ટકા પાયામાં, ૪૦ ટકા ફૂટ અવસ્થાએ અને ૨૦ ટકા કંટી અવસ્થાએ) આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Assistant Research Scientist, Main Rice Research Station, AAU, Nawagam*)

16.2.1.10 Response of new castor variety to different sowing time and spacing in late *kharif* under irrigated condition

The farmers of Middle Gujarat Agro-climatic Zone growing castor are recommended to grow either Gujarat Castor Hybrid 7 or Gujarat Anand Castor 11 during 1st week of September and sow Gujarat Castor Hybrid 7 at 120 cm x 60 cm for securing higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં દિવેલા ઉગાડતા ખેડૂતોને દિવેલાનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ગુજરાત સંકર દિવેલા ૭ અથવા ગુજરાત આણંદ દિવેલા ૧૧ જાતનું વાવેતર સપ્ટેમ્બર માસના પ્રથમ અઠવાડિયામાં તથા ગુજરાત સંકર દિવેલા ૭ ને ૧૨૦ સે.મી. x ૬૦ સે.મી.ના અંતરે વાવવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Associate research Station, ARS, AAU, Sansoli*)

Junagadh Agricultural University

16.2.1.11 Evaluation of some cow-based bio-enhancers and botanicals for organic cultivation of summer groundnut

Confirmation of earlier recommendation.

(**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh*)

16.2.1.12 Integrated weed management in soybean

The farmers of south Saurashtra Agro-climatic zone growing soybean are recommended to apply pre-mix pendimethalin + imazethapyr 800 g/ha (30 + 2% EC 50 ml/10 L water) as pre-emergence *fb* IC & HW at 40 DAS or IC & HW at 20 & 40 DAS for effective weed management and achieving higher seed yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સોયાબીનનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે અસરકારક નીંદણ નિયંત્રણ તથા દાણાનું વધુ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા માટે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં પેન્ડીમેથાલીન + ઈમાઝેથાપાયર ૮૦૦ ગ્રામ/હે.)૩૦ + ૨% ઈસી ૫૦ મીલી/૧૦ લી. પાણી(પ્રમાણે છંટકાવ કરવો તથા વાવણી બાદ ૪૦ દિવસે એક વખત આંતરખેડ અને હાથ નિંદામણ કરવા અથવા વાવણી બાદ ૨૦ અને ૪૦ દિવસે આંતરખેડ અને હાથ નિંદામણ કરવા.

(**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh*)

16.2.1.13 Response of *rabi* onion (*Allium cepa* L.) to levels and application schedule of soluble fertilizers under drip irrigation

The farmers of South Saurashtra Agro-climatic Zone growing *rabi* onion (Cv. Pilipatti) are recommended to apply 5 t FYM/ha along with 75% RDF (i.e. 56.25-45.00-37.50 kg N-P_2O_5-K_2O/ha) in water soluble form through drip fertigation in six equal splits at 10 days interval after two common flood irrigations for getting higher yield and net return.

Details of drip system

Particular	**Detail**	**Particular**	**Detail**
Later spacing	90 cm	Dripper distance	40 cm
Operation pressure:	1.2 kg/cm^2	Irrigation interval	Alternate day
Dripper discharge rate	4 l/hr		

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં શિયાળું ડુંગળી)જાત-પીળીપતી(નું વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે વધારે ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા માટે ૫ ટન છાંણીયુ ખાતર પ્રતિ હેકટર તથા ભલામણ કરેલ રાસાયણીક ખાતરના ૭૫%)એટલે કે ૫૬.૨૫-૪૫.૦૦-૩૭.૫૦ કિ.ગ્રા. ના.ફો.પો./હેકટર(પાણીમાં દ્રાવ્ય ખાતરને છ સરખા હપ્તામાં ૧૦ દિવસના ગાળે ટપક સિંચાઈ દ્વારા બે રેળ બાદ આપવા.

ટપક પધ્ધતિની વિગત

વિગત		વિગત	
પાણીની નળીઓનું અંતર	૯૦ સે.મી.	ટપકણીયાનું અંતર	૪૦ સે.મી.
પરીચલનનું દબાણ	૧.૨ કિ.ગ્રા./ચો.સે.મી.	પિયતનો ગાળો	એકાતરા દિવસે
ટપકણીયાના સ્ત્રાવ ક્ષમતા	૪ લી./કલાક		

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

16.2.1.14 Evaluation of different *kharif* groundnut varieties under organic farming

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* bunch groundnut under organic farming are recommended to apply 50% RDN through FYM (1250 kg/ha) + 50% RDN through vermicompost (312.50 kg/ha) for higher pod yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસામાં ઉભડી મગફળીની સેન્દ્રિય ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીનું વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે પ્રતિ હેકટરે ભલામણ કરેલ નાઈટ્રોજનના ૫૦ ટકા નાઈટ્રોજન છાણીયાં ખાતર)૧૨૫૦ કિ.ગ્રા./હે(દ્વારા + ૫૦ ટકા નાઈટ્રોજન અળસિયાના ખાતર)૩૧૨.૫૦ કિ.ગ્રા./હે(દ્વારા આપવો.

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

16.2.1.15 Influence of plant geometry and fertilizer levels on the productivity of semi-spreading groundnut

The farmers of South Saurashtra Agro-climatic Zone growing semi-spreading groundnut during *kharif* are recommended to sow at a spacing of 45 cm x 10 cm (seed rate 135 kg/ha) and apply either 50% RDF (6.25-12.5-25 N-P_2O_5-K_2O kg/ha) + 50% RDN through FYM (1250 kg/ha) + Bio-fertilizer (*Rhizobium* 10 ml/kg seed, PSB & KMB soil application 3.0 litre/ha) or 100% RDF (12.5-25-50 N-P_2O_5-K_2O kg/ha) + Bio-fertilizer (*Rhizobium* 10 ml/kg seed, PSB & KMB soil application 3.0 litre/ha) for obtaining higher pod yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું અર્ધવેલડી મગફળીનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ડોડવાનું વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે અર્ધવેલડી મગફળીનું વાવેતર ૪૫ સે.મી. × ૧૦ સે.મી.)બીજ દર૧૩૫ કિ.ગ્રા. પ્રતિ હેકટર(ના અંતરે કરવું અને ૫૦% ભલામણ કરેલ ના.ફો.પો.)૬.૨૫-૧૨.૫-૨૫.૦ ના.ફો.પો. કિ.ગ્રા./હે(+ ૫૦% ભલામણ કરેલ નાઈટ્રોજન છાણીયા ખાતર દ્વારા)૧૨૫૦ કિ.ગ્રા./હે.(+ જૈવિક ખાતરો)રાઈજોબીયમ૧૦ મીલી./કિ.ગ્રા. બીજ અને પીએસબી અને કેએમબી ૩ લીટર પ્રતિ હેકટર જમીનમાં(અથવા ૧૦૦ ટકા ભલામણ કરેલ ના.ફો.પો.)૧૨.૫-૨૫.૦-૫૦.૦ ના.ફો.પો. કિ.ગ્રા./હે.(+ જૈવિક ખાતરો)રાઈજોબીયમ ૧૦ મીલી./કિ.ગ્રા. બીજ અને પીએસબી અને કેએમબી ૩ લીટર પ્રતિ હેકટર જમીનમાં(આપવા.

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

16.2.1.16 Application of bio-formulations in *kharif* groundnut production

The farmers of South Saurashtra Agro-climatic Zone growing groundnut during *kharif* season are recommended to apply 75% recommended dose of chemical fertilizers (9.37-18.75-37.5 kg NPK/ha) with seed treatment of NPK liquid bio-fertilizer (250 ml for seed of 1 ha) + Zn solubilising bacteria (125 ml for seed of 1 ha) for obtaining higher pod yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું મગફળીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીનું વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે મગફળીમાં ભલામણ કરેલ રાસાયણીક ખાતરના ૭૫ ટકા)૯.૩૭-૧૮.૭૫-૩૭.૫ ના.ફો.પો. કિ.ગ્રા./હે(સાથે ના.ફો.પો. પ્રવાહી જૈવિક ખાતર)૧ હે વાવેતરના બીજ માટે ૨૫૦ મીલી(+ જીંક દ્રાવ્ય જીવાણુંની)૧ હે વાવેતરના બીજ માટે ૧૨૫ મીલી(બીજ માવજત આપવી.

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

16.2.1.17 Nutrient and pest management in pigeonpea

The farmers of South Saurashtra Agro-climatic Zone, growing *kharif* pigeonpea are recommended to apply recommended dose of fertilizer (25-50-50 N-P_2O_5-K_2O kg/ha) and spray of indoxacarb 14.5 SC 0.010% (7 ml/10 L of water) at 50% flowering and spray of chlorantraniliprole 18.5 SC 0.006% (3 ml/10 L of water) 15 days after 1st spray.

Alternatively, apply recommended dose of fertilizer (25-50-50 N-P_2O_5-K_2O kg/ha) and spray of multi micronutrient formulation Grade IV 20 ml/10 litre and spray of indoxacarb 14.5 SC 0.010% (7 ml/10 L of water) at 50% flowering and spray of chlorantraniliprole 18.5 SC 0.006% (3 ml/10 L of water) 15 days after 1st spray for obtaining higher seed yield and net realization.

Table: Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)
				g a.i./ha	Quantity of formulation (g or ml/ha)	Conc. (%)			

2020	*Kharif* pigeonpea	Pod borer complex	Indoxacarb 14.5 SC	50.75	350	0.010	500 liters	First spray at 50% flowering	15
			Chlorantraniliprole 18.5 SC	27.75	150	0.006		spray at 15 days interval after 1st spray	29

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ તુવેરનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે તુવેરનું વધુ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા માટે ભલામણ થયેલ રાસાયણિક ખાતર)૨૫-૫૦-૫૦ ના.ફો.પો. કિ.ગ્રા./હે.(અને ૫૦ %ફુલ અવસ્થાએ ઈન્ડોક્ઝાકાર્બ ૧૪.૫ એસ.સી. ૦.૦૧૦%)૭ મીલી/૧૦ લીટર પાણીમાં(છંટકાવ કરવો તેમજ પહેલા છંટકાવના ૧૫ દિવસ બાદ ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસ.સી. ૦.૦૦૬%)૩ મીલી/૧૦ લીટર પાણીમાં(છંટકાવ કરવો.

વિકલ્પમાં, ભલામણ થયેલ રાસાયણીક ખાતર)૨૫-૫૦-૫૦ ના.ફો.પો. કિ.ગ્રા./હે. (અને ૫૦ % ફુલ અવસ્થાએ મલ્ટી માઈક્રો ન્યુટ્રીયન્ટ ગ્રેડ-૪ નો)૨૦ મિલી/૧૦ લીટર પાણીમાં(અને ઈન્ડોક્ઝાકાર્બ ૧૪.૫ એસ.સી. ૦.૦૧૦%)૭ મીલી/૧૦ લીટર પાણીમાં(છંટકાવ કરવો તેમજ પહેલા છંટકાવના ૧૫ દિવસ બાદ ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસ.સી. ૦.૦૦૬%)૩ મીલી/૧૦ લીટર પાણીમાં(છંટકાવ કરવો.

Table: Recommendation for PHI as per CIB guidelines

વર્ષ	**પાક**	**જીવાત**	**કિટનાશક**	**પ્રમાણ**			**પાણી**	**છંટકાવ નો સમય**	**પ્રતિક્ષા સમય (દિવસ)**
				સ.ત. ગ્રામ.હે/	**કિટનાશક નું પ્રમાણ (ગ્રામ.હે/.લિ.મિ/)**	**માત્રા (%)**			
૨૦૨૦	ખરીફ તુવેર	શિંગ કોરી ખાનાર જીવાતો	ઈન્ડોક્ઝાકાર્બ ૧૪૫. એસસી..	૫૦૭૫.	૩૫૦	૦૦૧૦.	૫૦૦ લીટર	પહેલો છંટકાવ ૫૦ ફુલ % અવસ્થાએ	૧૫
			ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.એસ ૫.સી.	૨૭૭૫.	૧૫૦	૦૦૦૬.		પહેલા છંટકાવ બાદ ૧૫ દિવસે	૨૯

(**Action:** *Research Scientist, Pulse Research Station, JAU, Junagadh*)

16.2.1.18 Effect of mulching and hydrogel on the productivity of pearl millet in rainfed condition

The farmers of North Saurashtra Agro-climatic Zone growing pearl millet in *kharif* season are recommended to apply hydrogel (350 µm mesh) 2.5 kg/ha as soil application at the time of sowing + pearl millet straw mulch 5.0 t/ha at 30 days after sowing for getting higher yield and net returns and improving moisture availability in soil.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ચોમાસુ ઋતુમાં બાજરાનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મહતમ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા તેમજ જમીનમાં ભેજની ઉપલબ્ધતા વધારવા માટે વાવેતર સમયે જમીનમાં ૨.૫ કિ.ગ્રા. પ્રતિ હેકટર પ્રમાણે હાઈડ્રોજેલ)૩૫૦ µm mesh(આપવો અને વાવેતરના ૩૦ દિવસ બાદ જમીન પર બાજરા પાકના અવશેષોનું આવરણ ૫.૦ ટન પ્રતિ હેકટર પ્રમાણેકરવું.

(**Action:** *Research Scientist, Pearlmillet Research Station, JAU, Jamnagar*)

16.2.1.19 Screening of sesame varieties/germplasm lines for yield performance under organic condition in summer season

The farmers of South Saurashtra Agro-climatic Zone of Gujarat state interested to grow summer sesame in organic condition are recommended to grow sesame variety G. Til 4 or GJT 5 or G. Til 6 for achieving higher seed yield.

ગુજરાત રાજયના દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતી પધ્ધતીથી ઉનાળુ ઋતુમાં તલ ઉગાડવા ઈચ્છતા ખેડૂતોને વધુ ઉત્પાદન મેળવવા માટે તલની ગુ.તલ ૪ અથવા ગુ. જૂનાગઢ તલ ૫ અથવા ગુ.તલ ૬ જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે.

(**Action:** *Research Scientist, Agricultural Research Station, JAU, Amreli*)

16.2.1.20 Effect of multi-micronutrient formulations on papaya

The farmers of South Saurashtra Agro-climatic Zone growing papaya in medium black calcareous soil are recommended to apply multi micronutrients formulation Grade-V (40 g/plant) as

basal or micronutrient as per soil test value in addition to recommended dose of chemical fertilizers (200-200-250 N-P_2O_5-K_2O g/plant) as well as 5 kg FYM/plant to papaya for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં પપૈયાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પપૈયાના પાકમાં મલ્ટીમાઈક્રોન્યુટ્રીઅન્ટ ગ્રેડ-૫ પાયામાં ૪૦ ગ્રામ/છોડ અથવા જમીન ચકાસણીના આધારે સૂક્ષ્મતત્વો અને ભલામણ કરેલ રાસાયણિક ખાતર)૨૦૦-૨૦૦-૨૫૦ ના-ફો-પો ગ્રામ/છોડ(તેમજ છાણીયુ ખાતર ૫ કિ.ગ્રા./છોડને આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Sci., & Professor & Head, Dept. of Horticulture, JAU, Junagadh*)

16.2.1.21 Effect of nano boron on yield and nutrients uptake by *kharif* groundnut

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut in medium black calcareous soil are recommended to apply three sprays of 0.2% boric acid **OR** 0.2% nano boron (20 ml/10 lit water) at 30, 45 and 60 DAS in addition to recommended dose of fertilizers (12.5-25-50 N-P_2O_5-K_2O kg/ha) to *kharif* groundnut for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં ચોમાસુ મગફળીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ચોમાસુ મગફળીના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર)૧૨.૫-૨૫-૫૦ ના-ફો-પો કિ.ગ્રા./હે.(ઉપરાંત ૦.૨% બોરીક એસીડ અથવા ૦.૨% નેનો બોરોન)૧૦ લિટર પાણીમાં ૨૦ મીલી(ના દ્રાવણનો છંટકાવ વાવેતર બાદ ૩૦, ૪૫ અને ૬૦ દિવસે કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

(Action: *Professor & Head, Dept. of Agril. Chem. & Soil Sci., & Research Sci., Main Oilseed Research Station, JAU, Junagadh*)

16.2.1.22 Effect of N, P and K levels on growth, yield and nutrients uptake by coriander

The farmers of South Saurashtra Agro-climatic Zone growing coriander are recommended to apply 40 kg N/ha in two equal splits (½ as basal and ½ at 30 DAS), 30 kg P_2O_5/ha and 20 kg K_2O/ha as basal for getting higher seed yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ધાણાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ધાણાના પાકમાં ૪૦ કિ.ગ્રા. નાઈટ્રોજન/હે બે સરખા હપ્તામાં)૧/૨ ભાગ પાયામાં અને ૧/૨ ભાગ વાવેતર બાદ ૩૦ દિવસે(, ૩૦ કિ.ગ્રા. ફોસ્ફરસ/હે અને ૨૦ કિગ્રા પોટાશ/હે પાયામાં આપવાથી વધુ દાણાનું ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

(**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Sci., & Research Sci., Vegetable Research Station, JAU, Junagadh*)

Navsari Agricultural University

16.2.1.23 Study on drip system layout for different row spacing in vegetable Indian bean-sweet corn cropping sequence

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone following vegetable Indian bean (*rabi*)-sweet corn (summer) crop sequence under drip irrigation are recommended to keep lateral spacing of 1.60 m for 4 rows of Indian bean sown at 30 cm x 10 cm spacing and 3 rows of sweet corn sown at 53 cm x 20 cm spacing and use drippers of 8 lph discharge rate for getting higher yield and net return.

System details

Lateral spacing	:	160 cm
Dripper spacing	:	60 cm
Dripper discharge	:	8 lph
Operating pressure	:	1.2 kg/cm^2
Operating period	:	Twice in a week

Operating time
Indian bean (*rabi*)
Dec to March : 1 hr to 1 hrs 20 minute (0.6 PEF)
Sweet corn (summer)
April to May : 1 hrs 30 minute to 2 hrs (0.6 PEF)

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં શાકભાજી પાપડી (શિયાળુ)-મીઠી મકાઇ (ઉનાળુ) પાક પધ્ધતિમાં ટપક પિયત પધ્ધતિ અપનાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે શાકભાજી પાપડીનું વાવેતર ૩૦ સેમી x ૧૦ સેમી અંતરે ૪ હારમાં જ્યારે મીઠી મકાઇનું વાવેતર ૫૩ સેમી x ૨૦ સેમી અંતરે ૩ હારમાં કરી ૧.૬૦ મીટર અંતરે લેટરલ ગોઠવી અને ૮ લી/કલાકની ક્ષમતાનાં ડ્રીપર દ્વારા ટપક પધ્ધતિથી પિયત કરવાથી વધારે ઉત્પાદન અને ચોખ્ખી આવક મળે છે.

ટપક પધ્ધતિની વિગત

બે નળી વચ્ચેનું અંતર	:	૧૬૦ સેમી
ટપકણીયા વચ્ચેનું અંતર	:	૬૦ સેમી
ટપકણીયાનો પ્રવાહ	:	૮ લી/કલાક
પધ્ધતિનું દબાણ	:	૧.૨ કિગ્રા/મી²
પધ્ધતિ ચલાવવાનો ગાળો	:	અઠવાડિયામાં બે વખત
પધ્ધતિ ચલાવવાનો સમય		
પાપડી (શિયાળુ)	:	
ડિસેમ્બરથી માર્ચ	:	૧ કલાક થી ૧ કલાક ૨૦ મિનિટ (૦.૬ પી.ઈ.ફ.)
સ્વીટ કોર્ન (ઉનાળુ)	:	
અપ્રિલ થી મે	:	૧ કલાક ૩૦ મિનીટ થી ૨ કલાક (૦.૬ પી.ઈ.ફ.)

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

16.2.1.24 Effect of different levels of irrigation and fertigation on *rabi* sorghum-vegetable cowpea cropping sequence

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone following *rabi* sorghum-vegetable cowpea (summer) crop sequence are recommended to irrigate the crops with drip irrigation system at 0.6 PEF and apply 6 kg N/ha and 40 kg P_2O_5/ha as basal and remaining 58 kg N/ha in 6 equal splits at weekly interval starting from 20 DAS through fertigation to sorghum and 40 kg P_2O_5/ha as basal and 20 kg N/ha in 3 equal splits at weekly interval to cowpea for securing higher yield and net return.

System details

Crop spacing		30 x 15 (4) : 60 cm
Lateral spacing	:	180 cm
Dripper spacing	:	60 cm
Dripper discharge	:	4 lph
Operating pressure	:	1.2 kg/cm^2
Operating period	:	Twice in a week
Operating time		
Sorghum (*rabi*)		
Dec to March	:	2 hrs 20 minute to 3 hrs 15 minute (0.6 PEF)
Cowpea (summer)		
April to May	:	3 hrs 20 minute to 3 hrs 45 minute (0.6 PEF)

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં શિયાળુ જુવાર-શાકભાજી ચોળા (ઉનાળુ) પાક પધ્ધતિ અપનાવતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા ૦.૬ પી.ઈ.એફ. મુજબ ટપક પધ્ધતિ અપનાવવાની તેમજ જુવારને ૬ કિગ્રા/હે નાઈટ્રોજન અને ૪૦ કિગ્રા/હે ફોસ્ફરસ પાયામાં અને બાકી રહેતો ૫૮ કિગ્રા/હે નાઈટ્રોજન વાવેતરના ૨૦ દિવસ બાદ અઠવાડીયાનાં અંતરે ૬ સરખા હપ્તામાં ટપક પધ્ધતિ દ્વારા અને ચોળા પાકને ૪૦ કિગ્રા/હે ફોસ્ફરસ પાયામાં આપી ૨૦ કિગ્રા/હે નાઈટ્રોજન અઠવાડિયાના અંતરે ૩ સરખા હપ્તામાં ટપક પધ્ધતિ દ્વારા આપવાની ભલામણ કરવામાં આવે છે.

ટપક પધ્ધતિની વિગત

વાવેતર અંતર	:	૩૦ x ૧૫ સેમી (૪): ૬૦ સેમી
બે નળી વચ્ચેનું અંતર	:	૧૮૦ સેમી
ટપકણીયા વચ્ચેનું અંતર	:	૬૦ સેમી
ટપકણીયાનો પ્રવાહ	:	૪ લી/કલાક
પધ્ધતિનું દબાણ	:	૧.૨ કિગ્રા/મી²
પધ્ધતિ ચલાવવાનો ગાળો	:	અઠવાડિયામાં બે વખત

પધ્ધતિ ચલાવવાનો સમય

જુવાર (શિયાળુ)	:	
ડિસેમ્બરથી માર્ચ	:	૨ કલાક ૨૦ મિનીટ થી ૩ કલાક ૧૫ મિનિટ
ચોળા (ઉનાળુ)		
અપ્રિલ થી મે	:	૩ કલાક ૨૦ મિનીટ થી ૩ કલાક ૪૫ મિનિટ

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

16.2.1.25 Nutrient management in Indian bean (var. GNIB 21) and its ratoon crop sequence

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing vegetable Indian bean (var. GNIB-21) during *rabi* season are recommended to apply either 20-40-00 N-P_2O_5-K_2O kg/ha as basal or 5 t/ha FYM at the time of land preparation to plant crop and 20-30-00 N-P_2O_5-K_2O kg/ha to ratoon crop after harvest of plant crop for getting higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં શિયાળાની ઋતુમાં શાકભાજીની પાપડી (જીએનઆઈબી-૨૧)ની ખેતી કરતાં ખેડૂતોને પાપડીનું વધુ ઉત્પાદન અને આવક મેળવવા માટે મુખ્ય પાકને ૨૦-૪૦-00 ના-ફો-પો કિગ્રા/હે પાયાના ખાતર તરીકે અથવા ૫ ટન/હે છાણિયું ખાતર જમીન તૈયાર કરતી વખતે અને લામ પાકને ૨૦-૩૦-૦૦ ના-ફો-પો કિગ્રા/હે મુખ્ય પાકની કાપણી બાદ આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Nodal Officer (Megaseed) & Unit Head, PCRS, Navsari*)

16.2.1.26 Response of *rabi* castor to row spacings under different sowing window with or without intercrop of Indian bean (var. GNIB-21)

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing castor (GNCH-1) during *rabi* season are recommended to sow the crop in last week of October at 150 cm x 90 cm spacing and intercrop (1:1) vegetable Indian bean (var. GNIB-21) for obtaining higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં શિયાળામાં દિવેલા (જીએનસીએચ-૧) પાક લેતાં ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા ઓક્ટોબર મહિનાના છેલ્લા અઠવાડિયા દરમિયાન ૧૫૦ સેમી x ૯૦ સેમી અંતરે દિવેલાનું વાવેતર કરવા અને શાકભાજીની પાપડી (જીએનઆઈબી-૨૧) આંતરપાક (૧:૧) તરીકે વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Nodal Officer (Megaseed) & Unit Head, PCRS, Navsari*)

16.2.1.27 Canopy management through mapiquat chloride under high density planting system of cotton (G. Cot 16) in irrigated conditions

Hirsutum cotton (variety: G.Cot. 16) growers of South Gujarat Agro-climatic Zone are recommended to adopt high density planting system by sowing the crop at 45 cm x 20 cm or 60 cm x 20 cm spacing for obtaining higher seed cotton yield and net profit. Further, mepiquat chloride spray was not found effective in increasing seed cotton yield.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં હીરસુતમ કપાસ)ગુ.કપાસ ૧૬(ઉગાડતા ખેડૂતોને વધુ ઉત્પાદના અને ચોખ્ખો નફો મેળવવા માટે ૪૫ સેમી x ૨૦ સેમી અથવા ૬૦ સેમી x ૨૦ સેમી વાવેતર અંતરે હાઈ ડેન્સિટિ પ્લાંટિંગ અપનાવવાની ભલામણ કરવામાં આવે છે. વધુમાં મેપીક્વેટ ક્લોરાઈડના છંટકાવની કપાસનું ઉત્પાદન વધવા પર કોઈ અસર જોવા મળેલ નથી.

(**Action:** *Res. Sci., MCRS, Surat*)

16.2.1.28 Soil test based recommendation for targeted yield of cotton

Dropped due to insufficient fertility variation.

(**Action:** *Res. Sci., MCRS, Surat*)

16.2.1.29 Weed management in *kharif* grain sorghum

The farmers of South Gujarat Agro-climatic Zone growing *kharif* sorghum are recommended to carry out two hand weeding at 25 and 50 DAS and one inter culturing at 50 DAS for effective weed control and achieving higher yield and net return.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ જુવાર વાવતા ખેડુતોને પાકમાં અસરકારક નિંદણ નિયંત્રણ તેમજ વધુ ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે વાવેતર બાદ ૨૫ અને ૫૦ દિવસે એમ બે હાથ નિંદામણ તથા ૫૦ દિવસે એક આંતરખેડ કરવાની ભાલામણ કરવામાં આવે છે.

(**Action:** *Res. Sci., MSRS, Surat*)

16.2.1.30 Response of summer sesame to nutrient management and irrigation scheduling

The farmers of South Gujarat Agro-climatic Zone growing summer sesame are recommended to give 8 irrigations each of 60 mm depth of which first irrigation should be given at sowing, second at 12-14 days after first irrigation, third and fourth at 10-12 days interval after second irrigation and remaining four irrigations at 8-10 days interval after fourth irrigation and apply 62.5-31.25-50 N-P_2O_5-K_2O kg/ha (half N and full dose of P_2O_5 and K_2O as basal and remaining half N at 30 DAS) along with 20 kg S/ha as a basal through gypsum for getting higher seed yield and net return.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ તલ વાવતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા પાકને ૬૦ મીમીના કુલ ૮ પિયત આપવા, જે પૈકી પ્રથમ પિયત વાવણી સમયે, બીજું પ્રથમ પિયત બાદ ૧૨-૧૪ દિવસે, ત્રીજુ અને ચોથું પિયત બીજા પિયત પછી ૧૦-૧૨ દિવસના અંતરે અને બાકીના ચાર પિયત ચોથા પિયત બાદ ૮ થી ૧૦ દિવસના સમયાંતરે આપવા તેમજ ૬૨.૫-૩૧.૨૫-૫૦ ના-ફો-પો કિગ્રા/હે (નાઈટ્રોજનનો અડધો જથ્થો તથા ફોસ્ફરસ અને પોટાશનો પૂર્ણ જથ્થો પાયામાં અને નાઈટ્રોજનનો બાકીનો અડધો જથ્થો વાવણી પછીના ૩૦ દિવસે આપવો) સાથે ૨૦ કિગ્રા સલ્ફર જીપ્સમ સ્વરૂપે પાયામાં આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Asstt. Res. Sci., ARS, NAU, Achhalia*)

16.2.1.31 Effect of levels of nitrogen phosphorus and sulphur application on growth, yield and quality of linseed (*Linun usitatissimum* L.) under south Gujarat condition

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing linseed are recommended to apply 75 kg N/ha, 50 kg P_2O_5/ha as DAP and 20 kg S/ha as elemental sulphur (full dose of sulphur one week before sowing, half dose of N and full dose of P_2O_5 at sowing and remining half dose of N at 30 DAS) for getting higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં અળસીનું વાવેતર કરતા ખુડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે પ્રતિ હે ૭૫ કિગ્રા નાઈટ્રોજન, ૫૦ કિગ્રા ફોસ્ફરસ ડી.એ.પી. સ્વરૂપે અને ૨૦ કિગ્રા સલ્ફર તત્વ સલ્ફરરૂપે (સલ્ફરનો સંપૂર્ણ જથ્થો વાવેતર પહેલા એક અઠવાડિયે, નાઈટ્રોજનનો અડધો અને ફોસ્ફરસનો સંપૂર્ણ જથ્થો વાવેતર સમયે અને બાકી રહેતો અડધો નાઈટ્રોજન વાવેતર બાદ 30 દિવસે) આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari*)

16.2.1.32 Integrated weed management in *rabi* maize

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing *rabi* maize are recommended to apply atrazine 1.0 kg/ha as pre-emergence *fb* one interculturing at 40 DAS or carry out two interculturing along with hand weeding at 20 and 40 DAS for effective weed control and to obtain higher yield and net income.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં શિયાળુ મકાઈનું વાવેતર કરતા ખેડૂતોને અસરકારક નિંદણ નિયંત્રણ તેમજ વધુ ઉત્પાદન અને આવક મેળવવા એટ્રાઝીન ૧.૦ કિગ્રા/હે પ્રિ-ઈમરજન્સ છંટકાવ કરવાની તેમજ વાવણી બાદ ૪૦ દિવસે એક આંતર ખેડ કરવાની અથવા વાવણી બાદ ૨૦ અને ૪૦ દિવસે બે આંતર ખેડ અને હાથ નિંદણ કરવા ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari*)

16.2.1.33 Integrated weed management in fodder oat

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing fodder oat are recommended to adopt cross sowing method at 30 cm x 30 cm spacing (using 1.5 times seed rate) for getting higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં ઘાસચારા ઓટનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે 30 સેમી x 30 સેમી અંતરે આડુ-ઉભુ વાવેતર (૧.૫ ગણો બીજનો દર રાખી) કરવાની ભલામણ આપવામાં આવે છે.

(**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari*)

16.2.1.34 Production potential of fodder maize (*Zea mays* L.) with different fodder intercrops

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing summer fodder maize are recommended to adopt fodder maize + fodder cowpea intercropping in 1:1 (maize spacing 30 cm) or 2:2 ratio (maize spacing paired row 15-45-15 cm) for getting higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ ઘાસચારા મકાઈનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા મકાઈની સાથે ઘાસચારા ચોળીનો ૧:૧ (મકાઈનું વાવેતર અંતર 30 સેમી) અથવા ૨:૨ (મકાઈનું વાવેતર અંતર જોડિયા હાર ૧૫-૪૫-૧૫ સેમી)ના પ્રમાણમાં આંતરપાક લેવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari*)

16.2.1.35 Evaluation of different phosphorus management practices in *rabi* sorghum-summer green gram cropping sequence under south Gujarat condition

The farmers of South Gujarat Heavy Rainfall Zone following *rabi* sorghum-summer green gram cropping sequence are recommended to apply 30 kg P_2O_5 and Arbuscular Mycorrhizae (3000 IP/g) 250 g/ha (along with bio-compost 5 t/ha and 40 kg N/ha at sowing and 40 kg N/ha at 30 DAS) to sorghum and 15 kg N and 30 kg P_2O_5/ha to summer green gram for getting higher yield and net return.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં શિયાળુ જુવાર-ઉનાળુ મગ પાક પધ્ધતિ અપનાવતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે જુવાર ને ૩૦ કિગ્રા ફોસ્ફરસ અને આર્બસ્કયુલર માઈકોરાઈઝા (૩૦૦૦ આઈપી/ગ્રામ) ૨૫૦ ગ્રામ/હે (૫ ટન બાયોકમ્પોષ્ટ અને ૪૦ કિગ્રા નાઈટ્રોજન પાયામાં તથા ૪૦ કિગ્રા/હે નાઈટ્રોજન વાવણી બાદ ૩૦ દિવસે આપવાની સાથે) તેમજ ઉનાળુ મગને ૧૫ કિગ્રા નાઈટ્રોજન અને ૩૦ કિગ્રા ફોસ્ફરસ/હે આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. & Head, Dept. of SSAC, NMCA, NAU, Navsari*)

16.2.1.36 Effect of natural organic liquid on growth, yield and quality of green gram (*Vigna radiate* L.) under organic farming

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing organic summer green gram are recommended to spray 1% enriched banana pseudostem sap three times (30, 45 and 60 DAS) for obtaining higher yield and net profit.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખેતીથી ઉનાળુ મગ ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા ૧% એનરીચ્ડ કેળનાં થડનાં રસના ત્રણ છંટકાવ (રોપણી બાદ ૩૦, ૪૫ અને ૬૦ દિવસે) કરવાની ભલામણ કરવામાં આવે છે.
(**Action:** *Assoc. Prof., Dept. of SSAC, ACHF, NAU, Navsari*)

16.2.1.37 Response of little millet (Vari) to organics

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing *kharif* little millet are recommended to apply 40 kg N/ha through either FYM (8 to 9 t/ha) or biocompost (3 t/ha) alongwith soil application of *Azotobacter* and PSB each 2 lit/ha immediately after seedling establishment for getting higher yield and net profit.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં વરીની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ૪૦ કિગ્રા નાઈટ્રોજન/હે છાણિયા ખાતર (૮ થી ૯ ટન/હે) અથવા બાયોકમ્પોસ્ટ (૩ ટન/હે) મારફત તેમજ એઝેટોબેક્ટર અને પી.એસ.બી. દરેક ૨ લિ/હે ધરું ચોંટી ગયા બાદ તુરંત જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Assoc. Prof., Agronomy, COA, NAU, Waghai*)

16.2.1.38 Nutrient management in Dill Seed under south Gujarat condition

The farmers of South Gujarat Agro-climatic Zone growing dillseed are recommended to fertilize the crop with 60-30-00 N-P_2O_5-K_2O kg/ha (30-30-00 N-P_2O_5-K_2O kg/ha as basal and 30 kg N/ha at 40 DAS) for getting higher yield and net return.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સુવાનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન તેમજ ચોખ્ખો નફો મેળવવા ૬૦-૩૦-૦૦ ના-ફો-પો કિગ્રા/હે (૩૦-૩૦-૦૦ ના-ફો-પો કિગ્રા/હે પાયામા તેમજ ૩૦ કિગ્રા નાઇટ્રોજન/હે વાવણીના ૪૦ દિવસ બાદ) આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. of Agronomy, COA, NAU, Bharuch*)

16.2.1.39 Evaluation of castor based relay cropping sequences under rainfed condition of South Gujarat

The farmers of South Gujarat Agro-climatic Zone growing late *kharif* (First week of September) rainfed castor are recommended to adopt green gram-castor or black gram-castor relay cropping system for obtaining higher yield and net profit.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં મોડી ખરીફ (સપ્ટેમ્બરનાં પ્રથમ અઠવાડિયામાં) ઋતુમાં વરસાદ આધારીત દિવેલાની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે મગ-દિવેલા અથવા અડદ-દિવેલા રિલે પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Prof. of Agronomy, COA, NAU, Bharuch*)

16.2.1.40 Response of sugarcane to tillage and different intercropping system under south Gujarat condition

The farmers of South Gujarat Agro-climatic Zone growing sugarcane are recommended to carry out sub-soiling of 45 cm depth within alternate row at 2 m distance followed by cultivation with cultivator for obtaining higher yield and net profit. Further, intercropping of gram, fenugreek and Indian bean in sugarcane was not found remunerative.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં શેરડી ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને આવક મેળવવા માટે ૪૫ સેમી ઉંડાઈનું એકાંતરે હારમાં ૨ મીટરના અંતરે સબસોઈલિંગ કરી કલ્ટીવેટરથી ખેડ કરવાની ભલામણ કરવામાં આવે છે. વધુમાં, શેરડી સાથે ચણા, મેથી કે વાલ પાપડીનો આંતરપક ફાયદાકારક જણાયેલ નથી.

(**Action:** *Prof. of Agronomy, COA, NAU, Bharuch*)

16.2.1.41 Weed control in tomato (*Lycopersicon esculentum* Mill.) through mulching and herbicides under drip irrigation conditions

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing drip irrigated tomato are recommended to adopt mulching with black plastic (50µ, 84.66% coverage) for weed control and obtaining higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં ટપક પધ્ધતિથી ટામેટાનું વાવેતર કરતા ખેડુતોને નિંદણ નિયંત્રણ તેમજ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા કાળા પ્લાસ્ટીકનું આવરણ (૫૦µ, ૮૪.૬૬% આવરણ) અપનાવવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Asstt. Prof., Horticulture Polytechnic, Paria*)

Sardarkrushinagar Dantiwada Agricultural University

16.2.1.42 Diversification of cropping system as component of small holder farming systems

The farmers of North Gujarat Agro-climatic Zone-IV are recommended to adopt pearl millet-potato-groundnut or groundnut-potato-pearl millet or *Bt* cotton (HDP)-wheat- fodder sorghum crop sequence for securing higher production and net income as well as sustaining soil fertility and improving water use efficiency.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ–૪ ના ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા તેમજ જમીનની ફળદ્રુપતા અને પાણીના કાર્યક્ષમ ઉપયોગ માટે બાજરી-બટાટા-મગફળી અથવા મગફળી-બટાટા-બાજરી અથવા બીટી કપાસ)હાઇ ડેન્સિટિ પ્લાંટિંગ(-ઘઉં-ઘાસચારા જુવારની પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Centre for Research on Integrated Farming System, SDAU, SK Nagar*)

16.2.1.43 Nitrogen management in wheat through neem coated urea

The farmers of North Gujarat Agro-climatic Zone-IV growing wheat are recommended to apply 105 kg N/ha through neem coated urea (50 % N as basal and remaining 50 % N in two equal splits at 21-25 and 35-40 DAS) and inoculate seeds with either *Azotobacter* or NPK consortium @ 5 ml/kg seeds along with basal application of 60 kg P_2O_5/ha and 10 t FYM/ha for obtaining higher grain yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગ-૪ ના ઘઉં વાવતા ખેડૂતોને હેકટર દીઠ વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે પ્રતિ હેકટરે ૧૦૫ કિ.ગ્રા. નાઈટ્રોજન નીમકોટેડ યુરીયા દ્રારા આપવો)જે પૈકી ૫૦ ટકા નાઈટ્રોજન પાયામાં વાવણી વખતે અને બાકીનો ૫૦ ટકા નાઈટ્રોજન પૂર્તિ ખાતર તરીકે બે સરખા હપ્તામાં વાવણી બાદ પ્રથમ હપ્તો ૨૧ થી ૨૫ દિવસે અને બીજો હપ્તો ૩૫ થી ૪૦ દિવસે(તેમજ એઝેટોબેકટર અથવા એન.પી.કે. કોન્સોરટીયમ પ્રવાહી જૈવિક ખાતરથી બીજ માવજત)૫.૦ મીલી પ્રતિ કિ.ગ્રા. બીજ દીઠ(અને પ્રતિ હેકટરે ૬૦ કિ.ગ્રા. ફોસ્ફરસ અને ૧૦ ટન છાણિયુ ખાતર પાકની વાવણી વખતે આપીને વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Agronomy Department, CPCA, SDAU, SK Nagar*)

16.2.1.44 Effect of spacing and nitrogen requirement on productivity of rainfed castor (GCH 7)

The farmers of North Gujarat Agro-climatic Zone-IV growing rainfed castor (GCH 7) are recommended to grow the crop at 120 cm x 60 cm spacing and apply 75 kg N/ha (37.5 kg N/ha as basal and 37.5 kg N/ha at 40-50 DAS when sufficient rainfall is received) along with basal application of 40 kg P_2O_5/ha for securing higher yield and net return.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ માં વરસાદ આધારિત દિવેલા)જી.સી.એચ. ૭(ઉગાડતા ખેડૂતોને દિવેલાના પાકનું હેકટર દીઠ વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે ૧૨૦ સે.મી. × ૬૦ સે.મી. અંતર રાખી વાવેતર કરવું અને પ્રતિ હેકટરે ૭૫ કિગ્રા નાઈટ્રોજન આપવો)જે પૈકી ૩૭.૫ કિગ્રા નાઈટ્રોજન પાયામાં વાવણી વખતે અને ૩૭.૫ કિગ્રા નાઈટ્રોજન પૂર્તિ ખાતર તરીકે વાવણી બાદ ૪૦ થી ૫૦ દિવસે પૂરતો વરસાદ થયેથી(તેમજ ૪૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટરે પાકની વાવણી વખતે આપવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Centre for Natural Resources Management, SDAU, SK Nagar*)

16.2.1.45 Fertilizer management for castor

Withheld due to inconsistent response.

1) If refinement is possible, present it in next year combine joint AGRESCO after getting approval in the Crop Production Sub-committee of SDAU.

(**Action:** *Castor-Mustard Research Station, SDAU, SK Nagar*)

16.2.1.46 Effect of nutrient management practices and foliar nutrition for sustainable production of field pea

The farmers of North Gujarat Agro-climatic Zone-IV growing field pea are recommended to apply 75% RDF (15:30:00:15:3.75 kg/ha N-P_2O_5-K_2O-S-Zn) as basal and two foliar spray of NPK (19:19:19) @ 0.5% at pre-flowering and pod initiation for getting higher seed yield and net return.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ ના વટાણાની ખેતી કરતા ખેડુતોને વટાણાનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ભલામણ કરેલ ખાતરના જથ્થાના ૭૫%)૧૫:૩૦:૦૦:૧૫:૩.૭૫ કિ.ગ્રા./હેકટર ના:ફો:પો:સલ્ફર:ઝીંક(ખાતર પાયામાં આપવું અને એન.પી.કે.)૧૯:૧૯:૧૯(૦.૫% દ્રાવણના બે છંટકાવ ફુલ બેસવાની શરૂઆત થાય તે પહેલા તથા શિંગો બેસવાની શરૂઆતની અવસ્થાએ કરવા ભલામણ કરવામાં આવે છે.

(**Action:** *Pulses Research Station, SDAU, SK Nagar*)

16.2.1.47 Herbicidal weed management in urdbean and its carry over effect on succeeding *rabi* crops

The farmers of North Gujarat Agro-climatic Zone-IV growing urdbean are recommended to follow two hand weeding at 15-20 and 35-40 DAS for obtaining higher seed yield and net return.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ ના અડદનું વાવેતર કરતા ખેડૂતોને હેકટર દીઠ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પાકને વાવણી બાદ ૧૫ થી ૨૦ અને ૩૫ થી ૪૦ દિવસે હાથ નિંદામણ કરવાની ભલામણ કરવામાં આવે છે.

(**Action:** *Pulses Research Station, SDAU, SK Nagar*)

16.2.1.48 Evaluation of cow-based different bio-enhancers in greengram

Accepted as recommendation for scientific community.

Mention OC, P & K status in the paragraph.

(**Action:** *Pulses Research Station, SDAU, SK Nagar*)

16.2.1.49 Effect of integrated weed management practices on fenugreek and their residual effect on green gram

The farmers of North Gujarat Agro-climatic Zone-IV growing fenugreek are recommended to carry out two inerculturing followed by hand weeding at 20 and 35 DAS for effective weed control and securing higher seed yield and net return.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ ના મેથીની ખેતી કરતાં ખેડુતોને ભલામણ કરવામાં આવે છે કે, મેથીમાં વાવણીના ૨૦ અને ૩૫ દિવસે આંતરખેડ કર્યા બાદ હાથ નિંદામણ કરવાથી અસરકારક નિંદામણ નિયંત્રણની સાથે વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.

(**Action:** *Centre of Research on Seed Spices, SDAU, Jagudan*)

16.2.1.50 Integrated weed management practices on coriander and their residual effect on green gram

The farmers of North Gujarat Agro-climatic Zone-IV growing coriander are recommended to carry out two inerculturing followed by hand weeding at 20 and 35 DAS for securing higher yield and net return.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ ના ધાણા વાવતાં ખેડુતોને ભલામણ કરવામાં આવે છે કે, ધાણામાં વાવણીના ૨૦ અને ૩૫ દિવસે આંતરખેડ કર્યા બાદ હાથ નિંદામણ કરવાથી અસરકારક નિંદણ નિયંત્રણની સાથે વધુ ઉત્પાદન અને આવક મળે છે.

(**Action:** *Centre of Research on Seed Spices, SDAU, Jagudan*)

16.2.1.51 Influence of *kharif* fennel to sowing technique and crop geometry under varying levels of nitrogen

The farmers of North Gujarat Agro-climatic Zone-IV are recommended to grow *kharif* fennel by transplanting method instead of direct sowing for getting higher yield and net return. The fennel should be transplanted at 90 cm x 60 cm and fertilized with 100 kg N/ha (40 kg N/ha as basal and remaining 60 kg N/ha as top dressing in two equal splits at 30 and 60 DAT) along with basal application of 60 kg P_2O_5/ha.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ના ખરીફ વરિયાળી ઉગાડતા ખેડુતોને ભલામણ કરવામાં આવે છે કે, ખરીફ વરીયાળીનુ વાવતેર ફેરરોપણી પધ્ધતિથી કરવાથી ઓરીને વાવણી કરતાં વધુ ઉત્પાદન અને આવક મળે છે. ખરીફ વરીયાળીની ફેરરોપણી ૯૦ સે.મી. ×૬૦ સે.મી. ના અંતરે કરી ૧૦૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેકટરે)૪૦ કિગ્રા નાઈટ્રોજન પાયામાં અને બાકીનો ૬૦ કિ.ગ્રા./હેકટર નાઈટ્રોજન પૂર્તિ ખાતર તરીકે બે સરખા હપ્તામાં ફેરરોપણીના ૩૦ અને ૬૦ દિવસે(તેમજ ફૉસ્ફરસ ૬૦ કિ.ગ્રા./હેકટર પાયાના ખાતર તરીકે આપવો.

(**Action:** *Centre of Research on Seed Spices, SDAU, Jagudan*)

16.2.1.52 Efficient water management in wheat using micro-irrigation

The farmers of North Gujarat Agro-climatic Zone-IV growing wheat having drip irrigation system are recommended to install lateral at 40 cm distance and 40 cm distance between two drippers having discharge of 4 LPH after crop establishment (CRI Stage). The system should be operated at 80% PEF at 3 days interval for 36 minutes during December to January and 46 minutes during February for getting higher yield and net return with saving of 31% water.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ-૪ વિસ્તારના ટપક પિયત પધ્ધતિ ધરાવતા ખેડુતોને ભલામણ કરવામાં આવે છે કે ઘઉના પાકમાં મુકુટમૂળ અવસ્થા પછી ૪૦ સે.મી.ના અંતરે પ્રશાખા ગોઠવી પ્રશાખા ઉપર ૪૦ સે.મી. ના અંતરે ૪ લીટર/કલાક પ્રવાહ દરના ટપકણિયા ગોઠવવા. પિયત માટે આ પધ્ધતિને ૦.૮ ટકા સંચયી બાષ્પીભવન ગુણાંક ડિસેમ્બર-જાન્યુઆરી માસમાં ૩૬ મીનીટ અને ફેબ્રુઆરી માસમાં ૪૬ મીનીટ સુધી દર ત્રણ દિવસે ચલાવવાથી ઘઉંનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી ૩૧ ટકા પાણીનો બચાવ કરી શકાય છે.

(**Action:** *Wheat Research Station, SDAU, Vijapur*)

16.2.1.53 Nitrogen and potash requirement of irrigated wheat under sandy loam soil in AES I

Withheld

1) Check the data and calculations.
2) Refine the recommendation and present it in next year combine joint AGRESCO after getting approval in the Crop Production Sub-committee of SDAU.

(**Action:** *Wheat Research Station, SDAU, Vijapur*)

16.2.1.54 Efficacy of pre-emergence herbicides in *rustica* tobacco

Withheld

1) Correct the third objective.
2) Check data, statistical analysis and cost of cultivation.
3) Verify calculations in Table 4 (plant population and germination count).
4) Refine the recommendation and present it in next year combine joint AGRESCO after getting approval in the Crop Production Sub-committee of SDAU.

(**Action:** *Agricultural Research Station, SDAU, Ladol*)

16.2.1.55 Effect of crop geometry on yield of Bt. Cotton under salt affected soils

Accepted as recommendation for scientific community.

(**Action:** *Agricultural Research Station, SDAU, Adiya*)

16.2.1.56 Effect of biofertilizers on yield of wheat under salt affected soils

Withheld.

1) Write ‘grain yield’ instead of ‘seed yield’.
2) Check EC/ECe values before and after harvest.
3) Verify calculation of economics.
4) Considering yield data, T_9 should also be recommended.
5) Refine the recommendation and present it in next year combine joint AGRESCO after getting approval in the Crop Production Sub-committee of SDAU.

(**Action:** *Agricultural Research Station, SDAU, Adiya*)

16.2.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

16.2.2.1 Integrated weed management in blackgram (*Vigna mungo* L.)

It is for the information of scientific community that pendimethalin 30% EC 1000 g a.i./ha PE *fb* quizalofop-ethyl 5% EC 50 g a.i./ha PoE provide effective weed management of complex weed flora and higher net return in blackgram without any herbicide residues in produce and soil. There was no any adverse effect of herbicide applied in blackgram on succeeding maize, chickpea and wheat crops.

(**Action:** *Associate Research. Scientist, ARS, AAU, Derol*)

JUNAGADH AGRICULTURAL UNIVERSITY

16.2.2.2 Response of pearl millet to biofertilizers

Concluded.

(**Action:** *Research Scientist, Pearlmillet Research Station, JAU, Jamnagar*)

16.2.2.3 Screening of sesame varieties/germplasm lines for yield performance under organic condition in summer season

It is for the information of scientific community that under South Saurashtra Agro-climatic Zone of Gujarat state sesame varieties/germplasm GT 4, AT 319, GJT 5 and GT 6 gave higher seed yield in summer season under organic condition.

(**Action:** *Research Scientist, Agriculture Research Station, JAU, Amreli*)

16.2.2.4 Management of chickpea crop under organic farming

It is for the information of scientific community that under South Saurashtra Agro-climatic Zone, application of FYM @ 4 t/ha + vermicompost 1.0 t/ha + either *Trichoderma harzianum* (2 x 10^7 cfu/g) @ 2.5 kg /ha or *Pseudomonas fluorescens* (1 x 10^8 cfu/g) 2.5 kg/ha + *Rhizobium* culture (1 x 10^7 cfu/g) 5 ml/kg seed + PSB (1 x 10^7 cfu/g) 5 ml/kg seed + two spray of *Beauveria bassiana* (2 x 10^6 cfu/g) 40 g/10 L water at 50% flowering and 2nd spray at 15 days after 1st spray found the most economical in chickpea.

(**Action:** *Research Scientist, Pulse Research Station, JAU, Junagadh*)

16.2.2.5 Response of groundnut to phosphorus under rainfed condition

Confirmation of earlier recommendation.

(**Action:** *Research Scientist, Main Dry Farming Research Station, JAU, Targhadia*)

16.2.2.6 Establishment of critical limit of zinc for pigeonpea crop in medium black calcareous soils

Withheld.

Considered as feeler trial and continue experiment for one more year. Make recommendation next year.

(**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Sci., JAU, Junagadh*)

16.2.2.7 Relative salinity tolerance of different pigeonpea varieties

It is for the information of scientific community especially plant breeders that pigeonpea variety GJP 1 was found more salt tolerance [higher mean salinity index (60.04), higher mean seed

yield (22.66 g/plant), minimum yield decline (66.45 %) at 8.0 dS/m and for 50% yield reduction at EC 6.86 dS/m, as well as lower Na/K ratio in seed and stalk] compared to AGT 2 and GT 101 on the basis of salinity indices. The sequential order of salinity tolerance for pigeonpea varieties was observed as GJP 1 > BDN 2 > Vaishali > GT 101 > AGT 2.

(**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Sci., JAU, Junagadh*)

NAVSARI AGRICULTURAL UNIVERSITY

16.2.2.8 Weed management in *kharif* grain sorghum

Application of atrazine 1.5 kg/ha as a pre-emergence *fb* one hand weeding at 40 DAS was found effective for weed control in *kharif* sorghum. Residue analysis of the herbicide was carried out and found below detectable level.

(**Action:** *Res. Sci., MSRS, Surat*)

16.2.2.9 Integrated weed management in fodder oat

Application of either pendimethalin @ 1 kg/ha as PE or 2,4-D amine salt 0.5 kg/ha or metsulfuron methyl 4 g/ha as PoE at 30 DAS gave effective weed control with higher yield and net return in fodder oat. Residue analysis of these herbicides was carried out and found below detectable level.

(**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari*)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

16.2.2.10 Herbicidal weed management in urdbean and its carry over effect on succeeding *rabi* crops

Application of Pendimethalin 30 EC @ 1 kg/ha PE followed by inerculturing and hand weeding at 25-30 DAS or Pendimethalin 30 EC + Imazethapyr 2 EC (ready mix) @ 0.75 kg/ha as PE followed by inerculturing and hand weeding at 25-30 DAS or Clodinafop propargyl 8% + Aciflourfen sodium 16.5% @ 187.5 g/ha at 15-20 DAS were found effective for weed control and higher seed yield of urdbean. No phytotoxic effect of herbicides was observed on succeeding wheat and rajmash crops.

(**Action:** *Pulses Research Station, SDAU, SK Nagar*)

16.2.2.11 Evaluation of cow-based different bio-enhancers in greengram

Seed treatment with *Bijamrut* @ 300 ml/kg seed or foliar spray of cow urine @ 3% at 30, 45 and 60 DAS under low organic carbon and medium to high P and K gave higher seed yield of greengram under organic farming.

(**Action:** *Pulses Research Station, SDAU, SK Nagar*)

16.2.2.12 Effect of integrated weed management practices on fenugreek and their residual effect on green gram

Application of Pendimethalin @ 500 g/ha as PE followed by IC and HW at 35 DAS for effective weed control and higher yield of fenugreek.

(**Action:** *Centre of Research on Seed Spices, SDAU, Jagudan*)

16.2.2.13 Integrated weed management practices on coriander and their residual effect on green gram

Application of Pendimethalin @ 1.00 kg/ha as PE followed by inerculturing and hand weeding at 30 DAS for effective weed control and yield of coriander.

(**Action:** *Centre of Research on Seed Spices, SDAU, Jagudan*)

16.2.2.14 Efficacy of pre-emergence herbicides in *rustica* tobacco

Withheld. (Suggestions are mentioned in Recommendation No. 13.)

(**Action:** *Agricultural Research Station, SDAU, Ladol*)

16.2.2.15 Effect of crop geometry on yield of Bt. Cotton under salt affected soils

Sowing of Bt. Cotton should be done at 60 cm x 45 cm spacing in salt affected soil (saline soil) having low OC and medium to high P and K gave higher seed cotton yield.

(**Action:** *Agricultural Research Station, SDAU, Adiya*)

16.2.3 NEW TECHNICAL PROGRAMMES

Date: May 27-28, 2020

Discipline	**:**	Crop Production/Natural Resource Management
Date	**:**	May 27-28, 2020
Organized by	**:**	Navsari Agricultural University
Chairman	**:**	Dr. B.K. Sagarka, DEE, JAU, Junagadh
Co-chairman	**:**	Dr. V.P. Ramani, ADR, AAU
	:	Dr. M.K. Arvadia, Principal, NMCA, NAU
Rapporteurs	:	Dr. J.D. Thanki, Convener and Professor & Head (Agron.), NAU
	:	Dr. R.M. Solanki, Assoc. Professor (Agron.), JAU
Statistician	:	Dr. P.R. Vaishnav, Prof. & Head, Dept. of Agril. Statistics, AAU

SUMMARY

University	Proposed New technical programmes	Approved New technical programmes
AAU	21	21
JAU	28	28
NAU	27	26
SDAU	27	27

Sr.No.	Centre & Title of Experiment	Suggestions	Remarks
ANAND AGRICULTURAL UNIVERSITY			
	Department of Agronomy, BACA, AAU, Anand		
16.2.3.1	Evaluation of low cost natural farming in maize + soybean - wheat + chickpea cropping system	Accepted with following suggestions: 1) Row ratio of intercropping should be kept as per recommendations of the region. (**Action:** Professor and Head, Dept. of Agronomy, BACA, AAU, Anand)	Approved
	Dept. of Soil Science and Agril. Chem., BACA, AAU, Anand		
16.2.3.2	Effect of Nano NP fertilizer on growth, yield and quality of summer fodder maize	Accepted with following suggestions: 1) Delete name of variety from the objectives. 2) Remove spray at 15 DAS from treatments and also delete duplicate treatments. 3) Keep RDF in place of RDNP. (**Action:** Professor and Head, Dept. of SSAC, BACA, AAU, Anand)	Approved

16.2.3.3	Effect of nano zinc fertilizer on growth, yield and quality of oat var. Kent	Accepted with following suggestions: 1) Remove name of variety from the title and objectives. 2) Mention concentration of $ZnSO_4$ in T_6 and T_7. 3) Mention foliar spray in T_4 and T_5. 4) Avoid duplication in writing nutrient content/uptake observations. 5) Write '100% RDF (control)' in T_1. (**Action:** Professor and Head, Dept. of SSAC, BACA, AAU, Anand)	Approved
	Dept. of Agril. Meteorology, BACA, AAU, Anand		
16.2.3.4	Parameterization and evaluation of Weather Research and Forecasting (WRF) modelling system for Anand region	Accepted. (**Action:** Professor and Head, Dept. of Agril.. Metrology, BACA, AAU, Anand)	Approved
16.2.3.5	Moisture stress detection in *rabi* sunflower (*Helianthus annuus* L.) ased on canopy-air temperature differential measurements	Accepted. (**Action:** Professor and Head, Dept. of Agril. Metrology, BACA, AAU, Anand)	Approved
	Regional Research Station, AAU, Anand		
16.2.3.6	Effect of spacing and fertilizer on yield and quality of summer groundnut variety GG 34	Accepted with following suggestions: 1) Delete 'yield and quality' from the title. (**Action:** Associate Research Scientist, RRS, AAU, Anand)	Approved
	Bidi Tobacco Research Station, AAU, Anand		
16.2.3.7	Effect of nitrogen levels on yield and quality of bidi tobacco varieties under middle Gujarat conditions	Accepted with following suggestions: 1) S supplied through ammonium sulphate to be equalized by adding S. 2) Include available S status in soil analysis observations. 3) Add nutrient content/uptake observations. (**Action:** Associate Research Scientist,	Approved

		BTRS, AAU, Anand)	
	AICRP-Weed Management, BACA, AAU, Anand		
16.2.3.8	Weed management in onion	Accepted. (**Action:** Agronomist, AICRP-Weed Management, BACA, AAU, Anand)	Approved
16.2.3.9	Weed management in onion nursery	Accepted. (**Action:** Agronomist, AICRP-Weed Management, BACA, AAU, Anand)	Approved
	Micronutrient Research Scheme (ICAR), AAU, Anand		
16.2.3.10	Screening of wheat genotypes /varieties for iron (Fe) efficiency	Accepted. (**Action:** Associate Research Scientist, Micronutrient Res. Scheme, AAU, Anand)	Approved
16.2.3.11	Screening of wheat genotypes /varieties for manganese (Mn) efficiency	Accepted. (**Action:** Associate Research Scientist, Micronutrient Res. Scheme, AAU, Anand)	Approved
	Agricultural Research Station, College of Agriculture, AAU, Jabugam		
16.2.3.12	Effect of time of sowing and irrigation scheduling at critical growth stages on summer groundnut	Accepted with following suggestions: 1) Correct the method of writing sowing time in treatments. (**Action:** Principal, COA, AAU, Jabugam)	Approved
16.2.3.13	Effect of time of sowing and spacing on semi *rabi* black gram	Accepted with following suggestions: 1) Confirm the name of variety. 2) Correct the number of treatment combinations. (**Action:** Principal, COA, AAU, Jabugam)	Approved
16.2.3.14	Evaluation of soybean based cropping system in middle Gujarat condition (Tribal area of Chhotaudepur district)	Accepted. (**Action:** Principal, COA, AAU, Jabugam)	Approved
	Tribal Research cum Training Centre, AAU, Devgadh Baria		
16.2.3.15	Performance of *rabi* sweet corn variety madhuram under different levels of nitrogen, phosphorus and potash applied through drip system	Accepted with following suggestions: 1) Remove name of variety from the title. 2) Add observations of nutrient content/uptake.	Approved

		(**Action:** Research Scientist, TRTC, AAU, Devgadh Baria)	
	Agricultural Research Station, AAU, Derol		
16.2.3.16	Effect of sowing time and variety on growth and yield of chickpea	Accepted with following suggestions: 1) Modify title as: Effect of sowing time on growth and yield of chickpea varieties. 2) Delete duplicating objective. (**Action:** Associate Research Scientist, ARS, Derol)	Approved
16.2.3.17	Response of castor (GCH 10) to spacing and nitrogen under irrigated condition	Accepted with following suggestions: 1) Nutrient content/uptake observations to be added. (**Action:** Associate Research Scientist, ARS, Derol)	Approved
	Regional Cotton Research Station, AAU, Viramgam		
16.2.3.18	Effect of spacing and nitrogen levels on yield of desi cotton variety Wagad Gaurav under rainfed condition	Accepted with following suggestions: 1) Include 'biofertilizer' word in title and objectives. 2) Add observations of nutrient content/uptake. (**Action:** Associate Research Scientist, RCRS, AAU, Viramgam)	Approved
	College of Agricultural Information Technology, AAU, Anand		
16.2.3.19	Evaluation of nutrient management modules in pearlmillet + blackgram - wheat + chickpea cropping system	Accepted with following suggestions: 1) Add observations of soil physical parameters. (**Action:** Assistant Research Scientist, AITC, AAU, Anand)	Approved
	Tribal Research cum Training Centre, AAU, Devgadh Baria		
16.2.3.20	Evaluation of nutrient management modules in different cropping systems	Accepted with following suggestions: 1) Recast title as: Assessment of crop management module in different cropping systems. 2) Recast objectives as per title. (**Action:** Research Scientist, TRTC, AAU, Devgadh Baria)	Approved
	Narmada Irrigation Research Project, Anand Agricultural University, Khandha		
16.2.3.21	Evaluation of nutrient management modules in cotton + pigeonpea intercropping system	Accepted with following suggestions: 1) Recast title as: Assessment of crop management modules in cotton + Pigeonpea inter cropping system. 2) Add observations of soil physical parameters. (**Action:** Assistant Research Scientist, NIRP, AAU, Khandha)	Approved

JUNAGADH AGRICULTURAL UNIVERSITY			
	AGRONOMY		
16.2.3.22	Evaluation of low cost natural farming in wheat + chickpea intercropping system	Accepted. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.23	Evaluation of low cost natural farming in groundnut + pigeonpea intercropping system	Accepted. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.24	Evaluation of *Amrut Mati* in summer groundnut	Accepted with following suggestions: 1) Reframe the experiment considering first year results as feeler trial. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.25	Dynamics of weed flora in major *rabi* crops	Accepted with following suggestions: 1) Species-wise dry weight of weeds to be recorded. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.26	Dynamics of weed flora in major *kharif* crops	Accepted with following suggestions: 1) Species-wise dry weight of weeds to be recorded. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.27	Calibration and validation of CERES model (DSSAT 4.6) for different cultivars of wheat under different sowing times	Accepted with following suggestions: 1) As per need, Consult Meteorology Dept., AAU. 2) Take future scenario from IPCC. (**Action:** *Professor, Department of Agronomy, JAU, Junagadh*)	Approved
16.2.3.28	Effect of low cost natural farming practices on summer groundnut	Accepted with following suggestions: 1) Keep rate of FYM 7.5 t/ha. 2) Table to be corrected as per modules. (**Action:** *Res. Sci., Main Oil Seed Res. Station, JAU, Junagadh*)	Approved
16.2.3.29	Identifying suitable crop geometry and nutrient dose for spanish bunch *kharif* groundnut (AICRP)	Accepted. (**Action:** *Res. Sci., Main Oil Seed Res. Station, JAU, Junagadh*)	Approved
16.2.3.30	Response of drip irrigated castor to plant geometry and nitrogen fertigation (AICRP)	Accepted with following suggestions: 1) Write RBD with Factorial concept instead of FRBD. (**Action:** *Res. Sci., Main Oil Seed Res. Station, JAU, Junagadh*)	Approved

16.2.3.31	Response of cotton to moisture conservation practices under rainfed condition	Accepted with following suggestions: 1) Write '*Bt* cotton' in the title. 2) Keep rate of FYM 10 t/ha in 4th treatment. 3) Sixth observation periodical soil moisture content to be recorded at monthly interval and during dry spell. (**Action:** *Main Dry Farming Research Station, JAU, Targhadia & Dry Farming Research Station, JAU, Vallabhipur*)	Approved
16.2.3.32	Response of groundnut to moisture conservation practices under rainfed condition	Accepted with following suggestions: 1) Specify mulching with wheat straw in 7th treatment. (**Action:** *Main Dry Farming Research Station, JAU, Targhadia & Dry Farming Research Station, JAU, Jam Khambhalia*)	Approved
16.2.3.33	Effect of customized fertilizer (CFG) on scaling up productivity and profitability of chickpea based cropping systems (AICRP)	Accepted. (**Action:** *Pulses Research Station, JAU, Junagadh*)	Approved
16.2.3.34	Enhancing production potential of pigeonpea through foliar nutrition (AICRP)	Accepted with following suggestions: 1) If possible, analyse Pulse magic. (**Action:** *Pulses Research Station, JAU, Junagadh*)	Approved
16.2.3.35	Agronomic bio-fortification of pearl millet cultivars through zinc fertilizer	Accepted. (**Action:** *Pearl Millet Research Station, JAU, Jamnagar*)	Approved
16.2.3.36	Effect of crop geometry and irrigation scheduling based on soil moisture sensor and ETc in sugarcane	Accepted with following suggestions: 1) Replace 'geometry' word with 'spacing' at all places. (**Action:** *Sugarcane Research Station, JAU, Kodinar*)	Approved
16.2.3.37	Integrated weed management in autumn planted sugarcane	Accepted with following suggestions: 1) Remove name of Agril. Asstt. from investigators. 2) Check dose in T_8. (**Action:** *Sugarcane Research Station, JAU, Kodinar*)	Approved
16.2.3.38	*In situ* moisture conservation in rainfed sesame for higher resource use efficiency, productivity and profitability (AICRP)	Accepted with following suggestions: 1) Specify crop residue and its quantity in M_5. (**Action:** *Agricultural Research Station, JAU, Amreli*)	Approved

16.2.3.39	Evaluation of pre and post emergence herbicide for chemical weed management in sesame (AICRP)	Accepted. (**Action:** *Agricultural Research Station, JAU, Amreli*)	Approved
16.2.3.40	Effect of mulch and herbicides on weed management in sesame (AICRP)	Accepted with following suggestions: 1) Specify thickness of mulch. (**Action:** *Agricultural Research Station, JAU, Amreli*)	Approved
16.2.3.41	Efficacy of different doses of pendimethalin on promising sesame genotypes (AICRP)	Accepted. (**Action:** *Agricultural Research Station, JAU, Amreli*)	Approved
16.2.3.42	Standardization of geometry for *Bt* varieties of cotton (AICRP)	Accepted. (**Action:** *Cotton Research Station, JAU, Junagadh*)	Approved
16.2.3.43	Effect of bio stimulant on growth and development of cotton (AICRP)	Accepted. (**Action:** *Cotton Research Station, JAU, Junagadh*)	Approved
	SOIL SCIENCE		
16.2.3.44	Effect of different levels of NPK and time of application on cucumber yield under protected condition	Accepted. (**Action:** *Department of Agril. Chemistry & Soil Science and Vegetable Res. Station, JAU, Junagadh*)	Approved
16.2.3.45	Effect of fresh cow dung on yield, quality and uptake of nutrients in groundnut	Accepted with following suggestions: 1) Write 'cow dung' in place of 'fresh cow dung' and mention into note upto 5 days old. 2) Write Vermicompost 2 t/ha + Bioconsortia (*Rhizobium* 2 L/ha + PSB 2 L/ha + KSB 2 L/ha + *Trichoderma harzianum* 3 kg/ha + *Pseudomonas fluorescence* 3 L/ha + *Beauveria bassiana* 3 kg/ha) in T_6. 3) Add FYM (RDN equivalent) treatment. (**Action:** *Department of Agril. Chemistry & Soil Science and Main Oilseed Res. Station, JAU, Junagadh*)	Approved
16.2.3.46	Periodical evaluation of soil fertility status of Saurashtra region	Accepted with following suggestions: 1) Include Mo and B in soil analysis. (**Action:** *Department of Agricultural Chemistry & Soil Science, JAU, Junagadh*)	Approved
16.2.3.47	Effect of fresh cow dung on yield and yield attributes of garlic	Accepted with following suggestions: 1) Add termite, weed and *E. coli* observations.	Approved

		2) Delete common application of *Amrut pani* and cow urine as mentioned in the note. 3) Instead of 1500 kg decomposed cow dung, keep Bijamrut as seed treatment + Jivamrut 3 spray at 30, 45 and 60 DAS in T_3. (**Action:** *Department of Agril. Chemistry & Soil Science and Vegetable Res. Station, JAU, Junagadh*)	
16.2.3.48	Relative salinity tolerance of different cowpea varieties	Accepted with following suggestions: 1) Modify title as: Evaluation of cowpea varieties for salinity tolerance. 2) Mention size of mini plots. 3) If feasible, add anion analysis. (**Action:** *Department of Agricultural Chemistry & Soil Science, JAU, Junagadh*)	Approved
16.2.3.49	Effect of saline irrigation water on pearl millet	Accepted with following suggestions: 1) Add 'varieties' word in the title. 2) If feasible, add anion analysis of water. (**Action:** *Department of Agricultural Chemistry & Soil Science, JAU, Junagadh*)	Approved
NAVSARI AGRICULTURAL UNIVERSITY			
	Soil and Water Management Research Unit, Navsari		
16.2.3.50	Effect of irrigation and fertigation levels on ridge gourd under South Gujarat	Accepted with following suggestions: 1) Mention source of fertilizer/s. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
16.2.3.51	Effect of different forms of gypsum on drip irrigated sugarcane	Accepted with following suggestions: 1) Show time of gypsum application (1 month before sowing) and size of gypsum granules. 2) Mention size of gypsum granules. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
16.2.3.52	Effect of sub surface fertigation on fruit yield and quality of mango	Accepted with following suggestions: 1) WEE observation to be added. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
16.2.3.53	Effect of zinc application in drip irrigated mango orchard	Accepted with following suggestions: 1) No need to write large plot technique, write only CDR in design. 2) Verify data of P_2O_5 status of	Approved

		proposed experimental site. 3) Specify 'soil application' in T_1 to T_6. 4) Write 'in single application' instead of 'in single split' in T_1, T_3 and T_5. 5) Add fruit drop/retention/dieback observations. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	
16.2.3.54	Survey of nutrient status of mango orchard in Valsad, Navsari and Tapi districts of South Gujarat	Accepted with following suggestions: 1) Select 10-15 years old trees for the study. 2) Follow standard procedure for leaf sampling. 3) Also include S and B status in soil analysis observations. 4) If possible, take soil samples from 0-30, 30-60 and 60-90 cm depth in 3rd observation. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
	Main Rice Research Centre, Navsari		
16.2.3.55	Developing suitable package of practices for wet DSR	Accepted with following suggestions: 1) Specify treatment details as; Main plot: Time of sowing Sub-plot: Method of sowing (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
16.2.3.56	Evaluation of low cost natural farming in rice under south Gujarat condition	Accepted. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
	CSSRS, Danti/Umbharat		
16.2.3.57	Effect of irrigation and fertilizer levels on marvel grass under coastal salt affected soils	Accepted with following suggestions: 1) Revise N and P_2O_5 levels as: N = 40, 60 & 80 kg N/ha; Phosphorus = 20 & 40 kg P_2O_5/ha and take them as separate factors in sub-plot. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved
16.2.3.58	Effect of different forms of gypsum and wheat crop residue incorporation on rice-wheat cropping system in coastal salt affected soil	Accepted with following suggestions: 1) Mention time of gypsum application and composition of powder & granular forms. 2) Record quantity of wheat straw harvest. 3) Write 'incorporation' in place of 'incorporate' in wheat crop residue treatments. (**Action:** *Research Scientist, SWMRU, NAU, Navsari*)	Approved

	Main Sugarcane Research Station, Navsari		
16.2.3.59	Assessment of planting geometry for single eye budded settling on sugarcane under south Gujarat condition	Accepted. (**Action:** *Res. Sci. (Agron.), MSRS, Navsari*)	Approved
16.2.3.60	Effect of nutrient management on sugarcane planted through single eye budded settling under south Gujarat condition	Accepted with following suggestions: 1) Add observations of nutrient content/uptake. (**Action:** *Res. Sci. (Agron.), MSRS, Navsari*)	Approved
16.2.3.61	Evaluation of low cost natural farming in sugarcane under south Gujarat condition	Accepted with following suggestions: 1) Confirm mulching/*Achhadan* treatments. (**Action:** *Res. Sci. (Agron.), MSRS, Navsari*)	Approved
	Soil Science, Navsari		
16.2.3.62	Evaluation of ground water suitability for irrigation in Jalalpore taluka of Navsari district	Accepted with following suggestions: 1) Take whole Navsari district. 2) Sampling should include collection before monsoon (May) and after monsoon (within a month) 3) Add sulphate and potassium analysis in observations. (**Action:** *Res. Sci., Soil Sci., Navsari*)	
	Agricultural Experimental Station, Paria		
16.2.3.63	Effect of soil and foliar application of multi-micronutrients on yield and quality of mango cv. Kesar	Accepted with following suggestions: 1) Correct design as CRD (Factorial concept) instead of FRBD. 2) Follow standard procedure for leaf sampling. 3) Include B in 12th observation. 4) Add fruit drop/retention/dieback observations. (**Action:** *Res. Sci., AES, Paria*)	Approved
	Main Cotton Res. Station, Surat		
16.2.3.64	Integrated weed management in cotton	Accepted with following suggestions: 1) Write '*Bt* cotton' in the title. 2) In T_6, write 0.5 kg/ha rate of Paraquat di-chloride 24% SL in place of 2000 ml/ha. 3) No. of bolls to be recorded per plant instead of per m^2. 4) Record weed observations species-wise. (**Action:** *Res. Sci., MCRS, Surat*)	Approved

	Main Sorghum Res. Station, Surat		
16.2.3.65	Evaluation of low cost natural farming in sorghum under south Gujarat condition	Accepted with following suggestions: 1) Confirm *Achhadan*/Incorporation of rice straw treatment. 2) Include replacement series 2:1 intercropping of green gram (Co4) in Module-I and sole in Module-II and III. (**Action:** *Res. Sci., MSRS, Surat*)	Approved
16.2.3.66	Spacing and fertilizer requirement of *kharif* grain sorghum	Accepted with following suggestions: 1) Specify biofertilizers and rate of application for common application. (**Action:** *Res. Sci., MSRS, Surat*)	Approved
	Agricultural Research Station, Achhalia		
16.2.3.67	Studies on foliar spray of zinc on normal and late sown *rabi* castor	Accepted with following suggestions: 1) Revise Zn levels as: Z_1 = Control (water spray), Z_2 = 0.25% $ZnSO_4$, Z_3 = 0.50% $ZnSO_4$, Z_4 = 0.75% $ZnSO_4$. 2) Keep 3 sprays of $ZnSO_4$ adding 3rd spray after 15 days of peak flowering. 3) Keep 4 replications. 4) Add Zn content/uptake observations. (**Action:** *Asstt. Res. Sci., ARS, Achhalia*)	Approved
16.2.3.68	Response of pigeonpea to irrigatioon at different stages	Accepted with following suggestions: 1) Recast the title as: Response of Pigeonpea to irrigation schedule. 2) Keep irrigation methods in main plot. (**Action:** *Asstt. Res. Sci., ARS, Achhalia*)	Approved
	Agricultural Research Station, Mangrol		
16.2.3.69	Integrated nutrient management in *kharif* fodder sorghum under south Gujarat condition	Accepted with following suggestions: 1) Revise treatments as; T_1 : 50% RDN through FYM + 50 % RDN through BC T_2 : 25% RDN through FYM + 50% RDN through inorganic fertilizers + BF T_3 : 25% RDN through BC + 50% RDN through inorganic fertilizers + BF T_4 : 50% RDN through FYM + 25% RDN through inorganic fertilizers + BF T_5 : 50% RDN through BC + 25% RDN through inorganic fertilizers + BF T_6 : 75% RDF through inorganic fertilizers + BF T_7 : 100% RDF through inorganic	Approved

		fertilizers **Note:** (1) BF = Azotobacter and PSB each 10 ml/kg seed treatment (2) Inorganic N to be applied in two splits, *i.e.*, basal and 30 DAS (3) No common application of inorganic P fertilizer. 2) Keep 3 replications. 3) Take the experiment on fixed site. 4) Take Indian bean in sequence to determine residual effect. 5) Soil analysis observations to be recorded initial and at the end of last year experiment. (**Action:** *Asstt. Res. Sci., ARS, Mangrol*)	
16.2.3.70	Production potential of sole *rabi* sorghum as well as different legumes and *rabi* sorghum - legume competitive ability through additive series in inter cropping under south Gujarat condition	Dropped as Indian bean is included in sequence in Experiment No. 20. (**Action:** *Asstt. Res. Sci., ARS, Mangrol*)	Dropped
	Dept. of Agronomy, NMCA, Navsari		
16.2.3.71	Study of critical crop-weed competition in summer pearl millet (*Penneisetum glaucum* L.)	Accepted with following suggestions: 1) Dry weight of weeds to be recorded at 20, 40 DAS and at harvest. (**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, Navsari*)	Approved
16.2.3.72	Response of marvel grass (*Dichanthium annulatum*) to nitrogen and phosphorus	Accepted with following suggestions: 1) Remove 'management' word from the title in PPT. 2) No. of cuts to be increased upto 4 cuts. 3) Revise N levels as: 30, 60, 90 and 120 kg/ha; and splits of N application as: 25% basal, 25% after 1st cut, 25% after 2nd cut and 25% after 3rd cut. (**Action:** *Prof. & Head, Dept. of Agronomy, NMCA, Navsari*)	Approved
	Agril. Meteorology Cell, NMCA, Navsari		
16.2.3.73	To assess the impact of climate change on chickpea using CROPGRO model	Accepted with following suggestions: 1) Recast the title as 'Calibration and validation of DSSAT-CROPGRO model for chickpea'. 2) Delete the 3rd objective. 3) Take 3 varieties *viz*., GG 3, GG5 and GG 6. 4) Keep only days to emergence in the 1st observation. (**Action:** *Asstt. Prof. (Meteo), Agril. Meteorology Cell, NMCA, Navsari*)	Approved

	College of Agriculture, Bharuch		
16.2.3.74	Effect of spacing and fertilizer levels on *rabi* sweet corn (*Zea mays* L. var. saccharata Sturt)	Accepted with following suggestions: 1) Take only fertilizer trail with treatments suggested as below. Nitrogen levels: 90, 120 and 150 kg/ha Phosphorus levels: 30 and 60 kg P_2O_5/ha Potash levels: 0 and 30 kg K_2O/ha. Note: N to be applied in 3 splits viz., 25% as basal, 50% at 30 DAS and 25% at 45 DAS. 2) Do not keep common application of FYM, but keep common application of biofertilizers. 3) Recast the title, objectives, *etc.* as per the modified treatments. (**Action :** *Prof. of Agronomy, CoA, Bharuch*)	Approved
16.2.3.75	Response of Dill seed to sulphur, FYM and biofertilizers under south Gujarat condition	Accepted with following suggestions: 1) Modify the treatments as suggested as below. Nitrogen levels: 20, 40 and 60 kg/ha Phosphorus levels: 0 and 20 kg P_2O_5/ha Sulphur levels: 0, 10 and 20 kg S/ha. 2) Do not keep treatments or common application of FYM, but keep seed treatment of biofertilizers (Azotobacter + PSB each 10 ml/kg seed). 3) Recast the title, objectives, *etc.* as per the modified treatments. 4) Determination of volatile oil observation to be added. (**Action :** *Prof. of Agronomy, CoA, Bharuch*)	Approved
16.2.3.76	Bio-chemical changes in leafy vegetables grown on contaminated and uncontaminated soils	Accepted with following suggestions: 1) Write ‘non-contaminated’ in place of ‘uncontaminated’. 2) Recast the objectives and also add objective: To assess the accumulation of heavy metals in leafy vegetables. 3) Sites of contaminated and non-contaminated soils should be in nearby area so that type of soil may not change. (**Action :** *Prof. of Agronomy, CoA, Bharuch*)	Approved

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY			
	Centre for Integrated Farming Systems, SDAU, SK Nagar		
16.2.3.77	Identification of cropping systems module for different farming systems	Accepted with following suggestions: 1) Write 'cropping system modules' in place of 'cropping systems module' in the title. (**Action:** Centre for Integrated Farming Systems, SDAU, SK Nagar)	Approved
16.2.3.78	Evaluation and validation of natural farming practices in different agro-ecologies	Accepted with following suggestions: 1) Recast title/objectives. Title to be modified as 'Evaluation of natural farming practices in different agro-ecologies'. 2) Quantify inputs wherever missing in different treatments. 3) Instead of conventional method, write recommended practices in T_{10}. (**Action:** Centre for Integrated Farming Systems, SDAU, SK Nagar)	Approved
	Centre for Natural Resource Management, SDAU, SK Nagar		
16.2.3.79	Productivity enhancement in dryland through Integrated Farming System	Accepted. (**Action:** Centre for Natural Resource Management, SDAU, SK Nagar)	Approved
16.2.1.80	Production potential of vegetable cowpea under organic farming	Accepted with following suggestions: 1) Variety may be changed, if possible. 2) Observations of soil physical parameters to be included. (**Action:** Centre for Natural Resource Management, SDAU, SK Nagar)	Approved
16.2.3.81	Fertigation scheduling for sprinkler irrigated potato	Accepted with following suggestions: 1) Take large plot technique instead of RBD (Factorial concept). 2) Add N & K uptake observations. (**Action:** Centre for Natural Resource Management, SDAU, SK Nagar)	Approved
	Pulses Research Station, SDAU, SK Nagar		
16.2.3.82	Integrated crop management in chickpea	Accepted with following suggestions: 1) Add treatment of Farmers' practice and define it. (**Action:** Pulses Research Station,SDAU, SKNagar)	Approved
	Seed Spices Research Stations, SDAU, Jagudan		
16.2.3.83	Intercropping of gram in cumin	Accepted with following suggestions: 1) Write spacing properly in the treatments. (**Action:** Seed Spices Research Stations, SDAU, Jagudan)	Approved

16.2.3.84	Effect of split application of nitrogen on growth, yield and quality of *rabi* fennel	Accepted with following suggestions: 1) Revise split treatments as; M_1 = ½ basal + ½ in two equal splits at 20 & 40 DAS M_2 = ¼ basal + ¾ in in three equal splits at 20, 40 and 60 DAS M_3 = ¼ basal + ¾ in four equal splits at 20, 40, 60 and 80 DAS. (Note : Total 3 treatments of split application). 2) Observations should be written in detail. 3) Add observations of nutrient content/uptake and volatile oil. (**Action:** Seed Spices Research Stations, SDAU, Jagudan)	Approved
	Wheat Research Station, SDAU, Vijapur		
16.2.3.85	Effect of sea weed on yield and quality of wheat	Accepted with following suggestions: 1) Modify title as : Response of wheat to sea weed under different levels of fertilizer. 2) Keep 3% and 6% concentration in S_4 and S_5, respectively to be sprayed at 30 and 45 DAS. 3) Write sea weed extract in liquid sea weed treatments. 4) Plant stand should be recorded per m row length instead of per m^2. 5) Write observations in detail. 6) Include gluten in quality parameters and nutrient content/uptake observations. (**Action:** Wheat Research Station, SDAU, Vijapur)	Approved
16.2.3.86	Response of wheat (*Triticum aestivum* L.) varieties to different dates of sowing	Accepted with following suggestions: 1) Specify timely sowing and late sowing. 2) Measure soil temperature at sowing. 3) Work out correlation with weather parameters. (**Action:** Wheat Research Station, SDAU, Vijapur)	Approved
	Agricultural Research Station, SDAU, Ladol		
16.2.3.87	Effect of phosphorus and potash on yield and quality of *rustica* tobacco	Accepted with following suggestions: 1) Keep two levels of phosphorus, *i.e.*, 0 and 20 kg P_2O_5. 2) Quantity of S to be equalized. 3) Include nutrient content/uptake observations. (**Action:** Agricultural Research Station, SDAU, Ladol)	Approved

	ARS, SDAU, Adiya		
16.2.3.88	Effect of methods of Biofertilizer application on fertilizer requirements of gram	Accepted with following suggestions: 1) Recast the title as: Response of gram to fertilizer levels and biofertilizers. 2) No need to write 'method' in case of biofertilizer application, keep only biofertilizer in title, objectives, treatments, *etc*. 2) Quantify rate of biofertilizer (soil application 2 lit/ha, seed treatment 10 ml/kg) and *Trichoderma* 3 kg/ha. 3) Add microbial count observations. (**Action:** ARS, SDAU, Adiya)	Approved
	ARS, SDAU, Aseda		
16.2.3.89	Response of fenugreek to different levels of fertilizer under various cutting management	Accepted with following suggestions: 1) Remove 'optimum' word from objectives. 2) Keep 10 ml/kg rate of consortium application. 3) Consider equivalent yield of fenugreek grain. 4) Take SSP as P_2O_5 source. (**Action:** ARS, SDAU, Aseda)	Approved
16.2.3.90	Management of Orobanche in cumin	Accepted with following suggestions: 1) Delete T_4 and T_9 treatments. 2) Instead of 'hand pulling' in T_2, write 'cutting'. 3) For Ammonium sulphate, write 24 kg S/ha in place of 20 kg N/ha. 4) Deduct N supplied by ammonium sulphate from the recommended dose of N in that treatment. 5) Mention unit of orobanche count in 7th observation. (**Action:** ARS, SDAU, Aseda)	Approved
	Cotton Research Station, SDAU, Talod		
16.2.3.91	Effect of different plant growth regulators on growth and yield of *kharif* groundnut *Cv*. GJG 22	Accepted with following suggestions: 1) Delete name of variety from the title. 2) Keep spray at 30 DAS in S_1. 3) Add observations of number of pegs and filled & unfilled pods. 4) Write 60 cm spacing instead of 60 x 20 cm. 5) Verify status of registration in CIB guidelines for growth regulators. (**Action:** Cotton Research Station, SDAU, Talod)	Approved

	Seed Technology, SDAU, SK Nagar		
16.2.3.92	Effect of spacing and row ratio on seed production of castor (var. GCH 8)	Accepted. (**Action:** Seed Technology, SDAU, SK Nagar)	Approved
	LRS, SDAU, Vijapur		
16.2.3.93	Integrated nutrient management in *rabi* forage maize	Accepted with following suggestions: 1) Reframe the whole experiment as suggested below. **Title:** Nutrient management in *rabi* fodder maize **Treatments** Nitrogen levels: 60, 80, 100 kg N/ha Phosphorus levels: 20, 40 kg P_2O_5/ha Potash levels: 0, 20 kg K_2O/ha. **Design:** RBD (Factorial concept) **Replications:** Three **Note:** Nitrogen to be applied in three splits *viz*., 25% basal, 50% at 30 DAS and 25% at 45 DAS. 2) Accordingly revise the objectives, observations, *etc*. (**Action:** LRS, SDAU, Vijapur)	Approved
	Agro forestry Research Station, SDAU, SK Nagar		
16.2.3.94	Effect of nitrogen levels on productivity and quality of fodder oat varieties	Accepted with following suggestions: 1) Reframe the whole experiment as suggested below. **Title:** Nutrient management in fodder oat **Treatments** Nitrogen levels: 80, 100, 120 kg N/ha Phosphorus levels: 40, 60 kg P_2O_5/ha Potash levels: 0, 30 kg K_2O/ha. **Design:** RBD (Factorial concept) **Replications:** Three **Note:** Nitrogen to be applied in four splits *viz*., 25% basal, 25% at 30 DAS, 25% after first cut. 25% after 2nd cut. **Variety:** Kent 2) Accordingly revise the objectives, observations, *etc*. (**Action:** DOR Office, SDAU, SKNagar)	Approved
	BSRC, SDAU, SKNagar		
16.2.3.95	Effect of Bioenhancer on yield and quality of *kharif* pearlmillet	Accepted with following suggestions: 1) Write 'cow based bioenhancer'. 2) Determine S and micronutrient status of soil before and after harvest. 3) Include S, Zn and Fe content and uptake in observations.	Approved

		4) Application with irrigation to be replaced by drenching application. (**Action:** BSRC, SDAU, SKNagar)	
	Agricultural Research Station, SDAU, Shihori		
16.2.3.96	Scheduling of sprinkler irrigation for wheat by using saline water	Accepted with following suggestions: 1) Modify the title as : Scheduling of sprinkler irrigation in wheat. 2) Remove 'saline water' from all the places. 3) Design should be large plot technique. 4) Salinity related observations of irrigation water and soil to be included. 5) Mention fertilizer dose. (**Action:** Agricultural Research Station, SDAU, Shihori)	Approved
	Agricultural Research Station, SDAU,Kholwada		
16.2.3.97	Feasibility of isabgol based intercropping systems	Accepted. (**Action:** Agricultural Research Station, SDAU,Kholwada)	Approved
	Action: KVK Deesa		
16.2.3.98	Response of wheat to different levels of fertilizer and liquid organic manures	Accepted with following suggestions: 1) Revise the whole experiment as per Experiment No. 19 (**Action:** KVK Deesa)	Approved
	Polytechnic in Agriculture, SDAU, Khedbrahma		
16.2.3.99	Integrated nutrient management in *rabi* maize	Accepted with following suggestions: 1) Reframe the whole experiment as suggested below. **Title:** Nutrient management in *rabi* maize **Treatments** Nitrogen levels: 90, 120, 150 kg N/ha Phosphorus levels: 30, 60 kg P_2O_5/ha Potash levels: 0, 30 kg K_2O/ha. **Design:** RBD (Factorial) **Replications:** Three **Note:** Nitrogen to be applied in four equal splits (basal, knee high, tasseling and milking stage) **Variety:** GAYMH-3 2) Accordingly revise the objectives, observations, *etc.* (**Action:** Polytechnic in Agriculture, SDAU, Khedbrahma)	Approved
	Krishi Vigyan Kenra, SDAU, Khedbrahma		
16.2.3.100	Effect of inorganic fertilizers and bio enhancers on chickpea	Accepted with following suggestions: 1) Revise the whole experiment as per Experiment No. 19 (**Action:** KVK, SDAU, Khedbrahma)	Approved

	Dept. of ACSS, CPCA, SDAU, SK Nagar		
16.2.3.101	Integrated nitrogen management in barley under saline soil	Accepted with following suggestions: 1) Revise the title as : Integrated nutrient management in barley under saline soil. 2) Modify the treatments as : T_1 : 100% RDF through inorganic fertilizers T_2 : 75% RDF through inorganic fertilizers + Azotobacter & PSB (each 10 ml/kg) seed treatment T_3 : 75% RDF through inorganic fertilizers + 25% RDN through FYM T_4 : 75% RDF through inorganic fertilizers + 25% RDN through castor cake T_5 : 75% RDF through inorganic fertilizers + 25% RDN through vermicompost T_6 : 50% RDF through inorganic fertilizers + 50% RDN through FYM T_7 : 50% RDF through inorganic fertilizers + 50% RDN through castor cake T_8 : 50% RDF through inorganic fertilizers +50% RDN through vermicompost T_9 : 50% RDN through FYM + 50% RDN through castor cake T_{10} : 50% RDN through FYM + 50% RDN through vermicompost T_{11}: 50% RDN through castor cake + 50% RDN through vermicompost T_{12}: 50% RDN through FYM + 25% RDN through castor cake + 25% RDN through vermicompost. 3) Delete common application of P_2O_5. 4) Determine S and micronutrient status of soil before and after harvest and content/uptake by plant. (**Action:** Dept. of ACSS, CPCA, SK Nagar)	Approved
	Dept. of Agronomy, CPCA, SDAU, SK Nagar		
16.2.3.102	Evaluation of low cost natural farming in wheat + chickpea cropping system	Accepted with following suggestions: 1) Modify wheat + chickpea intercropping row ratio to 4:2 and take sole crop/s on area basis in rest of the modules. (**Action:** Dept. of Agronomy, CPCA, SDAU, SK Nagar)	Approved

16.2.3.103	Evaluation of low cost natural farming in Pearl millet + green gram cropping system	Accepted.	Approved

GENERAL POINTS

- Dr. V.P. Ramani, Co-chairman & ADR, Anand proposed points of guidelines pertaining to formulation and conduct of research experiments and their reporting in the Agresco meeting. It was requested to circulate these points to all the conveners to discuss the same with faculty members of respective university and fine tuning. It was decided to compile these points and submit to the Director of Research for further process, decisions, and implementation. Dr. V.P. Ramani, ADR, Anand was requested to work as Nodal Officer for the same.
- Title and objectives of LCNF experiments should be uniform in all universities. Contact Dr. R.K. Mathukia for any problems regarding treatments and suggestions in these experiments.

16.3 PLANT PROTECTION

Date : 22nd-23rd June, 2020

SUMMARY

Name of Sub Committee	Recommedations								
	Proposed				Approved				
	Ento		Patho		Ento		Patho		Total
	Farmers	Scientific	Farmers	Scientific	Farmers	Scientific	Farmers	Scientific	
JAU, Junagadh	12	11	8	3	12	9 (10-1#)	7	3	31
SDAU, S.K.Nagar	-	03	-	3	-	03	-	2	05
NAU, Navsari	06	11	3	7	05 (6-1**)	11 (10+1**)	3	6	25
AAU, Anand	13	12	4	-	11	13 (12+1@)	4	-	28
Total	**31**	**36**	**15**	**13**	**28**	**36**	**14**	**11**	**89**

Note : # Merged scientific recommendation with farmers as one, ** Shifted to scientific community, * Extended for one more year

@ Split from farmers recommendation in to Scientific recommendation

COMMITTEE OF RECOMMENDATIONS

Chairman	Dr. R. K. Patel, Vice Chancellor, SDAU
Co-Chairman	1) Dr. K. A. Patel, ADR, NAU, Navsari
Rapporteurs	1) Dr. P. S. Patel, SDAU, SK Nagar, 2) Dr. Lalit Mahatma, NAU, Navsari 3) Dr. D. B. Sisodiya, AAU, Anand, 4) Dr. M. K. Ghelani, JAU, Junagadh
Statistician	1) Dr. A. D. Kalola, Asso. Prof., AAU, Anand

The meeting was began with the welcome address by the Hon.Vice Chancellor of th host Universty Dr. S. R. Chaudhary of NAU. Hon.Vice Chancellor appreciated the efforts of all reputed scientists to smooth conduct of earlier video conference on technical programme and its success gave more confidence in conducting the recommendations by video conference. He requested all the participants to actively involve in the discussions to refine the scientific findings for the benefit of the farmers.

The technical session was chaired by Hon.Vice chancellor of SDAU, Dr.R.K. Patel. In his introductory remark, he emphasised the need of easy and economical technology to combat many of the farmers' problems. Crop protection is always remain as a challenge in successful

crop production and scientists have over come many such issues with very cheap, easy and economical methods,however ,many issues are still cause concern.He requsted all the participating scientists to plan effective and easy to handle technologies which should be ecofriendly and cost effective.He also appreciated the the efforts taken by the host Navsari Agricultural University for effectively conducting the agresco through video conferencing.

This was followed by the presentations of recommendations by JAU, SDAU, NAU and AAU.

16.3.1 RECOMMENDATIONS FOR FARMING COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

AGRICULTURAL ENTOMOLOGY

16.3.1.1 Evaluation of new pheromone based mating disruption technology for shoot and fruit borer in brinjal

The farmers of South Saurashtra Agro-climatic Zone growing brinjal are advised to give three applications of Gir Sawaj Mating Disruption Paste @ 400 g per application per hectare (uniformly distributed in 1000 dots between two branches), first at initiation of pest infestation and successive two application at an interval of 30 days for effective, economical and ecofriendly management of brinjal shoot and fruit borer.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Qty. Of Chemical suspension required/ha	Application schedule
				g.a.i ./ha	Qty. of formulation/ha	Conc. (%)	Dilution in water (10 lit.)		
2020	Brinjal	Shoot and fruit borer	Gir Sawaj Mating Disruption Paste	-	400 g paste per application per hectare	-	-	-	First application at pest infestation, while second and third at 30 days interval after first application.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં રીંગણની પર્યાવરણ અનુકૂળ ખેતી કરતા ખેડૂતોને ડુંખ અને ફળ કોરી ખાનાર ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ગીર સાવજ મેટીંગ ડીસરપ્સન પેસ્ટની, ૪૦૦ ગ્રામ પેસ્ટ પ્રતિ હેકટર (એકસરખા ૧૦૦૦ ટપકાને બે ડાળીની વચ્ચેની જગ્યા પર) ના દરે ત્રણ માવજત આપવી. પ્રથમ માવજત જીવાતનો ઉપદ્રવ જણાય ત્યારે અને પછીની બે માવજત, પ્રથમ માવજતના ૩૦ દિવસના અંતરે આપવાની સલાહ આપવામાં આવે છે.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલ જરૂરીયાત/હે	વાપરવાની પધ્ધતિ
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/હેક્ટર)	ફોર્મ્યુલેશનની માત્રા/હે	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)		
૨૦૨૦	રિંગણ	ડુંખ અને ફળ કોરી ખાનાર ઈયળ	ગીર સાવજ મેટીંગ ડીસરપ્સન પેસ્ટ	-	૪૦૦ ગ્રામ પેસ્ટ/માવજત/હેક્ટર	-	-	-	પ્રથમ માવજત જીવાતનો ઉપદ્રવ જણાય ત્યારે અને બીજી અને ત્રીજી માવજત પ્રથમ માવજતના ૩૦ દિવસે

Suggestions: Approved

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

16.3.1.2 Impact of bio-pesticides and insecticides on foraging bee in mustard

The farmers of South Saurashtra Agro-climatic Zone are advised to apply two sprays of *Beauveria bassiana* 1.15 WP (Min. 1×10^8 cfu/g) 0.0069 % (60 g/10 l of water), first at initiation of aphid and second at 15 days after first spray. *Beauveria bassiana* 1.15 WP found safer for foraging activities of bees in mustard.

Summary of Recommendation for Farmers

Year	Crop	Target	Pesticides with formulation	Dosage				Total Qty. of Chemical suspension required/ha	Application Schedule	Waiting period/ PHI (days)
				g.a.i./ha	Qty. of formulation/ha	Conc. (%)	Dilution in water (10 lit.)			
2020	Mustard	Foraging bees	*B. bassiana* 1.15 WP	35	3.0 kg	0.0069 (Min. $1x10^8$cfu/g)	60 g	500 lit.	First spray at initiation of aphid and second spray at 15 days after first spray	-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં રાઈની ખેતી કરતા ખેડૂતોને બ્યુવેરિયા બાસીયાના ૧,૧૫ વે.પા. (ન્યુનતમ ૧ x ૧૦^૮ સીએફયુ/ગ્રામ) ૦.૦૦૬૯% (૬૦ ગ્રામ ૧0 લી. પાણી)નાં બે છંટકાવ, પ્રથમ મોલો દેખાય ત્યારે અને બીજો પ્રથમ છંટકાવના ૧૫ દિવસે અંતરે કરવાની સલાહ આપવામાં આવે છે. બ્યુવેરિયા બાસીયાના ૧.૧૫ વે.પા મધમાખીની મહતમ અવરજવર માટે સલામત છે.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	ટાર્ગેટ	જંતુનાશક	પ્રમાણ	જંતુનાશક	વાપરવાની	વેઈટીંગ

			દવા અને તેનું ફોર્મ્યુલેશન	સક્રિયત ત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોમ્યુલેશ નનીમાત્રા પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)	દવા અને પાણીનાં દ્રાવણની કુલજરૂરી યાત પ્રતિ હેક્ટર	પધ્ધતિ	પીરીયડ /પી.એ ચ.આઈ (દિવસ)
૨૦૨૦	રાઈ	મધમાખી	બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા .	૩૫	૩.૦ કી.ગ્રા.	૦.૦૦૬૯ (ન્યુનતમ ૧x ૧૦^૮ સીએફ્યું/ ગ્રામ)	૬૦ ગ્રા.	૫૦૦ લીટર	પ્રથમ છંટકાવ મોલો દેખાયે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસના અંતરે	--

Suggestions: Approved

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

16.3.1.3 Study on foraging activities of honeybees on seed spices

The farmers of South Saurashtra Agro-climatic Zone are advised to avoid the insecticidal spray during visiting time of honey bees from 12.00 to 16.00 hours on coriander, fennel and dill seed crops. Among the different honey bee species, *Apis florea* was the dominant forager.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ખેડૂતોને ધાણા, વરિયાળી અને સુવાદાણાના પાકમાં બપોરના ૧૨ થી ૪ કલાક દરમ્યાન મધમાખીની અવરજવર જોવા મળતી હોય, આ સમયગાળા દરમ્યાન જંતુનાશકોનો છંટકાવ ટાળવાની સલાહ આપવામાં આવે છે. મધમાખીની જુદી જુદી જાતોમાંથી એપિસ ફ્લોરીયા પ્રબળ પ્રભુત્વ ધરાવે છે.

Suggestions: Approved

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

16.3.1.4 Synergism of different plant oils with different insecticides against pod borer, *Helicoverpa armigera* infesting chickpea

The farmers of South Saurashtra Agro-climatic Zone are advised to apply two sprays of chlorantraniliprole 18.5 SC 0.006 % + neem oil 0.5 % (3.25 + 50 ml /10 l of water) along with sticker (3 ml/10 l water), first spray when pest crosses the economic threshold level (0.75 larvae/plant before flowering and 0.5 larvae /plant after flowering) and second at 20 days after first spray for effective management of *Helicoverpa armigera* in chickpea. Pre-harvest interval (PHI) of 11 days should be kept.

Summary of Recommendation for Farmers

Y	Cro	Pest	Pesticid	Dosage	Total	Application	Wai

ear	p		es with formulation	a.i./ha	Quantity of formulation/ha	Con. (%)	Dilution in water (10 lit.)	Quantity of Chemical suspension required/ha	schedule	ting period/PHI (days)
2020	Chickpea	*Helicoverpa armigera*	Chlorantraniliprole 18.5 SC + Neem oil	30 + 2500	162.5 ml + 2.5 lit	0.006 % + 0.5 %	3.25 ml + 50 ml	500 lit.	First spray when pest crosses the economic threshold level (0.75 larvae/plant before flowering and 0.5 larvae /plant after flowering) and second spray at 20 days interval after first spray	11

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચણાની ખેતી કરતા ખેડૂતોને લીલી ઈયળના અસરકારક નિયંત્રણ માટે ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી ૦.૦૦૬% + લીંબોળીનું તેલ ૦.૫% (૩.૨૫ + ૫૦ મીલી./10 લી. પાણી) સ્ટીકર સાથે (૩ મીલી/૧૦ લી. પાણી), પ્રથમ છંટકાવ જીવાતની આર્થિક ક્ષમ્યમાત્રા (ફૂલો પહેલાં ૦.૭૫ ઈયળ/છોડ અને ફૂલો પછી ૦.૫ ઈયળ/છોડ) પાર કરે ત્યારે અને બીજો, પ્રથમ છંટકાવના ૨૦ દિવસે કરવાની સલાહ આપવામાં આવે છે. ઉતાર/ કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૧૧ દિવસ રાખવો.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલ જરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગપીરીયડ/પી.એચ.આઈ (દિવસ)
				સક્રિયત ત્વ પ્રતિ હેક્ટર (ગ્રામ/હેક્ટર)	ફોમ્યુલેશનની માત્રા પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૨૦	ચણા	લીલી ઈયળ	ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી + લીંબોળીનું તેલ	૩૦ + ૨૫૦૦	૧૬૨.૫ મિ.લિ. + ૨.૫ લિ..	૦.૦૦૬% + ૦.૫%	૩.૨૫ મિ.લિ. + ૫૦ મિ.લિ.	૫૦૦ લીટર	પ્રથમ છંટકાવ જીવાતની આર્થિક ક્ષમ્યમાત્રા (ફૂલો પહેલાં ૦.૭૫ ઈયળ/છોડ અને ફૂલો પછી ૦.૫ ઈયળ/છોડ) પાર કરે ત્યારે અને બીજો, પ્રથમ છંટકાવના ૨૦ દિવસે	૧૧

Suggestions: Approved

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

16.3.1 Standardization of number of pheromone trap for fall army worm S*podoptera frugiperda*(J. E.

.5 **Smith) in maize**

The farmers of South Saurashtra Agro-climatic Zone are advised to install 50 sex pheromone traps per hectare (20 sex pheromone traps per acre) at 10 days after germination and replace lure at 40 days for effective management of fall army worm in maize.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મકાઈની ખેતી કરતા ખેડૂતોને ચાર ટપકાવાળી ઈયળ (ફોલ આર્મીવોર્મ) ના અસરકારક નિયંત્રણ માટે ૫૦ ફિરોમોન ટ્રેપ પ્રતિ હેકટરે (૨૦ ફિરોમોન ટ્રેપ પ્રતિ એકર) અંકુરણના ૧૦ દિવસ પછી લગાવવા તથા લ્યુર ૪૦ દિવસે બદલવાની સલાહ આપવામાં આવે છે.

Suggestions: Approved

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

16.3.1.6 **Bio-efficacy of different biopesticides against fall army worm S*podoptera frugiperda* (J. E. Smith) infesting maize**

The farmers of South Saurashtra Agro-climatic Zone growing maize are advised to spray *Beauveria bassiana*1.15 WP (1 x 10^8 cfu/g) 0.009 % (80 g/10 l of water) OR *Nomuraea rileyi* 1.15 WP (1 x 10^8 cfu/g) 0.009 % (80 g/10 l of water) OR *Beauveria bassiana* 1.15 WP (1 x 10^8 cfu/g) 0.007% (60 g/10 l of water) + *Sf*NPV 450 LE (10 ml/10 l of water), first spray at initiation of pest infestation and subsequent two sprays at 10 days interval for the effective and economical management of fall armyworm.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Quantity of Chemical suspension required/ha	Application schedule	Waiting period/PHI (days)
				a.i./ha	Quantity of formulation/ha	Con. (%)	Dilution in water (10 lit.)			
2020	Maize	Fall armyworm	*Beauveria bassiana* 1.15 WP (1 x 10^8cfu/g)	46	4.0 Kg.	0.009 %	80 g	500 lit.	First spray at initiation of pest infestation, subsequent second and third at 10 day interval	-
			Nomuraea rileyi 1.15 WP (1 x 10^8cfu/g)	46	4.0 Kg.	0.009 %	80 g			-
			Beauveria bassiana 1.15 WP (1 x 10^8cfu/g) + *Sf*NPV	35 + --	3.0 Kg. + 0.5 lit.	0.007 + 450	60 g + 10 ml			-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મકાઈની ખેતી કરતા ખેડૂતોને ચાર ટપકવાળી ઈયળ (ફોલ આર્મીવોર્મ) ના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે બ્યુવેરિયા બાસીયાના ૧.૧૫ વે.પા. (ન્યુનતમ ૧ x ૧૦૮ સીએફયુ/ગ્રામ) ૦.૦૦૯% (૮૦ ગ્રામ/૧0 લી. પાણી) અથવા નોમુરિયા રેલી ૧.૧૫ વે.પા. (ન્યુનતમ ૧ x ૧૦૮ સીએફયુ/ગ્રામ) ૦.૦૦૯% (૮૦ ગ્રામ/૧0 લી. પાણી) અથવા બ્યુવેરિયા બાસીયાના ૧.૧૫ વે.પા.(ન્યુનતમ ૧ x ૧૦૮ સીએફયુ/ગ્રામ) ૦.૦૦૭% (૬૦ ગ્રામ/૧0 લી.પાણી) + એસએફએનપીવી ૪૫૦ એલઈ (૧0 મીલી/૧૦ લી.પાણી), પ્રથમ છંટકાવ જીવાત દેખાય ત્યારે અને ત્યારબાદ બે છંટકાવ ૧0 દિવસના અંતરે કરવાની સલાહ આપવામાં આવે છે.

ખેડૂતોપયોગી ભલામણ સારાંશ

વ	પાક	જીવાત	જંતુનાશક દવા અને	પ્રમાણ	જંતુનાશક	વાપરવા	વેઈટીંગ

ર્ષ			તેનું ફોર્મ્યુલેશન	સક્રિયત ત્વ પ્રતિ હેક્ટર (ગ્રામ/હે ક્ટર)	ફોર્મ્યુલેશ નની માત્રા પ્રતિ હેક્ટર	સાંદ્રતા)%(	પાણી સાથે ડાયલ્યુ શન (૧૦ લીટર)	દવા અને પાણીનાં દ્રાવણની કુલજરૂરી યાત પ્રતિ હેક્ટર	ની પધ્ધતિ	પીરીયડ/ પી.એચ. આઈ (દિવસ)
૨૦ ૨૦	મકા ઇ	ચાર ટપકા વાળી ઈયળ (ફોલ આર્મી વોર્મ)	બ્યુવેરીયા બાસીયાના ૧.૧૫ %વે.પા . (ન્યુનતમ ૧ x ૧૦^૮સી.એફ.યુ/ .ગ્રા)	૪૬	૪.૦ કિલો	૦.૦૦૯	૮૦ ગ્રામ	૫૦૦ લીટર	પ્રથમ છંટકાવ જીવાત દેખાય ત્યારે અને ત્યારબાદ બીજો અને ત્રીજો છંટકાવ, પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે	--
			ન્યુમેરીયા રાયલી ૧.૧૫ % વે.પા . (ન્યુનતમ ૧ x ૧૦^૮સી.એફ.યુ/ .ગ્રા)	૪૬	૪.૦ કિલો	૦.૦૦૯	૮૦ ગ્રામ			--
			બ્યુવેરીયા બાસીયાના ૧.૧૫ %વે.પા . (ન્યુનતમ ૧ x ૧૦^૮સી.એફ.યુ/ .ગ્રા) + એસ.એફ.એન.પી.વી .	૩૫ + --	૩.૦ કિલો + ૦.૫ લીટર	૦.૦૦૭ + ૪૫૦	૬૦ ગ્રામ + ૧૦ મિ.લિ			--

Suggestions: Approved

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

16.3.1.7 **Bio-efficacy of different insecticides against fall army worm, S*podoptera frugiperda* (J. E. Smith) infesting maize**

The farmers of South Saurashtra Agro-climatic Zone growing maize are advised to spray spinetoram 11.7 EC 0.012% (10 ml/10 l of water) OR emamectin benzoate 5 SG 0.0025% (5 g/10 l of water) OR thiodicarb 75 WP 0.075 % (10 g/10 l of water), first at initiation of pest infestation and second after 15 days of first spray for effective and economical management of fall armyworm.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage: a.i./ha	Dosage: Quantity of formulation/ha	Dosage: Con. (%)	Dosage: Dilution in water (10 lit.)	Total Quantity of Chemical suspension required/ ha	Application schedule	Waiting period/PHI (days)
2020	Maize	Fall armyworm	Spinetoram 11.7 EC	59.00	0.5 lit.	0.012	10 ml	500 lit.	First spray at initiation of pest infestation and second at 15 day interval	-
			Emamectin benzoate 5 SG	13.00	0.250 lit.	0.0025	5 g			-
			Thiodicarb 75 WP	375	0.5 lit.	0.075	10 g			-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મકાઈની ખેતી કરતા ખેડૂતોને ચાર ટપકાવાળી ઈયળ (ફોલઆર્મીવોર્મ) ના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે સ્પીનેટોરામ ૧૧.૭ ઈસી ૦.૦૧૨% (૧૦ મીલી./૧૦ લી. પાણી) અથવા એમામેક્ટીન બેન્ઝોએટ ૫ એસજી ૦.૦૦૨૫% (૫ ગ્રામ/૧૦ લી. પાણી) અથવા થાયોડીકાર્બ ૭૫ વે.પા. ૦.૦૭૫% (૧૦ ગ્રામ/૧૦ લી. પાણી), પ્રથમ છંટકાવ જીવાત દેખાય

ત્યારે અને ત્યારબાદ બીજો, પ્રથમ છંટકાવના ૧૫ દિવસે કરવાની સલાહ આપવામાં આવે છે.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલજરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી.એચ. આઈ (દિવસ)
				સક્રિયતત્વ પ્રતિ હેક્ટર (ગ્રામ/હેક્ટર)	ફોર્મ્યુલેશનનીમાત્રા પ્રતિહેક્ટર	સાંદ્રતા)%(	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૨૦	મકાઇ	ચાર ટપકા વાળી ઈયળ (ફોલ આર્મી વોર્મ)	સ્પીનેટોરામ ૧૧.૭ ઇસી	૫૯.૦૦	૦.૫ લીટર	૦.૦૧૨	૧૦મિ.લિ	૫૦૦ લીટર	પ્રથમ છંટકાવ જીવાત દેખાય ત્યારે અને ત્યારબાદ બીજો છંટકાવ, પ્રથમ છંટકાવના ૧૫ દિવસના અંતરે	--
			એમામેક્ટીન બેન્ઝોએટ ૫ એસજી	૧૩.૦૦	૦.૨૫૦ લીટર	૦.૦૦૨૫	૫ ગ્રા.			--
			થાયોડીકાર્બ ૭૫ વે.પા.	૩૭૫	૦.૫ કિલો	૦.૦૭૫	૧૦ ગ્રા.			--

Suggestions: Approved

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

16.3.1.8 Area wide integrated management of white grub in groundnut

The farmers of South Saurashtra Agro-climatic Zone growing groundnut are advised to spray chlorpyrifos 20 EC 0.04% (20 ml/10 l water) on surrounding host trees at onset of monsoon, seed treatment of chlorpyrifos 20 EC @ 25 ml/kg seed, soil application of *Metarhizium anisopliae* OR *Beauveria bassiana* 1.15 WP @ 5 kg/ha (Min. 1 x 10^8 cfu/g) + castor cake (300 kg/ha) before sowing and drenching of *M. anisopliae* or *B. bassiana* @ 5 kg (1 x 10^8 cfu/g) dissolved in 1000 l of water/ha in root zone of plant after 30 days of germination for the effective and economical management of white grub.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Quantity of Chemical suspension required/ha	Application schedule	Waiting period/PHI (days)
				a.i./ha	Quantity of formulation /ha	Con. (%)	Dilution in water (10 lit.)			
2020	Groundnu	White grub	Chlorpyrifos 20 % EC (spray) + Chlorpyrifos 20 % EC (Seed treatment) + *Metarhizium anisopliae* 1.15 WP (Soil application and drenching)	200.0 + 600.0 + 57.50 + 57.50	1.0 lit.+ 3.0 lit + 5.0 kg + 5.0 kg	0.04 + -- + 0.006+ 0.006	20 ml + NA + NA+ 50.0 g	1000 lit (Drenching)	Spraying on surrounding host trees at onset of monsoon, Seed treatment and soil application before sowing and drenching	-

	t		Chlorpyrifos 20 % EC (spray) + Chlorpyrifos 20 % EC (Seed treatment) + *Beauveria bassiana* 1.15 WP (Soil application and drenching)	200.0 + 600.0 + 57.50 + 57.50	1.0 lit.+ 3.0 lit + 5.0 kg + 5.0 kg	0.04 + -- + 0.006+ 0.006	20 ml + NA + NA+ 50.0 g	1000 lit (Drenching)	after 30 days of germination	-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મગફળીની ખેતી કરતા ખેડૂતોને મુંડા (ધૈણ)ના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ચોમાસુ બેસતા, ખેતરની આસપાસના યજમાન ઝાડ પર ક્લોરપાયરીફોસ ૨૦ ઈસી ૦.૦૪% (૨૦ મીલી/૧૦ લીટર પાણી) નો છંટકાવ કરવો, બીજને ક્લોરપાયરીફોસ ૨૦ ઈસી ૨૫ મીલી /કિ.ગ્રા. મુજબ પટ આપવો, વાવેતર પહેલા જમીનમાં ૫ કિ.ગ્રા. મેટારીઝીયમ એનીસોપ્લી અથવા બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (ન્યુનતમ ૧ x ૧૦૮ સીએફ્યું/ગ્રામ) ૩૦૦ કિ.ગ્રા. એરંડીના ખોળ સાથે ભેળવી એક હેક્ટરમાં આપવું અને ઉગાવાના ૩૦ દિવસ બાદ મેટારીઝીયમ એનીસોપ્લી અથવા બ્યુવેરીયા બાસીયાના ૫ કિ.ગ્રા (ન્યુનતમ ૧ x ૧૦૮ સીએફ્યું/ગ્રામ) ૧૦૦૦ લી. પાણીમાં ઓગાળી પ્રતિ હેક્ટર છોડના મૂળ વિસ્તારમાં આપવાની સલાહ છે.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલજરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી.એચ.આઈ (દિવસ)
				સક્રિયતત્વ પ્રતિ હેક્ટર (ગ્રામ/હેક્ટર)	ફોર્મ્યુલેશન નીમાત્રા પ્રતિહેક્ટર	સાંદ્રતા)%(	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૨૦	મગફળી	મુંડા (ધૈણ)	ક્લોરપાયરીફોસ ૨૦ ઈસી (છંટકાવ) + ક્લોરપાયરીફોસ ૨૦ ઈસી (બીજ માવજત) + મેટારીઝીયમ એનીસોપ્લી ૧.૧૫ વે.પા. (જમીન માવજત અને ડ્રેન્ચિંગ)	૨૦૦.૦ + ૬૦૦.૦ + ૫૭.૫૦ + ૫૭.૫૦	૧.૦ લીટર + ૩.૦ લીટર + ૫.૦ કિ.ગ્રા + . ૫.૦ કિ.ગ્રા.	૦.૦૪ + + -- ૦.૦૦૬ + ૦.૦૦૬	૨૦ મિલી+ . લાગુ પડતું નથી + લાગુ પડતું નથી + ૫૦.૦ ગ્રામ	૧૦૦૦ લીટર (ડ્રેન્ચિંગ)	ચોમાસુ બેસતા ખેતરની આસપાસના □□□□□ ઝાડ પર છંટકાવ, બીજ માવજત અને વાવેતર પહેલા અને ઉગાવાના ૩૦ દિવસ બાદ જમીનમાં ડ્રેન્ચિંગ દ્વારા	--
			ક્લોરપાયરીફોસ ૨૦ ઈસી (છંટકાવ) + ક્લોરપાયરીફોસ ૨૦ ઈસી (બીજ માવજત) + બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (જમીન માવજત અને ડ્રેન્ચિંગ)	૨૦૦.૦ + ૬૦૦.૦ + ૫૭.૫૦ + ૫૭.૫૦	૧.૦ લીટર + ૩.૦ લીટર + ૫.૦ કિ.ગ્રા + . ૫.૦ કિ.ગ્રા.	૦.૦૪ + + -- ૦.૦૦૬ + ૦.૦૦૬	૨૦ મિલી+ . લાગુ પડતું નથી + લાગુ પડતું નથી + ૫૦.૦ ગ્રામ	૧૦૦૦ લીટર (ડ્રેન્ચિંગ)		--

Suggestions: Approved

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

16.3.1.9	**Bio-efficacy of new insecticidal molecules against sucking pest of summer groundnut**

The farmers of South Saurashtra Agro-climatic Zone growing summer groundnut are advised to apply two sprays of imidacloprid 17.8 SL 0.005% (2.8 ml/10 l of water) at 10 days interval starting from pest infestation for effective and economical management of thrips. Pre-harvest interval (PHI) of 40 days should be kept.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Quantity of Chemical suspension required/ha	Application schedule	Waiting Period/PHI (days)	Remark(s)
				g.a.i./ha	Quantity of formulation/ha	Concentration (%)	Dilution in water (10 lit)				
1	2	3	4	5	6	7	8	9	10	11	12
2020	Groundnut	Thrips	Imidacloprid 17.8 SL	24.9	0.140 lit.	0.005	2.80 ml	500 lit.	First spray at initiation of pests and second at 10 days after first spray	40	-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ મગફળી વાવતા ખેડૂતોને થ્રીપ્સનાં અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ઈમીડાક્લોપ્રિડ ૧૭.૮% એસ.એલ. ૦.૦૦૫% (૨.૮ મીલી/૧૦ લી. પાણી) દવાના બે છંટકાવ જીવાતનો ઉપદ્રવ શરૂ થયાના ૧૦ દિવસના અંતરે કરવાની સલાહ આપવામાં આવે છે. કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૪૦ દિવસ રાખવો.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ એ.પી/ આઈ.ચ . (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ/ હે	ફોર્મ્યુલેશન ની માત્રા પ્રતિ હેક્ટર	સાંદ્રતા (%)	**પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)**				
1	2	3	4	5	6	7	8	9	10	11	12
૨૦૨૦	મગફળી	થ્રિપ્સ	ઇમીડાક્લોપ્રીડ ૧૭.૮ એસ. એલ.	૨૪.૯	૦.૧૪૦ લી.	૦.૦૦૫	૨.૮૦ મિ.લિ	૫૦૦ લી.	પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ શરુ થયે કરવો ત્યારબાદ બીજો છંટકાવ ૧૦ દિવસ બાદ કરવો.	૪૦	-

Suggestions: Approved

(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

16.3.1.10	**Bio-efficacy of biopesticides against sucking pest infesting groundnut**

The farmers of South Saurashtra Agro-climatic Zone growing groundnut in *kharif* season are advised to apply two sprays of imidacloprid 17.8 SL 0.005% (3.0 ml/10 l of water) at 10

days interval starting from pest infestation for effective and economical management of thrips. Pre-harvest interval (PHI) of 40 days should be kept.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total* Quantity of Chemical suspension required/ha	Application schedule	Waiting Period/PHI (days)	Remark(s)
				g.a.i./ha	Quantity of formulation/ha	Concentration (%)	Dilution in water (10 lit)				
1	2	3	4	5	6	7	8	9	10	11	12
2020	Groundnut	Thrips	Imidacloprid 17.8 SL	26.7	0.150 lit.	0.005	3 ml	500 lit.	Two sprays at 10 days interval starting from pest infestation	40	Registered under CIB approved list

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું ઋતુમાં મગફળી વાવતા ખેડૂતોને થ્રિપ્સનાં અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ઈમીડાક્લોપ્રિડ ૧૭.૮% એસએલ ૦.૦૦૫% (૩ મીલી/૧૦ લી.પાણી) જંતુનાશક દવાના બે છંટકાવ જીવાતનો ઉપદ્રવ શરુ થયાના દસ દિવસના અંતરે કરવાની ભલામણ કરવામાં આવે છે. કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૪૦ દિવસ રાખવો.

ખેડૂતોપયોગી ભલામણ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી .આઈ. એચ. (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ/હે	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેક્ટર	સાંદ્રતા (%)	**પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)**				
1	2	3	4	5	6	7	8	9	10	11	12
૨૦૨૦	મગફળી	થ્રિપ્સ	ઇમીડક્લોપ્રીડ ૧૭.૮ એસ.એલ.	૨૬.૭	૦.૧૫૦ લી.	૦.૦૦૫	૩ મિ.લિ	૫૦૦ લી.	દસ દિવસના અંતરે બે છંટકાવ, પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ શરુ થયે કરવો.	૪૦	-

Suggestions: Approved

(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

16.3.1.11 Management of white grub in groundnut

The farmers of South Saurashtra Agro-climatic Zone growing groundnut in *kharif* season are advised to apply seed treatment with imidacloprid 600 FS @ 4 ml OR chlorpyriphos 20 EC @ 25 ml per kg of seeds for effective and economical management of white grub.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage				Total* Quantity of Chemical suspen	Application schedule	Waiting Period/PHI (day	Remark(s)
				g.a.i./ha	Quantity of formulation/ha	Concentration (%)	Dilution in water (10				

							lit)	sion requir ed/ha		s)	
1	2	3	4	5	6	7	8	9	10	11	12
2020	Groundnut	Root feeders (Whitegrub)	Chlorpyriphos 20 EC	--	3.000 lit.(ST)	0.5	25 ml/kg seed	--	Seed treatment before sowing	-	-
			Imidacloprid 600 FS	--	0.480 lit.(ST)	0.192	4 ml/kg seed	--		-	

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું ઋતુમાં મગફળી વાવતા ખેડૂતોને ઘૈણના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ઈમીડાક્લોપ્રિડ ૬૦૦ એફ.એસ. ૪ મીલી અથવા ક્લોરપાયરીફોસ ૨૦ ઈસી ૨૫ મીલી પ્રતિ ૧ કિલો બીજ પ્રમાણે બીજ માવજત આપવાની સલાહ આપવામાં આવે છે.

ખેડૂતોપયોગી ભલામણનુ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેકટર	વાપરવા ની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી આ.એચ. .ઈ (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ/હે	ફોર્મ્યુલેશન ની માત્રા પ્રતિ હેકટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)				
1	2	3	4	5	6	7	8	9	10	11	12
૨૦૨૦	મગફળી	મુળ ખાનાર જીવાત (ઘૈણ)	ક્લોરપાયરીફોસ ૨૦ ઈ.સી.	--	૩.૦૦૦ □□. (ST)	૦.૫	૨૫ મીલી/કિ. ગ્રા. બિયારણ	--	વાવેતર પહેલા બીજ મવજત	-	-
			ઈમીડક્લોપ્રિડ ૬૦૦ એફ.એસ.	--	૦.૪૮૦ □□. (ST)	૦.૧૯૨	૪ મીલી/કિ. ગ્રા. બિયારણ	--		-	

Suggestions: Approved

(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

16.3.1.12 Testing of IPM modules with farmers practice against pest complex of pearl millet

The farmers of North Saurashtra Agro-climatic Zone growing *kharif* pearl millet are advised to apply seed treatment of imidacloprid 600 FS @ 8.75 ml/kg at the time of sowing, removal of shoot fly dead hearts, installation of fish meal traps @ 10/ha at 7 days after germination (fish meal to be replaced once in a week) and spraying of dimethoate 30 EC 0.03 % (10 ml/10 l of water) at 35 days after germination for effective and economical management of shoot fly.

Summary for Farmers Recommendation

Year	Crop	Pest	Pesticides with formulation	Dosage				Total qty. of chemical suspension required /ha	Application schedule	Waiting period / PHI (days)	Remarks
				g.a.i./ha	Qty. of formulation/ha	Concentration (%)	Dilution in water (10 lit.)				
1	2	3	4	5	6	7	8	9	10	11	12

2020	Pearl millet (bajra)	Shoot fly	Imidacloprid 600 FS	16.80	8.75 ml/kg seed	--	--	35 ml	Seed treatment at the time of sowing	Nil	Reg. In CIB
			Dimethoate 30 EC	150.00	0.5 L/ha	0.03	10 ml	500 ml	Single spray at 35 days after germination	Nil	Reg. In CIB

ઉતર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું બાજરી ઉગાડતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, બીજને વાવેતર સમયે ઈમિડાક્લોપ્રીડ ૬૦૦ એફએસ ૮.૭૫ મીલી પ્રતિ કિલો બીજ માવજત આપવી, સાંઠાની માખી દ્વારા નુકશાન પામેલ ડુંખો કાઢી લેવી, હેકટરે ૧૦ પ્રમાણે અંકુરણના ૭ દિવસ પછી મચ્છી ખોરાકનાં પીંજરા મુકવા (મચ્છી ખોરાક દર અઠવાડીયે બદલવો) અને પાક ઉગ્યાના ૩૫ દિવસે ડાઈમિથોએટ ૩૦ ઈસી ૦.૦૩% (૧૦ મીલી/૧૦ લી. પાણી) કરવાથી છંટકાવ સાંઠાની માખીનુ અસરકારક અને અર્થક્ષમ નિયંત્રણ કરી શકાય છે.

ખેડુત ઉપયોગી ભલામણનું સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનું ફોર્મુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણી ના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેકટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ .પી/ .એચ .આઈ (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ/ હે	ફોર્મ્યુલેશન ની માત્રા પ્રતિ હેકટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)				
1	2	3	4	5	6	7	8	9	10	11	12
૨૦ ૨૦	બા જરી	સાંઠાની માખી	ઈમીડાકલો પ્રીડ ૬૦૦ એફ. એસ.	૧૬.૮ ૦	૮.૭૫ મી.લી./ કિલો બીજ	--	--	૩૫ મી.લી.	વાવેતર સમયે બીજ માવજત	લાગુ પડતુ નથી.	સી. આઈ . બી માં નોંધા યેલ છે.
			ડાઈમેથો એટ ૩૦ ઈ.સી.	૧૫૦ .૦૦	૦.૫ લી / હે.	૦.૦૩	૧૦ મિલી	૫૦૦ મી.લી.	એક છંટકાવ પાક ઉગ્યાના ૩૫ દિવસે	લાગુ પડતુ નથી.	

Suggestions: Approved

(Action: Research Scientist (Pearl millet), Millet Research Station, JAU, Junagadh)

PLANT PATHOLOGY

16.3.1.13 **Biological control of root rot of coriander**

The farmers of South Saurashtra Agro-climatic Zone growing coriander are advised to apply talc based *Trichoderma harzianum* 1% WP (2 x 10^7 cfu/g) @ 6.0 kg mixed in 500 kg of FYM per hectare at the time of sowing in furrows for effective and economical management of root rot.

Summary of Recommendation for Farmers

Year	Crop	Disease	Pesticides/ Biopesticides formulation	Dosage				Quantity of water/soil amendments require/ ha	Application schedule	Waiting period/PHI (Days)	Remarks
				a.i. (g/ha)	Quantity of formulation/ha	Conc. (%)	Quantity of formulation in 10 l of water (g or ml)				
2020	Coriander	Root rot	*Trichoderma harzianum* 1.0 % WP	--	6.0 kg/ha	2 x 10^7 cfu/g	--	500 kg FYM	Soil application in open furrow at the time of sowing	Nil	--

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ધાણાની ખેતી કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે, મૂળના કોહવારા રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ટાલ્ક આધારીત ટ્રાઈકોડર્મા હારજીયાનમ ૧% વે.પા. (૨ x ૧૦૭ સીએફયુ/ગ્રામ) ૬.૦ કિ.ગ્રા.ને ૫૦૦ કિ.ગ્રા. છાણીયા ખાતરમાં ભેળવી વાવેતર સમયે ચાસમાં આપવુ.

ખેડૂતોપયોગી ભલામણનુ સારાંશ

વર્ષ	પાક	રોગ	જંતુઘ્ન દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ				પાણી ની કુલ જરૂરીયાત જમીન / સુધારકો ની જરુરિયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધત્તિ	વેઈટીંગ પીરીયડ / પીએચ આઈ (દિવસ)	રીમાર્કસ
				સક્રિય તત્વ ગ્રામ પ્રતિ હેક્ટર	ફોર્મ્યુલેશન ની માત્રા પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન ૧૦) લીટર પાણીમાં (				
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧	૧૨
૨૦૨૦	ધાણા	મુળનો કોહવારો	ટ્રાઈકોડર્મા હાર્જીયાનમ ૧% વે.પા.	--	૬.૦ કિલો/હેક્ટર	૨ x ૧૦૭ સીએફયુ ગ્રામ/	--	૫૦૦ કિ.ગ્રા. છાણીયુ ખાતર	વાવેતર સમયે ખૂલ્લા ચાસમા આપવુ.	--	--

Suggestions: Approved

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

16.3.1.14 **Impact of Rhizobium isolates on groundnut under field condition**

The farmers of South Saurashtra Agro-climatic Zone growing groundnut during *kharif* season are advised to give seed treatment of *Rhizobium leguminosarum* isolate-1 (10^7cfu/ml) @ 10 ml/kg seeds along with soil application of recommended dose (RD) of P_2O_5 (25 kg/ha) & K_2O (50 kg/ha) and 75% RD of N (9.4 kg/ha) at the time of sowing for obtaining higher pod yield and net return.

	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ખરીફ મગફળીનું વાવેતર કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવેતર સમયે રાઈઝોબીયમ લેગ્યુમીનોસારમ આઈસોલેટ-૧ (૧૦^{૭} સીએફ્યુ/મીલી) ૧૦ મીલી/કિ.ગ્રા. બીજ માવજત સાથે ભલામણ મુજબનો ફોસ્ફરસ (૨૫ કિ.ગ્રા./હે) અને પોટાશ (૫૦ કિ.ગ્રા./હે) અને ભલામણના ૭૫ ટકા નાઈટ્રોજન (૯.૪ કિ.ગ્રા./હે) જમીનમાં આપવો.
	Suggestions: Approved
	(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
16.3.1.15	**Impact of Azotobacter isolates on cotton under field condition**
	The farmers of South Saurashtra Agro-climatic Zone growing *Bt* cotton are advised to give seed treatment of *Azotobacter chroococcum* isolate-1 (10^7cfu/ml) @ 10 ml/kg seeds along with soil application of recommended dose (RD) of P_2O_5 (50 kg/ha) and K_2O (150 kg/ha) at the time of sowing in furrow and 75% RD of N (180 kg/ha) [in equal four splits of 45 kg first at basal and remaining at 30, 60 and 90 days after sowing] for obtaining higher seed cotton yield and net return.
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ખરીફ બીટી કપાસની ખેતી કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવેતર સમયે એઝેટોબેક્ટર ક્રૂકોકમ આઈસોલેટ-૧ (૧૦^{૭} સીએફ્યું/ મીલી) ૧૦ મીલી/કિ.ગ્રા. બીજ માવજત સાથે ભલામણ મુજબનો ફોસ્ફરસ (૫૦ કિ.ગ્રા./હે) અને પોટાશ (૧૫૦ કિ.ગ્રા./હે) વાવેતર સમયે ચાસમા અને ભલામણના ૭૫ ટકા નાઈટ્રોજન (૧૮૦ કિ.ગ્રા./હે) [૪૫ કિ. ગ્રા. ના ચાર સરખે હપ્તે, પ્રથમ વાવેતર સમયે અને બાકીના વાવેતરના ૩૦, ૬૦ અને ૯૦ દિવસે] જમીનમાં આપવા.
	Suggestions: Approved
	(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
16.3.1.16	**Impact of phosphate solubilizing microorganism on cotton under field condition**
	The farmers of South Saurashtra Agro-climatic Zone growing Bt cotton are advised to give seed treatment of *Bacillus subtilis* JAU isolate-1 (10^7cfu/ml) @ 10 ml/kg seeds along with soil application of recommended dose (RD) of N (240 kg/ha) [in equal four splits of 60 kg first at basal and remaining at 30, 60 and 90 days after sowing] and K_2O (150 kg/ha) and 75% RD of P_2O_5 (37.5 kg/ha) at the time of sowing for obtaining higher seed cotton yield and net return**.**
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ખરીફ બીટી કપાસની ખેતી કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવેતર સમયે બેસીલસ સબટીલીસ જેએયુ આઈસોલેટ-૧ (૧૦^{૭} સીએફ્યું/મીલી) ૧૦ મીલી/કિ.ગ્રા. બીજ માવજત સાથે ભલામણ મુજબનો નાઈટ્રોજન (૨૪૦ કિ.ગ્રા./હે) [૬૦ કિ. ગ્રા. ના ચાર સરખે હપ્તે, પ્રથમ વાવેતર સમયે અને બાકીના વાવેતરના ૩૦, ૬૦ અને ૯૦ દિવસે] અને પોટાશ (૧૫૦ કિ.ગ્રા./હે) અને ભલામણના ૭૫ ટકા ફોસ્ફરસ (૩૭.૫ કિ.ગ્રા./હે) જમીનમાં આપવા.
	Suggestions: Approved
	(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
16.3.1.17	**Impact of phosphate solubilizing microorganism on groundnut under field condition**
	The farmers of South Saurashtra Agro-climatic Zone growing groundnut during *kharif* season are advised to give seed treatment of *Bacillus subtilis* JAU isolate-1 (10^7cfu/ml) @ 10 ml/kg seeds along with soil application of recommended dose (RD) of N (12.50 kg/ha) and K_2O (50.00 kg/ha) and 75% RD of P_2O_5 (18.75 kg/ha) at the time of sowing for obtaining higher pod yield and net return.
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મગફળીની ખેતી કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવેતર સમયે બેસીલસ સબટીલીસ જેએયુ આઈસોલેટ-૧ (૧૦^{૭} સીએફ્યું/ મીલી) ૧૦ મીલી/કિ.ગ્રા. બીજ માવજત સાથે ભલામણ મુજબનો નાઈટ્રોજન (૧૨.૫ કિ.ગ્રા./હે) અને પોટાશ (૫૦ કિ.ગ્રા./હે) અને ભલામણના ૭૫ ટકા

	ફોસ્ફરસ (૧૮.૭૫ કિ.ગ્રા./હે) જમીનમાં આપવા.
	Suggestions: Approved
	(Action: Professor & Head, Department of Plant Pathology, JAU, Junagadh)
16.3.1.18	**Biological control of root rot (*Macrophomina phaseolina*) of groundnut**
	The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut are advise to apply talc based *Trichoderma harzianum* 1% WP (2 x 10^7 cfu/g) @ 1.5 kg/ha + *Trichoderma viride* 1% WP (2 x 10^7 cfu/g) @ 1.5 kg/ha OR *Trichoderma viride* 1% WP (2 x 10^7 cfu/g) @ 1.5 kg/ha + *Pseudomonas fluorescens* 1% WP (1 x 10^8 cfu/g) @ 1.5 kg/ha mixed in 500 kg/ha well decomposed farm yard manure in furrow at the time of sowing, for effective and economical management of root rot of groundnut.

Summary of Recommendation for Farmers

Year	Crop	Disease	Pesticides/ Biopeticides formulation	Dosage: a.i. (g/ha)	Dosage: Quantity of formulation/ha	Dosage: Conc. (%)	Dosage: Quantity of formulation in 10 l of water (g or ml)	Quantity of water/soil amendments required/ha	Application schedule	Waiting period /PHI (Days)	Remarks
2020	Ground nut	Root rot	*Trichoderma harzianum* 1% WP + *Trichoderma viride*1% WP	--	1.5 kg/ha (1% WP) + 1.5 kg/ha (1% WP)	2 x 10^7 cfu/g + 2 x 10^7 cfu/g	--	500 kg FYM	Furrow application at the time of sowing	Nil	--
			Trichoderma viride 1% WP + *Pseudomonas fluorescens* 1% WP	--	1.5 kg/ha (1% WP) + 1.5 kg/ha (1% WP)	2 x 10^7 cfu/g + 1 x 10^8 cfu/g	--	500 kg FYM	Furrow application at the time of sowing	Nil	

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ મગફળીની ખેતી કરતા ખેડૂતોને સલાહ આપવામા આવે છે કે, મૂળના સડાના રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે, ટાલ્ક આધારિત ટ્રાયકોડર્મા હારજીયાનમ ૧% વે. પા. (૨x૧૦[૭] સીએફયું/ગ્રામ) ૧.૫ કિ.ગ્રા./હે + ટ્રાયકોડર્મા વીરીડી ૧% વે. પા. (૨x ૧૦[૭] સીએફયું/ગ્રામ) ૧.૫ કિ.ગ્રા./હે અથવા ટ્રાયકોડર્મા વીરીડી ૧% વે. પા (૨ x ૧૦[૭] સીએફયું/ગ્રામ) ૧.૫ કિ.ગ્રા./હે + સ્યુડોમોનાસ ફ્લુરોસન્સ ૧% વે. પા. (૧x ૧૦[૮] સીએફયું/ગ્રામ) ૧.૫ કિ.ગ્રા./હે ને ૫૦૦ કિ.ગ્રા./ હે સારી રીતે કોહવાયેલા છાણીયા ખાતરમાં ભેળવી વાવેતર સમયે ચાસમાં આપવું.

ખેડૂતોપયોગી ભલામણનુ સારાંશ

વર્ષ	પાક	જીવાત રોગ/	જંતુનાશક દવાઓ અને સ્વરૂપ	પ્રમાણ	પાણી જમીન/	વાપરવાની રીત અને	છેલ્લી માવજત અને કાપણી

				સક્રીય તત્વ ગ્રામ/હે.	દવાનો જથ્થો પ્રતિ હેક્ટર	સાંદ્રતા (%)	૧૦ લીટર પાણી માં દવાનો જથ્થો	સુધારકોનો જથ્થો પ્રતિ હેક્ટર	સમય	વચ્ચેનો સમય ગાળો વેઈટીંગ પીરીયડ/ પી.એચ.આઈ (દિવસ)
1	2	3	4	5	6	7	8	9	10	11
૨૦૨૦	મગફળી	મૂળનો સડો	ટ્રાઈકોડર્માં હારજીયાનમ ૧% વે. પા. + ટ્રાઈકોડર્માં વીરડી ૧% વે. પા.	--	૧.કી પ.ગ્રા. (૧% વે. પા.) + ૧.કી પ.ગ્રા. (૧% વે. પા.)	૨x ૧૦^{૭} સીએફયુ ગ્રામ/ + ૨x ૧૦^{૭} સીએફયુ ગ્રામ/	--	૫૦૦ કિલો છાણીયુ ખાતર	વાવણી સમયે ચાસમાં આપવા	નીલ
			ટ્રાઈકોડર્માં વીરડી ૧% વે. પા. + સ્યુડોમોનાસ ફ્લુરોસન્સ ૧% વે. પા.	--	૧ પ.કી.ગ્રા (૧% વે. પા.) + ૧.કી પ.ગ્રા. (૧% વે. પા.)	૨x ૧૦^{૭} સીએફયુ ગ્રામ/ + ૧ x ૧૦^{૮} સીએફયુ ગ્રામ/	--	૫૦૦ કિલો છાણીયુ ખાતર	વાવણી સમયે ચાસમાં આપવા	નીલ

Suggestions: Approved

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

16.3.1.19 **Management of major foliar diseases of groundnut**

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut are advised to apply seed treatment of mancozeb 75 % WP @ 3 g/kg seeds follow by two sprays of hexaconazole 5 % SC, 0.005 % (10 ml/10 l of water) at 40 and 65 DAS for effective and economical management of early and late leaf spots (ELS & LLS) diseases of groundnut.

Summary of Recommendation for Farmers

Year	Crop	Pest	Pesticides with formulation	Dosage: g.a.i./ha	Dosage: Quantity of formulation/ha	Dosage: Concentration (%)	Dosage: Dilution in water (10 lit)	Total* Quantity of Chemical suspension required/ha	Application schedule	Waiting Period/ PHI (days)	Remark(s)
1	2	3	4	5	6	7	8	9	10	11	12
2020	Groundnut	Foliar diseases of groundnut	Mancozeb 75 % WP		3 g/kg seed	--	--	0.36 kg	As a seed treatment	58	
			Hexaconazole 5 % SC		0.500 lit.	0.005	10 ml	500 lit.	Foliar spray at 40 and 65 DAS	58	

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું મગફળી ઉગાડતા ખેડૂતોને વહેલા તથા મોડા આવતા પાનનાં ટપકાં (ટીક્કા) રોગોના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે મેન્કોઝેબ ૭૫% વે.પા.ની બીજ માવજત ૩ ગ્રામ/ કિ.ગ્રા. અને હેક્ઝાકોનાઝોલ ૫% એસસી (૧૦ મીલી/૧૦ લી. પાણી) વાવેતર બાદ ૪૦ અને ૬૫ દિવસે છાંટવાની સલાહ આપવામા આવે છે.

ખેડૂતોપયોગી ભલામણનુ સારાંશ

વર્ષ	પાક	જીવાત	જંતુનાશક દવઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીના દ્રાવણ ની કુલ જરુરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ / પીએચ આઈ (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ/હે.	ફોર્મ્યુલેશનની માત્રા ગ્રામ/મીલી/કિલો/લી પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી માં ડાયલ્યુશન ૧૦ લી.				
1	2	3	4	5	6	7	8	9	10	11	12
૨૦૨૦	મગફળી	મગફળીના પાનમાં આવતા રોગ માટે	મેંન્કોઝેબ ૭૫ % વેટેબલ પાવડર	૨૭૦	૩ ગ્રામ / કિલો બિજ	--	--	૦.૩૬ કિલો	બીજ માવજત તરીકે	૫૮	
			હેક્ઝાકોનાઝોલ ૫ % એસ. સી.	૨૫	૦.૫૦૦ લીટર	૦.૦૦૫	૧૦ મી લી.	૫૦૦ લીટર	વાવણી બાદ ૪૦ અને ૬૫ દીવસે છંટકાવ કરવા	૫૮	

Suggestions: Approved

(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

16.3.1.20 Evaluation of different IPDM modules for management of major insect-pest and diseases in groundnut

Farmers who are interested in organic cultivation of groundnut are advised to apply Bijamrut as a seed treatment @ 10 ml/kg seed along with foliar spray of cow urine 10% (1 l /10 l of water) at 30 and 60 DAS for effective and economical management of tikka disease and to obtain higher pod and haulm yield.

સજીવ ખેતીમાં રસ ધરાવતા ખેડૂતોને મગફળીમાં આવતા ટીક્કા રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ તેમજ ડોડવા અને ચારાનુ વધુ ઉત્પાદન મેળવવા માટે બીજામૃતની બીજ માવજત ૧૦ મીલી/ કિ.ગ્રા. બીજ અને ગૌમુત્ર ૧૦% (૧ લી. /૧૦ લી. પાણી) વાવેતર બાદ ૩૦ અને ૬૦ દિવસે છંટકાવ કરવાની સલાહ આપવામા આવે છે.

Suggestions: Not approved

(Action: Res.Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

	NIL

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

AGRICULTURAL ENTOMOLOGY	
16.3.1.21	**Evaluation of different races of eri silkworm under laboratory condition for its**

	suitability
	Recommendation for farming community: The eri silkworm rearing farmers of South Gujarat Zone AES III are advised to rear eri silkworm race, Borduar or Lakhimpur or Ambagaon to get better quality and economic traits. [Source of Availability of DFLs: Central Muga Eri Research and Training Institute (CMERTI), Jorhat (Assam)]
	દક્ષિણ ગુજરાતના ખેત આબોહવાકીય પરિસ્થિતિ-૩ના દિવેલાના રેશમના કીડાનો ઉછેર કરતા ખેડૂતોને ભલામણ કરવામાં આવેછે કે, દિવેલાના રેશમ કીડાની જાત, બોરદોર અથવા લખીમપુર અથવા અંબાગાંવ નો ઉછેર કરવાથી ઉચ્ચ ગુણવત્તા વાળું અર્થક્ષમ રેશમ પ્રાપ્ત કરી શકાય છે. [ઈંડાનું પ્રાપ્તિ સ્થાન: સેન્ટ્રલ મુગા એરી રીસર્ચ એન્ડ ટ્રેનીંગ ઈન્સ્ટીટયુટ, સેન્ટ્રલ સિલ્ક બોર્ડ, જોરહાટ (આસામ)]
	Suggestions: Approved
	(Action: Professor and Head, Department of Entomology, NMCA, NAU, Navsari)
16.3.1.22	**Standardize the height of pheromone traps in pigeonpea ecosystem for the mass trapping of *Helicoverpa armigera* (Hubner)**
	The pigeonpea growers of south Gujarat are advised to maintain the height of pheromone trap 1.5 feet above the crop canopy at 50 per cent flowering stage for trapping maximum male moths of *Helicoverpa armigera* (Hubner).
	દક્ષિણ ગુજરાતમાં તુવેરની ખેતી કરતા ખડૂતોને લીલી ઈયળના વધુમાં વધુ નર ફુદા પકડવા માટે પાકમાં ૫૦ ટકા ફૂલ અવસ્થાએ છોડની ટોચથી ૧.૫ ફુટ ઊંચાઈ જળવાય તેમ ફેરોમોન ટ્રેપ લગાડવા માટે ભલામણ કરવામાં આવે છે.
	Suggestions: Approved
	(Action: Professor and Head, Department of Entomology, NMCA, NAU, Navsari)
16.3.1.23	**Study the activity period of honey bees in pointed gourd**
	Higher activity period of honey bee in pointed gourd is observed between 11.30 AM to 3.30 PM in South Gujarat Heavy Rainfall Zone-II.
	દક્ષિણ ગુજરાતના ભારે વરસાદ ધરાવતા ખેત આબોહવાકીય વિસ્તાર-૨ માં પરવળના પાકમાં સવારના ૧૧.૩૦ થી બપોરના ૩.૩૦ કલાક દરમિયાન મધમાખીની સક્રીયતા વધારે જોવા મળે છે.
	Suggestions: Approved
	(Action: Professor and Head, Department of Entomology, NMCA, NAU, Navsari)
16.3.1.24	**Evaluation of different oils against sorghum shoot fly**
	Sorghum growing farmers of south Gujarat are advised to spray Neem oil 0.5 % or Karanj oil 0.5 % (50ml + 3 g detergent /10 lit water) at 7 and 17 days after emergence of crop for effective management of sorghum shoot fly.
	દક્ષીણ ગુજરાતમાં જુવારની ખેતી કરતા ખેડૂતોને સાંઠાની માખીના અસરકારક નિયંત્રણ માટે લીમડાનું તેલ ૦.૫% અથવા કરંજનું તેલ ૦.૫ % (૧૦ લિટર પાણીમાં ૫૦ મિલી તેલ + ૩ ગ્રામ ડીટરજન્ટ) પાક ઉગ્યાના ૭ અને ૧૭ મા દિવસે છંટકાવ કરવા ભલામણ કરવામાં આવે છે.
	Suggestions: Approved
	(Action: Assistant Research Scientist (Ento.),MSRS, NAU, Surat)
16.3.1.25	**Effect of bio pesticides on shoot borer in organic mango**

	Farmers of south Gujarat growing organic mango are advised to spray azadirachtin 1500 ppm @33 ml / 10 litres at the initiation of flowering and second at fifteen days after the first spray for the management of mango shoot borer.
	દક્ષીણ ગુજરાતમાં આંબાની સેન્દ્રીય ખેતી કરતા ખેડૂતોને ડૂંખ વેધકના અસરકારક નિયંત્રણ માટે એઝાડીરેકટીન ૧૫૦૦ પીપીએમ ૩૩ મિલી/૧૦ લિટર ના બે છંટકાવ પ્રથમ ફૂલ બેસવાની શરૂઆતની અવસ્થાએ અને બીજો પ્રથમ છંટકાવના પંદર દિવસ બાદ કરવાની ભલામણ કરવામાં આવે છે.
	Suggestions: Approved
	(Action: Professor & Head, Plant Protection, ASPEE Horticulture, NAU, Navsari)
PLANT PATHOLOGY	
16.3.1.26	**Biological management of foot rot in finger millet**
	Finger millet growing farmers of South Gujarat are advised to give seed treatment with *Pseudomonas fluorescens* 1.5% (1x10^8 cfu/ml) @ 10ml/kg of seeds + two soil applications of *Pseudomonas fluorescens* 1.5% @ 2.5 l /ha in 250 kg FYM at transplanting and at 50% flowering for effective management of finger millet foot rot.
	દક્ષિણ ગુજરાતના નાગલી ઉગાડતા ખેડૂતોને મૂળના કોહવારા રોગના અસરકારક નિયંત્રણ મેળવવા માટે સ્યુડોમોનાસ ફ્લોરોસન્સ 1.5% (૧ x૧0૮ સીએફ્યુ /મીલી) ૧0 મીલી /કિ.ગ્રા. બીજ માવજત આપવી અને ત્યારબાદ બે વખત સ્યુડોમોનાસ ફ્લોરોસન્સ (૧x૧0૮ સીએફ્યુ /મીલી) ૨.૫ કિ.ગ્રા./૨૫0 કિ.લો. છાણિયા ખાતરમાં ભેળવી પાકની ફેરરોપણી અને ૫0 ટકા ફુલ આવે ત્યારે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.
	Suggestions: Approved
	(Action: Asstt. Res.Sci. (Patho.), Hill Millet Research Station,N.A.U., Waghai (Dangs)
16.3.1.27	**Evaluation of fungicides for the management of false smut of rice**
	The Paddy growers of South Gujarat Agro-climate zone are advised to apply two sprays of trifloxystrobin 25 + tebuconazole 50 (75 WG) 0.03 per cent (4 gm/10 l.) or propiconazole 25 EC, 0.025 per cent (10 ml/10 l.) for effective control of false smut. The first spray should be given at boot leaf stage and the second spray at milking stage. PHI 21 days for trifloxystrobin 25 + tebuconazole 50 (75 WG) or 30 days for propiconazole 25 EC.
	દક્ષિણ ગુજરાતના ડાંગર ઉગાડતા ખેડૂતોને ડાંગરનાં ગલત આંજીયો રોગના અસરકારક નિયંત્રણ માટે ટ્રાયફ્લોકસીસ્ટ્રોબીન ૨૫ + ટેબુકોનાઝોલ ૫૦ (૭૫ વેટેબલ ગ્રેનુય્લસ) ૦.૦૩ % (૪ ગ્રામ પ્રતિ ૧૦ લિટર) અથવા પ્રોપીકોનાઝોલ ૨૫ ઈસી, ૦.૦૨૫% (૧૦ મી.લી. પ્રતિ ૧૦ લિટર) ના બે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. પહેલો છંટકાવ ધ્વજ પર્ણદંડ અવસ્થાએ (બુટ લીફ સ્ટેજ) અને ત્યારબાદ બીજો છંટકાવ દૂધિયા દાણા (મિલ્કિંગ સ્ટેજ) અવસ્થાએ કરવો. ટ્રાયફ્લોકસીસ્ટ્રોબીન ૨૫ + ટેબુકોનાઝોલ ૫૦ (૭૫ વેટેબલ ગ્રેનુય્લસ) છેલ્લા છાંટકાવ અને કાપણી વચ્ચેનો ૨૧ દિવસ રાખવો અથવા પ્રોપીકોનાઝોલ ૨૫ ઈસી છેલ્લા છાંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ૩૦ દિવસ રાખવો.
	Suggestions: Approved
	(Action: Asstt. Res.Sci. (Patho.), Main Rice Research Station, NAU, Navsari)
16.3.1.28	**Management of rice seedling rot caused by *Sclerotium rolfsii***
	Summer paddy growers in South Gujarat are advised to seed soaking with azoxystrobin 23SC at 0.046% solution, 1ml /500 ml water soaked in one kg seeds for two hrs + Soil application with *Trichoderma harzianum* 1.5% wp (2x 10^6 cfu/gm) @ 1g/m^2 or seed treatment with azoxystrobin 23SC at 0.046% solution, 1ml /500 ml water soaked in one kg seeds for two hrs for better plant population, minimum seedling mortality along with good seedling vigor.

	ઉનાળુ ડાંગર ઉગાડતા દક્ષિણ ગુજરાતના ખેડૂતોને સલાહ આપવામાં આવે છે કે ડાંગરનાં બીજને એઝોક્સિસ્ટ્રોબિન ૨૩ એસ.સી. ૦.૦૪૬%, ૧ મિલી/ ૫૦૦ મિલી પાણીમાં એક કિગ્રા બીજને ૨ કલાક પાણીમાં પલાળીને વાવણી કરવી તથા ટ્રાયકોડર્મા હારજીયાનમ 1.5% વેપા (સીએફ્યુ- 2 x ૧૦૬/ગ્રામ) ૧ ગ્રામ/મીર પ્રમાણે જમીનમાં આપવા ભલામણ કરવામાં આવે છે અથવા ડાંગરનાં બીજને એઝોક્સિસ્ટ્રોબિન ૨૩ એસ.સી. ૦.૦૪૬% ૧ મિલી/ ૫૦૦ મિલી પાણીમાં એક કિગ્રા બીજને ૨ કલાક પાણીમાં પલાળીને વાવણી કરવાની ભલામણ કરવામાં આવે છે. જેથી સારા તંદુરસ્ત છોડનો ઉગાવો મળે અને છોડનો મૃત્યુદર ઘટાડી શકાય.
	Suggestions: Approved
	(Action: Asstt. Res.Sci. (Patho.), Regional Rice Research Station, N.A.U., Vyara)

ANAND AGRICULTURAL UNIVERSITY, ANAND

AGRICULTURAL ENTOMOLOGY	
16.3.1.29	**Bio-efficacy of insecticides against thrips, *Scirtothrips dorsalis* Hood in pomegranate (PP/Ento./2017/02)**

The pomegranate growers of middle Gujarat Agro-climatic zone are advised to apply cyantraniliprole 10.26 OD, 0.008% (7.50 ml/10 litre water) during *hasta bahar* when thrips population attain 5 thrips/10 cm shoot and second after 15 days for effective control of thrips. PHI of 5 days should be kept.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Insecticides	Dosage				Application schedule	Waiting period/PHI (days)	Remarks
				g a.i/ ha	Conc. (%)	Quantity of formulation (ml/ha)	Dilution in water (Litre/ ha)			
2020	Pomegranate	Thrips	Cyantraniliprole 10.26 OD	76.9	0.008	750	1000	First spray at thrips population reach to 5/10 cm shoot and second after 15 days	05	---

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં દાડમની ખેતી કરતાં ખેડૂતોને થ્રીપ્સના અસરકારક નિયંત્રણ માટે હસ્તા બહાર દરમ્યાન સાયન્ટ્રાનિલિપ્રોલ ૧૦.૨૬ ઓડી, ૦.૦૦૮% (૭.૫ મિ.લિ./૧૦ લિટર પાણીમાં) નો પ્રથમ છંટકાવ ૧૦ સે.મી.ની ડૂંખ પર ૫ (પાંચ) થ્રીપ્સ જોવા મળે ત્યારે અને બીજો છંટકાવ ૧૫ દિવસ બાદ કરવાની સલાહ આપવામાં આવે છે. દાડમના ઉતાર અને છેલ્લા છાંટકાવ વચ્ચેનો સમયગાળો ૫ દિવસ રાખવો.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષા સમય / દિવસ	રીમાર્ક
				સ. ત. ગ્રામ/હે.	માત્રા/ (%)	કીટનાશકનું પ્રમાણ (મિ.લિ. /હે.)	પાણી (લિટર/હે.)			
૨૦૨૦	દાડમ	થ્રીપ્સ	સાયન્ટ્રાનિલિપ્રોલ ૧૦.૨૬ ઓડી	૭૬.૯	૦.૦૦૮	૭૫૦	૧૦૦૦	પ્રથમ છંટકાવ ૧૦ સે.મી.ની ડૂંખ પર પાંચ થ્રીપ્સ જોવા મળે ત્યારે અને બીજો ૧૫ દિવસ બાદ કરવો	૦૫	--

Suggestions: Approved

(Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.1.30	**Efficacy of insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) infesting maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/01)**

Farmers of middle Gujarat Agro-climatic zone growing maize in kharif are advised to spray spinetoram 11.7 SC, 0.0117 % (10 ml/ 10 litre of water) or emamectin benzoate 5 SG, 0.0025% (5 g/ 10 litre of water) or chlorantraniliprole 18.5 SC, 0.006% (3 ml/ 10 litre of water) or thiodicarb 75 WP, 0.11% (15 g/ 10 litre of water) first at initiation of pest and second after 15 days for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticides with formulation	Dosage: g a.i. /ha	Dosage: Quantity of formulation (g or ml) /ha	Dosage: Conc. (%)	Dosage: Dilution in water (Litre/ha)	Application schedule	Waiting period/ PHI (days)	Remarks
2020	Maize	Fall army worm	Spinetoram 11.7 SC	58.5	500	0.0117	500	First at initiation of pest and second at 15 days interval	30	Vide office memorandum No. 42/2019 dated-27th November, 2019
			Emamectin benzoate 5 SG	12.5	250	0.0025				
			Chlorantran-iliprole 18.5 SC	30.0	150	0.006				
			Thiodicarb 75 WP	563	750	0.11				

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસામાં મકાઈની ખેતી કરતાં ખેડૂતોને ટપકાંવાળી લશ્કરી ઈયળનાં અસરકારાક અને અર્થક્ષમ નિયંત્રણ માટે સ્પીનેટોરમ ૧૧.૭ એસસી, ૦.0૧૧૭% (૧૦ મિ.લિ./૧૦ લિટર પાણી) અથવા એમામેકટીન બેન્ઝોએટ ૫ એસજી, ૦.૦૦૨૫% (૫ ગ્રામ/૧૦ લિટર પાણી) અથવા ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસસી, ૦.૦૦૬% (૩ મિ.લિ./૧૦ લિટર પાણી) અથવા થાયોડીકાર્બ ૭૫ ડબલ્યુપી, ૦.૧૧% (૧૫ ગ્રામ/૧૦ લિટર પાણી) નો પ્રથમ છંટકાવ જીવાતના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો છંટકાવ તેના ૧૫ દિવસ બાદ કરવાની સલાહ આપવામાં આવે છે. ડોડાના ઉતાર/ કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૩૦ દિવસ રાખવો.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ: સ.ત. ગ્રામ/હે.	પ્રમાણ: કીટનાશકનું પ્રમાણ (ગ્રામ/મિ.લિ.)/હે.	પ્રમાણ: માત્રા (%)	પ્રમાણ: પાણી (લિટર)	છંટકાવનો સમય	પ્રતીક્ષા સમય (દિવસ)	રીમાર્ક
૨૦૨૦	મકાઈ	ટપકાંવાળી લશ્કરી ઈયળ	સ્પીનેટોરમ ૧૧.૭ એસસી	૫૮.૫	૫૦૦	૦.0૧૧૭	૫૦૦	પ્રથમ છંટકાવ જીવાતના ઉપદ્રવની શરૂઆત થાય	૩૦	Govt. of India, DPPQS vide office memorandum No. 42/2019 dated-27th
			એમામેકટીન બેન્ઝોએટ ૫ એસજી	૧૨.૫	૨૫૦	૦.૦૦૨૫				
			ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫	૩૦.૦	૧૫૦	૦.૦૦૬				

			એસસી					ત્યારે અને બીજો છંટકાવ તેના ૧૫ દિવસ બાદ		Novembe, 2019
			થાયોડીકાર્બ ૭૫ ડબલ્યુપી	૫૬૩	૭૫૦	૦.૧૧				

Suggestions: Approved

(Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.1.31 **Efficacy of granular insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/02)**

Farmers of middle Gujarat Agro-climatic zone growing maize in kharif are advised to give whorl application of chlorantraniliprole 0.4% GR, 20 kg/ha, first at appearance of pest and second after 15 days for effective and economical control of fall armyworm. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Pesticide	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ha	Quantity of formulation (kg/ha)	Conc. (%)	Water requirement/ha			
2020	Maize	Fall armyworm	Chlorantrani-liprole 0.4 % GR	80	20	-	-	First application at appearance of pest and second after 15 days	30	-

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ મકાઈની ખેતી કરતાં ખેડૂતોને ટપકાંવાળી લશ્કરી ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ક્લોરાન્ટ્રાનિલીપ્રોલ ૦.૪% જીઆર, ૨૦ કિ.ગ્રા./હેક્ટર પ્રમાણે પ્રથમ જીવાત દેખાવાની શરૂઆત થાય ત્યારે અને બીજી તેના ૧૫ દિવસે ભૂંગળીમાં આપવાની સલાહ આપવામાં આવે છે. ડોડાના ઉતાર/ કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૩૦ દિવસ રાખવો.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				માવજત નો સમય	પ્રતીક્ષા સમય / દિવસ	રીમાર્ક
				સ.ત. (ગ્રામ) /હે.	કીટનાશક નું પ્રમાણ (કિ.ગ્રા./હે.)	સાંદ્રતા (%)	પાણી નુ પ્રમાણ / હે.			
૨૦૨૦	મકાઈ	ટપકાંવાળી લશ્કરી ઈયળ	ક્લોરાન્ટ્રાનિલીપ્રોલ ૦.૪% જીઆર	૮૦	૨૦	-	-	પ્રથમ માવજત જીવાત દેખાવાની	30	--

								શરૂઆત થાય ત્યારે અને બીજી તેના ૧૫ દિવસે ભૂંગળીમાં આપવી		

Suggestions: Approved

(Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.1.32 **Evaluation of bio-pesticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/03)**

Farmers of middle Gujarat Agro-climatic zone are advised to spray *Bacillus thuringiensis* var. *kurstaki* 1 % WG @ 20 g/10 litre water first at initiation of pest and subsequent two sprays at 10 days interval for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Insecticides	Dosage				Application schedule	Waiting period /PHI (days)	Remarks
				Conc. (%)	Dose (g/ 10 litre)	Quantity of formulation (kg/ha)	Dilution in water (Litre/ha)			
2020	Maize	Fall army worm	Bacillus thuringiensis var.kurstaki 1 % WG	-	20	1	500	First spray at initiation of pest and subsequent two sprays at 10 days interval	---	---

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં મકાઈની ખેતી કરતાં ખેડૂતોને ટપકાંવાળી લશ્કરી ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે બેસીલસ થુરેન્જીનેન્સીંસ કુર્સ્ટાકી ૧% ડબલ્યુજી (૨ x ૧૦૮ સીએફયુ /ગ્રામ) ૨૦ ગ્રામ/ ૧૦ લિટર પાણીનો પ્રથમ છંટકાવ જીવાતની શરૂઆત થયે અને બીજા બે છંટકાવ તેના ૧૦ દિવસના આંતરે કરવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	જીવાત	બાયોપેસ્ટીસાઈડસ	પ્રમાણ				છંટકાવનો સમય	પ્રતીક્ષાસમય / દિવસ	રીમાર્ક
				માત્રા (%)	જથ્થો (ગ્રામ/ ૧૦ લિ.)	કીટનાશકનુંપ્રમાણ (કિ.ગ્રા /હે.)	પાણી (લિટર/ હે.)			
૨૦૨૦	મકાઈ	પુછ્ડે ચાર ટપકાંવાળી લશ્કરી ઈયળ	બેસીલસ થુરેન્જીનેન્સીંસ કુર્સ્ટાકી ૧ % ડબલ્યુજી	-	૨૦	૧	૫૦૦	જીવાતની શરૂઆત થયે અને બીજા બે છંટકાવ તેના ૧૦ દિવસના આંતરે કરવા	--	--

Suggestions: Approved

(Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.1.33 **Efficacy of poison baits against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) infesting maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/04)**

Farmers of middle Gujarat Agro-climatic zone growing maize in kharif are advised to apply poison baits

- Rice bran 25 kg + jaggery 5 kg + thiodicarb 75 WP 250 g/ha

or

- Maize flour 25 kg + jaggery 5 kg + thiodicarb 75 WP 250 g/ha

or

- Rice bran 25 kg + jaggery 5 kg + emamectin benzoate 5 SG 125 g/ha

First at initiation of pest and second after 15 days for effective and economical control of fall armyworm in leaf whorl in maize.

Note: Dissolve 5 kg jaggery in 5 litres of water, mix 25 kg of bran/flour in to it and keep it overnight, next day add insecticide in bait before application.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Insecticide	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (g/ha)	Carrier /ha			
2020	Maize	Fall armyworm	Thiodicarb 75 WP	-	250	25 kg rice bran/maize flour+5 kg jaggery+5 litre of water	First application at initiation of pest and second after 15 days	30	---
			Emamectin benzoate 5 SG	-	125				

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસામાં મકાઈની ખેતી કરતા ખેડૂતોને ટપકાંવાળી લશ્કરી ઈયળનાં

અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે :

•ડાંગરનું ભુસૂ ૨૫ કિ.ગ્રા. + ગોળ ૫ કિ.ગ્રા. + થાયોડીકાર્બ ૭૫ ડબલ્યુપી ૨૫૦ ગ્રામ/હે

અથવા

•મકાઈનો લોટ ૨૫ કિ.ગ્રા. + ગોળ ૫ કિ.ગ્રા. + થાયોડીકાર્બ ૭૫ ડબલ્યુપી ૨૫૦ ગ્રામ/હે

અથવા

•ડાંગરનું ભુસૂ ૨૫ કિ.ગ્રા. + ગોળ ૫ કિ.ગ્રા. + એમામેક્ટીન બેન્ઝોએટ ૫ એસજી ૧૨૫ ગ્રામ/હે

વિષ પ્રલોભિકા (પોઈઝન બેઈટ)ની પ્રથમ માવજત જીવાત દેખાવાની શરૂઆત થયે અને બીજી તેના ૧૫ દિવસ બાદ મકાઈની ભૂંગળીમાં આપવાની સલાહ આપવામાં આવે છે.

નોંધ: વિષ પ્રલોભિકા બનાવવા ૫ કિ.ગ્રા. ગોળને ૫ લિટર પાણીમાં ઓગાળી તૈયાર કરેલ ભુસૂ/ લોટમાં ભેળવી એક રાત પડી રહેવા દઈ બીજા દિવસે માવજત આપતા પહેલા તેમાં કીટનાશક ઉમેરવી.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ			માવજત નો સમય	પ્રતીક્ષા સમય/ દિવસ	રીમાર્ક
				માત્રા (%)	કીટનાશક નું પ્રમાણ ગ્રામ/હે.	વાહક/હે.			
૨૦૨૦	મકાઈ	પુછડે ચાર ટપકાંવાળી લશ્કરી ઈયળ	થાયોડીકાર્બ ૭૫ ડબલ્યુપી	-	૨૫૦	૨૫ કિ.ગ્રા. ડાંગરનું ભુસુ/ મકાઈનો લોટ+ ૫ કિ.ગ્રા. ગોળ+ ૫ લિટરપાણી	પ્રથમ જીવાત દેખાવાની શરૂઆત થાય ત્યારે અને બીજી તેના ૧૫ દિવસે ભૂંગળીમાં આપવી	30	--
			ઈમામેક્ટીન બેન્ઝોએટ ૫ એસજી	-	૧૨૫				

Suggestions: Approved

(Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.1.34 **Efficacy of biocontrol agents for the management of shoot and fruit borer, *Earias vittella* Fab. on okra (PP/Biological Control/2018/01)**

The farmers of middle Gujarat Agro-climatic zone growing okra are advised to spray *Bacillus thuringiensis* var. *kurstaki* 1% WP @ 50 g/10 litre water or NSKE 5% @ 500 g/10 litre water at fifteen days interval for three times or six releases of *Trichogramma chilonis* @ 50,000/ha at weekly interval starting from the initiation of shoot and fruit borer (*Earias vittella*) for the effective control.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Microbial insecticide/ bio-agent	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (kg/ha)	Dilution in water (litre/ha)			
2020	okra	Fruit borer (*Earias vittella*)	*Bacillus thuringiensis* var. *kurstaki* 1% WP ($2x10^8$ cfu/g)		2.5	500	Foliar spray at fifteen days interval for three times with the initiation of pest	--	--
			Neem seed kernel extract	5	25				

			(NSKE)						
			Trichogramma chilonis	-	50,000 parasitized eggs/ ha	--	Six releases @ 50000/ha at weekly interval with the initiation of pest		

મધ્ય ગુજરાતના ખેત આબોહવાકીય વિસ્તાર ભીંડાની ખેતી કરતાં ખેડૂતોને ડૂંખ અને ફળ કોરી ખાનાર ઈયળના અસરકારક નિયંત્રણ માટે બેસિલસ થુરીન્જીયન્સીસ (૧% વે.પા.) ૫૦ ગ્રામ/૧૦ લિટર પાણીમાં ભેળવીને ત્રણ છંટકાવ કરવા) અથવા લીમડાની લીંબોળીના મીંજનો અર્ક ૫ % (૫૦૦ ગ્રામ/૧૦ લિટર પાણી) પ્રમાણે પંદર દિવસના અંતરે ત્રણ છંટકાવ કરવા અથવા પરજીવી ટ્રાઈકોગ્રામા ચીલોનીસ ભમરીનો, ૫૦,૦૦૦/હેક્ટર પ્રમાણે અઠવાડીયાના અંતરે છ વખત ખેતરમાં ઉપદ્રવની શરૂઆત થાય ત્યારથી છોડવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	જીવાત	જૈવિક નિયંત્રકો	પ્રમાણ			છંટકાવનો સમય	પ્રતીક્ષા સમય/ દિવસ	રીમાર્ક
				માત્રા (%)	પ્રમાણ (કિલો/હે.)	પાણી (લિટર/હે.)			
૨૦૨૦	ભીંડા	ફળ કોરી ખાનાર ઇયળ	બેસીલસ થુરીન્જીન્સીસ કુર્સ્ટાકી ૧% વેપા (૨ × ૧૦૮ સીએફયુ/ગ્રામ)		૨.૫	૫૦૦	ઉપદ્રવની શરૂઆત થાય ત્યારથી પંદર દિવસના અંતરે ત્રણ છંટકાવ	-	-
			લીમડાની લીંબોળીના મીંજનો અર્ક	૫	૨૫			--	--
			ટ્રાઇકોગ્રામા ચીલોનીસ ભમરી	-	૫૦,૦૦૦ પરજીવીકરણ થયેલ ઈંડા/હેક્ટર	-	ઉપદ્રવની શરૂઆત થાય ત્યારથી અઠવાડીયાના અંતરે છ વખત ૫૦,૦૦૦/હેક્ટર પ્રમાણે છોડવી	-	-

Suggestions: Approved

(Action: Principal Scientist, AICRP on Bio-control, AAU, Anand)

16.3.1.35 Evaluation of biological control agents against mango hoppers (STA 14)

Farmers of middle Gujarat Agro-climatic zone having mango orchard are advised to give one spray of entomopathogenic fungi *Lecanicillium lecanii* 1% WP (2 × 10^8 cfu/g) or *Metarhizium anisopliae* 1% WP (2 × 10^8 cfu/ g) @ 50 g/ 10 litre of water on tree trunk during the month of November and three sprays on foliage at fifteen days interval with the initiation of pest for effective control of hopper.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Microbial insecticide/ bio-agent	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (kg / ha)	Dilution in water (litre/ha)			
2020	mango	Mango hopper	*Lecanicillium lecanii* 1% WP (2x10^8 cfu/g)	-	5	1000	One off-season spray on trunk during the month of November and three foliar sprays at fifteen days interval with the initiation of pest	--	--
			Metarhizium anisopliae 1% WP (2x10^8 cfu/g)	-	5				

મધ્ય ગુજરાત ખેત આબોકીય વિસ્તારમાં આંબાની ખેતી કરતાં ખેડૂતોને મધિયાના અસરકારક નિયંત્રણ માટે રોગકારક ફૂગ લેકાનીસીલીયમ લેકાની ૧% ડબલ્યુજી (૨ × ૧૦૮ સીએફયુ/ગ્રામ) અથવા મેટારીઝીયમ એનીસોપ્લી ૧% ડબલ્યુજી (૨ × ૧૦૮ સીએફયુ/ગ્રામ) ૫૦ ગ્રામ/૧૦ લિટર પાણીમાં ભેળવી નવેમ્બર માસમાં ઝાડનાં થડ પર એક છંટકાવ અને ડાળીઓ પર ઉપદ્રવની શરૂઆત થાય ત્યારથી પંદર દિવસના અંતરે ત્રણ છંટકાવ કરવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	જીવાત	જૈવિક નિયંત્રકો	પ્રમાણ			છંટકાવનો સમય	પ્રતીક્ષા સમય/ દિવસ	રીમાર્ક
				માત્રા (%)	પ્રમાણ (કિ.ગ્રા./હે.)	પાણી (લિટર/હે.)			
૨૦૨૦	આંબો	મધિયો	લેકાનીસીલીયમ લેકાની ૧% વેપા (૨ × ૧૦૮ સીએફયુ/ગ્રામ)	-	૫	૧૦૦૦	નવેમ્બર માસમાં ઝાડનાં થડ પર એક છંટકાવ ડાળીઓ પર અને ખેતરમાં ઉપદ્રવની શરૂઆત થાય ત્યારથી પંદર દિવસના અંતરે ત્રણ છંટકાવ કરવા	-	-
			મેટારીઝીયમ એનીસોપ્લી ૧% વેપા (૨ × ૧૦૮ સીએફયુ/ગ્રામ)	-	૫				

Suggestions: Not approved

(Action: Principal Scientist, AICRP on Bio-control, AAU, Anand)

16.3.1.36 Evaluation of spraying schedule of insecticides for the management of leaf eating caterpillar, *Spodoptera litura* (F.) in bidi tobacco nursery (PP/BTRS(Ento)/2017/01)

In tobacco nursery, use of neem seed kernel extract 5% (500 g/ 10 litre water) at the age of 30-35 days of seeding and after 15 days apply chlorpyrifos 20 EC, 0.04% (20 ml/10 litre water, 200 g a.i/ha) to delay the development of resistance in *Spodoptera litura.*

Recommendation for PHI as per CIB guidelines:

Recommendation for PHI as per CIB guidelines: **Year**	**Crop**	**Pest**	**Dosage**				**Appli. schedule**	**Waiting period/ PHI**	**Remark**
			Pesticide with formulation	g a.i./ha	Conc. (%)	Dilution in 10 litre water			
2020	Tobacco (Nursery)	*Spodoptera litura* (F)	Neem seed kernel extract	-	5	500 gm	at 30 DAS	-	-
			Cholrpyrifos 20 EC	200	0.04	20 ml	at 45 DAS	-	-

	તમાકુનાં ધરૂવાડિયામાં લીંબોળીનાં મીંજનું દ્રાવણ ૫% (૫૦૦ ગ્રામ /૧૦ લિટર પાણી) ધરૂવાડિયુ ૩૦-૩૫ દિવસનું થાય ત્યારે અને ત્યારબાદ ૧૫ દિવસે, ક્લોરોપાયરીફોસ ૨૦ ઈસી ૦.૦૪ % (૨૦ મિ.લિ./૧૦ લિટર પાણી, ૨૦૦ ગ્રામ સ.ત./હે.) છંટકાવ કરવાથી પાન ખાનારી ઈયળમાં પ્રતિકારકશક્તિ આવવામાં વિલંબ થશે. ખેડૂત ઉપયોગી ભલામણનું સારાંશ

વર્ષ	પાક	જીવાત	પ્રમાણ				વાપરવાની પધ્ધતિ	છંટકાવ અને કાપણી વચ્ચે નો ગાળો	નોંધ
			જંતુનાશક દવાઓનું ફોર્મુલેશન	સક્રિય તત્વ પ્રતિ હેક્ટર	પ્રમાણ (%)	૧૦ લિટર પાણી સાથે મિશ્રણ			
૨૦૨૦	તમાકુ (ધરુવાડીયું)	પાન ખાનારી ઇયળ	લીંબોળી ના મીજ	-	૫	૫૦૦ ગ્રામ	વાવણી ના ૩૦ દિવસ પછી	-	-
			ક્લોરપાયરીફોસ ૨૦ ઈસી	૨૦૦	૦.૦૪	૨૦ મિલી	વાવણી ના ૪૫ દિવસ પછી	-	-

Suggestions: Approved

(Action: Research Scientist, BTRS, AAU, Anand**)**

16.3.1.37	**Evaluation of insecticides against plant hopper infesting rice (PP/MRRS (Ento.)/2018/01)**
	The rice growers of middle Gujarat Agro-climatic zone are advised to apply two sprays of pymetrozine 50 WG, 0.037% (7.5 g/10 litre of water), first at the initiation of white backed plant hopper (WBPH) and second after 15 days for effective management of WBPH in rice. Interval between last spray and harvest should be minimum 19 days.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Insecticide with formulation	Dosage				Appl. Schedule	Waiting period/ PHI (Days)	Remarks
				g a.i./ha	Conc. (%)	Quantity of formulation (g/ha)	Water			
2020	Rice	White backed plant hoppers (WBPH)	Pymetrozine 50% WG	187.5	0.037	375	500 litre	First spray at initiation of WBPH and second after 15 days	19	-

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ડાંગરની ખેતી કરતા ખેડૂતોને સફેદ પીઠવાળા ચૂસીયાંના અસરકારક નિયંત્રણ માટે પાયમેટ્રોઝીન ૫૦ ડબલ્યુજી, ૦.૦૩૭% (૭.૫ ગ્રામ/૧૦ લિટર પાણી)નાં બે છંટકાવ, પ્રથમ સફેદ પીઠવાળા ચૂસીયાંના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો તેના ૧૫ દિવસે કરવાની સલાહ આપવામાં આવે છે. છેલ્લો છંટકાવ અને કાપણી વચ્ચેનો ગાળો ઓછામાં ઓછો ૧૯

દિવસ રાખવો.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				છંટકાવ નો સમય	પ્રતિક્ષા સમય/ દિવસ	રીમાર્ક
				સ.ત. ગ્રામ/હે.	માત્રા (%)	કીટનાશકનું પ્રમાણ (ગ્રા./હે)	પાણી (લિટર)			
૨૦૨૦	ડાંગર	સફેદ પીઠવાળા ચૂસીયાં	પાયમેટ્રોઝીન ૫૦ ડબલ્યુજી	૧૮૭.૫	૦.૦૩૭	૩૭૫	૫૦૦	પ્રથમ છંટકાવ સફેદ પીઠવાળા ચૂસીયાંના ઉપદ્રવની શરૂઆત થાય ત્યારે અને બીજો તેના ૧૫ દિવસે	૧૯	-

Suggestions: **Approved**

(Action: Research Scientist, MRRS, AAU, Nawagam)

16.3.1.38 Evaluation of local practices for management of Fall Armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize (PP/Entomology (BACA), ARS, Sansoli & MMRS, Godhra /2019/06)

Farmers of middle Gujarat Agro-climatic zone who are following non-chemical farming are advised to give whorl application of soil or sand @ 5 g/plant at 30 and 45 days after sowing for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Local practices	Dosage			Appli. schedule	Waiting period/ PHI (days)	Remarks
				Dose (g/ plant)	Quantity of formulation (kg/ha)	Dilution in water			
2020	Maize	Fall armyworm	Soil	5	416.17	-	Whorl application at 30 and 45 days after sowing	--	--
			Sand	5	416.17				

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં બિન-રાસાયણિક મકાઈની ખેતી કરતાં ખેડૂતોને ટપકાંવાળી લશ્કરી ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે માટી અથવા રેતી ૫ ગ્રામ/છોડ વાવણીના ૩૦ અને ૪૫ દિવસે મકાઈની ભૂંગળીમાં આપવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	જીવાત	દેશી પધ્ધ્તી	પ્રમાણ			છંટકાવનો સમય	પ્રતીક્ષા સમય/ દિવસ	રીમાર્ક
				માત્રા (ગ્રામ/છોડ)	કીટનાશકનું પ્રમાણ કિ.ગ્રા. /હે	પાણી			
૨૦૨૦	મકાઇ	ટપકાંવાળી લશ્કરી ઈયળ	માટી	૫	૪૧૬.૧૭	-	વાવણીના ૩૦ અને ૪૫ દિવસે ભૂંગળીમાં આપવી	--	--
			રેતી	૫	૪૧૬.૧૭				

Suggestions: Not approved (Extended)

1. The house has suggested to conduct the trial for one more year.

(Action: Associate Research Scientist, MMRS, AAU, Godhra)

16.3.1.39 Determination of Economic Threshold Level for gram pod borer in chickpea (PP/ARS, Derol (Ento.) /2016/01)

The farmers of middle Gujarat Agro-climatic zone growing chickpea are advised to initiate control measures when population of gram pod borer, *Helicoverpa armigera* crosses the economic threshold level as 13 larvae per 20 plants.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચણાની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે પોપટા કોરી ખાનાર લીલી ઈયળ તેની આર્થિક ક્ષમ્યમાત્રા ૧૩ ઈયળ કે તેથી વધુ પ્રતિ ૨૦ છોડ દીઠ જોવા મળે ત્યારે નિયંત્રણ માટે યોગ્ય પગલા

ભરવા.

Suggestions: Approved

(Action: Associate Research Scientist, ARS, AAU, Derol)

16.3.1.40 Evaluation of insecticides for the control of stem borer and wireworm infesting un-irrigated wheat (PP/ARS (Ento.), Arnej/2016/01)

The farmers of *Bhal* and Coastal Agro-climatic zone growing un-irrigated wheat are advised to treat seeds with thiamethoxam 30 FS or imidacloprid 600 FS @ 8 ml/kg seeds using equal quantity of water and dried under shade for effective control of stem borer and wireworm.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Insecticides	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ kg seed	Quantity of formulation/ kg seed	Conc. (%)	Dilution in water			
2020	Un-irrigated wheat	Stem borer and wireworm	Thiamethoxam 30 FS	2.4	8 ml	-	-	Before sowing seed treatment with thiamethoxam 30 FS or imidacloprid 600 FS @ 8 ml/kg seeds	Being a seed treatment not required	-
			imidacloprid 600 FS	4.8	8 ml	-	-			

ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારના બિનપિયત ઘઉંની ખેતી કરતા ખેડૂતોને ગાભમારાની ઇયળ અને વાયરવર્મના અસરકારક નિયંત્રણ માટે બીજને થાયામેથોક્ઝામ 30 એફએસ અથવા ઈમીડાક્લોપ્રીડ ૬૦૦ એફએસ ૮ મિ.લિ./કિ.ગ્રા. બીજ પ્રમાણે સમપ્રમાણમાં પાણી ભેળવી બીજ માવજત આપીને છાંયડે સુકવી વાવણી કરવા સલાહ આપવામાં આવે છે.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ				વાપરવાની પધ્ધતી	પ્રતિક્ષા સમય (દિવસ)	રીમાર્કસ
				ગ્રામ સ.ત./કિ.ગ્રા. બીજ	ફોર્મ્યુલેશનની માત્રા/ કિ.ગ્રા. બીજ	પ્રમાણ	પાણી સાથે ડાયલ્યુશન			
૨૦૨૦	બિનપિયત ઘઉં	ગાભમારાની ઇયળ અને વાયરવર્મ	થાયામેથોક્ઝામ ૩૦ એફએસ	૨.૪	૮ મિ.લિ.	--	--	વાવતાં પહેલાં બીજને થાયામેથોક્ઝામ ૩૦ એફ એસ અથવા ઈમીડાક્લોપ્રીડ ૬૦૦ એફ ૮ મિ.લિ./કિ.ગ્રા. પ્રમાણે માવજત આપવી	બીજ માવજત આપવાની હોવાથી જરૂરિયાત નથી	---
			□□□□□□□□□□ □□□□□ ૬૦૦ □□□□	૪.૮	૮ □□.□□.	--	--			

Suggestions: Approved

(Action: Associate Research Scientist, ARS, AAU, Arnej)

16.3.1.41 Evaluation of insecticides for the control of major lepidopteran pests of rice (PP/ARS, Sansoli/2018/01)

Rice growers of middle Gujarat agro-climatic zone are advised to spray flubendiamide

20 WG, 0.005% (2.5 g per 10 litre of water) at 30 and 45 days after transplanting for effective and economical control of leaf folder, *Cnaphalocrosis medinalis* infesting rice. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:

Year	**Crop**	**Pest**	**Insecticide**	**Dosage**			**Application schedule**	**Waiting period/ PHI (days)**	**Remarks**
				Conc. (%)	**Quantity of formulation (g/ha)**	**Dilution in water (g/ 10 litre)**			
2020	Rice	Leaf folder	Flubendiamide 20 WG	0.005	125	2.5	Spray application at 30 and 45 days after transplanting	30	---

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ડાંગરની ખેતી કરતાં ખેડૂતોને પાન વાળનાર ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ડાંગરની ફેરરોપણીના ૩૦ અને ૪૫ દિવસે ફ્લુબેન્ડિએમાઇડ ૨૦ ડબલ્યુજી, ૦.૦૦૫% (૨.૫ ગ્રામ પ્રતિ ૧૦ લિટર)નો છંટકાવ કરવાની સલાહ આપવામાં આવે છે. ડાંગરની કાપણી અને છેલ્લા છંટકાવ વચ્ચેનો સમયગાળો ૩૦ દિવસ રાખવો.

વર્ષ	પાક	જીવાત	કીટનાશક	પ્રમાણ			છંટકાવનો સમય	પ્રતીક્ષા સમય/ દીવસ	રીમાર્ક
				માત્રા (%)	કીટનાશકનું પ્રમાણ (ગ્રામ/હે.)	પાણી (ગ્રામ/૧૦ લિટર)			
૨૦૨૦	ડાંગર	પાન વાળનાર ઇયળ	ફ્લુબેન્ડિએમાઇડ ૨૦ ડબલ્યુજી	૦.૦૦૫	૧૨૫	૨.૫	ફેરરોપણીના ૩૦ અને ૪૫ દિવસ બાદ છંટકાવ કરવો	૩૦	--

Suggestions: Approved

(Action: Associate Research Scientist, ARS, AAU, Sansoli)

PLANT PATHOLOGY & NEMATOLOGY

16.3.1.42 Bio-efficacy of agrochemicals against bacterial canker (*Xanthomonas axonopodis* pv. *citri*) in citrus (PP/Hort. Wing, Anand (Patho.)/2017/01)

The farmers of middle Gujarat Agro-climatic zone are advised to spray tank mixed solution of streptomycin sulphate 90% + tetracycline hydrochloride 10% SP, 1 g/10 litre of water and copper oxychloride 50 WP, 20 g/10 litre of water first at initiation of disease and subsequent three sprays at 20 days interval for effective and economical management of bacterial canker in citrus.

Year	Crop	Disease	Agrochemicals	Dosage				Application schedule	Waiting period/PHI (days)	Remarks
				Conc. (%)	Dose/ 10 lit (g/ml)	Quantity of formulation/ha (g/kg)	Dilution in water			
2020	Citrus	Canker	Streptomycin sulphate 90% + tetracycline hydrochloride 10% SP (streptocycline), and copper oxychloride 50 WP	100 ppm and 0.1%	1 g and 20 g	100 g and 2 kg	1000 lit	First spray at initiation of disease and remaining three sprays at interval of 20 days of first spray	---	---

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં લીંબુની ખેતી કરતાં ખેડૂતોને બળિયા ટપકાંના રોગના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે સ્ટ્રેપ્ટોમાઈસીન સલ્ફેટ ૯૦% + ટેટ્રાસાયક્લીન હાઈડ્રોક્લોરાઈડ ૧૦% એસપી, ૧૦૦ પીપીએમ, ૧ ગ્રામ/ ૧૦ લીટર પાણી અને કોપર ઓક્સીક્લોરાઈડ ૫૦ ડબલ્યુપી, ૦.૧%, ૨૦ ગ્રામ/ ૧૦ લીટર પાણી નો પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને બાકીના ત્રણ છંટકાવ પ્રથમ છંટકાવના ૨૦ દિવસના અંતરે કરવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	રોગ	કૃષિ રસાયણો	પ્રમાણ				છંટકાવ નો સમય	પ્રતીક્ષા સમય / દીવસ	રીમાર્ક
				માત્રા (%)	માત્રા / ૧૦ લિ.	કૃષિરસાયણો નું પ્રમાણ/હે. (ગ્રામ/ કિ.ગ્રા.)	પાણી			
૨૦૨૦	લીંબુ	બળિયા ટપકાં	સ્ટ્રેપ્ટોમાઈસીન સલ્ફેટ ૯૦% + ટેટ્રાસાયક્લીન હાઈડ્રોક્લોરાઈડ ૧૦%, એસપી (સ્ટ્રેપ્ટોસાઈક્લીન) અને કોપર ઓક્સીક્લોરાઈડ ૫૦ ડબલ્યુપી	૧૦૦ પીપીએમ અને ૦. ૧%	૧ ગ્રામ અને ૨૦ ગ્રામ	૧૦૦ ગ્રામ અને ૨ કિ.ગ્રા.	૧૦૦૦ લિટર	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને બાકીના ત્રણ છંટકાવ પ્રથમ છંટકાવના ૨૦ દિવસ ના અંતરે	--	--

Suggestions: Approved

(Action: Assistant Professor (Pl. Path.), College of Horticulture, AAU, Anand)

16.3.1.43 Effect of manures in management of nematodes in bidi tobacco nursery (PP/BTRS (Patho.)/2016/01)

The farmers of middle Gujarat Agro-climatic zone growing bidi tobacco nursery are advised to apply recommended dose of 180 kg N/ha, out of which 45 kg N/ha in form of FYM (*i.e.* 90 kg FYM/100 m^2) coupled with poultry manure (PM) 90 kg N/ha (*i.e.* 24 kg PM/100 m^2) one month before seeding, remaining 45 kg N/ha from ammonium sulphate (AS) 25 kg N/ha as a basal dose (*i.e.* 1.25 kg AS/100 m^2) and remaining 20 kg N/ha as a split dose from urea (*i.e.* 0.43 kg urea/100 m^2) and drenching with rose can (100 g diluted in 10 litre water) after 30 days of germination to manage disease caused by nematodes and increase number of healthy transplantable seedlings. Requirements of manures and fertilizer to different plot size.

Plot size	FYM (kg)	Poultry manure (kg)	Ammonium sulphate (kg)	Urea (kg)
1 m^2	0.9	0.24	0.0125	0.0043
10 m^2	9	2.4	0.125	0.043
100 m^2	90	24	1.25	0.43
1000 m^2	900	240	12.5	4.3
10000 m^2	9000	2400	125	43

મધ્ય ગુજરાતમાં બીડી તમાકુનું ધરુવાડિયું ઉછેરતા ખેડૂતોને ભલામણ કરવામાં આવેલ ૧૮૦ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ/ ૧૦૦ મીર પૈકી વાવણીના એક માસ પહેલા ૪૫ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ હેક્ટર છાણિયા ખાતર (૯૦ કિ.ગ્રા/૧૦૦ મીર) ના રૂપમાં અને ૯૦ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ હેક્ટર મરઘાંના ખાતર (૨૪ કિ.ગ્રા/૧૦૦ મીર)ના રૂપમાં જ્યારે બાકીનો ૪૫ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ હેક્ટર પૈકી ૨૫ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ હેક્ટર એમોનિયમ સલ્ફેટ (૧.૨૫ કિ.ગ્રા./૧૦૦ મીર) ના રૂપમાં પાયાના ખાતર તરીકે આપી પિયત આપી દેવુ અને બાકી રહેલ ૨૦ કિ.ગ્રા. નાઇટ્રોજન પ્રતિ હેક્ટર યુરિયા (૦.૪૩ કિ.ગ્રા./૧૦૦ મીર) ના રૂપમાં પુર્તિ (૧૦૦ ગ્રામ ૧૦ લિટર પણીમા ઓગાળી) ખાતર તરીકે ઉગાવાના ૩૦ દિવસ પછી જમીનમા ઝારાની મદદથી દરેડવાથી કૃમિના રોગનું નિયંત્રણ મળે છે અને રોપવાલયક તંદુરસ્ત ધરું ની સંખ્યા વધારે મળે છે.

જુદા જુદા પ્લોટ માટે ખાતરોની જરૂરીયાત

પ્લોટનું માપ	છાણીયુ ખાતર (કિ.ગ્રા.)	મરઘાંનુ ખાતર (કિ.ગ્રા.)	એમોનિયમ સલ્ફેટ (કિ.ગ્રા.)	યુરિયા (કિ.ગ્રા.)
૧ મીર	૦.૯	૦.૨૪	૦.૦૧૨૫	૦.૦૦૪૩
૧૦ મીર	૯	૨.૪	૦.૧૨૫	૦.૦૪૩
૧૦૦ મીર	૯૦	૨૪	૧.૨૫	૦.૪૩
૧૦૦૦ મીર	૯૦૦	૨૪૦	૧૨.૫	૪.૩
૧૦૦૦૦ મીર	૯૦૦૦	૨૪૦૦	૧૨૫	૪૩

Suggestions: Approved

(Action: Research Scientist, Bidi Tobacco Research Station, AAU, Anand)

16.3.1.44 Effect of transplanting date of rice and nitrogen levels on incidence of pests and diseases (PP/CoA, Vaso (Patho.)/2017/01)

The farmers of middle Gujarat Agro-climatic zone growing paddy variety GR-11 are advised to transplant seedlings during 2nd to 4th week of July with application of 80 kg N/ha (32 kg as basal dose, 32 kg at tillering stage and 16 kg at one week before panicle initiation stage) to reduce the intensity of diseases (bacterial leaf blight and sheath rot) and infestation of insects (leaf hopper, leaf folder and rice stem borer).

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં જીઆર - ૧૧ ડાંગરની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ડાંગરની ફેરરોપણી જુલાઇના બીજા થી ચોથા અઠવાડીયામાં કરવી અને નાઈટ્રોજન ૮૦ કિ.ગ્રા. પ્રતિ હેક્ટર (૩૨ કિ.ગ્રા. પાયામાં, ૩૨ કિ.ગ્રા. ફૂટની અવસ્થામાં અને ૧૬ કિ.ગ્રા. કંટી નીકળવાના એક અઠવાડીયા પહેલા) મુજબ આપવાથી રોગ (જીવાણુથી થતો પાનનો સુકારો અને પર્ણચ્છેદનો કહોવરો) અને જીવાતો (ચૂસિયા, પાન વાળનારી ઇયળ અને ગાભમારાની ઇયળ) નો ઉપદ્રવ ઘટાડી શકાય છે.

Suggestions: Approved

(Action: Assistant Professor, Department of Plant Pathology, CoA, AAU, Vaso)

16.3.1.45 Effect of salicylic acid against foliar diseases of maize (PP/MMRS (Patho.), Godhra/2016/01)

The farmers of middle Gujarat Agro-climate zone growing *kharif* maize are recommended to soak the seeds in salicylic acid @ 0.75 mM concentration (104 mg/lit) for 18 hours followed by shade drying for 48 hours and apply two sprays of salicylic acid @ 3 mM concentration (4.14 g/10 lit.), first at 20 days after germination and second at 15 days after first spray for effective and economical management of foliar diseases *viz*., Maydis leaf blight, Turcicum leaf blight and Curvularia leaf spot.

Dissolves the salicylic acid in minimum quantity of ethanol to ensure complete solubility followed by dilution with required water.

Year	Crop	Pest	Pesticides with formulation	Dose				Application schedule	Waiting/ PHI (Days)	Remark(s)
				a.i./ha	Quantity of formulation/ha	Concentration (%)	Dilution in water (10 lit.)			
2020	Maize (*kharif*)	Foliar maize diseases such as maydis leaf blight, turcicum leaf blight and curvularia leaf spot	Seed priming with 0.75 mM + foliar spray of salicylic acid (3 mM)	-	2.08 g/20 kg seed /20 lit. + 207 g for two foliar spray	3 mM	4.14 g	Seed priming with salicylic acid before sowing after that two foliar spray of salicylic acid, one at 20 DAG and another at 15 days interval after first spray.	Not require	-

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું મકાઇની ખેતી કરતા ખેડૂતોને મેઇડીસ પાનના સૂકારા, ટર્સીકમ પાનના સૂકારા અને કર્વુંલેરીઆ પાનના ટપકા રોગોના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે સેલીસીલીક એસીડના ૦.૭૫ મિલિમોલર (૧૦૪ મિલિગ્રામ/લિટર)ના દ્રાવણમાં ૧૮ કલાક ડુબાડીની રાખી ત્યાર બાદ ૪૮ કલાક છાયડામાં સૂકવી વાવણી કરવી અને ૩ મિલિમોલર સેલીસીલીક એસીડ (૪.૧૪ ગ્રામ/૧૦ લિટર) ના બે છંટકાવ કરવા ભલામણ કરવામાં આવે છે. પ્રથમ છંટકાવ ઉગાવાના ૨૦ દિવસે અને બીજો છંટકાવ પ્રથમ છંટકાવના ૧૫ દિવસ બાદ કરવો.

સેલીસેલીક એસિડનુ દ્રાવણ બનાવવા જરૂરિયાત પ્રમાણેના જથ્થાને ઓછામાં ઓછા ઈથેનોલમાં સંપૂર્ણ દ્રાવ્ય કરી ત્યારબાદ જરૂરિયાત પ્રમાણે પાણીમાં લેવું.

વર્ષ	પાક	રોગ	જંતુનાશક દવાઓનું ફોર્મ્યુલેશન	પ્રમાણ				વાપરવાની પધ્ધતિ	વેઇટીંગ પીરીયડ (દિવસો)	રીમાકર્સ
				સક્રિય તત્વ હેકટરે	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેકટર	પ્રમાણ (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૨૦	મકાઇ (ખરીફ)	મકાઇના પાનના સુકારાનો રોગ જેવા કે મેઇડીસ, ટર્સીકમ અને કર્વુંલેરીઆ પાનનો ટપકાનો રોગ	૦.૭૫ મિલિ મોલર સાદ્રતાવારુ સેલીસીલીક એસીડ + સેલીસેલીક એસીડનો છંટકાવ (૩ મિલિમોલર)	--	૨.૦૮ ગ્રામ/ ૨૦ કિલો બીજ/૨૦ લિટર પાણીમાં + ૨૦૭ ગ્રામ બે છંટકાવ માટે	૩ મિલિ મોલર	૪.૧૪ ગ્રામ	વાવણી પહેલાં સેલીસીલીક એસીડની બીજ માવજત તેમજ વાવણી પછી ૨૦ દિવસ અને બીજો છંટકાવ ૧૫ દિવસ બાદ કરવો.	જરૂરી નથી	-

Suggestions: Approved

(Action: Research Scientist (Maize), Main Maize Research Station, AAU, Godhra)

16.3.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

AGRICULTURAL ENTOMOLOGY	
16.3.2.1	**Impact of bio-pesticides and insecticides on foraging bee in mustard**
	For effective management of mustard aphid, two sprays of flonicamide 50 WG 0.015% (3.0 g/10 l of water) OR acetamiprid 20 SP 0.008% (4.0 g/10 l of water), first spray at initiation of pest infestation and second at 15 days interval after first spray found effective.
	Suggestions: Not approved
	(Action: Professor & Head, Department of Entomology, JAU, Junagadh)
16.3.2.2	**Study on foraging activities of honeybees on seed spices**
	Honey bee species *viz., Apis florea, Apis dorsata, Apis cerana* and *Trigona iridipenis* were recorded in the coriander, fennel and dill seed for foraging activity. Among the different species, *Apis florea* was found the dominant forager.
	Suggestions: Merged scientific recommendation with Farmer's recommendation
	(Action: Professor & Head, Department of Entomology, JAU, Junagadh)
16.3.2.3	**Synergism of different plant oils with different insecticides against pod borer, *Helicoverpa armigera* infesting chickpea**
	Two sprays of flubendamide 48 SC 0.015% + neem oil 0.5% (3.20 + 50 ml/10 l of water) along with sticker (3 ml/10 l water), first spray when pest crosses the economic threshold level (0.75 larvae/plant before flowering and 0.5 larvae /plant after

	flowering) and second, at 20 days after first spray found effective against *Helicoverpa armigera* infesting chickpea.
	Suggestions: Approved
	(Action: Professor & Head, Department of Entomology, JAU, Junagadh)
16.3.2.4	**Study on efficacy of different insecticides against white fly in papaya**
	Two sprays of acetamiprid 20 SP 0.006% (3 g/10 l of water) OR thiamethoxam 25 WG 0.01% (4g/10 l of water), first at nymphs and adults infestation and second at 15 days after first spray found effective against whitefly (*Bemisia tabaci)* infesting papaya.
	Suggestions: Approved
	(Action: Professor & Head, Department of Horticulture, JAU, Junagadh)
16.3.2.5	**Bio-efficacy of new insecticidal molecules against sucking pest of summer groundnut**
	Two sprays of clothianidin 50 WDG 0.004% (0.8 g/10 l of water) OR spinosad 45 SC 0.014% (3.0 ml/10 l of water) OR dinotefuran 20 SG 0.006% (3.0 g/10 l of water) at 10 days interval starting from pest infestation found effective against thrips in summer groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
16.3.2.6	**Bio-efficacy of biopesticides against sucking pest infesting groundnut**
	Two sprays of spinosad 45 SC 0.018% (4 ml/10 l of water) at 10 days interval starting from pest infestation found effective against thrips in *kharif* groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
16.3.2.7	**Management of white grub in groundnut**
	Seed treatment with clothianidin 50 WDG 4 g per kg of seed found effective against white grub in *kharif* groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
16.3.2.8	**Phenology based application of selective insecticide/ biopesticide combinations for *Spodoptera exigua* and *Helicoverpa armigera* in chickpea**
	Spraying of profenophos 50 EC 0.13% (26 ml/10 l water) followed by emamectin benzoate 5 SG 0.002% (4 g/10 l water) 15 days after first spray was found effective against pod borer (*Helicoverpa armigera*) infesting chickpea.
	Suggestions: Approved
	(Action: Research Scientist (Pulse), Pulse Research Station, JAU, Junagadh)
16.3.2.9	**Testing of IPM modules with farmers practice against pest complex of pearl millet**
	Seed treatment of imidacloprid 600 FS @ 8.75 ml/kg seeds + removal of shoot fly dead hearts + fish meal trap @ 10/ha at 7 days after germination (fish meal to be replaced once a week) + spraying of novaluron 10 EC 0.01% (10 ml/10 l water) at 35 DAG recorded lowest stem borer per cent incidence of pearl millet.
	Suggestions: Approved

	(Action: Research Scientist (Pearl millet), Millet Research Station, JAU, Jamnagar)
16.3.2 .10	**Testing the efficacy of different insecticides against shoot fly and stem borer in pearl millet**
	Seed treatment of clothianidin 50 WDG @ 7.5 g/kg seeds followed by spray of fipronil 5 SC 0.01% (20 ml/10 l water) for shoot fly, while chlorantraniliprole 20 SC 0.006% (3.0 ml/10 l water) for stem borer at 35 DAG were found effective in pearl millet.
	Suggestions: Approved
	(Action: Research Scientist (Pearl millet), Millet Research Station, JAU, Jamnagar)
16.3.2 .11	**Evaluation of pre-harvest spraying of insecticides for management of pulse beetle (C*allosobruchus* sp.) in green gram**
	Green gram seeds can be protected up to two months from pulse beetle infestation during storage (seed purpose) by giving spray in the field either profenophos 50 EC 0.05% (10 ml/10 l of water) or emamectin benzoate 5SG 0.0015% (3.0g/10 l of water) at 50 and 100 % pod maturity of green gram.
	Suggestions: Approved
	(Action: Research Scientist (Pearl millet), Millet Research Station, JAU, Jamnagar)

PLANT PATHOLOGY

16.3.2 .12	**Development of technologies for the management of soil borne diseases of groundnut**
	Deep ploughing in summer with mould board plough + furrow application of *Trichoderma harzianum* 1% WP (2 x 10^6 cfu/g) @ 4 kg/ha enriched with 250 kg FYM/ha at the time of sowing + seed treatment with tebuconazole 2 DS @ 1.5 g/kg of seeds followed by seed treatment with PGPR (1 x 10^7 cfu/g) @ 5 ml/kg seeds + line application of *T. harzianum* 1% WP @ 4 kg/ha enriched with 250 kg FYM/ha at 35 and 70 DAS near the base of plant found effective against collar rot and stem rot diseases in groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
16.3.2 .13	**Management of major foliar diseases of groundnut**
	Seed treatment of tebuconazole 2 DS @ 1.5 g/kg seeds with two spray of tebuconazole 50% + trifloxystrobin 25% WG @ 0.035 % (13.2 g/10 l of water) at 40 and 65 DAS found effective against foliar diseases (Early Leaf Spot and Late Leaf Spot) in *kharif* groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)
16.3.2 .14	**Evaluation of different IPDM modules for management of major insect-pest and diseases in groundnut**
	Seed treatment with *Trichoderma harzianum* 1% WP @ 4 g/kg seed + need based

	spray of imidacloprid 17.8 SL 0.005% (3 ml/10 l water) for sucking pest + need based spray of novaluron 10 EC 0.010% (10 ml/10 l water) for defoliators at 50-70 DAS + two sprays of tebuconazole 25.9 EC 0.0259% (15 ml/10 l water) at 50 and 70 DAS found effective against early leaf spot and late leaf spot diseases and leaf damage caused by defoliators (*Helicoverpa* & *Spodoptera*) of groundnut.
	Suggestions: Approved
	(Action: Res. Sci. (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

AGRICULTURAL ENTOMOLOGY	
16.3.2.15	**Bio-efficacy of various molecules of insecticides against coriander aphid, *Hydaphis coriandri* (Das)**
	Two foliar sprays of flonicamid 50WG @ 0.015% (75g a.i./ha; 3g/10 lit water), first at 1.5 aphid index and second at 10 days after first spray is effective for managing aphid in coriander. PHI 33 days should be kept.
	Suggestions: Approved
	(Action: Assoc. Res. Sci. (Ento.), Seed Spices Research Station, SDAU, Jagudan)
16.3.2.16	**Bio-efficacy of different synthetic insecticides against isabgol aphid, *Aphis gossypii* Glover**
	Two foliar sprays of flonicamid 50WG @ 0.015% (75 g a.i./ha; 3 g/10 lit water), first at 1.5 aphid index and second at 10 days after first spray is effective for managing aphid in isabgol. PHI 43 days should be kept.
	Suggestions: Approved
	(Action: Assoc. Res. Sci. (Ento.), Seed Spices Research Station, SDAU, Jagudan)
16.3.2.17	**Chemical control of sucking pests of mustard**
	Seed treatment with imidacloprid 600 FS @ 5 ml/kg seed or thiamethoxam 35 FS @ 6 ml/kg seed followed by three foliar sprays of flonicamid 50 WG @ 2g/10 lit water (0.01%), first at initiation of whitefly infestation or 1.5 Aphid Index and remaining two sprays should be given at 15 days interval after first spray for effective management of whitefly and aphid in mustard.
	Suggestions: Approved
	(Action: Assoc. Res. Sci. (Ento.), Polytechnic in Agriculture, SDAU, Khedbrahma)
PLANT PATHOLOGY	
16.3.2.18	**Screening of castor genotypes for *Fusarium* wilt disease resistance**
	Castor inbred lines *viz*., SKI-399, SKI-401, SKI-403, SKI-405, SKI-406, SKI-408, SKI-415, SKI-416, SKI-417, SKI-419 and SKI-420 are resistant (≤ 20 % wilt incidence) to wilt disease and SKI-407, SKI-411, SKI-412, SKI-413 and SKI-

	414 are moderately (> 20 - 40 % wilt incidence) resistant to wilt disease. Castor pistillate lines *viz*., Geeta, JP-96, SKP-106, SKP-121, SKP-123 and SKP-84 are resistant (≤ 20 % wilt incidence) to wilt disease. These lines could be used as wilt resistance source(s) in future breeding programme to develop wilt resistant hybrid/variety.
	Suggestions: Approved
	(Action: Asstt. Res. Scientist (Pl. Patho.), CMRS, SDAU, Sardarkrushinagar)
16.3.2.19	**Morphological and cultural characterization of foliar blight of wheat**
	In North Gujarat, two pathogens *viz*. *Alternaria triticina* (75 isolates) and *Bipolaris sorokiniana* (28 isolates) were associated with foliar blight and the intensity was recorded up to 89, 56, 78 and 35% in Mehsana, Gandhinagar, Aravalli and Sabarkantha districts, respectively while very low in Banaskantha (1%) and Patan (2%) districts. All the isolates were pathogenic except eight isolates of *A. triticina*. The isolates of *A. triticina* were greyish white to black with suppressed growth while *B. sorokiniana* were greyish white with fluffy growth and knotting on the periphery of the culture
	Suggestions: Approved
	(Action: Asstt. Res. Sci.(Pl. Patho.), Wheat Research Station, SDAU, Vijapur)
16.3.2.20	**Management of coriander powdery mildew through fungicides**
	Spraying of propiconazole 25 EC (0.1%) or hexaconazole 5 EC (0.1%) at the initiation of powdery mildew disease and second spray at 15 days after first spray effectively manage the disease in coriander.
	Suggestions: Not Approved
	(Action: Asstt. Res. Sci. (Pl. Patho.), Seed Spices Research,Station, SDAU, Jagudan)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

AGRICULTURAL ENTOMOLOGY	
16.3.2.21	**Evaluation of different substrates for mass culturing of *Beauveria bassiana* (Bals.) Vuill**
	For mass multiplication of *Beauveria bassiana* (Bals.) Vuill,, 100g of sorghum grain soaked overnight in water, then autoclave for 20 minutes at 121°C temperature. The fungus can be inoculated at 10ml conidial suspension of *B. bassiana* ($5x10^7$ conidia/ ml) after cooling aseptically and incubated for 15 days at 25±1°C temperature to get maximum cfu ($13.67x10^8$). Moreover, the clumps should be broken manually by rubbing HDPE bag for uniform growth of the fungus.
	Suggestions: Approved
	(Action: Professor & Head, Department of Entomology, NMCA, NAU, Navsari)
16.3.2.22	**Screening of pigeon pea genotypes against pod borer and pod fly under natural field condition**

	Infestation of pod borers and pod fly was less in the pigeon pea entries *viz*., NPEK-15-03, NPEK-15-25, ICPL-87119, NPEK-15-09, BP-15-23, GJP-1303, SKNP-1413, AGT-2 and BP-15-11.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Ento), College of Agriculture, NARP, NAU, Bharuch)
16.3.2.23	**Screening of promising genotypes for multiple resistance against stem borer (*Scirpophaga incertulas*), leaf folder (*Cnaphalocrocis medinalis*) and sheath mite (*Steneotarsonemus spinki*) of rice**
	Rice genotypes *viz*., NVSR-329, NVSR-355 and NVSR-384 were found to have multiple resistant reaction against yellow stem borer (*Scirpophaga incertulas* Walker), leaf folder, (*Cnaphalocrocis medinalis* Guenee) and sheath mite (*Steneotarsonemus spinki* Smiley) under field conditions.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Ento), College of Agriculture, NARP, NAU Bharuch)
16.3.2.24	**Study the incidence of insect-pest in high density mango plantation under drip irrigation**
	Mango (cv Kesar) orchard under high density (5m x 5m) planting under drip irrigation in south Gujarat conditions recorded mango hopper, thrips and mite during 1st to 3rd, 52nd to 2nd and 7th to 10th standard meteorological week, respectively.
	Suggestions:Approved
	(Action: Assoc. Res. Sci. (Ento), Main Rice Research Centre, SWMRU, NAU, Navsari)
16.3.2.25	**Varietal preference of insect-pest incidence in ultra high-density mango plantation under drip irrigation**
	Mango (cv Kesar) orchard under ultra high density (2.5m x 2.5m) planting under drip irrigation in south Gujarat conditions recorded higher population of mango hopper, thrips and mites in Ratna and less population of these pests in Totapuri variety.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Ento), Soil and Water Management Research Unit, NAU, Navsari)
16.3.2.26	**To assess the crop loss due to insect pests and diseases in sorghum**
	The avoidable yield loss due to insects *viz.,* shoot fly and stem borer and due to disease *viz.,* grain mold and sugary disease was anticipated up to 50.00 per cent in sorghum.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Ento), Main Sorghum Research Station, NAU, Surat)
16.3.2.27	**Documentation and monitoring population of pollinators on mango**
	Total thirteen insect species were observed visiting on mango flowers and maximum population of floral visitors belonging to Diptera (Blow flies, *Chrysomya megacephala* Fab.; Syrphid flies, *Syrphus* sp. and *Eristalinus arvorum* Fab. and house fly, *Musca domestica* L.) followed by Hymenopteran bees (*Apis florea* Fab.; *Apis cerana indica* Fab.; *Apis mellifera* L.; *Apis dorsata* Fab. and *Tetragonula*

	iridipennis Smith), Wasp, *Vespula orientalis* L.; Red ant, *Oecophylla smaragdina* (Fab.); Dragon fly and Butterflies during full bloom stage. The maximum activity was recorded in south direction followed by north, west and east direction. The intensity of pollinators or visitors was found significantly higher in unsprayed trees as compared to sprayed trees.
	Suggestions: Approved
	(Action: Asstt. Research Scientist (Ento), AES, NAU, Paria)
16.3.2.28	**Assessment of yield losses due to pest and diseases in papaya**
	The average avoidable yield loss due to mealybug, *Paracoccus marginatus* and Papaya Ring Spot Virus (PRSV) disease anticipated up to 11.00 per cent in papaya.
	Suggestions: Not approved
	(Action: Assistant Research Scientist (Patho), Fruit Research Station, NAU, Gandevi)

16.3.2.29	**Studies on natural parasitization of sugarcane shoot borer**
	Shoot borer *viz*., *Sesamia* sp. and *Chilo* sp. were important pests of sugarcane which were naturally parasitized by parasitoids *viz*., *Tachinid* sp. and *Apanteles* sp under south Gujarat condition.
	Suggestions: Approved
	(Action: Scientist (Pl. Protection) KVK, NAU, Vyara)
16.3.2.30	**Effect of ozonized water washing on pesticide residues and shelf-life of green chilli and okra**
	The home-makers, consumers and food processors are advised to rinse okra and chilli fruits with ozonized water for 8 minutes with commercially available ozone purifier based on Vortex Ozone Technology having ozone producing capacity of 0.5kg/hour to decontaminate the acetamiprid and ethion residues in the range of 39.18-59.43 and 51.39-59.28 %, respectively and prolongs the shelf-life of the fruits.
	Suggestions: Approved
	(Action: Asstt. Professor, Food Quality Testing Laboratory, NAU, Navsari)
16.3.2.31	**Status of pesticide residues in seasonal green leafy vegetables in South Gujarat**
	The survey of pesticide residues in five leafy vegetables (coriander, colocasia, fenugreek, spinach, amaranthus) different markets of South Gujarat reveals that 48.75 % samples were positive for different pesticides. • More than 50% samples of spinach and colocasia were positive for different pesticides. • Buprofezin was the most frequently detected pesticides from different leafy vegetables. • None of vegetable sample was found exceeding the Maximum permissible limit for different elements.
	Suggestions: Approved
	(Action: Asstt. Professor, Food Quality Testing Laboratory, NAU, Navsari)
16.3.2.32	**Pollinators fauna in lucerne flora**
	Pollinators *viz*., honey bees, butterflies, dipteran insects, wasps, etc. in lucerne are very active between 10.00 AM to 2.00 PM in South Gujarat Heavy Rainfall Zone-II.
	Suggestions: Approved (Shifted from farmers recommendation to scientific recommendation)
	(Action: Professor and Head, Department of Entomology, NMCA, NAU, Navsari)
PLANT PATHOLOGY	
16.3.2.33	**Screening of little millet (*Panicum miliare* L.) varieties and germplasms against blast**
	Seven little millet germplasms *viz*., WV-124, WV-126, WV-130, WV-143, WV-145, WV-146, WV-151 and two varieties *viz*., GV-2 and GNV-3 were found resistant against blast and grain smut. OLM -203 variety was found highly resistant to grain smut.
	Suggestions: Approved
	(Action: Asstt Professor, College of Agriculture, NAU, Waghai)

16.3.2.34	**Screening of mungbean entries against mungbean yellow mosaic (LSET-I & SSET)**
	Mungbean entries viz., NKM-15-08, NKM-15-12, NKM-15-05, NKM-15-13, NKM-15-14 and NKM-15-15 were found Highly Resistant against mungbean yellow mosaic disease in South Gujarat Heavy Rainfall Zone under natural condition.
	Suggestions: Approved
	(Action: Asstt. Res.Sci. (Patho), Pulses and Castor Research Station, NAU, Navsari)
16.3.2.35	**Screening of urdbean entries against mungbean yellow mosaic (SSET)**
	Urdbean entries viz., NUK-15-02, NUK-15-06 & NUK-15-10 were found Highly Resistant and NUK-15-09 was found Resistant against mungbean yellow mosaic disease in South Gujarat Heavy Rainfall Zone under natural condition.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Patho), Pulses and Castor Research Station, NAU, Navsari)
16.3.2.36	**Screening of cowpea entries against yellow mosaic (SSET & PET)**
	Cowpea entries viz., NCK-15-08, NCK-15-09, NCK-15-11, NCK-15-12, NCK-15-02 & NCK-15-04 were found Highly Resistant and NCK-15-07 was found Resistant against yellow mosaic disease in South Gujarat Heavy Rainfall Zone under natural condition.
	Suggestions: Approved
	(Action: Asstt. Res. Sci.(Patho), Pulses and Castor Research Station, NAU, Navsari)
16.3.2.37	**Screening of Indian bean entries against yellow mosaic and powdery mildew (SSET)**
	Indian bean entries *viz.,* NIBD-14-01 was found Highly Resistant against yellow mosaic disease. While, NIBD-14-01, NIBD-14-02, NIBD-14-03 & NIBD-14-06 were found Moderately Resistant against powdery mildew disease in South Gujarat Heavy Rainfall Zone under natural condition.
	Suggestions: Approved
	(Action: Asstt. Res. Sci. (Patho), Pulses and Castor Research Station, NAU, Navsari)
16.3.2.38	**Assessment of yield losses due to pest and diseases in banana**
	The average avoidable yield loss due to pseudo-stem weevil, *Odoiporus longicollis* (Oliver) as well as banana bunchy top virus (BBTV) and Sigatoka leaf spot diseases infestation estimated up to 6.00 per cent in banana.
	Suggestions: Not Approved
	(Action: Asstt. Res. Sci. (Patho), Fruit Research Station, NAU, Gandevi)
16.3.2.39	**Integrated management of papaya diseases**
	Following module was found effective with minimum infection of diseases *viz.,* Fruit Rot, Collar rot and Papaya Ring Spot Virus and higher marketable papaya fruits yield.
	Module I: Seed treatment with captan 50 WP @ 5 g per 100g seed, seedling raising under Nylon net (40-60 mesh) and spraying of acephate 75 SP, 1.5g/l three days before transplanting in main field. Growing of two rows of maize and castor/sesbania as border crop. ↓ After 10 days

	Drench with Dimethomorph 50 WP, 0.4g + Mancozeb 75 WP , 2g /l ↓ After 15 days Neem Oil 2% Foliar application + 0.5ml/L sticker at 30 days interval till flowering ↓ After 15 days Foliar Application of Urea @10g + Zinc Sulphate @ 15g + Boron @ 10g/l ↓ After 7 days Application of Hexaconazole 5 EC, 2 ml + Zineb75WP, 2g + 0.5ml sticker/l ↓ After 7 days Neem oil 2% foliar application + 0.5ml sticker/l ↓ After 7 days Application of Hexaconazole 5 EC, 2 ml + Zineb 75WP, ,2g + 0.5ml sticker/l ↓ After 7 days Foliar Application of Urea @10g + Zinc Sulphate @ 15g + Boron @ 10 g/l ↓ After 15 days Neem oil 2% foliar application + 0.5ml sticker/l ↓ After15 days Application of Urea @ 10g + Zinc Sulphate @ 15g + Boron @ 10g/l ↓ After15 days Difenoconazole 25 EC @0.5ml + 0.5ml sticker/l
	Suggestions :Approved
	(Action: Asstt. Res. Sci. (Patho), Fruit Research Station, NAU, Gandevi)

ANAND AGRICULTURAL UNIVERSITY, ANAND

AGRICULTURAL ENTOMOLOGY	
16.3.2.40	**Bio-efficacy of insecticides against thrips, *Scirtothrips dorsalis* Hood in pomegranate (PP/Ento./2017/02)**
	Application of spinosad 45 SC, 0.01% (2.20 ml/10 litre water, 100 g a.i./ha) or buprofezin 15% + acephate 35% (50 WP), 0.063% (12.5 g/10 litre water, 625 g a.i./ha) when thrips population attain 5 thrips/10 cm shoot and second after 15 days for effective control of thrips in pomegranate. **Suggestions: Approved** (Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)
16.3.2.41	**Evaluation of insecticides against leaf eating caterpillar in drumstick (PP/Ento./2018/02)**
	Chlorantraniliprole 18.5% SC, 0.006% (3.00 ml/10 litre water, 30 g a.i./ha) or emamectin benzoate 5% SG, 0.0019% (3.80 g/10 litre water, 9.50 g a.i./ha), first at appearance of pest and second after 15 days proved effective against drumstick leaf eating caterpillar. **Suggestions: Approved** (Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)
16.3.2.42	**Efficacy of granular insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/02)**
	Whorl application of fipronil 0.6% GR, 20 kg/ha (120 g a.i./ha) first at appearance of pest and second after 15 days for effective control of fall armyworm, *Spodoptera frugiperda* in maize. **Suggestions: Approved** (Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)

16.3.2.43	**Evaluation of bio-pesticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize (PP/Entomology(BACA), ARS, Sansoli & MMRS, Godhra/2019/03)**
	Application of *Nomuraea rileyi* 1% WP (2 x 10^8 cfu/g) @ 40 g/10 litre water first at initiation of pest and subsequent two sprays at 10 days interval for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize. **Suggestions: Approved** (Split from farmers recommendation in to scientific recommendation) (Action: Prof. and Head, Dept. of Entomology, BACA, AAU, Anand)
16.3.2.44	**Decontamination study of water by ozone treatment for about 100 pesticides (PP/Pesticide Residues/2019/01)**
	Ozone treatment to pond/river/ground water for 15 min @ 500 mg/hr in 15 mL water can result in ≥ 70% degradation of the listed 99 pesticides. Out of these, 71 pesticides showed degradation ≥ 90%. Pesticides *viz.,* thiacloprid, tricyclazole, phosphamidon, fenamiphos-sulfone, propoxure, finamiphos-sulfone, simazin, atrazine, chlorantraniliprole and fluopicolide did not degrade by ozone treatment. List of pesticide degraded more than 90% are metoxuron, diuron, demeton, azoxystrobin, malathion, dimethomorph, triazophos, fenamiphos, phenthoate, quinalphos, anilophos, fenthion, pyraclostrobin, phosalone, spinosyn A & D, emamectin B1a, buprofezin, pyriproxyfen, chlorpyriphos, spiromesifen, propargite, tridemorph, fenpyroximate, fenazaquin, carbosulfan, fipronil-sulfone, temephos, methiocarb, ethiofencarb, butocarboxim, chlorotoluron, chloroxuron, diethofencarb, forchlorfenuron, isoproturon, neburon, pirimicarb, siduron, butafenacil, cyprodinil, fenhexamid, flutolanil, furulaxyl, imazalil, mepanipyrim, mepronil, picoxystrobin, piperonyl-butoxide, prochloraz, pyracarbolid, pyrimethanil, rotenone, spiroxamine, bupirimate, carboxin, clethodim, ethiprole, fenamidone, methoprotryne, prometryn, terbutryn, triflumizole, diniconazole, fenpropimorph, mexacarbate, aminocarb, pencycuron and fluazinam. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
16.3.2.45	**Multi-residue analysis of 100 pesticides in water using QuEChERS method and detection by LC-MS/MS and/or GC-MS/MS (PP/Pesticide Residues/2019/02)**
	A new innovative QuEChERS method for multi-residue analysis of 130 pesticide compounds in water is developed with LOQ 0.5 ppb. This method can reduce the analysis time, use fewer reagents in small amounts and provide high recovery for routine monitoring of pesticides residue from water. The method can very well match the requirements for WHO and BIS standards for most pesticides. **Suggestions: Approved** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
16.3.2.46	**Multi-residue analysis of 100 pesticides in cumin seeds using QuEChERS method and detection by LC-MS/MS and/or GC-MS/MS (PP/Pesticide Residues/2019/03)**
	Multiresidue analysis of cumin seeds by LC-MS/MS showed acceptable performance of 98 pesticides when fortified at 0.1 µg/g. List of pesticides showed acceptable performance are aldicarb, aldicarb-sulfone, aldicarb-sulfoxide, anilofos, bendiocarb, carbaryl, carbofuran, cymoxanil, dichlorvos, diniconazole, edifenphos, etaconazole, fenamidone, fenamiphos, fenamiphos-sulfone, fenamiphos-sulfoxide, fenarimol, fenobucarb, fenthion, flonicamid, fluopicolide, flusilazole, indoxacarb, isoproturon, linuron, malaoxon, metoxuron, metribuzin, oxycarboxin, penconazole, pencycuron, pretilachlor, propanil, propaquizafop, propoxur, quizalofop-

	ethyl, simazine, demeton-S-methyl sulphoxide, demeton-S-methyl-sulfone, carboxin, demeton-O, demeton-S, triadimefon, fenpyroximate, abamectin, carbosulfan, acephate, acetamiprid, atrazine, azoxystrobin, buprofezin, carbendazim, carbofuran, carbofuran-3-hydroxy, carbofuran-3-keto, clothianidin, dimethoate, dimethomorph, diuron, fenazaquin, imidacloprid, iprobenfos, metalaxyl, methamidophos, methomyl, monocrotophos, myclobutanil, omethoate, phenthoate, phorate-sulfone, phorate-sulfoxide, phosalone, phosphamidon, profenofos, propargite, propiconazole, pyraclostrobin, pyriproxyfen, tebuconazole, thiacloprid, thiamethoxam, triazophos, chlorfenvinphos, chlorantraniliprole, difenoconazole, fipronil, fipronil-sulfide, fipronil-sulfone, thiophanate-methyl, malathion, tricyclazole, alachlor, chlorpyriphos, ethion, fenpropathrin, thiodicarb, trifloxystrobin, dicofol. **Suggestions**: Approved (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
16.3.2.47	**Evaluation of insecticides against plant hopper infesting rice (PP/MRRS (Ento.)/2018/01)**
	Two sprays of sulfoxaflor 24 SC, 0.043% (18.2 ml/10 litre of water, 218.7 g a.i./ha), first spray at the initiation of white backed plant hopper (WBPH) and second after 15 days for effective management of WBPH in rice. **Suggestions: Approved** (Action: Research Scientist, MRRS, AAU, Nawagam)
16.3.2.48	**Screening of mungbean genotypes against insect pests and diseases under natural conditions (PP/PRS, Vadodara /2016/02)**
	Out of 17 greengram genotypes/cultivars screened in summer season, VMG-03 found resistant against insect pests *viz*., whitefly, jassid, thrips and yellow mosaic disease while moderately resistant to aphid and spotted pod borer, *Maruca vitrata*. This can be used in breeding for developing resistant varieties. **Suggestions: Approved** (Action: Research Scientist, Pulse Research Station, AAU, Vadodara)
16.3.2.49	**Screening of blackgram genotypes against insect pests and diseases under natural conditions (PP/PRS, Vadodara /2016/03)**
	Out of 20 blackgram genotypes/cultivars screened in summer season, VUG-33 and VUG-31 found resistant against insect pests *viz*., whitefly, jassid, thrips and yellow mosaic disease while moderately resistant to aphid and spotted pod borer, *Maruca vitrata*. This can be used in breeding programme for developing resistant varieties. **Suggestions: Approved** (Action: Research Scientist, Pulse Research Station, AAU, Vadodara)
16.3.2.50	**Population dynamics of major lepidopterous insect pests through sex pheromone traps (PP/Agri.Wing(Ento),Vaso/2013/02)**
	Relatively higher male moth catches of tobacco leaf eating caterpillar, *Spodoptera litura*, gram pod borer, *Helicoverpa armigera* and rice stem borer, *Scirpophaga incertulas* in pheromone traps were found during July to December, September to December and August to October, respectively with peak in month of October. **Suggestions: Approved** (Action: Asso. Prof. and Head, Dept. of Entomology, College of Agriculture, AAU, Vaso)
16.3.2.51	**Evaluation of insecticides for the control of major lepidopteran pests of rice (PP/ARS, Sansoli/2018/01)**

	Application of thiodicarb 75 WP, 0.15% (20 g/10 litre water, 783.33 g a.i./ha) at 30 and 45 days after transplanting found effective against leaf folder, *Cnaphalocrocis medinalis* infesting rice. **Suggestions: Approved** (Action: Associate Research Scientist, ARS, AAU, Sansoli)
16.3.2.52	**Management of root-knot nematodes (*Meloidogyne* sp./ race) in pulses by crop rotation (PP/Nematology/2016/16)**
	For effective management of root-knot nematode, *Meloidogyne incognita* and *M. javanica* in root-knot infested field, adopt the following crop rotation for three years. *Kharif*: cowpea (AVCP 1), *Rabi*: onion and Summer: cowpea (AVCP 1) vegetable **Suggestions: Approved** (Action: Professor & Head, Department of Nematology, BACA, Anand)

16.3.3 NEW TECHNICAL PROGRAMMES

Date : 29-30 May, 2020

Summary

Name of Sub Committee	New Technical Programmes						Total
	Proposed		Approved		Not Approved		
	Ento	Patho	Ento	Patho	Ento	Patho	
AAU, Anand	30	10	28	9	2(1*+1)	1#	37
JAU, Junagadh	11	5	10 (11-1@)	6 (5+1+)	-	-	16
NAU, Navsari	13	9	12	7	1*	2*	19
SDAU, S.K.Nagar	7	1	7	1	-	-	08
Total	**61**	**25**	**57**	**23**	**3**	**3**	**80**

*Suggested as filler trial, # Two experiments merged as one with two locations, + Addition of trial, @ shifted

COMMITTEE OF NEW TECHNICAL PROGRAMMES

Chairman	: Dr. R. K. Patel, Vice Chancellor, SDAU
Co-Chairman	: Dr. K. A. Patel, ADR, NAU, Navsari
	: Dr. A. G. Desai, Res. Sci. (Pl. Patho.)SDAU
Rapporteurs	: Dr. P. S. Patel, SDAU, Sknagar
	: Dr. Lalit Mahatma, NAU, Navsari
Statistician	: Dr. A. D. Kalola, Asso. Prof., AAU, Anand

At the outset Dr. S. R. Chaudhary, Hon. Vice Chancellor of NAU welcomed Dr. R. K. Patel, Hon. Vice Chancellor of SDAU and also the chairman of the Crop protection sub-committee and all the conveners, Co-chairman, rapporteurs and other senior scientists who attended the video conferencing. Dr. S. R. Chaudhary, Hon. Vice Chancellor and Host of this meeting emphasized the need of such a very important meeting through Videoconference due to Covid 19 pandemic and requested all the conveners and members for very active participation for a critical discussion on the new technical programme. The chairman of the session and Hon. Vice Chancellor of SDAU in his introductory remark pointed out the new challenges faced by Crop protection scientists and narrated some burning issues such as, the second major plague of

locusts, incidence of invasive species like fall army worm, ban of very effective plant protection chemicals by Govt. of India, Pressure on organic farming from different corners, Restriction on use of effective chemicals due to label claim policy *etc*. He also pointed out that Plant protection is always a challenge and requested the young scientists to transform the challenges into opportunity. This was followed by the presentation of new technical programme by AAU, JAU, NAU and SDAU.

ANAND AGRICULTURAL UNIVERSITY, ANAND
AGRICULTURAL ENTOMOLOGY

Sr. No.	Title	Suggestions
16.3.3.1	Bio-efficacy of insecticides against wheat aphid	**Accepted with following suggestions:** 1. Remove the word 'subsequent' from methodology 2. If the aphid incidence found during vegetative stage in leaf then observation should be recorded as no of aphids/ shoot and if it found on ear head then No. of aphids/ ear head should be recorded 3. The ETL for feeding on leaf is 10 aphids/shoot and for ear head 5 aphids/ear head, so the first application of insecticides will be given accordingly 4. Change the dose of Thiamethoxam @ 4 g/10 L water instead of 1 g/10 L water 5. Take observation at 14 DAS instead of 15 DAS **[Action:** Professor and Head, Department of Entomology, BACA, AAU, Anand**]**
16.3.3.2	Bio-efficacy of organic inputs against aphid in fennel	**Accepted with following suggestions:** 1. Remove 'with slight runoff stage' from methodology. 2. Fix two sprays 3. Add concentration in T3, T4, T5 4. Economics of different treatments **[Action:** Professor and Head, Department of Entomology, BACA, AAU, Anand**]**
16.3.3.3	Biological suppression of fall armyworm, *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae) in maize	**Accepted with following suggestions:** 1. In methodology, 1st release of *T. pretiosum* with the initiation of egg laying 2. Change the observation as Infested plants/ plot instead of 10 plants

		3. Correct the concentration 0.0006% instead of 0.4% in T_{12} 4. Maintain isolation distance at least 6 m in all Trichogramma released plots **[Action:**Research Scientist, AICRP on Biological Control, AAU, Anand**]**
16.3.3.4	Isolation, characterization and bioassay studies of *Spodoptera frugiperda* nuclear polyhedrosis virus (*Sf*NPV)	**Accepted with following suggestions:** 1. Remove 'against different insect pests' from the observations to be recorded No. 4 2. Keep 3rd instar larvae instead of 2nd instar **[Action:**Research Scientist, AICRP on Biological control, AAU, Anand**]**
16.3.3.5	Estimation of losses to agricultural crops by Blue bull (*Boselaphustragocamelus)* in Anand District	**Not approved :** 1. Take as a filler trial 2. Take the permission from respective authority **[Action:**Ornithologist, AINPVPM: Agril. Ornithology, AAU, Anand**]**
16.3.3.6	Bioefficacy of different mycoinsecticides for the management of leaf eating caterpillar, *Spodoptera litura* (F) in bidi tobacco nursery	**Accepted with following suggestions:** 1. Delete T_7 2. Record larval count 3. Mention the scale of leaf spot index as mentioned in observations to be recorded **[Action:**Assistant Research Scientist (Ento.), BTRS, AAU, Anand**]**
16.3.3.7	Decontamination study of pesticides in green chilli	**Accepted with following suggestions:** 1. In T_3write Lambda cyhalothrin instead of cyhalothrin 2. Mention the season of crop 3. Add formulation in T4, T5, T6 & T7 **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.8	Decontamination study of pesticides in okra	**Accepted with following suggestions:** 1. In T_3 write Lambda cyhalothrin instead of cyhalothrin 2. Mention the season of crop 3. Add formulation in T4, T5, T6 & T7 **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.9	Residues and persistence of fluopyram 250 g/L + trifloxystrobin 250 g/L SC in chilli	**Accepted with following suggestions:** 1. In T_3 write Lambda cyhalothrin instead of cyhalothrin 2. Mention the season of crop 3. Add formulation in T4, T5, T6 & T7 **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**

16.3.3.10	Residues and persistence of fluopyram 400 g/L SC in chilli	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.11	Residues and persistence of fosetyl Al. 80 WP in banana	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.12	Residues and persistence of cyantraniliprole 7.3% + diafenthiuron 36.4% SC in tomato	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.13	Residues and persistence of cyantraniliprole 7.3% + diafenthiuron 36.4% SC in brinjal	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.14	Residues and persistence of cyantraniliprole 7.3% + diafenthiuron 36.4% SC in okra	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.15	Residues and persistence of fluopyram 200 g/L + tebuconazole 200 g/L SC in banana	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.16	Residues and persistence of fosetyl Al. 80 WP in/on bengal gram	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.17	Residues and persistence of thiodicarb 75 WP in maize	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.18	Residues and persistence of tetraniliprole 200 g/L SC in maize	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.19	Residues and persistence of flubendiamide 90 g/L + deltamethrin 60 g/L SC in maize	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.20	Residues and persistence of fluoxapiprolin 30 g/L + fluopicolide 200 g/L SC in potato	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.21	Residues and iprovalicarb 8.4 + Copper Oxy Chloride 40.6 % WG in potato	**Approved** **[Action:**Residue Analyst,AINP on Pesticide Residues, ICAR, AAU, Anand**]**
16.3.3.22	Bio-efficacy of ready-mix insecticides against pod borer, *Maruca vitrata* (Fabricius) in cowpea	**Accepted with following suggestions:** **1.** Add observation of bio-agents **[Action:**Assistant professor (Ento.), Polytechnic in Agriculture, AAU, Anand**]**

16.3.3.23	Bio-efficacy of organic inputs against aphid infesting broccoli (*Brassica oleracea* var. *italica* L.)	**Accepted with following suggestions:** 1. Replace the word 'Bio-efficacy' with 'Evaluation' in title 2. Mention Replication instead of Repetition 3. Take observation at 14 DASinstead of 15 DAS **[Action:** Assistant professor (Ento.), College of Horticulture, AAU, Anand**]**
16.3.3.24	Effect of insecticidal hydropriming on sucking pests of mungbean	**Accepted with following suggestions:** 1. Add germination (%) in observation to be recorded 2. Take observation on sucking pests instead of 'Number of larvae per 10 plants/plot' in observations to be recorded 3. Remove 'Healthy and damaged pods per 100 green pods/plot'from observations to be recorded 4. Delete the treatments T7, T8 & T9 **[Action:**Assistant Research Scientist (Ento.), RRS, AAU, Anand**]**
16.3.3.25	Evaluation of insecticides as seed treatment against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize	**Accepted with following suggestions:** 1. Correct the spelling of Thiamethoxam 2. Check the dose of T7 3. Take observation on germination (%) 4. Add observation on cob damage (%) 5. Take observation of infested plant(s) per plot instead of 10 plants **6.** Change the year of completion **[Action:**Asst. Res. Scientist (Ento.), MMRS, AAU, Godhara**]**
16.3.3.26	Evaluation of insecticides as a seed treatment against thrips in summer green gram	**Not approved:** **[Action:**Asst. Res. Scientist (Ento.), ARS, AAU, Derol**]**
16.3.3.27	Evaluation of organic inputs for management of cowpea pod borer, *Maruca vitrata*(Fabricius)	**Accepted with following suggestions:** 1. Delete"waste decomposer" from T7 2. Remove "slight runoff" from the methodology 3. Add method of preparation of buttermilk 4. Add concentration in T3, T6, T7, T8 & T9 5. Economics of different treatments **[Action:**Asst. Professor (Ento.), CoA, AAU, Vaso**]**

16.3.3.28	Evaluation of organic inputs for management of mustard aphid, *Lipaphis erysimi* (Kaltenbach)	**Accepted with following suggestions:** 1. Remove 'waste decomposer' from T7 2. Economics of different treatments **[Action:**Asst. Professor (Ento.), CoA, AAU, Vaso**]**
16.3.3.29	Bio-efficacy of insecticides against *Caliothrips indicus* Bagnall on pea	**Accepted with following suggestions:** 1. Change the dose of acetamiprid, imidacloprid and thiamethoxam **[Action:**Asst. Professor (Ento.), College of Agriculture, AAU, Jabugam**]**
16.3.3.30	Seasonal incidence of insect-pests of soybean and their natural enemies	**Accepted with following suggestions:** 1. Change the title as 'Survey of insect-pests of soybean and their natural enemies' 2. Mention therearing technique offield-collected larvaein laboratory 3. Mention method of collection of girdle beetle 4. Add observation of hairy caterpillar if appears **[Action:**Training Associate (Pl. Prot.), TRTC, AAU, Devgadhbaria**]**

ANAND AGRICULTURAL UNIVERSITY, ANAND
PLANT PATHOLOGY

Sr. No.	Title	Suggestions
16.3.3.31	Evaluation of effectiveness of organic inputs for the management of root rot in mungbean	**Accepted with following suggestions:** 1. Delete the word "of effectiveness" from title 2. Fix the total number of application 3. Delete the T_{11} (**Action**: Professor & Head, Dept. of Plant Pathology, BACA, AAU, Anand)
16.3.3.32	Evaluation of organic inputs against major foliar diseases of tomato	**Accepted with following suggestions:** 1. Write "all" instead of major in title **2.** Check the dose of T_1 (**Action**: Professor & Head, Dept. of Plant Pathology,BACA, AAU, Anand)
16.3.3.33	Evaluation of nematicides against *Meloidogyne incognita* infecting capsicum in polyhouse	**Accepted with following suggestions:** 1. Write "infestation" instead of infecting in title 2. Mention the dose of T1 and T4 (**Action**: Professor & Head, Dept. of Plant Pathology,BACA, AAU, Anand)

16.3.3.34	To evaluate the effect of nematicides for the management of root-knot nematode in tomato	**Accepted with following suggestions:** 1. Change title as "Evaluation of nematicides for the management of root knot nematode in tomato" (**Action**: Professor & Head, Dept. of Plant Pathology,BACA, AAU, Anand)
16.3.3.35	Efficacy of ready mix fungicides for the management of damping-off disease in bidi tobacco nursery	**Accepted with following suggestions:** 1. Correct the Metalaxyl MZ 72 WP instead of Metalaxyl MZ 68 WP 2. Fix the total number of application 3. Check the quantity of water for drenching (**Action**: Assoc. Res. Scientist (Patho.), BTRS, AAU, Anand)
16.3.3.36	Evaluation of organic inputs against major diseases of turmeric	**Accepted with following suggestions:** 1. Fix the total number of sprays as 5 (**Action**: Asst. Professor (Patho.), CoH, AAU, Anand)
16.3.3.37	Evaluation of organic inputs against major foliar diseases of okra	**Accepted with following suggestions:** 1. Fix the total number of spray as 3 2. Mention the method of buttermilk (**Action**: Asst. Professor (Patho.), CoA, AAU, Jabugam)
16.3.3.38	Field evaluation of fungicides for the management of powdery mildew of okra	**Accepted with following suggestions:** 1. Check the dose/concentration of T4 & T6 2. Mention T7 as check 3. Correct the scale/PDI of powdery mildew (Action: Asst. Professor (Patho.), CoA, AAU, Jabugam)
16.3.3.39	Screening of various white and yellow genotypes of maize against late wilt under artificial inoculation conditions	**Accepted with following suggestions:** 1. Mention the name of fungus 2. Mention the resistant check 3. Specify spore solutions to be injected per plant and No. of plants to be inoculated (**Action**: Asst. Research Scientist (Pl. Path.), MMRS, AAU, Godhara)
16.3.3.40	Evaluation of organic inputs against major foliar diseases of okra	**Suggestions :** 1. Experiment No. 7 & 10 are the same, so it should be taken at two location with considering only one experiment (**Action**: Convener, CPSC, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

AGRICULTURAL ENTOMOLOGY

Sr. No.	Title	Suggestions
16.3.3.41	Testing of various locally available cultivated and wild flora against groundnut bruchid, *Caryedon serratus* (Olivier)	**Accepted with following suggestions:** 1. Mention the gauge of the HDP and Layered polythene bags 2. Mention the total quantity of treated seeds for storing in different bags 3. Write CRD (Factorial) instead of FCRD 4. Take botanical as 1st factor and bags as 2nd factor 5. Add kernel damage (%) 6. First observation at 15 days instead of 1 day 7. Record observations on weight loss 8. Calculate the economics **(Action**: *Professor and Head, Department of Entomology, JAU, Junagadh)*
16.3.3.42	Effect of pruning on defoliators, stem rot and yield in *kharif* groundnut	**Accepted with following suggestions:** 1. Remove the yield from title 2. Record the observations on No. of larva of *Helicoverpa* and *Spodoptera* 3. Record the days of 50 % flowering in each treatment 4. Record plants damaged by termites 5. Record natural enemies *(***Action :***Research Scientist (Groundnut), Main Oilseeds Res. Station, JAU, Junagadh)*
16.3.3.43	Development of protocols for procurement, safe storage and milling outturn of major pulses.	**This experiment shifted to concerned discipline** *(***Action :***Professor and Head, Department of Proceesing & Food Engg. CAET, JAU, Junagadh)*
16.3.3.44	Bio-intensive management of pulse bruchid under storage condition in chick pea	**Accepted with following suggestions:** 1. Delete Biointensive from title 2. Remove last two column from table 3. Mention time for solarization in methodology 4. Write repetition instead of replication 5. Remove 10 lit of water from table (column 4) **(Action :***Research Scientist, Pulse Research Station, JAU, Junagadh)*

16.3.3.45	Testing of IPM modules with farmers practice against pest complex of pearl millet	**Accepted with following suggestions:** 1. Add seed germination (%) **(Action :***Research Scientist, Pearl Millet Research Station, JAU, Jamnagar)*
16.3.3.46	Monitoring of Fall Army worm (*Spodoptera frugiperda*) in *kharif* pearl millet	**Accepted with following suggestions:** 1. Record plant damage (%) **(Action :***Research Scientist, Pearl Millet Research Station, JAU, Jamnagar)*
16.3.3.47	Evaluation of pre-harvest spraying of insecticides and botanicals for management of pulse beetle (*Callosobruchus* sp.) in green gram	**Accepted with following suggestions:** 1. Record observations at 2, 4, 6, 9 and 12 month **(Action :***Research Scientist, Pearl Millet Research Station, JAU, Jamnagar)*
16.3.3.48	Studies on the effect of insecticidal seed treatment on seed viability during storage under ambient condition in chick pea	**Accepted with following suggestions:** 1. In T1, T2 & T3 write ml instead of g **(Action :***Research Scientist, Pearl Millet Research Station, JAU, Jamnagar)*
16.3.3.49	Bio-efficacy of different biopesticides against rugose spiralling whitefly in coconut	**Accepted with following suggestions:** 1. Use repetition instead of replication 2. Take 2 palm per repetition 3. Record observations at 3, 7 & 9 days of each spray 4. Fix the total number of spray as 3 5. Add observations on natural enemies 6. Specify the methodology of observation on population of spiraling white fly **(Action :***Professor and Head, Department of Entomology, JAU, Junagadh)*
16.3.3.50	Bio-efficacy of different insecticides against rugose spiralling whitefly in coconut	**Accepted with following suggestions:** 1. Use repetition instead replication 2. Take 2 palm per repetition 3. Record observations at 3, 7 & 9 days of each spray 4. Fix the total number of spray as 3 5. Add observations of natural enemies 6. Specify the methodology of observation on population of spiraling white fly **(Action :***Professor and Head, Department of Entomology, JAU, Junagadh)*
16.3.3.51	Management of rugose spiralling whitefly through root feeding of insecticides in coconut	**Accepted with following suggestions:** 1. Check the dose of azadirachtin 2. Use repetition instead replication

		3. Specify the methodology of observation on population of spiraling white fly **(Action :***Professor and Head, Department of Entomology, JAU, Junagadh)*

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

PLANT PATHOLOGY

Sr. No.	Title	Suggestions
16.3.3.52	Detection of variability in *Lasiodiplodia theobromae* causing die-back of mango and its management in Saurashtra region.	**Accepted with following suggestions:** 1. Change title as "Chemical control of die back of mango" 2. Design CRD instead of RBD 3. Repetition four instead of three 4. Take three different doses of each combination fungicides viz., Tebuconazole 50 % + Trifloxystrobin 25 % WG and Azoxystrobin 20% + Difenoconazole 12.5% SC [(i) recommended dose (ii) 25% lower and (iii) 25 % higher than recommended dose] 5. T6 & T7 continue 6. Fix total three spray **(Action :***Professor and Head, Department of Plant Pathology, JAU, Junagadh)*
16.3.3.53	Management of root knot nematode (*Meloidogyne* sp.) of guava.	**Accepted with following suggestions:** **Split the experiment into two Biological and chemical control** **I Change title as "Biological control of root knot nematode(*Meloidogyne* sp.) in guava"** 1.Design CRD instead of RBD 2.Remove T4, T5 & T6 3.Add poultry manure alone and its combination with *Pochonia chlamydosporia, Lecanicillium lecanii, Trichoderma harzianum* 4. Add neem cake alone 5. Total nine treatments II **Change title as "Chemcial control of root knot nematode(*Meloidogyne* sp.) in guava"** 1.Design CRD instead of RBD 2.Take three different doses of each combination

		fungicides *viz*., Fluensulfone 2% GR and Fluopyram 500SC [(i) Recommended dose (ii) 25% lower and (iii) 25% higher than recommended dose] 3.Total seven treatments including untreated control **(Action :***Professor and Head, Department of Plant Pathology, JAU, Junagadh)*
16.3.3.54	Management of foliar blight diseases of leguminous crop (cowpea).	**Approved** **(Action :***Research Scientist, Vegetable Research Station, JAU, Junagadh)*
16.3.3.55	Integrated wilt management in chick pea	**Accepted with following suggestions:** **(Action :***Res. Sci., Pulse Research Station, JAU, Junagadh)*
16.3.3.56	Management of pearl millet blast by using chemicals and bio-agents	**Approved** *(***Action :***Res. Sci., Pearl Millet Research Station, JAU, Jamnagar)*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI
AGRICULTURAL ENTOMOLOGY

Sr. No.	Title	Suggestions
16.3.3.57	Seasonal incidence of natural enemies of lac insect, *Kerrialacca* (Kerr.)	**Approved** **(Action:** *Professor and Head, Department of Entomology, NMCA, NAU, Navsari***)**
16.3.3.58	*In vitro* compatibility of *Metarhizium anisopliae* with insecticides	**Approved** **(Action:** *Professor and Head, Department of Entomology, NMCA, NAU, Navsari***)**
16.3.3.59	Survey of natural enemies/disease causing pathogen of *Helicoverpa armigera* (Hubner) in gram	**Approved** **(Action:** *Associate Professor, Department of Entomology, College of Agriculture, NAU, Waghai***)**
16.3.3.60	Survey of natural enemies/disease causing pathogen of *Spodoptera frugiperda* (J. E. Smith) in maize	**Approved** **(Action:** *Associate Professor, Department of Entomology, College of Agriculture, NAU, Waghai***)**
16.3.3.61	Evaluation of different insecticides, their application methods and bio-efficacy, Phyto-toxicity and residue in Indian bean	**Accepted with following suggestions:** 1. Change the title as "Evaluation of different insecticides and their application methods in Indian bean" 2. Refine the doses of all the insecticides for

		chemigation and mention in hectare basis 3. Change the design accordingly 4. Commencement of season is 2020 instead of 2021 5. Mention capacity of dripper (water per hour and time) 6. Take care of removing all the residues from the drip line **(Action:** *Assistant Research Scientist (Ento.),SWMRU, NAU, Navsari***)**
16.3.3.62	Management of sorghum stem borer	**Accepted with following suggestions:** 1. Change the title as "Evaluation of insecticides against sorghum stem borer" 2. Specify the season of experiment 3. Correct the spelling spinetoram 4. Refine all the treatments (Take three promising insecticides with three dose of each (i) recommended dose (ii) 25% lower and (iii) 25 % higher than recommended dose, and untreated control; so total 10 treatments) **(Action:** Assistant Research Scientist, Main Sorghum Research Station, NAU, Surat**)**
16.3.3.63	Management of mango stem borer (*Batocera rufomaculata*) using 'Arka Borer Control [AICRP on Fruits (Mango)]	**Not Approved** 1. Take as a large scale filler trial **(Action:** Research Scientist, Agriculture Experimental Station, NAU, Paria**)**
16.3.3.64	Management of mango hopper and thrips on mango by oil based formulation of *Metarhizium anisopliae* [AICRP on Fruits (Mango)]	**Approved** 1. Replace the design RBD with CRD 2. Write repetition instead replication **(Action:**Research Scientist, Agriculture Experimental Station, NAU, Paria**)**
16.3.3.65	Evaluation of different botanical formulations for management of sucking pest complex in Mango (Agresco code 15.2.10) [AICRP on Fruits (Mango)]]	**Accepted with following suggestions:** 1. Write repetition instead replication **(Action:** Research Scientist, Agriculture Experimental Station, NAU, Paria**)**
16.3.3.66	Evaluation of different botanicals for the control of Tea Mosquito Bug (TMB), *Helopeltis antonii* Signoret in cashew [AICRP on Fruits (Mango)]]	**Accepted with following suggestions:** 1. Replace the design RBD with CRD 2. Write repetition instead replication 3. Mention method of preparation of botanical 4. Remove T9 **(Action:**Asstt. Res. Sci. (Ento), Fruit Research Station, NAU, Gandevi**)**

16.3.3.67	Varietal performance of sapota against major insect pests under high density plantation	**Accepted with following suggestions:** 1. Design CRD 2. Use repetition instead of replication 3. Mention susceptible and resistant check in treatments **(Action:**Asstt. Res. Sci. (Ento), Fruit Research Station, NAU, Gandevi**)**
16.3.3.68	Status of pesticides residues in honey samples of Gujarat	**Accepted with following suggestions:** 1. Remove the word survey from design 2. Record the pollen count in bee hives from respective areas of samples **(Action:**Asstt. Res. Sci. FQTL, NAU, Navsari**)**
16.3.3.69	Bio efficacy of bioformulations against *Spodoptera frugiperda* (J. E. Smith) under South Gujarat condition	**Accepted with following suggestions:** 1. Mention the crop in title 2. Total number of spray should be 4 3. Keep Spray interval 10 days 4. Remove T6 5. Take observations at 3, 5,7 & 9 DAS **(Action:**Professor & Head, Department of Entomology, NMCA, NAU, Navsari**)**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

PLANT PATHOLOGY

Sr. No.	Title	Suggestions
16.3.3.70	Effect of bio-films formation in *Trichoderma-Azotobacter* interaction against *Macrophomina phaseolina*	**Accepted with following suggestions:** 1. Mention the crop in title 2. Verify the methodology 3. Fix the cfu of Azotobacter at 1X 10^8 CFU/gm of *Trichoderma viride* at 2X10^6 **(Action:**Professor & Head, Department of Plant Pathology, NMCA, NAU, Navsari**)**
16.3.3.71	Investigations on leaf rust disease of Champa (*Plumeria* spp.)	**Not Approved** 1. Take as filler trial **(Action:**Professor & Head, Dept. of Plant Pathology, NMCA, NAU, Navsari**)**
16.3.3.72	Management of leaf and flower blight of Marigold	**Accepted with following suggestions:** 1. Delete T7 2. Mention number of leaves and flower to be observed in methodology

		3. Per cent flower blight intensity in the observation **(Action:** Professor & Head, Dept. of Plant Protection, ACHF, NAU, Navsari**)**
16.3.3.73	Evaluation of efficacy of bioagents against cotton disease	**Accepted with following suggestions:** 1. Remove ‘of efficacy’ from title **(Action:** Assistant Research Scientst(Patho.) Main Cotton Research Station, NAU, Surat**)**
16.3.3.74	Efficacy of newer fungicides against sorghum grain mold *in-vitro* condition	**Not Approved** 1. Take as filler trial **(Action:** Assistant Research Scientist (Patho.) Main Sorghum Research Station , NAU, Surat**)**
16.3.3.75	Evaluation of bio-formulation against Fusarium wilt in banana (observation trial)	**Accepted with following suggestions:** 1. Delete (observation trial) from title 2. Correct the formulation in module 1 and describe in methodology **(Action:** Assistant Research Scientist (Patho.), Fruit Research Station, NAU, Gandevi**)**
16.3.3.76	Evaluation of locally available substrates and their combinations for the cultivation of Oyster mushroom in the Dangs	**Accepted with following suggestions:** 1. Record the contaminants **(Action:** Associate Professor (Patho.),College of Agriculture, NAU, Waghai**)**
16.3.3.77	Evaluation of different chopped stalk and strain spawns for the cultivation of Oyster mushroom in the Dangs	**Accepted with following suggestions:** 1. Mention quantity of different materials used **(Action:** Associate Professor (Patho.),College of Agriculture, NAU, Waghai**)**
16.3.3.78	Survey, collection and preparation of mushroom fungi from Dangs district of South Gujarat	**Accepted with following suggestions:** 1. Remove word fungi from the title **(Action:** Associate Professor (Patho.),College of Agriculture, NAU, Waghai**)**

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

ENTOMOLOGY

Sr. No.	Title	Suggestions
16.3.3.79	Evaluation of different molecules of insecticides against cotton sucking pests	**Accepted with following suggestions:** 1. Remove "of different molecules" from title 2. Change the variety as G. Cot Hy 8 BGII instead of G cot Hy 10 BGII 3. Same group of the insecticides should not be in the same treatment, so change accordingly 4. Delete T4 5. Replication four instead of three 6. Add observation on mealybug 7. Take observation at 14 DAS instead of 15 DAS 8. Correct as 1000 lit. instead of 1000 ml in drenching (**Action**: Asstt. Res. Scientist (Ento.), Cotton Research Station, S. D. Agricultural University, Talod)
16.3.3.80	Management of American serpentine leaf miner, *Liriomyza trifolii* (Burgess) on tomato under protected cultivation	**Accepted with following suggestions:** 1. Add the method of leaf extracts 2. Record the observations from 5 plants 3. Add phytotoxicity data 4. Mention fruit yield kg/ha 5. Add sticker in all botanicals including control as 0.1 % soap solution (**Action**: Asst. Professor (Ento.) College of Horticulture, S.D. Agricultural University, Jagudan)
16.3.3.81	Influence of indigenous bee attractants in enhancing pollination and yield of onion seeds	**Accepted with following suggestions:** 1. Spacing should be 45 cm x 30 cm 2. Write 'table sugar' instead of sugar 3. Replace concentrations of sugarcane juice with 20% & 30 % 4. Record the different honeybee species 5. Take observation of honeybee from five plants for two minutes

		(Action: Asst. Professor, (Ento.),Department of Entomology,CPCA, SDAU, Sardarkrushinagar)
16.3.3.82	Management of leaf webber/capsule borer, *Antigastracatalaunalis*(Duponchel) in sesame	**Accepted with following suggestions:** 1. Change the title as 'Bioefficacy of insecticides against leaf webber/capsule borer, *Antigastracatalaunalis*(Duponchel) in sesame' 2. Record the observation at 14 days instead of 15 days **(Action**: Asst. Professor, (Ento.),Department of Entomology,CPCA, SDAU, Sardarkrushinagar)
16.3.3.83	Eco-friendly management of leaf miner (*Aproaeremamodicella*)in *kharif* groundnut.	**Accepted with following suggestions:** 1. Add NSKE 5 % instead of neem leaf extract in T1 2. Add tobacco decoction 2% instead of azadirachtin 10000 ppm in T7 3. Add sticker in all botanicals including control as % soap solution 4. 4.Add the methods of preparation of botanicals **(Action**: Asst. Professor, (Ento.),Department of Entomology,CPCA, SDAU, Sardarkrushinagar)
16.3.3.84	Eco-safe management of mole cricket in potato crop	**Accepted with following suggestions:** 1. Add two treatments, vermicompost alone and FYM alone 2. Change concentration of entomopathogenic fungi as 1 x 10^8 instead of 1 x 10^9 3. Correct net plot size as 3.0 m x 3.6 m **(Action**: Asst. Professor, (Ento.),Department of Entomology,CPCA, SDAU, Sardarkrushinagar)
16.3.3.85	Impact of indigenous bee attractants in enhancing pollination and seed yield of Lucerne	**Accepted with following suggestions:** 1. Write 'table sugar' instead of sugar 2. Replace concentrations of sugarcane juice with 25% & 50 % 3. Record the different honeybee species 4. Take observation of honeybee from 1.5 sq ft. for two minutes **(Action**: Assoc. Professor (Ento.),Department of Entomology,CPCA, SDAU, Sardarkrushinagar)

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

PLANT PATHOLOGY

Sr. No.	Title	Suggestions
16.3.3.86	Survey, collection and identification of the *macromycetes* from Amirgadh and Danta	**Accepted with following suggestions:** 1. Mention the methodology and number of villages from selected taluka 2. Identify the macromycetes through concerned taxonomist (**Action**: Asst. Professor, Polytechnic in Agriculture S.D. Agricultural University, Sardarkrushinagar)

General suggestions:

1. Same group of insecticides should not be kept for more than two subsequent sprays in a season.
2. The screening trials must have sufficient pests/disease pressure with susceptible check.
3. Methodology of experiment should be uniform.
4. Need to mention emulsifier/sticker used in the experiment.
5. Market availability of the products should be checked before evaluation.
6. Experiment based on bio-pesticides should not be mixed with insecticides.
7. Statistical analysis pattern shoussld be same in all SAUs. Analyze the data pooled over spray over period. Need to follow DNMRT when there are seven or more than seven treatments.
8. Any chemical cannot be restricted to evaluate as a seed dresser.
9. Scientists working in AICRP centers should address the issue pertaining to various treatments/ formulations etc in respective group meet of AICRP.
10. Only registered products should be used across all the SAUs.
11. In case of biopesticides the cfu/colony count should be same in all the SAUs.
12. Calculation of economics of the treatments should be common in all SAUs based on labour requirement.
13. Proper footnote must be given in the table.
14. The concentration and dosage of all the bio-rational under testing should be uniform for all universities (Like the concentration of azadirachtin, cfu of entomopathogenic fungi, formulations related to cow urine *etc*.)
15. In AICRP/AIPN trials individual scientists should address local issues at national level and modify the technical programme accordingly and also care should be taken before finalizing the new technical programmes.
16. There should be a common policy for testing product/inputs other than SAUs of Gujarat in coordinated trial (In many AICRP trials different types of products are being tested without knowing its composition and other details)
17. Testing of biorationals alongwith chemical pesticides should be avoided.
18. In all experiment the number of scientists and associates involved should not be more than four.

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16.4. HORTICULTURE AND AGRO-FORESTRY

Date:- 24-25 June, 2020

Particulars	Recommendation	New Technical programme
Date of Meeting	**24-25/06/2020**	**01-02/06/2020**
Chairman	**Dr. H.C. Patel, Dean, AAU**	**Dr. H.C. Patel, Dean, AAU**
Co-Chairman	Dr. T.R. Ahlawat, NAU Dr. Piyush Verma, SDAU	Dr. T.R. Ahlawat, NAU Dr. Piyush Verma, SDAU
Rapporteurs	Dr. Alka Singh, NAU Dr. B.N. Satodiya, AAU Dr. N.D. Polara, JAU Dr. V.R. Wankhade, SDAU	Dr. M.J. Patel, AAU Dr. S.N. Saravaiya, NAU
Statistician	Prof. H.N. Chhatrola, NAU	Prof. H.N. Chhatrola, NAU

University	Farmers recommendation		Scientific recommendation		New Technical programme	
	Presented	Approved	Presented	Approved	Presented	Approved
AAU	05	05	-	-	05	05
JAU	05	03	-	01*	03+2@	03+2@
SDAU	08	06	-	-	13	12
NAU	21	16	04 + 01#	03	30+2@	27+2$+2@
Total	**39**	**30**	**5**	**4**	**51+4@**	**47+2$+4@**

*** Approved for Scientific community from Farmers' recommendation**
 # Approved for Farmers' recommendation from Scientific recommendation
@ Approved as a feeler trial
$ Subjected to approval from Basic Science (16.4.3.12)/Crop Improvement (16.4.3.13) subcommittee

16.4.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

16.4.1.1	**Effect of rooting media on propagation of African marigold (*Tagetes erecta* L.) cv. Calcutta Selection through herbaceous shoot tip cutting under net house** Farmers/nurserymen cultivating marigold in middle Gujarat agro climatic zone are recommended to propagate 4-5 cm long herbaceous shoot tip cuttings of African marigold cv. Calcutta Selection in plug tray media of Sandy loam soil + FYM (1:1)

	OR FYM alone **OR** Sandy loam soil + Vermicompost (1:1) **OR** Vermicompost alone for getting higher survival of plants/cuttings and net profit. **Note:** Cuttings of marigold are to be planted into the plug tray after dipping them in 150 mg/l IBA solution for 10 min. under 50% green shade net condition. મધ્ય ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં ગલગોટાની ખેતી કરતા ખેડૂતો/નર્સરી ધારકોને ભલામણ કરવામાં આવે છે કે આફ્રિકન ગલગોટાની કલકત્તા સિલેકશન જાતના છોડના ટોચના કુમળા ૪ થી ૫ સે.મી. ના કટકાને પ્લગ ટ્રે માં ગોરાડુ માટી + છાણિયુ ખાતર (૧:૧) અથવા માત્ર છાણિયુ ખાતર અથવા ગોરાડુ માટી + વર્મીકંપોસ્ટ (૧:૧) અથવા માત્ર વર્મીકંપોસ્ટ માધ્યમમાં રોપવાથી વધુ છોડની સફળતા અને ચોખ્ખો નફો મળે છે. **નોંધ:** છોડના ટોચના કુમળા ૪ થી ૫ સે.મી. ના કટકાને પ્લગ ટ્રેમાં રોપતા પહેલા ૧૫૦ મિ.ગ્રા./લિટર આઈ. બી. એ. ના દ્રાવણમાં ૧૦-મિનિટ સુધી બોળીને ૫૦ ટકા લીલી નેટમાં ઉછેર કરવો. **Approved** ***(Action: Dept. of Floriculture and Landscape, COH, AAU, Anand)***
16.4.1.2	**Nutrient management through organics in onion (*Allium cepa* L.) as intercrop in sapota orchard** The farmers of middle Gujarat agro-climatic zone growing onion organically in sapota orchard during initial 10-12 years are recommended to apply either 75 kg N/ha through FYM (10.7 t containing 0.7 % N) + bio NPK consortium 1 l/ha in soil or 75 kg N/ha through vermicompost (5.7 t containing 1.3 % N) + bio NPK consortium 1 l/ha in soil for getting higher yield and net return and maintaining soil health. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ચીકુવાડીયામાં શરૂઆતનાં દસથી બાર વર્ષ સુધી સજીવ ખેતીથી ડુંગળીનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા તેમજ જમીનનું સ્વાસ્થ્ય જાળવવા માટે ૭૫ કિ.ગ્રા નાઈટ્રોજન છાંણીયા ખાતર દ્વારા (૦.૭ ટકા નાઈટ્રોજન યુક્ત ૧૦.૭ ટન) + ૧ લી. બાયો- એન.પી.કે. કન્સોર્ટિયમ પ્રતિ હેક્ટરે જમીનમાં આપવાની અથવા ૭૫ કિ.ગ્રા નાઈટ્રોજન અળસિયાનું ખાતર (૧.૩ ટકા નાઈટ્રોજન યુક્ત ૫.૭ ટન) મારફતે + ૧ લી. બાયો-એન.પી.કે. કન્સોર્ટિયમ પ્રતિ હેક્ટરે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે. **Approved** ***(Action: Dept. of NRM COH, AAU, Anand)***
16.4.1.3	**Effect of bunch feeding on yield of banana cultivation (cv. Grand Nain) in tribal area of Chhotaudepur Region of middle Gujarat** The farmers of middle Gujarat agro climatic zone growing banana (cv. Grand Nain) are recommended for bunch feeding after de-navelling with 500 g Cow dung slurry + 7.5 g Urea + 7.5 g Sulphate of Potash or 500 g Cow dung slurry + 15 g Ammonium Sulphate + 7.5 g Sulphate of Potash to get higher yield with quality and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં કેળની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળની લુમના છેડે ફૂલ કાપ્યા બાદ ૫૦૦ ગ્રામ ગાયના છાણની રબડી + ૭.૫ ગ્રામ યુરીયા + ૭.૫ ગ્રામ પોટેશીયમ

	સલ્ફેટ અથવા ૫૦૦ ગ્રામ ગાયના છાણની રબડી + ૧૫ ગ્રામ એમોનિયમ સલ્ફેટ + ૭.૫ ગ્રામ પોટેશીયમ સલ્ફેટનું દ્રાવણ કોથળીમાં કેળની લુમનો છેડો ડુબે તે રીતે બાંધવાથી કેળનું ગુણવત્તાયુક્ત વધુ ઉત્પાદન અને આવક મળે છે. **Approved** ***(Action: Agriculture Research Station, College of Agriculture, AAU, Jabugam)***
16.4.1.4	**Evaluation of the possibility of pulse based inter-cropping system with banana cultivation in tribal area following drip irrigation system** The farmers of middle Gujarat agro-climatic zone growing banana (cv. Grand Nain) at 1.8 X 1.8 m spacing under drip irrigation are recommended to adopt intercropping system involving black gram (1:3 row ratio) or green gram (1:4 row ratio) as an intercrop to get the additional income without affecting the yield of banana (black gram and green gram sowing during third week of September at the spacing of 45 X 10 cm and 30 X 10 cm, respectively). મધ્ય ગુજરાત ખેત આબોહવા વિસ્તારમાં કેળનું (ગ્રાન્ડ નેઈન) ૧.૮ X ૧.૮ મી. ના અંતરે ટપક પધ્ધતિ દ્વારા વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળના પાકમાં અડદ (૧:૩ હાર પ્રમાણે) અથવા મગ (૧:૪ હાર પ્રમાણે) આંતરપાક તરીકે લેવાથી કેળના ઉત્પાદનને અસર કર્યા સિવાય વધારાની આવક મેળવી શકાય છે (અડદ અને મગનુ વાવેતર સપ્ટેમબરના ત્રીજા અઠવાડિયામાં અનુક્રમે ૪૫ X ૧૦ સે. મી. અને ૩૦ X ૧૦ સે. મી. અંતરે કરવું). **Approved** ***(Action: Agriculture Research Station, College of Agriculture, AAU, Jabugam)***

16.4.1.5	**Nitrogen management through fertigation on green fruit yield of chilli (*Capsicum annuum* L.) under middle Gujarat conditions** The farmers of middle Gujarat agro climatic zone growing *rabi* chilli hybrid (GAVCH-1) in paired row (60 × 45 x 120 cm) through drip irrigation system are recommended to fertilize the crop with 160 N kg/ha (20 kg in basal and remaining 140 kg in four equal split at 20, 30, 40, 50 DAT) through fertigation to get higher green fruit yield and net return. **System details:** • Lateral spacing 180 cm • Dripper spacing 45 cm • Dripper discharge 4 liter per hour • Operating pressure 1.2 kg/cm^2 • Operating frequency Alternate day • Operating time 1 Hour 27 Minutes મધ્ય ગુજરાત ખેત-આબોહવાકીય વિસ્તારમાં શિયાળુ સંકર મરચી (જીએવીસીએચ-૧) ની ફેરરોપણી જોડીયા હાર પધ્ધતિ (૬૦×૪૫× ૧૨૦ સે.મી.) થી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મરચીના પાકને ટપક પધ્ધતી દ્વારા પિયત આપવા સાથે ૧૬૦ કિ.ગ્રા./હેક્ટર નાઈટ્રોજન (૨0 કિલો પાયામા અને બાકીનો ૧૪૦ કિલો ચાર સરખા હપ્તામાં ૨૦, ૩૦, ૪૦ અને ૫૦ દિવસના અંતરે) આપવાથી લીલા મરચાનું વધુ ઉત્પાદન અને નફો મેળવી શકાય છે. ટપક પધ્ધતીની વિગત: • બે ડ્રીપ લાઈન વચ્ચેનું અંતર: ૧૮૦ સે.મી. • બે ડ્રીપર વચ્ચેનું અંતર: ૪૫ સે.મી. • ટપકની ક્ષમતા: ૪.૦૦ લીટર પ્રતિ કલાક • દબાણ: ૧.૨ કિ.ગ્રા./સે.મી^{૨} • પિયતનો ગાળો: એકાંતરા દિવસે • ટપક ચલાવવાનો સમય: ૧ કલાક અને ૨૭ મિનીટ **Approved** ***(Action: Tribal Research cum Training Centre, AAU, Devgadh Baria)***

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

16.4.1.6	**Effect of fertilizers and paclobutrazol on bearing behavior of rejuvenated mango trees (*Mangifera indica* L.) cv. Kesar**

	Farmers of South Saurashtra Agro-Climatic Zone having rejuvenated Kesar mango orchard are advised to apply paclobutrazol @ 7.5 g *a.i.* per tree in the month of mid of July in soil and apply 150 per cent RDF in two split from 4th year after rejuvenation (i.e. 150 kg FYM + 562.5: 240: 562.5 NPK g/tree as basal and 562.5:0 : 562.5 NPK g/tree at February) for getting higher yield and net return. દક્ષિણ સૌરાષ્ટ્રના ખેત આબોહવાકીય વિસ્તારના નવીનીકરણ કરેલ કેસર જાતના આંબાવાડિયા ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, જુલાઈ માસના મધ્યમા પેકલોબ્યુટ્રાઝોલ સક્રિય તત્વ ૭.૫ ગ્રામ પ્રતિ ઝાડ જમીનમા આપવાની સાથે ભલામણ કરેલ ખાતરના ૧૫૦ ટકા નવીનીકરણના ચોથા વર્ષથી બે હપ્તામાં (૧૫૦ કિલો છાણિયુ ખાતર + ૫૬૨.૫: ૨૫૦: ૫૬૨.૫ એન.પી.કે. ગ્રામ પ્રતિ ઝાડ પાયામાં અને ૫૬૨.૫: ૦: ૫૬૨.૫ એન.પી.કે. ગ્રામ પ્રતિ ઝાડ ફેબ્રુઆરીમા) આપવાથી વધુ ઉત્પાદન અને આવક મળે છે. **Approved** ***(Action: Professor & Head, Deptt. of Horticulture, JAU, Junagadh)***
16.4.1.7	**Integrated nutrient management in pomegranate (*Punica granatum* L.) cv. Bhagwa** The farmers of South Saurashtra Agro-Climatic Zone growing pomegranate cv. *Bhagwa* are advised to apply ½ dose of 75% RDNK *i.e.* 188 g/plant Nitrogen and Potash (K_2O) with full dose of Phosphorus (P_2O_5) *i.e.* 250 g/plant as basal dose (in the form of DAP- 543 g, Urea-195 g, Muriate of Potash - 313 g/plant), *Azotobacter* and Potassium Solubilizing bacteria (KSB) each @ 5.0 ml/plant in the month of October. Apply remaining ½ dose of Nitrogen and Potash (408 g urea and 313 MOP g/plant) in the month of February for getting higher yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારના દાડમની ભગવા જાતનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ભલામણ કરેલ નાઈટ્રોજન અને પોટાશ તત્વના ૭૫ % નો અડધો જથ્થો એટલે કે ૧૮૮ ગ્રામ નાઈટ્રોજન અને પોટાશ પ્રતિ છોડ તેમજ ફોસ્ફરસનો પુરો જથ્થો એટલે કે ૨૫૦ ગ્રામ પાયાના ખાતર તરીકે (ડીએપી-૫૪૩ ગ્રામ, યુરિયા-૧૯૫ ગ્રામ, મ્યુરેટ ઓફ પોટાશ- ૩૧૩ ગ્રામ), એઝેટોબેક્ટર અને પોટેશિયમ સોલ્યુબીલાઈઝીંગ બેક્ટેરીયા (કેએસબી) દરેક ૫.૦ મીલી પ્રતિ છોડ, ઓકટોબર માસમા આપવુ તેમજ બાકીનો નાઈટ્રોજન અને પોટાશનો અડધો જથ્થો (એટલે કે યુરિયા-૪૦૮ ગ્રામ અને મ્યુરેટ ઓફ પોટાશ -૩૧૩ ગ્રામ પ્રતિ છોડ) ફેબ્રુઆરી માસમા આપવાથી વધારે ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. **Approved** ***(Action: Professor & Head, Deptt. of Horticulture, JAU, Junagadh)***
16.4.1.8	**Evaluation of cucumber variety under net house and poly house condition** **<u>Deferred with Suggestions:</u>** 1. Reanalyze the data with CRD design and Mention design as large plot technique and present in next year 2. Calculate yield on 1000 m^2 basis 3. Calculate the economic ***(Action: Professor & Head, Deptt. of Horticulture, JAU, Junagadh)***
16.4.1.9	**Effect of chemical fertilizer application in split on coconut cv. TxD (Mahuva)**

	The farmers of South Saurashtra Agro Climatic Zone growing coconut cv. T×D (Mahuva) are advised to apply FYM 50 kg/palm/year with 125% RDF NPK @1875, 938, 1875 g/palm/year in four equal split [June-Sept-Dec.-March] for securing higher nut yield and net return. **દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમા નાળિયેરીની ટી x ડી (મહુવા) જાત ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે, છાણિયુ ખાતર ૫૦ કિ.ગ્રા./ ઝાડ/વર્ષ સાથે ૧૨૫% ભલામણ કરેલ ખાતરનો જથ્થો ના.ફો.પો. (૧૮૭૫, ૯૩૮, ૧૮૭૫ ગ્રામ/ઝાડ/વર્ષ) વર્ષમા ચાર સરખા હપ્તામા (જુન-સપ્ટેમ્બર-ડિસેમ્બર-માર્ચ) આપવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મળે છે.** **Approved** ***(Action: Research Scientist, ARS, JAU, Mahuva)***

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16.4.1.10	**Effect of different media on propagation of desi rose (*Rosa chinensis*)** **Deferred with Suggestions:** Suggested to conduct experiment for one more year due to inconsistency of data in both two year ***(Action: Professor and Head, Dept. of Horticulture, CPCA, Sardarkrushinagar)***
16.4.1.11	**Effect of pruning and spacing on growth, yield and quality of desi rose (*Rosa chinensis*)** Rose growing farmers of North Gujarat Agro climatic Zone are recommended to plant the desi rose in paired row spacing of 120 x 45 x 30 cm or 120 x 30 x 30 cm with pruning once in a year in the month of October to obtain the higher yield and net returns. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં ગુલાબ ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે, દેશી ગુલાબનું વાવેતર ૧૨૦ x ૪૫ x ૩૦ સેમી અથવા ૧૨૦ x ૩૦ x ૩૦ સેમીના અંતરે જોડીયા હાર પધ્ધતિથી કરીને વર્ષમા એક વખત ઓકટોબર મહિનામા છટણી કરવાથી ફૂલોનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. **Approved** ***(Action: Professor and Head, Dept. of Horticulture, CPCA, Sardarkrushinagar)***
16.4.1.12	**Effect of different plant growth regulators on growth, flowering and yield of ridge gourd (*Luffa acutangula* L. Roxb.)** Farmers of North Gujarat cultivating ridge gourd are advised to spray NAA 100 ppm (0.1 g/l of water) solution at 2 to 4 true leaf stage for getting higher number of female flowers, fruit yield as well as net returns. ઉત્તર ગુજરાત વિસ્તારના તુરીયાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે એન.એ.એ. ૧૦૦ પીપીએમ (૦.૧ ગ્રામ/લી પાણી) ના દ્રાવણનો છંટકાવ ૨ થી ૪ પર્ણ અવસ્થાએ (દલપત્ર બાદ) કરવાથી વધારે માદા ફૂલ તથા ઉત્પાદન અને ચોખ્ખી આવક મળે છે.

	Approved ***(Action: Principal,College of Horticulture, SDAU, Jagudan)***
16.4.1.13	***In vitro* and *in situ* effect of seed bio-priming techniques on seed germination and seedling vigour of vegetable crops** Farmers of North Gujarat Agro climatic Zone raising the nursery of tomato, brinjal, onion and chilli are advised to treat the seed with 10 g/kg of *Trichoderma harzianum* or *Pseudomonas fluorescens* in 20 ml distilled water for 12 hours to get higher vigour index, less germination period and reduced pre and post emergence mortality. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તારના ટામેટા, રીંગણ, ડુંગળી અને મરચાના ધરૂ ઉછેરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ટ્રાઈકોડર્મા હરજીયાનમ અથવા સ્યુડોમોનાસ ફ્લોરોસેન્સને ૧૦ ગ્રામ પ્રતિ કિગ્રા. ના દરે ૨૦ મી.લી. નિસ્યંદિત પાણીમા પલાળીને બીજને જૈવિક પટની ૧૨ કલાક માવજત આપવાથી વધારે જુસ્સો અનુક્રમણિકા (વીગર ઈન્ડેક્ષ) ની સાથે ઉદભવ પુર્વ અને પછીના મુત્યુ દર તેમજ બીજ ઉગવાના સમયમા ઘટાડો થાય છે. **Approved** ***(Action: Principal,College of Horticulture, SDAU, Jagudan)***
16.4.1.14	**Storage studies of date palm pollen under different storage conditions and containers** Date palm growers are advised to store the excess pollen of current season in glass bottle at 0 to -4^{0}C in refrigerator for effective pollination in the ensuing season in case of unavailability of fresh pollen. ખારેક ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ચાલુ વર્ષની પરાગરજને કાચને બરણીમા ૦ થી – ૪° સે ના તાપમાને રેફ્રીજરેટરમા સંગ્રહ કરવાથી આવતા વર્ષમા તાજી પરાગરજની અછતના સમયે અસરકારક પરાગનયન માટે ઉપયોગમા લઈ શકાય છે. **Approved** ***(Action: Research Scientist, DPRS, Mundra)***
16.4.1.15	**Evaluation of different filling media for off shoot of date palm** Date palm growers are advised to spray 2 g/l IBA solution at basal portion of offshoots and then filled the mixture of sandy soil and vermicompost or sandy soil and FYM in ratio of 1:1 on volume basis as media during September month for preparation of offshoots and their planting for better rooting and higher survival rate. ખારેક ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ખારેકના પીલામા સારા મૂળ અને વધારે જીવિત શેષ દર મેળવવા માટે ૨ ગ્રામ/લી. દ્રાવણનો આઈ.બી.એ. પીલાના નીચેના ભાગે છંટકાવ કરવો અને ત્યાર બાદ રેતાળ માટી અને અળસિયાના ખાતર અથવા રેતાળ માટી અને છાણિયા ખાતરનું ૧:૧ (કદ પ્રમાણે) મિશ્રણ સપ્ટેમ્બર માસમા પીલા બાંધતી વખતે માધ્યમ તરીકે ઉપયોગમાં લેવું. **Approved** ***(Action: Research Scientist, DPRS, Mundra)***
16.4.1.16	**Effect of bagging of date palm (*Phoenix dactylifera*) inflorescence on fruit set and quality**

	<u>**Deferred with Suggestions:**</u> 1. Calculate the economics 2. Analyze the data as per approved design and present it in 17th AGRESCO. ***(Action: Research Scientist, DPRS, Mundra)***
16.4.1.17	**Varietal trial in guava** In North Gujarat Agro climatic Zone, Guava variety L 49 is suitable with respect to yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તારમા જામફળની એલ ૪૯ જાત ઉત્પાદન અને ચોખ્ખી આવકના આધારે અનુકૂળ માલુમ પડેલ છે. **Approved** ***(Action: Assoc. Research Scientist, FRS, Dehgam)***

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16.4.1.18	**Integrated nutrient management in Sapota cv. Kalipatti** The farmers of South Gujarat having adult tree of sapota orchard cv. Kalipatti are recommended to apply 50 kg farm yard manure and 80 per cent recommended dose of chemical fertilizer (800-400-400 NPK g/tree in three split of NPK *i.e.* 200:400:100 g/tree in June, 400:00:200 g/tree in August and 200:00:100 g/tree in October) along with soil application of bio fertilizers (*Azatobactor*, phosphorus solubilizing bacteria and potash mobilizing bacteria) @ 50 ml/tree of each in June, October and February month for getting higher yield, TSS of fruit and net return. દક્ષિણ ગુજરાતમા ચીકુની કાલીપતી જાતના પુખ્ત વયના ઝાડોની વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ચીકુના ઝાડને ૫૦ કિલો છાણિયુ ખાતર અને રાસાયણિક ખાતરના ૮૦ ટકા જથ્થો (૮૦૦-૪૦૦-૪૦૦ ગ્રામ ના.ફો.પો./ઝાડ ત્રણ હપ્તામા ૨૦૦-૪૦૦-૧૦૦, ૪૦૦-૦-૨૦૦ અને ૨૦૦-૦-૧૦૦ ગ્રામ/ઝાડ પ્રમાણે અનુક્રમે જુન, ઓગષ્ટ અને ઓક્ટોબર) આપવાની સાથે જૈવિક ખાતરો (એઝેટોબેક્ટર, ફોસ્ફરસ સોલ્યુબીલાઈઝીંગ બેક્ટેરીયા અને પોટાશ મોબીલાઈઝીંગ બેક્ટેરીયા) દરેકના ૫૦ મીલી/ઝાડના પ્રમાણમાં જુન, ઓક્ટોબર અને ફેબ્રુઆરી માસમા જમીનમા આપવાથી ખાતરની બચત સાથે વધુ ઉત્પાદન, કુલ દ્રાવ્ય ઘનપદાર્થ (ટી.એસ.એસ.) અને ચોખ્ખો નફો મળે છે. **Approved** ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.1.19	**Effect of graded doses of paclobutrazol on flowering, yield and quality of mango cv. Alphonso** The farmers of South Gujarat having more than 35 years old mango orchard of Alphonso variety are recommended to apply paclobutrazol through soil drenching during 1st fortnight of August in the ratio of 10:5:10:5 g *a.i.*/tree in 1st, 2nd, 3rd and 4th year, respectively along with 150 % RDF (150 kg FYM and 1125:240:1125g NPK per tree) for getting higher fruit yield and net return. દક્ષિણ ગુજરાતના ૩૫ વર્ષથી વધુ ઉંમરના આંબાની હાફૂસ જાતની વાડી ધરાવતા ખેડૂતોને ભલામણ

	કરવામા આવે છે કે, હાફૂસના ઝાડને ઓગષ્ટ મહિનાના પ્રથમ પખવાડીયામાં પેકલોબ્યુટ્રાઝોલ ૧૦:૫:૧૦:૫ ગ્રામ સક્રિય તત્વના પ્રમાણને ઝાડ દિઠ અનુક્રમે પહેલાં, બીજા, ત્રીજા અને ચોથા વર્ષે ઝાડના થડની ફરતે જમીનમા આપવુ અને ભલામણના ૧૫૦ % ખાતર (૧૫૦ કિ.ગ્રા. છાણિયું ખાતર અને ૧૧૨૫:૨૪૦:૧૧૨૫ ગ્રામ ના:ફો:પો પ્રતિ ઝાડ) આપવાથી કેરીનુ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved** ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.1.20	**Impact of pre-soaking treatments on germination and growth of mango (*Mangifera indica* L.) stones** Farmers and nurserymen of South Gujarat are recommended to sow the mango stones after soaking in solution of GA_3 100 mg/litre for 24 hours to get mango seedlings with better plant growth and higher survival. દક્ષિણ ગુજરાતમા આંબાના રોપ ઉછેર કરતા ખેડૂતો અને નર્સરીધારકોને ભલામણ કરવામા આવે છે કે કેરીના ગોટલાને ૧૦૦ મીલીગ્રામ પ્રતિ લીટર જીબ્રેલીક એસીડના દ્રાવણમા ૨૪ કલાક ડૂબાડીને પછી રોપવાથી સારી વુધ્ધિવાળા વધુ રોપા મેળવી શકાય છે. **Approved** ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.1.21	**Effect of foliar application of GA_3 and CPPU on yield and quality of mango (*Mangifera indica* L.) cv. Kesar** **<u>Dropped:</u>** 1. Arrange demonstrations of best treatment ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.1.22	**Effect of post flowering spray of chemicals on fruit retention and yield of mango cv. Kesar** The farmers of South Gujarat having mango orchard of Kesar variety are recommended to spray 2% novel organic liquid nutrients at pea and marble stage to increase the yield and improve quality of fruits along with higher net return. દક્ષિણ ગુજરાતના વધુ વરસાદવાળા વિસ્તારમા આંબાની કેસર જાતની વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે કેસરના ઝાડ ઉપર કેરી વટાણા અને લખોટી જેટલી થાય ત્યારે ૨ % નોવેલ સેન્દ્રીય પ્રવાહી પોષક તત્વોનો છંટકાવ કરવાથી કેરીનું ગુણવત્તાસભર વધુ ઉત્પાદન સાથે વધારે ચોખ્ખો નફો મેળવી શકાય છે. **Approved** ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.1.23	**Effect of biofertilizers, growth regulator and micronutrients on fruit growth, yield and quality of Sapota cv. Kalipatti** The farmers of South Gujarat having sapota cv. Kalipatti orchards are recommended to apply FYM 75 kg in June month and 750-375-375 g/tree NPK application in June and October month (Two equal splits), Bio-fertilizers - *Azospirillum* + PSB @ 40ml/tree application in July, 50 ppm GA_3 spray in

November and 0.5% Grade 4 micronutrients spray in December month for getting higher yield and income.

દક્ષિણ ગુજરાતમા ચીકુની કાલીપત્તિ જાતની વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ચીકુના પુખ્તવયનાં ઝાડને ઝાડ દીઠ ૭૫ કિલો છાણીયું ખાતર જુન માસમાં અને ૭૫૦ ગ્રામ નાઈટ્રોજન, ૩૭૫ ગ્રામ ફોસ્ફરસ અને ૩૭૫ ગ્રામ પોટાશ જુન અને ઓક્ટોબર માસમા (બે સરખા હપ્તામાં) આપવો, જૈવિક ખાતર એજોસ્પાઈરીલમ અને પી.એસ.બી. ૪૦ મિ.લી./ઝાડ જુલાઈ માસમા આપવું, જીબ્રેલીક એસીડ ૫૦ પીપીએમનો છંટકાવ નવેમ્બર માસમા અને ગ્રેડ-૪ સુક્ષ્મ પોષકતત્વો ૦.૫ ટકાનો છંટકાવ ડીસેમ્બર માસમા કરવાથી ચીકુના ઉત્પાદન અને આવકમા વધારો થાય છે.

Approved

(Action: Assoc. Res. Sci., FRS, NAU, Gandevi)

16.4.1.24 **High density orcharding in different varieties of mango**

<u>Deferred with suggestions:</u>

1.Reanalyse the yield data of first 15 years by forming clusters of five years

2.To be presented in next year

(Action: Res. Sci., AES, NAU, Paria)

16.4.1.25 **Effect of tip pruning and foliar application of KNO_3 on early flowering and yield of mango cv. Kesar**

The farmers of South Gujarat having mango orchard cv. Kesar (Planted at 10 x 10 m) are recommended to apply foliar spray of 4% KNO_3 at 4th to 5th month after shoot tip pruning having approximately 1.0 cm diameter (Immediately after harvest) for getting early fruit maturity with higher yield and maximum net return.

દક્ષિણ ગુજરાતના આંબાની કેસર જાતની (૧૦ x ૧૦ મી અંતરે વાવેતર કરેલ) વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે આંબાની કેસર જાતના ઝાડને ફળ ઉતારી લીધા બાદ તુરત જ ઝાડની અંદાજિત ૧.૦ સે. મી. જાડાઇ ધરાવતી ડાળીઓની છટણી કર્યાના ચારથી પાંચ મહિને ૪ % પોટાશિયમ નાઈટ્રેટનો છંટકાવ કરવાથી કેરીની વહેલી પરીપકવતાની સાથે વધુ ઉત્પાદન અને આવક મેળવી શકાય છે.

Approved

(Action: Principal, Horti. Poly Tech., ACHF, NAU, Navsari)

16.4.1.26 **Effect of different sources of nutrients and fertigation levels on yield and other horticultural traits in tomato under protected culture**

Farmers cultivating tomato in naturally ventilated polyhouse (1000 m^2) are recommended to fertigate the crop with 25: 12.50: 12.50 kg NPK (As per the schedule given in table below) through water soluble fertilizers along with application of 0.5 kg *Trichoderma viride* and *Pseudomonas fluorescens* each, 0.5 L Phosphorous Solubilizing Bacteria (*Bacillus megaterium*) & potash mobilizer- *Frateuria aurantia* each, 2 t FYM and 5.0 kg micro-nutrients (Grade V) at the time of transplanting for higher yield as well as net returns.

Crop Duration	Application ratio of fertilizers			Remarks
	N (kg)	P (kg)	K (kg)	

1st Growth Period (Up to 30 days)	6.22	3.75	1.14	• Fertigation should be carried out once a week after 10-15 days of transplanting.
2nd Growth Period (31-60 days)	3.13	2.50	2.28	
3rd Growth Period (61-90 days)	3.13	1.25	3.38	
4th Growth Period (91-120 days)	3.13	1.25	2.28	
5th Growth Period (121-150 days)	3.13	1.25	1.14	
6th Growth Period 151-180 days)	3.13	1.25	1.14	
7th Growth Period (181-210 days)	3.13	1.25	1.14	
Total	25.00	12.50	12.50	

નેચરલી વેન્ટીલેટેડ પોલીહાઉસ (૧૦૦૦ ચો.મી.) માં ટામેટાની રક્ષિત ખેતી સાથે સંકળાયેલ ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકને ફર્ટીગેશન અંતર્ગત ૨૫: ૧૨.૫૦:૧૨.૫૦ કિ.ગ્રા. ના.ફો.પો. (નીચેના કોઠામાં દર્શાવેલ શિડયૂલ પ્રમાણે) ની સાથે ટ્રાયકોડર્મા વિરીડી, સ્યુડોમોનાસ ફ્લુરોસેન્સ દરેક ૦.૫ કિ.ગ્રા., ફોસ્ફોરસ સોલ્યુબીલાઈઝીંગ બેક્ટેરિયા (બેસિલસ મેગાટેરીયમ), પોટાશ મોબીલાઈઝર (ફ્રેચૂરિયા ઓરેંસિયા) દરેક ૦.૫ લી. તથા ૨ ટન છાણિયુ ખાતર અને ૫.૦ કિ.ગ્રા. સૂક્ષ્મ તત્વ (ગ્રેડ ૫) પ્રમાણે છોડની ફેરરોપણી સમયે આપવાની ભલામણ કરવામા આવે છે.

પાકનો સમય ગાળો	**ખાતર વિભાજિત કરવાનો ગુણોતર**			**નોંધ**
	નાઈટ્રોજન (કિ.ગ્રા.)	**ફોસ્ફોરસ (કિ.ગ્રા.)**	**પોટાશીયમ (કિ.ગ્રા.)**	
પ્રથમ વિકાસ તબક્કો (પ્રથમ ૩૦ દિવસ)	૬.૨૨	૩.૭૫	૧.૧૪	ફર્ટીગેશનની શરૂઆત ફેરરોપણીના ૧૦ થી ૧૫ દિવસ બાદ અઠવાડિયામાં એક વાર કરવી.
દ્વિતીય વિકાસ તબક્કો (૩૧ થી ૬૦ દિવસ)	૩.૧૩	૨.૫૦	૨.૨૮	
તૃતીય વિકાસ તબક્કો (૬૧ થી ૯૦ દિવસ)	૩.૧૩	૧.૨૫	૩.૩૮	
ચોથો વિકાસ તબક્કો (૯૧ થી ૧૨૦ દિવસ)	૩.૧૩	૧.૨૫	૨.૨૮	
પાંચમો વિકાસ તબક્કો (૧૨૧ થી ૧૫૦ દિવસ)	૩.૧૩	૧.૨૫	૧.૧૪	
છઠ્ઠો વિકાસ તબક્કો (૧૫૧ થી ૧૮૦ દિવસ)	૩.૧૩	૧.૨૫	૧.૧૪	
સાતમો વિકાસ તબક્કો (૧૮૧ થી ૨૧૦ દિવસ)	૩.૧૩	૧.૨૫	૧.૧૪	
કુલ	૨૫.૦૦	૧૨.૫૦	૧૨.૫૦	

Approved

(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)

<table>
<tr><td>16.4.1.27</td><td>Feasibility of tomato cultivation through grafting during rainy season
The tomato growers of South Gujarat are recommended to adopt interspecific grafting of tomato with Solanum torvum during rainy season for getting higher yield and net return.
દક્ષિણ ગુજરાતના ટામેટાની ખેતી સાથે સંકળાયેલ ખેડૂતોને ભલામણ કરવામા આવે છે કે ચોમસાની ઋતુમાં સોલેનમ ટોરવમ પ્રજાતિનો મૂળકાંડ તરીકે ઉપયોગ કરી તેની ઉપર ટામેટાના ઉપરોપની કલમ બનાવી ખેતી કરવાથી વધુ ઉત્પાદન અને આર્થિક નફો મેળવી શકાય છે.
Approved
(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)</td></tr>
<tr><td>16.4.1.28</td><td>Artificial oscillation for increasing fruit set and performance of tomato in poly house under South Gujarat conditions

<u>Deferred with Suggestions:</u>
1.Reanalysis to be done including control v/s rest treatments
2. To be presented in next year (next AGRESCO)
(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)</td></tr>
<tr><td>16.4.1.29</td><td>Integrated Nutrient Management in Cabbage
(Brassica oleracea var. Capitata)
The cabbage growing farmers of South Gujarat are recommended to apply 20 t/ha FYM at the time of land preparation and fertilize their crop with combination of 50 % recommended dose of nitrogen (100:00:37.5 NPK kg/ha) along with Nitrogen based quantity of Bio compost (12.5 t/ha, containing 0.8 % N). Entire quantity of Bio compost and potash as well as half quantity of nitrogen should be applied as basal. Remaining half dose of nitrogen should be applied as top dressing in two equal splits viz., 30 and 45 DATP to obtain higher yield.

દક્ષિણ ગુજરાતમા કોબીજની ખેતી સાથે સંકળાયેલા ખેડૂતોને વધુ ઉત્પાદન મેળવવા માટે પ્રતિ હેકટરે ૨૦ ટન છાણિયું ખાતર જમીન તૈયાર કરતી વખતે અને પાયામાં ૫૦ ટકા ભલામણ કરેલ નાઈટ્રોજનના જથ્થાની (૧૦૦-૦૦-૩૭.૫ કિગ્રા ના.પો.ફો.) સાથે નાઈટ્રોજનના આધારે બાયોકમ્પોસ્ટ (૦.૮% નાઈટ્રોજન ધરાવતુ, ૧૨.૫ ટન/હે.) આપવાની ભલામણ કરવામા આવે છે. બાયોકમ્પોસ્ટ અને પોટાશનો સંપૂર્ણ જથ્થો તથા નાઈટ્રોજનનો અડધો જથ્થો પાયામા આપવો. નાઈટ્રોજનનો બાકીનો અડધો જથ્થો પૂર્તિ ખાતર તરીકે બે સરખા હપ્તામાં એટલેકે ફેરરોપણી બાદ ૩૦ અને ૪૫ દિવસે આપવો.
Approved
(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)</td></tr>
<tr><td>16.4.1.30</td><td>Validation of organic farming technologies in elephant foot yam
The farmers of South Gujarat Heavy Rainfall Zone, intending to grow elephant foot yam cv. Gajendra organically are recommended to use organic treatment as per below mentioned management:
• Raise green manure of cowpea with 20 kg ha^{-1} seed rate and incorporate it at</td></tr>
</table>

	45-60 days before planting of elephant foot yam. • Take organically produced planting material of 500 g weight and treat it with bucket full of cow dung slurry containing 1- 2 kg neem cake and *Trichoderma harzianum* (5 g per kg seed corm) and then dry under shade before planting. • At the time of planting, apply FYM : neem cake mixture (in 10:1 ratio) @ 36 t ha^{-1} incorporated with *Trichoderma harzianum* @ 2.5 kg per tonne of FYM neem cake mixture along with neem cake @ 1 t ha^{-1} in pits. • Raise green manure cowpea again with 20 kg ha^{-1} seed rate in-between fallow space of elephant foot yam plants and incorporate at 45-60 days in pits along with 3 t ha^{-1} of ash દક્ષિણ ગુજરાતના ભારે વરસાદીય વિસ્તારમાં સેન્દ્રિય ખેતીથી સૂરણની ગજેન્દ્ર જાત ઉગાડવા માંગતા ખેડૂતો માટે નીચે મુજબની સેન્દ્રિય માવજત વાપરવાની ભલામણ કરવામાં આવે છે. • સુરણની વાવણી પહેલા ચોળીનો લીલો પડવાશ ૨૦ કિલો/ હેકટર બિયારણ લઈ કરવો તથા ૪૫ થી ૬૦ દિવસોમાં વાવણી પહેલા તેને જમીનમાં દબાવવો. • સજીવ ખેતી ઉત્પાદિત ૫૦૦ ગ્રામ વજનના સુરણના ટુકડાને લઈ તેને ૧-૨ કિલો લીમડાના ખોળ તથા બિયારણના ૧ કિલો વજન દીઠ ૫ ગ્રામ ટ્રાયકોડર્મા હરજીયાનમ ભેળવેલ ૧ ડોલ છાણની રબડીમા માવજત આપી છાંયડામા સુકવી વાવેતર કરવું. • વાવેતર સમયે ૩૬ ટન / હેકટરે છાણિયા ખાતર: લીમડાનો ખોડ (૧૦: ૧ નું પ્રમાણ) કે જેમાં ૨.૫ કિલો/ ટન પ્રમાણે ભેળવેલ ટ્રાયકોડર્મા હરજીયાનમ મિશ્રણનો ઉપયોગ કરવો તથા સાથે સાથે ૧ ટન/ હેકટર લીમડાનો ખોળ પણ આપવો. • સુરણના ખાડાની વચ્ચેની ખાલી જગ્યામા ફરી પાછો ચોળીનો લીલો પડવાશ ૨૦ કિલો/ હેકટર બિયારણ લઈ કરવો તથા ૪૫ થી ૬૦ દિવસોમા તેને ખાડામા દબાવી દેવો તથા સાથે સાથે ૩ ટન / હેકટર રાખ પણ આપવી. **Approved** ***(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)***
16.4.1.31	**Standardization of soil less media for brinjal plug tray nursery** The farmers and nursery men raising brinjal seedling in plug tray nursery are recommended to use media of Vermicompost: Cocopeat as 1:1 or 2:1 ratio for maximum germination percentage, good seedling vigour, higher return and maximum survival of seedling in plug tray as well as in main field. રીંગણના ધરૂ ઉછેરતા ખેડૂતો અને નર્સરીધારકો ને ભલામણ કરવામા આવે છે કે, મીડીયા તરીકે વર્મીકમ્પોસ્ટ અને કોકોપીટ નું પ્લગ ટ્રે માં ૧:૧ અથવા ૨:૧ પ્રમાણ રાખવાથી ધરૂનો ઉગાવો વધુ સારો, જુસ્સાદર તેમજ પ્લગ ટ્રે અને ખેતરમા રોપણી કર્યા બાદ ધરૂમા વધુ ટકાઉપણુ જોવા મળે છે. **Approved** ***(Action: Principal, Horti. Poly Tech, NAU, Paria)***
16.4.1.32	**Integrated nutrient management in rose (*Rosa chinensis* L.)** Farmers of South Gujarat growing rose are recommended to apply RDF (10 t/ha FYM + 200: 200: 200 NPK kg/ha) after pruning in first week of May and November in four equal split (May, August, November and February months) by 50 % RDN through chemical fertilizers and 50% RDN through Neem Cake along with Biofertilizers *i.e. Azotobactor* + Phosphate Solubilizing Bacteria (PSB) + Potash

	Mobilizing Bacteria (KMB) each @ 1.25 l /ha as soil application and 1 % (10 ml/l) foliar spray of *Novel* organic liquid nutrient four times (June, September, December and March months) for getting higher production of flowers as well as net return. દક્ષિણ ગુજરાતમાં દેશી ગુલાબની ખેતી કરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે ગુલાબના છોડની મે અને નવેમ્બર માસના પ્રથમ અઠવાડીયામાં છટણી કર્યા બાદ ભલામણ કરેલ ખાતરને (૧૦ ટન/હે. છાણિયું ખાતર + ૨૦૦: ૨૦૦: ૨૦૦ ના.ફો.પો. કિગ્રા/હે.) ચાર સરખા ભાગમા (મે, ઓગસ્ટ, નવેમ્બર, ફેબ્રુઆરી માસમા) ૫૦ % નાઈટ્રોજન રાસાયણિક ખાતરથી અને ૫૦ % નાઈટ્રોજન લીંબોળી ખોળ દ્વારા આપી ૧૫ દિવસ બાદ એઝોટોબેક્ટર, ફોસ્ફેટ સોલ્યુબલાઈઝીંગ બેક્ટેરિયા (પી.એસ.બી.) અને પોટાશ મોબીલાઈઝીંગ બેક્ટેરિયા (કે.એમ.બી.) જેવા જૈવિક ખાતરો દરેક ૧.૨૫ લી./હે. જમીનમા આપવા તથા ૧ % (૧૦ મીલી/લી) નોવેલ સેન્દ્રીય પ્રવાહી પોષક તત્વોનો ચાર વખત (જુન, સપ્ટેમ્બર, ડીસેમ્બર અને માર્ચ માસમાં) છંટકાવ કરવાથી ફુલોનુ વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. **Approved** ***(Action: Professor& Head, FLA, ACHF, NAU, Navsari)***
16.4.1.33	**Effect of different growing media and foliar application of nitrogen on garlic, fenugreek and spinach** **<u>Deferred with suggestions:</u>** 1. Recast after recalculation of economics based on the new off season rates (Rs 60/kg spinach, Rs 150/kg garlic and Rs 100/kg fenugreek) 2. To be presented in next year ***(Action: Professor & Head, FLA, ACHF, NAU, Navsari)***
16.4.1.34	**Standardization of packing techniques for flower strings of marigold** **Dropped:** 1. There was discrepancy regarding number of treatments in tables and observation on quality parameters which was unexplainable ***(Action: Professor & Head, FLA, ACHF, NAU, Navsari)***
16.4.1.35	**Effect of different cultivation practices on quality and yield of banana pseudo stem sap** **<u>Deferred with Suggestions:</u>** 1. Production wise economics to be added and to be presented next year ***(Action: Res. Sci. & Head, SWAMRU, NAU, Navsari)***
16.4.1.36	**Residues of paclobutrazol in mango under South Gujarat conditions** The mango growers of South Gujarat are recommended that application of paclobutrazol 25 SC as growth promoter at the rate of 7.5 g *a.i.*/tree i.e. 30 ml/10 l water in mango tree through drenching method in the month of July under condition do not pose the problem of paclobutrazol residues in mature and ripe mango fruits as its residues were well below the MRL values fixed by National and International regulatory agencies for mango. દક્ષિણ ગુજરાતના આંબા ઉત્પાદકોને ભલામણ કરવામા આવે છે કે આંબાને પેકલોબ્યુટ્રાજોલ **૨૫**

	એસ.સી.નાં ૭.૫ ગ્રા. સક્રિય તત્વ/ઝાડ એટલે કે ૩૦ મી.લી./૧૦ લી. પાણી પ્રમાણે જુલાઈ માસમા રેડવાથી કાચી અને પાકી કેરીમા પેકલોબ્યુટ્રાજોલના અવશેષ આવવાનું જોખમ રહેતું નથી અને કેરીમા તેના અવશેષ રાષ્ટ્રીય અને આંતરરાષ્ટ્રીય નિયમનકારી એજન્સીઓ દ્વારા નક્કી કરેલ મહતમ અવશેષ મર્યાદા (MRL) કરતા ખૂબજ ઓછા જોવા મળે છે. **Approved** ***(Action: Professor & Head, FQTL, NMCA, NAU, Navsari)***
16.4.1.37	**Effect of different organic sources on yield and quality of banana under certified organic farm** For achieving higher yield as well as net income, the farmers of South Gujarat growing banana, variety Grand Nain, organically are recommended to apply 150g N/plant *i.e.* 14.7 kg NADEP compost (containing 1.02 % N) in three equal splits at basal, 30 and 60 DAP, along with *Azotobacte*r @ 5 l/ha + KMB @ 5 l/ha + PSB @ 5 l/ha at planting and green manuring two times. **Detail management:** • Planting: Prepare the pit at 1.5 x 1.2 x 2.4 m distance and apply the first split of NADEP compost (containing 1.02 % N) @ 4.9 kg per pit along with *Azatobactor,* PSB and KMB @ 5.0 l/ha each at the time of planting. Apply second and third split application of NADEP compost @ 4.9 kg/plant at 30 and 60 DAP, respectively. • Grow *dhaincha* as green manure continuously two times in between the wider spaces of banana. First at the time of planting and subsequently second after incorporation of first green manuring and incorporate it in soil at 45 DAS. દક્ષિણ ગુજરાતમાં સેન્દ્રિય ખેતીથી કેળ (ગ્રાન્ડ નેઈન જાત) ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા ૧૫૦ ગ્રામ નાઈટ્રોજન/ છોડ એટલે કે ૧૪.૭ કિગ્રા. નાડેપ કંમ્પોસ્ટ ત્રણ સરખા હપ્તામા રોપણી વખતે તથા ત્યારબાદ ૩૦ અને ૬૦ દિવસે તથા એઝેટોબેકટર, કેએમબી + પીએસબી ૫ લિટર / હે. લેખે રોપાણ વખતે છોડને આપવાની અને ઈક્કડનો બે વખત લીલો પડવાશ કરવાની ભલામણ કરવામાં આવે છે. વિગતે માવજતો: • રોપણી ૧.૫ x ૧.૨ x ૨.૪ મીટરના અંતરે ખાડા કરવા અને પ્રથમ હપ્તામાં નાડેપ સેન્દ્રીય ખાતર ૪.૯ કિગ્રા. ખાડા દીઠ (૧.૦૨ % નાઈટ્રોજન યુકત) તેમજ કેએમબી જૈવિક ખાતર + પીએસબી + એઝેટોબેકટર ૫ લિ. / હે. આપવું બીજા અને ત્રીજા હપ્તામા છોડ દીઠ ૪.૯ કિગ્રા. નાડેપ સેન્દ્રીય ખાતર રોપણી બાદ ૩૦ અને ૬૦ દિવસે આપવું. • કેળની રોપણીના પહોળા ગાળામા ઈક્કડનો સતત બે વખત લીલો પડવાશ કરવો. પ્રથમ લીલો પડવાશ રોપણી સમયે અને બીજો લીલો પડવાશ પ્રથમ લીલા પડવાશને જમીનમા દાબી તુરંત કરવો અને તેને વાવણીના ૪૫ દિવસ બાદ જમીનમા દબાવવો. **Approved** ***(Action: Professor, NRM, ACHF, NAU, Navsari)***
16.4.1.38	**Determination of critical limit of water salinity for *Ailanthus spp.* (Arduso) seedlings** Farmers and nursery growers are informed that seedlings of *Ailanthus*

	species (*i.e. A. excelsa* and *A. triphysa*) are moderately salt tolerant for irrigating with saline water upto 8.0 dS/m. ખેડૂતો અને નર્સરી ઉત્પાદકોને ભલામણ કરવામા આવે છે કે અરડુસાની પ્રજાતિઓ જેવી કે એક્સેલસા અને ત્રિફ્સા પિયત પાણીના ક્ષાર સામે મધ્યમ પ્રતિકારક હોઈ તેમના રોપા ૮.૦ ડેસી સાયમન/મીટર વિધુત વાહકતા સુધી ટકી રહે છે. **Approved** ***(Action: HoD, NRM, CoF, NAU, Navsari)***
16.4.1.39	**Vegetative Propagation of Dambel (*Tylophora indica*)** It is recommended to the farmers and nurseryman that the vegetative propagation of Dambel can be achieved by dipping 10 cm cutting in 1 g/l IBA solution for 10 minutes and growing in coco-peat or red soil media under net house conditions. ખેડૂતો અને નર્સરી ઉત્પાદકોને ભલામણ કરવામા આવે છે કે દમવેલનુ વનસ્પતિક પ્રસર્જન કરવા માટે તેના ૧૦ સે.મી. લાંબા કટકાના છેડાને પ્રતી લીટર ૧ ગ્રામ આઇ.બી.એ ના પ્રવાહીમાં ૧૦ મીનીટ ડૂબાડીને કોકોપીટ અથવા લાલ માટી માધ્યમમાં નેટ હાઉસમા ઉછેરવાથી તેનો વધુ વિકાસ મેળવીશકાય છે. **(Approved for farmers recommendation instead of scientific community)** ***(Action: HoD, FPU, CoF, NAU, Navsari)***

16.4.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

- NIL –

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

16.4.2.1	**Effect of foliar spray of chemicals to induce flowering and fruiting on rejuvenated mango trees cv. Kesar** The scientific community is informed to spray cycocel (CCC) @ 1000 ppm (1 ml in one liter of water) during October and second spray after one month of first spray in rejuvenated Kesar mango orchard for obtaining higher yield and net return. **Suggestions:** **1. Approved for scientific community** ***(Action: Professor & Head, Deptt. of Horticulture, JAU, Junagadh)***

SARDARKRUSHINAGAR AGRICULTURAL UNIVERSITY, S. K. NAGAR

- NIL –

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

16.4.2.2	**Evaluation of bio agent, fungicides and physical method on germination and survival of mango (*Mangifera indica* L.) stone** **Dropped:** There was no any significant difference between treatments ***(Action: Research Scientist, RHRS, NAU, Navsari)***
16.4.2.3	**Effect of different light sources on growth and quality of micro-greens** • Scientists are informed that based on the performance of different microgreens for growth parameters like days to first harvest, leaf area (cm^2), fresh weight and quality parameters *viz*., ascorbic acid, *β*-carotene, N, P, K, Ca, total antioxidant activity and overall acceptability under different light sources, electroluminescent light is recommended for growing microgreens inside growing chamber/room. • Fenugreek, beet root, red cabbage, displayed significantly maximum ascorbic acid, N, Ca; *β*-carotene, K; antioxidant activity. Based on sensory evaluation, highest score for overall acceptability was obtained by Amaranth microgreens, which was followed by beet root and red cabbage microgreens. **Approved** ***(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)***
16.4.2.4	**Integrated weed management in elephant foot yam** The scientists are informed that spraying of post emergence herbicide- Glyphosate 41 % S. L. 1 kg *a.i.*/ha at 30, 60 and 90 DAP in-between row space of elephant foot yam cv. Gajendra for effective weed management. **Approved** ***(Action: Prof., Veg. Sci., ACHF, NAU, Navsari)***
16.4.2.5	**Residues of paclobutrazol in Sapota under South Gujarat conditions** The scientific community is informed that sapota fruits exceeded the MRL values fixed by National and International regulatory agencies for Paclobutrazol residues which were collected during 90-120 days from the sapota tree drenched with paclobutrazol 25 SC at the rate of 7.5 g *a.i.*/ha i.e. 30 ml/10 l water in the month of September under South Gujarat conditions. **Approved** ***(Action: Professor & Head, FQTL, NMCA, NAU, Navsari)***

16.4.3 NEW TECHNICAL PROGRAMME

Date :- June 01-02, 2020

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestions and Action
16.4.3.1	**Effect of integrated nutrient management on growth and yield of potato *(Solanum tuberosum L)***	Accepted with following suggestions: 1. Keep RDF as 220:110:220 NPK kg/ha. 2. Use 'DAP' instead of 'DAS' in treatments note. 3. Add observation of Bulk density 4. Nutrient NPK content of leaves and tubers should be worked. 5. The available N of soil should be worked out (initial and after). 6. After completion of experiment same crop should be followed. 7. Yield of haulm per plot should be worked out. 8. Sowing word should be replaced with planting from observation. *(Action:* College of Horticulture, AAU, Anand*)*
16.4.3.2	**Evaluation of nutrient management modules in okra + cowpea - cabbage + fenugreek intercropping system**	Accepted with following suggestions: 1. Okra seed rate should be mentioned as 6-8 kg. 2. Head weight should be mentioned instead of curd wt. 3. Add observation on head diameter and head yield (t/ha). 4. Add observation on green leaf yield (kg/ha) in fenugreek. 5. Fenugreek leaf purpose – Pusa Early Bunching var. should be used in the experiment. 6. Spacing of fenugreek should mentioned as line sowing instead of 20 x 25 cm. 7. Plant geometry of the experiment should be discussed with statistician of your centre. 8. Add B and Mo in chemical analysis. *(Action: College of Horticulture, AAU, Anand)*
16.4.3.3	**Effect of N, P and K application on yield and quality of watermelon**	Accepted with following suggestions: 1. Use word levels in objective. 2. Length of vine should be measured at 30 and 60 DAS instead of 25, 50 and 75 DAS. 3. Days to initiation of male and female flower. 4. Take observation on number of female flowers.

		5. Analyse NPK content and uptake of fruits and vine. 6. Add observation on Pulp : Peel ratio 7. Yield should be quantified as t/ha 8. No. of fruits / vine should be considered instead of observation No. 3 *(Action: Agriculture Research Station, College of Agriculture, AAU, Jabugam)*
16.4.3.4	**Effect of bio-stimulants on growth and yield of onion (*Allium cepa* L.) under middle Gujarat**	Accepted with following suggestions: 1. Change title as: Effect of biofertilizers and bio-stimulants on growth and yield of onion (*Allium cepa* L.) under middle Gujarat 2. Mention units of bio NPK and Bijamrut. 3. Novel organic liquid fertilizer should be replaced with Novel organic liquid nutrient. 4. RDF should be mentioned with NPK. 5. Keep Bio stimulant as B_7 Control treatment. So treatment combinations would be 21 (3 x 7). 6. Spray schedule should be at 30 and 60 DATP. *(Action: Sheth D. M. Polytechnic In Horticulture, AAU, Vadodara)*
16.4.3.5	**Effect of different rate and frequency of foliar application of zinc on growth, yield and quality of tomato**	Accepted with following suggestions: 1. Change title as: Effect of different rate and frequency of foliar application of zinc on yield attributes and quality of tomato 2. Add 4th Objective as interaction between 2 factors. 3. Follow Design RBD (Factorial concept). 4. In the list of observation (A), mention yield and yield attributes instead of Growth and yield attributes. 5. Add observations on fruit length and diameter (cm), Fruit weight (g), content and uptake of Zn. *(Action: Micronutrient Research Scheme (ICAR), AAU, Anand)*

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestions and Action
16.4.3.6	**Effect of climatic parameters on D x T coconut variety in various locations of Saurashtra region (Feeler Trial)**	Accepted with following suggestions: 1. Number of palms per treatment should be 5 …instead of 2 2. Number of replications should be 8 …instead of 7 3. All observations a, b, c should be taken season wise. 4. The quality parameters at Sr. No. 2, 3 and 4

		should be mentioned in %. 5. The unit of RH should be mentioned. 6. Follow design Large Plot Techniques (To be analysed as CRD). 7. Uniform age group should be maintained in the experiment. *(Action:* Professor & Head, Department of Horticulture, JAU, Junagadh*)*
16.4.3.7	**Effect of climatic parameters on Dwarf Green coconut variety in various locations of Saurashtra region (Feeler Trial)**	Accepted with following suggestions: 1. Number of palms per treatment should be 5 …instead of 2 2. Number of replications should be 8 …instead of 7 3. All observations a, b, c should be taken season wise. 4. The quality parameters at Sr. No. 2, 3 and 4 should be mentioned in %. 5. The unit of RH should be mentioned. 6. Follow design Large Plot Techniques (To be analysed as CRD). 7. Uniform age group should be maintained in the experiment. *(Action: Professor & Head, Department of Horticulture, JAU, Junagadh)*
16.4.3.8	**Malformation incidence in mango cv. Kesar in Suarshtra region**	Accepted with following suggestions: 1. Use word floral malformation instead of disease at all places. 2. Total population of 600 trees should be maintained in whole experiment. 3. Large Plot Technique should be followed for the experiment (To be analysed as FCRD). *(Action: Professor & Head, Department of Horticulture, JAU, Junagadh)*

16.4.3.9	**Effect of different drying techniques with use of various media for drying of flower of forest trees (*Butea monosperma*, *Delonix regia* & *Cassia fistula*)**	Accepted with following suggestions: 1. In title, use ornamental trees instead of forest trees. 2. Include word 'flowers of ….' in all objectives. 3. Specify the timing in D5 (microwave) of Factor A in relation to temperature. 4. Under physical observations, remove prefix per cent at Sr. No. 2, 3 and 4. 5. Maintain sufficient working samples in the experiment. 6. Remove D2 from Factor A. 7. Use Hedonic scale instead of sign in visual observations. *(Action: Professor & Head, Department of Horticulture, JAU, Junagadh)*
16.4.3.10	**Response of different rootstocks under saline irrigation condition in tomato.**	Accepted with following suggestions: 1. Add word 'under saline condition' in first objective. 2. Use word fruit diameter instead of fruit girth. 3. Fruit yield should be mentioned as Fruit yield (kg/plant). 4. TSS should be measured in ^{o}Brix. 5. Number of plants per treatment should be minimum 10. 6. Pot size should be mentioned in cm instead of cm^3. 7. Remove V5 from factor A. 8. Mention the stage of crop for imposing salinity treatments. 9. Add observation of survival percentage on periodical basis and lycopene content in fruit. 10. Soil analysis Na/ K ratio instead of N/ K. *(Action: Professor & Head, Department of Horticulture, JAU, Junagadh)*

SARDARKRUSHINAGAR AGRICULTURAL UNIVERSITY, S. K. NAGAR

Sr. No.	Title	Suggestions and Action
16.4.3.11	**Effect of growth regulators on germination and growth of Acid Lime (*Citrus aurantifolia* Swingle.) seedlings.**	Accepted with following suggestions: 1. Remove word seedlings from title of the experiment. 2. Observations should be taken at 60, 120 & 180 days. 3. Add following observations:

		a. Root: shoot ratio b. Fresh and dry weight of shoot and root at 180 days c. Germination (%) at 45 days after sowing d. Survival percentage at 180 days e. Counting of nucellar seedlings 4. Conduct experiment in 2 factor Factorial CRD i.e. Factor 1– GA_3 (4 levels- 0, 50, 100, 150 ppm) and Factor 2-NAA (4 levels- 0, 50, 100, 150 ppm). 5. Give treatment of soaking of seeds for 12 hrs. 6. Follow Statistical Design as CRD (Factorial). *(Action:* Professor (Horti.), CPCA, SDAU, Sardarkrushinagar*)*
16.4.3.12	**Standardization of holding solutions for improving keeping quality of cut spikes of gladiolus.**	Accepted with following suggestions: 1. Consider the variety American Beauty or Green Star or Suraj Hybrid and should be uniform throughout the experimental period. 2. Keep Spike length 45 cm and it should be uniform for all the treatments. 3. Holding solution should be fixed as 500 ml. 4. Consider at least 2 flasks for the study. 5. Objectives of the experiment should be reframed considering interaction effect. 6. Observations should be taken periodically i.e. 2, 4, 6, 8, 10, 12 and 14 days. 7. At 3 days, cut should be made at the basal end of the spike. 8. Observation No. 6 should be recorded daily. *(Action: Professor (Horti.), CPCA, SDAU, Sardarkrushinagar)*
16.4.3.13	**Study of fertigation on growth, yield and quality of Acid Lime (*Citrus aurantifolia* Swingle).**	Accepted with following suggestions: 1. Add observations on fruit length, girth and diameter, titrable acidity. 2. Plant spread (N-S, E-W) should be measured. 3. Add observations pest & disease 4. Specify method of irrigation in control plot 5. Soil analysis should be carried out for EC, pH, NPK before and after. 6. Mention schedule for T1. 7. Source for P should be mentiond 8. The stage of fertigation should start 1 month after retreat of monsoon. 9. Consider design as Large Plot (To be analyzed as CRD) *(Action: Professor (Horti.), CPCA, SDAU, Sardarkrushinagar)*

16.4.3.14	**Study of fertigation in mango**	Accepted with following suggestions: 1. Title of the experiment should be "Study of fertigation in mango under north Gujarat conditions" 2. Treatments 1, 2, 3 should be mentioned as through fertigation. 3. Fertigation should be scheduled from 2nd fortnight of January, February, March and April. 4. Soil analysis should be carried out for EC, pH, NPK before and after. 5. Delete observations No. 1 and 2. 6. Source for P should be mentioned 7. Add observations on fruit length, diameter, TSS and total sugar, reducing sugar and non-reducing sugar and titrable acidity. 8. Add observation pest & disease 9. Add flowering parameters 10. Specify method of irrigation in control plot *(Action: Professor (Horti.), CPCA, SDAU, Sardarkrushinagar)*
16.4.3.15	**Effect of different PGR on growth and flowering of bitter gourd (*Mimordica charantia* L.)**	Accepted with following suggestions: 1. Delete the observation on quality parameters. 2. Specify the variety. *(Action:* Principal,College of Horticulture, SDAU, Jagudan*)*
16.4.3.16	**Effect of different media on germination and growth of 'Desert Rose' (*Adenium obesum*)**	Accepted with following suggestions: 1. Replace emergence word from observation No. 1 with germination. 2. Timing should be mentioned for observation No. 3 and 7 3. Observation No. 6, 10 and 11 having destructive characters, so maintain sufficient seeds for each treatment. 4. Specify No. of leaves and no. of buds/plant. *(Action: Principal,College of Horticulture, SDAU, Jagudan)*
16.4.3.17	**Effect of media and seed treatments on germination, growth and survivability of phalsa (*Grewia subinaequalis* DC.)**	Not Approved *(Action: Principal,College of Horticulture, SDAU, Jagudan)*

16.4.3.18	**Effect of different bio fertilizers and micro nutrients on growth, yield and quality of rejuvenated guava plants**	Accepted with following suggestions: 1. In treatment No. 3 and 4, use word 'micronutrient mix grade IV' instead of mineral mixture. 2. Dose of biofertilizers should be mentioned per plant. 3. General border should be kept in the experiment. 4. Observation No. 5 i.e. Fruit yield should be mentioned as kg/plant instead of g/plant. 5. Add quality parameters like TSS, fruit length, diameter. 6. Follow standard procedure for leaf tissue analysis of micronutrients. 7. Methodology should be give regarding rejuvenation *(Action: Assistant Research Scientist, FRS, Dehgam)*
16.4.3.19	**Study on *Melia dubia* based Agrisilviculture system under North Gujarat conditions.**	Accepted with following suggestions: 1. Title of the experiment should be "Study on *Melia dubia legume crop* based Agri-silviculture system under North Gujarat condition" 2. Reframe the objectives as per the title of experiment. 3. Mention the spacing for intercrops. 4. Geometry should be verified with the statistician of your centre. 5. Statistical design should also be varified after consultation of statician of your centre. 6. Use variety of JAU, Junagadh –GU 4 instead of GU 1 for black gram. 7. Observations on tree biomass, tree volume, crown height and length, light intensity should be added. 8. Observation 2 should be removed. 9. Observation on Carbon sequestration should be included in Melia. *(Action: Res. Sci., AFRS, Sardarkrushinagar)*
16.4.3.20	**Effect of nitrogen, phosphorus and potassium on Pomegranate**	Accepted with following suggestions: 1. Experiment should start at minimum age of 5 years. 2. Observation on cumulative fruit yield for last 4 years i.e. 5, 6, 7 and 8 should be recorded. 3. Experiment should be conducted as factorial concept.

		4. Recast objectives as per three factors of NPK 5. Methodology for fertilizer application should be clarified. *(Action: Res. Sci., AFRS, Sardarkrushinagar)*
16.4.3.21	**Effect of different media on muskmelon seedling in plug tray**	Accepted with following suggestions: 1. The experiment should be conducted involving 2 factors - Media and Age of transplanting seedling (2, 4, 6 leaf stage for transplant). 2. Recast objectives of the experiment. 3. Mention the season of sowing/experiment. 4. Size of plug tray should be specified. 5. Experimental Design should be CRD (Factorial concept). 6. Add observation on survival (%) *(Action: Principal Scientist & Head, KVK, Deesa)*
16.4.3.22	**Effect of different media on watermelon seedling in plug tray**	Accepted with following suggestions: 1. Recast objectives of the experiment. 2. Mention the season of sowing/experiment. 3. Size of plug tray should be specified. 4. The experiment should be conducted involving 2 factors - Media and Age of transplanting seedling (2, 4, 6 leaf stage for transplant). 5. Experimental Design should be CRD (Factorial concept). 6. Add observation on survival (%) *(Action: Principal Scientist & Head, KVK, Deesa)*
16.4.3.23	**Effect of different media on bottle gourd seedling in plug tray**	Accepted with following suggestions: 1. Recast objectives of the experiment. 2. Mention the season of sowing/experiment. 3. Size of plug tray should be specified. 4. The experiment should be conducted involving 2 factors - Media and Age of transplanting seedling (2, 4, 6 leaf stage for transplant). 5. Experimental Design should be CRD (Factorial concept). 6. Add observation on survival (%) *(Action: Principal Scientist & Head, KVK, Deesa)*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

16.4.3.24	**Effect of weather parameters on flowering and fruiting of HDP mango under South Gujarat condition**	Accepted with following suggestions: 1. Mention unit in planting distance. 2. Add 'sex ratio' in flowering parameters. 3. No. of panicles should be 4 in each direction. 4. Specify the soil depth as 15cm while measuring soil temperature. 5. Instead of panicle density, count No. of panicles per tree. 6. Flowering parameters : No 2, 3, 4, 5, should be included in fruiting parameters observation 7. Remove rejuvenated word from age of tree. 8. Correlation analysis should be done for the experiment. 9. Date of initiation of flowering should be mentioned as Days taken for initiation of flowering. 10. Cut off date for flowering should be considered as 1st November. 11. Pollen viability (%) should be recorded at 9 am. *(Action: Research Scientist, RHRS, NAU, Navsari)*
16.4.3.25	**Phytochemical screening and determination of antioxidant activity of different mango cultivars.**	Accepted with following suggestions: 1. Approved with condition to consult Convener of Basic Sciences for final verdict. 2. Design should be CRD. *(Action: Research Scientist, RHRS, NAU, Navsari)*
16.4.3.26	**Evaluation of guava cultivars under South Gujarat conditions**	Accepted with following suggestions: 1. Delete variety 'Lalit' from the list of treatments. 2. Design should be Large Plot Technique (To be analysed as CRD). 3. The unit for plant spread should be in 'meter'. 4. Under the observation on flowering parameters, delete No. 2,3,4 observation. 5. Under Section III i.e. Fruit and yield characters should be taken at harvest. 6. Remove observation on pulp colour. 7. Take observations in accordance to DUS characters. 8. Confirmation should be taken from Crop Improvement Sub-committee. 9. The PI is strictly instructed to follow the suggestions given by Statistician without fail. *(Action: Research Scientist, RHRS, NAU, Navsari)*

16.4.3.27	**Effect of different growing media on germination and growth of mango seedling**	Accepted with following suggestions: 1. Change the title as "Effect of different growing media on germination and growth of mango stone under net house condition". 2. Collection of 'Stone' should be mentioned instead of collection of cuttings in Methodology. 3. Mention plot size for raised bed. 4. Observations to be recorded at 30, 60 and 90 days after sowing as well as after grafting. 5. Record "survival (%)" after 360 days of planting. *(Action: Associate Research Scientist, FRS, NAU, Gandevi)*
16.4.3.28	**Compare the effect of different organic inputs in banana**	Accepted with following suggestions: 1. Modify title as ‘Effect of different organic inputs in banana’. 2. The spelling of revaluation should be corrected as Revolution. 3. Specify 'RDF' with organic matter. 4. The source of Jeevamrit in T8 should be mentioned. 5. Specify size of gross plot, net plot and Planting distance & method. 6. Add observations on Total Sugar, Reducing Sugar, Non-reducing sugar, days taken to maturity, weight of fingers, yield (t/ha), OC, pH and EC (Before and after experiment). 7. Use word Pseudostem instead of stem in growth parameters. *(Action: Associate Research Scientist, FRS, NAU, Gandevi)*
16.4.3.29	**Revalidation of recommended dose of N and K fertilizer in mango cv. Kesar**	Accepted with following suggestions: 1. Title of the experiment should be "Effect of N, P and K fertilizer on yield and quality of mango cv. Kesar". 2. Delete N5 from Factor A and K1 from factor B, and add Factor C as Phosphorous: P1-160 (g/plant) and P2-250 (g/plant). 3. In First objective, mention P, and Second objective should be based on interaction effect. 4. Half N and K, and full dose of P should be given as basal dose. 5. Follow RBD (Factorial) Design instead of FRBD 6. Write "tree" instead of 'Plant'

		7. As per notes age of plant may differ so need to take experiment in uniform age plants/canopy 8. Need to take experiment in 8 x 8 m. 9. Observation No. 9 should be taken as initial and after harvesting instead of after completion of experiment. 10. Add observations on quality parameters namely total sugar, reducing, non-reducing sugar and Ascorbic Acid. 11. Add observations on physical parameters namely fruit length, width and diameter. 12. Mention the standard procedure for leaf tissue analysis and it should be taken after every harvest. *(Action: Research Scientist, AES, NAU, Paria)*
16.4.3.30	**MLT (II) for mango hybrids**	Accepted with following suggestions: 1. Give the full form of MLT in the title of experiment. 2. Add observations on quality parameters namely total sugar, reducing, non-reducing sugar. *(Action: Research Scientist, AES, NAU, Paria)*
16.4.3.31	**Flower and fruit regulation in Alphonso mango**	Accepted with following suggestions: 1. Add 'Malformation' in observation 2. Mention Tree age 3. Mention the timing of soil moisture (%). 4. Total number of trees should be 50. 5. Mention the time and dose of application of PBZ. 6. Mention the methodology for suppression of vegetative shoots (%). *(Action: Research Scientist, AES, NAU, Paria)*
16.4.3.32	**Performance of okra varieties in different crop geometry under polyhouse conditions during winter season**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and off instead of winter. Similarly make changes in the objective. 2. Record weather parameters- temperature and RH. 3. Pods per plant should be mentioned as Number of pods per plant. 4. Time of sowing should be considered as first week of December. 5. Plot size should be verified. 6. Number of entries should be minimum 8. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*

16.4.3.33	**Evaluation of bush type french bean varieties under polyhouse conditions**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and similarly make changes in the objective also. 2. Sowing should be done in the month of July. 3. Number of entries should be minimum 8. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.34	**Evaluation of pole type french bean varieties under polyhouse conditions**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and similarly make changes in the objective also. 2. Sowing distance should be 60 x 20 cm. 3. Number of entries should be minimum 8. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.35	**Evaluation of cherry tomato varieties under polyhouse conditions.**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and similarly make changes in the objective also. 2. Remove (C) from variety No. 7 and 8. 3. Number of entries should be minimum 5. 4. Plant height and leaf area should be recorded at final harvest. 5. Record weather parameters- temperature and RH. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.36	**Evaluation of broccoli varieties during rainy season under polyhouse conditions (Feeler trial)**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and similarly make changes in the objective also. 2. Propose NTP based on results of this feeler trial next year. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.37	**Evaluation of garden pea (early) varieties during rainy season under polyhouse conditions (Feeler trial)**	Accepted with following suggestions: 1. Mention NVPH instead of polyhouse conditions in the title and similarly make changes in the objective also. 2. Propose NTP based on results of this feeler trial next year. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.38	**Evaluation of Low Cost Natural Farming in cauliflower under south Gujarat condition**	Accepted with following suggestions: 1. Title should be 'Evaluation of Low Cost Natural Farming in Cauliflower + Indian Bean under south Gujarat condition' 2. Add B and Mo in chemical analysis. 3. Plot size as well as sample size should be verified. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*

16.4.3.39	**Response of Brinjal (GNRB-1) to foliar application of Novel Organic Liquid Nutrient and Micronutirents**	Accepted with following suggestions: 1. Mention dose of FYM and RDF. 2. Design of the experiment should be FRBD. 3. Treatments should include 2 factors as Factor A (NOLN 0, 1, 1.5, 2%) and Factor B (Micronutrient Grade IV 0, 0.5, 0.75, 1%) 4. Take observation on fruit diameter instead of fruit girth, days to last picking and average weight of fruit (g). 5. Take observation on micronutrients content of fruits at 3rd picking. 6. Check the compatibility between NOLN and micronutrient Grade IV prior to spray. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.40	**Effect of different spacing and NAA on growth and yield of summer Okra**	Not Approved (Can be continued as PG research in future) *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.41	**Response of Tomato (GT-7) to foliar application of Novel Organic Liquid Nutrient and Micronutirents.**	Accepted with following suggestions: 1. Mention dose of FYM and RDF. 2. Design of the experiment should be FRBD. 3. Treatments should include 2 factors as Factor A (NOLN- 0, 1, 1.5, 2%) and Factor B (Micronutrient Grade IV- 0, 0.5, 0.75, 1%) 4. Take observation on fruit diameter instead of fruit girth, days to last picking and average weight of fruit (g). 5. Take observation on micronutrients content of fruits at 3rd picking. 6. Check the compatibility between NOLN and micronutrient Grade IV prior to spray. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.42	**Influence of sett size and spacing on growth and yield of greater yam (*Dioscorea alata* L.)**	Accepted with following suggestions: 1. Remove name of cultivar Hemlata from all the three objectives. 2. Remove (control) from W 4 of Factor 1. 3. Record tuber diameter instead of tuber girth. 4. Use word 'suitable' instead of 'ideal' in all the three objectives. *(Action: Professor, Veg. Sci., ACHF, NAU, Navsari)*
16.4.3.43	**Standardization of growing media for Brinjal and Tomato on roof top condition**	Accepted with following suggestions: 1. Mention the proportion of media on v/v basis. 2. Mention fertilizer dose per container. 3. Physical and chemical properties of all media should be analysed. *(Action: Scientist, KVK, NAU, Surat)*

16.4.3.44	**Effect of different potting media on gerbera cultivation in polyhouse**	Accepted with following suggestions: 1. Remove second objective 2. Add observations on No. of leaves and suckers 'per plant' 3. Mention type of poly house. 4. Specify varieties 5. Observations should be taken every 6 month after planting. 6. Mention fertilizer dose. 7. Media should be mentioned on volume basis. *(Action: Professor, FLA,ACHF, NAU, Navsari)*
16.4.3.45	**Evaluation of ferns in different growing media under benching system in orchid (*Dendrobium*) polyhouse**	Accepted with following suggestions: 1. Germplasm coding of fern types should be mentioned. 2. Media should be mentioned on volume basis. 3. Mention the specification of benching system. *(Action: Professor, FLA,ACHF, NAU, Navsari)*
16.4.3.46	**Evaluation of Sansevieria germplasm as potted ornamental**	Accepted with following suggestions: 1. Germplasm coding of Sansevieria types should be mentioned. *(Action: Professor, FLA,ACHF, NAU, Navsari)*
16.4.3.47	**Standardization of Grafting Technique in Moon Cactus**	Accepted with following suggestions: 1. Title should be "Effect of type and height of rootstock for grafting in Moon cactus" 2. Third objective should be based on interaction. 3. Design should be FCRD. *(Action: Professor, FLA,ACHF, NAU, Navsari)*
16.4.3.48	**Influence of pre-sowing treatments on germination and early growth in *Bauhinia malabarica* Roxb.**	Accepted with following suggestions: 1. Add one treatment *i.e.* 'soaking in cow dung slurry for 24 hrs'. 2. Concentration of H_2SO_4 should be mentioned. 3. Quantity of H_2SO_4 for 1 kg seed should be mentioned. 4. Use word Repetitions instead of replication. *(Action: HoD, SAF, CoF, NAU, Navsari)*
16.4.3.49	**Assessment of Pre-sowing treatments on seed germination and seedling vigour in *Milliusa tomentosa* (Roxb.) J. Sinclair**	Accepted with following suggestions: 1. Use word Repetitions instead of replication. *(Action: HoD, SAF, CoF, NAU, Navsari)*
16.4.3.50	**Effect of wind break (*Casuarina equisetifolia* L.) on productivity of paddy in South Gujarat**	Accepted with following suggestions: 1. Use word Repetitions instead of replication. 2. Spacing of paddy should be mentioned 3. Tree to tree spacing should be provided. 4. Under treatment T1, 2 m distance must be maintained.

		5. Fallow land must be taken into consideration for working out economics. *(Action: HoD, SAF, CoF, NAU, Navsari)*
16.4.3.51	**Influence of IBA on rooting of branch cuttings of *Swietenia macrophyla* King. and *S. mahagoni* (L.) Jacq.**	Accepted with following suggestions: 1. Use word Repetitions instead of replication. 2. Remove % symbol from the bracket of observation No. 1. 3. Size/length and time of stem cuttings should be mentioned. 4. Method/duration of dipping should be mentioned. 5. Recast the objectives of the experiment as per the treatments (Factor 1 and 2). 6. Time of observation should be specified. 7. Observation No. 5, 6, 8 and 9 should be taken at 6 months age. 8. The experiment should executed by using polybags. 9. Remove survival (%) from observation. 10. Sample size should be more. *(Action: HoD, SAF, CoF, NAU, Navsari)*
16.4.3.52	**Studies on physico-anatomical and chemical properties of Candidate Plus Trees (CPTs) of *Melia dubia* Cav. for pulp and paper quality from South Gujarat**	Accepted with following suggestions: 1. Add hemi-cellulose under chemical parameters. *(Action: HoD, FPU, CoF, NAU, Navsari)*
16.4.3.53	**Removal of heavy metal ions from aqueous solutions by Bamboo wastes**	Accepted with following suggestions: 1. Change the title as "Removal of chromium ion from aqueous solutions by Bamboo wastes ". 2. Add control in Factor 2. *(Action: HoD, NRM, CoF, NAU, Navsari)*
16.4.3.54	**Biodiversity of Navsari city & its surroundings**	Approved as such *(Action: HoD, NRM, CoF, NAU, Navsari)*
16.4.3.55	**Human-Leopard Conflict zone grading in South Gujarat**	Approved as such *(Action: HoD, NRM, CoF, NAU, Navsari)*

General suggestions:

1. If Y x T is found non-significant and data are consistent for two years then recommendation can be passed but if data are not consistent then it should be extend for one more year.
2. Put Y x T value in each table
3. Good quality photographs should be compulsory for recommendation. Treatment effect should be visible in photographs.
4. Economics calculation should be uniform in all universities. Convener, JAU will prepare guidelines for economic calculation and circulate to all. Based on higher net realization (instead of BCR), recommendation should be done.
5. In RDF, FYM dose should be mentioned in all experiments.
6. Already released variety can be recommended for farmers by Horticulture and Agro forestry subcommittee.
7. There should be uniformity in statistical methodology and analysis in all universities
8. For Gujarati version of recommendation, ‘shruti’ font is compulsory.
9. In trials on nutrition management, the actual quantity given should be mentioned in the recommendation instead of percentage.
10. The source of NPK should be mentioned in the recommendation.
11. In case of flowering parameters, days (mid value) should be mentioned instead of dates. The days should be calculated keeping a common cutoff date for all.
12. The last season wholesale price earned by growers or the APMC price of the current season should be used for calculation of economics
13. It is mandatory for all the sub-committees of AGRESCO to present the new technical programmes and recommendations pertaining to horticultural crops in Horticulture Sub-Committee of SAUs for final approval.
14. It was also suggested to keep the name of the Horticulture and Agro-forestry Sub-Committee as Horticulture and Forestry Sub-Committee in future.
15. Economics should not be mentioned in the text of objectives as well as in the list of observations, but by default it must be calculated at the time of recommendation.

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16.5 Basic Science

Date: 18th June, 2020

The meeting of 16th Combined Joint AGRESCO Basic Science Sub Committee regarding "Recommendation for Farmers and Scientific Community" was held on 18-06-2020 via video conferencing.

At the outset, Dr. S. R. Chaudhary, Hon. Vice Chancellor, NAU, Navsari welcomed Dr. R. V. Vyas, Hon. Vice Chancellor AAU, Anand and conveners as well as members of 16th Combined Joint AGRESCO Basic Science Sub Committee. In the welcome speech, Dr. Chaudhary requested members for a active participation and critical discussion on Recommendations and expressed his satisfaction on the efforts made by the scientists of all the four State Agricultural Universities to strengthen research activities.

The technical session of Recommendations was chaired by Dr. R. V. Vyas, Hon. Vice Chancellor AAU, Anand and Co-chaired by Dr. B. A. Golakiya, Professor & Head, Department of Biotechnology, JAU, Junagadh and Dr. S. R. Vyas, Professor, ASPEE College of Home Science & Nutrition, SDAU, S. K. Nagar.

First of all, Recommendations were presented by Dr. B. A. Golakiya, Convener JAU, Junagadh followed by Dr. Ajay V Narwade, Convener NAU, Navsari; Dr. S. B. Gondaliya, Convener SDAU, SK Nagar and Dr. Akarsh Parihar, Convener AAU, Anand. The Plenary session was chaired by Dr. R. V. Vyas, Hon. Vice Chancellor AAU, Anand. In his address, Dr. R. V. Vyas stressed upon to enhance the level of research to make it more applied and product oriented. He appreciated the efforts made by all the Scientists of the Basic Science group for conducting the research efficiently and coming with useful outcomes of the experiments. He led all the Scientists to applaud the hard work made by the Scientists with a zeal to further intensify and enhance the quality of the research work. There were very fruitful deliberations made throughout the presentation of recommendations. He suggested to all the Scientists to critically refer the recent research papers of last five years to support your research findings and to make any comparison if required. He further added that the data obtained in the various experiments must be supported by the molecular validation. All the recommendations presented by different conveners were thoroughly discussed at length by the house and approved with critical suggestions.

The meeting was ended with vote of thanks by Dr. Ajay V Narwade, Convener, NAU, Navsari.

Chairman	**:**	Dr. R. V. Vyas, Hon. Vice Chancellor, AAU, Anand
Co-chairman	**:**	Dr. S. R. Vyas, SDAU, S. K. Nagar
		Dr. B. A. Golakiya, JAU, Junagadh
Rapporteurs	**:**	Dr. Akarsh Parihar, AAU, Anand
		Dr. Ajay V Narwade, NAU, Navsari
		Dr. H. P. Gajera, JAU, Junagadh
		Dr. Gaurav Dave, SDAU, S. K. Nagar

Presentation of Recommendations by Conveners of SAUs:

Sr. No.	Name	University
1	Dr. Akarsh Parihar	Anand Agricultural University, Anand
2	Dr. B. A. Golakiya	Junagadh Agricultural University, Junagadh
3	Dr. Ajay V Narwade	Navsari Agricultural University, Navsari
4	Dr. S. B. Gondaliya	Sardarkrushinagar Dantiwada Agricultural University, S. K. Nagar

Summary

University	No. of Recommendation					
	Farming Community		Scientific Community		Total	
	Proposed	Accepted	Proposed	Accepted	Proposed	Accepted
AAU, Anand	00	00	01	01	01	01
JAU, Junagadh	01	01	02	02	03	03
NAU, Navsari	04	01	15	11 + 02*	19	12 + 02*
SDAU, S. K. Nagar	00	00	02	02	02	02
Total	**05**	**02**	**20**	**16+02***	**25**	**18 + 02***

Note: a) * Recommendation shifted from farming community to scientific community.
b) One recommendation presented for farming community was extended for one more year.
c) Two recommendations for scientific community was suggested to present and get endorsed in Dairy Science and Food Processing Technology group.
d) One recommendation for scientific community was suggested to presented and get endorsed in Crop Improvement group.
e) One recommendations for scientific community was extended for one more year.

16.5.1 Recommendations for Farming Community

ANAND AGRICULTURAL UNIVERSITY

Sr. No	Centre / Title
	-Nil-

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No	Centre / Title
	Recommendation for Farming Community
16.5.1. 1	Effect of integrated nutrient management on growth and yield of chickpea under North Saurashtra region
	House approved the farmers recommendation after recasting as follows: The farmers of North Saurashtra Agro-climatic Zone growing chickpea (GJG-3) in *rabi* season are advised to apply 50 % of RDF (N:P:K 10:20:0 kg) + 10 kg K_2O + 5 kg bentonite + 500 kg vermicompost per hectare under three irrigations for obtaining higher yield and net returns due to enhancement in growth parameters like increase in number of pods and pod weight.

	ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તાર (ખેત આબોહવાકીય પરીસ્થિતિ-૬) માં રવિ ઋતુમાં ચણા (જીજેજી-3) નું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ચણાના પાકમાં ભલામણ કરેલ રસાયણિક ખાતરનો ૫૦% જથ્થો (ના.:ફો.:પો. ૧૦:૨૦:૦ કિ.ગ્રા.) + ૧૦ કિ.ગ્રા. પોટાશ + ૫ કિ.ગ્રા. બેન્ટોનાઈટ + ૫૦૦ કિ.ગ્રા. વર્મીકમ્પોસ્ટ પ્રતિ હેકટરે ત્રણ પિયત સાથે આપવાથી વૃદ્ધિને લગતા પરીબળોમાં વધારો પોપટાની સંખ્યા અને વજનમાં વધારો થવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. *(**Action:** Research Scientist, Main Dry Farming Research Station, JAU, Targhadia-Rajkot)*

NAVSARI AGRICULTURAL UNIVERSITY

Sr No	Centre / Title
16.5.1.2	Evaluation of different methods for manure preparation from straw and threshing waste of rice
	Recommendation: Farmers are advised to use combination of *Bacillus licheniformis* X6 (10^4 cfu/ml) and *Aspergillus terreus* XF9 (10^4 cfu/ml) @ 0.1 % to get good quality of orgnic manure in short time period from rice straw waste using NADEP method. **ખેડૂતો ડાંગરના પરાળમાંથી ગુણવત્તાયુક્ત સેંદ્રિય ખાતર ઓછા સમયમાં બનાવવા માંગતા હોય તેને ડાંગરના પરાળને ૦.૧ % બેસિલસ લાઈકેનિફોર્મિસ એક્સ6 (10^4 cfu/ml) અને એસ્પર્જિલસ ટેરસ એક્સએફ૯ (10^4 cfu/ml) કલ્ચર આપી નાડેપ પદ્ધતિ દ્વારા ખાતર બનાવવાની ભલામણ કરવામાં આવે છે.** **Suggestions:** 1. Not approved this year with a suggestion to propose next year with the suggested observation and data with minimum four repetitions (4 structures) as at least two years lab data is required for farming community recommendation. 2. Perform NPK analysis, as it is required to prepare organic manure. 3. NADEP data should also include the field experiment. *(**Action:** Professor & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari)*
16.5.1.3	Effect of exogenous application of brassinosteroid on yield and quality of tomato (*Solanum lycopersicum* L.)
	House approved the farmers recommendation after recasting as follows: The farmers of South Gujarat growing tomato variety GT-2 are advised to spray brassinolide 10 mg per 10 liters at 25, 50 and 75 days after transplanting for enhancing lycopene, total sugar, post harvest quality up to 7 days and obtaining higher yield and net return. **દક્ષિણ ગુજરાતમાં ટામેટા જી.ટી.-૨ જાતનું વાવેતર કરવા વાળા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે તેમજ** લાઈકોપિન, કુલ શર્કરા અને **લણણી પછી** સાત દિવસ સુધીની **ગુણવત્તા વધારવા માટે ટામેટાની ફેર રોપણી કર્યા પછી ૨૫, ૫૦ અને ૭૫ દિવસે બ્રાસિનોલાઈડનો છંટકાવ ૧૦** મિલિગ્રામ પ્રતિ ૧૦ લિટર **કરવાની ભલામણ કરવામાં આવે છે.** *(**Action:** Professor & Head, Dept. of Plant Molecular Biology & Biotech, ACHF, NAU, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K.NAGAR

Sr No	Centre / Title
	-Nil-

16.5.2. Recommendations for Scientific Community

ANAND AGRICULTURAL UNIVERSITY

Sr No	Centre / Title
16.5.2.1	Effect of harvesting stage on morpho-physiological and essential oil constituents of *Ocimum* spp.
	House approved the recommendation after recasting as follows: It is advised to harvest the Sweet Basil (Gujarat Anand Basil 1; *Ocimum basilicum*) variety at seed setting stage (110-115 DAS) to get higher number of leaves per plant (4949) and methyl chevicol (8.0%) content in oil and to harvest at flowering stage (90-95 DAS) can get higher industrial value in terms of linalool (48.0%) content in oil. Further, it is advised to harvest *Closimum* (*Ocimum gratissimum*) species at flowering stage (105-110 DAS) in order to obtain the highest oil yield (0.5%) with 85.8% eugenol content in oil. ***(Action:** Associate Research Scientist & Head, M&APRS, AAU, Anand)*

JUNAGADH AGRICULTURAL UNIVERSITY

Sr No	Centre / Title
16.5.2.2	Phytochemical, antioxidant and antidiabetic characterizations of custard apple (*Annona squamosa* L.) genotypes
	House approved the recommendation after recasting as follows: It is informed to the scientific community that, out of 30 custard apple genotypes tested, fruit pulp of genotypes DS-1, Aml-10 and Aml-6 recorded higher α amylase inhibition (as antidiabetic potential) and % DPPH (1,1-Diphenyl-2-picrylhydrazyl) free radical scavenging (as antioxidant activity). The ascorbic acids and phenols contributed positively for both α amylase inhibition and % DPPH free radical scavenging activities in fruit pulp of custard apple. Phytochemicals analysis illustrated that terpenoids and flavonoids present in fruit pulp are positively correlated with antioxidant activity whereas alkaloids showed significantly positive correlation with antidiabetic potential. ***(Action:** Professor & Head, Department of Biochemistry and Biotechnology, CoA, JAU, Junagadh)*
16.5.2.3	Qualitative and nutritional evaluation of promising genotypes of groundnut
	House approved the recommendation after recasting as follows: The scientific community involved in groundnut improvement is recommended to use below mentioned groundnut genotypes for the qualitative and nutritional improvement of groundnut crop.

	<table><tr><td>Sr. No.</td><td>Name of genotype</td><td>Name of quality/nutritional parameters</td><td>Range of quality/ nutritional parameters</td></tr><tr><td>1</td><td>GG-16, KDG-123, GG-4, RG-578</td><td>Total soluble sugar</td><td>24.40 to 24.68 %</td></tr><tr><td>2</td><td>TG-51, ICGV-00440, JL-501</td><td>Total carbohydrate</td><td>10.56 to10.75 %</td></tr><tr><td>3</td><td>RG-510</td><td>True protein</td><td>23.22 %</td></tr><tr><td>4</td><td>TLG-45, JSSP-35, ICGV-86156</td><td>Total oil</td><td>50.55 to 51.21 %</td></tr><tr><td>5</td><td>JL-501</td><td>Iron</td><td>95.85 ppm</td></tr><tr><td>6</td><td>GJG-9, ICGV-02266, TPG-41, GJG-17, RG-578</td><td>Calcium</td><td>1366.29 to 1403.67 ppm</td></tr><tr><td>7</td><td>ICGV-15055</td><td>Oleic acid</td><td>80.21, % of total fatty acid</td></tr><tr><td>8</td><td>ICGV-15035, ICGV-15033, ICGV-15005</td><td>O/L ratio</td><td>22.88 to 23.88</td></tr></table> *(**Action:** Professor & Head, Department of Biochemistry and Biotechnology, CoA, JAU, Junagadh)*

NAVSARI AGRICULTURAL UNIVERSITY

Sr No	Centre / Title
16.5.2.4	Effect of phosphate solubilizing microbes in wheat (*Triticum aestivum*) under saline conditions
	House approved the recommendation for Scientific Community after recasting as follows: It is informed to scientific community to use native isolates *Bacillus subtilis* PSB-S (1×10^8 cfu/ml) + *Cladosporium herbarum* PSF-S (1×10^7 cfu/ml) along with 100% recommended dose of chemical phosphatic fertilizers in wheat for maximum phosphate solubilization in the soil with EC up to 3.79 (dS/m). *(**Action:** Professor & Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)*

16.5.2.5	Identification and validation of sex linked markers in Palmyra palm (*Borassus flabillifer*)
	House approved the recommendation for Scientific Community after recasting as follows: The scientific community are advised to use male sex linked PCR based marker NAU_PALMYRAPALM_SCAR620 for early stage identification of male Palmyra palm (*Borassus flabellifer* L.) from the population to maintain the male:female tree sex ratio in the new plantation. ***(Action:** Professor & Head, Dept. of Basic Science, ACHF, Navsari)*
16.5.2.6	Optimization of denovo regeneration protocol and selection of glyphosate tolerant line for *Cynodon dactylon* variety Selection 1
	House approved the recommendation after recasting as follows: It is informed to the scientific community to use MS+4.0 mg/l 2,4-D for higher callus induction frequency for *in vitro* regeneration of *Cynodon dactylon* using node as an explant. The media treatments MS+0.1mg/l BAP and MS+0.1 mg/l IBA must be used for maximum shoot and root regeneration, respectively. Best hardening was observed with coco peat, vermicompost and sand in the ratio of 2:1:1. LD_{50} was 1.0% glyphosate for *in vitro* induce callus of *Cynodon dactylon* variety Selection 1. ***(Action:** Principal, ASBI, NAU, Surat Principal, ASBI, NAU, Surat)*
16.5.2.7	Optimization of amylase production by soil isolate under solid state fermentation (SSF)
	House approved the recommendation after recasting as follows: It is informed to the scientific community that native *Bacillus subtilis* strain VSP4, gave maximum amylase production (169.72 U/gds) under solid state fermentation using 5 g wheatbran supplemented with 0.05 g of starch, 0.1 g of yeast extract and 5 mM $CaCl_2$ having media pH 10.0 after 60 hrs of incubation at 60°C in incubator. ***(Action:** Principal, ASBI, NAU, Surat Principal, ASBI, NAU, Surat)*
16.5.2.8	Influence of various nanoparticles on contamination in micropropagation of banana.
	House approved the recommendation after recasting as follows: It is informed to the scientific community that silver nanoparticles (~ 13.0 nm) at 10.0 mg/l concentration with MS medium can reduce the contamination up to 12.6 % in *in vitro* regeneration of banana. ***(Action:** Principal, ASBI, NAU, Surat Principal, ASBI, NAU, Surat)*
16.5.2.9	Screening of cotton genotypes for salinity tolerance
	House approved the recommendation after recasting as follows: It is informed to the scientific community that cotton genotypes GISV-218 and G.Cot-16 are salinity tolerance up to $EC_{1:2.5}$ (13.14 dS/m) while G.Cot-10 and G.Cot-100 are salinity sensitive. ***(Action:** Research Scientist, Main Cotton Research Station, NAU, Surat)*
16.5.2.10	Biochemical traits in relation to insect tolerance of wild species and cross derivatives involving wild species of cotton
	It is informed to scientific community that the WS08- {(G.6 X G.ano) X G.tom} X G.Cot-100, WS07- ALB X *G.anomalum*, WS05-(G.67 X MOCO)F1 X G.Cot-11, WS25- Large Mango Leaves and WS06- ALB X *G.anomalum* showed most lowered

	sucking pest infestation and square damage among the wild entry and cross derivatives selected for analysis. Among these five genotype, {(G.6 X *G.ano*) X *G.tom*} X G.Cot-100 showed higher total phenol, tannin and surface wax content at sucking pest infestation. {(G.6 X *G.ano*) X *G.tom*} X G.Cot-100 also showed higher trichome density and hairiness character. While Large Mango Leaves and ALB X *G.anomalum* showed higher gossypol content at boll worm infestation and hence recommend for further breeding programs. **Suggestion/s:** 1. Present the recommendation in Crop Improvement group and get it endorsed from the same group. ***(Action:** Research Scientist, Main Cotton Research Station, NAU, Surat)*
16.5.2.11	Study of free living nitrogen fixing bacterial diversity with respect to seasonal variation
	Recommendation: It is informed to scientific community to use the isolate A19 (*Streptomyces coelicolor*) and A28 (*Bacillus altitudinis*) due to their multiple *in vitro* plant growth promoting activities along with the free living nitrogen fixing potential. **Suggestion/s:** 1. Not approved with a suggestion to collect the supportive data for one more year. 2. N content by kjeldahl method has to be estimated along with *nif* gene PCR amplification. ***(Action:** Principal, CoA, NAU, Bharuch)*
16.5.2.12	Assessment of various anti-nutritional factors from different varieties of pigeon pea
	House approved the recommendation after recasting as follows: It is informed to the scientific community that out of 10 genotypes of pigeon pea studied, AVPP-1 and GNP-2 are prominent for their anti-nutritional content in whole seed. ***(Action:** Principal, CoA, NAU, Bharuch)*
16.5.2.13	Isolation and characterization of endophytic bacteria from Finger millet
	House approved the recommendation after recasting as follows: It is informed to the scientific community that finger millet root endophytic isolates native *Bacillus subtilis* (EP 6) and *Achromobacter xylosoxidans* (EP 17) show multiple plant growth promoting abilities under *in vitro* conditions. ***(Action:** Principal, CoA, NAU, Waghai)*
16.5.2.14	Study of starch quality in greater yam *Dioscorea alata*
	House approved the recommendation after recasting as follows: It is informed to the scientific community that greater yam genotypes NGY9, NGY3 and NGY1 had highest resistant starch, refrigeration stability (synersis %) and starch gel clarity (transmittance %), respectively. ***(Action:** Professor & Head, Dept. of Soil Science & Agri. Chem., NMCA, NAU, Navsari)*
16.5.2.15	**Title:** Isolation and characterization of plant growth promoting Actinomycetes from rhizospheric soil
	House approved the recommendation as such: It is informed to the scientific community that *Streptomyces enissocaesilis* IB 7.2 found most potent for multiple plant growth promotion characters like nutrient solubilization, antagonistic potential, extracellular hydrolytic enzyme secretion and

	plant growth hormone production under *in vitro* conditions. ***(Action:** Professor & Head, Dept. of Plant Pathology, NMCA, NAU, Navsari)*
16.5.2.16	Optimization of micropropagation protocol for different genotypes of banana
	House approved the recommendation after recasting as follows: It is informed to the scientific community that out of ten diverse banana genotype; *Cheankadali*, *Lalkel* and *Rajapuri* genotypes had better growth response to micropropagation protocol comprised of shoot tip explants surface sterilization treatment [Carbendazim (0.125%) + Chloramphenicol (500 mg/l) for 45 minutes + 1.0 % $HgCl_2$ solution for 10 minutes] followed by shoot multiplication [MS + BA (3.0 mg/l) + adenine sulphate (2.0 mg/l)] and root induction [½ MS + 1.0 mg/l IBA] treatment. ***(Action:** Dept. of GPB (Plant Physiology), NMCA, Navsari)*
16.5.2.17	**Title:** Status of heavy metals in green leafy vegetables grown under South Gujarat region
	House approved the recommendation after recasting as follows: It is informed to scientific community that none of vegetable sample was found exceeding the maximum permissible limit for different elements except nickel in spinach and fenugreek. Moreover, the survey of pesticides residues in randomly taken 10 samples of the three leafy vegetables that is fenugreek, spinach and amranthus from different markets of South Gujarat were detected below permissible value for different pesticides. ***(Action:** Professor & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari)*
16.5.2.18	Surveillance of afla toxin in pasteurized and raw milk
	Recommendation: It is informed to scientific community that occurrence of aflatoxin M1 was higher in winter season followed by monsoon season. Aflatoxin M1 is more in buffalo milk compared to cow milk sample. In pasteurised buffalo milk sample, aflatoxin M1 is higher than raw milk whereas in cow milk it was absent. **Suggestion/s:** 1. Present the recommendation in Dairy Science and FPT group and get it endorsed from the same group. ***(Action:** Professor & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari)*
16.5.2.19	Amino acid profiling of released varieties of pigeon pea from SAUs of Gujarat
	House approved the recommendation after recasting as follows: It is informed to the scientific community that among 12 pigeonpea varieties analyzed, highest amount of free amino acids (1.00%) was found in GT-103, whereas highest protein content (22.21%) was present in BP-16-261. The genotypes with higher essential amino acids as mentioned below in ascending order can be considered for future pigeonpea breeding programme:

Sr. no.	Essential amino acid	Genotypes
1.	Arginine	Banas (19.69), GNP-2 (18.85), GT-101 (18.65)
2.	Histidine	GT-103 (9.18), GT-102 (7.65), GT-101 (6.50)
3.	Valine	GT-102 (1.36), AGT-2 (1.26), GT-1 (1.21)

	4.	Methionine	GT-103 (4.10), GT-102 (3.50), GNP-3 (3.32)
	5.	Phenyl alanine	AGT-2 (26.07), GJP-1 (25.11), GT-103 (24.23)
	6.	Tryptophan	Banas (11.77), GJP-1 (11.14), AGT-2 (10.25)
	7.	Lysine	GJP-1(6.58), GT-101 (6.23), GJP-1(6.58)
	8.	Leucine	AVPP-1 (12.05), Banas (11.89), GJP-1 (11.85)

Value in the brackets is concentration of amino acid in mg g^{-1} unit.
*(**Action:** Professor & Head, Dept. of Plant Molecular Biology & Biotech, ACHF, NAU, Navsari)*

16.5.2.20 Identification and trouble shooting of microbial contamination occurs during canning of mango pulp

Recommendation: It is informed to scientific community that unpasteurized Kesar mango pulp has been reported to have microorganisms such as *Klebsiella pneumoniae*, *Micrococcus endophyticus* and *Chryseobacterium indologenes*. To avoid contamination of canned mango pulp by these type of microorganisms and to troubleshoot the problem of can spoilage, proper canning of mango pulp should be carried out as shown in the following chart,

Flowchart of mango pulp canning process

Washing of ripe Kesar mangoes using 3.0 ppm chlorinated water

↓

Sorting and Cutting of mangoes on inspection cum cutting conveyer by skilled persons

↓

Mango pulp extraction using two stage pulper by separation of stone, skin and fibers

↓

Mixing of pulp in 200 kg tanks

↓

Pasteurization of mango pulp in scrape surface pasteurizer at 90°C and adjust 0.4 % acidity. On reaching 90°C temperature, transfer of pulp to storage tank for filling

↓

Cleaning of each can by hot water steam followed by filling of pulp (850g/Cans) and Sealing of cans by double seamer machine

↓

Retorting of filled cans (100°C for 30 min)

↓

	Cooling of cans to ambient temperature ↓ Storage (upto 2 months) **Suggestion/s:** 1. Present the recommendation in Dairy Science and FPT group and get it endorsed from the same group. *(**Action:** Professor & Head, Dept. of PHT, ACHF, NAU, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K.NAGAR

Sr. No	Centre / Title
16.5.2.21	Development of microbial consortium for growth promotion of Cumin in variety GC-4
	House approved the recommendation after recasting as follows: Based on the experiment performed during 2016-2019, four rhizospheric bacterial isolates with phosphate solubilizing traits were obtained. The BLAST homology search against 16S rRNA gene sequence of the isolates with code C1, C3, C4 and C5 showed 99.75%, 99.47%, 100% and 99.17% similarity with *Erwinia* sp., *Pantoea dispersa*, *Pseudomonas nitritireducens* and *Klebsiella pneumoniae*, respectively. The isolate C3, identified as *Pantoea dispersa* (GenBank accession no. MF351847), recorded the highest phosphate solubilizing index of 2.51 and therefore, it is recommended for future phosphate solubilization studies. *(**Action:** HOD, Department of Microbiology, College of Basic Science and Humanities, SDAU, Sardarkrushinagar)*
16.5.2.22	Biochar mediated carbon augmentation of soil and involvement of PGPR in tomato plant growth: A pot study
	House approved the recommendation after recasting as follows: Based on the experiment performed during 2017-2019, a rhizospheric bacterial isolate P8 with phosphate solubilizing index of 2.0 was obtained. The BLAST homology search against 16S rRNA gene sequence of the isolate P8 showed 99.63% similarity with *Kocuria flava*. Therefore, the isolate P8, identified as *Kocuria flava* (GenBank accession no. LC515414) is recommended for future phosphate solubilization studies. *(**Action:** HOD, Department of Microbiology, College of Basic Science and Humanities, SDAU, Sardarkrushinagar)*

16.5.3 NEW TECHNICAL PROGRAMMES

Date:19th May 2020

The 16th Combined Joint AGRESCO Basic Science Sub Committee meeting was held on 19-05-2020 via video conferencing.

At the outset, Dr. S. R. Chaudhary , Hon. Vice Chancellor, NAU, Navsari welcomed Dr. R. V. Vyas, Hon. Vice Chancellor, AAU, Anand; Dr. V. P. Chovatia, Hon. Vice Chancellor, JAU, Junagadh; Dr. R. K. Patel, Hon. Vice Chancellor, SDAU, SK Nagar and conveners as well as members of 16th Combined Joint AGRESCO Basic Science Sub Committee from the four SAUs of Gujarat. In the welcome speech, Dr. Chaudhary emphasized the importance of research in SAUs of Gujarat and expressed his satisfaction on the efforts made by the Scientists of all the four State Agricultural Universities to strengthen research activities.

The technical session for presenting the New Technical Programmes (NTPs) was chaired by Dr. R. V. Vyas, Hon. Vice Chancellor AAU, Anand and Co-Chaired by Dr. S. R. Vyas, Principal, College of Basic Science and Humanities, SDAU and Dr. B. A. Golakia, Professor and Head, Department of Biochemistry and Biotechnology, JAU.

First of all, NTPs were presented by Dr. Akarsh Parihar, Convener AAU, Anand followed by Dr. B. A. Golakia, Convener JAU, Junagadh; Dr. Ajay V Narwade, Convener NAU, Navsari and Dr. S. B. Gondaliya, Convener SDAU, SK Nagar. The Plenary session was chaired by Dr. R. V. Vyas, Hon. Vice Chancellor AAU, Anand. Dr. R. V. Vyas stressed upon to enhance the level of research to make it more applied and product oriented. There were very fruitful deliberations made through the technical session. All the NTPs were discussed in length and appropriate inputs were given by the members of the house. The meeting was ended with vote of thanks by Dr. Ajay V Narwade, Convener, NAU, Navsari.

Chairman	**:**	**Dr. R. V. Vyas, Hon. Vice Chancellor, AAU, Anand**
Co-Chairman	**:**	**Dr. S. R. Vyas, Principal, College of Basic Science and Humanities, SDAU**
		Dr. B. A. Golakia, Professor & Head, Dept. of Biochemistry & Biotechnology, JAU
Rapporteurs	**:**	**Dr. Akarsh Parihar, I/c. Unit Officer, Dept. of Agril. Biotechnology, AAU**
		Dr. Ajay V Narwade, Associate Professor, Dept. of GPB, NAU

Summary

University	**No. of New Technical Programme**	
	Proposed	**Accepted**
AAU, Anand	02	02
JAU, Junagadh	06	06
NAU, Navsari	10	10
SDAU, Sardarkrushinagar	07	07
Total	**25**	**25**

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr.No	Title / Centre	Suggestions
16.5.3.1	Synthesis, stability analysis of nano-thymol and evaluation of its anti-microbial activity for development of axenic cultures in tissue culture crops	**Accepted with following suggestion/s:** 1. An appropriate experimental design CRD/FCRD should be used in consultation with statistician as experiment has different temperature and pH as factor. 2. Take common contaminating bacteria and fungi as control. 3. Mention PI and Co-PI as per format. (Action: Assistant Professor, Plant Tissue Culture Laboratory, Department of Agricultural Biotechnology, AAU, Anand)
16.5.3.2	Nutraceutical characterization of Garden cress (*Lepidium sativum*) at various growth stages	**Accepted with following suggestion/s:** 1. Lipid profile from seed oil and total antioxidant activity must be analyzed 2. Minerals to be specified (Action: Professor & Head, Department of Biochemistry, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

Sr.No	Title / Centre	Suggestions
16.5.3.3	Improvement of Groundnut oil quality for high oleic acid through CRISPR/Cas gene editing technology	**Accepted with following suggestion/s:** 1. Phenotypic observation for mutant and normal. plant should be specified and recorded. 2. Method of RT-PCR or Western blotting should. be clearly mentioned with control. (Action: Professor & Head, Department of Biochemistry and Biotechnology, CoA, JAU, Junagadh)
16.5.3.4	Improvement of tomato genotype for high lycopene content and delayed fruit ripening using CRISPR-Cas genome editing technology	**Accepted with following suggestion/s:** 1. Use LCMS for lycopene analysis. 2. Ethylene as indicator of ripening of tomato to be included. 3. Add workplan and observation for objective 1:

		To establish tissue culture protocol for the re-generation of tomato plants 4. Phenotypic observation for mutant and normal plant should be specified and recorded 5. Reduce number of varieties, if possible. 6. Method of RT-PCR or Western blotting should be clearly mentioned with control (Action: Professor & Head, Department of Biochemistry and Biotechnology, CoA, JAU, Junagadh)
16.5.3.5	Characterization of transcription factors (TFs) involved in ABA dependent signal transduction in Peanut	**Accepted with following suggestion/s:** 1. Mention proper method of water stress creation for the experiment. 2. Method of ABA extraction and ABA measurement must be mentioned. 3. Mention cloning and transformation protocol. 4. Specify RT-PCR protocol to be used for experiment along with housekeeping genes details. (Action: Professor & Head, Department of Biochemistry and Biotechnology, CoA, JAU, Junagadh)
16.5.3.6	Effect of chemical defoliants on boll opening percentage, yield and quality parameters of Bt Cotton (*Gossypium hirsutum* L.)	**Accepted with following suggestion/s:** 1. Method of ABA content analysis must be specified (Action: Research Scientist, Cotton Research Station, JAU, Junagadh)
16.5.3.7	Preparing for Climate Change – Growth and development of *arboreum* cotton in response to growth regulators	**Accepted with following suggestion/s:** 1. Weather parameter to be recorded and find its correlation. 2. Reframe the title. (Action: Research Scientist, Cotton Research Station, JAU, Junagadh)
16.5.3.8	Photosynthate partitioning and remobilization in pearl millet under rainfed condition	**Accepted with following suggestion/s:** 1. Record photosynthesis rate at different growth stages 2. Add chlorophyll conent, xanthophyll content and days to maturity as new observations. 3. Specify field lay out. (Action: Research Scientist, Main Pearl Millet Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

Sr.No	Title / Centre	Suggestions
16.5.3.9	Study on survival and efficacy of microbial bioinoculants in banana pseudostem based Novel	**Accepted with following suggestion/s:** 1. Write Novel organic liquid in title 2. Specify name of PSB and KMB isolates to be used 3. Observation on temperature of storage must be included 4. Specify media/method to be used for PGPR properties/antimicrobial properties (Action: Principal, ASBI, NAU, Surat)
16.5.3.10	Response of Bt cotton to different Plant Growth Regulators	**Accepted with following suggestion/s:** 1. Observation on leaf reddening must be included (Action: Research Scientist, Main Cotton Research Station, NAU, Surat)
16.5.3.11	Evaluation of biochemical parameters of selected cotton genotypes	**Accepted with following suggestion/s:** 1. Follow Soxhlet method for oil content analysis 2. Add moisture content 3. Mention check variety (Action: Research Scientist, Main Cotton Research Station, NAU, Surat)
16.5.3.12	Comparative study of biochemical parameters in dry and sprouted seed of green gram	**Accepted with following suggestion/s:** 1. Take sprouting seeds of 24-48 hrs for all genotypes. 2. Add observation on sulfur content, total caroteniods, per cent moisture in dry and sprouted seeds. 3. Specify check variety/genotype . 4. Check units of measurement. 5. Specify factors for FCRD. (Action: Principal, CoA, NAU, Bharuch)
16.5.3.13	Molecular characterization of banana genotypes	**Accepted with following suggestion/s:** 1. Modify the title as per objective and write scientific name of banana in the title

		2. Recast the objective No. 1 as "Standardization of micro propagation protocol for banana genotypes" 3. Add observation on multiplication ratio observation for lab experiment 4. Add days of harvesting and days to maturity for field experiment 5. Mention treatment details for lab experiment 6. Write names of genotypes along with check 7. Write marker details to be used for experiment 8. Mention field layout (Action: Dept. of GPB (Plant Physiology), NMCA, NAU, Navsari)
16.5.3.14	Application of CSM-CERES-Rice model for assessment of plant density and nitrogen management of transplanted rice for tropical environment	**Accepted with following suggestion/s:** 1. Write expected outcome (Action: Dept. of GPB (Plant Physiology), NMCA, NAU, Navsari)
16.5.3.15	Isolation and characterization of chitinolytic bacteria	**Accepted with following suggestion/s:** 1. Specify the microorganisms for antagonist activity along with method to be used 2. Specify the environmental factors for optimization 3. Source should be insect or other agriculture waste site instead of regular dumping site 4. Record cultural characteristic, Gram staining and biochemical screening 5. Add reference of method for enzyme estimation 6. Specify identification of bacteria through 16S-rRNA along with accession number. (Action: Professor & Head, Dept. of Food Quality Testing Lab., NMCA, NAU, Navsari)
16.5.3.16	Characterization of bioactive molecule produced by *Fusarium verticillioides*	**Accepted with following suggestion/s:** 1. Mention ethanol and methanol ratio with water 10:90 and 20:80 (water:organic solvent) along with detailed methodology 2. Instead of experimental design, write method of analysis 3. For observations, inhibition of two spotted red spider mite, specify parameters of inhibition 4. Write the chemical properties of bioactive molecule and compare it with known compound (Action: Professor & Head, Dept. of Food Quality Testing Lab., NMCA, NAU, Navsari)

16.5.3.17	Optimization of expression level of recombinant protein from *E. coli* host strain *BL*21(*DE3*)	**Accepted with following suggestion/s:** 1. Approval from IBSC of NAU must be taken before initiation of the experiment 2. Mention details of vectors and genes with sequence information 3. Use LC-MS for characterization of protein 4. No of replication or interaction should be specified 5. Method to be specified for competence cell preparation, cloning protocol, method of protein extraction and their purification strategies like chromatography or dialysis etc. 6. Proper scientific reference or citation should be added and observation of each enzyme under study with EU measurement protocol must be included (Action: Professor & Head, Dept. of Plant Molecular Biology & Biotech, ACHF, NAU, Navsari)
16.5.3.18	Exploration and evaluations of mangrove diversity along coastal belt of South Gujarat	**Accepted with following suggestion/s:** 1. Make use of arial pictures, satellite image or pictures for experiment 2. Include/report if any new species is found during the experiment 3. Consult with scientist/faculty person working on mangrove from other Universities (Action: Professor & Head, Dept. of Basic Science, CoF, ACHF, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K.NAGAR

Sr.No	Title / Centre	Suggestions
16.5.3.19	Exploring potassium solubilization potential of rhizospheric bacteria	**Accepted with following suggestion/s:** 1. Add Feldspar and silica for checking zone of clearance. 2. FCO guideline should be followed and accordingly experiment should be revised. 3. Consult Department of Microbiology, AAU, Anand before initiation of experiment. 4. List out prominent organic acids profiling through HPLC.

		5. Follow CRD with 4 replications. 6. Observation on waste mica must be included. (Action: Dean, College of Basic Science & Humanities and Head, Department of Microbiology, SDAU, S. K. Nagar)
16.5.3.20	Study of oil quality parameters of mustard genotypes	**Accepted with following suggestion/s:** 1. Mention CRD design 2. Include sulphur content analysis in observation 3. Add observation on add total MUFA, PUFA and rancidity parameters 4. Mention the check variety (Action: Research Scientist, Caster and Mustard Research Station, SDAU, S. K. Nagar)
16.5.3.21	Study of oil quality parameters of castor genotypes and hybrids	**Accepted with following suggestion/s:** 1. Use CRD design with four replication 2. Mention unit of observations 3. Include Ricin analysis in observation, if possible 4. Study C:N ratio of de-oiled cake (Action: Research Scientist, Caster and Mustard Research Station, SDAU, S. K. Nagar)
16.5.3.22	Evaluation of plant growth regulators for delaying of ripening for quality fruits of date palm (*Phoenix dactylifera* L.)	**Accepted with following suggestion/s:** 1. Remove word quality from title 2. Add reducing sugar, phenol, acid:sugar ratio, moisture and fiber content observations 3. Mention two factor RBD (FRBD) instead of RBD 4. Choose early maturing variety or variety showing synchronize harvesting 5. In objective 2, replace "standardization of" with "To standardize" (Action: Head, Department of Plant Breeding and Genetics, CPCA, SDAU, S. K. Nagar)
16.5.3.23	Effect of seed priming on Castor for seed germination and related parameters under field condition	**Accepted with following suggestion/s:** 1. Specify the method for measuring root length 2. Correct the unit of gram as g 3. Write formulation of GA_3 4. Mention plot size (Gross and net plot size) and layout

		5. Amylase and lipase activity should be taken as biochemical parameters during germination 6. Specify the time or duration of observations 7. Include observations like harvest index, yield and yield related parameters in experiment 8. Mention variety/genotype to be used 9. Experiment on castor, cumin and coriander must be clubbed together, if possible (Action: Head, Department of Plant Breeding and Genetics, CPCA, SDAU, S. K. Nagar)
16.5.3.24	Effect of seed priming on Cumin for seed germination and related parameters under field condition	**Accepted with following suggestion/s:** 1. Specify the method for measuring root length 2. Correct the unit of gram as g 3. Write formulation of GA_3 4. Mention plot size (Gross and net plot size) and layout 5. Amylase and lipase activity should be taken as biochemical parameter during germination 6. Specify the time or duration of observations 7. Include observations like harvest index, yield and yield related parameters in experiment 8. Mention variety/genotype to be used (Action: Head, Department of Plant Breeding and Genetics, CPCA, SDAU, S. K. Nagar)
16.5.3.25	Effect of seed priming on Coriander for seed germination and related parameters under field condition	**Accepted with following suggestion/s:** 1. Specify the method for measuring root length 2. Correct the unit of gram as g 3. Write formulation of GA_3 4. Mention plot size (Gross and net plot size) and layout 5. Amylase and lipase activity should be taken as biochemical parameter during germination 6. Specify the time or duration of observations 7. Include observations like harvest index, yield and yield related parameters in experiment 8. Mention variety/genotype to be used (Action: Head, Department of Plant Breeding and Genetics, CPCA, SDAU, S. K. Nagar)

General suggestions:

1. Cost benefit ratio should be as per statistical rules for every recommendation.
2. Recommendation text should justify the title and objectives of experiment.
3. Data pertaining to *in vitro* compatibility study of microorganisms should be included, when multiple microbes in use.
4. New important microbial strain identified should be deposited in the concern Institute (www.nbaim.org.in).
5. Furnish all details regarding identification of microorganism or plant using BLAST sequence result, percent homology and accession number.
6. Parameters as per FCO norms for microbes must be included in supporting the result findings.
7. Data analysis in consultation with Statistician is essential.
8. AGRESCO report should be prepared according to the prescribed format.
9. The sample size and design etc. of the experiment should be finalized in consultation with the statistician.
10. Title and objective of experiment should be justified.
11. The research papers of last five years from peer reviewed International journals should be referred for preparing NTP.
12. In the methodology, protocols/procedures should be as per set standards.
13. NPK analysis and C: N ratio should be included in organic manure related studies.
14. Only approved list of chemicals/plant hormones/pesticides/insecticides should be used in NTP.
15. Prior approval from IBSC of respective SAU should be taken for experiment/s related to Genetically Modified Organism (GMO)/ Living Modified Organism (LMO) before presenting in Basic Science Sub Committee meeting.
16. Molecular marker studies like AFLP, SSR, ISSR etc. should include parameters like PIC, Shannon's diversity index, PCA etc., if required.
17. Necessary set guidelines should be strictly followed for experiments based on PG student research work to be continued in sub-committee before presenting in Basic Science Sub Committee meeting.
18. For testing microorganism showing nitrogen fixing ability, estimation of nitrogen content by kjeldahl method or any other known standard protocol should be carried out along with PCR based *nif* gene amplification.

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16.6 Social Science

Date: 1st July, 2020

Chairman : Dr. Arun A. Patel, DEE, AAU, Anand

Co-chairman : Dr. V. T. Patel, DEE, SDAU, Sardarkrushinagar

Dr. R. D. Pandya, Prof & Head, NAU, Navsari

Rapporteurs : 1) Dr. Narendra Singh, NAU, Navsari

2) Dr. Kalpesh P. Thakar, SDAU, Sardarkrushinagar

3) Dr. N.B.Jadav, JAU,Junagadh

4) Dr. Ritambhara Singh, AAU,Anand

Presentation of recommendation by Conveners of SAUs

Sr. No.	Name	Designation & University
1.	Dr. Ruchira Shukla	Convener, Social Science, NAU, Navsari
2.	Dr. Kalpesh P. Thakar	Convener, Social Science, SDAU, Sardarkrushinagar
3.	Dr. C. D. Lakhlani	Convener, Social Science, JAU, Junagadh
4	Dr. R. S. Pundir	Convener, Social Science, AAU, Anand

At the outset, Dr. S. R. Chaudhary Hon'ble Vice Chancellor of Navsari Agricultural University welcomed all the members of the sub committees of four SAU's in online video conferencing meeting of 16th Combined Joint AGRESCO for Recommendations of Social Science. Hon'ble Vice Chancellor of NAU emphasized the need for this meeting in online mode owing to prevailing Covid-19 pandemic situation and urged to all the conveners and members for active participation and critical discussion on Recommendations. He emphasized that all the recommendations should be discussed at length and the young scientists should be encouraged to take useful research programmes benefitting the farming community and social science group. He congratulated all the scientists for bringing recommendations for the agricultural sector. The Chairman of the meeting Dr. Arun A.Patel, DEE, AAU, Anand in his remarks stated that there is a need for developing a mechanism so that recommendations of all the state agricultural universities could be disseminated to farmers of Gujarat. He stated that all the recommendation should be gathered and compiled together so that it is helpful to farming community.

All the recommendations presented by the different conveners of all four universities were thoroughly screened by the house.

<u>**SUMMARY**</u>

Name of Universities	No. of Farmers Recommendations		No. of Recommendation/Message for Scientific community/Policy Makers	
	Proposed	Approved	Proposed	Approved
Navsari Agricultural University, Navsari	-	-	02	01
Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar	-	-	03	01
Junagadh Agricultural University, Junagadh	-	-	08	04
Anand Agricultural University, Anand	01	01	03	03

16.6.1 RECOMMENDATIONS FOR FARMING COMMUNITY

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI: NIL

S. D. AGRICULTURAL UNIVERSITY, SKNAGAR: NIL

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH: NIL

ANAND AGRICULTURAL UNIVERSITY, ANAND

16.6.1.1	**Title:** An Economic Analysis of Turmeric Production in Middle Gujarat: A Comparative Study of Processed and non-processed
	House approved the recommendation as under: It is recommended that farmers cultivating the turmeric are advised to sale their produce after processing in powder form to get the maximum income and profit as compared to non-processed turmeric. હળદરની ખેતી કરતાં ખેડૂતોને મહત્તમ આવક અને નફો મેળવવા માટે હળદરના ઉત્પાદનનું સીધું વેચાણ કરવાને બદલે તેનો પાઉડર બનાવી વેચાણ કરવા માટે ભલામણ કરવામાં આવે છે. (Action: I/C Professor and Head, Department of Agri. Economics, BACA, AAU, Anand)

16.6.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY/POLICY MAKER

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

16.6.2.1	**Title:** Professionalism in management of Primary Dairy Cooperatives in South Gujarat
	House approved the message as under: Perception of professionalism in management of primary milk cooperative societies of South Gujarat can be augmented by knowledge about principles, benefits, faith, group motivation and attitude towards cooperative societies. દક્ષિણ ગુજરાતની પ્રાથમિક દૂધ સહકારી મંડળીઓના સિદ્ધાંતોનું જ્ઞાન, લાભ, વિશ્વાસ, જૂથ પ્રેરણા અને સહકારી મંડળી પ્રત્યેના વલણના યોગ્ય ઉપયોગ ધ્વારા મંડળીઓના સંચાલનમાં વ્યવસાયીકરણની સમજમાં વધારો કરી શકાય છે. (Action: HoD, Extension Education, NMCA, NAU, Navsari)
16.6.2.2	**Title :** Training Needs of Farmers in Vegetables Cultivation
	Not approved by the house. Further, the house suggested that to carryout suitable statistical analysis and present in next AGESCO**.** (Action: Senior Scientist & Head, KVK, NAU, Waghai)

S. D. AGRICULTURAL UNIVERSITY, S.K. NAGAR

16.6.2.3	**Title:** The Effectiveness of Flipped Classroom Model of Teaching on Students' Learning
	Not approved by the house due to insufficient data. The house suggested to come with three years pooled data with suitable statistics for recommendation, hence study may be continued. (**Action:** HoD**,** Home Science Extension and Communication Management, ASPEE College of Home Science and Nutrition)
16.6.2.4	**Title:** Attitude of dairy farmers towards indigenous and exotic dairy breeds of cattle of Banaskantha District
	Not approved by the house due to insufficient data. The house suggested that the data of one year is not sufficient for recommendation hence study may be continued. **(Action:** DEE, SDAU, S.K. Naga**r)**
16.6.2.5	**Title:** Estimation of optimum plot size and Experiment shape from uniformity trial data of coriander (*Coriandrum Sativum* L)

	House approved the recommendation for Scientific community as under A plot of 10 basic units' size with shape of 6 rows each of 5 meters length (1.8 m × 5.0 m = 9.0 m^2) was found as optimum plot size (net plot) with 3 replications for field experiments on coriander. **(Action:** Research Scientist**,** Centre for Research on Seed Spices, S. D. Agricultural University, Jagudan**)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

16.6.2.6	**Title:** Spatial and temporal integration analysis and price discovery of mechanism potato wholesale markets in Gujarat
	Not approved by the house because of generalized nature of recommendation. (Action: Professor & Head, Deptt. of Agril. Economics, JAU, Junagadh)
16.6.2.7	**Title:** Price instability of major oilseed crops of Amreli district
	Not approved by the house because of the study being conducted in a single district alone. (Action: P. I., Deptt. of Agril. Economics & Statistics, JAU, Mota Bhandariya)
16.6.2.8	**Title:** Development of Auto Advisory Service for Groundnut Growers
	1. Not approved by the house because of messages (recommendations) not matching with title and objectives of the study. **2. The messages are based on the findings of the survey data which are not in tandem with the major objective of the study (i.e. software development).** **3.** (Action: Professor & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)
16.6.2.9	**Title:** A comparative study on groundnut yield forecasting models for Junagadh district
	The house approved the recommendation for scientific community as under The groundnut productivity can be forecasted at the 10th week after sowing and use multiple linear regression models having generated weather variables with correlation coefficient between groundnut productivity and weather variables as weight and original weather variables using week wise approach with higher predictability and lower deviations between forecasted and observed productivity. (Action: Professor & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)
16.6.2.10	**Title:** Financial inclusion of farmers in Saurashtra region
	The house approves the recommendation for scientific community as under To promote financial inclusion in Saurashtra region, the farmers with land

	holding up to 4 ha need to be provided with lesser used financial services *viz.* medium and long term credit, personal health insurance and pension within 14 km radius of their households. (Action: Principal and Dean, PG Institute of ABM, JAU, Junagadh)
16.6.2.11	**Title:** Business performance analysis of farmer producer organizations of Saurashtra region
	Not approved by the house citing the reasons of the study being conducted with one year data along with its title and objectives differing with that of the recommendation emerged. (Action: Principal and Dean, PG Institute of ABM, JAU, Junagadh)
16.6.2.12	**Title:** Assessment of hygienic milk production practices adapted by dairy farmers for quality milk production
	House approved the message for scientific community as under To improve the adoption of clean milk production practices among dairy farmers, targeted training programmes need to be organized giving priority to the farmer's age, education level, extension participation and source of information. (Action: HoD, Dept. of VAE, College of Vet. Sci. & Ani. Husbandry, JAU, Junagadh)
16.6.2.13	**Title:** Training needs of rural women in home science related activities
	The house approved the recommendation for scientific community as under It is recommended to extension personnel of the Amreli district that trainings of bakery, papad and vadi making, jam making, value-added products of pearl millets as well as awareness about the government schemes for girl child is most needed for women empowerment. Extension personnel should prefer demonstrations, field visits and study tours for such trainings. (Action: Senior Scientist & Head, KVK, JAU, Amreli)

ANAND AGRICULTURAL UNIVERSITY, ANAND

16.6.2.14	**Title:** An Economic Analysis of Turmeric Production in Middle Gujarat: A

	Comparative Study of Processed and non-processed
	House approved the recommendation for policy makers as under: The farmers those who are interested in the value addition of turmeric should be given the required infrastructural and financial support to reduce the operational cost of processing for adoption of the advanced mechanized technologies. (Action: I/C Professor and Head, Department of Agri. Economics, BACA, AAU, Anand)
16.6.2.15	**Title :** A study of problems and prospects of entrepreneurship development through Students Start-up and Innovation Policy
	House approved the recommendation for policy makers as under: Entrepreneurial qualities among the students can be developed by more interaction with entepreneurs, specialization in programmes like entrepreneurship development, inclusion of business games, case studies and industry academic interaction during degree programme. **(Action: P**rofessor & Head, College of FPT&BE, AAU, Anand)
16.6.2.16	**Title:** Evaluation and development of yardstick of CV % for Maize crop experiments for Godhra center
	House approved the recommendation for scientific community as under: The yard stick of CV% for accepting the results of Maize crop experiment conducted at Main Maize Research Station, Godhra is 17 per cent for yield character. (Action : Professor and Head, Department of Agri. Statistics, BACA, AAU, Anand**)**

16.6.3 NEW TECHNICAL PROGRAMMES

Date : 6th - 8th June, 2020

Summary

Name of University	New Technical Programmes			Total
	Proposed	Approved	Not approved	
NAU, Navsari	**21**	**21**	**-**	**21**
SDAU, S.K.Nagar	**16**	**15**	**1**	**15**
JAU, Junagadh	**8**	**8**	**-**	**8**
AAU, Anand	**40**	**40**	**-**	**40**
Total	**85**	**84**	**1**	**84**

Chairman : Dr. Arun A. Patel, DEE, AAU, Anand

Co-chairman : Dr. V. T. Patel, DEE, SDAU, S.K.Nagar

Dr. R. D. Pandya, HoD, Ext. Edu., NAU, Navsari

Rapporteurs : 1) Dr. Narendra Singh, HoD, Ag.Eco., NAU, Navsari

2) Dr. Kalpesh P. Thakar, HoD, Ag.Eco.,SDAU, S.K.Nagar

Navsari Agricultural University, Navsari

Sr. No.	Title	Suggestions	Remark
16.6.3.1	Adoption gap in recommended pigeon pea practices in Narmada district	Accepted with following suggestions 1. Add fourth objective as "To find out the relationship between selected characteristic of tribal farmers and their adoption gap". 2. Add fifth objective as "To find out the constraints and seek suggestions from tribal farmers". 3. Remove knowledge variable from independent variable in methodology and consider as dependent. 4. Mention the name of sampling	**Approved**

		method in the research methodology. (**Action**: Senior Scientist & Head, KVK, NAU, Dediapada)	
16.6.3.2	Awareness about agricultural hazards among the farmers of South Gujarat	Accepted with following suggestions 1. Mention the sampling method in the research methodology. (**Action**: HoD, Extension Education, NMCA, NAU, Navsari)	**Approved**
16.6.3.3	A scale construction on perception of crisis and it's management	Accepted with following suggestions 1. Modify title as, "Development and standardization of scale to measure perception of crop crisis and its management". 2. Mention the sampling method in the research methodology. (**Action**: HoD, Extension Education, NMCA , NAU, Navsari)	**Approved**
16.6.3.4	A scale on attitude of employees towards ICTs apparatus for exploring agricultural information	Accepted with following suggestions 1. Modify title as, "Development and standardization of scale to measure the attitude of employees towards ICTs apparatus for exploring agricultural information". 2. Mention the sampling method in the research methodology. (**Action**: HoD, Extension Education, NMCA, NAU, Navsari)	**Approved**
16.6.3.5	Scale to measure knowledge of rural women about the agro based enterprises	Accepted with following suggestions 1. Modify title as, "Development and standardization of scale to measure knowledge of rural women about the agro based enterprises". 2. Enterprise wise scales should be made from the study. (**Action**:Senior Scientist & Head, KVK, NAU, Vyara, Tapi)	**Approved**
16.6.3.6	Perception of UG students towards educational environment of College of Agriculture, Waghai	Accepted with following suggestions 1. Modify the first objective as "To study the profile of students". 2. Specify the sample size in research methodology. (**Action**: Principal, Polytechnic in Agriculture, CoA, NAU, Waghai)	**Approved**

16.6.3.7	Perception of students about Diploma to Degree programme.	Accepted with following suggestions 1. Modify title as, "Perception of students about Diploma to Degree Programme in Agriculture". (**Action**: Principal, Polytechnic in Agriculture, NAU, Vyara)	**Approved**
16.6.3.8	Adoption of recommended sugarcane technologies released for farming community in Surat district	Accepted with following suggestions 1. Replace objective number two with three and vice versa. 2. Add 4th objective as, "To study the relationship between profile of farmers and their adoption". (**Action**:Senior Scientist & Head, KVK, NAU, Surat)	**Approved**
16.6.3.9	Adoption of recommended sugarcane technologies released for farming community in Navsari district	Accepted with following suggestions 1. Replace objective number two with three and vice versa. 2. Add 4th objective as, "To study the relationship between profile of farmers and their adoption" . (**Action**:Senior Scientist & Head, KVK, NAU, Navsari)	**Approved**
16.6.3.10	Adoption of recommended sugarcane technologies released for farming community in Tapi district	Accepted with following suggestions 1. Replace objective number two with three and vice versa. 2 Add 4th objective as, "To study the relationship between profile of farmers and their adoption". (**Action**:Senior Scientist & Head, KVK, NAU, Vyara, Tapi)	**Approved**
16.6.3.11	Adoption of recommended finger millet technologies released for farming community in Dangs district	Accepted with following suggestions 1. Add first objective as, "To study the profile of respondents". 2. Modify third objective as "To find out the constraints in adoption of recommended finger millet technologies by farmers." (**Action**:Senior Scientist & Head, KVK, NAU, Dangs)	**Approved**
16.6.3.12	Economic analysis of Papaya production in South Gujarat	Accepted with following suggestions 1. Add one objective as " To estimate the marketing efficiency of Papaya". (**Action**: HoD, Agril. Economics, NMCA, NAU, Navsari)	**Approved**

16.6.3.13	Economic assessment of private horticulture nurseries in Navsari district of Gujarat	Accepted with following suggestions 1. Replace word 'stakeholders' by 'nursery owners' in the first objective. 2. Replace word 'feasibility' by word 'profitability' in the second objective. 3. Mention about cost analysis method in research methodology. (**Action**: HoD, Agril. Economics, NMCA, NAU, Navsari)	**Approved**
16.6.3.14	Growth and instability analysis of area and production in forestry sector of Gujarat	Accepted (**Action**: Assistant Professor, Agril. Economics, ACHF,NAU, Navsari)	**Approved**
16.6.3.15	Economic analysis of tissue culture banana in Bharuch District of South Gujarat	Accepted with following suggestions 1. Sample size should be increased up to 120. (**Action**: Assistant Professor, Agril. Economics, CoA, NAU, Bharuch)	**Approved**
16.6.3.16	Dynamics of area, production, productivity and export of pulses in Gujarat	Accepted with following suggestions 1. Recast the title as, "Dynamics of area, production, productivity and export of pulses in India". 2. Reframe the objective in context to new title. 3. Mention about the period of data to be taken for the study in the research methodology. (**Action**: Assistant Professor, Agril. Economics , CoA, NAU,Waghai)	**Approved**
16.6.3.17	Milk production, consumption, disposal pattern and constraints faced by women dairy farmers of South Gujarat.	Accepted (**Action**:Principal, ASPEE Agribusiness Management Institute, NAU, Navsari)	**Approved**
16.6.3.18	Social media awareness and usage behaviour among farmers for agricultural marketing of South Gujarat	Accepted (**Action**:Principal, ASPEE Agribusiness Management Institute, NAU, Navsari)	**Approved**

16.6.3.19	Construction of selection indices using different economic coefficients to select optimum selection index in Indian bean (Lablab purpureus L. sweet)	Accepted (**Action**: HoD, Agril. Statistics, NMCA, NAU, Navsari)	**Approved**
16.6.3.20	Stability of sorghum genotype through AMMI model in Gujarat	Accepted (**Action**: Associate Professor, Dept. of Agril. Statistics, CoA, NAU, Bharuch)	**Approved**
16.6.3.21	Estimation of cotton yield using Two-phase sampling approach	Accepted (**Action**: Assistant Professor, Dept. of Agril. Statistics, CoA, NAU, Waghai)	**Approved**

S. D. Agricultural University, Sardarkrushinagar

Sr. No.	Title	Suggestions	Remark
16.6.3.22	Utilization of Pradhan Mantri Ujjwala Yojana (PMUJ) by rural women	Accepted (**Action**: Principal, ASPEE College of Home Science and Nutrition, SDAU, SK Nagar)	**Approved**
16.6.3.23	Adoption of kitchen gardening practices by tribal farmers in Sabarkantha district	Accepted with following suggestions 1. Scale developed by AAU, Anand should be employed. 2. Mention the reason to select Sabarkantha district in methodology. 3. Name of sampling design adopted be mentioned in methodology . (**Action**: Scientist & Head, Krushi Vigyan Kendra – Khedbrahma, SDAU, S.K.Nagar)	**Approved**
16.6.3.24	Association of dietary practices, nutritional status and academic performance of Agriculture Polytechnic, Khedbrahma students	Not accepted **(Action:** Senior Scientist & Head, Krushi Vigyan Kendra – Khedbrahma, SDAU, S.K.Nagar**)**	**Dropped**
16.6.3.25	Adoption of marigold cultivation practices by the farmers of North Gujarat	Accepted with following suggestions 1. Replace the word 'cultivation practices' with the word 'recommended cultivation practices' in	**Approved**

		title and in the second and third objective. 2. Add one more objective as, "To study the relationship between profile of farmers and their adoption". (**Action**: Principal, College of Horticulture, SDAU., Jagudan**)**	
16.6.3.26	Knowledge about fall army worm among maize growers	Accepted with following suggestions 1.Modify 3rd objective as, " To identify constraints perceived by the maize growers to control fall army worm". 2. Name of sampling method should be mentioned. (**Action**: DEE, SDAU, S.K.Nagar**)**	**Approved**
16.6.3.27	Attitude of Polytechnic Students Towards Agricultural Occupation	Accepted (**Action**: Principal, Polytechnic in Agriculture/Krushi Vigyan Kendra, Deesa, SDAU**)**	**Approved**
16.6.3.28	Knowledge and adoption of white grub management technologies by groundnut growers in North Gujarat	Accepted with following suggestions 1. Add one more objective as, "To study the relationship between profile of farmers and their adoption of white grub management technologies". (**Action**: DEE, SDAU, S.K.Nagar**)**	**Approved**
16.6.3.29	Buffalo healthcare management practices followed by the farmers of Banaskantha district of Gujarat	Accepted with following suggestions 1.Modify 3rd objective as, "To find out the constraints faced by farmers and seek their suggestions regarding buffalo healthcare management practices". (**Action:** Principal, Polytechnic in Animal Husbandry, SDAU, S.K.Nagar)	**Approved**
16.6.3.30	Farmers' perception regarding livestock services delivered by the Banas Milk Cooperative Union	Accepted with following suggestions 1. Add one more objective as, "To seek the suggestions from dairy farmers in availing the livestock services delivered by Banas dairy".	**Approved**

		(**Action**: HoD, Agricultural Extension & Communication, C.P.C.A, SDAU, S.K.Nagar)	
16.6.3.31	Assessment of the training needs on scientific dairy farming of rural dairy farm women in the operational area of KVK Tharad	Accepted with following suggestions 1. Replace word 'various areas of' with the word 'scientific' in second objective. (**Action**: Senior Scientist & Head, Krushi Vigyan Kendra, Tharad, SDAU, S.K.Nagar)	**Approved**
16.6.3.32	Study the Knowledge and Adoption Level of Date Palm Growers of Banaskantha and Patan districts	Accepted with following suggestions 1.Recast the title as, "Knowledge and Adoption Level of Date Palm Growers of Banaskantha and Patan districts". 2. Objectives to be reframed as: a) To study the personal and socio-economic characteristics of date palm growers b) To ascertain the knowledge level of date palm growers about scientific cultivation practices of date palm c) To study the adoption level of date palm growers about scientific cultivation practices of date palm d) To study the relationship between knowledge and adoption level of scientific date palm cultivation practices e) To identify the constraints faced by date palm grower in adoption of scientific date palm cultivation practices 3. Mention the name of sampling method adopted with sample size in research methodology. (**Action**: Senior Scientist & Head, Krushi Vigyan Kendra, Tharad, SDAU, S.K.Nagar)	**Approved**
16.6.3.33	Economics of milk production in Banaskantha district	Accepted with following suggestions 1. Mention the name of sampling method 'Multistage sampling' in methodology.	**Approved**

		2. Mention the name of milch animal species (cow/ buffalo or cross-bred cow in methodology. (**Action**: HoD, Agricultural Economics, C.P. College of Agriculture)	
16.6.3.34	An Assessment of Technological and Structural Changes in Isabgol Cultivation in North Gujarat	Accepted (**Action**: Principal, College of Horticulture, SDAU, Jagudan)	**Approved**
16.6.3.35	Identification of suitable model for prediction of area , production and productivity of cumin (Cuminum cyminum) in Banaskantha district	Accepted with following suggestions 1. Use Adjusted R-square instead of R-square in methodology. 2. In methodology add ARIMA model for analysis purpose. (**Action**: HoD, Agricultural Statistics, C. P. College of Agriculture, SDAU, S.K.Nagar)	**Approved**
16.6.3.36	Prevalence and Predictors of Overweight and Obesity among School going children of Palanpur city	Accepted (**Action**: HoD, Statistics, College of Basic Science and Humanities, SDAU, S.K.Nagar)	**Approved**
16.6.3.37	Estimation of optimum plot size and shape from the uniformity trial of fennel (Foeniculumvulgare Mill.)	Accepted with following suggestions 1. Mention the location in an experiment. 2. Increase the number of basic units from 400 to at least 600. Total area should be set in such a way that maximum number of simulated plots is possible. 3. Objective to be modified as, "To estimate optimum size and shape of plot for rabi fennel (length and width along with direction)". (**Action**: Principal, College of Horticulture, SDAU, Jagudan	**Approved**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestions	Remark
16.6.3.38	Performance and determinants of Plant Varietal Protection (PVP) behavior in Indian agriculture with special reference to Gujarat	Accepted (**Action** : HoD, Agricultural Economics, CoA, JAU, Junagadh)	**Approved**
16.6.3.39	Economics of selected Cucurbitaceae *kharif* vegetable crops grown in Saurashtra region of Gujarat	Accepted (**Action** : HoD, Agricultural Economics, COA, JAU, Junagadh)	**Approved**
16.6.3.40	Financial literacy among the students of Junagadh Agricultural University	Accepted with the following suggestions 1. Specify the method to measure financial literacy in research methodology. 2.Add second objective as, 'To measure financial literacy among the students'. (**Action** : Principal, PG Institute of ABM, JAU,Junagadh)	**Approved**
16.6.3.41	Consumer preference towards organised and unorganised retailing of fruits and vegetables	Accepted with the following suggestions 1. Modify title as, "Consumer preference towards organised and unorganised retailing of fruits and vegetables in Urban Saurashtra". 2. Sample size should be100 from each city so total sample size will be 400. 3. In second objective add the word "consumer" before the word "preference". 4. In fourth objective "incorporate the unorganized retail sector". (**Action** : Principal, PG Institute of ABM, JAU,Junagadh)	**Approved**
16.6.3.42	Business opportunities of exotic vegetables in Saurashtra	Accepted (**Action** : Principal, PG Institute of ABM, JAU,Junagadh)	**Approved**
16.6.3.43	Impact assessment of GJG-22 groundnut variety and its consequences	Accepted with the following suggestions 1. Recast title as, "Comparison of performance of GJG 22 and GJG 20 groundnut varieties". (**Action**: HoD, Agricultural Extension, COA, JAU, Junagadh)	**Approved**

16.6.3.44	Study on adoption of scientific practices by dairy farmers of Junagadh district	Accepted with the following suggestions 1. Change title as, “Adoption of scientific practices by the dairy farmers of Junagadh district”. 2. Add third objective as “To study the relationship between profile of dairy farmers and their adoption of scientific practices”. 3. Modify fourth objective as “To find out the constraints faced by dairy farmers and seek their suggestions”. 4. Specify sampling method as ‘multistage sampling’ in research methodology. (**Action**: HoD, Animal Husbandry Extension Education, College of Vet. Sci. & Ani. Husbandry, JAU,Junagadh)	**Approved**
16.6.3.45	Women's empowerment and nutritional status of their children in Dhoraji taluka	Accepted with the following suggestions 1. Revise title as “Assessing women empowerment and nutritional status of their children in Dhoraji taluka”. 2. Mention the indicators of women empowerment in research methodology. (**Action**: Senior Scientist & Head, KrushiVigyanKendra,JAU,Pipalia)	**Approved**

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestions	Remark
16.6.3.46	An economic impact evaluation of GAR -13 in Kheda district of middle Gujarat	Accepted with following suggestions 1. Recast the title of study as, " An economic effect evaluation of GAR -13 in Kheda district of middle Gujarat . 2. Specify the name of model used in the study. (**Action**: HoD, Agril. Econ., BACA, AAU, Anand)	**Approved**
16.6.3.47	Impact of Women Dairy Cooperative Societies on Income and Employment of Women in Anand District of Gujarat	Accepted with following suggestions 1. Change the title of study as, " Role of Women Dairy Cooperative Societies on Income and Employment of Women in Anand	**Approved**

		District of Gujarat" . 2. Remove Anand district from all objectives. 3. Sample size should be increased if possible. (**Action**: HoD, Agril. Econ., BACA, AAU, Anand)	
16.6.3.48	Growth and export potential of agricultural products in India	Accepted with following suggestions 1.Modify the title as, "Growth and export potential of agriculture commodities in India". 2. Specify the indicators of high export potential and time period of data in methodology. (**Action**: HoD, Agril. Econ., BACA, AAU, Anand)	**Approved**
16.6.3.49	Economic evaluation of production and marketing of potato in Anand and Kheda district	Accepted with following suggestion 1. Specify the marketing efficiency estimation method to be used in methodology. (**Action**: HoD, Agril. Econ., BACA, AAU, Anand)	**Approved**
16.6.3.50	Impact Assessment of AAU's new Green Gram variety, GAM-5 vis-à-vis a competing variety	Accepted with following suggestions 1. Specify the impact assessment methodology in methodology. 2. Sample size should be increased. (**Action**: Principal & Dean, IABMI, AAU, Anand)	**Approved**
16.6.3.51	A Study on working capital analysis of Food Processing Companies in India	Accepted with following suggestions 1. Modify the title as, "Working capital analysis of Food Processing Companies in India". 2. Criteria of Purposive sampling should be specified. (**Action**: Principal & Dean, IABMI, AAU, Anand)	**Approved**
16.6.3.52	Evaluation of workshops under NAHEP - CAAST, Anand Agricultural University, Anand	Accepted with following suggestion 1. Remove the third objective. (**Action**: Principal & Dean, IABMI, AAU, Anand)	**Approved**
16.6.3.53	Production and Marketing of Goat in Dahod District in Central Gujarat	Accepted with following suggestions 1. Remove the word "rearing" from 3rd objective. 2. Specify the herd size and breed of goat . (**Action**: Principal & Dean, IABMI, AAU, Anand)	**Approved**

16.6.3.54	Awareness of Agricultural Application available on Smartphone among the participants of training programme of Sardar Smruti Kendra, Anand	Accepted with following suggestions 1. Remove word " Anand" from all objectives. (**Action**: HoD, DoDBM, Dairy Sci. College, AAU, Anand)	**Approved**
16.6.3.55	Cash flow Statement Analysis of Dairy Cooperatives	Accepted with following suggestions 1.Modify the title of study as, " Cash flow Statement Analysis of District Milk Cooperative Unions" . 2. Delete the word "One" from first and second objective. (**Action**: HoD, DoDBM, Dairy Sci.College, AAU, Anand)	**Approved**
16.6.3.56	A study on consumer's awareness, perception and acceptance of various types of functional foods in selected cities of Gujarat	Accepted with following suggestions 1. Modify the title of study as, " Consumer's awareness, perception and acceptance of functional foods in selected cities of Gujarat". 2.Reframe the 3rd objective as "To investigate various factors affecting decision to purchase the functional foods". (**Action**: HoD, FBM, College of FPT&BE, AAU, Anand)	**Approved**
16.6.3.57	Comparison of different statistical models to forecast the area, production and productivity of major fruit crops in Gujarat	Accepted with following suggestions 1. Remove word "all" from 1st objective. (**Action**: HoD, Agricultural Statistics, BACA, AAU, Anand)	**Approved**
16.6.3.58	Pre-harvest forecasting of paddy yield based on weather parameters using different statistical methods for middle Gujarat	Accepted with following suggestions 1. Specify about Total paddy or Kharif Paddy in methodology. (**Action**: HoD, Basic Science and Humanities, BACA, AAU, Anand)	**Approved**
16.6.3.59	Development of a tool to measure the self-working confidence to be a successful poultry farmers	Accepted with following suggestions 1. Modify the title of study as "Development of a tool to measure the self-working confidence to be successful poultry farmers".	**Approved**

		2. Remove word “a” from objective also. (**Action**: HoD, Agril. Extension and Communication, BACA, AAU)	
16.6.3.60	To study of knowledge and attitude of women about kitchen gardening	Accepted with following suggestions 1.Modify the title of study as " Knowledge and attitude of women about kitchen gardening”. (**Action**: HoD, Agril. Extension and Communication, BACA, AAU)	**Approved**
16.6.3.61	Rural area working zeal of farmers’ children pursuing agriculture graduation in SAUs of Gujarat	Accepted (**Action**: HoD, Agril. Extension and Communication, BACA, AAU)	**Approved**
16.6.3.62	Veterinary practices workability of farmers’ sons	Accepted with following suggestions 1.Clarify in methodology “sons of farmer or son of farmer”. (**Action**: Director, Extension Education, EEI, AAU, Anand)	**Approved**
16.6.3.63	Follow up study of workshop on use of mass media for transfer of technology	Accepted with following suggestions 1. Second objective should be as, “To study the knowledge level of participants about mass media”. (**Action**: Director, Extension Education, EEI, AAU, Anand)	**Approved**
16.6.3.64	Study on Effectiveness of training programmes conducted by EEI, Anand	Accepted with following suggestions 1. Modify the title of study as " Effectiveness of training programmes conducted by EEI, Anand”. 2. Remove word “by EEI Anand” from all objectives. (**Action**: Director, Extension Education, EEI, AAU, Anand)	**Approved**
16.6.3.65	Retention of knowledge and adoption of trained farmers about quality seed production	Accepted (**Action**: Director, Extension Education, AAU, Anand)	**Approved**
16.6.3.66	Retention of knowledge and adoption of trained farmers about cultivation practices of medicinal and aromatic plants	Accepted (**Action**: Director, Extension Education, AAU, Anand)	**Approved**

16.6.3.67	E-agriculture employability of students studying in B. Tech. (AIT) of AAU, Anand	Accepted with following suggestions 1. Remove correlation analysis from methodology. (**Action**: Professor & Head, Dept. of Agril. Science, AIT, AAU, Anand)	**Approved**
16.6.3.68	Perception of UG students about educational environment at Jabugam campus	Accepted (**Action**: Principal, College of Agriculture, AAU,Jabugam)	**Approved**
16.6.3.69	Awareness about educational courses run by SAUs among higher secondary science stream students in Chhotaudepur district of Gujarat	Accepted (**Action**: Principal, College of Agriculture, AAU,Jabugam)	**Approved**
16.6.3.70	Feeding practices adopted by buffalo owners in Anand District	Accepted (**Action**: Professor and Head, Deptt. of Veterinary Extension, College of Veterinary Science, AAU, Anand)	**Approved**
16.6.3.71	Attitude of the farm women of Vaso taluka of Kheda district towards dairy entrepreneurship	Accepted with following suggestions 1. Add third objective as, "To find out the association between profile of farm women and their attitude towards dairy entrepreneurship". (**Action**: Principal, Agriculture College, AAU, Vaso)	**Approved**
16.6.3.72	Mechanization need of the farmers to minimize the drudgery problem	Accepted (**Action**: Principal, Agriculture College, AAU, Vaso)	**Approved**
16.6.3.73	Assessment of eating attitude among AAU students residing in hostel	Accepted (**Action**: Principal, Polytechnic in Food Science & Home Economics, AAU, Anand)	**Approved**
16.6.3.74	Knowledge level and adoption of control measures for subclinical mastitis among dairy farmers of Vadodara district	Accepted with following suggestions 1. Add objective as, "To identify the constraints experienced by dairy farmers in adoption of control measures for subclinical mastitis ". (**Action**: Principle, Polytechnic in Horticulture, AAU, Vadodara)	**Approved**

16.6.3.75	Awareness and opinion of farmers about the technological traits of maize cultivar GAYMH-1	Accepted with following suggestions 1. Replace word "find out" by "study" in third objective. (**Action**: Associate Research Scientist, Agril. Research Station, AAU, Derol)	**Approved**
16.6.3.76	Awareness and opinion of farmers about the technological traits of castor cultivar GAC-11	Accepted with following suggestions 1. Replace word "find out" by "study" in third objective. (**Action**: Research Scientist, Main Maize Research Station, AAU, Godhra)	**Approved**
16.6.3.77	Adoption of profession breeders keeping bovine of Ahmedabad district of Gujarat state	Accepted with following suggestions 1. Modify the title as, "Adoption of scientific bovine keeping practices by professional breeders of Ahmedabad district". (**Action**: Senior Scientist cum Head, KVK, AAU, Arnej)	**Approved**
16.6.3.78	Utilization of medicinal plants by rural women of DholkaTaluka for common ailments	Accepted (**Action**: Senior Scientist & Head, KVK, AAU, Arnej)	**Approved**
16.6.3.79	A study on knowledge and adoption of kitchen gardening by tribal women in Chhotaudepur district of Gujarat	Accepted with following suggestions 1. In title remove word "A study on". 2. Add objective "To find out relationship between knowledge profile of tribal women and their knowledge regarding kitchen gardening". (**Action**: Senior Scientist and Head, KVK, Mangal Bharti, Vadodara)	**Approved**
16.6.3.80	Awareness of buffalo owners in tribal area about causes of infertility	Accepted (**Action**: Sr. Scientist and Head, KVK, AAU, Dahod)	**Approved**
16.6.3.81	Migration behavior of tribal families of Dahod district of Gujarat	Accepted (**Action**: Senior Scientist & Head, Pashu Vigyan Kendra, AAU, Devgadhbaria)	**Approved**

16.6.3.82	Prevailing buffalo calf rearing practices and mortality pattern in operational area of Dairy Vigyan Kendra, Vejalpur	Accepted (**Action**: Senior Scientist & Head, Dairy Vigyan Kendra, AAU, Vejalpur)	**Approved**
16.6.3.83	Knowledge about IPM in paddy by paddy growers in Mahemdavad Taluka of Kheda district	Accepted with following suggestions 1. Modify the title as, "Knowledge and adoption about IPM among paddy growers of Mahemdavad Taluka in Kheda district". 2. Add one objective "To study the adoption of IPM by paddy growers". (**Action**: Head, Farm Technology Training Centre, Nenpur-Sansoli)	**Approved**
16.6.3.84	Training need of tribal farmers of Dahod district in agriculture	Accepted with following suggestions 1. Mention "multistage sampling method" in research methodology. (**Action**: Head, TRTC & TFWTC, AAU,Devgadhbaria)	**Approved**
16.6.3.85	Knowledge level of Integrated Pest and Disease Management practices among Maize growing farmers of Dahod and Garbadatalukas of Dahod district	Accepted (**Action**: Head, Agri - Polyclinic for Tribal Farmers, AAU, Dahod (Hill Millet Research Station)	**Approved**

General Suggestions:

1. In context to the decision taken in the 15th meeting of State Agricultural University Council at Gandhinagar under the chairmanship of Shri R. C. Faldu, Hon. Minister of Agriculture on 04.02.2020 for providing the farmers recommendations to all the farmers of the State through all the SAU's. An in depth discussion was done in the meeting and it was mentioned that presently the farmers recommendations are made for the specific Agro Climatic Zones and published by respective university so simple gathering of all the recommendations made by four state agricultural universities and published by all universities will not serve the purpose. Further, it may confuse the farmers as they are for the specific agro climatic situations. In such situation it was recommended by the house that all the scientist / sub committees meeting may

take the decision for their recommendation in respect of its publication in AAU/ NAU/SDAU/JAU area and mention/ guide under each recommendation. Accordingly, DEE shall incorporate respective recommendations of the other universities in their farmer's recommendation booklet every year.

2. It was a good experience of online meeting for the approval of new technical programs as they were circulated to all the members in advance before the meeting and all the universities has compiled their comments and shared with all other universities. This has helped in saving of time and effective scrutiny of the new technical programmes. Looking to the fruitful experience it is recommended to adapt same methodology of online meeting for the approval of farmer's recommendation (except crop variety) and finalize. So farmers can get new technology generated by the state agricultural universities in time.

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16.7 Animal Health

Date: 26/06/2020

The 16th Combined Joint AGRESCO (Animal Health Sub-committee) meeting of SAUs of Gujarat & Kamdhenu University was hosted by Navsari Agricultural University on 26.06.2020 for approval of recommendations. The meeting was chaired by Hon'ble Vice Chancellor of Kamdhenu University Dr. N. H. Kelawala. Dr. D.V. Joshi, Dean & Principal, Veterinary College, SDAU, Sardarkrushinagar and Dr. P. H. Tank, Dean & Principal, Veterinary College, JAU, Junagadh acted as Co-chairman. Rapporteurs of the technical session were Dr. S. K. Bhavsar, Professor, Veterinary College, AAU, Anand, Dr. R. M. Patel, Professor & Convener (Animal Health), Veterinary College, SDAU, Sardarkrushinagar, Dr. J. H. Patel, Assistant Professor, Veterinary College, NAU, Navsari and Dr. U. D. Patel, Assistant Professor & Convener (Animal Health), Veterinary College, JAU, Junagadh. Dr. D. V. Patel, Associate Professor rendered expertise as the statistician during deliberations.

Total **29** recommendations, including 2 for farmers and 27 for scientific community were presented during the meeting. Both the farmer's recommendations were deferred and **19** recommendations for scientific community were approved by the house as mentioned below:

Summary

University	Farmers recommendation		Scientific recommendation		Total Approved (out of)
	Presented	Approved	Presented	Approved	
S. D. Agricultural Univeristy	2	0	8	4	4 (10)
Kamdhenu University	0	0	1	1	1 (01)
Navsari Agricultural University	0	0	7	5	5 (07)
Junagadh Agricultural University	0	0	3	3	3 (03)
Anand Agricultural University	0	0	8	6*	6 (08)
	2	**0**	**27**	**19**	**19 (29)**

* two recommendations were merged.

16.7.1 Recommendations for Farming Community

Sardarkrushinagar Daniwada Agricultural University	
16.7.1.1	**Title: Study on status of acaricide resistance and development of alternate strategy to control ticks in northern Gujarat**
	બનાસકાંઠા અને પાટણ જિલ્લામાં જોવા મળતી ઇતરડી અને જુવા ઉપર ડેલ્ટામેથ્રીન ૧.૨૫ (%) બિનઅસરકારક જોવા મળેલ છે. **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Vet. Parasitology, Vet. College, SDAU, Sardarkrushinagar)
16.7.1.2	**Title**: **Clinico-biochemical and histopathological studies on mange/scabies affected dogs to evaluate therapeutic efficacy of fipronil and Ivermectin along with topical garlic extract**
	ત્રણ માસ સુધીની ઉમરના ગલૂડિયામાં, ખસને સંપૂર્ણ પણે મટાડવા માટે તેના શરીર પર ૧૦% લસણનો અર્ક દિવસમાં બેવાર પાંચ અઠવાડીયા સુધી લગાડવાની ભલામણ કરવામાં આવે છે **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Clinics, Vet. College, SDAU, Sardarkrushinagar)

16.7.2 Recommendations for Scientific Community

Kamdhenu University	
16.7.2.1	Title: Validate an instant electronic farm-side test for diagnosis of Subclinical Ketosis in Bovines
	Under Indian field conditions, in dairy animals, an instant electronic farm-side test for quantitative measurement of Beta-hydroxybutyrate in blood aid veterinarians to diagnose hyperketonemia and formulate treatment plan. **Suggestions:** 1. Remove 'and formulate treatment plan.' 2. Recasted recommendation was **approved** as: An instant electronic farm-side test for quantitative measurement of Beta-hydroxybutyrate in blood, aid veterinarians to diagnose hyperketonemia in dairy animals under Indian field conditions. (Action: PI/ADR, KU, Gandhinagar)
Navsari Agricultural University	
16.7.2.2	**Title: Formulation and *in-vitro* evaluation of quercetin loaded micro emulsion for pharmacological properties.**
	Quercetin microemulsion (1 mg/ml) formulation prepared with 1M NaOH, Tween 80 and Water in the ratio of 0.2:0.2:19.6 showed good antioxidant property with IC50 values 3.75 µg/ml and 1791.8µg/ml in ABTS and DPPH assay, respectively. **Suggestions:** 1. Replace 'includes1M NaOH, with 'prepared with 1M NaOH' 2. Recommendation was **approved**. *(Action: PI through HoD, Vet. Pharmacology & Toxicology)*
16.7.2.3	**Title: *In vitro* evaluation of combination effect of Rutin with Enrofloxacin, Gentamicin sulphate and Ceftriaxone**.
	Combination of Rutin and Enrofloxacin has synergistic action with the concentrations 78.13 and 0.12 µg/ml against *Salmonella* Typhimurium, *Proteus mirabilis* and *Bacillus subtilis* whereas with the concentrations 78.13 and 0.24 µg/ml against *Pseudomonas aeruginosa*. **Suggestions:** 1. Begin recommendation with word "*In vitro*". 2. Add the word "antibacterial" prior to "synergestic" in the recommendation. 3. Recasted recommendation was **approved** as: *In vitro* combination of Rutin (78.13 µg/ml) and Enrofloxacin has antibacterial synergistic action at the concentrations of 0.12 µg/ml against *Salmonella* Typhimurium, *Proteus mirabilis* and *Bacillus subtilis* and 0.24 µg/ml against *Pseudomonas aeruginosa,* respectively. ***(Action: PI through HoD, Vet. Pharmacology & Toxicology)***
16.7.2.4	**Title: *In vitro* evaluation of combination effect of Rutin with Enrofloxacin, Gentamicin sulphate and Ceftriaxone**.
	Combination of Rutin and Gentamicin sulfate has synergistic action with the concentrations 78.13 and 3.91 µg/ml against *Escherichia coli* and *Pseudomonas aeruginosa*, with the concentrations 78.13and 0.98 µg/ml against *Salmonella* Typhimurium and *Streptococcus pyogenes*, with the concentrations 78.13 and 1.95 µg/ml against *Proteus mirabilis* and with the concentrations 78.13 and 7.81 µg/ml against *Staphylococcus aureus.* **Suggestions:** 1. Begin recommendation with word "*In vitro*". 2. Add word 'antibacterial' prior to synergistic action. 3. Recasted recommendation was **approved** as:

	In vitro combination of Rutin (78.13 µg/ml) and Gentamicin sulfate has antibacterial synergistic action with the concentrations of 3.91 µg/ml against *Escherichia coli* and *Pseudomonas aeruginosa*, 0.98 µg/ml against *Salmonella* Typhimurium and *Streptococcus pyogenes*, 1.95 µg/ml against *Proteus mirabilis* and 7.81 µg/ml against *Staphylococcus aureus,* respectively. *(Action: PI through HoD, Vet. Pharmacology & Toxicology)*
16.7.2.5	**Title: *In vitro* evaluation of combination effect of Rutin with Enrofloxacin, Gentamicin sulphate and Ceftriaxone**.
	Combination of Rutin and Ceftriaxone has synergistic action with the concentrations 78.31 and 0.98µg/ml against *Salmonella* Typhimurium and *Pseudomonas aeruginosa* whereas with the concentrations 78.31 and l.95 µg/ml against *Streptococcus pyogenes*. **Suggestions:** 1. Begin recommendation with word "*In vitro*". 2. Add word 'antibacterial' prior to synergistic action. 3. Recasted recommendation was **approved** as: *In vitro* combination of Rutin (78.13 µg/ml) and Ceftriaxone has antibacterial synergistic action with the concentrations of 0.98 µg/ml against *Salmonella* Typhimurium and *Pseudomonas aeruginosa* and l.95 µg/ml against *Streptococcus pyogenes,* respectively. *(Action: PI through HoD, Vet. Pharmacology & Toxicology)*
16.7.2.6	**Title: Evaluation of *in vivo* anti-inflammatory and antibacterial activities of Ellagic acid following intramuscular administration in albino rats.**
	Ellagic acid has good anti-inflammatory activity at 75 mg/kg body weight in carrageenan induced rat paw edema model. **Suggestions:** 1. Add 'intramucularly' after body weight. 2. The recommendation was **approved**. *(Action: PI through HoD, Vet. Pharmacology & Toxicology)*
16.7.2.7	**Title: Histopathological study on renal lesions in animals.**
	It is recommended to conduct periodic renal function tests in animals as membrano-proliferative glomerulonephritis and ischemic acute tubular necrosis are commonly observed renal lesions on histopathology. **Suggestions:** 1.Recommendation was **deferred.** *(Action: PI through HoD, Vet. Pathology)*
16.7.2.8	**Title: Evaluation of various therapeutic techniques for posterior paresis in dogs.**
	Following therapeutic regimen is recommended for treatment of posterior paresis in dogs not having spinal fracture/dislocation: 1. Arnica – 30 @ 4 pills thrice daily for 30 days, PO 2. Lathyrus – 30 @ 4 pills thrice daily for 30 days, PO 3. Tab. Prednisolone @ 0.5 mg/kg for first 15 days followed by 0.25 mg/kg for next 15 days, PO 4. Nervine tonic (Twice daily for 30 days in standard dose), PO 5. Tab. Amoxicillin and potassium clavulanate @10 mg/kg twice daily for 7 days, PO **Suggestions:** 1.Recommendation was **deferred.** *(Action: PI through HOD, Veterinary Surgery and Radiology)*

Sardarkrushinagar Daniwada Agricultural University	
16.7.2.9	**Title: Detection of antimicrobial resistant in *E.coli* isolated from various clinical samples of poultry.**
	Gene *int*1 was detected in 46.37 percent Avian Pathogenic *E. Coli* (APEC) isolates which is responsible for their antimicrobial resistance. **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Vet. Microbiology, Vet. College, SDAU, Sardarkrushinagar)
16.7.2.10	**Title: Detection of antimicrobial resistant in *E.coli* isolated from various clinical samples of poultry.**
	Beta lactamase blocker other than clavulanic acid and sulbactam is to be sought after treating *E. Coli* infection in poultry as maximum resistance of isolates was observed against Amoxyclav (97.11%), followed by ampicillin/sulbactam (55.07%), and ceftriaxone/sulbactam (49.28%). **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Vet. Microbiology, Vet. College, SDAU, Sardarkrushinagar)
16.7.2.11	**Title: Detection of antimicrobial resistant in *E.coli* isolated from various clinical samples of poultry.**
	Flouroquinole group of antibiotics viz., Moxifloxacin, Enrofloxacin, Ciprofloxacin and Levofloxacin were found resistant in 91.31%, 89.86%, 89.86% and 89.86%, respectively against Avian Pathogenic *E. Coli (*APEC) isolates **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Vet. Microbiology, Vet. College, SDAU, Sardarkrushinagar)
16.7.2.12	**Title: Study on status of acaricide resistance and development of alternate strategy to control ticks in northern Gujarat.**
	Deltamethrin (1.25%) is resistant to hard ticks (*Rhipicephalus* (*Boophilus) microplus*, *Hyalomma anatolicum, Rhipicephalus sanguineus*) and soft tick (*Ornithodorus sp.*) In Banaskantha and Patan districts of Gujarat at recommended dosage (25ppm). **Suggestions:** 1. Recommendation was **Approved**. (Action: PI/Head, Dept. Of Vet. Parasitology, Vet. College, SDAU, Sardarkrushinagar)
16.7.2.13	**Title: Effect of preen gland removal on body weight and physio-biochemical properties of blood in broiler chicken (*Gallus gallus domesticus*).**
	Removal of preen gland in broiler chickens (*Gallus gallus domesticus*) at 8th day of age has no effect on body weight gain and biochemical parameters **Suggestions:** 1.Recommendation was **deferred.** (Action: PI/Head, Dept. Of Vet. Surgery & Radiology, Vet. College, SDAU, Sardarkrushinagar)
16.7.2.14	**Title: Clinico-biochemical and histopathological studies on mange/scabies affected dogs to evaluate therapeutic efficacy of fipronil and Ivermectin along with topical garlic extract**
	Topical application of 10% (w/v) garlic extract twice daily for five weeks is an effective miticidal remedy to cure canine scabies/mange infestation in puppies' upto 3 months of age. **Suggestions:** 1. Recommendation was **Approved**.

(Action: PI/Head, Dept. of Clinics, Vet. College, SDAU, Sardarkrushinagar)

16.7.2.15 **Title: Clinico-biochemical and histopathological studies on mange/scabies affected dogs to evaluate therapeutic efficacy of fipronil and Ivermectin along with topical garlic extract**

Topical application of 0.25% fipronil once weekly for five weeks is an effective alternative miticidal therapy to Ivermectin for treatment of scabies/mange infestation in dogs.

Suggestions:

1. Remove 'Topical application of ' and add 'spray' after '0.25% fipronil'
2. Recommendation was **Approved**.

(Action: PI/Head, Dept. Of Clinics, Vet. College, SDAU, Sardarkrushinagar)

16.7.2.16 **Title: Clinico-biochemical and histopathological studies on mange/scabies affected dogs to evaluate therapeutic efficacy of fipronil and Ivermectin along with topical garlic extract**

The diagnostic efficacy of 10% KOH digestion method is significantly superior in mite yield up to 42 days of post treatment compared to direct, impression and acetate tape method and it is field reliable in diagnosing and monitoring therapy of dermatopathyies caused by mite.

Suggestions:

1. Recommendation was **Approved**.

(Action: PI/Head, Dept. Of Clinics, Vet. College, SDAU, Sardarkrushinagar)

Junagadh Agricultural University

16.7.2.17 **Title: Evaluation of an immunomodulatory effect of *Abrus precatorius* L. in mice**

Administration of hydro-alcoholic extract of *Abrus precatorius* L. leaves at 200 and 300 mg/kg body weight orally daily for 14 days in mice revealed immunostimulant effect against cyclophosphamide-induced immunosuppression.

Suggestions:

1.Remove 300 mg/kg

2.Give local name of herb/plant

3.Recasted recommendation was **approved** as:

Oral administration of hydro-alcoholic extract of *Abrus precatorius* L. (Chanothi) leaves at the dose rate 200 mg/kg body weight/day for 14 days, revealed immunostimulant effect against Cyclophosphamide induced immunosuppression in mice.

(Action: PI/Head, Dept. of Vet. Pharmacology & Toxicology, Vet. College, JAU, Junagadh)

16.7.2.18 **Title: Studies on prevalence, haemato-biochemical & diagnostic aspects of fasciolosis by coprological examination in cattle & buffalo of Junagadh district**

Overall prevalence of *Fasciola* infection is very less in bovines (1.88 %). However, buffalo shows significantly higher infection in monsoon season as compared to cattle in and around Junagadh.

Suggestions:

1.Recasted recommendation was **approved** as:

"Overall prevalence of *Fasciola* infection is very less in bovines (1.88 %) in and around Junagadh"

(Action: PI/Head, Dept. of Vet. Parasitology, Vet. College, JAU, Junagadh)

16.7.2.19 **Title : Optimization of Loop Mediated Isothermal Amplification (LAMP) test for diagnosis of *Trypanosoma evansi* infection in animals**

The following designed and optimized primers targeting RoTat1.2 gene are equally specific and sensitive for detection of *Typanosoma evansi* infection in animals through LAMP assay compared to PCR.

Primer ID	Types	Sequence (5'-3')

Tf3 (Forward)	Outer primer	gcacaaatgccgacggta
Tb3 (Reverse)		gtcgttgccggttattgct
FIP1 (Forward)	Internal primer	aggtagctgtctcctggggccgaaatcgacgcgctagg
BIP1 (Reverse)		ggcgacataagcgccgatgggcaggtgttgcttcctaca
LF1 (Forward)	Loop primer	gtcatagttggcttcgccg
LB1 (Reverse)		cacaaaactaacagccgttgcag

Suggestion:

1. Recommendation was **Approved**

(Action: PI/Head, Dept. of Vet. Parasitology, Vet. College, JAU, Junagadh)

Anand Agricultural University

16.7.2.20 **Title: Studies on sub-acute toxicity of clove oil (*Syzygium aromaticum*) in rats.**

Repeated oral administration of clove oil is safe as it did not reveal any toxic effects following once daily oral administration up to 200 mg/kg body weight for 28 days in wistar rats.

Suggestions:

1.Replace the word "Safe" and recast the recommendation paragraph

2.Recasted recommendation is **approved** as:

Repeated oral administration of clove oil up to 200 mg/kg body weight for 28 days did not reveal any toxic effects in wistar rats.

(Action: PI/Head, Dept. of Vet. Pharmacology & Toxicology, Vet. College, AAU, Anand)

16.7.2.21 **Title: Evaluation of Reproductive Metabiota in Various Patho-Physiological Conditions in Dairy Animals**

The genital microflora explored metagenomically in 50 vaginal aspirates from 35 buffaloes of different reproductive status revealed a rich bacterial diversity, comprising 33 Phyla, 779 Genera and 2859 Species. The most abundant phyla being higher in pregnant and endometritic than cyclic and acyclic buffaloes were *Proteobacteria, Actinobacteria, Bacteroidetes and Firmicutes*. The most abundant genera being found higher in acyclic and/or endometritic than pregnant and cyclic buffaloes were *Kocuria, Rhizobium, Enterobacter, Salmonella, Acinetobacter, Sphingomonas* and *Bacillus*.

Suggestion:

1. Advised to merge with subsequent recommendation.

(Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand)

16.7.2.22 **Title : Evaluation of Reproductive Metabiota in Various Patho-Physiological Conditions in Dairy Animals**

The genital microflora explored metagenomically in 50 vaginal aspirates from 35 buffaloes of different reproductive status together with plasma progesterone and estradiol profile revealed a rich bacterial diversity, comprising 33 Phyla, 779 Genera and 2859 Species. Phylum *Bacteroidetes* and genera *Kocuria, Rhizobium, Sphingomonas* and *Bacillus* had significant ($p<0.01$) positive correlations and genus *Enterobacter* had negative correlation with plasma progesterone levels whereas phyla *Bacteroidetes, Firmicutes* and *Fusobacteria* had negative correlations ($p<0.01$) with estradiol levels, indicating their selective role on growth/ inhibition of specific organisms in the genital tract.

Suggestions:

1. Advised to merge with earlier recommendation.
2. Recasted recommendation was **Approved** as:

The genital microflora explored metagenomically in 50 vaginal aspirates

	from 35 buffaloes of different reproductive status together with plasma progesterone and estradiol profile revealed a rich bacterial diversity, comprising 33 Phyla, 779 Genera and 2859 Species. The most abundant phyla being higher in pregnanant and endometritic than cyclic and acyclic buffaloes were Proteobacteria, Actinobacteria, Bacteroidetes and Firmicutes. The most abundant genera being found higher in acyclic and/or endometritic than pregnant and cyclic buffaloes were Kocuria, Rhizobium, Enterobacter, Salmonella, Acinetobacter, Sphingomonas and Bacillus. Phylum Bacteroidetes and the genera Kocuria, Rhizobium, Sphingomonas and Bacillus had significant ($p<0.01$) positive correlations and genus Enterobacter had negative correlation with plasma progesterone levels, whereas phyla Bacteroidetes, Firmicutes and Fusobacteria had negative correlations ($p<0.01$) with plasma estradiol levels, indicating their selective role on growth/inhibition of specific organisms in the genital tract. (Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand))
16.7.2.23	**Title : Differential Diagnosis and Therapeutic Management of Cystic Ovarian Degeneration in Crossbred Cattle**
	Cystic ovarian degeneration (COD) occurred chiefly at the prime age of 5-7 years (62% during 3rd or 4th lactation (70%), with higher prevalence of luteal cyst than the follicular cy (64% vs. 36%) and greater involvement of right ovary in crossbred cows. Hence, the practicin field vets should pay more attention to diagnose and handle the COD cases accordingly. **Suggestion:** 1.Recommendation was **Approved**. (Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand))
16.7.2.24	**Title : Differential Diagnosis and Therapeutic Management of Cystic Ovarian Degeneration in Crossbred Cattle**
	Differential diagnosis of ovarian cyst as follicular vs. luteal cyst was the most accurate based on plasma progesterone assay (21 vs. 79%) followed by ultrasound examination (28 vs 72 %) and rectal palpation (36 vs. 64%). The agreement of USG with rectal palpation findings for follicular cyst was higher as compared to luteal cyst (94 vs. 86%). It is therefore advised to use USG in combination with rectal palpation to correctly diagnose the type of ovarian cysts under field conditions. **Suggestion:** 1.Recommendation was **Approved**. (Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand))
16.7.2.25	**Title : Differential Diagnosis and Therapeutic Management of Cystic Ovarian Degeneration in Crossbred Cattle**
	Ovsynch + CIDR protocol was promising over Ovsynch alone (70 vs. 60% CR) fo effective treatment of follicular cysts, and Modified Ovsynch protocol was found promising tha Double PG protocol (69 vs. 56% CR) for treatment of luteal cysts, and hence are recommende for use by practicing field veterinarians. **Suggestion:** 1.Recommendation was **Approved**. (Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand))
16.7.2.26	**Title : Effect of Heat Stress (Microclimate) on Sperm Production of Cattle and Buffalo Bulls.**
	Significantly greater correlations of micro (on-farm/in-house) ambient temperature, relativ humidity and THI with fresh and frozen semen production of bulls of different breeds of buffaloes a well as zebu, exotic and crossbred breeds as compared to distant macro-climatic (observator parameters suggest that the micro-climatic conditions should be obtained from on-far

	measurements rather than macro-climatic data of distant observatory to evaluate potential heat stress and to develop effective measures to abate heat stress of bulls on semen station. **Suggestion:** 1. Recasted recommendation was **approved** as: Significantly greater correlations of micro (on-farm) ambient temperature, relative humidity and THI with fresh and frozen semen production of bulls of different breeds of cattle and buffalo as compared to distant macro-climatic (observatory) parameters suggest that the micro-climatic conditions should be obtained from on-farm measurements rather than macro-climatic data of distant observatory to evaluate potential heat stress and to develop effective measures to abate heat stress of bulls on semen station. (Action: PI/Head, Department of Gynaecology and Obstetrics, Vet. College, AAU, Anand))
16.7.2.27	**Title : Detection of *Salmonella* spp. by Loop-Mediated Isothermal Amplification (LAMP) Assay**
	SYBR Green I dye (10000X concentration) @ 1:100 dilution can be used for better interpretation of Loop-Mediated Isothermal Amplification (LAMP) assay for identification of *Salmonella* spp. **Suggestion:** 1.Recommendation was **deferred**. (Action: PI/Head, Department VPH, Vet. College, AAU, Anand))

16.7.3 New Technical Programmes

Date :- 03/6/2020

The 16th Combined Joint AGRESCO (Animal Health Sub-committee) meeting of SAUs of Gujarat & Kamdhenu University for finalizing New Technical Programmes was hosted by Navsari Agricultural University through online video conferencing mode on 3.06.2020.

The online meeting begun with welcome address by Dr. S. R. Chaudhary, Hon'ble Vice Chancellor of Navsari Agricultural University. The technical session was chaired by Dr. N. H. Kelawala, Hon'ble Vice Chancellor of Kamdhenu University, Gandhinagar. Dr. P. H. Tank, Dean, College of Veterinary Science & A.H., JAU, Juanagadh acted as Co-Chairman and Dr. C.V. Savalia, Convener (Animal Health Sub-committee) of NAU, Navsari and Dr. R. M. Patel, Convener (Animal Health Sub-committee) of SDAU Sardarkrushinagar acted as Rapporteurs during the session. As per the shcedule New Technical programmes were presented by conveners of respective SAUs. Dr. R. G. Shah, convener and ADR presented NTP of Kamdhenu Universty. The vote of thanks was administered by Dr. R. M. Patel, the rapporteur.

Summary

SN	University	New Technical Programmes	
		Presented	Accepted
1	Sardarkrushinagar Dantivada Agricultural University	5	5
2	Anand Agricultural University	17	17
3	Junagadh Agricultural University	3	3
4	Navsari Agricultural University	7	7
5	Kamdhenu University	1	Referred to Animal Production group
Total		33	32

SN	Title	Suggestion/s
Sardarkrushinagar Dantivada Agricultural University		
16.7.3.1	Title: Molecular detection and characterization of infectious bursal disease virus (IBDV).	Approvedwith following suggestions: 1. Specify the source of sample collection (different farms) 2. Write name of virus and abbreviation in italic, also modify title accordingly. (Action:PI through HOD, Deptt. of Microbiology, Vet. College, Sardarkrushinagar)
16.7.3.2	Title: Pre clinical studies on oncolytic effects of Newcastle Disease Virus (NDV).	Approvedwith following suggestions: 1. Specify strain of mice to be used in the study 2. Take approval of IAEC. 3. Name of virus and abbreviation must be in italic, also modify title accordingly (Action:PI through HOD, Deptt. of Microbiology, Vet. College, Sardarkrushinagar)
16.7.3.3	Title: Pharmacokinetics of cefquinome in Mehsana buffalo calves	Approvedwith following suggestions: 1. Mention duration of experiment 2. Take equal number of both the sexes, if not available take more number of female animals. 3.For I/V study, blood collection time should be 2 minutes and not at 24 and 36 hr. interval 4. Experiment be conducted in 'cross-over' design (Action:PI through HOD, Deptt. of VPT, Vet. College, Sardarkrushinagar)
16.7.3.4	Cytological examination of clinical specimen to aid clinical diagnosis	Approvedwith following suggestion: 1. Objective 2: replace 'when ever possible' with 'if required' (Action:PI through HOD, Deptt. of Pathology, Vet. College, Sardarkrushinagar)
16.7.3.5	Title: Sub-acute (28 days) oral toxicity of Indoxacarb in Wistar rats	Approvedwith following suggestions: 1.Specify dose 2.Mention clinical signs to be observed, behavioural signs advisable rather clinical signs. 3. Remove (28 days) from the title 4. Mention OECD guideline in sampling plan. (Action:PI through HOD, Deptt. of Pathology, Vet. College, Sardarkrushinagar)
Anand Agricultural University		
16.7.3.6	Studies on sub-acute toxicity of cinnamon oil (*Cinnamomum zeylanicum*)in rats.	Approved with following suggestions: 1. Correct replications as 5 and Total animals as 40. 2. Add 2 factor CRD for analysis. 3. Use number of male and female animals as per standard protocol [Action:Professor & Head, Dept. of Pharmacology & Toxicology, Vet. College, Anand]

16.7.3.7	Study on Pharmacokinetic–Pharmacodynamic (PK-PD) integration of cefpirome in sheep	Approved with following suggestions: 1. Take approval of IAEC. 2.Mention sex of animals, use male and female animals,3 each. [Action:PI through HOD, Dept. of Pharmacology & Toxicology, Vet. College, Anand]
16.7.3.8	Prevalence of Caprine paramphistomosis in Anand Taluka	Approved with following suggestions: 1. Mention prevalence of snail species (I/h) in the area. 2. Modify title as 'Prevalence of paramhistomosis with special reference Caprine in Anand taluka' [Action:PI through HOD , Dept. of Parasitology, Vet. College, Anand]
16.7.3.9	Studies on diagnosis and therapeutic management of mange in camels (C*amelus dromedarius).*	Approved with following suggestions: 1.Take owner's concurrence for the study. 2.Mention local name of the herb/plant. 3.Modify objective as "To study etiology of Mange in camels" 4. Animals-7 for each treatment 5. Therapeutic efficacy of treatment to be evaluated by recording mite count/cm^2 before and after treatment. [Action: PI through HOD, Dept. of Medicine, Vet. College, Anand]
16.7.3.10	Study on etiological factors and haemato-biochemical changes associated with vomition in dogs.	Approved with following suggestions: 1. Na^+, K^+ and HCO_3^- to be estimated. 2. Include USG and endoscope in the protocol. 3. Lateral flow assay is advised side by side. 4. Blood smear examination for CBC to be included in the study. 5. Replace SGOT/SGPT with AST/ALT [Action: PI through HOD, Dept. of Medicine, Vet. College, Anand]
16.7.3.11	Isolation, identification and antimicrobial sensitivity pattern of different bacterial species isolated from houseflies in and around Anand district.	Approved with following suggestions: 1. Mentionbodypart /area of housefly, for collection of sample. 2. Mention few species of bacteria to be studied. 3. Collect flies in suitable transport medium. [Action: PI through HOD, Dept. of Microbiology, Vet. College, Anand]
16.7.3.12	Seroprevalence of *Mycoplasma* infection in goats	Approved with following suggestions: 1. Optimize number of investigators (possibly 1+3) with work load [Action: PI through HOD, Dept. of Microbiology, Vet. College, Anand]
16.7.3.13	*In Vitro* Embryo Production and Pregnancy Rates from OPU-IVEP using Sexed Semen in Cattle.	Approved with following suggestions: 1. Consider conducting PD on 30-35 days. 2.Mention dose of semen. 3. OPU-Follicular wave to be studied. [Action: PI through HOD, Department of Gynaecology & Obstetrics, Vet. College, Anand]

16.7.3.14	Evaluation of Cryoprotective and Capacitation Inhibitory Potential ofMifepristone, Sericin and Taurine in TYFG Extender for Bovine Semen	Approved with following suggestions: 1. Total antioxidant status to be included in evaluation of seminal plasma. [Action: PI through HOD, Department of Gynaecology & Obstetrics, Vet. College, Anand]
16.7.3.15	Kisspeptin as Modulator of Ovarian Dynamics, Endocrine Profile and Fertility in Buffalo.	Approved with following suggestions: 1. Mention statistical tool - CRD. 2. Sampling to be done on alternate day. [Action: PI through HOD, Department of Gynaecology & Obstetrics, Vet. College, Anand]
16.7.3.16	Development of rapid multiplex PCR method for simultaneous detection of gram-negative foodborne pathogens	Approved with following suggestions: 1. --NIL-- [Action: PI through HOD, Department of VPH, Vet. College, Anand]
16.7.3.17	Determination of Antibiotic Sensitive properties of Probiotic bacteria using molecular techniques.	Approved with following suggestions: 1. Modify title as : "Determination of antibiotic sensitivity of*Lactobacillus*spp., by molecular techniques" 2. Specify the dairy food products to be studied. 3. Optimize number of investigators (possibly 1+3) with work load and justification. [Action: PI through HOD, Department of VPH, Vet. College, Anand]
16.7.3.18	Comparative Analysis of Tetracycline Residues from Milk in and around Anand.	Approved with following suggestions: 1. Include the history of animal in technical details. 2. Use milk from Tetracycline treated milch animals. 3. Optimize number of investigators (possibly 1+3) with work load with justification. [Action: PI through HOD, Department of VPH, Vet. College, Anand]
16.7.3.19	Studies on Management of Surgical affections of External Ear in Canines.	Approved with following suggestions: 1. Take owner's consent 2. 12 dogs in 2 groups. So total animals will be 24. 3. Remove the word "either sex". 4. Replace 'medicinal management' with 'medical management' at all places. 5. Fungal culture is to be added along with antibiogram. [Action: PI through HOD, Department of Surgery & Radiology, Vet. College, Anand]
16.7.3.20	Studies on Ketamine-Medazolam, Isoflurane and Sevoflurane Induction and Maintenance with and without Butorphanol Premedication in Birds.	Approved with following suggestions: 1. Duration of experiment: 2 years. 2. Correct spelling of Medazola. 3. Species of birds to be included in the study. [Action:PI through HOD, Department of Surgery &Radiology, Vet. College, Anand]
16.7.3.21	Studies on Surgico-therapeutic Management of Corneal Ulcer in Dogs.	Approved with following suggestions: 1. Specify treatment. 2 groups, 6 animals in each group. 2. Mention the medicinal protocol. 3. Duration of project: 2 years. [Action: PI through HOD, Department of Surgery & Radiology, Vet. College, Anand]

16.7.3.22	Clinical Studies on affections of anal glands in dogs.	Approved with following suggestions: 1. Retrospective study is to be mentioned. [Action: PI through HOD, Department of Vet. Clinical Complex, Vet. College, Anand]
Junagadh Agricultural University		
16.7.3.23	Title: Evaluation of antioxidant and immunomodulatory effect of seeds of *Cassia absus* L. in rats	Approvedwith following suggestion: 1. -- NIL -- (Action: PI through HOD, Dept. of Veterinary Pharmacology & Toxicology, Vet. College, Junagadh)
16.7.3.24	Title: Standardization and application of Infrared Thermography in Musculo-skeletal Disorders of Horses and Dogs	Approvedwith following suggestion: 1. Rectify duration of project (Action: PI through HOD, Dept. of Surgery & Radiology, Vet. College, Junagadh)
16.7.3.25	Title: Standardization and application of CO_2 laser as alternative technique for surgery of tumour in dogs.	Approvedwith following suggestions 1. Rectify duration of project. 2. Mention healing parameters after performing surgery viz, time of surgery taken, level of bleeding and occurrence of complication, if any. (Action: PI through HOD, Dept. of Surgery & Radiology, Vet. College, Junagadh)
Navsari Agricultural University		
16.7.3.26	Title: Evaluation of *in vitro* antibacterial effect of Linalool combined with Enrofloxacin, Gentamicin sulphate and Ceftriaxone.	Approvedwith following suggestions: 1. Remove the word 'sulphate' from gentamicinsulphate. 2. *typhimurium* should be written in non-italics with first letter in upper case. (Action:PI through HOD, Dept. of Veterinary Pharmacology & Toxicology,Vet. College, Navsari)
16.7.3.27	Title: *In vitro* antibacterial effect of Catechin combined with Enrofloxacin, Gentamicin sulphate and Ceftriaxone.	
16.7.3.28	Title: *In vitro* evaluation of lemon grass (*Cymbopogon flexuosus*) extract for pharmacological properties.	Approvedwith following suggestions: 1. Mention the type of extract in method. 2. *typhimurium* should be written in non-italics with first letter in upper case. (Action:PI through HOD, Dept. of Veterinary Pharmacology & Toxicology,Vet. College, Navsari)
16.7.3.29	Title: Effect of Shetur/Black mulberry (*Morus nigra*) plant leaves extract supplementation in Tris Egg Yolk Citrate Extender on cryopreserved Surti buck semen quality.	Approvedwith following suggestions: 1. Modify title as " Effect of Shetur/Black mulberry (*Morgus nigra*) plant leaves extract supplementation in Tris Egg Yolk Cirate Extender on cryopreserved semen of Surti buck" 2. Duration : 1 year. 3. Optimize number of investigators (possibly 1+3). (Action:PI through HOD, Dept. of Department of Gynaecology & Obstetrics,Vet. College, Navsari)
16.7.3.30	Effect of Mango (*Mangifera indica*) plant leaves extract supplementation in Tris Egg Yolk Citrate Extender on Surti buck semen quality preserved at refrigerated temperature.	Approvedwith following suggestions: 1. Duration : 1 year. 2. Optimize number of investigators (possibly 1+3). (Action: PI/Head, Dept. of Department of Gynaecology & Obstetrics,Vet. College, Navsari)

16.7.3.31	Title: Detection of haemoprotozoan parasites in salivary glands of common bovine ticks.	Approvedwith following suggestions: 1. Mention cattle/buffalo along with the total number of animals to be studied. 2. Mention in interpretation : 'acinar cells in infected tick looks greenish blue'. 3. Study should be carried out in parent department i.e. Deptt. of Vet. Parasitology of concerned Vet. College. 4. Mention number of ticks to be studied from animal body and animal shed, separately. (Action: PI through Principal, Polytechnic in Animal Husbandry, Navsari)
16.7.3.32	Title: *Invitro* anthelmintic activity of herbal extracts against *Haemonchus contortus* of goats.	Approvedwith following suggestion: 1. Study should be carried out in parent department i.e. Deptt. of Vet. Parasitology of concerned Vet. College. (Action: PI through Principal, Polytechnic in Agriculture, Vyara)
Kamdhenu University, Gandhinagar		
16.7.3.33	Title: Effect of FMD vaccination on production and reproduction in the cows and buffaloes	Approvedwith following suggestion: 1. Suggested by the house to modify programme as per the AGRESCO experiment format of SAUs and to be presented subsequently in the CJA of Animal Production group meeting to be held on 4.06.2020. (Action: PI through ADR, Kamdhenu University, Gandhinagar)

General suggestions:

1. While proposing NTP and recommendation, PI should observe that experiment is approved by IAEC, when ever applicable.
2. Recommendation text should not be in bookish language form.
3. There shall be one PI and maximum 3 Co-PIs, with justification of their role with proportion of % work share of each one, in new technical programme.
4. The recommendation proposed should justify the title and objectives of the experiment.
5. Name of JRF/SRF/Teaching Associate should not be considered as PI / Co-PI in the AGRESCO experiments.
6. The person working in the Unit / Sub-unit other than college should be treated as Faculty and faculty member working in the university can propose AGRESCO experiments as PI and can be opted as Co-PI.

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16.8 Animal Production and Fisheries Science

Date: 29th June, 2020

The 16th Combined Joint AGRESCO meeting for Animal Production and Fisheries Science of SAUs of Gujarat & Kamdhenu University for approval of recommendations was hosted by Navsari Agricultural University through online video conferencing mode on 29.06.2020.

Dr. S. R. Chaudhary, Hon'ble Vice Chancellor of Navsari Agricultural University as a Chairman of the technical session welcomed co-chairmen and rapporteurs of the session, University Officers, Deans, Conveners of AGRESCO subcommittee and other members who have joined the meeting from various SAUs and KU. Dr. V. B. Kharadi, Dean and Principal, Veterinary College, Navsari and Dr. F. P. Savaliya, Research Scientist and Head, Poultry Research Station, Veterinary College, Anand acted as Co-chairmen. Dr. S. V. Shah, Professor and Head, LPM, Veterinary College, Anand, Dr. B. D. Savaliya, Research Scientist and Head, CBF, JAU, Junagadh, Dr. H. D. Chauhan, Associate Professor, LPM, CPCA, SDAU, Sardarkrushinagar as well as Dr. U. V. Ramani, Assistant Professor, ABT, Veterinary College, NAU, Navsari acted as rapporteurs during the session. Dr. A. N. Khokhar, Associate Professor (Agri. Statistics), BACA, AAU Anand gave expertise as statistician during the session. As per the schedule recommendations were presented by conveners/scientists of respective SAUs and KU. The proposed recommendations were approved after thorough discussion amongst the members of the house after suitable modifications as per suggestions. During the session it was suggested not to draw recommendation for the farmers for feeding of animals based on *in vitro* studies. The vote of thanks was administered at the end of the session by Dr. B. P. Brahmkshtri, Convener (Animal Production), Veterinary College, Navsari.

Summary

Sr. No.	University	Recommendations			
		Farmers' community		Scientist community	
		Presented	Accepted	Presented	Accepted
1	Junagadh Agricultural University	1+1*	1+1*	1+1#	1+1#
2	SardarkrushinagarDantiwada Agril. Univeristy	-	-	1	1
3	Navsari Agricultural University	4	1	10	5
4	Anand Agricultural University	10	9	13	2
Total		**15 + 1***	**11+ 1***	**25+1#**	**09+1#**

*referred to dairy science group # referred to social science group

Total 11 recommendations were approved for farmers' community out of 15 recommendations presented whereas 09 recommendations were approved for scientist community out of 25 recommendations presented with/without modification suggested as mentioned in the table:

16.8.1 Recommendations for Farmers' Community

JUNAGADH AGRICULTURAL UNIVERSITY	
16.8.1.1	**Title: Effect of shrimp (*Litopenaeus vannamei*) pond sludge on growth of Tilapia (*Oreochromis mosambicus*) in cemented circular tank** Fish farmers culturing Tilapia (*Oreochromis mosambicus*) are recommended to utilize dried shrimp sludge as feed @ 10% of fish body weight along with 5% self-formulated shrimp feed (SFSF) of 30% protein content to obtain better growth and survival rate. તીલાપિયા (ઓરિયોક્રોમિસ મોસામ્બિકસ) ઉછેર કરતા મત્સ્યખેડૂતોને ભલામણ કરવામાં આવે છે કે તીલાપિયા માછલીના ખોરાક્મા તેના વજનના ૧૦% જીંગા તળાવનો સુકો કાદવ અને ૫% જાતે બનાવેલ ૩૦% પ્રોટીનયુક્ત જીંગાનો ખોરાક આપવાથી સારો વિકાસદર અને જીવંતદર મેળવી શકાય છે. **Approved as above after incorporating following suggestion/s :** 1. Delete words "with low production cost" and "ઓછા ખર્ચે" in English and Gujarati respectively. (**Action**: PI through HOD, Fisheries Research and Training Center, JAU, Mahuva)
16.8.1.2 **A***	**Title: Incorporation of *Cucurbita pepo* (pumpkin) pulp for the preparation of value added flavoured buffalo milk** The dairy entrepreneurs are recommended to incorporate 15% *Cucurbita pepo* (pumpkin) pulp and 10% ground sugar for the preparation of good and acceptable quality Pumpkin flavoured buffalo milk. The shelf life of good quality pumpkin flavoured buffalo milk can be maintained up to 6 months at room temperature subjecting to "in bottle heat treatment" at 110 ± 2 ^{O}C for 15 minutes after filling into cleaned and sterilized glass bottle. આથી ડેરી પેદાશો બનાવતા ઉત્પાદકોને જાણ કરવામાં આવે છે કે કોળા ફ્લેવર્ડ દૂધ બનાવવાની પદ્ધતિમાં, ૧૫ % કોળાનો માવો અને ૧૦ % ખાંડનો ઉપયોગ કરીને ગ્રાહકો દ્વારા સ્વીકાર્ય એવું સારી ગુણવત્તાયુક્ત કોળા ફ્લેવર્ડ દૂધ બનાવી શકાય છે. આ રીતે બનાવેલ સારી ગુણવત્તાયુક્ત કોળા ફ્લેવર્ડ દૂધને સ્વચ્છ અને જીવાણુંરહિત કાચની બોટલમાં ભરીને હવાચુસ્ત પરિસ્થિતિમાં ૧૧૦±૨°સે તાપમાને ૧૫ મિનીટ માટે નીર્જીવીકરણ કરવાથી સ્વીકાર્ય ગુણવત્તાયુક્ત પરિસ્થિતિમાં ૬ માસ સુધી સામાન્ય રૂમ તાપમાને જાળવી શકાય છે. **Approved as above after incorporating following suggestion/s** 1. Replace word "Informed" with "recommended" and "at least" with "up to" in English. 2. Replace word "જાણ" with "ભલામણ" in Gujarati. (Action: PI through HOD, Dept. of LPT, Vet. College, JAU, Junagadh) Note: Referred to the dairy science group

NAVSARI AGRICULTURAL UNIVERSITY	
16.8.1.3	**Title: Effect of heat ameliorative measures during dry period on production performance in subsequent lactation in Surti buffaloes** Farmers of south Gujarat rearing Surti buffaloes are advised to keep Surti buffaloes in the pukka shed having fans and lime painted on roof top during summer season, before two months of calving (dry buffaloes) as it improves immune status and milk fat during subsequent lactation. દક્ષિણ ગુજરાતના સુરતી ભેંસ પાળતા પશુપાલકોને ભલામણ કરવામાં આવે છે કે ગરમીની ઋતુમાં વિયાણના બે મહિના પહેલા વસુકેલ ભેંસોના પાકા રહેઠાણમાં છત ઉપર ચૂનો તેમજ અંદર પંખા લગાવી ઠંડક રાખવાથી રોગપ્રતિકારક શક્તિ વધે છે તેમજ આવનાર દૂઝણા દિવસોમાં ફેટમાં સુધારો થાય છે. **Approved as above after incorporating following suggestion/s**: 1. Replace word "chuna" with "lime painted" and "dried" with "dry" in English 2. Replace word/s "ફેટની ગુણવત્તામાં" with "ફેટમાં" in Gujarati (Action: PI through HOD, Veterinary Physiology and Biochemistry, NAU, Navsari)
16.8.1.4	**Title: Nutrient composition, *in vitro* feed degradation and microbial biomass yield estimation of unconventional feed resources for ruminants in south Gujarat** It is recommended to goat keepers that, goats fed with fresh tree leaves of Sisam or Seven or Gliricidia or Sisu up to level 125, 210, 165 and 175 gram/day respectively, without any side effect of anti-nutritional factor (tannin) on digestibility of nutrients. બકરાપાલકોને ભલામણ કરવામાં આવે છે કે, બકરાઓને સીસમ અથવા સેવન અથવા ગ્લીરીસીડીઆ અથવા સીસુ વૃક્ષના તાજા પાન અનુક્રમે દૈનિક ૧૨૫, ૨૧૦, ૧૬૫ અને ૧૭૫ ગ્રામ સુધી ખવરાવવાથી તેમાં રહેલ નુકશાનકારક તત્વ (ટેનીન)થી પાચ્યતા પર આડ અસર થતી નથી. **Deferred** 1. Farmer's recommendation should be made only after feeding trials in animals. (Action: PI through HOD, Animal Nutrition, NAU, Navsari)
16.8.1.5	**Title: Nutrient composition, *in vitro* feed degradation and microbial biomass yield estimation of unconventional feed resources for ruminants in south Gujarat** It is recommended to goat keepers that, more than 70% nutrient digestibility observed in fresh tree leaves of Sisam, Sevan, Gliricidia and Sisu; therefore these tree leaves having potential to become alternative of cultivated fodder during scarcity and to fulfil the maintenance nutrient requirements of goats. બકરાપાલકોને ભલામણ કરવામાં આવે છે કે સીસમ, સેવન, ગ્લીરીસીડીઆ અને સીસુ વૃક્ષના તાજા પાનમાં પોષકતત્વોની ૭૦% થી વધુ પાચ્યતા જોવા મળે છે, જેમાં અછતના સમયમાં ઘાસચારાના વિકલ્પની અથવા બકરામાટે નિભાવના પોષકતત્વો પુરા પાડવાની ક્ષમતા રહેલ છે. **Deferred** 1. Farmer's recommendation should be made only after feeding trials in animals. (Action: PI through HOD, Animal Nutrition, NAU, Navsari)

16.8.1.6	**Title: Nutrient composition, *in vitro* feed degradation and microbial biomass yield estimation of unconventional feed resources for ruminants in south Gujarat** It is recommended to goat keepers that, the fresh tree leaves of Baheda and Harde contain more than 6% tannin (anti-nutritional factor), therefore it can be fed maximum 100 gram/day. બકરાપાલકોને ભલામણ કરવામાં આવે છે કે બહેડા અને હરડે વૃક્ષના તાજા પાનમાં ટેનીન (નુકશાનકારક તત્વ)ની માત્રા ૬% થી વધુ હોવાના કારણે મહતમ ૧૦૦ ગ્રામ/દિવસ ખવરાવી શકાય છે. **Deferred** 1. Farmer's recommendation should be made only after feeding trials in animals. (Action: PI through HOD, Animal Nutrition, NAU, Navsari)
	ANAND AGRICULTURAL UNIVERSITY
16.8.1.7	**Title:** The effect of feeding protected choline on milk and production efficiency in dairy cows. Supplemental feeding of rumen protected choline (33.5%) in total mixed ration @ 40 g/day during 21 pre-calving to 120 post-calving days to lactating cows economize milk production by 29.18%, reduce dry matter intake for milk production by 36.14% and total digestible nutrients/kg milk by 34.69%. દૂધાળ ગાયોને કુલમિશ્રિત આહારમાં દૈનિક ૪0 ગ્રામ રુમેન પ્રોટેક્ટેડ કોલીન (૩૩.૫%) વિયાણના ૨૧ દિવસ પહેલાથી વિયાણ પછીના ૧૨૦ દિવસ સુધી ખવડાવવાથી દૂધ ઉત્પાદન ખર્ચમાં ૨૯.૧૮% અને પ્રતિ કીલોગ્રામ દૂધ ઉત્પાદન માટે સુકા ખોરાક ગ્રહણની માત્રામાં ૩૬.૧૪% તથા કુલ પાચ્ય પોષક તત્વો લેવાની માત્રામાં ૩૪.૬૯% નો ઘટાડો થાય છે. **Suggestions: Approved as above with recasting.** (Action: PI through RS and Head, LRS, AAU, Anand)
16.8.1.8	**Title:** Performance of Crossbred Cows under Different Feeding Regimes. Dairy farmers are recommended that in comparison to sole paddy straw feeding to crossbred cows, feeding of concentrate mixture @ 1 kg/d during dry period and 50% of milk production during lactation, 10 kg hybrid napier green fodder, mixture of cereal and legume straw (50% paddy straw: 50% pigeon pea straw) on *ad lib* basis and 30 g mineral mixture/day increases net profit by 29.21%. પશુપાલકોને ભલામણ કરવામાં આવે છે કે સંકર ગાયોને ખોરાક તરીકે ફક્ત પરાળની સરખામણીએ વસુકેલ દિવસો દરમ્યાન ૧ કિ.ગ્રા./દિવસ અને દુધાળ દિવસોમાં દૂધ ઉત્પાદનના ૫૦% પ્રમાણે દાણ, ૧૦ કિ.ગ્રા. ગજરાજ ઘાસ લીલો ચારો, ધાન્ય અને કઠોળ વર્ગના સૂકા ચારાનું મિશ્રણ (૫૦% ડાંગર પરાળ:૫૦% તુવેર ગોતર) ખાઈ શકે તેટલું તથા ક્ષાર મિશ્રણ (૩૦ ગ્રામ/દિવસ) આપવાથી ચોખ્ખા નફામાં ૨૯.૨૧% નો વધારો થાય છે. **Suggestions: Approved as above with recasting.** (Action: PI through RS and Head, LRS, AAU, Anand)
16.8.1.9	**Title:** Effect of tryptophan supplementation at two levels of crude protein in layer ration on production performance of White Leghorn birds. To achieve maximum egg production with lowest feed cost per egg produced during 21-40 week of age in White Leghorn birds, poultry feed manufacturers and poultry farmers are recommended to maintain 14% crude protein and 0.19%

	tryptophan (amino acid) level in layer feed. વ્હાઈટ લેગહોર્ન મરઘીઓમાં ૨૧-૪૦ અઠવાડિયા દરમિયાન ન્યૂનતમ આહાર ખર્ચ પ્રતિ ઈંડા ઉત્પાદન તથા વધુ ઈંડા ઉત્પાદન મેળવવા માટે, મરઘાંઆહારના ઉત્પાદકો અને મરઘાંપાલકોને લેયર મરઘા આહારમાં ૧૪% ક્રૂડ પ્રોટીન અને 0.૧૯% ટ્રિપ્ટોફેન (એમીનોએસિડ)નું પ્રમાણ રાખવા ભલામણ કરવામાં આવે છે. **Suggestions: Approved.** (Action: PI through RS and Head, PRS, AAU, Anand)
16.8.1.10	**Title:** Study on the growth, production and carcass evaluation of Kadaknath, Rhode Island Red and their crosses. Poultry farmers are recommended to rear the crossbred males of Kadaknath X RIR for attaining higher body weight (Average 1534 g) at marketing age of 16 weeks with acceptancable chicken meat on the basis of sensory evaluation like appearance, smell, palatability etc. Moreover, poultry farmers are also recommended to rear the crossbred females of Kadaknath X RIR for attaining higher average egg production (Average 97 eggs) and body weight (Average 1810 g) at 40 weeks of age. સોળ અઠવાડિયાની વેચાણની ઉંમરે વધુ શારીરિક વજન (સરેરાશ ૧૫૩૪ ગ્રામ) મેળવવા અને મરઘાં માંસના દેખાવ, સુગંધ, સ્વાદ વગેરે જેવા પરિક્ષણોની સ્વીકૃતિના આધારે કડકનાથ x આરઆઈઆર સંકરજાતના નર મરઘાં ઉછેરવા મરઘાંપાલકોને ભલામણ કરવામાં આવે છે. વધુમા ચાલીસ અઠવાડિયાની ઉંમરે વધુ ઈંડા ઉત્પાદન (સરેરાશ ૯૭ નંગ) અને શારીરિક વજન (સરેરાશ ૧૮૧૦ ગ્રામ) મેળવવા માટે કડકનાથ x આરઆઈઆર સંકરજાતની મરઘીઓ ઉછેરવા મરઘાંપાલકોને પણ ભલામણ કરવામાં આવે છે. **Suggestions: Approved as above with recasting.** 1. Merge 16.1.10A and 16.1.10B proposed. (Action: PI through RS and Head, PRS, AAU, Anand)
16.8.1.10A	Poultry farmers are recommended to rear the crossbred males of Kadaknath X RIR for attaining higher body weight (Average 1534 g) at marketing age of 16 weeks and acceptancable chicken meat on the basis of sensory evaluation like appearance, smell, palatability etc. સોળ અઠવાડિયાની વેચાણની ઉંમરે વધુ શારીરિક વજન (સરેરાશ ૧૫૩૪ ગ્રામ) મેળવવા અને મરઘાં માંસના દેખાવ, સુગંધ, સ્વાદ વગેરે જેવા પરિક્ષણોની સ્વીકૃતિના આધારે કડકનાથ x આરઆઈઆર સંકરજાતના નર મરઘાં ઉછેરવા મરઘાંપાલકોને ભલામણ કરવામાં આવે છે.
16.8.1.10 B	Poultry farmers are recommended to rear the crossbred females of Kadaknath X RIR for attaining higher average egg production (Average 97 eggs) and body weight (Average 1810 g) at 40 weeks of age. ચાલીસ અઠવાડિયાની ઉંમરે વધુ ઈંડા ઉત્પાદન (સરેરાશ ૯૭ નંગ) અને શારીરિક વજન (સરેરાશ ૧૮૧૦ ગ્રામ) મેળવવા માટે કડકનાથ x આરઆઈઆર સંકરજાતની મરઘીઓ ઉછેરવા મરઘાંપાલકોને ભલામણ કરવામાં આવે છે.
16.8.1.11	**Title**: Supplementation of bypass fat for fattening of Surti male goats. The Surti goat keepers are recommended to feed TMR with 25 g bypass fat daily from 22 to 24 months of age to Surti male goats for 70 days to increase body weight and feed conversion efficiency with 38.6% reduction in feed cost per kg gain. સુરતી બકરા પાલકોને ભલામણ કરવામાં આવે છે કે પુખ્ત સુરતી બકરાઓને **૨૨** થી **૨૪** માસની ઉંમર દરમ્યાન ૭૦ દિવસ સુધી રોજ **૨૫** ગ્રામ બાયપાસ ફેટ ઉમેરી કુલમિશ્રિત આહાર ખવડાવવાથી તેમના વજન અને ખોરાક રૂપાંતરણ ક્ષમતામાં વધારો થાય છે તેમજ પ્રતિ કિ.ગ્રા. વજન વધારવા માટે થતા ખોરાકીય ખર્ચમાં ૩૮.૬ %

	નો ઘટાડો થાય છે. **Suggestions: Approved as above with recasting.** **1. Replace word 'advised' with 'recommended' in English.** (Action: PI through RS and Head, ANRS, AAU, Anand)
16.8.1.12	**Title:** *In-vitro* evaluation of different variety of paddy straw of Main Rice Research Station, Nawagam. Livestock owners are recommended that compared to paddy straw of other varieties, paddy straw of GAR-14 variety developed by Anand Agricultural University has very good nutritional quality, contains higher crude protein with low crude fibre. પશુપાલકોને ભલામાણ કરવામાં આવે છે કે આણંદ કૃષિ યુનિવર્સિટી દ્વારા ભલામણ થએલ જી.એ.આર-૧૪ ડાંગરના પરાળની પોષણ ગુણવતા અન્યજાતોના પરાળની સરખામાણીએ ઘણી સારી છે તે વધુ પ્રોટીન,તેમજ ઓછા રેસાવાળા તત્વો ધરાવે છે. **Suggestions: Approved as above with recasting.** (Action: PI through RS and Head, ANRS, AAU, Anand)
16.8.1.13	**Title:** Methane mitigation in crossbred cows under different feeding regimes Dairy farmers are recommended that in comparison to sole paddy straw based feeding of crossbred cows, feeding of concentrate mixture daily @ 1 kg during dry period and 50% of milk production during lactation, 10 kg green fodder (Hybrid Napier), mixture of cereal and legume straw (50% paddy straw : 50% pigeon pea straw) on *ad lib* basis and 30 g mineral mixture/day reduce daily methane emission and dietary energy loss through methane emission by 21.5% which is reflected by increase in milk yield (37.4%) of animals. પશુપાલકોને ભલામણ કરવામાં આવે છે કે સંકર ગાયોને ખોરાક તરીકે ફક્ત ડાંગરની પરાળ સરખામણીએ વસુકેલ દિવસો દરમ્યાન ૧ કિ.ગ્રા./દિવસ અને દુધાળ દિવસોમાં દૂધ ઉત્પાદનના ૫૦% પ્રમાણે દાણ, ૧૦ કિ.ગ્રા. લીલોચારો (ગજરાજઘાસ), ધાન્ય અને કઠોળ વર્ગના સૂકાચારાનું મિશ્રણ (૫૦% ડાંગરપરાળ : ૫૦% તુવેરગોતર) ખાઈ શકે તેટલું તથા ૩૦ ગ્રામ ક્ષારમિશ્રણ આપવાથી દૈનિક મીથેન વાયુના ઉત્સર્જન તેમજ મીથેન વાયુ દ્વારા આહારમાં રહેલ શક્તિના વ્યયમાં ૨૧.૫% નો ઘટાડો થાય છે. જે ગાયોનું દૂધ ઉત્પાદન વધારવામાં (૩૭.૪%) મદદરૂપ થાય છે. **Suggestions: Approved as above with recasting.** (Action: PI through RS and Head, ANRS, AAU, Anand)
16.8.1.14	**Title:** Estimation of methane emission in bullock and dietary interventions for its mitigation. Livestock owners are recommended that crossbred bullocks fed TMR with 30% concentrate mixture, 35% wheat straw and 35% Lucerne gotar reduces daily methane emission by 17.7% પશુપાલકોને ભલામણ કરવામાં આવે છે કે સંકર બળદોને ૩૦% સુમિશ્રીત દાણ, ૩૫% ઘઉં કુંવળ સાથે ૩૫% રજકા ગોતર લઈ બનાવેલ કુલમિશ્રીત આહાર આપવાથી પશુઓ દ્વારા ઉત્સર્જીત દૈનીક મીથેન વાયુના પ્રમાણમાં ૧૭.૭% જેટલો ઘટાડો થાય છે. **Suggestions: Approved.** (Action: PI through RS and Head, ANRS, AAU, Anand)
16.8.1.15	**Title:** Performance of Adult Surti Goats on Different Floor Types Under Asbestos

	Roofed House. On the basis of behavioural studies of goats, intensive goat keepers of middle Gujarat are recommended to construct goat shed comprising of pucca floor under covered area in order to increase comfort. મધ્ય ગુજરાતમાં ઘનિષ્ઠ પધ્ધતીથી ઉછેર કરતા બકરાપાલકોને બકરાની વર્તણુંકના અભ્યાસના આધારે ભલામણ કરવામાં આવે છે કે બકરાના રહેઠાણ બનાવતી વખતે છાપરા નીચેનું તળિયુ પાકુ રાખવાથી તેમની આરામદાયકતામાં વધારો થાય છે. **Suggestions: Approved as above with recasting.** 1. **Replace** 'advised' **with** ' recommended' **in English** (Action: PI through HoD, LPM, AAU, Anand)
16.8.2	**Recommendations for Scientific Community**
JUNAGADH AGRICULTURAL UNIVERSITY	
16.8.2.1	**Title**: Receiver operating characteristic (ROC) analysis of milk components for sub-clinical mastitis in Gir cows. In Gir cows, milk components particularly milk SNF, protein, lactose and ash decrease and Somatic Cell Counts increases in udder infection during early and mid-lactation. Healthy udder quarters could be differentiated from severely infected quarters by milk lactose threshold with moderate accuracy during early and mid-lactation. **Approved as above after incorporating following suggestion/s:** 1. Delete words “moderate to” after from and “low to” after with **2.** Specify lactation stage (Action: PI through HOD, Polytechnic in A.H., Vet. College, JAU, Junagadh)
16.8.2.2 **A#**	**Title:** Assessment of hygienic milk production practices adopted by dairy farmers for quality milk production. To improve the adoption of clean milk production practices among dairy farmers, targeted training programmes need to be organized giving priority to the farmer’s age, education level, extension participation and source of information. **Approved as above after incorporating following suggestion/s:** 1. Recast and presented in the social science group (Action: PI through HOD, Dept. of Vet. and A.H. Extension, JAU, Junagadh) **#Note: This recommendation will be presented in Social Science group**
	SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY
16.8.2.3	**Title**: Genetic Evaluation of Mehsana Buffalo Bulls under progeny testing on the basis of variation in number of progeny per sire. It is recommended to the scientists and animal breeders to carry out the genetic evaluation of Mehsana buffalo bulls based on test day milk records of more than 20 progenies per sire as it is comparatively efficient (>90%) to the most accurate group i.e. 30 daughters per sire using BLUP and animal models. **Approved after incorporating following suggestion/s :**

	1. Specify models and records used 2. Considering accuracy, bull evaluation based on more than 20 progenies per sire should be recommended. (Action: PI through HOD, AGB., Sardarkrushinagar)
NAVSARI AGRICULTURAL UNIVERSITY	
16.8.2.4	**Title**: Measurement of heat stress and its impact on behaviour and production performance in surti buffaloes in different seasons. THI of 72.15 based on NRC 1971, observed in winter season beneficially improves fat and lactose percentage in milk and milk yield in Surti buffaloes. **Approved as above after incorporating following suggestion/s:** 1. Delete word "cumulative" before milk yield 2. Specify model used to calculate THI (Action: PI through HOD, VPB, NAU, Navsari)
16.8.2.5	Title: Cutaneous thermal profiling of Surti does in different seasons. Surface temperature of eye and udder using infrared thermography may be used as a non-invasive alternative to rectal temperature for assessment of body temperature as well as heat stress in Surti goats. **Approved as above after incorporating following suggestion/s:** 1. Recast after merging **16.8.2.5A** and **16.8.2.5B** as proposed. (Action: PI through HOD, VPB, NAU, Navsari)
16.8.2.5 A	Cutaneous thermal profiling using infrared thermography as a non-invasive tool can be used to assess heat stress in Surti goats.
16.8.2.5 B	Surface temperature of eye and udder using infrared thermography may be used as an alternative to rectal temperature for assessment of body temperature.
16.8.2.6	**Title**: Study of genetic polymorphism in growth related genes and its association with growth parameters in Surti goats. Surti goats with BB (366 and 56 bps) genotype are found with higher body weight at 6 months of age as compared to AB (422, 366 and 56 bps) genotype when growth hormone (GH) gene is amplified using forward primer 5' CTCTGCCTGCCCTGGACT 3' and reverse primer 5' GGAGAAGCAGAAGGCAACC 3' and digested with *HaeIII* restriction enzyme. **Approved as above after incorporating following suggestion/s:** 1. Replace "466" with "422" after AB (Action: PI through HOD, AGB, NAU, Navsari)
16.8.2.7	**Title**: Relative gene expression study on casein protein and its regulatory genes in mammary epithelial cells of surti goat. (A) The Mammary Epithelial Cells can be successfully recovered in sufficient quantity from optimum amount of milk (800 ml) of Surti goats using antibody mediated magnetic bead separation and can be further used for recovering RNA for down step quantification of major milk Casein protein gene and its regulatory gene's expression. (B) The relative gene expression of *CSN1S1, CSN1S2, CSN3* and *C/EBP*

	genes show upregulation with advancement of lactation from 30 days to 90 days post partum in Surti goats with 7.79, 32.87, 21.41 and 24.68 fold increase respectively. The relative gene expression of CSN1S2, CSN3 and C/EBP genes show positive correlation with protein percent at 30 days and 90 days post partum in Surti goats. Positive correlations also shown by CSN2 with Test Day Milk Yield and CSN3 with Cumulative Milk Yield at day 30 post partum in Surti goats. **Approved as above after incorporating following suggestion/s:** 1. Replace 'from' after recovered with 'in sufficient quantity from optimum amount of' in (A) 2. Take milk quantity "800 ml" after milk in the bracket in (A) 2. Merge 16.8.2.7A, 16.8.2.7B and 16.8.2.7C proposed. 3. Recast showing association of gene expression with production/composition. (Action: PI through HOD, AGB, NAU, Navsari)
16.8.2.7 A	The Mammary Epithelial Cells can be successfully recovered in sufficient quantity from optimum amount of milk (800 ml) of Surti goats using antibody mediated magnetic bead separation and can be further used for recovering RNA for down step quantification of major milk Casein protein gene and its regulatory gene's expression.
16.8.2.7 B	The relative gene expression of *CSN1S1, CSN1S2, CSN3* and *C/EBP* genes were significantly up regulated with advancement of lactation from 30 days to 90 days post partum in Surti goats with fold increase of 7.79, 32.87, 21.41 and 24.68 respectively.
16.8.2.7 C	The relative gene expression of *CSN1S2, CSN3* and *C/EBP* genes were consistently positive and significant and shared similar expression patterns in the different physiological stages compared at 30 and 90 days post partum in Surti goats.
16.8.2.8	**Title**: Nutrient composition, *in vitro* feed degradation and microbial biomass yield estimation of unconventional feed resources for ruminants in south Gujarat. (A) Based on average dry and organic matter digestibility (70.60% and 79.99%), total volatile fatty acid (12.13 mMol/dl) and microbial biomass production (292.47 mg/200 mg DM) of tree leaves, *Gliricidia sepium* (Gliricidia), *Gmelina arborea* (Sevan), *Dalbergia latifolia* (Sisam) and *Dalbergia sissoo* (Sisu), show better fermentation characteristics and having potential to fulfil the maintenance requirement of small ruminants as promising alternative feed resources. **(B)** Beyond 6% of total tannin content of tree leaves decreases *in vitro* dry matter and organic matter digestibility as well as total volatile fatty acid with negative correlation coefficients of -0.866, -0.811 and -0.679 respectively, therefore the total tannin content of the diet should not exceed 6 % while selecting Gliricidia, Gmelina (Sevan), Dalbergia (Sisu) and Terminalia spp. (Harade and Baheda) tree leaves for ration

	formulation of Goats. **Approved as above after incorporating following suggestion/s:** **1.** Replace 'as a result with 'and' after characteristics 2. Merge 16.8.2.8A, 16.8.2.8B and 16.8.2.8C as proposed. (Action: PI through HOD, Animal Nutrition, NAU, Navsari)
16.8.2.8 A	Based on average dry and organic matter digestibility (70.60% and 79.99%), total volatile fatty acid (12.13 mMol/dl) and microbial biomass production (292.47 mg/200 mg DM) of tree leaves, *Gliricidia sepium* (Gliricidia), *Gmelina arborea* (Sevan), *Dalbergia latifolia* (Sisam) and *Dalbergia sissoo* (Sisu), show better fermentation characteristics and having potential to fulfil the maintenance requirement of small ruminants as promising alternative feed resources.
16.8.2.8 B	Beyond 6% of total tannin and 8% of ADL content of *Terminalia bellirica* (Baheda) and *Terminalia chebula* (Harde) tree leaves decreases dry matter digestibility, organic matter digestibility, total volatile fatty acid and gas production with establishment of negative correlation coefficient.
16.8.2.8 C	*Gliricidia*, *Gmelina* (Sevan), *Dalbergia* (Sisu) and *Terminalia* spp. (Harade and Baheda) tree leaves use as an alternative fodder, their content of total tannin, acid detergent lignin and silica should be considered because of their negative correlation with digestibility and fermentation characteristics
ANAND AGRICULTURAL UNIVERSITY	
16.8.2.9	**Title**: The effect of feeding protected choline on milk and production efficiency in dairy cows. Supplemental feeding of rumen protected choline (33.5%) in total mixed ration @ 40 g/day during 21 pre-calving to 120 post-calving days to lactating cows improves blood glucose and body condition score, economize milk production, improves feed conversion efficiency with profitable milk production (1:1.97 vs. 1:1.63). **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, LRS, AAU, Anand)
16.8.2.10	**Title**: Effect of tryptophan supplementation at two levels of crude protein in layer ration on production performance of White Leghorn birds a) White Leghorn birds fed with diet containing 16% crude protein and 0.17% tryptophan during 21-40 weeks of age, produced significantly highest hen day egg production (85.29%) and total eggs (119.42 eggs/bird) with lower feed cost per egg produced (2.47 Rs/egg). b) White Leghorn birds fed with diet containing 14% crude protein and 0.19% tryptophan during 21-40 weeks of age, produced significantly higher hen day egg production (84.60%) and total eggs (118.77 eggs/bird) with lowest feed cost per egg produced (2.45 Rs/egg). **Deferred** **Suggestion:**

	1. Recommended to farmers need not be repeated. (Action: PI through RSand Head, PRS, AAU, Anand)
16.8.2.11	**Title**: Study on the growth, production and carcass evaluation of Kadaknath, Rhode Island Red and their crosses. Body weight at marketing age of 16 weeks of Kadaknath X RIR males (Average 1534 g) was found to be significantly higher than RIR X Kadaknath males (Average 1379 g) and Kadaknath purebred males (Average 1145 g). **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. (Action: PI through RSand Head, PRS, AAU, Anand)
16.8.2.12	**Title**: Study on the growth, production and carcass evaluation of Kadaknath, Rhode Island Red and their crosses. Direct and reciprocal crosses of Kadaknath and Rhode Island Red (RIR) was found to be significantly higher in egg production (Average 97 nos) as compared to Kadaknath purebred (Average 42 nos) up to 40 weeks. Females of Kadaknath X RIR was found to be significantly higher in body weight (Average 1810 g) as compared to RIR X Kadaknath (Average 1618 g) and Kadaknath purebred (Average 1520 g) at 40 weeks. Among both the crosses, Kadaknath X RIR was found superior than the RIR X Kadaknath for egg production and body weight at 40 weeks. **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, PRS, AAU, Anand)
16.8.2.13	**Title**: Supplementation of bypass fat for fattening of Surti male goats. Adult Surti male goats fed TMR supplemented with daily 25 g bypass fat for finishing resulted in significant improvement in feed conversion efficiency of DM, CP, DCP & TDN by 42.7, 40.3, 40.7 & 40.5%, respectively without affecting hematological parameters, serum triglyceride and cholesterol level. **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, ANRS, AAU, Anand)
16.8.2.14	**Title**: Supplementation of bypass fat for fattening of Surti male goats. Adult Surti male goats supplemented with daily 25 g bypass fat in TMR for finishing resulted in significant increase in heart girth by 6.6% and total body weight by 21.4%. **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation.

	(Action: PI through RSand Head, ANRS, AAU, Anand)
16.8.2.15	**Title**: *In-vitro* evaluation of different variety of paddy straw of Main Rice Research Station, Nawagam. The paddy straw of GAR-14 variety contains high crude protein (9.85%), low crude fibre (18.82%) and lignin (2.73%) content as well as high *in vitro* dry matter digestibility (42.77%) than paddy straw of other varieties. **Deferred** **Suggestion:** 1. Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, ANRS, AAU, Anand)
16.8.2.16	**Title**: *In-vitro* evaluation of different variety of paddy straw of Main Rice Research Station, Nawagam. The paddy straw of GAR-14 and GR-11 variety have significantly low *in vitro* methane production potential (3.02 and 3.20, ml/100mg DDM, respectively) than paddy straw of other varieties. **Deferred** 1. Results don't support recommendation. (Action: PI through RSand Head, AAU, Anand)
16.8.2.17	**Title**: Methane mitigation in crossbred cows under different feeding regimes. In comparison to sole paddy straw based feeding to crossbred lactating cows, feeding of concentrate mixture daily @ 1 kg during dry period and 50% of milk production during lactation, 10 kg green fodder (Hybrid Napier), mixture of cereal and legume straw (50% paddy straw:50% pigeon pea straw) on *ad lib* basis and 30 g mineral mixture/day reduce daily methane emission by 21% and methane emission (g/kg milk) by 39%. **Deferred** **Suggestion:** **1.** Recommended to farmers need not be repeated. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, ANRS, AAU, Anand)
16.8.2.18	**Title**: Estimation of methane emission in bullock and dietary interventions for its mitigation. Replacement of wheat straw by Lucerne *gotar* @ 50% in TMR (70:30) reduces daily methane emission and dietary energy loss through methane by 17.7% in crossbred bullocks. **Deferred** **1.** Results don't support recommendation. Can be merged with Farmers' recommendation. (Action: PI through RSand Head, ANRS, AAU, Anand)
16.8.2.19	**Title**: Identification of "Molecular Portraits" in Squamous Cell Carcinoma of Horn in Kankrej (*Bos indicus*) Bullocks. A) It is recommended to use 'Keratins' and 'Interleukins' groups of genes as potential biomarkers for prognosis of squamous cell carcinoma of horn in

	Kankrej bullocks. B) It is recommended to use 28 missense variants distributed across 19 genes namely BOLA, CARF, EI24, FABP2, FOXN3, HIST3H2A, JSP.1, KLK4, KNG1, KRT8 [displayed 7 missense variants (including stop-lost variant i.e. chr10:75129445A>G (T>C)], LOC616948, MDH1B, PERM1, PPP1R15A, SAP18, SLC25A36, STON2, TTC16, and YME1L1KRT8 as panel of SNVs having prognostic values in horn cancer in Kankrej Bullocks. **Approved as above after incorporating following suggestion/s :** 1. **Merge recommendation 16.8.2.19A &16.8.2.19B as proposed.** (Action PI through HOD, Ani. Biotech, AAU, Anand)
16.8.2.19 A	It is recommended to use 'Keratins' and 'Interleukins' groups of genes as potential biomarkers for prognosis of squamous cell carcinoma of horn in Kankrej bullocks.
16.8.2.19 B	It is recommended to use 28 missense variants distributed across 19 genes namely BOLA, CARF, EI24, FABP2, FOXN3, HIST3H2A, JSP.1, KLK4, KNG1, KRT8 [displayed 7 missense variants (including stop-lost variant i.e. chr10:75129445A>G (T>C)], LOC616948, MDH1B, PERM1, PPP1R15A, SAP18, SLC25A36, STON2, TTC16, and YME1L1KRT8 as panel of SNVs having prognostic values in horn caner in Kankrej Bullocks.
16.8.2.20	**Title**: Identification of "Molecular Portraits" in Squamous Cell Carcinoma of Horn in Kankrej (*Bosindicus*) Bullocks. The seven upregulated (XLOC_000016, XLOC_002198, XLOC_002851, XLOC_ 007383, XLOC_010701, XLOC_010272 and XLOC_011517) and one down regulated (XLOC_011302) long non-coding RNAs (lncRNAs) are associated with eleven genes having established role in squamous cell carcinoma of horn in Kankrej bullocks. These lncRNAs are recommended to be used as 'Molecular Portraits' of squamous cell carcinomas of horn in Kankrej bullocks. **Approved** (Action PI through HOD, Ani. Biotech, AAU, Anand)

16.8.3 New Technical Programmes

Date:- 04.06.2020

The 16th Combined Joint AGRESCO meeting for Animal Production and Fisheries Science of SAUs of Gujarat & Kamdhenu University for finalizing New Technical Programmes was hosted by Navsari Agricultural University through online video conferencing mode on 04.06.2020.

Dr. S. R. Chaudhary, Hon'ble Vice Chancellor of Navsari Agricultural University as a chairman of the technical session welcomed University Officers, Deans, Conveners of AGRESCO subcommittee and members who have joined the meeting from various SAUs and KU. He informed that the discussion through online mode was very effective and wished thorough discussion in finalizing NTPs. Dr. V. B. Kharadi, Dean and Principal, Veterinary College, Navsari and Dr. F. P. Savaliya, Research Scientist and Head, Poultry Research

Station, Veterinary College, Anand acted as Co-chairmen. Dr. S.V. Shah, Professor and Head, LPM, Veterinary College, Anand as well as Dr. B. P. Brahmkshtri, Convener (Animal Production) & Professor and Head, ILFC, Veterinary College, Navsari worked as Rapporteurs during the session. Dr. A. N. Khokhar, Associate Professor (Agri. Statistics), BA College of Agriculture, Anand gave expertise as statistician during the session. As per the schedule New Technical programmes were presented by conveners of respective SAUs and KU. The vote of thanks was administered at the end of the session by Dr. B. P. Brahmkshtri, Rapporteur and Convener (Animal Production), Veterinary College, Navsari.

Summary

Sr. No.	University	New Technical Programmes	
		Presented	Accepted
1	Junagadh Agricultural University	7	7
2	Sardarkrushinagar Dantiwada Agril. Univeristy	7	7
3	Navsari Agricultural University	6	6
4	Anand Agricultural University	16	15
5	Kamdhenu University (* Approved for Animal Health)	1*	1*
Total		**36 + 1***	**35 + 1***

Total 36 NTPs were presented and approval was given to 35 NTPs with/without suggestions as mentioned in the table:

Sr. No.	Title	Suggestions/ Remarks	Action by
JUNAGADH AGRICULTURAL UNIVERSITY			
16.8.3.1	**Title: Relative gene expression of Interferon tau stimulated genes in Jaffarabadi Buffalo**	**Approved after following Suggestions:** ✓ Verify GPG protocol and implement accordingly. ✓ Specify ISGs and House Keeping genes under objective 2.	PI through HoD Animal Genetics and Breeding, Vet. College, Junagadh
16.8.3.2	**Title: Efficacy of Artificial Neural Network for Milk Prediction in Jaffarabadi Buffaloes**	**Approved after following Suggestions:** ✓ Specify the method/model to be used for linear programming. ✓ Replace word 'recorded' with 'used' under observation. ✓ Specify no. of layers and neurons in neural network	PI through HoD Animal Genetics and Breeding, Vet. College, Junagadh

16.8.3.3	**Title: Efficacy of deep learning meta-architecture for identification of Gir cattle**	**Approved after following Suggestions:** ✓ In objectives 1, write full name for CNN ✓ Preferably use low resolution camera so that the image can be sent through social media network.	PI through HoD Animal Genetics and Breeding, Vet. College, Junagadh
16.8.3.4	**Title: Genetic variation at Prolactin *Rsa-I* locus in Gir Cattle**	**Approved after following Suggestions** ✓ Modify experiment to study Prolactin promoter gene and Prolactin Receptor gene ✓ Modify title and objective accordingly	PI through HoD Animal Genetics and Breeding, Vet. College, Junagadh

16.8.3.5	**Title: Effect of feeding Moringa (*Moringa oliefera*) based Calf Starter on the performance of suckling Jaffrabadi buffalo calves**	**Approved after following Suggestions:** ✓ Verify fiber content of moringa before using it as calf starter to ensure permissible limit of crude fibre. ✓ Study economics for feeding	PI through Unit Head, Cattle Breeding Farm, Junagadh
16.8.3.6	**Title: Studies on sole feeding of Marvel (*Dicanthium annulatum*) grass on milk production and milk composition in lactating Gir cows**	**Approved after following Suggestions:** ✓ Include estimation of serum calcium and phosphorous also. ✓ Include estimation of NEFA and BHBA if possible	PI through Unit Head, Cattle Breeding Farm, Junagadh
16.8.3.7	**Title: Study on effect of partial replacement of fish meal with *Spirulina* and *Moringa oleifera* diet on growth and survival of *Labeo rohita* fry**	**Approved after following Suggestions:** ✓ Ensure fibre content limit in diet ✓ Study economics for feeding	PI through Unit Head, Fisheries College, Junagadh
SARDARKRUSHINAGAR DANTIWADA AGRI. UNIVERSITY			
16.8.3.8	Effect of Ashwagandha (*Withania somnifera*) on sexual behavior and seminal characteristics in Kankrej (*Bos indicus*) bull.	**Approved after following Suggestions:** ✓ Avoid bulls of very young or old age ✓ Replace word “parameter” with 'characteristics' under Material and Method	PI through Unit Head, LRS, Sardarkrushi-nagar
16.8.3.9	Effect of roughage feeding on milk economy of lactating Kankrej cattle.	**Approved after following Suggestions:** ✓ Specify type (cereal/legume) and quantity of roughage feeding ✓ Specify concentrate feeding and consider level of production of animals for grouping ✓ Specify method of statistical analysis	PI through Unit Head, LRS, Sardarkrushi-nagar

16.8.3.10	Comparative study on milking ability of Kankrej cattle under hand milking and machine milking	**Approved after following Suggestions:** ✓ Specify adaptation of Kankrej cows to machine milking and suckling of calf under methodology ✓ In parameters / observations- include Somatic cell count and milk composition traits ✓ Specify method of statistical analysis	PI through Unit Head, LRS, Sardarkrushi-nagar
16.8.3.11	Effect of Separation on Maternal Behaviour of Kankrej cows	**Approved after following Suggestions:** ✓ In title and objective add word 'calf' before 'separation' ✓ Group animal as primiparous and multiparous	PI through HoD Livestock Production and Management, Vet. College, Sardarkrushi-nagar
16.8.3.12	Modelling of growth curve in farm bred broiler rabbits	**Approved after following Suggestions:** ✓ Specify no. of generations and breed wise animals to be studied	PI through HoD Animal Genetics and Breeding, Vet. College, Sardarkrushi-nagar
16.8.3.13	Effect of dietary pomegranate peel powder supplementation on growth performance and blood lipid profile of broiler chickens	**Approved after following Suggestions:** ✓ Ensure permissible limit of fiber content of diets before start of experiment. ✓ Analyse anti-oxidative parameters also if possible * For lipoprotein estimation, use species specific kits	PI through HoD Animal Nutrition, Vet. College, Sardarkrushi-nagar
16.8.3.14	Study of characteristics of goat population in tribal areas of North Gujarat	**Approved after following Suggestions:** ✓ Specify characteristics under title and ✓ objective ✓ Include CO-PI from Extension Dept ✓ Follow NBAGR format for phenotypic ✓ characterization.	PI through HoD Livestock Production and Management, Vet. College, Sardarkrushi-nagar

NAVSARI AGRICULTURAL UNIVERSITY			
16.8.3.15	Effect of rumen protected niacin supplementation on sweating rate, oxidative stress and skin temperature during summer in Surti buffaloes	**Approved after following Suggestions:** ✓ Mention 2 treatments instead of 1 under experimental details ✓ No need of ANOVA-DNMRT test for statistical analysis	PI through HoD Physiology and Biochemistry, Vet. College, Navsari
16.8.3.16	Study of changes in udder temperature, milk composition and somatic cell count of Surti buffaloes during different stages of lactation	**Approved after following Suggestions:** ✓ Mention periods as mid (101 to 200 days) and late (201 and above) stages of lactation ✓ Specify milk composition parameters under observation	PI through HoD Physiology and Biochemistry, Vet. College, Navsari
16.8.3.17	Study of changes in udder temperature, milk composition and somatic cell count of Surti goat during different stages of lactation.	**Approved after following Suggestions:** ✓ Mention time interval 40 days instead of 50 as (<40 days, 41-80 days and 81 and above) stages of lactation ✓ Specify milk composition parameters under observation	PI through HoD Physiology and Biochemistry, Vet. College, Navsari
16.8.3.18	Placental morphometry *vis-à-vis* neonatal behavior in Surti buffaloes.	**Approved**	PI through HoD Livestock Production Management, Vet. College, Navsari
16.8.3.19	Impact of light sources on broiler performance.	**Approved after following Suggestions:** ✓ Correct number of birds as 48 per treatment	PI through HoD Instructional Livestock Farm Complex, Vet. College, Navsari
16.8.3.20	Association of udder and teat morphometric with milk yield and udder health in lactating Surti buffaloes.	**Approved**	PI through Principal Polytechnic in Animal husbandry, Navsari

ANAND AGRICULTURAL UNIVERSITY			
16.8.3.21	Effect of feeding *Moringa oleifera* fodder in growing dairy animals	**Approved with following suggestion/s:** ✓ Specify age of animals under study ✓ Record body weight biweekly	PI through Unit Head, LRS, Veterinary College, Anand
16.8.3.22	Optimization of the age at maturity in Surti buffalo heifers supplemented with bypass protein and bypass fat.	**Approved with following suggestion/s:** ✓ Specify starting age of heifers to be used and duration of experiment ✓ Delete 'by per rectal palpation or sonography' from second objective ✓ Delete 'so it can be given as recommendation to the livestock owners' from third objective ✓ Specify blood collection at monthly interval ✓ Include estrogen under observation	PI through Unit Head,RBRU, Veterinary College, Anand
16.8.3.23	Optimization of dietary energy and protein level of native chicken of North Gujarat (Aravali).	**Approved with following suggestion/s:** ✓ Reduction in number of birds per treatment due to delayed breeding as a result of a Covid 19 pandemic, however it will not be less than 15 per replicate in starter and grower phases ✓ Test energy protein levels above and below the BI Standards	PI through Unit Head, PRS, Veterinary College, Anand
16.8.3.24	Effect of Direct Fed Microbials on digestibility and rumen fermentation in large ruminants.	**Approved with following suggestion/s:** ✓ Specify microbials to be fed and its dosage	PI through Unit Head, ANRS, Veterinary College, Anand
16.8.3.25	Study of the feeding and Management practices of pet dogs in Anand.	**Experiment was deffered for won't of questionare**	PI through Unit Head, ANRS, Veterinary College, Anand
16.8.3.26	Effect of Supplementation of Solid State Fermentation (SSF) Biomass on Growth Performance of Crossbred Heifers	**Approved**	PI through Unit Head, ANRS, Veterinary College, Anand
16.8.3.27	Replacement of maize with wheat on performance of broilers	**Approved with following suggestion/s:** ✓ It was advised to study the pigmentation of skin / meat	PI through Unit Head, ANRS, Veterinary College, Anand

		✓ Include economics of maize replacement	
16.8.3.28	Effect of feeding Ashwagandha and Shatavari roots on growth of Surti kids	**Approved with following suggestion/s:** ✓ Specify roots / whole plant of Ashwagandha and Shatavari to be used ✓ Change the title and objective accordingly	PI through Unit Head, ANRS, Veterinary College, Anand
16.8.3.29	Methane mitigation in Lactating Crossbred cow under different feeding regimes	**Approved**	PI through Unit Head, ANRS, Anand
16.8.3.30	Methane mitigation by dietary interventions and its effect on growth performance of buffalo calves.	**Approved**	PI through Unit Head, ANRS, Anand
16.8.3.31	Effect of feeding Moringa oleifera leaves on digestibility in adult cattle	**Approved with following suggestion/s:** ✓ Mention CP% replacement by moringa	PI through Unit Head, ANRS, Anand
16.8.3.32	Study on effect of different sources of Zn on performance of growing small/large ruminants	**Approved with following suggestion/s:** ✓ Specify species of experimental animals ✓ Specify blood collection schedule ✓ Specify sources of Zn	PI through Unit Head, ANRS, Anand
16.8.3.33	Exploring chicken micro-biome, its antimicrobial resistance (AMR), gene profile and production potential in response to antibiotics and feed additives.	**Approved with following suggestion/s:** ✓ Specify antibiotics and probiotic to be used. ✓ Replace word 'Prebiotic' with 'probiotic'	PI through HoD Animal Bio-technology, Veterinary College, Anand
16.8.3.34	Screening of indigenous, crossbred cattle and Buffalo population for β casein A1/A2 protein gene variants using KASP Assay.	**Approved with following suggestion/s:** ✓ Delete ‘buffalo’ from title and objective if not under study	PI through HoD Animal Genetics and Breeding, Veterinary College, Anand
16.8.3.35	Comparative study of efficacy of different	**Approved with following suggestion/s:** ✓ Add one more group of feeding	PI through HoD Animal

	methods of probiotic application on broiler performance	probiotic through feed.	Science, Anand
16.8.3.36	Efficacy of herbal formulation (pulverized leaves of *Aegle marmelos* and *Murraya koenigii*) in ameliorating infertility in dairy animals.	**Approved with following suggestion/s:** ✓ Remove words 'similar to that prepared by IVRI' from first objective.	PI through, HoD KVK, Dahod
KAMDHENU UNIVERSITY			
16.8.3.37	Title: Effect of FMD vaccination on production and reproduction in the cows and buffaloes	**Approved**	PI through HoD Kamdhenu University, Gandhinagar

General suggestions:

1. Approvals of the NTPs are subjected to its approval by respective IAECs.
2. Investigators are advised to specify species/breed/No.of animals, period/interval of collection of blood / samples, observation to be recorded while planning the experiments.

16.9 Agricultural Engineering Sub Committee

Date: 3rd July, 2020

Schedule

	Recommendation	New Technical Programme
Date	**03/07/2020**	**05/06/2020**
Time	**09:00 – 14:15 & 15.00 to 19.30**	**09:00 – 13:00**
Venue	**IT Cell conference hall, SAUs**	

Chairman	Dr. R. N. Singh, Director of Research, SDAU, SK Nagar
Co-Chairman	Dr. N. K. Gontia, Principal and Dean, Agril. Engg. Faculty, JAU, Junagadh
	Dr. R. Subbaiah, Principal and Dean, Agril. Engg. Faculty, AAU, Anand
Rapporteur	Dr. H. D. Rank, Research Scientist, RTTC, JAU, Junagadh
	Dr. V. M. Modi, Associate Professor, CoREEE, SDAU, SK Nagar
	Dr. Pankaj Gupta, Professor, FMP, AAU, Godhra
	Dr. S. H. Sengar, Associate Professor, REE, CAET, NAU, Dediapada
Statistician	Dr. S. M. Upadhyay, Professor, JAU, Junagadh

Presentations of Recommendations and New Technical Programmes by Convenors

S.No.	Convenor	State Agricultural University
1	Dr P M Chauhan	Junagadh Agricultural University, Junagadh
2	Dr. B S Deora	Sardarkrushinagar Dantiwada Agricultural University, S K Nagar
3	Dr. R Swarnkar	Anand Agricultural University, Anand
4	Dr. P K Shrivastava	Navsari Agricultural University, Navsari

Summary of Recommendations

	Recommendations		Farming community			Scientific community		
University	**Proposed**	**Accepted**	**Approved**	**Deferred**	**Total**	**Approved**	**Deferred**	**Total**
JAU	10	10	8	0	8	2	0	2
SDAU	5	4	4	1	5	0	0	0
AAU	9	8	3	0	3	5	1	6
NAU	5	5	3	0	3	2	0	2
Total	**29**	**27**	**18**	**1**	**19**	**9**	**1**	**10**

Summary of New Technical Programmes

	Presented	Approved	Debarred	Deferred	Filler
JAU	**7**	**7**	**-**	**-**	**-**
SDAU	**4**	**3**	**-**	**1**	**-**
AAU	**10**	**6**	**-**	**4**	**-**
NAU	**10**	**7**	**2**	**-**	**1**
Total	**31**	**23**	**2**	**5**	**1**

16.9.1 Recommendations for Farmers

Junagadh Agricultural University

16.9.1.1 Design and development of a manually operated seed drill for small seeds

Recommendation

Farmers and manufacturers are recommended to adopt JAU developed manually operated drum seeder for sowing of small seeds (like sesame, pearl millet etc). The drum seeder sows 45 cm spaced two rows at a time with the effective field capacity of 0.18 ha/h. The drum seeder is found useful for precision sowing of small seeds.

ભલામણ

ખેડૂતો અને ઉત્પાદકોને નાના બીજ)જેવા કે તલ ,બાજરી વગેરે ની વાવણી કરવા માટે હાથથી ચાલતું ડ્રમટાઈપ જે.એ.યુ. સીડર વાપરવાની ભાલામણ કરવામાં આવે છે .આ ડ્રમસીડરથી ૪૫ સેમીના અંતરે બે હારમાં એક સાથે, પ્રતિ કલાકે ૦.૧૮ હેક્ટર જેટલી કાર્યક્ષમતા સાથે વાવણી કરી શકાય છે.આ ડ્રમસીડરથી નાના બીજનું વધુ ચોકસાઈથી વાવેતર કરી શકાય છે.

Approved

(**Action :** Professor & Head, FMP, CAET, JAU)

16.9.1.2 Development of device for dung collection from cattle shed

Recommendation

Animal rearer's and Gaushala owners are recommended to use ***'Mini Tractor Operated Cattle Dung Collecting Device'*** developed by Junagadh Agricultural University. It reduces the labour requirement by 87% with collection efficiency of about 91% and it is also beneficial from hygiene point of view for labourers and animals.

ભલામણ:

પશુપાલકો અને ગૌશાળા માટે જુ.કૃ.યુ. દ્વારા વિકસાવવામાં આવેલ 'મીની ટ્રેક્ટર સંચાલિત કેટલ ડંગ કલેકટિંગ ડિવાઈસ (છાણ એકત્રિત કરવાનું યંત્ર)' વાપરવાની ભલામણ કરવામાં આવે છે. જેનો વપરાશ કરવાથી ૮૭% જેટલી મજૂરોની જરૂરિયાત ઘટે છે અને છાણ એકત્રિત કરવાની ક્ષમતા ૯૧% જેટલી ધરાવે છે, જે મજૂરો તેમજ પશુઓના સ્વચ્છતા ની દ્રષ્ટિએ પણ હિતાવહ છે.

Approved

(**Action :** Professor & Head, FMP, CAET, JAU)

16.9.1.3 Lemon grading simulation based on image processing technique

Recommendation

Fruit grading machine manufacturers are recommended to adopt the image processing technique-based simulation developed by Junagadh Agricultural University, Junagadh for grading of lime (kagji) based on their size and colour. The limes can be graded in 3 x 3 different categories according to their size (small, medium and big) x maturity (immature, intermediate and mature) by applying the size and colour features of lime obtained through this simulation.

ભલામણ

ફળોનું ગ્રેડીંગ કરવાના મશીન ઉત્પાદકોને લીંબુનું કદ અને રંગના આધારે ગ્રેડીંગ કરવા માટે જૂનાગઢ કૃષિ યુનિવર્સિટી, જૂનાગઢ દ્વારા વિકસાવવામાં આવેલ ઇમેજ પ્રોસેસીંગ ટેક્નીક આધારીત સીમ્યુલેશનના અંતર્ગત મેળવવામાં આવેલ લીંબુના કદ અને રંગના વિશિષ્ટ લક્ષણોના આધારે લીંબુનું જુદી-જુદી ૩ ×૩ કેટેગરી કદ (નાના, મધ્યમ અને મોટા) × પરિપક્વતા (અપરિપક્વ, અર્ધપરિપક્વ અને પરિપક્વ)માં ગ્રેડીંગ કરી શકાય છે.

Approved

(**Action :** Professor & Head, PFE, CAET, JAU)

16.9.1.4 **Design and development of on farm solar assisted dryer for drying of groundnut pods for longer storage**

Recommendation

The farmers growing groundnuts and processors drying groundnut pods are recommended to use the solar assisted dryer developed by Junagadh Agricultural University. Use of solar assisted dryer for drying of threshed groundnut pods to reduce moisture content from 11 to 13.9 % (wb) to safer storage moisture content of 6 to 7 % (wb) using dryer condition of about50 $^{\circ}$C air temperature andabout 0.099 m^3/s air flow in 7 to 8 hours (i.e. 1 day). Use of solar assisted dryer can reduce drying time (7 h) to seven times less than sun drying (50 h) and reduces the post harvest losses of groundnut pods in drying, handling, storage as compared to sun drying**.**

Details of solar assisted dryer

- Capacity of dryer : 125 kg per batch (Groundnut pods)
- Drying trays : 12 trays arranged in 6 tiers (10±0.50 kg per tray)
- Solar collectors: 8 Nos. (1 m x 2 m)
- Drying air temperature : about 50 $^{\circ}$C
- Air flow rate : 1.0 m/s
- Blower capacity : 1.5 hp, 28 m^3/min
- Maximum increment in drying temperature : 26.9 ^{0}C to 39.8 ^{0}C
- Drying time : 7 to 8 hours

ભલામણ

આથી મગફળીનો પાક લેતા ખેડુતો અને મગફળી સુકવતા પ્રોસેસરો માટે ભલામણ કરવામાં આવે છે કે જુનાગઢ કૃષિયુનિવર્સીટી દ્વારા વિકસાવાયેલ સોલાર આધારીત સુકવણી યંત્રના ઉપયોગથી મગફળીના ડોડવાની સફળતાપૂર્વક સુકવણી કરી શકાય છે. સોલાર આધારીત સુકવણી યંત્રના ઉપયોગથી થ્રેશીંગ કરેલા મગફળીના ડોડવાના ભેજને ૧૧ થી ૧૩.૯ ટકા થી સંગ્રહ માટેના સુરક્ષિત ભેજ ૬ થી ૭ ટકા સુધી ઘટાડવા માટે સુકવણી યંત્રની સ્થિતિ ૫૦ સેન્ટીગ્રેડ આસપાસના ઉષ્ણતામાનવાળી અને આશરે ૦.૦૯૯ મી^{3}/સેકન્ડ વેગવાળી હવાથી ૭ થી ૮ કલાકમાં (૧ દિવસ) સુકવી શકાય છે. આ સુકવણી યંત્રના ઉપયોગથી મગફળીના ડોડવાના સુકવણી સમયમાં (૭ કલાક)સુર્ય પ્રકાશની સુકવણી (૫૦ કલાક) કરતા સાતગણો સમય બચાવી શકાય તેમજ કાપણી બાદ સુકવણી4 હેરફેર અને સંગ્રહ દરમ્યાન થતા બગાડનું પ્રમાણ ઘટાડી શકાય છે.

સોલાર આધારીત સુકવણી યંત્રની વિગત :

- સુકવણીની ક્ષમતા :: ૧૨૫ કિલો પ્રતિ બેચ (મગફળીના ડોડવા માટે)
- સુકવણીની ટ્રે : ૬ સ્તર માં ગોઠવેલ કુલ - ૧૨ નંગ (ક્ષમતા : ૧૦ ± ૦.૫ કિલો પ્રતિ ટ્રે)
- સોલાર કલેક્ટર : ૮ નંગ (૨ મીટર X ૧ મીટર)
- સુકવણીની હવાનું તાપમાન : ૫૦ ડિગ્રી સે. આસપાસ
- સુકવણીની હવાનો પ્રવાહ : ૦.૦૯૯ મી^{3}/સેકન્ડ
- બલોઅરની ક્ષમતા : ૧.૫ હોર્સ પાવર૨૮ મી^{3}/મીનીટ
- સુકવણીની હવાના તાપમાનમા મેળવી શકાતો વધારો : ૨૬.૭ થી ૩૯.૮ ડિગ્રી સે.

સુકવણીના કલાકો : ૭ થી ૮ કલાક

Approved

(**Action :** Professor & Head, PFE, CAET, JAU)

16.9.1.5 **Forced air curing of onion**

Recommendation

	The farmers curing traditionally and storing red onion are recommended to use forced air curing at about 40 ºC temperature with air flow rate about 0.24 m^3/s and without foliage onion bulb for obtaining higher quantity of marketable onion after six months of storage.
	ભલામણ આથી લાલ ડુંગળીને પરંપરાગત ક્યોરીંગ કરીને સંગ્રહ કરતાં ખેડૂતોને છ મહિના સંગ્રહ બાદ વેંચવા લાયક વધુ ડુંગળી મેળવવા માટે પાંદડા વગરની ડુંગળીને આશરે૪૦ °સે તાપમાન સાથે આશરે ૦.૨૪મી^{3}/સે. દરથીહવાનાપ્રવાહવડેદબાણ સાથે હવા દ્વારા ક્યોરિંગ કરીને સંગ્રહ કરવાની ભલામણ કરવામાં આવે છે.
	Approved
	(Action : Professor & Head, PFE, CAET, JAU)
16.9.1.6	**Development of high protein extruded product using defatted peanut flour**
	Recommendation Snack manufacturing units are recommended to adopt a process technology developed by Junagadh Agricultural University for the preparation of extruded product by using a proportion of defatted peanut flour and corn flour as 26:74 (w/w) with the help of twin screw extruder machine to increase the protein content in Ready-to-Eat extruded products. The suggested optimum conditions to prepare extruded product using defatted peanut flour are feed moisture content: 13% (wb), die head temperature: 135°C, feed temperature: 60°C, barrel temperature: 100°C and screw speed: 250 rpm. This process can prepare the extruded product of increased protein content with desired product characteristics.
	ભલામણ આથી નાસ્તા ઉત્પાદન કરતા ઉધોગકારોને (સ્નેક્સ), સીધી જ ખાય શકાય તેવી એક્સટ્રુડેડ પ્રોડક્ટસમાં પ્રોટીનની માત્રામાં વધારો કરવા જૂનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવવામાં આવેલ પધ્ધતિ મુજબ તેલ કાઢી લીધેલ મગફળીનો લોટ (ડીફેટેડ પીનટ ફ્લોર) તથા મકાઇનો લોટને ૨૬:૭૪ ના પ્રમાણ (વજન/વજન)માં લઇ ટ્વીન સ્ક્રુ એક્સટ્રુડરની મદદથી એક્સટ્રુડેડ પ્રોડક્ટસ તૈયાર કરવા માટેની ભલામણ કરવામાં આવે છે. આ પધ્ધતિ મુજબ ડીફેટેડ પીનટ ફ્લોરનો ઉપયોગ કરીને એક્સટ્રુડેડ પ્રોડક્ટસ તૈયાર કરવા માટે અનુકૂળ પરિસ્થિતિ મેળવવા મિશ્રિત લોટમાં ભેજનું પ્રમાણ ૧૩% (ભીનાશ આધારીત), ડાઇના મથાળાના ભાગે ૧૩૫ °સે, ફીડરના ભાગે તાપમાન : ૬૦ °સે, બેરલના ભાગે તાપમાન : ૧૦૦ °સે અને સ્ક્રુ ઝડપ : ૨૫૦ આર.પી.એમ. રાખવાનું સૂચન કરવામાં આવે છે. આ પ્રક્રિયા વડે વધુ માત્રમાં પ્રોટીન અને ઈચ્છિત લાક્ષણિકતાઓ ધરાવતી એક્સટ્રુડેડ પ્રોડક્ટસ તૈયાર કરી શકાય છે.
	Approved
	(Action : Professor & Head, PFE, CAET, JAU)
16.9.1.7	**Value addition in sesame: Standardization of technology for preparation of Sani - Jaggery based crushed sesame**
	Recommendation Sesame producers and processers are recommended to adopt the process technology developed by Junagadh Agricultural University to prepare *sani*.The *Sani* should be prepared from black raw sesame, added with 60% jaggery as well as 10 % shredded cashew nut and almond (1:1). Sani prepared through this method and packed in PET (Polyethylene Terephthalate) container remains safe up to 25 days of storage. This method can prepare the good quality *sani* with benefit cost ratio (BCR) of 1.51.
	ભલામણ

	આથી તલના ઉત્પાદકો અને પ્રોસેસર્સને સાની બનાવવા માટે જૂનાગઢ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવવામાં આવેલ પ્રક્રિયા તકનીકી અપનાવવા માટે ભલામણ કરવામાં આવે છે. કાળા તલમાંથી ૬૦% ગોળ તેમજ ૧૦% છીણેલ કાજુ અને બદામ(૧:૧) પ્રમાણર્થી ઉમેરી સાની બનાવવી જોઈએ. આપદ્ધતિથી બનાવેલ સાનીને પીઈટી (પોલીઈર્થીલીન ટેરેપ્થેલેટ) કન્ટેનરમાં ૨૫ દિવસ સુધી સલામત રીતે સંગ્રહી/સાચવી શકાય છે. આ પધ્ધવતર્થી લાભ અને ખર્ચનો ગુણોતર ૧.૫૧ સાથે સારી ગુણવત્તા ધરાવતી સાની તૈયાર કરી શકાય છે.
	Approved
	(Action : Associate Research Scientist, ARS, JAU, Amreli)
16.9.1.8	**Preparation and storage studies of Jamun Juice**
	Recommendation Farmers/ Food processors are advised to heat the Jamun juice at 67^{0}C temperature for 13 minutes and add 0.03% (w/w) sodium benzoate at little warm state to preserve its nutrients. The Jamun juice, thus, prepared packed in 1 litre PET bottle, can safely be stored up to 30 days in the refrigerator (7 $\pm$ 2^{0}C).
	ભલામણ આથી ખેડૂતો/ફૂડ ઉત્પાદકોને સલાહ આપવામાં આવે છે કે ,જાંબુના જ્યુસમાં પોષક તત્વોની જાળવણી માટે તેને ૬૭ °સે તાપમાને ૧૩ મિનીટ સુધી ગરમ કર્યા પછી તે થોડું હુંફાળું રહે ત્યારે તેમાં ૦.૩) % વજન પ્રમાણે (સોડીયમ બેન્ઝોએટ ઉમેરવું .આરીતે તૈયાર થયેલ જાંબુના જ્યુસને ૩૦ દિવસ સુધી રેફ્રીજરેટરમાં ૭$\pm$૨° સે તાપમાને (સલામત રાખી શકાશે.
	Approved
	(Action : Professor & Head, PFE, CAET, JAU)

16.9.2 Scientific Recommendation	
16.9.2.1	**Evaluation of hydraulic performance of oozing pipe irrigation**
	Recommendation The irrigation applications through porous pipe system gives very poor uniformity coefficient of 6.65% in case of 60m lateral length at 100cm input head to 47% in case of 30m lateral length at 200cm input head, which should be more than 90%. The uniformity in the wetting bulb size along the length of lateral also varies greatly.
	Approved
	(Action : Professor & Head, SWE, CAET, JAU)
16.9.2.2	**Effect of ozonization against the microorganisms of fruits and vegetable**
	Recommendation Scientific communities are advised to store mangoes & limes after applying a treatment of ozone 3 minutes (flow rate : 400 mg / hour) packed in 25 μ plastic bag (1 pinpoint hole per 2 x 2 square inch area of plastic bag) and kept at 10°C temperature remain safe against the microbial load up to 50 days & 120 days respectively. Whereas exporters are recommended to store tomatoes up to 21 days by applying a treatment of ozone 3 minutes (flow rate: 400 mg / hour) packed in 50 μ plastic bag (1 pinpoint hole per 2 x 2 square inch area of plastic bag) and kept at 10°C temperature remain safe against the microbial load.
	Approved
	(**Action :** Professor & Head, PFE, CAET, JAU)

Sardarkrushinagar Dantiwada Agricultural University

16.9.1 Recommendations for Farmers	
16.9.1.9	**Fertigation in fennel (Gujarat Fennel 12) through sub surface drip systems**
	Recommendation The farmers of North Gujarat Agro Climatic Zone- IV (AES-I) are recommended to irrigate fennel (Gujarat Fennel 12) using surface drip system laid in pair row (120 cm × 60 cm × 60 cm), operate as per given schedule and apply fertilizer dosage of 60-60-00 kg/ha NPK (30-60-00 kg/ha NPK as basal and remaining N through drip in four equal split at 30, 60, 70 and 90 DAS) to attain higher yield.

System Details		Operating irrigation time (hr) during base period	
Lateral spacing	180 cm	Month	Time (hr)
Emitter Spacing	40 cm	September - October	2.73
Emitter discharge	2 lph	November	1.70
Irrigation fraction	0.8 PEF	December-January	1.41
Frequency	Alternate day	February	1.70
Operating pressure	1.2 kg/cm^2	March (If needed)	2.48

ભલામણ

ઉત્તર ગુજરાત ખેત હવામાન વિભાગ –૪ (એઈએસ ૧) માં વરીયાળી (ગુજરાત વરીયાળી ૧૨) નું વાવેતર કરતાંખેડુતોને વધારે ઉત્પાદન માટેજોડીયા હાર : ૧૨૦ સેમી ×૬૦ સેમી ×૬૦ સેમી માં વાવેતર કરી જમીન પર ટપક પધ્ધતિથી નીચે મુજબ પિયત તથા ૬૦–૬૦–૦૦ કિ.ગ્રા/હે. એન.પી.કે. ના દર થી ખાતર (૩૦–૬૦–૦૦ કિ.ગ્રા./હે. ખાતર પાયામાં તથા બાકીનો ૩૦ કિ.ગ્રા./હે. નાઈટ્રોજન ચાર સરખા હપ્તામાં યુરીયા ખાતર રૂપે વાવણી પછી ૩૦, ૬૦, ૭૦ અને ૯૦ દીવસે) ટપક પધ્ધતિ મારફત આપવા ભલામણ કરવામાં આવે છે.

ટપક પધ્ધતિની વિગત		પિયત સમય પત્રક	
પ્રશાખાનું અંતર	૧૮૦ સેમી	માસ	સમય (કલાક)
ડ્રીપર અંતર	૪૦ સે.મી.	સપ્ટેમ્બર– ઓકટોબર	૨.૭૩
ડ્રીપર પ્રવાહદર	૨ લી./કલાક	નવેમ્બર	૧.૭૦
બાસ્પીભવન ગુણાંક	૦.૮	ડીસેમ્બર–જાન્યુઆરી	૧.૪૧
પિયત અંતરાલ	એકાન્તરે દિવસ	ફેબ્રુઆરી	૧.૭૦
ટપક સિસ્ટમનુ દબાણ	૧.૨ કિગ્રા/સેમી^{૨}	માર્ચ (જરૂરીયાત જણાય તો)	૨.૪૮

Approved

(Action : The Research Scientist, CNRM, SDAU)

16.9.1.10 Effect of land configuration and mulching on productivity and resource use efficiency of castor

Recommendation

The farmers of North Gujarat growing castor GCH-7 under rainfed conditions are recommended to apply castor shell mulch @ 5t/ha nearly 10 days after last effective rainfall of the season to get higher yield and economic return.

ભલામણ

ઉત્તર ગુજરાતમાં બિન પિયત દિવેલા ગુ. દિ. હા–૭ ની ખેતીકરતાં ખેડૂતોનેવધારે ઉત્પાદન અને આર્થિક વળતર માટેં ચોમાસાના છેલ્લા અસરકારક વરસાદ પછી અંદાજે ૧૦ દિવસમાં દિવેલાની ફોતરીનુ હેકટર દિઠ ૫ ટન પ્રમાણે આવરણ કરવા ભલામણ કરવામાં આવે છે.

Approved

(Action : The Research Scientist, CNRM, SDAU)

16.9.1.11 Design, Development and evaluation of lime(lemon) harvesting device

Recommendation

The lime growers are recommended to use the Manual Lime Harvesting Device developed by the Sardarkrushiangar Dantiwada Agricultural University to achieve harvesting capacity of approximately 12 to 13 kg/hr with reduced damage due to bruising and impact (approx. 2.0 %), and least possibility of thorn injury to the operator.

ભલામણ

લીંબુની ખેતી કરનારાઓનેઅંદાજીત ૧૨ થી ૧૩ કિ. ગ્રા./કલાક ની લણણીની ક્ષમતા પ્રાપ્ત કરવા સાથે લીંબુને પછડાટ અને છોલાવાથી થતી નુકશાની ઘટાડવા (અંદાજીત ૨ ટકાની) અને વાપરનારને કાંટા વાગવાની નહીવતસંભાવના ધરાવતા એસ.ડી.એ.યુ.ધ્વારા વિકસાવેલ મેન્યુઅલ લીંબુ હાર્વેસ્ટીંગ ડીવાઈસનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.

Approved

(Action : Principal & Dean, CoH, SDAU, Jagudan)

16.9.1.12 Dehydration of date palm halves using different drying methods

Deferred, advised to present next year with incorporation of all the suggestions.

(Action : The Principal & Dean, CREEE, SDAU)

16.9.1.13 Studies on drying of rose petals using renewable sources of energy

Recommendation

The farmers, processors and entrepreneurs are recommended to use the Indirect type natural convection solar drier or Green house drier for drying of native rose petals

	during February to March for 4 to 5 hours in daytime to get good quality dried petals, up to 6 % moisture content.
	ભલામણ **આથી ખેડૂતો, પ્રસંસ્કર્તા અને ઉધોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે, દેશી ગુલાબની પાંખડીઓ સુકવણી માટે ઈનડાઈરેકટ ટાઈપ નેચરલ કનવેકશન સોલાર ડ્રાયર અથવા ગ્રીન હાઉસ ડ્રાયરના ના ફેબ્રુઆરી થી માર્ચ મહિના માં દિવસ દરમ્યાન ૪ થી ૫ કલાક ઉપયોગથી ૬ % સુધી ભેજ ધરાવતી સારી ગુણવતાની સુકી પાખડીઓ મેળવી શકાય છે.**
	Approved
	(Action :The Prof. & Head (Hort.), CPCA and Principal & Dean, CREEE, SDAU**)**

Anand Agricultural University

Recommendations for Farmers	
16.9.1.14	**Development of tractor drawn simple and low cost combined tillage tool**
	Recommendation A tractor drawn combined tillage tool has been developed by Anand Agricultural Univeristy, which is useful for seedbed preparation in a single run in vaspa condition of sandy loam soil with required tilth which not only saves time but also manipulate more soil volume as compared to cultivatortherefore it is recommended for the use of farmers for seedbed preparation.
	ભલામણ આણંદ કૃષિયુનિવર્સિટીએ ટ્રેક્ટરથી ખેડ કરવા માટેનુ નવુ સાધન વિકસાવામા આવેલ આ ઔજાર ગોરાડુ જમીન મા વરાપે ખેડ કરવા થી એકજ ફેરામા વાવેતર લાયક જમીન તૈયાર થઈ જાય છે અને કલ્ટીવેટર કરતા વધારે માટી ખેડાય છે અને સમયની પણ બચત થાય છે જેથી ખેડુતોને પાકનાવાવેતર કરવામાટે જમીન તૈયાર કરવા માટેઔજાર વાપરવા ની ભલામણ કરવામા આવે છે .
	Approved
	(Action : Professor & Head, FMP, CAET, AAU, Godhra)
16.9.1.15	**Modification of bullock drawn indigenous wooden plough for tribal region of middle Gujarat**
	Recommendation The farmers are using bullock drawn indigenous plough are recommended to attach triangular shear blade developed by Anand Agricultural University at bottom of the plough boot to reduce time of ploughing (50%) and increase soil volume manipulation (100 %) as compared to traditional indigenous wooden plough. The modified plough opens bigger width furrow than the traditional plough and hence it requires less time and less walk behind the plough to cover unit area for ploughing operation.
	ભલામણ લાકડાના હળથી ખેડ કરતા ખેડુતોને તેમના હળના ચવડા (બુટ)ના તળિયામા આ. કૃ. યુ. દ્વારા વિક્સાવેલ ત્રિકોણાત્મક આકારવાળુ ફાળવો લગાડીને ખેડકરવાની ભલામણ કરવામા આવે છે જેથી દેશી હળ કરતા બમણી માટી ખેડાય છે અને સમય પણ દેશી હળ કરતા અડધુ લાગે છે. સુધારેલ હળ વધારે પહોળી ખેડ કરે છે જેથી ખેડ કરવા પાછળ પ્રતિ વિસ્તાર સમય પણ ઓછુ(અડધુ) લાગે છે અને તેથી ખેડુતને હળ પાછલ ચાલવાનુ પણ ઓછુ થાય છે. આમ સુધારેલ હળ વાપરવાથી નાના ખેડુતો જડપથી અને ગુણવતા-સભર ખેડની કામગીરી કરી શકસે.
	Approved
	(Action : Professor & Head, FMP, CAET, AAU, Godhra)
16.9.1.16	**Conjugate assessment of drip lateral spacing and irrigation regimes on**

productivity of rabi maize

Recommendation

Farmers of Middle Gujarat Agro-Climatic Zone-3 are recommended to install drip irrigation system in Rabi Maize (GAYMH1) at 60 cm row to row spacing having 40 cm emitter spacing with 4 lph emitter discharge and to operate drip system at 3 day interval as per following table results 56.85 % higher grain yield and 68.35 % fodder yield with 27.83 % water saving than flood irrigated maize.

Month	No. of irrigation	Irrigation time (minutes)
November	6	40
December	10	45
January	10	45
February	6	50

ભલામણ

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-3ના ગોરાડું જમીનમાં શિયાળુ ગુજરાત આણંદ પીળી સંકર મકાઈ-૧ વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૪૦ સેન્ટિમીટરના અંતરે ૪ લિટર પ્રતી કલાક પ્રવાહના દરના ડ્રીપર ધરાવતી લેટરલ વચ્ચે ૬૦ સેન્ટિમીટર અંતરે રાખી ટપક પિયત પદ્ધતિ દ્વારા ત્રણ દિવસના અંતરે નીચે કોષ્ટકમાં દર્શાવેલ સમય મુજબ પિયત આપવાથી ૫૬.૮૫ % અનાજ અને ૬૮.૩૫ % સુકેલ રાડનું છૂટા પાણીથી પિયત આપવાની સરખામણીમાં વધુ ઉત્પાદન લઈ ૨૭.૮૩ % પાણીની બચત થાય છે.

માસ	પિયતની સંખ્યા	પિયત આપવાનો સમય (મિનીટ)
નવેમ્બર	૬	૪૦
ડિસેમ્બર	૧૦	૪૫
જાન્યુઆરી	૧૦	૪૫
ફેબ્રુઆરી	૬	૫૦

Approved

(**Action :** Professor & Head, SWCE, CAET, AAU, Godhra)

Scientific Recommendations	
16.9.2.3	**Online leave management system**
	<u>Deferred/Debarred</u>due to the following reasons: 1) It is only for the information of house and not for public domain. 2) It is a Service-oriented activity, so there is no need to propose in CJA.
	(**Action :**PI/ Head, BEAS, CAET, AAU, Godhra)
16.9.2.4	**Estimation of evapotranspiration using MODIS and Landsat-8 dataset in selected semiarid region of middle Gujarat**
	Recommendation Field engineers, scientists, and policy makers of Panam canal command are advised to use Landsat 8 (spatial resolution: 30 m × 30 m) derived LST and crop coefficient (Kc) based algorithm than Mod16 (spatial resolution: 1 km × 1 km) algorithm to estimate actual evapotranspiration (ETc) in Rabi season up to 0.5 acre area. Further, the non-linearity between Mod16/Landsat 8 derived ETc with field-based FAO-56 can be reduced using ANN.
	Approved
	(Action: PI/ Head, IDE, CAET, AAU, Godhra)
16.9.2.5	**Evaluation of different types of ground wheel for sowing and planting machine**
	Recommendation Anand Agricultural University has optimized dimensions of ground wheel of tractor drawn sowing machines. The optimized ground wheel was 30 % lighter than the original ground wheel. It is recommended to the scientific community to use this type of design for ground wheels with 12 cm peg length for different sowing machines to reduce the weight without affecting the functionality of ground wheel.
	Approved
	(**Action :**PI/ Head, BEAS, CAET, AAU, Godhra)
16.9.2.6	**Effect of magnetic field of germination and seedling growth of onion**
	Recommendation It is recommended that exposure of 20 mT magnetic field for 60 minutes to onion seeds improve the germination and seedling growth of onion.
	Approved
	(**Action :**Professor & Head, Agricultural Science, CAIT, AAU, Anand)
16.9.2.7	**Breeder seed management system for Government of Gujarat**
	Recommendation Web-based online Breeder Seed Management System developed as per the need of the Department of Agriculture, Farmers Welfare and Co-operation, Government of Gujarat by Anand Agricultural University, which provides the platform for online purchasing of seed for indenters and dealers. It is recommended to be used by the indenters and dealers of Gujarat state.
	Approved
	(**Action ::** PI/DIT, AAU, Anand)
16.9.2.8	**Online repository and analysis of Fall Army Worm (FAW) for Government of Gujarat**
	Recommendation Online Repository and Analysis of Fall Armyworm (FAW) developedas per the need of the Department of Agriculture, Farmers Welfare and Co-operation, Government of Gujarat by Anand Agricultural University, which provides platform for submitting fall armyworm details using the mobile-based applicationby registered/authorized

	farmers. It is recommended to be used by the farmers of Gujarat state.
	Approved
	(**Action :**PI,/DIT, AAU, Anand)

Navsari Agricultural University

Recommendations for Farmers	
16.9.1.17	**Evaluation of solar tunnel dryer for feasibility of green leaves drying for herbal production in Dediapada**
	Recommendation Semi circular solar tunnel dryer (covered with UV stabilized 200 micron polythene sheet) having 30 m^2 area (10m x 3m x 2m size) is recommended to farmer community in South Gujarat for low temperature drying of *Sargava* and *Mahendi* leaves as well as *Keshuda* flowers for herbal products with 33 % less drying time compare to sun drying with higher net present worth.
	ભલામણ અર્ધવર્તૂલાકાર સૌર ટનલ ડ્રાય (૨૦૦માઈક્રોન યુ.વી .અવરોધક પોલીથીન આચ્છાદિત) જેના ક્ષેત્રફળ૩૦ ચોરસમીટર છે (૧૦મી.X ૩મી. X ૨ મી.) જેની દક્ષીણ ગુજરાતના ખેડૂતોને ઓછા તાપમાને સરગવા અને મહેંદીના પાન તથા કેસુડાના ફૂલની સુકવવા માટે અને તેનું હર્બલ ઉત્પાદન કરીતા ખુલ્લામાં સુકવણીની તુલનામાં ૩૩%સમયની બચત અને ચોખ્ખી વધુ આવકસાથે ખેડૂતોને ભલામણ કર વામાં આવે છે.
	Approved
	(**Action :** Associate Professor& Head, REE, CAET, NAU, Dediapada)
16.9.1.18	**Influence of land configuration on productivity of Sorghum (Sorghum bicolor L.) crop in Vertisol of South Gujarat**
	Recommendation The farmers of South Gujarat heavy rainfall zone growing rabi sorghum are recommended to adopt improved land configuration system i.e. double row planting system withlaserlevelled field, with leveling index as 0.72, to improve the crop yield, irrigation water saving and higher net return.
	ભલામણ દક્ષિણ ગુજરાત વધુ વરસાદ વાળા વિસ્તારના શિયાળુ જુવાર ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન, પાણીની બચત અને આવક મેળવવા, જમીનની સુધારેલ રૂપરેખા જેમ કે લેસર લેવલિંગ સુચક આંક ૦.૭૨ પ્રમાણે સમતલ કરેલ જમીનમાં બેવડી હાર પદ્ધતિમાં જુવારની રોપણી કરવાની ભલામણ કરવામાં આવે છે.
	Approved
	(**Action :** Professor & Head, Agricultural Engineering, NMCA, NAU
16.9.1.19	**Development of technology for ready to use freeze dried tomato (*Solanum lycopersicum*L.) slice**
	Recommendation The processors are recommended that to prepare freeze dried tomato chips, slice the tomato at 10 mm thickness then, blanch at 80°C for 2min and freeze at (–20°C) for 6h followed by freeze drying under -760 mm of Hg (vacuum) at 50°C drying temperature for 17.45 h and packing in 75micron HDPE bags to store up to 3 months without altering quality.
	ભલામણ પ્રસંસ્કરણકારોને ભલામણ કરવામાં આવે છે કે ટમેટાની ફ્રીઝડ્રાઈડ કાતરી બનાવવા, ટામેટા ને ૧૦

<table>
<tr><td rowspan="3"></td><td>મી.મી. જાડાઈમાં કાપ્યા બાદ ૨ મીનીટ માટે ૮૦° સે. એ બ્લાન્ચીંગ કરી અને (-૨૦° સે.)એ ૬ કલાક માટે થીજવી દીધા બાદ - ૭૬૦ મી. મી. પારા (શૂન્યઅવકાશ) ૫૦° સે. સુકવણી તાપમાને ૧૭.૪૫ કલાક ફ્રીઝડ્રાઈંગ કરી ૭૫ માઈક્રોન ની એચ.ડી.પી.ઇ. થેલી માં પેક કરવાથી કોઈપણ જાતની ગુણવત્તા માં બદલાવ થયા વગર ૩ માસ સુધી સાચવી શકાય છે.</td></tr>
<tr><td>Approved</td></tr>
<tr><td>(Action: Professor & Head, CEPHT& PE, ACHF, NAU)</td></tr>
<tr><td colspan="2">Scientific Recommendation</td></tr>
<tr><td rowspan="4">16.9.2.9</td><td>Assessment of water resources of Navsari and Dang district using water quality index and GIS</td></tr>
<tr><td>Recommendation
Analysis of surface water quality using Water Quality Index (WQI) and GIS indicated that WQI for Navsari district varies from 41.31 to 189.09 in Pre-monsoon and from 48.49 to 196.0 in Post-monsoon; whereas for Dang district, WQI varies from 37.83 to 121.68 in Pre-monsoon and from 40.09 to 152.83 in Post-monsoon season. Water samples plotted on US Salinity diagram indicated that, samples of Navsari district under C3S4 and C4S4 category are ‘poor zone of water quality’ and this water cannot be used for irrigation on soils with restricted drainage and requires special management for salinity control. Surface water in other locations of Navsari and all locations of Dang district belongs to ‘acceptable to suitable’ class of water for irrigation.</td></tr>
<tr><td>Approved</td></tr>
<tr><td>(Action:Principal, CoA,NAU, Waghai)</td></tr>
<tr><td rowspan="4">16.9.2.10</td><td>Effect of different colour shade nets on biomass and quality of leafy vegetables (Fenugreek, coriander and garlic)</td></tr>
<tr><td>Recommendation
The scientific community is informed thatfenugreek / coriander / garlic crops grown for green leafy vegetable purpose, during winter season (last week of November to first week of January) in the South Gujarat heavy rainfall agroclimatic zone, intheir established net houses having colour shade net, are advised to prefer crop under suitable colour shade netwith50 % shading for getting higher production and good quality green biomass.
<table>
<tr><th>Crop</th><th>Shade net colour</th></tr>
<tr><td>Fenugreek</td><td>Yellow / white / blue/ green</td></tr>
<tr><td>Coriander</td><td>Yellow / red /white</td></tr>
<tr><td>Garlic</td><td>Yellow /white / red</td></tr>
</table></td></tr>
<tr><td>Approved</td></tr>
<tr><td>(Action : Research Scientist, SWMRU, NAU)</td></tr>
</table>

16.9.3 New Technical Programmes

The 16th meeting of the combined joint AGRESCO of Agricultural Engineering Sub Committee for SAUs of Gujarat was held online through Zoom Plateformon 5th June, 2020. Amid COVID-19envirnment. IT cell of Navasari Agricultural University coordinated the meeting throughonline conference portal. At the outset, Dr. P. K. Shrivastava, Convener of the sub-committee, NAU extend warm welcome to all the members of subcommittee. Honourable Chairman Dr. R. N. Singh, Director of Research, SDAU, SK Nagar and distinguished Co-Chairman gave the opening remarks with emphasis on mechanization, nonconventional sources of energy, value addition, reduction on post harvest losses and to generate gender and cost specific technologies. The conveners of respective SAUs, subsequently, presented New Technical Programs.

Office-bearers and supporting persons of the technical meeting were as under.

Chairman	Dr. R. N. Singh, Director of Research, SDAU, SK Nagar
Co-Chairman	Dr. N. K. Gontia, Principal and Dean, Agril. Engg. Faculty, JAU, Junagadh
	Dr. R. Subbaiah, Principal and Dean, Agril. Engg. Faculty, AAU, Anand
Rapporteur	Dr. H. D. Rank, Research Scientist, RTTC, JAU, Junagadh
	Dr. V. M. Modi, Associate Professor, CoREEE, SDAU, SK Nagar
Statistician	Dr. S. M. Upadhyay, Professor, JAU, Junagadh

Summary

University	Proposed	Approved	Dropped
Junagadh Agricultural University	07	07	00
SardarkrushinagarDantiwada Agricultural University	04	03	01
Anand Agricultural University	10	06	04
Navsari Agricultural University	8	07	01* (* Filler trial)
Total	**29**	**23**	**05 +01* (* Filler trial)**

The house critically reviewed all the new technical programs by exchanging NTP by conveners of all four SAU's, in advance that allowed the subcommittee to deliberate in detail on the responses / justifications by the respective PI's, given against each comments/suggestions. Suggestions and decision of the NTPs of each university are summarized briefly in the following annexure I and II.

Dr. P. M. Chauhan,Convener, Junagadh Agricultural University, presented 7 (Seven) New Technical Programmes.			
NTP No	**Title**	**Suggestions**	**Remarks**
16.9.3.1	Modification of the existing onion planter for pelleted seeds.	• Materials for the planter should be specified. • Incorporate all suggestions as per final compliance report as outlined in the meeting	**Approved**
16.9.3.2	Design, development and performance evaluation of battery operated light weight interculture tool/weeder	• Compare performance with commercial power weeder of similar kinds. • Electrical, ergonomical and	**Approved**

		economical aspects may be added under evaluation study. • Observation 4 – Not operated is read as operated. • Objevives need to be corrected grameticaly. • Bettery specifications like Ah should be added.	
16.9.3.3	Design and development of a tractor operated groundnut pod (left over) collecting device	• Impact of continuous rain on harvesting status of groundnut pod may be studied. • Objevives needs to be corrected grameticaly.	**Approved**
16.9.3.4	Process standardization for extraction of Peanut Protein Isolate by Modifying Iso-electric Precipitation Method	• Incorporate all suggestions as per final compliance report as outlined in the meeting.	**Approved**
16.9.3.5	Low temperature grinding of spices	• Incorporate all suggestions as per final compliance report as outlined in the meeting.	**Approved**
16.9.3.6	Development of Protocols for Procurement, Safe Storage and Milling Outturn of Major Pulses. (Project allotted from Department of Consumer Affairs, Ministry of Consumer Affairs, Food and Public Distribution, Government of India)	• Incorporate all suggestions as per final compliance report as outlined in the meeting. • Remove the name of funding agency from the title of experiment.	**Approved**
16.9.3.7	Development of Textured Peanut Protein products: Peanut Wadi	• Incorporate all suggestions as per final compliance report as outlined in the meeting • RSM design – FCRD. • Take Repetition of atleast 7. • Consult statastian for the most appropriate design for the experiment.	**Approved**
Dr. B. S. Deora, Convener, Sardar krushinagar Dantiwada Agricultural University, presented 4 (Four) New Technical Programs.			
16.9.3.8	Optimization of sprinkler irrigation scheduling for wheat	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Review, if the prefix **(mini)** Sprinkler be possible in the title.	**Approved**
16.9.3.9	Effect of drying techniques on quality characteristics of dried tomato powder	• Similar work has already been done at NAU, Navsari. So, no need to work for the same crop. • Instead, continue the similar	**Not Approved** .

		research work for capsicum crop as feeler trial for one year.	
16.9.3.10	Standardization of the recipe for the preparation of Ready-to-serve(RTS) drinks from fennel	• First standardize the process parameters like soaking periods and ratio of fennel weight to water weight while soaking. • Most suitable product only be considered for sensory evaluation • Juice extraction parameters such as seed varieties, soaking time, water temperature, crushing methods etc. be recorded.	**Approved**
16.9.3.11	Development of Date Palm Pollen Separator	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Take 300 mesh size screen if available	**Approved**
Dr. R. Swarnkar, Convener Anand Agricultural University, presented 10 (Ten) New Technical Programmes.			
16.9.3.12	Monthly Forecasts of SPI and SPEI Drought Indicesin Middle Gujarat	• Incorporate all suggestions as per final compliance report as outlined in the meeting.	**Approved**
16.9.3.13	Taluka wise rainfall data repository of Gujarat state using text-mining approach	• Incorporate all suggestions as per final compliance report as outlined in the meeting. • Change title as Development of a web interface to analyze location specific rainfall data.	**Approved**
16.9.3.14	Technology for reduction of browning in Custard Apple Pulp	• Repetition of experiment. • Deferred due to availability of technology in referred published paper.	**Not Approved**
16.9.3.15	Studyontherelationship betweenweatherparamet ersandrice productivity for Kheda district Using Data Mining Approaches	• Incorporate all suggestions as per final compliance report as outlined in the meeting.	**Approved**
16.9.3.16	DNA Fingerprinting Information System (DFIS)	• Incorporate all suggestions as per final compliance report as outlined in the meeting. • Change title as Development of interface for DNA finger printing.	**Approved**
16.9.3.17	Transformation of Information through Multimedia Based Interactive Media for AAU Museum, ATIC center and SSK	• The experiment is not research based.	**Not Approved**

16.9.3.18	Modeling of area, production and productivity of maize crop for Anand/Kheda	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Consider 50 years data if available. • Give methodology in detail.	**Approved**
16.9.3.19	Developmentofmobilebasedapplicationfor Asset Management using RFID tagging	• The experiment is not research based.	**Not Approved**
16.9.3.20	Development of Veterinary Microbiology Diagnostic Report Management System for Veterinary College, AAU	• Incorporate all suggestions as per final compliance report as outlined in the meeting. • Change the title as Development of interface for Veterinary Microbiology Diagnostic ReportManagement System.	**Approved**
16.9.3.21	Development of Web Portal and Mobile App for World BankFunded NAHEP-CAAST Project	• The experiment is not research based.	**Not Approved**
Dr. P. K. Shrivastava, Convener Navsari Agricultural University,presented 8 (Eight) New Technical Programmes.			
16.9.3.22	*Design and development of tractor hydraulic operated cone penetrometer*	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Change the title as Development of tractor hydraulic operated cone penetrometer. • Considered for hard soil only.	**Approved**
16.9.3.23	Evaluation of mole drain on okra crop	• Feeler trial Presentation not permitted in CJA.	**Debarred**
16.9.3.24	*Feasibility test on* inclined plate type seed cum fertilizer drill on direct sowing rice (aerobic condition)	• Feeler trial Presentation not permitted in CJA.	**Debarred**
16.9.3.25	Effect of different establishment methods on rice crop (Oryza sativa L.) and evaluation of CERES rice model	• Incorporate all suggestions as per final compliance report as outlined in the meeting. • Recast the experiment by adding one more objective: 1) Engineering inputs like temperature and its effect on rice model • Replace '&'by 'and' in objective-2 • Command area planting model and physiological model should be combined then redraft the title,	**Approved**

		objectives, treatment and observations related to temperature based influence.	
16.9.3.26	Development and testing of runoff water filter with semi-auto flushing system for ground water recharge	• Take as feeler trial and propose as new experiment after modifications next year after getting it approved through the channel of research councils of SAUs.	**Take as filler trial.**
16.9.3.27	To identify maturity and harvesting indies as non-destructive index and relate with physico-chemical parameters of *Sonpari* mango.	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Modify title, it should not start with "To" start with Identification_____	**Approved**
16.9.3.28	To standardize storage parameters for *Sonpari* mango to extend shelf life.	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Improve title, it should not start with "To" start with Standardization • Design: F-CRD	**Approved**
16.9.3.29	To standardize forced ripening process using ethylene gas in ripening room for *Sonpari* mango.	• Incorporate of all suggestions as per final compliance report as outlined in the meeting • Improve title, it should not start with "To" start with Standardization ___	**Approved**
16.9.3.30	To design and develop packaging box for S*onpari* mango.	• Use "Design" instead of "To design" • Include alphonso/keshar as another variety • Compare the data with flexible package for multi crop developed by JAU, Junagadh	**Approved**
16.9.3.31	Evaluation of the drip irrigation system on crop yield, water use efficiency & growth of sorghum crop in south Gujarat condition	• Incorporate all suggestions as per final compliance report as outlined in the meeting • Water applied should be specified. • Initial, residual moisture content should be included in observation. • The empirical model for the wetting front advance may be developed.	**Approved**

Feedback by dignitaries

1) Experiment must be properly framed and duplication (plagiarism) avoided at the university level.
2) Studies on ergonomics necessary for bullock and human operated agricultural equipments needs to be taken up
3) Food Process Engineering, Food Engineering, Bio Energy and Dairy Engineering and Technology should be merged with Agricultural Engineering subcommittee, while, Food safety, Food quality and assurance and rest of the branches of Dairy Science should be kept in another group.
4) Agrometerology also needs to be clubbed with Agricultural Engineering group.
5) NTP and recommendations must be sent to the relevant departments of all SAU's for comments and improvment before final presentation in CJA
6) Service oriented applications and software should not be presented in AGRESCO.
7) Good experience of using online platform to conduct combined joint AGRESCO meeting in the time of COVID-19.
8) Since the presentations were made from all four campuses of SAU's, all Principal Investigators got the opportunity to participate and defend their NTP which is normally not possible.

In his valedictory remarks Hon Vice Chancelor Dr. S R Chaudhary congratulated all the faculties whose technical programmes have been approved during the day and encouraged the engineers to adopt online platform for better discussions among researchers of all the four SAU's. The meeting ended with the vote of thanks by Dr. P. K. Shrivastava, Convener of the host institute.

General Suggestions of the House

1. Since the presentations were made from all four campuses of SAU's, all Principal Investigators got the opportunity to participate and defend their NTP which is normally not possible.
2. Food Process Engineering, Food Engineering, Bio Energy and Dairy Engineering and Technology should be merged with Agricultural Engineering subcommittee, while, Food safety, Food quality and assurance and rest of the branches of Dairy Science should be kept in another group.
3. Agrometerology also needs to be clubbed with Agricultural Engineering group.
4. Service oriented applications and software should not be presented in AGRESCO.
5. Experiment must be properly framed and duplication (plagiarism) avoided at the university level.
6. NTP and recommendations must be sent to the relevant departments of all SAU's for comments and improvement before final presentation in CJA
7. Good experience of using online platform to conduct combined joint AGRESCO meeting in the time of COVID-19.
8. Restrict the number of investigators to maximum four including principle investigator.
9. Research project on agriculture engineering aspects must be approved from agricultural engineering sub-committee, even those that are presented and approved in respective Agresco Sub committees of SAUs.

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16.10.1 RECOMMENDATIONS FOR FARMER/INDUSTRY/ENTREPRENEUR

Date:- 02/07/2020

Chairman	Dr. J. B. Prajapati, Dean, AAU, Anand
Co-Chairman	Dr. R. F. Sutar, Professor, AAU, Anand
	Dr. B. G. Patel, SDAU, Sardarkrushinagar
Rapporteur	Dr. A. K. Sharma, AAU, Anand
	Dr. Tanmay Hajra, KU, Gandhinagar
	Dr. Dev Raj, NAU, Navsari
Statistician	Dr. V. B. Darji, AAU, Anand

Summary

Name of University	No. of Recommendations			
	Farming Community		Scientific Community	
	Proposed	Approved	Proposed	Approved
JAU, Junagadh	01	01	--	--
SDAU, SKNagar	02	02	--	--
AAU, Anand	24	24	09	09
NAU, Navsari	02	02	01	01
KU, Gandhinagar	--	--	01	01
Total	**29**	**29**	**11**	**11**

Anand Agricultural University

Title	Evaluating Mango Leather as a Natural Adjunct Flavouring for 'Mango Tid-Bits Ice Cream'
16.10.1.1	**Recommendation approved for industry** A technology for preparing 'Mango Tid-Bits' ice cream utilizing Alphonso mango pulp and mango leather as an adjunct flavouring has been developed at Anand Agricultural University, Anand. The presence of mango leather particulates in mango based ice cream enhances the acceptability of the resultant ice cream. "કેરીનો ટીડ બીટ આઈસ્ક્રીમ" બનાવવાની રીત આણંદ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવામાં આવેલી છે. જેમાં આલ્ફાન્સો (હાફૂસ) નો રસ અને આમ પાપડ નાં ટુકડા નો ઉપયોગ તેને ખુબજ નવીન સ્વાદ આપે છે. આમ પાપડ ના ટુકડા, કેરી ના આઈસ્ક્રીમ ની સ્વીકાર્યતામાં વધારો કરે છે.
	[Action: PI, Prof & Head, Dept of DT, DSC, AAU, Anand]
Title	Value addition to Mozzarella Cheese Analogue through incorporation of Whey Protein and Vitamin A

16.10.1.2	**Recommendations approved for industry and entrepreneurs** A satisfactory quality Mozzarella cheese analogue utilizing palm oil based fat, enriched with whey protein and vitamin A, having desired baking qualities as pizza topping can be prepared adopting the formulation and process developed by Anand Agricultural University, Anand. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસિત ફોર્મ્યુલેશન અને પધ્ધતિ દ્વારા પામ તેલ, વ્હે પ્રોટીન તથા વિટામિન એ નો ઉપયોગ કરીને, પીત્ઝા ટોપિંગ તરીકે ઇચ્છિત બેકિંગ ગુણો ધરાવતુ તથા સંતોષકારક ગુણવત્તાવાળુ મોઝરેલા ચીઝ એનાલોગ બનાવીશકાય છે.
	[Action: PI, Prof & Head, Dept of DT, DSC, AAU, Anand]
Title	Process Optimization for Manufacture of Ready-To-Reconstitute Kheer
16.10.1.3	**Recommendation approved for industry** A technology developed by Anand Agricultural University for manufacture of Ready-To-Reconstitute (RTR) kheer by employing vacuum tray drying for quick cooking rice and spray drying for pre-mix formulation is recommended. The developed RTR kheer has a shelf life of up to 6 months at 37±2°C when packaged in Met-PET/PE pouches. આણંદ કૃષિ યુનિવર્સિટી દ્વારા આર.ટી.આર. (રેડી–ટુ–રીકોન્સ્ટીટ્યુટ) ખીરના ઉત્પાદન માટે પદ્ધતિ વિકસિત કરવામાં આવેલ છે, જેમાં પ્રી-કૂકડ ચોખા માટે વેક્યૂમ ટ્રે ડ્રાયિંગ અને પ્રિ-મિક્સ ફોર્મ્યુલેશન માટે સ્પ્રે ડ્રાયિંગની કરવામાં આવે છે. ઉપરોક્ત મુજબ તૈયાર થયેલ આર.ટી.આર. ખીરને મેટ-પેટ/પીઇ (Met-PET/PE) પાઉચમાં પેક કરવામાં આવે ત્યારે ૩૭±૨°સે તાપમાને ૬ મહિના સુધી સંગ્રહ કરી શકાય છે.
	[Action: PI, Prof & Head, Dept of DT, DSC, AAU, Anand]
Title	Development of Nitrogen Distribution Based Approach to Detect Adulteration of Milk with Non-Protein Nitrogenous Compounds
16.10.1.4	**Recommendation approved for industry and scientific community** Methodology developed by Anand Agricultural University for detection of adulteration of non-protein nitrogenous compounds viz. urea, melamine and ammonium sulphate in milk based on ratios of nitrogen fractions (TPN/NPN and CN/ NPN) is recommended. આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલી દૂધના નાઈટ્રોજનના ઘટકોના ગુણોત્તર (TPN/ NPN અને CN/ NPN) આધારિત પદ્ધતિ દ્વારા પ્રોટીન સિવાયનાં નાઈટ્રોજન યુક્ત પદાર્થો જેવા કે યુરીયા, મેલેમાઇન અને એમોનીયમ સલ્ફેટની દૂધમાં થતી ભેળસેળ પારખી શકાય છે.
	[Action: PI, Assoc Prof & Head, Dept of DC, DSC, AAU, Anand]
Title	Evaluation of Selected Herbs as Natural Antioxidant for Ghee
16.10.1.5	**Recommendation approved for industry** Anand Agricultural University recommends addition of dried coarse particles of betel leaves @0.3% of the expected yield of ghee at the final stage of heat clarification process during the preparation of ghee for reducing oxidative deterioration of ghee. ઓક્સિડેશનથી થતો ઘીનો બગાડ ઓછો કરવા માટે, આણંદ કૃષિ યુનિવર્સીટી, આણંદ દ્વારા નાગર વેલનાં સૂકવેલા પાનના ભુકા ને ઘી બનાવતી વખતે અંતિમ તબક્કામાં ઘીની અપેક્ષિત ઉપજના ૦.3 ટકા લેખે નાખવાની ભલામણ કરવામાં આવે છે
	[Action: PI,Assoc. Prof & Head, Dept of DC, DSC, AAU, Anand]

Title	Evaluating Selected Spices for Extending Shelf Life of Cultured Buttermilk
16.10.1.6	**Recommendation approved for industry** Anand Agricultural University has developed a cultured buttermilk by blending 60 per cent dahi with 40 per cent paneer whey (fermented by *L. helveticus* MTCC 5463) and added with 1 per cent cumin powder and 0.02 per cent cumin oleoresin. It can be stored up to 7 days at refrigerated temperature (7±1ºC) in PET bottles. આણંદ કૃષિ યુનિવર્સીટી દ્વારા પનીર વ્હેનો ઉપયોગ કરી ક્લ્ચર બટર મીલ્ક (છાશ) બનાવવા માટેની રીત વિકસાવવામાં આવેલ છે. ક્લ્ચર બટર મીલ્ક (છાશ) બનાવવા માટે ૬૦% દહીને અને ૪૦% વ્હેની (લેકટોબેસીલસ હેલવેટીકસ MTCC 5463 દ્વારા આથવણ કરેલ) સાથે ભેળવી તેમાં ૧% જીરું (ક્યુમીન)પાવડર અને ૦.૦૨% ક્યુમીન ઓલીઓરેસીન નાખવાથી આ બટરમીલ્કને રેફ્રીજરેટર (૭± ૧°C) તાપમાને ૭ દિવસ સુધી પેટ (PET) બોટલમાં સંગ્રહી શકાય છે.
	[Action: PI, Assoc. Prof & Head, Dept of DC, DSC, AAU, Anand]
Title	Utilization of Whey in Common Bakery Products
16.10.1.7	**Recommendation approved for industry** Anand Agricultural University recommends use of whey in place of water in making the dough/batter for the bakery products. Cheddar cheese whey can be used upto 50% for toast and cake, 75% for bun and 100% for pitza base, while paneer whey upto 50% for khari and 100% for biscuits. Incorporation of whey improved the sensory attributes of these bakery products without affecting their keeping quality. આણંદ કૃષિ યુનિવર્સીટી બેકરીની બનાવટો માટે લોટ બાંધવામાં/ખીરું બનાવવા માટે વપરાતા પાણીની અવેજીમાં વ્હેનો ઉપયોગ કરવાની કરે છે. ચેડાર ચીઝ વ્હેનો ૫૦% સુધી ટોસ્ટ તથા કેક માટે, ૭૫% સુધી બન માટે અને ૧૦૦% સુધી પીત્ઝાબેઝ માટે જ્યારે પનીર વ્હેનો ૫૦% સુધી *ખારી* માટે અને ૧૦૦% સુધી બિસ્કીટ માટે ઉપયોગ કરી શકાય છે. વ્હેના ઉપયોગથી ઉપરોક્ત બેકરી બનાવટોના સ્વાદને લગતી લાક્ષણિકતાઓમાં સુધારો થવાની સાથે તેમની સંગ્રહક્ષમતામાં કોઈ ફરક પડતો નથી.
	[Action: PI, Assoc. Prof & Head, Dept of DC, DSC, AAU, Anand]
Title	Evaluation of antiobesity effect of probiotic fermented milk enriched with Finger Millet (*Eleusine coracana*)
16.10.1.8	**Recommendations approved for industry and entrepreneurs** Probiotic fermented milk product enriched with finger millet, prepared by fermented toned milk using *Streptococcus thermophilus* MTCC 5460 and probiotic *Lactobacillus helveticus* MTCC 5463, developed by Anand Agricultural University is found to possess antiobesity effect as confirmed by *in vitro* tests and *in vivo* study in Wistar rat model. આણંદ કૃષિ યુનીવર્સિટી દ્વારા વિકસીત એલ્યુસિન કોર્કેના(બાવટા) યુક્ત પ્રોબાયોટીક ફરમેન્ટેડ દૂગ્ધ પેદાશ (છાશ), કે જે ટોન્ડ દુધને સ્ટ્રેપ્ટોકોક્કસ થર્મોફિલસ MTCC 5460 અને પ્રોબાયોટીક લેક્ટોબોસિલીસ હેલવેટીકસ MTCC 5463 ને આથવીને બનાવવામાં આવેલ છે, તે મેદસ્વીતાના નિયમન માટે ઉપયોગી છે તેમ લેબોરેટરી પ્રયોગો તેમજ વિસ્ટારજાતના ઉંદર પરના અભ્યાસ પરથી માલૂમ પડેલ છે.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	Bioprospecting of oxalate degrading lactic acid bacteria to develop a functional product with potential in preventing kidney stone disease
16.10.1.9	**Recommendations approved for industry and entrepreneurs** A method for preparing barley enriched probiotic fermented milk product has been standardized at Anand Agricultural University, Anand. The product can be made using toned milk, adding 4% of barley flour and fermenting with

	starter culture [*Lactobacillus rhamnosus* MTCC 5945 + *Lactobacillus rhamnosus* MTCC 25062 + *Lactobacillus helveticus* MTCC5463 + *Lactobacillus plantarum* M11] at 37±1°C till the desired acidity of 0.65 to 0.7% LA. The product showed good antimicrobial activity against selected test pathogens and showed promising antioxidant, ACE Inhibitory, antidiabetic and oxalate degradation activity. The probiotic count in the product at the end of shelf life at 7°C of 21 days was >8 log cfu/ml. Further, *in vivo* animal study results revealed that barley enriched probiotic fermented milk product exhibited anti-urolithiatic activity in ethylene glycol ammonium chloride challenged Wistar rats. આણંદ કૃષિ યુનીવર્સિટી ખાતે બારલી (જવ) યુક્ત પ્રોબાયોટીક છાશ વિકસાવવામાં આવેલ છે. જે ટોન્ડ દુધમાં 4% બારલે નો લોટ ઉમેરી લેક્ટોબોસિલીસ રેમનોસસ MTCC 5945 + લેક્ટોબેસિલસ રેમનોસસ MTCC 25062 + લેક્ટોબેસિલસ હેલવેટીકસ MTCC 5463 + લેક્ટોબેસિલસ પ્લાન્ટેરમ M11 થી 37°C તાપમાને 0.65-0.7% (લેકટીકએસીડ) એસીડીટી આવે ત્યાં સુધી આથવીને બનાવી શકાય છે. સદર છાશ રોગજન્ય જીવાણુઓને નાશ કરવાની, એન્ટીઓકિસડન્ટ, એસીઈઅવરોધક, એન્ટીડાયાબિટિક તથા ઓક્સેલેટડીગ્રેડેશનની ક્ષમતા ધરાવે છે. આ છાશ 7 °C ± 1 °C તાપમાને 12 દિવસ સુધી સાચવી શકાય છે. જેમાં 12 દિવસે 8 લોગ સીએફયુ /ગ્રામ કરતા પણ વધારે પ્રોબયોટીક બેક્ટેરિયા જીવંત રહે છે. વિસ્ટાર જાતના ઉંદર પરના અભ્યાસથી જાણવા મળ્યુંકે બારલી (જવ) યુક્ત પ્રોબાયોટીક છાશ ઇથિલિનગ્લાયકોલ એમોનિયમ ક્લોરાઇડ ચેલેન્જ્ડ ઉંદરોમાં એન્ટી-યુરોલિથિઆટિક એકટીવીટી ધરાવે છે.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	Standardization of Process Parameters for the Development of Partially Defatted Peanut
16.10.1.10	**Recommendation approved for entrepreneurs** The entrepreneurs and oilseeds processors, interested in production of partially defatted whole peanut are recommended to use the technology developed by Anand Agricultural University. Defatted peanut so produced has 31% fat and 36% protein content. The process involves roasting after defatting for removal of unpleasant odor and can be stored upto 21 days in HDPE zip pouch. ઓછા (આંશિક) તેલ ધરાવતા આખા શીંગદાણાં બનાવવા ઇચ્છુક ઉધમ સાહસિકો અને મગફળીના પ્રોસેસર્સ માટે આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ઓછા તેલ ધરાવતા આખા શીંગદાણાં બનાવવાની દ્રાવક નિષ્કર્ષણ તકનીક વાપરવાની કરવામાં આવે છે. આ રીતે મળતાં શીંગદાણામાં આશરે ૩૧% જેટલું તેલ રહે છે તેમજ પ્રોટીન ૩૬% સુધી મળે છે. આ તકનીક દ્વારા મળતાં શીંગદાણાંમાંથી દ્રાવકની ગંધ દૂર કરવા પ્રક્રિયા બાદ શેકવા જરૂરી છે. નિષ્કર્ષણ બાદ શેકેલા આ શીંગદાણાંને એચ.ડી.પી.ઇ. પાઉચ માં રાખવાથી ૨૧ દિવસ સુધી ખાવાયોગ્ય સ્થિતી માં રાખી શકાય છે.
	[Action: PI, Prof & Head, Dept of PHET, FPTBE, AAU, Anand]
Title	Effect of Low Frequency Ohmic Heating on Recovery of Carrot Juice
16.10.1.11	**Recommendation approved for entrepreneurs and food processors** The entrepreneurs and food processors interested in the production of carrot juice are advised to use ohmic heating processing technology developed by Anand Agricultural University, Anand. The ohmically processed carrot juice can be stable and acceptable upto 28 days of storage under refrigerated condition at 7±2°C as compared to conventionally heated carrot juice which can be stable and acceptable upto 14 days under the same refrigerated condition. ગાજરના રસના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકો અને ફૂડ પ્રોસેસર્સને આણંદ

	કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ ઓહમિક હીટીંગ પ્રક્રીયાનો ઉપયોગ કરવાની સલાહ છે. સામાન્ય રીતે ગરમ કરી બનાવેલ ગાજરનો રસ રેફ્રીજેરેટેડ (૭±૨°C) તાપમાને ૧૪ દિવસ સુધી સારો અને સ્વીકાર્ય રહે છે જયારે ઓહમિક હીટીંગ દ્વારા ગરમ કરી બનાવેલ ગાજરનો રસ આજ તાપમાને ૨૮ દિવસ સુધી સારો અને સ્વીકાર્ય રહે છે.
	[Action: PI, Prof & Head, Dept of FE& PHET, FPTBE, AAU, Anand]
Title	Production of Premium Quality Powder with Maximum Retention of Essential Oil Using Cryogenic Grinding of Cinnamon
16.10.1.12	**Recommendation approved for entrepreneurs** Entrepreneurs and agro-processing units involved in grinding of spices are advised to use the technology of cryogenic grinding developed by Anand Agricultural University for superior quality cinnamon powder with higher retention of essential oil. For higher retention of essential oil, the cryogenic grinding of cinnamon at temperature of -80°C, sieve size of 0.8 mm and feed rate of 10 kg/h is recommended. તજનાં પાવડરનું ઉત્પાદન કરતા ઉધોગ સાહસિકો તથા ઉધોગકારોને ઉત્તમ ગુણવત્તાવાળા પાવડરનું ઉત્પાદન કરવા માટે આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ કાયોજેનિક ગ્રાઇન્ડીંગની તકનીકનો ઉપયોગ કરવાની ભલામણકરવામાં આવે છે. કાયોજેનિક ગ્રાઇન્ડીંગ તકનીકથી દળેલ તજનાં પાવડરમાં તૈલીય તત્વની મહત્તમ માત્રા ૮૮% રહે છે, જયારે પરંપરાગત ગ્રાઇન્ડીંગથી દળવામાં આવેલ પાવડરમાં ૩૪% જેટલું લઘુત્તમ તેલનું પ્રમાણ રહે છે. તજનાં પાવડરમાં મહત્તમ તૈલીય તત્વને જાળવી રાખવા માટે -૮૦°સે તાપમાને, ૦.૮ મીમીની ચાળણીનો ઉપયોગ કરી ૧૦ કિલોગ્રામ પ્રતિ કલાકના દરે દળવાની ભલામણકરવામાં આવે છે.
	[Action: PI, Prof & Head, Dept of PHET, FPTBE, AAU, Anand]
Title	Osmotic drying of mango slice
16.10.1.13	**Recommendation approved for entrepreneurs** The entrepreneurs and fruit processors interested in production of osmotically dehydrated mango slices are advised to use processing technology developed by Anand Agricultural University. The technology involves processing steps including selection of ripe *Kesar* and *Rajapuri* mangoes, washing, peeling, slicing, steeping in sugar syrup, followed by vacuum drying up to 15%(wb) moisture content. The product so prepared is acceptable and can be stored upto 180 days in 200 gauge HDPE pouches at ambient (30°±2°C) temperature. પાકી કેરીનાં ચિરીયાને ઓસ્મોટીકલી સુકવણી કરીને ઉત્પાદન કરવા રસ ધરાવતા ઉધોગ સાહસિકો અને ઉધોગકારોને આણંદ કૃષિ યુનિવસિટી ધ્વારા વિકસાવવામાં આવેલ ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણકરવામાં આવે છે. આ પધ્ધતિમાં સારી ગુણવતાવાળી પાકી કેસર અને રાજાપુરી કેરી ને બરાબર ધોઇ, છાલ ઉતારી, ચીરીયા કરી, ખાંડની ચાસણી ધ્વારા ઓસ્મોટીક ડીહાઇડ્રેશન કર્યા બાદ મીકેનીકલ હવાચુસ્ત ડ્રાયર ધ્વારા ૧૫% ભેજ સુધી સુકવણી કર્યા બાદ ૨૦૦ ગેજની એચડીપીઈ બેગમાં પેક કરીને સામાન્ય વાતાવરણ ના તાપમાને (૩૦°±૨°સે) ૧૮૦દિવસ સુધી સંગ્રહ કરી શકાય છે.
	[Action: PI, Prof & Head, Dept of FPT, FPTBE, AAU, Anand]

Title	Technology for Development of Ready- to-Rehydrate Type of Kidney bean
16.10.1.14	**Recommendation approved for entrepreneurs and food processors** The entrepreneurs and food processors interested in production of ready-to-eat and rehydrate type kidney beans are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves various processing steps including soaking, cooking and dehydration. The product so prepared is acceptable and can be stored upto 184 days in aluminum laminated pouches at ambient (30°±2°C) temperature. રેડી ટુ રીહાયડ્રેટ પ્રકારના રાજમાના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકો અને ખાદ્ય પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ તાંત્રિકતાઅપનાવવાની સલાહ આપવામાં આવે છે. આ તાંત્રિકતામાં વિવિધ પ્રક્રિયાઓ જેવીકે પલાળવા (સોકિંગ), રાંધવા (કૂકિંગ) અને સૂકવણી (ડિહાઇડ્રેશન) ખાસ પ્રકારની પ્રક્રિયાઓ દ્વારા કરવામાં આવે છે. આ રીતે તૈયાર કરેલ રાજમાં ઉપયોગ કરનાર માટે સ્વીકાર્ય છે અને તેને એલ્યુમિનિયમ લેમીનેટેડ પાઉંચમાં સામાન્ય વાતાવરણના તાપમાને (૩૦°±૨ ° સે) સારી રીતે ૧૮૪ દિવસ સુધી રાખી શકાય છે.
	[Action: PI, Prof & Head, Dept of FPT, FPTBE, AAU, Anand]
Title	Production Technology for Clarified Wood Apple Juice
16.10.1.15	**Recommendations approved for entrepreneurs and food processors** **1. Thermally treated clarified wood apple juice** The entrepreneurs and food processors interested in production of thermally treated clarified juice from wood apple fruit are recommended to use the technology developed by Anand Agricultural University, Anand. This technology involves clarification using centrifugation and bentonite treatment with thermal processing of wood apple juice at 85°C temperature for 4 minutes for preservation. Clarified wood apple juice (Thermally treated) can be stored up to 135 and 165 days at ambient (30±2°C) and refrigerated (7±2°C) temperature, respectively. **1. ઉષ્ણતા પધ્દ્ધતિ દવારા(Thermally) તૈયાર કરેલ શુધ્દ્ધ કોઠાનો રસ** કોઠાનાં ફળમાંથી ઉષ્ણતા પધ્દ્ધતિ દવારા તૈયાર કરેલ શુધ્દ્ધ રસના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકો અને ફૂડ પ્રોસેસરોને આણંદ એગ્રીકલ્ચરલ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ વેજ્ઞાનિક પધ્દ્ધતિનો ઉપયોગ કરવાની કરવામાં આવે છે. આ તકનીકીમાં કોઠાના રસનાં ક્લેરીફીકેશન અને લાંબા સમય સુધી જાળવણી કરવા માટે સેન્ટ્રિફ્યુગેશન અને બેન્ટોનાઇટ ની મદદથી ૮૫°સે તાપમાને ૪ મિનિટ માટે ગરમ કરવામાં આવે છે. આ રીતે તૈયાર કરેલ રસને સામન્ય તાપમાનમાં (૩૦±૨°સે) અને રેફ્રિજરેટેડ તાપમાનમાં (૭±૨°સે) અનુક્રમે ૧૩૫ અને ૧૬૫ દિવસ સુધી સુરક્ષિત રીતે સંગ્રહ કરી શકાય છે. **2.Non-thermally treated clarified wood apple juice** The entrepreneurs and food processors interested in production of non-thermally treated clarified juice from wood apple fruit are recommended to use the technology developed by Anand Agricultural University, Anand. This technology involves clarification using centrifugation and bentonite treatment with gamma irradiation processing of wood apple juice at 1 kGy dose for preservation. Clarified wood apple juice (Gamma irradiated) can be stored up to 150 and 195 days at ambient (30±2°C) and refrigerated (7±2°C) temperature, respectively. **2**. બિન-ઉષ્ણતા પધ્દ્ધતિ દવારા (નોન-Thermally) તૈયાર કરેલ શુધ્દ્ધ કોઠાનો રસ કોઠાનાં ફળમાંથી બિન-ઉષ્ણતા પધ્દ્ધતિ દવારા તૈયાર કરેલ શુધ્દ્ધ રસના ઉત્પાદન માં રસ ધરાવતા ઉધોગ સાહસિકો અને ફૂડપ્રોસેસરોને આણંદ એગ્રીકલ્ચરલ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ વેજ્ઞાનિક પધ્દ્ધતિનો ઉપયોગ કરવાની કરવામાં આવે છે. આ તકનીકી માં

	કોઠાનાં રસનાં શુદ્ધિકરણ (ક્લેરીફીકેશન) કરવા સેન્ટ્રિફ્યુગેશન અને બેન્ટોનાઇટ ટ્રીટમેન્ટનો ઉપયોગ થાય છે. કોઠાનાં રસને લાંબા સમય સુધી જાળવણી કરવા ૧ કિલોગ્રે (1kGy) ગામા ઇરેડિયેશનનો ડોઝ આપવામાં આવે છે. શુદ્ધ કોઠાનો રસ (ગામા ઇરેડિયેટેડ) ને સામન્ય તાપમાનમાં (૩૦±૨૦સે) અને રેફ્રિજરેટેડ તાપમાનમાં (૭±૨૦સે) અનુક્રમે ૧૫૦ અને ૧૯૫ દિવસ સુધી સુરક્ષિત રીતે સંગ્રહ કરી શકાય છે.
	[Action: PI, Prof & Head, Dept of FPT, FPTBE, AAU, Anand]
Title	Development of Fruit Beverage with Lactose Hydrolyzed Milk Solids
16.10.1.16	**Recommendation approved for entrepreneurs and food processors** The entrepreneurs and food processors interested in production of fruit beverage with lactose hydrolyzed milk solids are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves blending of milk:whey ratio 4:1 (80% milk, 20% whey) with addition of Beta D-galactosidase enzyme concentration 5.01 U/g of lactose, incubating it at 34°C for 203 min and then heating at 65°C for 10 min. This is followed by addition of sapota pulp 8% and sugar at 9.5% and the beverage is heated at 72°C for 15s and then packing in glass bottles. The product so prepared is having highly sensory acceptable quality. The product can be stored in glass bottles for 12 days at 7°±2°C. દૂધમાં રહેલા લેકટોઝ નું હાઇડ્રોલિસીસ કરી તેમાંથી ફ્રુટ બેવરેજ બનાવવામાં રસ ધરાવતા ઉદ્યોગસાહસિકો અને ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાનો ઉપયોગ કરવાની ભલામણકરવામાં આવે છે. આ તાંત્રિકતામાં દૂધ અને વ્હેનો ગુણોત્તર ૪:૧ (૮૦% દૂધ અને ૨૦% વ્હે) રાખવામાં આવે છે. અને તેમાં ૫.૦૧ યુનિટ બીટા–ડી–ગેલેકટોસાઈડેઝ એન્ઝાઈમ પ્રતિ ગ્રામ લેકટોઝ ઉમેરી તેને ૩૪°સે. તાપમાને ૨૦૩ મિનીટ સુધી ઇન્કયુબેશન કર્યા બાદ તેને ૬૫°સે. તાપમાને ૧૦ મિનીટ સુધી ગરમ કરવામાં આવે છે. ત્યારબાદ તેમાં ૮% ચીકુનો પલ્પ અને ૯.૫૦% ખાંડ ઉમેરી તેને ૭૨°સે. તાપમાને ૧૫ સેકન્ડ સુધી ગરમ કરીને કાચની બોટલમાં પેક કરવામાં આવે છે. આ રીતે તૈયાર કરેલી બેવરેજ ૭°± ૨°સે. તાપમાને ૧૨ દિવસ સુધી સંગ્રહ કરી શકાય છે.
	[Action: PI, Prof & Head, Dept of FPT, FPTBE, AAU, Anand]

Title	Cold Milling of Flax seed for extraction of Omega-3 Rich Oil
16.10.1.17	**Recommendation approved for entrepreneurs** The entrepreneurs and oil seed processors interested in production of superior quality flax seed oil are advised to use technology developed by Anand Agricultural University, Anand. The technology for production of omega-3 fatty acid rich flaxseed oil involves steps like moisture conditioning of flax seeds, followed by microwave roasting, oil extraction using hydraulic press extractor. Flaxseed oil can be stored for 120 days in amber colour HDPE bottle at ambient temperature (30°±2°C). અળસીનાં સારી ગુણવતા ધરાવતા તેલનાં ઉત્પાદનમાં રસ ધરાવતા સાહસિકો અને ઉધોગકારોને આણંદ કૃષિ યુનિવસિટી, આણંદ ધ્વારા વિકસાવવામાં આવેલ ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણકરવામાં આવે છે .આ પધ્ધતિમાં ઓમેગા-૩ ફેટી એસીડથી ભરપુર અળસીનું તેલ ઉત્પાદન કરવા માટે અળસીનો ભેજ સંતુલિત કરી, માઇક્રોવેવ ઓવનમાં શેકી, તેલ કાઢવા હાઇડ્રોલીક એક્સટ્રેકટરનો ઉપયોગ કરવામાં આવે છે. અળસી નું તેલ સોનેરી ભૂરા રંગની એચડીપીઈ બોટલમાં 120 દિવસ માટે સામાન્ય તાપમાને (30°±૨°સે) સ્ટોર કરી શકાય છે.
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Production Technologies for Value Added Products from Pumpkin Seeds
16.10.1.18	**Recommendation approved for entrepreneurs and food processors** The entrepreneurs and food processors interested to prepare pumpkin seed spread are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves dehulling of whole pumpkin seed, roasting, addition of salt, hydrogenated vegetable oil, sugar, spice(cinnamon, ginger powder) mix and packing in glass jars. The product so prepared has high sensory score, good consistency, optimum adhesiveness and cohesiveness. The product can be stored up to 90 days at 30°±2°C. કોળાના બીજ નું સ્પ્રેડ બનાવવામાં રસ ધરાવતા ઉધોગસાહસિકો અને ઉધોગકારોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાના ઉપાયોગની ભલામણકરવામાં આવે છે. આ તકનિકમાં કોળાના બીજને ડીહલ કરી લેવા, ત્યાર બાદ તેને રોસ્ટર માં બરાબર શેકી લેવા, પછી તેમાં મીઠું,વનસ્પતિ ઘી, ખાંડ અને મસાલા (તજ, જાયફળ, આદુ પાવડર) ઉમેરીને મિક્ષરમાં દળી લેવું. પછી તેમાં સોયા લેસીથીન ઉમેરીને ફરી મિક્ષરમાં મિક્ષ કરી લેવું. આવી રીતે બનાવેલ કોળાના બીજ ના સ્પ્રેડ ને ગ્લાસ બોટલ માં ભરીને તેને ૩૦°±૨°સે. તાપમાને ૯૦ દિવસ સુધી સાચવી શકાય છે અને તેની ગુણવતા જાળવી શકાય છે.
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]

Title	Technology for Production of Superior Quality Cinnamon Essential Oil Using Super Critical Fluid Extraction
16.10.1.19	**Recommendation approved for entrepreneurs** Entrepreneurs and Agro-processing units involved in production of superior quality of cinnamon essential oil are advised to use the supercritical fluid extraction technology developed by Anand Agricultural University. This technology involves use of carbon dioxide supercritical fluid extraction at controlled pressure of 283 bar and temperature of 70 °C which yields 8.72% cinnamon essential oil. The process also yields 11.7% cinnamaldehyde and 0.19% Eugenol in the essential oil તજના આવશ્યક (essential) તેલના ઉત્કૃષ્ટ ગુણવત્તાના ઉત્પાદનમાં સંકળાયેલા ઉધોગસાહસિકો અને કૃષિ-પ્રક્રિયા એકમોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ સુપરક્રીટિકલ નિષ્કર્ષણ તકનિક ઉપયોગ કરવાની ભલામણકરવામાં આવે છે. આ ટેક્નોલોજીમાં ૨૮૩ બારના દબાણે અને ૭૦° સે તાપમાને કાર્બન ડાયોક્સાઇડ સુપરક્રીટિકલ નિષ્કર્ષણના ઉપયોગ દ્વારા ૮.૭૨% આવશ્યક તેલ પેદા કરી શકાય છે. આ આવશ્યક તેલમાં, ૧૧.૭% સિનામાલ્ડીહાઇડ અને ૦.૧૯% યુજીનોલ હોય છે.
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Design and development of two-stage evaporative cooling system for transport of fruits and vegetables
16.10.1.20	**Recommendation approved for entrepreneurs** The design of two stage evaporative cooling system developed by Anand Agricultural University, Anand for fixing on vehicle for transport of fruits and vegetables is recommended for scientific community and entrepreneurs. This system maintains 25±2°C temperature and relative humidity above 60% inside the enclosed vehicle body during transit. ફળ અને શાકભાજીનું પરિવહન કરતા વાહન પર ફીટ કરવા માટે આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ બે તબક્કાના બાષ્પીભવનની ઠંડક પ્રણાલીની રચનાની વૈજ્ઞાનિક સમુદાય તેમજ વ્યવસાયિકો માટે કરવામાં આવે છે. આ પ્રણાલી પરિવહન દરમ્યાન વાહનના બંધ ચેમ્બરની અંદરનું તાપમાન ૨૫±૨°C અને ભેજ ૬૦% થી ઉપર જાળવી રાખે છે.
	[Action: PI, Prof & Head, Dept of PHET & FE, FPTBE, AAU, Anand]
Title	Study on co-digestion of potato processing effluent with cattle dung for biogas production.
16.10.1.21	**Recommendation approved for entrepreneurs** Effluent of potato flakes producing industry can be used for biogas production as per the study conducted at Anand Agricultural University, Anand. After 10 days HRT period for co-digestion of the effluent with cattle dung, biogas is produced which contains 59.67 % methane. The digested slurry contains 1.99% N, 1.43% P and 1.34% K. Treatment of the effluent not only gives good quality fuel in one fourth time in comparison to only cattle dung digestion but also produce the best quality manure for crop production. બટાકા ફ્લેક્સ ઉત્પાદિત કરતા ઔધોગિક એકમોમાંથી નીકળતા પ્રવાહી(એફ્લુએંટ) નો ઉપયોગ બાયોગેસના ઉત્પાદન માટે આણંદ કૃષિ યુનિવર્સિટી, આણંદમાં કરેલ અભ્યાસ મુજબ કરી શકાય છે. છાણ સાથે બટાકાના પ્રવાહી(એફ્લુએંટ)નુ સહપાચન ૧૦ દિવસ કર્યા બાદ ૫૯.૬૭% મિથેન ધરાવતો બાયોગેસ ઉત્પન્ન થાય છે. પાચક સ્લરીમાં ૧.૯૯% નાઇટ્રોજન,૧.૪૩% ફૉસ્ફરસ અને ૧.૩૪% પોટાશની માત્રા જોવા મળે છે. આ પ્રકારે બટાકાના પ્રવાહી(એફ્લુએંટ)ની પ્રક્રિયા કરવાથી સારી ગુણવત્તા ધરાવતું બળતણ ફક્ત પશુ છાણના પાચન પ્રક્રિયાની સરખામણીમાં ચોથા ભાગના સમયમાં મળવા ઉપરાંત પાક ઉત્પાદન માટે ઉચ્ચ ગુણવતા ધરાવતું ખાતર ઉત્પન્ન થાય છે.

	[Action: PI, Prof & Head, Dept of BE, FPTBE, AAU, Anand]
Title	Development of high fiber cookies using tomato pomace
16.10.1.22	**Recommendation approved for entrepreneurs** A satisfactory high fiber cookie can be prepared by adding 10% Tomato Pomace Powder (replacing Maida) using technology developed by Anand Agricultural University. The technology involves addition of Oregano, Chilli flakes and Garlic powder @ 1%, while Black Pepper Powder @ 0.5% in the "Sweet and Salty Biscuit" formula and preparation of cookies using "Creaming Method". The product duly packed in aluminium foil will have safe storage life up to 75 days.The bakery industry and entrepreneurs interested in production of high fiber cookies are advised to follow the same. સંતોષકારક હાઈફાયબર (વધુ રેસાવાળી) કૂકીઝનું ઉત્પાદન કરવા ટામેટાનો રસ કાઢી લીધા બાદ વધતા કુચાનો પાઉડર ૧૦ ટકાના દરે (મેંદાને બદલે) ઉમેરી આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉધોગસાહસિકોને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં ઓરેગેનો, ચિલિ ફ્લેક્સ અને ગાર્લિક પાઉડર ૧ ટકાના દરે તેમજ કાળા મરીનો પાઉડર ૦.૫ ટકાના દરે "સ્વીટ એન્ડ સાલ્ટી બિસ્કીટ"ની ફોર્મુલામાં વધારાના ઉમેરી "ક્રિમિંગ મેથડ" થી કૂકીઝ તૈયાર કરવા સૂચવેલ છે. આવી હાઈ ફાયબર કુકીઝ સામાન્ય વાતાવરણમાં એલુમિનિયમ ફોઇલમાં ૭૫ દિવસ સુધી સંગ્રહી શકાય છે.
	[Action: PI, Prof & Head, Polytechnic College in Food Science & Nutrition]
Title	Development of high fiber bakery products viz. bun, cookie, bread, cake and cupcake using Madhuka Indica flowers
16.10.1.23	**Recommendations approved for industry and entrepreneurs** (1) A satisfactory high fiber cookie can be prepared by adding 17.5% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka indica* flowers with Maida at 1:1 ratio for 3 minutes in mixer and prepares the cookies using "Creaming Method". The product duly packed in aluminium foil will have safe storage life up to 75 days. The developed cookie contains about 3½ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber cookies are advised to follow the same. સંતોષકારક હાઈફાયબર (વધુ રેસાવાળી) કૂકીઝનું ઉત્પાદન કરવા મહુડાના ફુલ ૧૭.૫ ટકાના દરે (મેંદાને બદલે) ઉમેરી આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉધોગ સાહસિકોને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં મહુડાના ફુલને મેંદા સાથે ૧:૧ના પ્રમાણમાં 3 મિનિટ માટે મિક્સરમાં ક્રશ કરી "ક્રિમિંગ મેથડ"થી કૂકીઝ તૈયાર કરવા સૂચવેલ છે. આવી હાઈફાયબર કુકીઝ સામાન્ય વાતાવરણમાં એલુમિનિયમ ફોઇલમાં ૭૫ દિવસ સુધી સંગ્રહી શકાય છે. જે સામાન્ય કૂકીઝ કરતા આશરે સાડા ત્રણ ગણા વધારે ફાયબર (રેસા) ધરાવે છે. (2) A satisfactory high fiber cupcake can be prepared by adding 15% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka indica* flowers with Maida at 1:1 ratio for 3 minutes in mixer, reduction in sugar by 15%, preparation of batter using "Creaming Method" and reduction in baking temperature by 10°C and increase in baking time by 2 minutes. The developed cupcake contains about 4¼ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber cupcake are advised

to follow the same.

સંતોષ કારક હાઈ ફાયબર (વધુ રેસાવાળી) કપ કેકનું ઉત્પાદન કરવા મહુડાના ફુલ ૧૫ ટકાના દરે (મેંદાને બદલે) ઉમેરી આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજી નો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉધોગસાહસિકો ને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં મહુડાના ફુલને મેંદા સાથે ૧:૧ ના પ્રમાણમાં ૩ મિનિટ માટે મિક્સરમાં ક્રશ કરી ઉપયોગમાં લેવા, ફોર્મ્યુલામાં ખાંડનું પ્રમાણ ૧૫ ટકા ઘટાડવા, "ક્રિમિંગ મેથડ" થી બેટર તૈયાર કરવા, બેકિંગ તાપમાન અને સમય અનુક્રમે ૧૦°સે. ઓછુ કરવા અને ૨ મિનિટ વધારવા સૂચવેલ છે. જે સામાન્ય કપ કેક કરતા આશરે સવાચાર ગણા વધારે ફાયબર (રેસા) ધરાવેછે.

(3) A satisfactory high fiber bread can be prepared by adding 5% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves addition of *Madhuka indica* flowers in the form of paste (prepared in luke warm water in 1:2 ratio) along with water while dough preparation, reduction proofing time by 10 minutes and baking at 210°C temperature for 22 minutes using "No Dough Time Method" of bread production. The developed bread contains about 1½ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber bread are advised to follow the same.

સંતોષકારક હાઈ ફાયબર (વધુ રેસાવાળી) બ્રેડનું ઉત્પાદન કરવા મહુડાના ફુલ ૫ ટકાના દરે ઉમેરી (મેંદાને બદલે) આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉધોગસાહસિકોને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં મહુડાના ફુલને હુંફાળા પાણીમાં ૧:૨ ના પ્રમાણમાં પેસ્ટ બનાવી પાણી સાથે ઉમેરી કણક તૈયાર કરવા, પ્રૂફિંગ સમય ૧૦ મિનિટ ઘટાડવા અને ૨૧૦°સે. તાપમાને ૨૨ મિનિટ બેકિંગ કરી "નોડોટાઈમ મેથડ"થી બ્રેડ તૈયાર કરવા સૂચવેલ છે. જે સામાન્ય બ્રેડ કરતા આશરે દોઢ ગણા વધારે ફાયબર (રેસા) ધરાવેછે.

(4) A satisfactory high fiber cake can be prepared by adding 10% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka indica* flowers with Maida at 1:1 ratio for 3 minutes in mixer, reduction in sugar by 10% and replacement of essence with Cardamom-Nutmeg powder @1.25% in the formula, preparation of better using creaming method and reduction in baking temperature by 10°C and increase baking time by 3 minutes. The developed cake contains about 3½ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber cake are advised to follow the same.

સંતોષકારક હાઈ ફાયબર (વધુ રેસાવાળી) કેકનું ઉત્પાદન કરવા મહુડાના ફુલ ૧૦ ટકાના દરે (મેંદા ને બદલે) ઉમેરી આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉધોગસાહસિકોને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં મહુડાના ફુલને મેંદા સાથે ૧:૧ ના પ્રમાણમાં 3 મિનિટ માટે મિક્સરમાં ક્રશ કરી ઉપયોગમાં લેવા, ફોર્મ્યુલામાં ખાંડનું પ્રમાણ૧૦% ઘટાડવા, એસેન્સને બદલે ૧.૨૫% એલચી-જાયફળ ઉમેરવા, ક્રિમિંગ મેથડથી બેટર તૈયાર કરવા, બેકિંગ તાપમાન અને સમય અનુક્રમે ૧૦°સે. ઓછુ કરવાઅને 3 મિનિટવધારવા સૂચવેલ છે. જે સામાન્ય કેક કરતા આશરે સાડા ત્રણ ગણા વધારે ફાયબર (રેસા) ધરાવે છે.

(5) A satisfactory high fiber bun can be prepared by adding 7% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand

	Agricultural University. The technology involves addition of *Madhuka indica* flowers in the form of paste (prepared in luke warm water in 1:2 ratio) along with water while dough preparation followed by proofing dough pieces at 50°C for 30 minutes with hand pressing after 10 minutes and baking at 220°C temperature for 17 minutes using “No Dough Time Method” of bun production. The developed bun contains about 2¼ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber bun are advised to follow the same. સંતોષકારક હાઈ ફાયબર (વધુરે સાવાળા) બનનું ઉત્પાદન કરવા મહુડાના ફુલ ૭ ટકાના દરે ઉમેરી (મેંદાને બદલે) આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં મહુડાના ફુલને હુંફાળા પાણીમાં ૧:૨ ના પ્રમાણમાં પેસ્ટ બનાવી પાણી સાથે ઉમેરી કણક તૈયાર કરી, તેના ટુકડાને ૫૦°સે. તાપમાને 30 મિનિટ પ્રૂફ કરી (૧૦ મિનિટ પછી પ્રેસીંગ સહિત) ૨૨૦°સે. તાપમાને ૧૭ મિનિટ બેકિંગ કરી "નોડોટાઈમ મેથડ" થી બન તૈયાર કરવા સૂચવેલ છે. જે સામાન્ય બન કરતા સવા બે ગણા વધારે ફાયબર (રેસા) ધરાવે છે.
	[Action: PI, Prof & Head, Polytechnic College in Food Science & Nutrition]
Title	Development of value added product containing Green Wheat (Ponk) and Chickpea ola (Ponk)
16.10.1.24	**Recommendations approved for processors and entrepreneurs** **(1)** A satisfactory tender roasted wheat *ponk* can be prepared by roasting wheat earhead in oven at 200˚C for 20 minutes followed by drying under shadow for 30 minutes. The *ponk* dully filled in food grade airtight plastic container will have storage life of about six months. The farmers, entrepreneurs and agro processing units interested in production of green wheat *ponk* are advised to use the technology developed by Anand Agricultural University. સંતોષકારક ઘઉંના પોંકનું ઉત્પાદન કરવા માટે ઘઉંની લીલી ડૂંડીઓને ૨૦૦ °સે . તાપમાને ૨૦ મીનીટ સુધી ઓવનમાં શેકવી .તેમાંથી દાણા છૂટા પાડી છાંયડામાં ૩૦ મીનીટ સુધી સુકવવા .આવા પોંકને હવા ચુસ્ત પ્લાસ્ટીક ડબ્બા માં છ મહિના સુધી સંગ્રહ કરી શકાય છે .ઘઉંના પોંકના ઉત્પાદનમાં રસ ધરાવતા ખેડૂતો, ઉદ્યોગસાહસિકો અને ખાદ્ય વાનગી ઉત્પાદક એકમોને આણંદ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવેલ ટેક્નોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે . **(2)** A satisfactory Chickpea ola*ponk* can be prepared by roasting green Chickpea ola pods in oven at 200˚C for 20 minutes followed by drying in oven at 100˚C for 1 hour. The Chickpea ola*ponk* dully filled in food grade airtight plastic container will have storage life of about four months. The farmers, entrepreneurs and agro processing units interested in production of Chickpea ola*ponk* are advised to use the technology developed by Anand Agricultural University. સંતોષકારક ચણાના ઓળાનું ઉત્પાદન કરવા માટે ચણાના લીલા પોપટાને ૨૦૦°સે. તાપમાને ૨૦ મીનીટ સુધી ઓવનમાં શેકવા, તેમાંથી દાણા છૂટા પાડી ઓવનમાં ૧૦૦° સે. તાપમાને કલાક સુધી સુકવવા. આવા ચણાના પોંકને હવાચુસ્ત પ્લાસ્ટીક ડબ્બામાં ચાર મહિના સુધી સંગ્રહ કરી શકાય છે. ચણાના પોંકના ઉત્પાદનમાં રસ ધરાવતા ખેડૂતો, ઉદ્યોગસાહસિકો અને ખાદ્ય વાનગી ઉત્પાદક એકમો ને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણકરવામાં આવે છે. **(3)** A healthy value added Jadariyu can be prepared by using 35% wheat ponk flour, 15% Chickpea ola ponk flour, 25% ghee, 20% sugar and 5% milk. The Jadariyu duly packed in food grade airtight plastic container will have storage life of about fifteen days. The farmers, entrepreneurs

and agro processing units interested in production of Jadariyu are advised to use the technology developed by Anand Agricultural University.

પૌષ્ટિક જાદરિયાનું ઉત્પાદન કરવા માટે ૩૫% ઘઉંના પોંકનો લોટ, ૧૫% ચણાના પોંકનો લોટ, ૨૫% ઘી, ૨૦% ખાંડ અને ૫% દૂધ નો ઉપયોગ કરી બનાવેલ જાદરિયાને ૧૫ દિવસ સુધી હવાચુસ્ત પ્લાસ્ટીક ડબ્બામાં સંગ્રહ કરી શકાય છે. જાદરિયાના ઉત્પાદનમાં રસ ધરાવતા ખેડૂતો, ઉદ્યોગસાહસિકો અને ખાદ્ય વાનગી ઉત્પાદક એકમોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણકરવામાં આવે છે.

(4) The farmers, entrepreneurs and agro processing units interested in production of satisfactory value added *ponk* khakhara are advised to use the technology developed by Anand Agricultural University.

(a) Wheat *ponk* khakhara can be prepared by incorporating 70% wheat ponk flour with wheat flour. The product duly packed in aluminum foil will have storage life of about 75 days.

(b) Chickpea ola *ponk* khakhara can be prepared by incorporating 35% Chickpea ola ponk flour with wheat flour. The product duly packed in aluminium foil will have storage life of about 45 days.

સંતોષકારક મૂલ્યવર્ધક પોંકના ખાખરાનું ઉત્પાદન કરવા માટે ખેડૂતો, ઉદ્યોગસાહસિકો અને ખાદ્ય વાનગી ઉત્પાદક એકમોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણકરવામાં આવે છે.

- ઘઉંના પોંકના ખાખરા બનાવવા માટે ૭૦% ઘઉંના પોંકના લોટને ઘઉંના લોટ સાથે મિશ્ર કરવો જેનો ૭૫ દિવસ સુધી એલ્યુમિનિયમ ફોઇલમાં સંગ્રહ કરી શકાય છે.
- ચણાના પોંકના ખાખરા બનાવવા માટે ૩૫% ચણાના પોંકના લોટને ઘઉંના લોટ સાથે મિશ્ર કરવો જેનો ૪૫ દિવસ સુધી એલ્યુમિનિયમ ફોઇલમાં સંગ્રહ કરી શકાય છે.

[Action: PI, Prof & Head, Polytechnic College in Food Science & Nutrition]

Sardar Krushinagar Dantiwada Agricultural University

<table>
<tr><td>Title</td><td>Standardization of a method for preparation of low calorie whey based ice-candy</td></tr>
<tr><td rowspan="3">16.10.1.25</td><td>Recommendations approved for industry and entrepreneurs
Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar developed a technology for manufacture of low calorie whey based ice-candy for calorie conscious people. The standardized process involves use of clarified paneer whey, 0.0425 per cent artificial sweeteners blend (acesulfame-K – 0.035 per cent and saccharin – 0.0075 per cent), lemon juice concentrate (3.5 per cent) and pH adjustment to 3.8 using 50 per cent citric acid solution. HPLC and TLC analysis revealed the stability of artificial sweeteners in the developed product up to 30 days when stored at -18°C.

સરદારકૃષિનગર દાંતીવાડા કૃષિ યુનિવર્સિટી, સરદારકૃષિનગર દ્વારા કેલરી પ્રત્યે સભાન લોકો માટે પનીર વ્હે આધારિત ઓછી કેલરી વાળી આઈસ-કેન્ડી બનાવવાની તકનીક વિકસાવવામાં આવી છે. આ પ્રમાણિત પ્રક્રિયામાં ક્લેરિફાઈડ પનીર વ્હે, ૦.૦૪૨૫ ટકા કૃત્રિમ શર્કરાનુ મિશ્રણ) એસલ્ફેમ-કે – ૦૦૩૫. ટકા અને સેક્કેરીન – ૦૦૦૭૫. ટકા(, ઘટ્ટ કરેલો લીંબુનો રસ)૩.૫ ટકા (અને પીએચ ૩.૮ લાવવા માટે ૫૦ ટકા સિટ્રિક એસિડના દ્રાવણનો ઉપયોગ કરી શકાય છે. એચ.પી.એલ.સી. અને ટિ. એલ. સી. પદ્ધતિથી કરવા માં આવેલ પૃથક્કરણ દ્વ્રારા પ્રમાણિત થાય છે કે ઉપરોક્ત પદ્ધતિથી બનાવેલ ઓછી કેલરીવાળી આઈસ-કેન્ડી માં ઉપયોગમાં લીધેલ કૃત્રિમ શર્કરાનું મિશ્રણ- ૧૮)માઇનસ અઢાર(°સે .તાપમાનેર ૦ દિવસ સુધી સંપૂર્ણપણે અચળ રહે છે.</td></tr>
<tr><td>Suggestion:Houseadvised to propose method for determination of artificial sweeteners in future.</td></tr>
<tr><td>[Action: Head, Dairy Chemistry Dept., G.N. Patel College of Dairy Technol.]</td></tr>
<tr><td>Title</td><td>Utilization of Milk fat fractions in Selected Bakery products</td></tr>
<tr><td rowspan="2">16.10.1.26</td><td>Recommendation approved for industry
Cookies with acceptable quality has been developed by Sardarkrushinagar Dantiwada Agricultural University replacing vanaspati with 25 % High Melting Triglyceride (HMT) or 50 % Medium Melting Triglycerides (MMT) fractions from Anhydrous milk fat (AMF). The product can be stored for 10 weeks at 30 ± 2° C, when packed in LDPE without any adverse changes in the organoleptic quality.

સરદારકૃષિનગર દાંતીવાડા કૃષિ યુનિવર્સિટી દ્વારા ગુણવત્તાયુક્ત કૂકીજ જેમાં વનસ્પતિ ની જગ્યાએ એનહાયડ્રેસ મિલ્ક ફેટ)AMF) ની ૨૫ %હાઈ મેલ્ટિંગ ટ્રાયગ્લિસરાઈડS) HMT) અથવા ૫૦ % મિડિયમ મેલ્ટિંગ ટ્રાયગ્લિસરાઈડS)MMT) ફ્રેક્શન નો ઉપયોગ કરીને બનાવવામાં આવેલ છે . વિકાસવેલ કુકીજ નું LDPE પાઉચ માં ૧૦ અઠવાડિયા માટે °2±30 C પર ગુણવતામાં કોઈ ફેરફાર કર્યા વગર સંગ્રહિત કરી શકાય છે.</td></tr>
<tr><td>[Action: Head, Dairy Chemistry Dept., G.N. Patel College of Dairy Technol.]</td></tr>
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Junagadh Agricultural University

Title	Incorporation of *Cucurbita pepo* (pumpkin) pulp for the preparation of value added flavoured buffalo milk
16.10.1.27	**Recommendation approved for farmers community and entrepreneur** The dairy entrepreneurs are informed to incorporate 15% *Cucurbita pepo*(pumpkin) pulp (22% TSS) and 10% ground sugar for the preparation of good and acceptable quality pumpkin based flavoured buffalo milk. The shelf life of good quality pumpkin based flavoured buffalo milk can be maintained for at least 6 months at room temperature subjecting to “in bottle heat treatment” at 110±2°C for 15 minutes after filling into cleaned and heat treated glass bottle. આથી ડેરી પેદાશો બનાવતા ઉત્પાદકોને જાણ કરવામાં આવે છે કે કોળા ફ્લેવર્ડ દૂધ બનાવવાની પદ્ધતિમાં ૧૫% કોળાનો માવો અને ૧૦% ખાંડનો ઉપયોગ કરીને ગ્રાહકો દ્વારા સ્વીકાર્ય એવું સારી ગુણવત્તા યુક્ત કોળા ફ્લેવર્ડ દૂધ બનાવી શકાય છે. આ રીતે બનાવેલ સારી ગુણવત્તા યુક્ત કોળા ફ્લેવર્ડ દૂધને સ્વચ્છ અને જીવાણું રહિત કાચની બોટલમાં ભરીને હવા ચુસ્ત પરિસ્થિતિમાં ૧૧૦±૨ °સે તાપમાને ૧૫ મિનીટ માટે ગરમ કરવાથી સ્વીકાર્ય ગુણવત્તા યુક્ત પરિસ્થિતિમાં ૬ માસ સુધી સામાન્ય રૂમ તાપમાને જાળવી શકાય છે.
	[Action: PI, Prof & Head, Livestock Products Technology Dept., College of Veterinary Science & A.H.]

Navsari Agricultural University

Title	Standardization of technology for preparation of candy from ripe papaya (*Carica papaya* Linn.) fruit
16.10.1.28	**Recommendation approved for processors and entrepreneurs:** The entrepreneurs and fruit processors interested in production of papaya candy are recommended to use the processing technology developed by the Navsari Agricultural University. The technology involves osmotic dehydration of ripe papaya cuboids in sugar syrup (50 °Brix) followed by increase of syrup strength (10 °Brix per day) up to 70 °Brix, quick rinsing and drying in tray dryer at 60°C. It results in good quality sweetened dehydrated papaya candy (moisture ~12%) which retains more than 40% of the ascorbic acid present in the fresh sample. The candy so produced and packed in polypropylene bags (400 gauges) found acceptable upto six months. ઓસ્મોટિકપ્રક્રિયાથી નિર્જળીકરણ કરેલ પપૈયાની કેંડીના ઉત્પાદનમાં રસધરાવતા ઉધોગસાહસિકો અને ફળફળાદીના પ્રોસેસરોને નવસારી કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેક્નોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ તાંત્રીકતામાં ખાંડની ચાસણી (૫૦ °બ્રિક્સ)માં પપૈયાના ટુકડાનું ઓસ્મોટિક પ્રક્રિયાથી નિર્જળીકરણ કર્યા બાદ ખાંડની ચાસણીની સાંદ્રતા (દરરોજ ૧૦ °બ્રિક્સ વધારી) ૭૦ °બ્રિક્સ ટી.એસ.એસ. થાય ત્યાં સુધી તૈયાર કરી, તરત જ ધોઈને ટ્રે ડ્રાયરમાં ૬૦ °સે. તાપમાને સુકવણી કરવામાં આવે છે. આ પ્રક્રિયાના પરિણામે સારી ગુણવતા યુક્ત મિઠાશ ધરાવતી નિર્જળીત કેંડી (૧૨% મોઈશ્ચર) મેળવી શકાય છે, જે તાજા પપૈયાના ૪૦% થી વધુ એસ્કોર્બિક એસિડ ધરાવે છે. આ રીતે તૈયાર કરેલ પપૈયાની કેન્ડીને પોલી પ્રોપીલીન (૪૦૦ ગેજ) ની બેગમાં પેક કરી, છ માસ સુધી સંતોષકારક રીતે સંગ્રહ કરી શકાય છે.
	[Action: PI, Prof & Head, Post Harvest Technology Dept., ASPEE College of Horticulture and Forestry]
Title	Home scale ripening of Banana cv. Grand Naine

16.10.1.29	**Recommendation approved for farmers** The farmers of South Gujarat heavy rainfall zone are recommended to ripe banana at home scale by spraying 100 ppm etharel (39% Ethaphone) on unripe banana and covering them by gunny bags for 4-5 days for early ripening and give good quality ripe fruits on 5th day. દક્ષિણ ગુજરાતનાં ભારે વરસાદ વાળા વિસ્તારના ખેડૂતોને ઘરે વહેલા કેળાં પકવવા માટે કાચા કેળાં ઉપર ૧૦૦ પી. પી. એમ. ઈથરેલનો (૩૯% ઈથાફોન) કાતરા ઉપર છંટકાવ કરી કોથળા વડે ૪ થી ૫ દિવસ કાતરાને ઢાંકવાની ભલામણ કરવામાં આવે છે જે થી પાંચમાં દિવસે સારી ગુણવત્તાના પાકા કેળાં મેળવી શકાય.
	Suggestions: House advised to document systematic scientific data for proper support of the results. Scientist also advised for development of chart indicating color and ripeness of banana samples in all treatments for proper farmers training.
	[Action: PI, Prof & Head, Post Harvest Technology Dept., ASPEE College of Horticulture and Forestry]

16.10.2 Scientific Recommendation

Anand Agricultural University

Title	Evaluation of antimicrobial activity of Lactic Acid Bacteria strains against mastitic milk isolates of *Staphylococcus aureus* and *Escherichia coli*
16.10.2.1	**Recommendation approved for scientific community** Anand Agricultural University Lactic Acid Bacterial strains *L. rhamnosus* MTCC5462, *Lactobacillus brevis* N9, *Lactobacillus paracasei* N26 and *Lactobacillus rhamnosus* NN3 are found to possess promising antimicrobial action against antibiotic resistant mastitic milk isolates *Staphylococcus aureus* 72and *E.coli* 6.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	*In-vitro* evaluation of selected probiotic cultures for oral health benefits
16.10.2.2	**Recommendation approved for scientific community** Anand Agricultural University probiotic culture *Weissella cibaria* MTCC 5947 was found to possess properties which can be explored to use it for oral health applications. It possesses antimicrobial ability towards oral pathogens, *Streptococcus mutans* MTCC 890 and *Candida albicans* MTCC 3017. It also possess high antioxidant and anti-carcinogenic activity helpful for potential plaques removal and better oral health.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	Purification and characterization of ACE-inhibitory peptides derived from fermented Surti Goat milk
16.10.2.3	**Recommendation approved for scientific community** A protocol is developed by Anand Agricultural University, Anand for the production of antihypertensive peptides viz., IELEDWKDK, LPKMAQLAGPAHNISR and ASASETNTAQVTSTEV peptides from surti goat milk by fermenting it for 48h at 37°C using *L. casei* NK9 and *L. fermentum* LF.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	Development of Technology for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties
16.10.2.4	**Recommendation approved for scientific community** The fermented rice beverage developed at Anand Agricultural University, Anand is found to have potential in preventing the antibiotic associated

	diarrhea. The group of wistar rats fed at the rate of 2 ml/g for 15 days helped to control diarrhea as estimated by parameters like maintenance of body weight, fecal water content, fecal consistency score and histopathological analysis.
	[Action: PI, Prof & Head, Dept of DM, DSC, AAU, Anand]
Title	Study on decontamination of pesticides in selected Spices, vegetable and fruits using γ-irradiation, UV radiation and Ozonation Techniques
16.10.2.5	**Recommendation approved for scientific community** The scientific community interested in degradation of pesticide in green chili are advised to use ozonized water for 15 minutes @ 30 g/hr. This enables reduction in Ethion (93%), Profenophos (91.10%), Quinalphos (91.02%), Imidacloprid (76%) and Acetamiprid (63%).
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Metagenomic based microbial diversity study of dairy effluent treatment plants
16.10.2.6	**Recommendation approved for scientific community** The samples from dairy effluent plants collected from various sources like influent, anaerobic digester, aeration tank and final treated effluent showed significant differences in the type of microbiota. The predominant phyla in dairy effluent samples are Firmicutes, Proteobacteria, Planctomycetes, Bacteroidetes, and Chloroflexi. The *Streptococcus, Veillonella, Blastopirellula,* and *Thauera* were found to be the core microbiome at the genus level.
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Evaluation of Combined Effect of Gamma Irradiation and Edible Coating on Shelf-Life of Sapota Fruit
16.10.2.7	**Recommendation approved for scientific community** Scientists interested in enhancement of shelf-life of sapota fruits Cv. Kalipatti are advised to use the combination of irradiation and edible coating technology developed by Anand Agricultural University. This technology enables the shelf life of 13 days with minimum physiological weight loss (19.85%), retention of the firmness of fruits (0.20 N) and ascorbic acid (8.82 mg/100).
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Performance Evaluation of Feed Forward Neural Network for Detection of Boric Acid Adulteration in Wheat Flour using FTIR Spectra
16.10.2.8	**Recommendation approved for scientific community** Feed forward artificial neural networks (learning rate 0.02, momentum 0.9) can be successfully used to detect boric acid adulteration in wheat flour at 2% and above levels using FTIR spectra with 90% correct identification.
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]
Title	Decontamination Effect of Dielectric Barrier Discharge Plasma and UV-C on Selected Microorganisms.
16.10.2.9	**Recommendation approved for scientific community** **1. Decontamination Effect of DBD Plasma on Selected Microorganisms:** The scientific community interested in non-thermal decontamination techniques is recommended to adopt DBD plasma treatment to decontaminate food born micro-organisms *S. typhi*, *E.coli*, *E. aerogens* and *S. aureus*. At 5 kV power for 24 minutes treatment of atmospheric cold plasma, the decontamination effect can be 2 to 3 log reduction (log CFU/g). **2. Decontamination Effect of UV-C on Selected Microorganisms:**

	The scientific community interested in non-thermal decontamination techniques is recommended to adopt UV-C treatment to decontaminate food born micro-organisms *S. typhi*, *E.coli*, *E. aerogens* and *S. aureus*. At 3 cm distance and 60 minutes of UV-C exposure treatment, the decontamination effect can be 3 to 5 log reduction (log CFU/g).
	[Action: PI, Prof & Head, Dept of FQA, FPTBE, AAU, Anand]

Navsari Agricultural University

Title	Surveillance of afla toxin in pasteurized and raw milk
16.10.2.10	**Recommendation approved for scientific community** Navsari Agricultural University analyzed 45 milk samples from Navsari for Aflatoxin presence. It was observed that occurrence of Aflatoxin M1 was higher in winter season followed by monsoon season. Aflatoxin M1 was more in buffalo milk in comparison to cow milk samples. Pasteurized buffalo milk samples showed higher Aflatoxin M1 than raw milk whereas it was absent in pasteurized cow milk samples.
	[Action: PI, Prof & Head, Food Quality Testing Laboratory, N.M. College of Agriculture]

Kamdhenu University

Title	Process optimization of milk based peanut *Thabdi*.
16.10.2.11	**Recommendation approved for scientific community** Optimum formulation for milk based peanut *Thabdi* includes Fat/SNF ratio of milk 1.11, 21% heat treated and ground peanut level (% w/w of milk on DMB), 80% sugar level (% w/w of milk on DMB). Heat treatment of peanut was carried out at temperature 105±2°C for 4 minutes in sand.
	Suggestion: House advised scientists to do appropriate shelf life study and propose recommendation for industry in future.
	[Action: Head, Dairy Technology Dept., College of Dairy Sci., KU, Amreli]

16.10.3 New Technical Programmes

Date:-10/06/2020

Summary

Name of University	**New Technical Programmes**	
	Proposed	**Approved**
AAU, Anand	26	26
JAU, Junagadh	--	--
NAU, Navsari	--	--
SDAU, SKNagar	09	09
KU, Gandhinagar	02	02
Total	**37**	**37**

Code No.	TITLE	*Remarks*
16.10.3.1	Comparative appraisal of mozzarella cheese analogues prepared using acid casein, rennet casein and their admixture	**Approved** **[Action: PI & Prof & Head, Dept of DT, DSC, AAU, Anand]**
16.10.3.2	Quality characteristics of Mozzarella cheese as influenced by dry plasticizing methods	**Approved** **[Action: PI & Prof & Head, Dept of DT, DSC, AAU, Anand]**
16.10.3.3	Development of technology for the manufacture of a protein enriched moringa fortified spread	**Approved with Suggestion/s** β carotene analysis should be addedin the observation. Observations on spreadability of the product as compared to control should be included. The word 'access' must be replaced with 'assess' in objective number 4. **[Action: PI & Prof & Head, Dept of DT, DSC, AAU, Anand]**
16.10.3.4	Development of technology for manufacture of low fat paneer	**Approved with Suggestion/s** Yield, as one of the response parameters, should be added. **[Action: PI & Prof & Head, Dept of DT, DSC, AAU, Anand]**
16.10.3.5	Quantification of selected adulterants in milk using existing qualitative tests	**Approved** **[Action: PI & Prof & Head, Dept of DC, DSC, AAU, Anand]**
16.10.3.6	Evaluating the effect of selected spices on cholesterol level in ghee	**Approved** **[Action: PI & Prof & Head, Dept of DC, DSC, AAU, Anand]**
16.10.3.7	Development of whey based candy incorporating *Moringaoleifera*	**Approved with Suggestion/s** β carotene analysis should be addedin the observations. **[Action: PI & Prof & Head, Dept of DC, DSC, AAU, Anand]**
16.10.3.8	Development of enrichment broth for selective growth of coliforms	**Approved** **[Action: PI & Prof & Head, Dept of DM, DSC, AAU, Anand]**
16.10.3.9	Production of bioactive peptides with Antioxidative activity from Fermented camel milk	**Approved** **[Action: PI & Prof & Head, Dept of DM, DSC, AAU, Anand]**
16.10.3.10	Development of fermented cactus pear (*Opuntiaficus-indica*) beverage. (under the plan scheme- Development of dairy starter cultures and value added dairy products)	**Approved** **[Action: PI & Prof & Head, Dept of DM, DSC, AAU, Anand]**
16.10.3.11	Mechanized manufacture of beet root *halwa*	**Approved with Suggestion/s** Quality attributes (i.e. composition, microbial,

		etc as per FSSAI) of the final product should be done. **[Action: PI & Prof & Head, Dept of DE, DSC, AAU, Anand]**
16.10.3.12	Production of premium quality powder with maximum retention of essential oil using cryogenic grinding of fennel seed	**Approved with Suggestion** Mention principal bioactive compounds to be analysed. **[Action: PI & Prof & Head, Dept of PHET, FPTBE, AAU, Anand]**
16.10.3.13	Standardization of drying technique for production of whole dried lime	**Approved** **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.10.3.14	Production technology for defatted pumpkin seed flour	**Approved** **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.10.3.15	Development of high fiber cookies supplemented with pomegranate seed flour	**Approved with Suggestions** 1.Objectives 1 & 2 seems to be similar. Standardization based on baking parameters may be considered for objective 1. 2.Since technology for two different type of products has to be worked out, consider revision of the title as "Development of high fiber cookies and muffins supplemented with pomegranate seed flour". 3.Process flow diagram should be included in the plan of work. **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.10.3.16	Production technology of Ready to Eat extruded snack from AonlaPomace Powder	**Approved** **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.10.3.17	Production technology for extraction of bioactive compounds from mango seed kernel	**Approved and Suggestions** House suggested to consider antioxidant activity analysis using ABTS, DPPH and/or FRAP. **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.10.3.18	Utilization of de-oiled flax seed meal for value added product	**Approved** **[Action: PI & Prof & Head, Dept of FPT, FPTBE, AAU, Anand]**
16.103.19	Performance assessment of two stage evaporative cooling system for transport of selected vegetables	**Approved** **[Action: PI & Prof & Head, Dept of FE, FPTBE, AAU, Anand]**
16.10.3.20	Development of IoT-based	**Approved**

	monitoring system for selected process parameters	**[Action: PI & Prof & Head, Dept of FE, FPTBE, AAU, Anand]**
16.10.3.21	Performance evaluation of feed forward neural network for detection of boric acid adulteration in wheat flour using FTIR spectra with solvent extraction	**Approved** **[Action: PI & Prof & Head, Dept of FQA, FPTBE, AAU, Anand]**
16.10.3.22	Evaluation of microbial decontamination efficiency of electrolysed water for safety and quality of selected fruits and vegetables	**Approved** **[Action: PI & Prof & Head, Dept of FQA, FPTBE, AAU, Anand]**
16.10.3.23	Decontamination efficiency of electrolyzed water and ozone for safety and quality of selected fruits and vegetables	**Approved with Suggestions** Mention selected vegetable (i.e. Okra etc) and pesticides concerned (i.e. Organochlorine, Organophosphate, Carbamate, Pyrethroid group group, like imidacloprid, chlorpyrifosetc) in the plan of work. **[Action: PI & Prof & Head, Dept of FQA, FPTBE, AAU, Anand]**
16.10.3.24	Study on physical, thermal & storage properties of various biomass briquettes and its utilization in small food industries	**Approved** **[Action: PI & Prof & Head, Dept of BE, FPTBE, AAU, Anand]**
16.10.3.25	Development of low fat omega fatty acid enriched Cake	**Approved** **[Action: PI & Prof & Head, Dept of BE, FPTBE, AAU, Anand]**
16.10.3.26	Development of soya milk bread	**Approved** **[Action: PI & Prof & Head, Polytechnic College in Food Science & Nutrition]**
16.10.3.27	Development of herbal beverage from olive leaves	**Approved with Suggestions:** 1. Sun drying should be included as treatment. 2. β carotene analysis should be included in final product. 3. Storage study should be included. 4. Size of leaves should be mentioned. **[Action: PI & Head, Department of Food Processing Technology, College of Food Technology, SDAU, SK Nagar]**
16.10.3.28	Preparation of coffee like beverage from Roasted Date Seed Powder (RDSP) and its evaluation for Antioxidant potential	**Approved with Suggestions:** 1. Mineral analysis, if possible, of the final product RDSP. 2. Beverage from RDSP should be prepared without adding milk and compared with black coffee. Milk may be added at the end, before serving.

		[Action: PI & Head, Dept of Dairy Chemistry, G.N. Patel College of Dairy Technology, SDAU, SK Nagar]
16.10.3.29	Assessment of antioxidant potential of herbal Greek yoghurt incorporated with Lemongrass (CymbopoganCitratus)	**Approved with Suggestions:** 1. Title should be revised as "Assessment of antioxidant potential of herbal Greek yoghurt incorporated with Lemongrass grass (*CymbopoganCitratus*) extract". 2. Storage study of the product should be carried out till its acceptable sensory attributes. 3. Add control, i.e. without adding lemon grass, sample during the study. 4. Estimation of carbohydrate in final product. **[Action: PI & Head, Dept of Dairy Chemistry, G.N. Patel College of Dairy Technology, SDAU, SK Nagar]**
16.10.3.30	Development of whey based candy using guava juice	**Approved with Suggestions:** All FSSAI recommended parameters should be studied for the final product. **[Action: PI & Head, Dairy Plant Operation, G.N. Patel College of Dairy Technology, SDAU, SK Nagar]**
16.10.3.31	Development of whey based beverages using guava juice	**Approved with Suggestions:** All FSSAI recommended parameters should be studied for the final product. **[Action: PI & Head, Dairy Technology, G.N. Patel College of Dairy Technology, SDAU, SK Nagar]**
16.10.3.32	Preparation of wheat grass based beverage	**Approved with Suggestions:** 1. Refer the recommendation approved previously in this regard. Scientist from AAU, Anand may be contacted. 2. Mention the variety of wheat and basil, which will be used in the study. 3. Also plan suitable storage study of the developed product. **[Action: PI & Head, Department of Food Process Engineering, College of Food Technology, SDAU, SK Nagar]**
16.10.3.33	Effect of jaggery on the rheological characteristics of biscuit dough and quality of biscuits	**Approved** **[Action: PI & Head, Department of Food Processing Technology, College of Food Technology, SDAU, SK Nagar]**
16.10.3.34	Development of technology for stevia based low calorie carbonated whey beverage	**Approved with Suggestions:** 1. Product should be evaluated till its sensory quality acceptable. 2. Calorific value should be added in the

		observations. 3. Standard carbonation process should be referred. **[Action: PI & Head, Dairy Engineering, G.N. Patel College of Dairy Technology, SDAU, SK Nagar]**
16.10.3.35	Standardization of the recipe for the preparation of Ready -to-serve drinks from rose	**Approved** with **Suggestion** Number of repetitions should be 4 (four). **[Action: PI & Head & Principal, College of Horticulture, SDAU, Jagudan]**
16.10.3.36	Study of novel preservatives alternative to Formalin	**Approved with Suggestions:** FAT and SNF should only be considered for optimization as alternative to formalin for all possible combinations. And acceptable/appropriate storage study and interval should also be included in the 1st objective. **[Action: PI & Head, Department of Dairy Chemistry, College of Dairy Science, KU, Amreli]**
16.10.3.37	Characterization of ghee prepared from sheep milk and evaluation of its shelf life during storage	**Approved with Suggestions:** 1. Iodine value, saponification value, melting point, RI value should also be included in the study. 2. Delete the word “during storage” from title and objective 2. **[Action: PI & Head, Department of Dairy Chemistry, College of Dairy Science, KU, Amreli]**

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Proceeding of Plenary Session of 16th Combined AGRESCO meeting of SAUs and Kamdhenu University held through Video Conferencing, hosted by Navsari Agricultural University (NAU), Navsari on July 30, 2020

Plenary Session

Venue: IT cell, NAU, Navsari | **Date: 30.07.2020**
Time: 09:00 to 17:00 Hrs

Plenary session of 16th Combined AGRESCO meeting of SAUs and Kamdhenu University was chaired by **Dr. V.P. Chovatia**, Hon. Vice Chancellor of JAU, Junagadh and Co-chaired by **Dr. R. K. Patel**, Hon. Vice Chancellor, SDAU, S. K. Nagar; **Dr. R.V. Vyas**, Hon. Vice Chancellor, AAU, Anand; **Dr. S.R. Chaudhary**,Hon. Vice Chancellor, NAU, Navsari and **Dr. N. H. Kelawala**, Hon. Vice Chancellor, KU, Gandhinagar. **Dr. S.R. Chaudhary**, Hon. Vice Chancellor, NAU, Navsari welcomed all the Hon. Vice Chancellors of SAUs and KU along with Director of Research & Dean PGS, Director of Extension Education, Associate Director of Research, Chairman, Co-chairman, Convener, Rapporteurs of all the committees and other participants who joined the meeting through online mode. He expressed immense pleasure and great satisfaction over the successful organization of Combined AGRESCO of all the SAUs and KU by using the Video Conferencing online platform in spite of nationwide lockdown and quarantine due to Corona Virus (COVID19) disease pandemic. It was loudly appreciated and recommended to organize the similar events in future by using the excellence of Video Conferencing as it not only save time and money but also relieve participants from the anxiety and risk of travelling. Further, exchange of NTPs and recommendation in advance of all the sub-committees could give more time for meaningful discussion and deliberations. Altogether total 496 New Technical Programmes were presented out of which 475 programme were approved. Total 420 recommendations / release proposals (242 for the farming communities and 178 scientific informations) were presented, out of which, 342 recommendations / release proposals (204 for the farming communities and 138 scientific informations) were approved. All the Hon. Vice Chancellors of SAUs addressed the meeting, congratulated the scientists and expressed satisfaction over the successful organization of 16thCombined Joint AGRESCO through the Video Conferencing.

Proceedings of all the sub-committees by the respective conveners were presented, where in recommendations and new technical programmes of different sub-committees were discussed and approved as in Annexure-I. Dr. D.R. Bhanderi, Professor & Head, Dept of Horticulture, NMCA, NAU, Navsari; Dr. P.B. Patel, Associate Research Scientist, MRRC, NAU, Navsari and

Dr. Lalit Mahatma, Associate Professor, Dept. of Plant Pathology, NMCA, NAU, Navsariwere the rapporteurs for this session.

Dr. P. B. Patel, Convener, Crop Improvement AGRESCO sub-committee, NAU, Navsari presented release proposals of varieties and recommendations of Crop Improvement AGRESCO sub-committee. Out of 27 release proposals of improved crop varieties/hybrids, 22 entailing 04, 04, 05 and 09 from JAU, SDAU, AAU and NAU were approved. Two recommendations for farmers from JAU, Junagadh were also approved. Further, one scientific recommendation and 4 new technical programmes were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. J. D. Thanki, Convener, Crop Production sub-committee of NAU, Navsari presented the proceeding of Crop Production sub-committee report. Forty seven farming community recommendations, of which 09, 18, 11 and 09 from SDAU, NAU, JAU and AAU were approved. Further, 11 scientific recommendations and 102 new technical programmes entailing 25, 26, 28 and 21 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. K. B. Rakholiya, Convener, Plant Protection AGRESCO sub-committee, NAU, Navsari presented proceeding of the Plant Protection AGRESCO sub-committee. In all, 42 recommendations were approved for farming community. Forty seven recommendations were approved as scientific information and 80 new technical programmes entailing 8, 19, 16 and 37 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. D. R. Bhanderi, Convener, Horticulture AGRESCO sub-committee, NAU, Navsari presented proceeding of the Horticulture and Agro-forestry AGRESCO sub-committee of SAUs. Thirty farming community recommendations, of which 05, 03, 06 and 16 from AAU, JAU, SDAU and NAU were approved. The house approved 04 recommendations for scientific community and 53 new technical programmes and four filler trials entailing 12, 31, 05 and 05 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. Ajay V. Narwade, Convener, Basic Science AGRESCO sub-committee, NAU, Navsari presented the proceeding. Two recommendations for farming community and 18 for scientific community were approved. Twenty five new technical programmes entailing 07, 10, 06 and 02 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. Ruchira Shukla, Convener, Social Science AGRESCO sub-committee, NAU, Navsari presented the proceeding. One recommendation for farming community and three scientific information were approved. Eighty four new technical programmes entailing 15, 21, 08 and 40 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. C.V. Savalia, Convener, Animal Healthsub-committee, NAU, Navsari presented proceeding of Animal Health AGRESCO sub-committee. Nineteen scientific recommendationswere approved. Thirty two new technical programme entailing 05, 07, 03 and 17 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. B. P. Brahmkshtri, Convener, Animal Production & Fisheries ScienceAGRESCO sub-committee, NAU, Navsari presented proceeding of Animal Production & Fisheries Science AGRESCO sub-committee. Eleven recommendations for the farming community and 09 scientific informations were approved. Thirty five new technical programmes entailing 07, 06, 07 and 15 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. P.K. Srivastava, Convener, Agricultural Engineering, NAU, Navsari presented proceeding of Agriculture Engineering AGRESCO sub-committee. Eighteen recommendations for the farming community and nine scientific recommendations were approved. Twenty three new technical programmes entailing 03, 07, 07 and 06 from SDAU, NAU, JAU and AAU, respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. A. V. Makwana, Convener, Dairy Science and Food Processing Technology & Bio-Energy, AAU, Anand presented proceeding of Dairy Science and Food Processing Technology & Bio-Energy AGRESCO sub-committee. Twenty nine recommendations for the farming community and 11 scientific informations were approved. Thirty seven new technical programme entailing 09, 26 and 02 from SDAU, AAU and KU,respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

GENERAL POINTS:

1. Recommendation/NTP approving Sub-committee shall only be authorized for approving recommendation/NTP, whenever, recommendation/NTP are presented in two different sub-committees.

2. Agro Ecological Situation (AES)wherever have been given in the final recommendation or scientific information should be removed.
3. Scientists working on the organic farming should estimate the primary and secondary nutrients, C: N ratioalongwith heavy metals before plantation of the crop and immediately after the harvesting of the crop.
4. Director of Research & Dean PGS, NAU, Navsari was appointed as Nodal Officer for the compilation of all the general points/suggestions of all the subcommittees and discuss with all the SAUs Director of Research & Dean PGS and Director of Extension for the finalization and subsequent circulation.
5. In calculation of economics of the treatment, all concerned should calculate BCR (Benefit Cost Ration) instead of ICBR.

<u>CONCLUDING REMARKS:</u>

Dr. V.P. Chovatia, Hon. Vice Chancellor, JAU, Junagadh expressed congratulations to the scientists for the approval of recommendations and thanks for the timely completion of the plenary session.

Dr. R. K. Patel, Hon. Vice Chancellor, SDAU, S. K. Nagar expressed satisfaction over the agricultural research and development since independent which not only made India self sufficient in the food security with the increasing population but transformed from food importer to exporter. He emphasized about the development of mechanism for the marketing, consultancy and management tactics for the speedy and efficient transmission of the developed technologies to the field.

Dr. R.V. Vyas, Hon. Vice Chancellor, AAU, Anand discussed about the new educational policy just launched by the Government of India and encouraged fellow scientists to be prepared for the changes in the overall agricultural sector.

Dr. N. H. Kelawala, Hon. Vice Chancellor, KU, Gandhinagar suggested to initiate research on Homoeopathic medicines by involving experts of the Homoeopathy.

Dr. S.R. Chaudhary, Hon. Vice Chancellor, NAU, Navsari expressed thanks to all the Hon. Vice chancellors for the cooperation for the online mode of presentation and timely completion of all the subcommittees meeting and finally the plenary session of 16^{th}Combined Joint AGRESCO.

The session ended with Vote of Thanks by Dr. Lalit Mahatma, Associate Professor, Dept. of Plant Pathology, NMCA, NAU, Navsari.

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