



Anand Agricultural University

14th Annual Report 2017-18





सत्यमेव जयते

Government of India
Ministry of Human Resource Development



India Rankings 2018

(National Institutional Ranking Framework)

Anand Agricultural University, Anand

ranked 83

in

University

Category

Anand

CHAIRMAN, NBA

Anand

MEMBER SECRETARY, NBA



Anand Agricultural University

14th Annual Report 2017-18

01-04-2017 to 31-03-2018

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Our Symbol



This is our Emblem;

One Square, One Leaf
with "AAU" firmly embedded

The Square with lighter and darker shades of green
Stands for Lusciousness, Fertility and Abundance of this land.
This is our Mother Land
With all the three elements abounding

Among the entire world, there is only one thing
That Could photo synthesize solar rays
into biomass i.e., the LEAF.
Hence, the LEAF stands as our symbol
Which could transform sun rays i.e. energy into matter

Thus leaf as a symbol of our commitment;
Our Dream
to make our Country
abundant in agriculture

Leaf is our tribute to
Our Mother Land
Our pledge to make Country prosperous

Our Motto is :

कृणवन्तो राष्ट्रं कृषिसंपन्नम्

Means

We, the Scientists, Students and
all the employees of AAU unitedly
stand to make the solemn pledge
that we enrich and glorify
the grandeur of our Country
and make it agriculturally prosperous

From VC's Desk



It is a matter of great pride and privilege and feel honored that I am a part of the institution in name and style of Anand Agricultural University (AAU). The headquarter of University situated in Anand, Milk City famous for the Amul Dairy located in the agro-climatic zone-III, which is a centre for teaching and learning since 1947. The university has emerged as one of the most distinguished Higher Education Institution, occupying an important place in the emergence of intellectual and cultural heritage of India.

AAU is committed to develop competent human resource to serve the society in general and farmers and food industry in particular for sustainable livelihood, efficient use of natural resources, ensuring food security and safety for the nation. The AAU believes in harnessing the power of science and innovation for increasing the prosperity of the society. Our Emblem symbolizes our commitment to make our country abundant in agriculture and pay tribute to our mother land and our pledge to make country prosperous.

With the support from the State and Central Government including ICAR, and private organizations, AAU has been able to create state-of-the-art teaching and research infrastructure. During the year, six new improved high yielding varieties, viz. Gujarat Anand Durum Wheat-3 (GADW-3), Gujarat Anand Bottle Gourd Hybrid-1 (GABGH-1), Gujarat Anand Tomato-5 (GAT-5), Gujarat Anand Kuvarpathu-1 (GAKP-1), Gujarat Anand Bidi Tobacco Hybrid-2 (GABTH-2) and Soybean NRC-37 have been released. In addition to this, 68 technologies have been recommended for farmers/entrepreneurs and 59 technologies for scientific community. These technologies will lead to better agricultural outputs adopting the scientifically proved methodologies and inputs yielding better economic returns to farmers.

AAU undertakes an ambitious social and community outreach initiative through Lab to Land programme for motivating the farmers to use modern technologies and sustainable farming techniques. Under our extension activities, we ensure that the research outcome reaches to the farmers, the real stakeholders through trainings of the farmers, farm women and farm youths.

AAU has passed several notable milestones and consistently improved on many fronts that have a bearing on achieving academic excellence. Successful attempts have been made to establish the university as a great center for the purpose to create the wealth of knowledge in its domain area. It has endeavoured to create a highly inspiring atmosphere and learning environment in a beautiful and green campus. Apart from quality education, AAU shoulders the responsibility of agricultural research of par excellence meeting the escalating demands of food grains and animal products as well as successful transfer of technologies through a strong network of extension education imparted to the farmers. Combined efforts have escalated the decadal agricultural growth of the state.

Over the years, Anand Agricultural University has steadily built a strong academic tradition. I am happy to inform that the National Institutional Ranking Framework Report-2018 has been declared by the Ministry of



Human Resource Development, Government of India and the university ranked at 83rd position at National Level, thereby, maintained its place in top 100 universities of India, which is a matter of pride for Gujarat State. ICAR has also placed AAU at 20th rank amongst all the agricultural universities of the country in the year 2017. Very recently, AAU is one of the four agricultural universities of the country and the only university from Gujarat which has been considered by UGC for submitting the proposal for Institution of Eminence to place it as the world class institution. Thus, AAU is nationally recognized for delivering excellent education at the undergraduate and postgraduate levels as well as research, and is committed to provide excellent human resource to meet national needs and global expectations.

A unique Experiential Learning Unit cum Incubation Centre established with the financial support of Ministry of Industries, Govt. of Gujarat and ICAR, New Delhi has been made fully operational at the College of Food Processing Technology & Bio Energy with eight food processing lines. This will give the real hands-on practical training to the students on various aspects of food processing and technologies in line with the students' READY (Rural Entrepreneurship Awareness Development Yojana) programme of ICAR.

The University has adopted the recommendations of Vth Deans Committee of ICAR as well as Minimum Standards in Veterinary Education – 2016 as recommended by Veterinary Council of India and has streamlined the degree nomenclatures and course syllabus accordingly.

Every employee in AAU considers himself/herself as a part of Team-AAU and their sense of belongingness enhanced AAU output. To further enhance the efficiency of our employees, they are deputed for various training programmes on various aspects of agriculture and allied sciences. AAU is amongst the very few agricultural universities in the country to make extensive use of automation in its administrative functions by using various ICT tools.

I am sure, the growing recognition of AAU at the national and international levels along with its glorious history will pave the way for building up better institutional capacity for exploring new horizons of academic excellence and still better contribution to farmers' welfare. And with the blessings of Hon. Governorshri and the Chancellor of our University, constructive support from the State and the Central Governments, and the enthusiastic involvement of our officers, scientists, faculty and supporting staff, AAU will continue to attain better progressive elevations.

I heartily congratulate the entire AAU fraternity for their relentless efforts in bringing our University to this level. I am sure that this saga of success would continue for all time to come.

Anand
Date : 27-08-2018


(N. C. Patel)
Vice Chancellor

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Our Song

हो संस्कृति कृषि वत्सलम्, कल्याण कीर्ति मंगलम्
कृषावन्तो राष्ट्रं कृषिसंपन्नम् कृषावन्तो राष्ट्रं कृषिसंपन्नम्
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

सरदार गाथा गुजरी, याद अमूल यरोतरी,
क्षीर संस्कृति महीसागरी, आतिथ्य आदर से लरी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

डाक्टर श्रीठाकोर डा, कायावरोहण कलिका,
वडताल लाल गुलाल, सून करताल धून नारायणी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

संतराम ओडाणा श्रीमद्, हरि मारगी जेवन लगत,
दिल के दिये जलते किये, गुंजु गीरा रविशंकरि,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

सरदार रास अडासमें, आपु चले थे साथ में,
विधानगर आशंढ में, विज्ञान ज्ञान गंगोतरी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

- डॉ. आलकृष्ण जोषी



Chapter - 1

INTRODUCTION



In central region of Gujarat State, the agricultural education was started way back in 1938 through establishment of *Krush-Go-Vidya Bhavan* at Anand, the milk city of India. This Institute was popularly known as Khetiwadi or the Institute of Agriculture. Later on in 1947, with the establishment of B. A. College of Agriculture, which was initially affiliated to Bombay University until 1956 then to Gujarat University until 1962 and subsequently to Sardar Patel University, became integral institution of Gujarat Agricultural University in 1972 along with Sheth M.C. College of Dairy Science and the Government College of Veterinary Science and Animal Husbandry, Anand.

Anand Agricultural University came in to existence with effect from May 01, 2004 by enactment of Gujarat Agricultural Universities Act, 2004 (Gujarat Act, No.5 of 2004) with transfer of the activities of the Anand zone of the erstwhile Gujarat Agricultural University. This resulted in greater autonomy for regional agriculture development, and as it had inherited such a well-developed infrastructure with vibrant activities, AAU used this strength as a force multiplier to enlarge its vision, adding momentum to its efforts in fulfilling its mandate.

AAU and its progenitor Gujarat Agricultural University, always have/had dominant presence in Indian agricultural education system, ever since 1972. Prime institutions/colleges like B. A. College of Agriculture, Sheth M. C. College of Dairy Science and College of Veterinary Science & A.H. had their reputed presence even from 1947, 1961 and 1964 respectively to undertake useful interventions related to agricultural education and research, which later contributed significantly in paving a path for many revolutions (green revolution, white revolution and many other historic agricultural innovations).

These historic institutions continue to remain prime faculties of present days AAU, which along with the subsequently added new faculties and colleges have gained increasing importance as well as higher status across the nation even though the AAU is in its second decade of existence.

AAU has now 10 constituent colleges, including three colleges for Agriculture, and one each for Veterinary Science and Animal Husbandry, Dairy Science, Agricultural Information Technology, Food Processing Technology and Bio Energy, Agricultural Engineering, Horticulture and Agricultural Business Management Studies. It also has 25 on campus and 23 off-campus research centres, 1 Extension Education Institute and 22 Extension Education centres. The districts of Ahmedabad, Anand, Botad, Chhotaudepur, Dahod, Kheda, Mahisagar, Panchmahaland Vadodara are covered under territorial jurisdiction of the university comprising nearly 17.41 per cent (3.413 million ha) area of Gujarat State (19.60 million ha). The headquarter of University is Anand, Milk City famous for the Amul Dairy, is on the Ahmedabad-Mumbai railway line, 65 km from Ahmedabad and 40 km from Vadodara railway station and is connected by express highway on Golden quadrilateral. The city is located at 22.56 °N Latitude and 72.95 °E Longitude.

AAU has passed several notable milestones and consistently improved on many fronts that have a bearing on achieving academic excellence. Successful attempts have been made to establish the university as a great center for the purpose to create the wealth of knowledge in its domain area. It has endeavored to create a highly inspiring atmosphere and learning environment in a beautiful and green campus. Apart from quality education, AAU shoulders the responsibility of agricultural research of par excellence



meeting the escalating demands of food grains and animal products as well as successful transfer of technologies through a strong network of extension education imparted to the farmers. Combined efforts have escalated the decadal agricultural growth of the state.

AAU is committed to develop competent human resource to serve the society in general and farmers and food industry in particular for sustainable livelihood, efficient use of natural resources, ensuring food security and safety for the nation. The AAU believes in harnessing the power of science and innovation for increasing the prosperity of the society. Our Emblem symbolizes our commitment to make our country abundant in agriculture and pay tribute to our mother land and our pledge to make country prosperous. Our Motto is “*Krunvanto Rastram Krushi Sampannam*” which means that we, the scientists, students and all the employees of AAU unitedly stand to make the solemn pledge that we enrich and glorify the grandeur of our country and make it agriculturally prosperous.

Considering the strengths acquired by AAU and opportunities looming large for further achievements and progress, the University is rightly set not only to continue its ongoing success stories but is also positioned rightly to usher in to next phase of excellence and contribution for agriculturally prosperous Gujarat and India.

1.1 Vision

Agriculturally Prosperous Gujarat and India

1.2 Mission

The mission of the Anand Agricultural University is to provide teaching, research and extension education services related to Agriculture, Dairy, Veterinary and Allied Sciences including newer sciences like Agricultural Information Technology, Agricultural Engineering Technology, Food Processing Technology, Agricultural Business Management, Horticulture etc. and thereby develop excellent human

resource and innovative technologies to serve the farming community with the motto of making Gujarat and India agriculturally prosperous.

1.3 Goals and Objectives

- ♦ Make provision to impart education and thereby develop quality human resources.
- ♦ Furthering the advancement of learning through research.
- ♦ Passing the knowledge gained through research to the stake holders – the farmers, through extension education.
- ♦ Promoting partnership and linkages with national and international institutions.
- ♦ Budding cutting edge technologies for national and international arena/ markets.

1.4 Education

- ♦ To impart education in agriculture and allied sciences at undergraduate and post graduate levels leading to Bachelor's, Master's and Doctorate degrees in various colleges of Agriculture, Dairy, Veterinary, Agril. Engineering, Agril. Information Technology, Food Processing Technology & Bio-Energy, International Agribusiness Management and leading to diploma in various Polytechnics in Agriculture, Horticulture, Food Science & Home Economics and Agricultural Engineering.
- ♦ To provide integrated agricultural education at different levels to increase efficiency and effectiveness of skill of students.
- ♦ To upgrade the technical competence of teachers by redesigning course curriculum as suggested by ICAR/ Dean's Committee/VCI and coordinating the teaching with research in the field of agriculture.
- ♦ To organize vocational courses to educate rural youth in various disciplines of agriculture and



allied sciences with intention to develop self-employment.

- ♦ To provide consultancy and advisory services to the industry, government and non-government sectors.
- ♦ To architect agribusiness professionals for Agricultural, Agri. food firms, rural and allied sectors.
- ♦ To encourage entrepreneurial spirit and develop qualified entrepreneurs for rural development.
- ♦ To cater the needs of enterprises and cooperatives in agribusiness at national and international level.

1.5 Research

- ♦ Evolving new varieties and breeds and developing technologies for increasing agricultural and animal productivity with a view to improve socio-economic status of farmers of Gujarat and India.
- ♦ Develop package of practices for cultivation of various crops and cropping systems of middle Gujarat.
- ♦ Develop integrated farming system, Integrated Pest and Disease Management Systems, Organic farming and Biological control.
- ♦ Develop cutting edge technologies in the field of Nanotechnology pertaining to agriculture, Animal husbandry and Food sciences.
- ♦ Develop technologies in the field of Milk production, Food processing and Bio-energy.
- ♦ Develop specific indigenous and cross breeds suitable to agro-climate zone of Middle Gujarat.

1.6 Extension Education

- ♦ Impart training to the officers and extension workers of line departments of Government of Gujarat and India, field functionaries, staff of the

University, NGOs, farmers, entrepreneurs etc.

- ♦ Conduct short and long duration vocational trainings for farmers, farm women, farm youth, entrepreneurs and tribals.
- ♦ Assess, refine and demonstrate latest agricultural technologies of University through front line demonstrations for their wider adoption.
- ♦ Transmit agricultural technologies to the farmers and rural masses of Gujarat through mass media, information technologies and video conferencing.

1.7 University Organization

As per the GAU Act-2004, the Chancellor, Vice Chancellor, Director of Research & Dean PG Studies, Director of Extension Education, Dean Faculty of Agriculture, Dean Faculty of Veterinary Science & Animal Husbandry, Dean Faculty of Dairy Science, Dean Faculty of Agricultural Engineering & Technology, Dean Faculty of Food Processing Technology and Bio-energy, Dean, International Agri-business Management Institute, Dean Agricultural Information Technology, Dean Faculty of Horticulture, Registrar, Comptroller, Director of Students' Welfare, Librarian and Executive Engineer are Officers of the University. The detailed organizational set-up as well as administrative and functional aspects are given in Chapter 2.

Hon'ble Governor of Gujarat acts as the Chancellor of the University. During the period under report, Hon'ble Governor of Gujarat, Shri O. P. Kohli was the Chancellor; Dr. N. C. Patel, the Vice Chancellor, while Dr. M. N. Brahmabhatt was the Registrar of the University.

1.8 Power and Functions of the University

Under Section 6 of the GAU Act, 2004, the University is empowered to exercise the following powers.



- ♦ Provide education and instruction in agriculture and allied sciences and in such other branches of learning as the University may deem fit;
- ♦ Make provision for research in agriculture and allied branches of learning; Make provision for dissemination of the findings of research and technical information through extension education programmes;
- ♦ Make such provision which would enable affiliated colleges and recognised institutions to undertake specialisation in different fields of studies;
- ♦ Institute degrees, diplomas and other academic distinctions;
- ♦ Lay down courses of study and instruction for various examinations;
- ♦ Hold examinations and confer degrees, diplomas and other academic distinctions and confer certificates to persons who -
 - a) have pursued approved courses of study at the University or at a college unless exempted there from, in the manner prescribed and have passed the examinations prescribed by the University or
 - b) have carried on research under conditions prescribed;
- ♦ Withdraw or cancel any degree, diploma or certificate conferred or granted by the University in such manner as may be prescribed;
- ♦ Confer Honorary degree and other distinctions in the manner prescribed;
- ♦ Provide lectures, instructions and training to persons who are not enrolled students of the University and grant such certificates to them as may be prescribed;
- ♦ Co-operate with any other University or authority in such manner and for such purpose as the University may determine;
- ♦ Establish and maintain colleges for imparting education in agriculture and allied sciences;
- ♦ Establish and maintain classrooms, laboratories, libraries, English language laboratory, research stations, institutions and museums with latest technology for teaching, research and extension education;
- ♦ Create such teaching, administrative and other posts as the University may deem necessary from time to time and make appointments thereto;
- ♦ Institute and award fellowships, scholarships and prizes in accordance with the Statutes;
- ♦ Associate or admit educational institutions imparting education in agriculture and allied sciences with, or to the privilege of the University by way of affiliation or recognition;
- ♦ Withdraw or modify, either in whole or part, affiliation or recognition of educational institutions;
- ♦ Inspect colleges and recognised institutions and take necessary measures to ensure that proper standards of instruction, teaching and training are maintained in them and that adequate library and laboratory provisions are made therein;
- ♦ Lay down and regulate the salary scales, allowances and other service conditions of the members of teaching, other academic and non-teaching staff of the University;
- ♦ Lay down and regulate the salary scales, allowances and other conditions of service of the members of the teaching, other academic and non-teaching staff in the affiliated colleges and recognised institutions; to, control and co-ordinate the activities of, and to give financial aid to, affiliated colleges and recognised institutions; and regulate fees to be paid by the students in affiliated colleges and recognised institutions;



- ♦ Institute and maintain residential accommodation for students and staff of the University;
- ♦ Fix demand and receive or recover such fees and other charges as may be prescribed;
- ♦ Supervise, regulate and control the residence, conduct and discipline of the students of the University, make arrangements for promoting their health and general welfare;
- ♦ Conduct, co-ordinate, supervise, regulate and control post-graduate teaching and research work at the University departments and affiliated colleges and recognised institutions;
- ♦ Co-ordinate, supervise, regulate and control conduct of undergraduate teaching and instruction in the affiliated colleges and undertake the same in University colleges;
- ♦ Make special provision for agricultural education, research and extension in relation to arid areas and areas prone to scarcity in the University area;
- ♦ Perform all such other acts and things whether incidental to the powers aforesaid or not, as may be requisite in order to further the objectives of the University.

1.9 Focus and Thrust Areas

AAU's activities have expanded to span newer commodities and other sectors such as soil health card, plant tissue culture, plant biotechnology, medicinal plants, liquid biofertilizer, location specific micronutrient status, pesticide residue, genomics, probiotic food, interface between industry and scientists, distance education etc., apart from the mandatory ones like research focus on rice, maize, tobacco, vegetable crops, fruit crops, forage crops, animal breeding, nutrition and dairy products etc. The core of AAU's operating philosophy however, continues to create partnership between the rural people and committed academia as the basis for

sustainable rural development. In pursuing its various programmes, AAU's overall mission is to promote continuous process of development of sustainable growth and economic independence in rural society. AAU aims to do this through education, research and extension education. Thus, AAU works towards the empowerment of the farmers.

AAU has taken a lead in agricultural education, research and extension in the Country. The University is committed to frontier areas of research and formulate the programmes as per the need of the farmers. So far, 1025 technologies have been recommended for farmers/scientists/entrepreneurs including 63 crop varieties. About 506 projects pertaining to education, research and extension are underway in different areas of agriculture, veterinary, dairy, food processing technology, agricultural engineering and horticulture. We have shown our strength in the areas of Liquid biofertilizer, Pesticide residue analysis, Soil health card, Astrometeorology calendar, Micro-propagation, Bio-diesel, Animal genomics, Rumen metagenomics, Modern surgical tools, Probiotic and Prebiotic fermented food products, post harvest value addition, ICT tools etc.

1.10 Accreditation

The Accreditation Board of ICAR, New Delhi has granted accreditation to Anand Agricultural University for a period of five years **w.e.f. 2016-17 to 2020-21.**

1.11 Recognitions

AAU is ranked 83 in University ranking in National Institutions Ranking Framework (NIRF) India Ranking 2018 done by Ministry of Human Resource Development, Government of India. From the State of Gujarat, only 3 institutions have been placed under top 100 positions at national level, and AAU is one of them.



Indian Council of Agricultural Research (ICAR) has accredited AAU and its colleges, which indicates the higher standards of education and research maintained by the university. In 2017 ranking of agricultural universities in India by ICAR, AAU has been placed at 28th rank.

AAU has signed memorandum of understanding with reputed foreign universities viz, Lund University, Sweden; Copenhagen University, Denmark; University of Alberta, Canada; and Florida Agriculture and Mechanical University, USA. In addition, AAU has 47 other MoUs including generic MoU with ICAR institutions and specific MoUs with other universities/

institutes/ NGOs in Gujarat and India. Apart from national projects, AAU has handled and still operating collaborative projects funded by European Union, Swedish International Development Agency, Government of Australia for exchange of students, faculty as well as conducting high end research.

Recently, UGC has announced a project to promote 20 institutions from India, which has potential to come up in first 500 in world ranking. AAU is the only university from Gujarat and one of the four agricultural universities of India, which has been identified as one of the potential institution and has been invited to apply for the “Institution of Eminence”.



B. A. College of Agriculture, AAU, Anand



Chapter - 2

MANAGEMENT AND ADMINISTRATION



Agricultural Universities are mainly working on three aspects, i.e., teaching, research and extension education. Teaching imparts knowledge, while research provides wisdom, which ultimately leads to strengthening of extension activities in agriculture sector. Manpower at the University is broadly divided into two categories, i.e., technical and non-technical. Technical manpower includes staff involved in teaching, research and extension education activities. They are Professor, Associate Professor, Assistant Professor, Research Scientist, Associate Research Scientist, Assistant Research Scientist, Extension Educationist, Associate Extension Educationist, Assistant Extension Educationist, etc. Non-Technical personnel are concerned with administrative and allied activities.

2.1 Management

Authority to govern the affairs of Anand Agricultural University flows from the GAU Act, 2004.

AAU was established under GAU Act, 2004 (Gujarat Act No. 5 of 2004) and functions under due authority of Chancellor, Vice Chancellor, Board of Management, Academic Council and Officers of the University. It has a territorial jurisdiction of nine districts of Gujarat namely Ahmedabad, Anand, Botad, Chhotaudepur, Dahod, Kheda, Mahisagar, Panchmahal, and Vadodara.

Functioning of the Authority

During the year under report, following authorities, as provided in Section-17 of the GAU Act, 2004 were functional.

- ♦ Board of Management
- ♦ Academic Council
- ♦ Faculties
- ♦ Board of Studies of different groups of subjects from different faculties
- ♦ Research Council
- ♦ Extension Education Council

The organizational set-up and decision making channel are given in chart-1 and chart-2.

Board of Management

The Board of Management considers and decides matters of general policies relating to the progress and development of the University. The list of Hon'ble members of the Board of Management is given in Annexure-2.

During the year under report, two regular meetings, two special meeting and one circulation meeting of Board of Management were held under the chairmanship of Dr. N. C. Patel, Vice Chancellor, Anand Agricultural University. Dr. M. N. Brahmabhatt (from 25-09-2015) I/c Registrar and Regular Registrar from 28-09-2017 acted as the Member Secretary of the Board.

Sr. No.	Meeting Number		Date	Place	Chairman
1	11 th	Special	20-05-2017	Gandhinagar	Dr. N. C. Patel
2	45 th	Regular	01-09-2017	Anand	Dr. N. C. Patel
3	12 th	Special	26-09-2017	Anand	Dr. N. C. Patel
4	46 th	Regular	05-12-2017	Godhra	Dr. N. C. Patel
5	23 rd	Circulation	08-01-2018	Gandhinagar	Dr. N. C. Patel



Academic Council

Academic Council has been constituted under Section-21 of GAU Act, 2004. Academic Council is responsible for the maintenance of standard of teaching and examinations in the University by controlling and regulating the quality of teaching, education and examinations in the University.

During the major period of the year (01-04-2017 to 31-03-2018) under report, Dr. N. C. Patel, Vice Chancellor was the Chairman and Dr. M. N. Brahmbhatt (from 25-09-2015) as I/c Registrar

and regular Registrar from 28-09-2017 acted as Member Secretary of the Academic Council. The list of members of the Academic Council is given in Annexure-3.

During the year under report, four meetings (as per table) were held to consider various issues pertaining to improvement of education, course curricula, course credits and recruitment rules for teachers and such other matters/concerns. Besides making recommendations to the Board of Management as mentioned above, the Academic Council also took various important decisions.

Sr. No.	Meeting Number		Date	Place	Chairman
1	45 th	Regular	29-04-2017	Anand	Dr. N. C. Patel
2	46 th	Regular	21-07-2017	Anand	Dr. N. C. Patel
3	47 th	Regular	24-11-2017	Anand	Dr. N. C. Patel
4	48 th	Regular	13-03-2018	Anand	Dr. N. C. Patel

Meetings of the Board of Post Graduate Studies

During the year under report, one regular meeting of Board of Post Graduate Studies was held

under the chairmanship of Dr. K. B. Kathiria, Director of Research & Dean, Post Graduate Studies and Dr. D. H. Patel, I/c. Assistant Registrar (Academic) as the Member Secretary.

Sr. No.	Meeting Number		Date	Place	Chairman
1	15 th	Regular	11-04-2017	Anand	Dr. K. B. Kathiria

Faculties

As per the Section-23 of the GAU Act, 2004, faculties are the authorities within the University. As per Statute S.9.0 the following faculties in the University are constituted:

- ♦ Faculty of Agriculture
- ♦ Faculty of Veterinary Science & Animal Husbandry
- ♦ Faculty of Dairy Science
- ♦ Faculty of Food Processing Technology & Bio-Energy
- ♦ Faculty of Agricultural Engineering and Technology
- ♦ Faculty of Agricultural Information Technology
- ♦ Faculty of Agri-business Management

- ♦ Faculty of Horticulture
- ♦ Faculty of Post Graduate Studies

Officers of the University, Members of Board of Management, Members of Academic Council and the Heads of Departments of various faculties are listed in Annexure-1, 2, 3 and 4 respectively.

Faculties consider all administrative and academic matters pertaining to their respective previews and make recommendations to the Academic Council. The faculty either initiates the matters on its own or receives recommendations from the Board of Studies of group of subjects of the respective faculty.

As per Statute S. 17.0, the following Boards of Studies have been constituted

- (a) Board of Studies of the Faculty of Agriculture



- (b) Board of Studies of the Faculty of Veterinary Science and Animal Husbandry
- (c) Board of Studies of the Faculty of Dairy Science
- (d) Board of Studies of the Faculty of Agricultural Engineering and Technology
- (e) Board of Studies of the Faculty of Food Processing Technology and Bio-energy
- (f) Board of Studies of the Faculty of Agribusiness Management
- (g) Board of Studies of the Faculty of Agricultural Information Technology
- (h) Board of Studies of the Faculty of Post Graduate Studies

As per Statute S. 19.0, the following Constitution of Board of Studies other than Board of the Post Graduate Studies

- (a) The Dean of the Faculty (**Chairman**)
- (b) The Heads of the Department and Professors teaching subjects assigned to that faculty
- (c) The Director of Extension Education or his representative
- (d) The Director of Research and Dean Post-graduate studies or his representative
- (e) Five Co-opted members
- (f) The Assistant Registrar (Academic) (**Secretary**)

Board of Studies

As provided in Section-24 of the GAU Act, 2004 and as per Statute S.21.0, functions of the Board of Studies are as follows;

- (1) To propose the establishment of such departments as deemed best and the scope of work to be done by the department and various other departments

and submit the plans there of to the Academic Council through the Faculty.

- (2) To develop department course outlines to meet the degree and diploma requirements of the University.
- (3) To perform such other functions as may be assigned by the Vice Chancellor or the Dean.

As per Statute S. 22.0, the following Duties of the Board of Studies

- (1) To consider and make recommendations to the Academic Council on all the matters pertaining to academics
- (2) To propose to the Academic Council, the courses of study for the various programmes of instructions offered in respective faculty of the University
- (3) To propose to the Academic Council, the curricula of the Department and advise in regard to all questions related to the syllabi for various under graduate courses and all other functions, referred to it by the Faculty
- (4) To recommend to Academic Council, the establishment of new Department, abolition / sub-division / or otherwise re-constitution of existing Department or Departments
- (5) To recommend text books and reference books, courses of studies relating to the subjects under the Board of Studies
- (6) To give a shape to the development of the subject or group of subjects on the Board of Studies
- (7) To report on all matters referred to it by the Faculty, Academic Council or the Board of Management

As per Statute S.24.0, the following Constitution of the Board of Post Graduate Studies

The Board of Post Graduate Studies shall



comprise of the following members:

- (1) Dean of Post Graduate Studies (**Chairman**)
- (2) The Registrar
- (3) All Deans / Principal
- (4) The Director of Extension Education
- (5) All Associate Director of Research
- (6) Three Research Scientists and three Post Graduate teachers of the University to be nominated by the Dean of Post Graduate Studies with the approval of the Vice Chancellor
- (7) The Assistant Registrar (Academic) (**Secretary**)

As per Statute S. 27.0 Constitution of the Research Council

The Research Council shall consist of the following members:

- (1) The Vice chancellor (**Chairman**)
- (2) The Deans of the Faculties
- (3) The Director of Extension Education
- (4) The Conveners of the Agresco sub-committees
- (5) Two Eminent Scientists outside the University nominated by the Vice Chancellor in consultation with Director of Research
- (6) Five Professors or there equivalent from the University nominated by the Vice Chancellor in consultation with Director of Research
- (7) One progressive farmer to be nominated by the Vice Chancellor in consultation with Director of Research
- (8) The Directors of Agriculture / Horticulture Animal husbandry
- (9) All Associate Director of Research
- (10) The Director of Research **Member Secretary**

As per Statute S. 29.0 Functions and duties of the Research Council

The function and duties of the Research Council shall be as under:

- (1) To monitor and determine the research priorities of the University area.
- (2) To be responsible for Agriculture and Allied Sciences Research in the University.
- (3) To advise the Board of Management on policy matters of research.
- (4) To plan, execute and manage the research activities in the University efficiently.
- (5) To organize and co-ordinate research programmes on Agriculture and Allied Sciences in the University.
- (6) To review critically ongoing research programmes and make suggestions to the Board of Management to continue or to abandon or to modify the ongoing scheme.
- (7) To approve Research Projects and consider Intellectual Property Rights (IPR) issues submitted by the Research Scientists / Institutions / Departments.
- (8) Public private partnership mode in research.
- (9) To make recommendations in respect of the following :
 - (i) transfer of research recommendations to the Scientists / Farming Community and Industry through the Extension Agencies.
 - (ii) allocation of funds to Research Schemes and Projects.
 - (iii) the terms and conditions for acceptance of the Research Projects / Consultancy Projects and funds thereof.



- (iv) formulation of research programmes and projects under taken or to be undertaken by the University.
- (v) physical and fixed facilities required for implementing research projects.
- (vi) integration of research with extension education and teachings in the University and participation of research workers in teaching and extension education.
- (vii) orienting research to meet farmers' needs.
- (viii) to give advice and accept the reports of on-going / completed research schemes.
- (10) To perform such other duties and functions as may be referred to from time to time by the Board of Management and the other authorities of the University as well as the Council of State Agricultural Universities.
- (iv) Other Extension Specialists / Farm Manager
- (5) Three eminent Extension Education specialists concerned with farmers' training, from outside the University to be co-opted by the Organization.
- (6) The Directors of Agriculture / Horticulture / Animal Husbandry
- (7) Two progressive farmers to be nominated by the Vice Chancellor in consultation with Director of Extension Education
- (8) The Associate Director of Extension Education
- (9) The Director of Extension Education

Member Secretary

As per Statute S.33.0 Functions and duties of Extension Education Council

In addition to the functions laid down under sub-section (3) of Section-27 of the Act, the functions and duties of the Extension Education Council shall be as under:-

The Extension Education Council shall consist of the following members:

- (1) The Vice chancellor (**Chairman**)
- (2) The Director of Research and Dean P.G.
- (3) Deans of the Faculties
- (4) Five Extension Education specialists to be nominated by the Vice Chancellor in consultation with Director of Extension Education from amongst the following :
 - (i) Professor of Extension Education
 - (ii) Agricultural Extension Educationist, Polytechnic
 - (iii) Programme Coordinator/Senior Scientist & Head, Krushi Vigyan Kendra.
- (1) To formulate extension education policies and annual extension education programmes of the University
- (2) To make recommendations for preparation of extension educational material and aids.
- (3) To review critically ongoing Extension Education programme and make suggestions to Board of Management to continue or to abandon or to modify the ongoing scheme.
- (4) To impart training to college students in Extension Education.
- (5) To prepare materials for cultivators.
- (6) To formulate short term courses for rural and urban people and field extension personnel in

the areas of agriculture and allied sectors.

- (7) To arrange training programmes on Agricultural Production, Processing and Marketing.
- (8) To formulate programmes for cultivators, their families and rural youth.
- (9) To recommend for:
 - (a) Co-ordination of extension education programmes and projects of the University with the Other Agricultural Universities / Institutions.
 - (b) Coordination and co-operation of extension educational activities of various agencies.
 - (c) Development of farmers' education, training and advisory services for identification and resolution of field problems and transfer of information.
 - (d) Methodology of extension education activities of the University area.
 - (e) Integration of extension education with teaching and research in the University and participation of extension workers teachers in the field of research programmes and education for their work.
- (10) To perform such other duties and functions as may be referred to from time to time by the Board of Management and the other authorities of the University and Council of State Agricultural Universities.

2.2 Administration

Anand Agricultural University was formed from erstwhile Gujarat Agricultural University during

May 2004 with three colleges for Under Graduate & Post Graduate programme and for imparting education in agricultural and allied sciences. Presently, Anand Agricultural University has 11 degree colleges, 5 Polytechnics and 1 Post-graduate Institute imparting education in agricultural and allied sciences. The University has a total of 1855 sanctioned posts, out of which 1136 are filled and remaining 719 posts are vacant.

Technical personnel included the staff at the main campus as well as 48 research stations, who carried different activities like crop improvement, crop protection, crop production, live stock management and improvement practices etc. under their domain of work. Our research endeavors have not only targeted excellence in agriculture but also other allied sectors like dairy science, veterinary science and animal husbandry, agricultural engineering and food processing technology etc.

AAU organizes various programmes and activities to expand knowledge of its scientists, faculty and students. During the year under report, various programmes including conferences/trainings/workshops/seminars/winter schools/ group meetings were organized by the University.

Human Resource Development at Anand Agricultural University receives top priority. Managerial trainings taken by Anand Agricultural University employees are given in the following table. The changing global scenario demands traditional research be sharpened based on market driven economy. Therefore, AAU scientists are encouraged to update their knowledge and improve their skills. Need of the day is search for newer technologies with cutting edge research so that new generation young farmers and women are enlightened.



Managerial Training during the period 01/04/2017 to 31/03/2018

Sr. No.	Name of Training	Place	Duration period	Total Participants
1	Office Administration	SPIPA, Ahmedabad	10/05/2017 to 12/05/2017	02
2	Office Administration	SPIPA, Ahmedabad	27/07/2017 to 29/07/2017	15
3	Office Administration	SPIPA, Ahmedabad	11/10/2017 to 13/10/2017	03
4	National Workshop on Emerging Trends in Information Technology in University Management	Central University, Gandhinagar	19/12/2017 to 21/12/2017	04
5	National Academic Depository (NAD)	All India Council for Technical Education (AICTE), New Delhi	30/01/2018	01

Human Resources :

The Staff position as on 31-3-2018 in the Anand Agricultural University is given as under :

Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
1	University Officers			
	Director of Research & Dean P.G.	1	1	0
	Director of Extension Education	1	1	0
	Director (I.T.)	1	0	1
	Registrar	1	1	0
	Comptroller	1	1	0
	Total :	5	4	1
2	Teaching/Research/Extension- Class-I & II			
	Principal	6	6	0
	Associate Director of Research	2	1	1
	Professor & its equivalent	60	40	20
	Associate Professor & its equivalent	169	127	42
	Assistant Professor & its equivalent	353	286	67
	Total :	590	460	130
3	Administration Group No. 1			
	Assistant Registrar (Academic/ Administration)	2	0	2
	Account Officer (Cash)	1	1	0
	Account Officer (PF/Cash)	1	1	0
	Assistant Administrative Officer	6	4	2
	Audit Officer	1	0	1
	Office Superintendent	15	4	11
4	Head Clerk	17	8	9
	Senior Clerk	86	71	15
	Junior Clerk	149	62	87
	Hostel Assistant Warden	7	7	0
	Hostel Warden	1	0	1
	Total	286	158	128

Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
5	Administration Group No. 2			
	Steno Grade-I	3	3	0
	Steno Grade-II	12	5	7
	Steno Grade-III	4	1	3
	Total	19	9	10
6	Engineering Group			
	Executive Engineer	1	1	0
	Deputy Engineer	1	1	0
	Junior Engineer (Civil/Electric)	3	2	1
	Total	5	4	1
7	Technical Group No.1			
	Agri. Officer/SRA (Agri.) & its equivalent	85	39	46
	Senior Research Assistant (Agri. Engg.)	12	11	1
	Senior Technician	2	1	1
	Agril. Supervisor & its equivalent	12	6	6
	Agril. Asstt. & its equivalent	174	119	55
	Foreman Instructor	2	2	0
	Supervisor Instructor	2	1	1
	Total	289	179	110
8	Technical Group No.2			
	Programme Assistant (KVK)	9	8	1
	Programmer	3	3	0
	Computer / Computer Operator	1	1	0
	Data Entry-cum-Disk Librarian	1	1	0
	Total	14	13	1
9	Technical Group No.3			
	Wireman	1	0	1
	Junior Wireman/Sr. Wireman	3	0	3
	Total	4	0	4
10	Isolated Group (Details given separately)			
11	Class- IV Group (Regular)	321	74	247
12	Supernumary Posts (Class-III & IV)			
	Class-III (Jr.Clerk/Agril.Asstt./Driver/Tractor Driver)	6	6	0
	Class-IV	135	135	0
	Total	141	141	0
	Grand Total	1855	1136	719
Details of Isolated Group (As mentioned at Sr.No.10 above)				
1	Senior Research Assistant (Dairy) / Dairy Supervisor	14	2	12
2	Library Assistant	1	0	1
3	Veterinary Officer & its equivalent	10	1	9
4	Instructor (Baking/Science)	3	0	3
5	Assistant Instructor	1	1	0
6	Lab Technician & its equivalent	49	34	15
7	X-ray Technician	1	1	0
8	Project Operator	1	0	1
9	Junior Instructor	2	0	2
10	Junior Instructress	1	0	1



Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
11	Mechanic-cum-Draftsman	1	1	0
12	Artist/Photographer	1	0	1
13	Stockman/Livestock Assistant	8	7	1
14	Black Smith	2	1	1
15	Carpenter	2	1	1
16	Compounder	2	0	2
17	Junior Mechanic-cum-Wireman	1	1	0
18	Mechanic/Sr. Mechanic / Jr. Mechanic	4	4	0
19	Boiler Attendant	2	2	0
20	Compressor Attendant	2	0	2
21	Fitter	1	0	1
22	Bakery Operator	1	1	0
23	Balwadi Teacher	1	1	0
24	Sewing Teacher	1	1	0
25	Driver	45	22	23
26	Tractor Driver	14	5	9
27	Plumber	1	1	0
28	Tracer/Draftsman Tracer	2	2	0
29	Craftsman(Welder, Fitter, Turner,Electrician)	4	4	0
30	Junior Research Assistant (Dairy)	1	1	0
31	Teaching Assistant	2	0	2
Total		181	94	87

New Appointments :

During the year under report, following posts were filled up by direct recruitment/promotion under various cadres.

Appointments during the year (01.04.2017 to 31.03.2018)

Sr. No.	Cadre	Direct recruitment/ promotion	Total
1	Professor *	Direct recruitment	07
2	Associate Professor *	Direct recruitment	16
3	Assistant Professor *	Direct recruitment	24
4	Registrar	Direct recruitment	01
5	Senior Research Assistant / Technical Assistant	Direct Recruitment	03
6	Senior Clerk	Promotion	11
7	Stockman / Livestock Assistant	Direct Recruitment	01
8	Lab Technician	Direct Recruitment	02
Total			65

* 1-Professor, 1- Associate Professor and 1- Assistant Professor not joined the post.

Retirement :

Following Teaching & Non-teaching staff retired from the University by Superannuation/Voluntarily/ Resignation/Death/Appointed in other University during the period under report.

Teaching & Non-teaching staff retired by Superannuation/Voluntarily/Resignation/ Death/Appointed in other University during the year (01.04.2017 to 31.03.2018)

Sr. No	Cadre	No. of persons					
		Super-annuation	Voluntarily	Resignation	Death	Appointed in other University	Total
1	Professor	10	1	0	0	0	11
2	Associate Professor	05	0	0	0	0	05
3	Assistant Professor	05	0	0	0	0	05
4	Assistant Registrar (Adm)	01	0	0	0	0	01
5	Agri. Officer / SRA	01	0	0	0	0	01
6	Agri. Supervisor	02	0	0	0	0	02
7	Agri. Assistant	11	0	1	0	0	12
8	Office Superintendent	02	0	0	0	0	02
9	Head Clerk	01	0	0	0	0	01
10	Senior Clerk	08	0	0	1	0	09
11	Junior Clerk	01	0	0	0	0	01
12	Junior Wiremen	01	0	0	0	0	01
13	Black Smith	0	1	0	0	0	01
14	Driver	01	0	0	0	0	01
15	Lab Technician	02	0	0	0	0	02
16	Sewing Teacher	01	0	0	0	0	01
17	Class-IV (Regular)	12	1	0	0	0	13
18	Class-III (Supreme)	02	0	0	1	0	03
19	Class-IV (Supreme)	07	0	0	0	0	07
Total :		73	3	1	2	0	79

2.3 Finance & Accounts

As per the Gujarat Agricultural Universities Act 2004, Chapter XI the University has established the Anand Agricultural University Fund. The contribution or grant by the State Government, the income of the University from all the sources including the income from fees and charges, bequest, donations, endowments and other grants are the part of, or be paid into the University Fund. The Comptroller act as financial adviser to the Vice Chancellor regarding all financial matters of the University and keep the Vice Chancellor informed from time to time about the financial position of the university. The Comptroller is responsible for supervising the quality of accounting and financial reporting to the Vice Chancellor of

the University, Board of Management and State Government.

The Comptroller prepares the financial plans for development of the university in consultation with the concerned officers of the University and under the guidance of the Vice Chancellor. The Comptroller ensures the grants are received in time from the Government of India, State Government and other aid-granting agencies. The Comptroller ensures that the University Fund is maintained and that a detailed and proper account of all credits into and withdrawals from the said fund is kept by the all offices of University. He also prepares the Annual Accounts of the university and renders necessary assistance to the auditor appointed by the State Government for the audit of the University.



Grant received, Income of University and Expenditure during the Financial Year 2017-18:

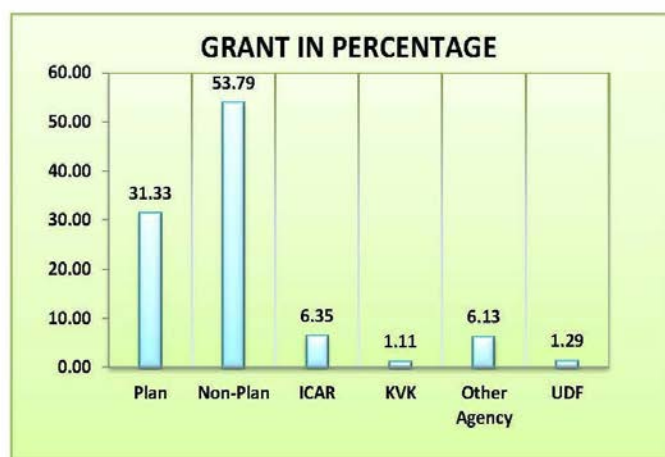
Anand Agricultural University has received the grants from State Government, Central Government, ICAR,

Government Departments, Industries and Other Agencies under the various Schemes / Projects of Education, Research and Extension Education during the financial year 2017-18 are as below :-

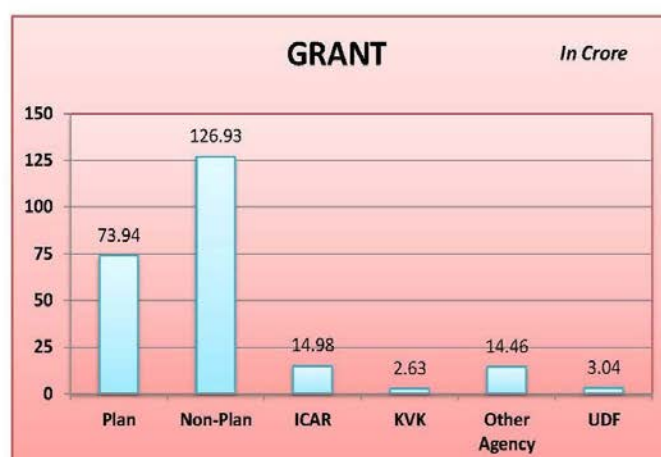
(₹ in Crore)

Sr. No.	Name of Scheme	Income	Grant	Expenditure
1	Plan - State Government	3.03	73.94	72.18
2	Non Plan - State Government	5.89	126.93	119.33
3	ICAR - Central Government	0.35	14.98	14.46
4	K.V.K. - Central Government	0.00	2.63	2.63
5	Other Agencies Scheme	0.11	14.46	11.39
6	University Development Fund	0.30	3.04	0.88
Total		9.68	235.98	220.87

Funding Agencywise Grants for the F.Y. 2017-18



Grant for the F.Y. 2017-18



Receipt for the F.Y. 2017-18



Expenditure for the F.Y. 2017-18



Audit

(i) Internal Audit

The Internal Audit of the all the offices of the University have been carried out by the Chartered Accountant on the quarterly based for the Financial Year 2017-18.

(ii) Examiner Local Fund Audit

Local Fund Audit by the State Government up to 2013-14 has been carried out and the Audit for the Financial Year 2014-15 is being carried out in the next year.

(iii) A. G. Audit

A.G. Audit for the Financial Year 2013-14 has been carried out by office of the Accountant General, Ahmedabad.

Store Verification

Physical Store Verification has been conducted during the Financial Year 2017-18.

Resources of Income and Financial Estimates

The revenue generated by the University during 2017-18 is mainly through sale of farm produces, milk & milk products, poultry products i.e. egg, bakery products & guest house services, examination fee, tuition fee, hostel revenue, tender fee, house rent deductions, library fee, etc.

Financial Estimates

Following are the Plan and Non-Plan Budget Estimates for 2016-17, as approved by the State Government.

Sr. No.	Details of Head	Estimates for 2017-2018 (Rs.in Crore)			
		Original		Revised	
		Plan	Non-Plan	Plan	Non-Plan
1.	Education	42.07	92.01	42.07	109.12
2.	Research	27.58	14.17	27.58	17.43
3.	Extension Education	4.29	0.32	4.29	0.37
Total		73.94	106.50	73.94	126.92

Pension

Details of Pension cases during 2017-18

No. of cases finalized

- (1) Final pension cases.....85
- (2) Revised pension cases03
- (3) Restoration pension cases.....42

Provident Fund (PF)

Details of P.F. cases disposed during 2017-18

- (1) No. of Final withdrawal cases74
- (2) No. of Part-final withdrawal cases ..147

In addition the monthly P.F. accounts subscription, withdrawals & balancing for university employees in form of broad sheet & ledger were maintained. Initial P. L. accounts with Anand Treasury is opened & maintained.



Annexure-1

Officers of the University

Hon'ble Governor Shri O. P. Kohli	
Vice Chancellor Dr. N. C. Patel	
Director of Research & Dean, P G Studies Dr. K. B. Kathiria	I/c. Director of Extension Education Dr. Arun A. Patel (From:01-07-2016 Upto 30-09-2017 In-charge) (From 28-09-2017 Regular)
Dean B. A. College of Agriculture Dr. K. P. Patel	Dean Veterinary Science & A.H. Dr. A. M. Thaker
Dean Sheth M. C. College of Dairy Science Dr. J. B. Prajapati	Dean Food Processing Technology & Bio-energy Dr. D. C. Joshi
Dean Agricultural Engineering & Technology Dr. R. Subbaiah	I/c. Dean Agricultural Information Technology Dr. D. R. Kathiriya
Dean International Agri-business Management Institute Dr. Y. C. Zala	I/c. Dean Horticulture Dr. K. P. Patel
I/c. Director Information Technology Dr. D. R. Kathiriya	I/c. Director of Students' Welfare Dr. S. H. Akbari
Comptroller Shri M. G. Vasava (From:01-07-2016 to 28-02-2018 Retired) I/c. Comptroller Shri R. H. Gondaliya (From:01-03-2018 to continue)	I/c. Librarian Dr. Y. R. Ghodasara
Executive Engineer Shri B. N. Bhalia	I/c. Registrar & Member Secretary Dr. M. N. Brahmbhatt (From:25-09-2015 to 27-09-2017 In-charge) (From 28-09-2017 Regular)

Annexure-2

Members of the Board of Management

Vice Chancellor Dr. N. C. Patel
Principal Secretary Agriculture Co-operation & Farmer Welfare Shri Sanjay Prasad (I.A.S.)
Secretary Finance Department Shri Milind Torvane (I.A.S.)
Deputy Secretary Education Department Shri Ashoksinh T. Parmar (Higher Education)
Director of Agriculture Shri B. M. Modi
Director of Animal Husbandry Dr. Hitaben Patel Dr. A. J. Kachhiapatel
Director of Horticulture Dr. R. A. Sherasiya
Dean Nominated by Vice Chancellor Dr. D. C. Joshi (From 01-11-2014 to 31-10-2017) College of Food Processing Technology & Bio-Energy Dean Dr. K. P. Patel (From 01-11-2017 to 30-10-2020) B. A. College of Agriculture
Nominated by Vice Chancellor I/c. Director of Extension Education Dr. Arun A. Patel (From:01-07-2016 Upto 30-09-2017 In-charge) Director of Research & Dean P.G. Studies Dr. K. B. Kathiria (From:01-10-2017 to 31-08-2019)
Former Vice Chancellor Dr. A. M. Shekh Anand (From: 08-12-2015 to 07-12-2018)
Former Director of Extension Education Dr. B. T. Patel, Ahmedabad (From: 08-12-2015 to 07-12-2018)
Nominated by Indian Council of Agricultural Research Assistant Director General & Director, National Agricultural Science Fund (NASF) Indian Council of Agricultural Research, New Delhi-110012 Dr. Pawan Kumar Agrawal (From:01-07-2017 to 30-06-2020) Assistant Director General (Farm Engg.) Dr. Kanchan K. Singh (From 03-10-2017 to 02-10-2020)
Farmer (Post vacant)
I/c. Registrar & Member Secretary Dr. M. N. Brahmabhatt (From:25-09-2015 to 27-09-2017 In-charge) (From 28-09-2017 Regular)



Annexure-3

Members of the Academic Council

Vice Chancellor Dr. N. C. Patel	
Director of Research & Dean P G Studies Dr. K. B. Kathiria	I/c. Director of Extension Education Dr. Arun A. Patel (From:01-07-2016 Upto 30-09-2017 In-charge) (From 28-09-2017 Regular)
Dean Agriculture Dr. K. P. Patel	Dean Veterinary Science & A.H. Dr. A. M. Thaker
Dean Dairy Science Dr. J. B. Prajapati	Dean Food Processing Technology & Bio-energy Dr. D. C. Joshi
Dean, Agricultural Engineering & Technology Dr. D. C. Joshi, Anand (From 01-05-2015 to 28-02-2017) Dr. R. Subbaiah, Godhra (From: 01-03-2017)	I/c. Dean Agricultural Information Technology Dr. D. R. Kathiriya
Dean International Agri-business Management Institute Dr. Y. C. Zala	I/c. Dean Horticulture Dr. K. P. Patel
Professor & Head Dr. M. N. Brahmabhatt (Nominated) Livestock Products Technology, Anand (From 01-10-2015 to 30-09-2018) But Selection as Registrar Dtd.28-09-2017) Professor Dr. R. F. Suthar (Nominated) Post-Harvest Engineering & Technology Food Processing Technology & Bio-Energy, Anand (From 01-01-2018 to 31-12-2020)	Research Scientist (Rice) Dr. K. S. Prajapati (Nominated) Nawagam (From 01-10-2015 to 30-09-2018)
Professor & Head Dr. D. M. Patel (Nominated) Teaching Veterinary Clinical Complex, Anand (From 01-02-2013 to 31-01-2016) Professor Dr. C. G. Joshi (Nominated) Veterinary Bio-technology (Ani. Sci.), Anand (From 01-06-2016 to 30-05-2019)	Professor & Head Dr. P. K. Borad (Nominated) Agricultural Entomology, Anand (From 01-10-2015 to 30-09-2018)
Professor & Head Dr. D. N. Rank (Nominated) Animal Genetics & Breeding, Anand (From 01-06-2014 to 31-05-2017) Professor Dr. K. M. Panchal (Nominated) Veterinary Anatomy, Anand (From 01-06-2017 to 31-05-2020)	Professor (P) Dr. V. R. Bhatt (Nominated) Agri. Chemistry & Soil Science, Anand (From 01-06-2014 to 31-05-2017) Professor Dr. R. B. Patel (Nominated) Agri. Chemistry & Soil Science, Anand (From 15-02-2017 to 14-02-2020)
I/c. Director of Students' Welfare Dr. S. H. Akbari (Co-opt)	I/c. Librarian Dr. Y. R. Ghodasara (Co-opt)

<p>Professor Dr. D. B. Choksi (Co-opt) Post Graduate Computer Science Sardar Patel University, Vallabh Vidyanagar (From 01-12-2016 to 30-11-2019)</p>	<p>Retd. Research Scientist (Agri.) Dr. Sureshbhai R. Patel (Co-opt) Karjan (From 01-02-2016 to 31-01-2019)</p>
<p>Retd. Research Scientist & Head Dr. M. B. Pande (Co-opt) Animal Nutrition, Anand (From 01-12-2016 to 30-11-2019)</p>	<p>Principal & Dean Dr. R. K. Jain (Co-opt) ADIT College, New Vallabh Vidyanagar (From 01-12-2016 to 30-11-2019)</p>
<p>Retd. Research Science (Vegetable) Dr. M. K. Bhalala (Co-opt) Anand (From 01-06-2014 to 31-05-2017) Dr. B. P. Shah (Co-opt) Retd. Principal & Dean Sheth M. C. College of Dairy Science Anand Agricultural University, Anand (From 01-06-2017 to 31-05-2020)</p>	<p>Retd. Professor & Head Dr. S. K. Dixit (Co-opt) Dept. of Agril. Statistics, Anand (From 15-09-2014 to 14-09-2017) Dr. Jivanbhai G. Patel (Co-opt) Retd. Principal (C. P. College of Agriculture) S.D.A.U., Sardar Krushinagar At. & Po. Anand (From 15-09-2017 to 14-09-2020)</p>
<p>Professor Dr. K. D. Aparnathi (Co-opt) Dairy Chemistry, Anand (From 01-06-2014 to 31-05-2017) Dr. C. K. Dixit (Co-opt) Retd. Professor & Head (Horticulture) At. & Post: Himmatnagar (From 01-06-2017 to 31-05-2020)</p>	<p>Acting Director Dr. P. Manival (Co-opt) Directorate of Medicinal & Aromatic Research Plants, Boriyavi (From 01-06-2014 to 31-05-2017) Dr. Ghanshyambhai M. Patel (Co-opt) Retd. Principal (Basic Science & Humanities) S.D.A.U., Sardar Krushinagar At. & Post: Ghatlodia, Ahmedabad (From 01-06-2017 to 31-05-2020)</p>
<p>I/c. Registrar & Member Secretary Dr. M. N. Brahmbhatt (From: 25-09-2015 to 27-09-2017 In-charge) (From 28-09-2017 Regular)</p>	



Annexure-4

Heads of the Departments

FACULTY OF AGRICULTURE, ANAND

Principal & Dean, Dr. K. P. Patel

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. M. V. Patel	Professor	Agronomy
2	Dr. R. V. Vyas	Professor (P)	Agricultural Microbiology
3	Dr. J. G. Talati	Professor (P)	Bio-chemistry
4	Dr. P. K. Borad	Professor (P)	Agricultural Entomology
5	Dr. B. A. Patel	Professor (P)	Nematology
6	Dr. D. H. Patel	Professor (P)	English
7	Dr. N. B. Chauhan	Professor	Extension Education
8	Dr. K. S. Jadav	Associate Professor	Agricultural Economics
9	Dr. P. R. Vaishnav	Professor	Agricultural Statistics
10	Dr. V. J. Patel	Associate Professor	Polytechnic in Agriculture, Anand
11	Dr. R. N. Pandey	Professor (P)	Plant Pathology (01-07-2017 to 31-03-2018)
12	Dr. Kalyanrao Patil	Assistant Professor	Seed Science & Technology
13	Dr. M. M. Trivedi	Professor (P)	Animal Science
14	Dr. N. I. Shah	Professor	Horticulture
15	Dr. M.S.Kulshreshtha	Professor	Agricultural Meteorology
16	Dr. B. D. Patel	Agronomist	AICRP on Weed Control Weed Control Project
17	Dr. R. B. Patel	Professor	Soil Science & Agricultural Chemistry (Retired Period: 31-05-2018)
18	Dr. D. B. Patel	Professor & Head	Plant Physiology
19	Dr. Sasidharan N.	Professor & Head	Genetics & Plant Breeding

FACULTY OF DAIRY SCIENCE, ANAND

Principal & Dean, Dr. J. B. Prajapati

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. J. B. Prajapati	Professor	Dairy Microbiology
2	Dr. K. D. Aparnathi	Professor	Dairy Chemistry
3	Dr. J. B. Upadhyay	Professor	Dairy Engineering
4	Dr. A. K. Makwana	Associate Professor	Dairy Business Management
5	Dr. Atanu Jana	Professor (P)	Dairy Technology
6	Dr. J. P. Prajapati	Associate Professor	Dairy Processing & Operations

FACULTY OF VETERINARY SCIENCE & ANIMAL HUSBANDRY, ANAND

Principal & Dean, Dr. A. M. Thaker

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. K. M. Panchal	Professor	Veterinary Anatomy
2	Dr. A. M. Pandey	Professor	Veterinary Physiology & Biochemistry
3	Dr. S. K. Bhavsar	Professor	Veterinary Pharmacology & Toxicology (01.10.2017 to 30.09.2020)
4	Dr. B. C. Parmar	Associate Professor	Livestock Products Technology (01.10.2017 to 30.09.2020)
5	Dr. J. B. Nayak	Associate Professor	Veterinary Public Health & Epidemiology (01.10.2017 to 30.09.2020)
6	Dr. B. P. Joshi	Professor	Veterinary Pathology
7	Dr. J. J. Hasnani	Professor	Veterinary Parasitology
8	Dr. Ashish Roy	Professor	Veterinary Microbiology (01.06.2015 to 31.05.2018) (Voluntarily retired on 11-03-2017)
	Dr. B. P. Joshi	Professor	Veterinary Microbiology (01-07-2017 to 30-06-2020)
9	Dr. S. K. Raval	Professor	Veterinary Medicine
10	Dr. P. V. Parikh	Professor	Veterinary Surgery & Radiology
11	Dr. A. J. Dhami	Professor	Veterinary Gynecology & Obstetrics
12	Dr. K. N. Wadhvani	Associate Professor	Livestock Production & Management
13	Dr. D. N. Rank	Professor	Animal Genetics & Breeding
14	Dr. C. G. Joshi	Professor	Animal Biotechnology (Ani. Sci.)
15	Dr. D. M. Patel	Professor	Teaching Veterinary Clinic Complex
16	Dr. Ankita Killedar	Research Scientist	Reproductive Biology Research Unit (Retired Period: 31.01.2018)
	Dr. N. P. Sarvaiya	Professor (P)	Reproductive Biology Research Unit (01.02.2018 to 31.01.2021)
17	Dr. S. V. Shah	Research Scientist	Livestock Research Station (01.07.2017 to 30.06.2020)
18	Dr. F. P. Savaliya	Associate Professor	Poultry Complex
19	Dr. V. P. Belsare	Research Scientist	Kapila Go Sanshodhan Kendra, Minawada/ Ramna Muvada
20	Dr. A. C. Vaidya	Associate Professor	Veterinary and Animal Husbandry Extension Education
21	Dr. R. S. Gupta	Professor (P)	Animal Nutrition (Retired Period 30.04.2017)
	Dr. P. R. Pandya	Professor (P)	Animal Nutrition (01.05.2017 to 30.04.2020)



FACULTY OF FOOD PROCESSING TECHNOLOGY & BIO-ENERGY, ANAND

Principal & Dean : Dr. D. C. Joshi

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. R. F. Sutar	Professor	Post Harvest Engineering & Technology
2	Dr. S. S. Kapdi	Professor	Bio-Energy
3	Dr. R. V. Prasad	Professor	Food Quality Assurance
4	Dr. A. K. Sharma	Associate Professor	Food Engineering
5	Dr. H. G. Bhatt	Associate Professor	Food Safety and Testing
6	Er. H. Pandey	Associate Professor	Food Processing Technology
7	Dr. Samip Dutta	Associate Professor	Food Business Management

FACULTY OF AGRI. ENGINEERING & TECHNOLOGY, GODHRA

Principal & Dean, Dr. R. Subbaiah

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. R. Swarnkar	Professor	Farm Machinery and Power
2	Dr. Navneet Kumar	Associate Professor	Processing & Food Engineering
3	Dr. Kapil Mandloi	Associate Professor	Basic Engineering and Applied Science
4	Dr. Mukesh Tiwari	Associate Professor	Irrigation and Drainage Engineering
5	Dr. Pankaj Gupta	Associate Professor	Soil & Water Engineering
6	Dr. D. K. Vyas	Associate Professor	Renewable Energy Engineering

AGRICULTURAL INFORMATION TECHNOLOGY, ANAND

I/c. Principal & Dean, Dr. D. R. Kathiriya

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. D. R. Kathiriya	Professor	Agricultural Information Technology
2	Dr. V. B. Darji	Professor	Agricultural Science

INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE, ANAND

Principal & Dean, Dr. Y. C. Zala

Sr. No.	Name and Designation of the Teacher		Department
1	Dr. R. S. Pundir	Professor (P)	Agri-business Economics & Policies
2	Dr. Y. A. Lad	Associate Professor	HRD & Personnel Management
3	Dr. M. R. Prajapati	Assistant Professor	Financial Management
4	Dr. D. R. Vahoniya	Assistant Professor	Project Management
5	Dr. S. R. Panigarhy	Assistant Professor	Production Management
6	Dr. Chetan Dudhagara	Assistant Professor	Communication & Information Technology
7	Dr. Ashish B. Mahera	Assistant Professor	Marketing Management

Chart -1
ORGANIZATIONAL SET-UP

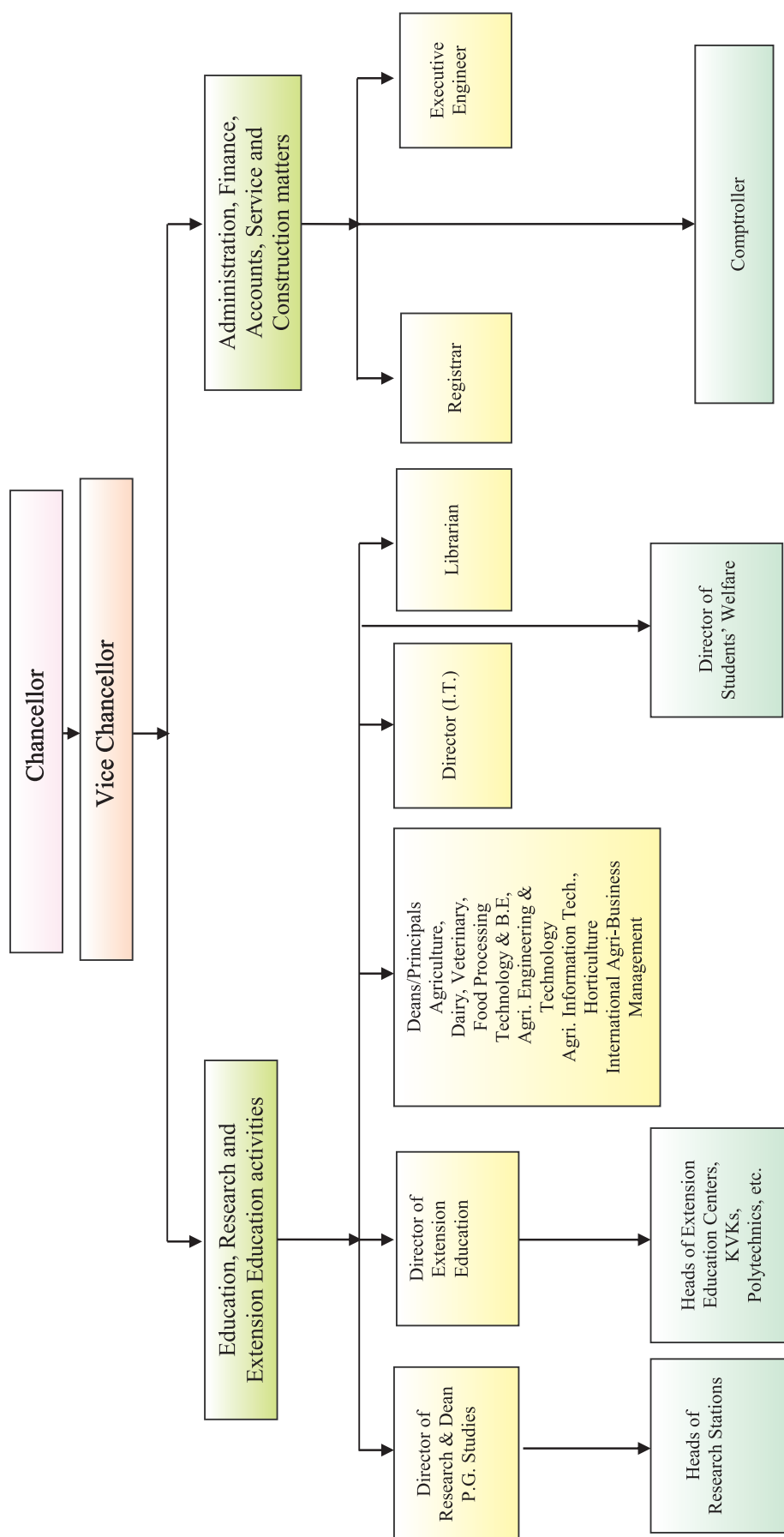
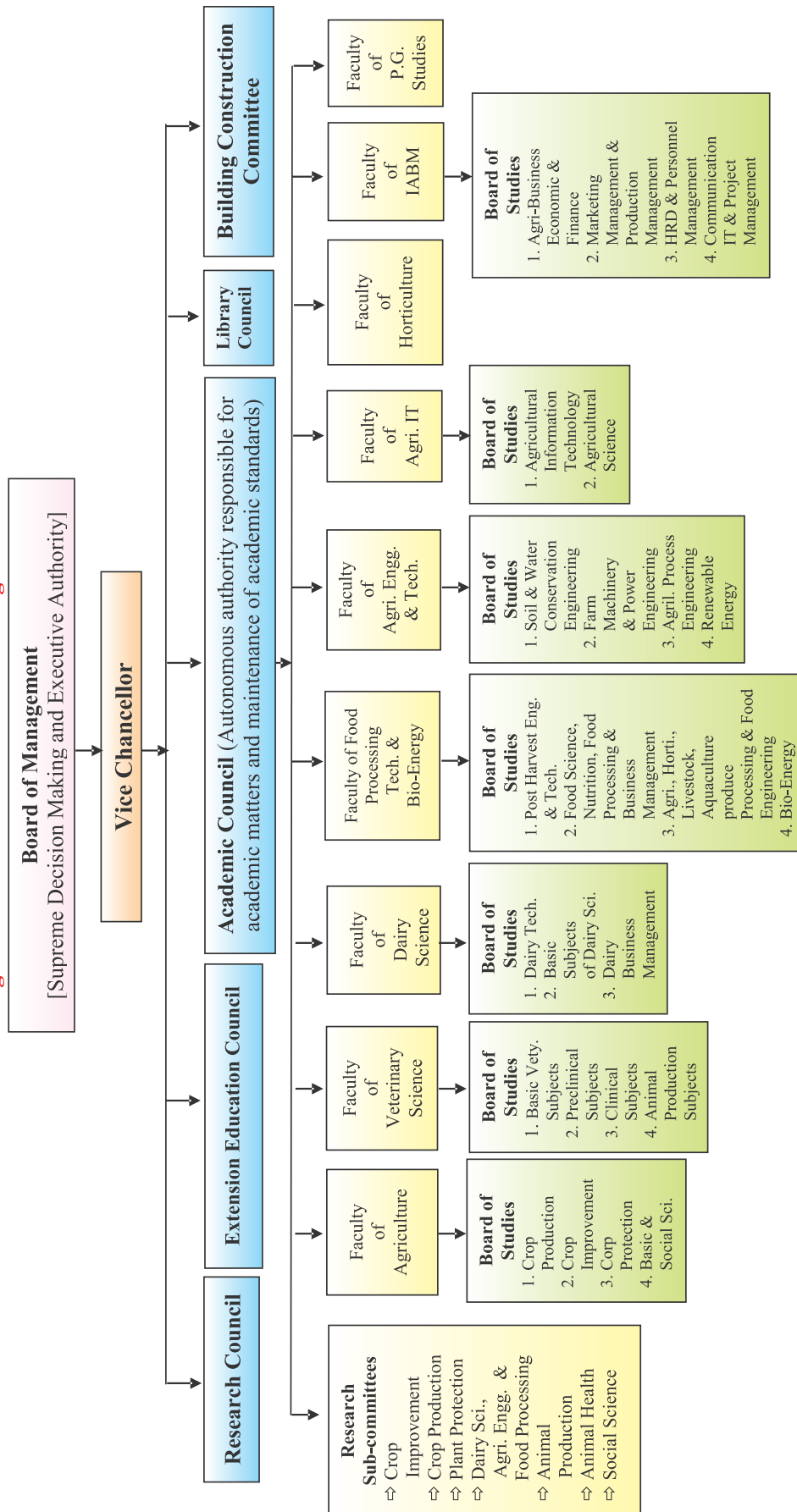


Chart-2
Organizational Chart & Decision making channels





Sheth M.C. College of Dairy Science, AAU, Anand



College of Veterinary Science & Animal Husbandary, AAU, Anand



International Agri-Business Management Institute, AAU, Anand

Chapter - 3

EDUCATION

Centralized Admission Process

Under Section 25 (7) (g) of the GAU Act, 2004, the function of supervising and coordinating the centralized admission to various degree courses at the University has been assigned to the Council of State Agricultural Universities. The Council has nominated Vice Chancellor of Anand Agricultural University as the Nodal Officer for carrying out function of the centralized admission for B Group UG courses for all SAUs of Gujarat.

Nodal Officer

As a Nodal Officer for Academic and Examination, Vice Chancellor Dr. N. C. Patel has successfully conducted an important exercise of centralized admissions at UG, Diploma to Degree and PG levels for four State Agricultural Universities of Gujarat. As the Nodal Officer, he convened meeting of the Registrars and Deans of four SAUs and arranged for smooth conduct of examinations and paper evaluation.

3.1 Under Graduate Courses

Admission Procedure

AAU is a residential university and follows semester system. Courses of B.Sc. (Hons.) Agriculture, B.Sc. (Hons.) Horticulture, B.Tech. (Dairy Technology), B.Tech. (Agricultural Engineering), B.Tech. (Food Technology), B.Tech. (Agricultural Information Technology) are of four years duration divided into eight semesters, while B.V.Sc. & A.H. course is of five and half years duration. The medium of instruction is English. The University imparts resident instruction for the graduate programmes at their constituent colleges with the eligibility and admission requirements as given in Table 3.1. Under the Semester system of education, all students are compulsorily required to stay in the University hostel, except otherwise permitted. Through online receipt of applications, a common merit list is prepared on the basis of Academic Regulations. Girl students (except NRI girls) are exempted from tuition and hostel fees.



Table 3.1 Eligibility criteria for admission in various degree programmes

Name of the graduate programme	Category wise minimum % requirement of marks in theory subjects in Physics, Chemistry and Biology of HSSCE examination			
	Category			
	General	SC	ST	SEBC
B.Sc. (Hons.) Agriculture	40	35	35	40
B.Sc.(Hons.) Horticulture	40	35	35	40
B.Tech. (Agricultural Information Technology)	40	35	35	40
B.V.Sc. & A.H.	50	47.50	47.50	47.50
	A candidate under General Category must have passed in each of the subjects (Physics, Chemistry, Biology & English), obtaining 50 % aggregate marks in these subjects at the qualifying examination. The students are admitted only on the basis of merit in GUJCET marks.			
Name of the graduate programme	Category wise minimum % requirement of marks in theory subjects in Physics, Chemistry and Mathematics of HSSCE examination			
	Category			
	General	SC	ST	SEBC
B.Tech. (Agricultural Engineering)	40	35	35	40
B.Tech. (Agricultural Information Technology)	40	35	35	40
B.Tech. (Food Technology)	40	35	35	40
B.Tech. (Dairy Technology)	40	35	35	40
Admission is considered on the merit basis of 60% of PCM/PCB theory and 40 % of GUJCET marks.				

The college wise details i.e., number of seats and actual admitted students for the academic year 2017-18 are given in Table 3.2.

Table 3.2 Students intake and admitted in different graduation programmes (2017-18)

Degree	Name of the College	Admission Capacity		No. of students
		Total Seat	ICAR/VCI	Admitted
B.Sc. Hons. (Agri.)	B. A. College of Agriculture, Anand	132	20	124
	College of Agriculture, Vaso	55	08	54
	College of Agriculture, Jabugam	40	-	36
B.V.Sc.& A.H.	College of Veterinary Sci. & A. H., Anand	72	11	68
B.Sc. Hons. (Horti.)	College of Horticulture, Anand	55	08	37
B.Tech. (Dairy Tech.)	Sheth M. C. College of Dairy Science, Anand	65	10	64
B.Tech. (AET)	College of Agril. Engineering & Technology, Godhra	40	06	38
B.Tech. (AIT)	College of Agricultural Information Technology, Anand	40	-	34
B.Tech. (FT)	Food Processing Technology & Bio-Energy, Anand	40	06	42*

* (3-Foreign Students)



3.1.1 Diploma to Degree Programme (D to D)

Admission Procedure

10% seats of degree programme are kept reserved in Agriculture, Horticulture, Agricultural Engineering & Food Processing Technology for Diploma to Degree programme. Based on the common entrance test, the qualifying students are admitted directly in the third semester of the concerned degree programme.

The details of number of seats and actual admitted and passed out students from different polytechnics are given in Table 3.3.

Table 3.3 : Students intake, admitted in different Diploma Programmes for academic year 2017-18

Name of the Diploma Programme	Name of the Polytechnic	Admission capacity	No. of students Admitted
		Total Seat	
Agriculture	Sheth M.C. Polytechnic of Agriculture, Anand	35	35
	Polytechnic of Agriculture, Vaso	35	33
Agricultural Engineering	Polytechnic of Agricultural Engineering, Dahod	35	27
Nutrition & Dietetics	Polytechnic of Food Science & Home Economics, Anand	35	23
Horticulture	Sheth D. M. Polytechnic of Horticulture, Vadodara	35	29

3.2 Post Graduate courses

Admission Procedure

A candidate aspiring to get admission in PG studies should have a graduate degree of the related field with an OGPA of not less than 6.00/10.00. Entrance test and personal interview are conducted and admission is given on the basis of merit and as per the intake capacity.

For admission in International Agri. Business Management Institute, graduates of Agriculture and its allied science are eligible. Selection is made on the basis of merit in Entrance Test, Group Discussion and Personal Interview.

3.1.2 Polytechnic Programme

Admission Procedure

Students who have passed Secondary School Certificate Examination with English as compulsory subject are eligible for admission to three years (six semesters) Diploma programme in various subjects run at the Polytechnics of the University. The medium of instruction is English.

Two academic years (four semesters) are required for the course work, research work and thesis preparation and examination leading to the Master's Degree. A minimum period of three academic years (six semesters) is required for the Ph.D. degree.

Intake Capacity

Intake capacity for Post Graduate programmes in a particular discipline is fixed on the basis of infrastructure of the concerned discipline and the availability of experts / recognized teachers in the discipline. On the basis of the decision taken by the Admission Committee, the intake capacity was fixed as shown in Table 3.4.

Table 3.4 Intake capacity in different faculties for the year 2017-18

Agriculture Faculty

Sr. No.	Subject	M. Sc. (Agri.)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1	Agronomy	09+03	04+02	18
2	Soil Science	07+02	01+01	11
3	Biochemistry	02+00	02+00	04
4	Genetics & Plant Breeding	08+04	04+01	17
5	Agril. Entomology	06+03	02+01	12
6	Agril. Statistics	04+01	01+00	06
7	Plant Pathology	05+01	02+00	08
8	Agril. Economics	04+01	02+01	08
9	Extension Education	05+03	04+01	13
10	Crop/Plant Physiology	01+00	01+00	02
11	Agril. Meteorology	02+00	02+00	04
12	Nematology	01+00	00+00	01
13	Agril. Microbiology	02+00	01+00	03
14	Plant Molecular Biology & Biotech.	03+01	01+01	06
15	Seed Science & Technology	02+00	01+01	04
Total :		61+19	28+09	117

Distance learning

Sr. No	Subject	M. Sc.
1	Agriculture Journalism	05
2	Agriculture Marketing	03

Horticulture Faculty

Sr. No.	Subject	M. Sc. (Horti.)	Ph. D.	Total
		Regular + ICAR	Regular + ICAR	
1	Fruit Science	07+03	01+01	12

Veterinary Science Faculty

Sr. No.	Subject	M. V. Sc.	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1	Veterinary Anatomy & Histology	02+02	01+00	05
2	Veterinary Pathology	04+01	01+00	06
3	Veterinary Parasitology	02+01	01+00	04
4	Veterinary Microbiology	02+01	01+00	04
5	Veterinary Physiology	02+01	00+00	03
6	Livestock Production & Management	03+01	01+00	05
7	Animal Genetics and Breeding	04+01	01+01	07
8	Veterinary Surgery & Radiology	02+00	01+00	03
9	Veterinary Pharmacology & Toxicology	02+00	00+00	02
10	Animal Reproduction Gynaecology and Obstetrics	04+01	01+01	07
11	Veterinary Clinical Medicine, Ethics and Jurisprudence	04+01	01+01	07
12	Animal Nutrition	03+01	01+00	05



13	Veterinary Public Health	02+01	01+00	04
14	Poultry Science	02+01	01+00	04
15	Animal Biotechnology	02+02	01+01	06
16	Veterinary & Animal Husbandry Extension	01+00	00+00	01
17	Veterinary Epidemiology & Preventive Medicine	00+00	00+00	00
18	Veterinary Biochemistry	01+00	00+00	01
TOTAL		42+15	13+04	74

Dairy Science Faculty

Sr. No.	Subject	M.Tech.	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1	Dairy Technology	04+01	02+01	08
2	Dairy Engineering	03+01	01+00	05
3	Dairy Microbiology	03+01	01+00	05
4	Dairy Chemistry	04+02	01+00	07
TOTAL:		14+05	05+01	25

Food Processing Technology Faculty

Sr. No.	Subject	M. Tech.(FPT)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1	Food Processing Technology	05+01	02+01	09
2	Food Processing Engineering	05+02	03+01	11
3	Food Safety and Quality Assurance	03+01	02+01	07
TOTAL:		13+04	07+03	27

Agri-business Management Faculty

Sr. No.	Subject	A.B.M.	Total
		Regular + ICAR	
1	Agribusiness Management	22+08	30

Agricultural Engineering & Technology Faculty

Sr. No.	Subject	M.Tech. (Agri. Engg.)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1	Farm Machinery & Power Engineering	05+02	01+00	08
2	Soil & Water Engineering	07+03	03+01	14
3	Processing & Food Engineering	02+00	00+00	02
4	Irrigation and Drainage Engineering	00+00	00+00	00
5	Renewable Energy Engineering	01+00	00+00	01
TOTAL:		15+05	04+01	25

Agricultural Information Technology Faculty

Sr. No.	Subject	M. Tech. (A.I.T.)	Total
		Regular + ICAR	
1	Agricultural Information Technology	06+00	06

Admission and Output

daily news papers of Gujarat State for the admission.

The advertisement was published in leading The applications were processed and entrance tests



were conducted through OMR system and merit list was prepared and declared on the website to call candidates for personal interview/counselling.

Details of students passed out in different faculties at Graduate, Masters and Doctorate levels are given in Table 3.5.

Table 3.5 Passed out students (Graduates and Post Graduates) of AAU (2017-2018)

Sr. No.	Degree	First Class with Distinction	First Class	Second Class	Pass Class	Total
1	B.Sc. (Hons.) Agri.	65	79	27	06	177
2	B. Sc. (Hons) Horti.	13	20	07	-	40
3	B.V.Sc.& A.H.	-	13	41	08	62
4	B.Tech. (DT)	09	37	20	-	66
5	B.Tech. (Agri.Engg)	16	23	08	-	47
6	B.Tech. (FPT)	08	12	10	-	30
7	B.Tech. (AIT)	06	07	09	-	22
UG Total						444
8	M.Sc.	-	-	01	-	01
9	M.Sc. (Agri)	19	42	07	-	68
10	M.Sc. (Horti)	-	09	02	-	11
11	M.V.Sc.	06	26	02	-	34
12	M.Tech. (DT)	03	10	01	-	14
13	M.Tech. (FPT)	01	05	01	-	07
14	MBA-IAB	02	20	02	-	24
15	M.Tech. (Agri. Engg.)	04	01	-	-	05
16	Ph.D.	-	-	-	-	36
Master & Ph.D. Total						200
Grand Total						644

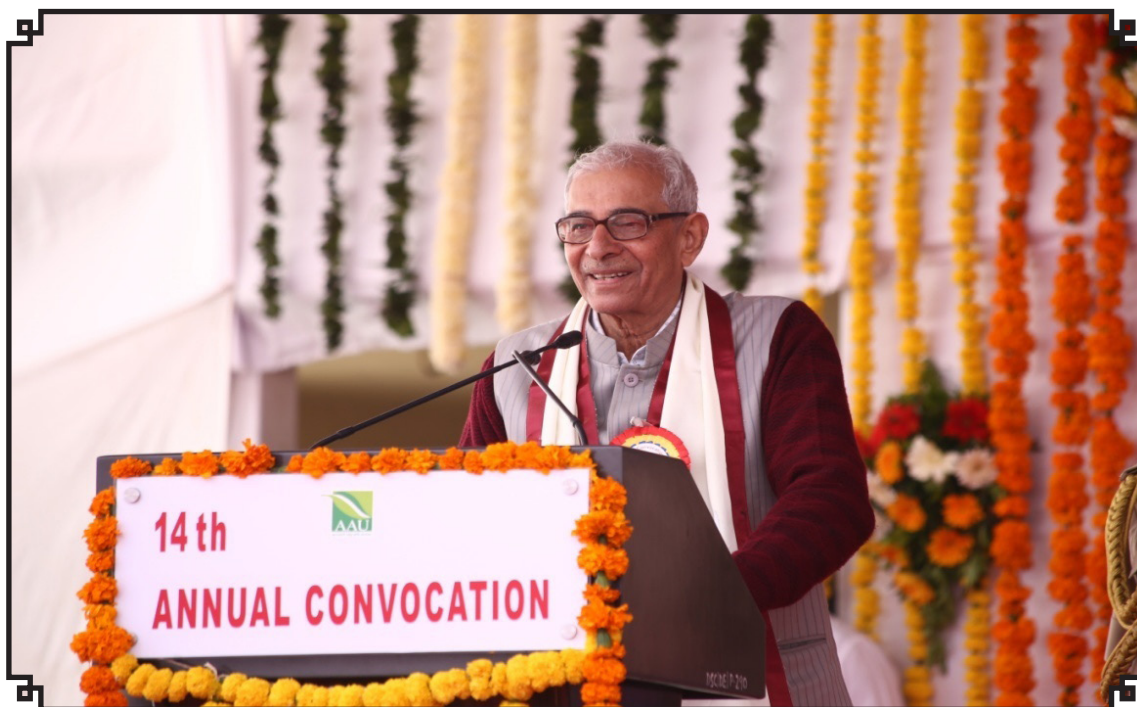
Annual Convocation

January 02, 2018 was the historic day for Anand Agricultural University as its 14th Annual Convocation was held in the presence of Hon'ble Governor of Gujarat and the Chancellor of this University, Shri O.P. Kohli, the Hon'ble Chief Guest of Convocation Prof. (Dr.) A. K. Srivastava, Chairman, Agricultural Scientists Recruitment Board, Indian Council of Agricultural Research, New Delhi, Hon'ble Shri R. C. Faldu, Hon. Minister of Agriculture, Rural Development, Fisheries, Animal Husbandry & Transport, and Vice Chancellors of other Agricultural and traditional Universities.

Kelawala Divyesh Naresh, a student of Faculty of College of Veterinary Science & Animal Husbandry, Chaudhary Nishaben Narayanbhai, a student of SMC College of Dairy Science and Monikaben A. Makwana, a student of B. A. College of Agriculture, were awarded Chancellor's Gold Medals

for Ph.D. and Master degree, respectively. Patel Purvi Subhashchandra, a student of B. A. College of Agriculture, Patel Abhishek Manubhai, a student of College of Veterinary Science & Animal Husbandry, Vaishali Rathod, a student of SMC College of Dairy Science, Chaudhary Hardikkumar Ashokbhai, a student of College of Agricultural Engineering & Technology, Nirbhay Kumar, a student of College of Food Processing Technology & Bio-Energy, Patel Pruthviben Pravinkumar, a student of College of Agricultural Information Technology, Athulya S. Kumar, a student of College of Horticulture were awarded Vice Chancellor's Gold Medals. The details of medals and prizes are shown in Annexure-A.

Hon'ble Governor of Gujarat and Chancellor of AAU, Anand, Shri O. P. Kohli conferred the degrees to the graduates and post-graduates in person and in absentia. Total, 399 graduate and 186 post-graduate candidates received the degrees at the Convocation.



Shri. O.P. Kohli, Hon'ble Chancellor & Governor of Gujarat State
addressing the audience during convocation



Prof. (Dr.) A. K. Srivastava, Chairman, Agricultural Scientists Recruitment Board,
Indian Council of Agricultural Research addressing the audience during convocation





Shri R. C. Faldu, Hon. Minister of Agriculture, Rural Development, Fisheries, Animal Husbandry & Transport, Govt. of Gujarat addressing the audience during convocation



Dr. N. C. Patel, Hon'ble Vice Chancellor of Anand Agricultural University delivering the welcome address during convocation



Annexure-A

List of PG Gold Medals/Gold Plated Medals/Cash Prizes

Awards for 14th Annual Convocation

Sr. No.	Medal Name	Gold Medal	Gold Plated Medal	Cash Prize	Student Name
1	Chancellor's Gold Medal (Ph.D.)	01	-	-	Kelawala Divyesh Naresh
2	Chancellor's Gold Medal (PG Agri.)	01	-	-	Monikaben A Makwana
3	Chancellor's Gold Medal (PG other than Agri.)	01	-	-	Chaudhary Nishaben Narayanbhai
4	Amul Gold Plated Silver Medal	-	01	-	Desai Rachana Rameshchandra
5	Late Dr. R.S. Sharma Gold Medal	01	-	-	
6	Amul Gold Plated Silver Medal	-	01	-	
7	Dr. J. M. Dave Gold Plated Silver Medal	-	01	-	Makwana Shrushti Pareshkumar
8	Shri K.C. Vasavada Memorial Medal	-	01	-	Chaudhary Hardikkumar Karsanbhai
9	Amul Gold Plated Silver Medal	-	01	-	
10	Shri K.C. Vasavada Memorial Medal	-	01	-	Dudhrejiya Priyankkumar Tulsidas
11	Amul Gold Plated Silver Medal	-	01	-	
12	Shri K.C. Vasavada Memorial Medal	-	01	-	Jadhav Ankita Yashwant
13	Smt. Venkata Seethamma Siripurapu Memorial Gold Medal	01	-	-	Mistry Urvish Pravinbhai
14	Late Shri K.K. Shukla Medal	-	01	-	Patel Shvetababen Naginbhai
15	Golden Jubilee Medal	-	01	-	Malaviya Abhishek Vithalbhai
16	Devidayal (Sales) Limited Medal	-	01	-	
17	Arun Iyer Gold Plated Silver Medal	-	01	-	Sonaka Ghosh
18	Dr. C. B. Shah Medal	-	01	-	Aravind T.
19	Laye Shri S.V. Desai Medal	-	01	-	
20	Dr. D.J. Patel Medal	-	01	-	Arade Prashant Chandrakant
21	Dr. D.J. Patel Medal	-	01	-	
22	Late Dr. Diwakar R. Patel Medal	-	01	-	Ruchika Bharti
23	Param Puja Pramukh Swami Maharaj Prerit Dr. K.P. Kikani Gold Plated Silver Medal (Master)	-	01	-	Patel Mehulkumar Chhabildas
24	Dr. K.P. Kikani Gold Plated Silver Medal (Ph.D.)	-	01	-	Pradeep Kumar Vishwakarna
25	Dr. C.A. Patel Cash Prize	-	-	01	Patel Mukeshkumar Inshvarbhai
Total		05	19	01	

List of UG Gold Medals/Gold Plated Medals/Cash Prizes

Sr. No.	Medal Name	Gold Medal	Gold Plated Medal	Cash Prize	Student Name
B.Sc. (Hons.) Agriculture					
1	Vice Chancellor's Gold Medal	01	-	-	Patel Purvi Subhashchandra
2	Dr. Purachand D. Mistry Medal	-	01	-	
3	Dr. B.V. Mehta Medal	-	01	-	
4	Dr. M.V. Desai Medal	-	01	-	
5	Dr. Ravjibhai Chhotabhai Patel Medal	-	01	-	
6	Dr. Sureshbhai N. Patel Memorial Medal	-	01	-	
7	Dr. C. A. Patel Gold Plated Silver Medal	-	01	-	
8	Dr. Ranchhodbhai M. Patel Gold Medal	01	-	-	
9	Dr. Harikaka Medal	-	01	-	
10	American Spring & Pressing Works Pvt. Ltd. Cash Prize	-	-	01	
11	Dr. Ramjibhai M. Patel Medal	-	01	-	Ishu Rameshbhai Patel
12	Dr. Mrinal Kanti Chakraborty Medal	-	01	-	Chaudhri Devangkumar Shirubhai
13	Late Shri. Jashbhai J. Patel Medal	-	01	-	
14	Prof. H.N. Patel Memorial Medal	-	01	-	
15	Shri Babubhai Jashbhai Patel Shashtipurti Smruti Gold Medal	01	-	-	
16	Shri Satyendrabhai K. Patel of Dabhau Gold Medal	01	-	-	
17	Shri Jethabhai Dahyabhai Patel Gold Plated Silver Medal (For Boys)	-	01	-	Kinley Teshering
18	Dr. Z. B. Patel Medal	-	01	-	
19	Shri Dayabhai Ambalal Patel Gold Medal	01	-	-	Manishakumari
20	Gujarat State First Batch Agricultural Graduates Golden Jubilee (1960-2010) Memorial Gold Medal	01	-	-	
21	Smt. Surajben Jethabhai Patel Gold Plated Silver Medal (For Girls)	-	01	-	
22	Memon Trust Dr. M.D. Patel Medal	-	-	1	
Total		06	14	02	



Sr. No.	Medal Name	Gold Medal	Gold Plated Medal	Cash Prize	Student Name
B.V.Sc. & A.H.					
1	Vice Chancellor's Gold Medal	01	-	-	Patel Abhishek Manubhai
2	Dr. R. K. Shukla Medal	-	01	-	Bhavsar Prakrutik Prafulchandra
3	S.J.C. Veterinary College, Anand Medal	-	01	-	
4	V. C. Desai Charities Medal	-	01	-	
5	Dr. A.D. Dave Medal	-	01	-	
6	Dr. K. N. Vyas Gold Plated Silver Medal	-	01	-	
7	S.J.C. Veterinary College, Anand Medal	-	01	-	Patel Nisha Manish
8	Smt. Ramaben B. Avsatthi Medal	-	01	-	
9	IX ISVPT- Anand Medal	-	01	-	
10	Shri Jivanlal G. Parmar Gold Plated Silver Medal	-	01	-	
11	Memon Trust Dr. N.C. Buch Cash Prize	-	-	01	
12	Memon Trust Dr. T.N. Vaishnav Cash Prize	-	-	01	
13	Prof. M.R. Varia Medal	-	01	-	Golavia Akash Vinubhai
14	Shri Shaileshbhai Rameshbhai Patel, Shakti Group Sarsa Gold Medal	01	-	-	
15	Poshak Poultry & Cattle Feed Pvt. Ltd. Sarsa Medal	-	01	-	Ajay Kumar Varshney
16	Dr. K. Jankiraman Gold Plated Silver Medal	-	01	-	
17	Dr. B. P. Pandya Cash Prize	-	-	01	
18	Dr. M. N. Mannari Gold Medal	01	-	-	Raval Kathan Bhanubhai
Total		03	12	03	
B.Tech. (D.T.)					
1	Vice Chancellor's Gold Medal	01	-	-	Vashali Rathod
2	Late Shri Kanubhai Chhotabhai Patel Medal	-	01	-	
3	Memon Trust Dr. B.M. Patel Cash Prize	-	-	01	
4	Memon Trust Dr. V. Kurien Cash Prize	-	-	01	
5	Late Bhogibhai V. Patel Medal	-	01	-	Patel Karan Chandrakant
6	Sheth Mansukhlal C. Desai Medal	-	01	-	
7	Sheth Mansukhlal C. Desai Medal	-	01	-	
8	Sheth Mansukhlal C. Desai Medal	-	01	-	
9	Sheth Mansukhlal C. Desai Medal	-	01	-	
10	Smt. Taraben Maganlal Khatri Medal	-	01	-	
11	Dr. Jashbhai Ranchhodbhai Patel Medal	-	01	-	

Sr. No.	Medal Name	Gold Medal	Gold Plated Medal	Cash Prize	Student Name
12	Late Smt. Kapilaben Babubhai Patel Medal	-	01	-	
13	Late Shri Shankarlal Ratilal Shah Medal	-	01	-	
14	Late Shri R. J. Patel Medal	-	01	-	
15	Shreshth Mill Gamdiwala Dairy Medal	-	01	-	
16	Shri Indubhai R. Patel Medal	-	01	-	
17	B.Tech.(DT)-1995 Batch Gold Plated Silver Medal	-	01	-	
18	Shri Ramanbhai Dahyabhai Patel of Vaghasi Cash Prize	-	-	01	
Total		01	14	03	

B.Tech. (Agril. Engg.)					
1	Vice Chancellor's Gold Medal	01	-	-	Chaudhary Hardikkumar Ashokbhai
2	Indian Trading Cash Prize	-	-	01	
3	Shri Venkata Subbaiah Siripurapu Memorial Gold Medal	01	-	-	Prajapat Sanjaykumar Kalidas
4	Ornate Godhra Cash Prize	-	-	01	
5	Ornate Godhra Cash Prize	-	-	01	Rank Prasang Harji
Total		02	00	03	

B. Tech. (AIT)					
1	Vice Chancellor's Gold Medal	01	-	-	Patel Pruthviben Pravinkumar
2	Designtech Systems Gold Medal	01	-	-	Sowmya Guptaa
Total		02	00	00	

B. Tech. (FPT)					
1	Vice Chancellor's Medal	01	-	-	Nirbhay Kumar Mrudula H. Devrani
2	Prof. S.C. Bose Siripurapu Gold Medal	01	-	-	
3	Memon Trust Dr. K.M. Munshi Cash Prize	-	-	01	
Total		02	00	01	

B.Sc. (Hons.) Horti.					
1	Vice Chancellor's Gold Medal	01	-	-	Athulya S. Kumar
2	Dr. N. S. Parekh Gold Plated Silver Medal	-	01	-	
3	Gujarat Bagayat Vikash Parishad Gold Plated Silver Medal	-	01	-	
Total		01	02	00	

Polytechnic Certificate & Medal Distribution Programme

Sr. No.	Medal Name	Gold Medal	Gold Plated Silver Medal	Cash Prize	Student Name
Polytechnic in Horticulture, AAU, Vadodara					
1	Dr. Subhashchandra J. Patel	-	01	-	Chudasama Hiralben Anilbhai
Polytechnic in Agriculture, AAU, Anand / Vaso					
1	Dr. Muljibhai D. Patel	-	01	-	Dobariya Urvesh kumar Rajeshbhai



Chapter - 4

RESEARCH



Anand Agricultural University is mainly engaged in improving the agricultural productivity, sustainability and thereby, the socio-economic status of farming community of the state. Interventions by the university in area of agricultural research through various technologies followed by their adoption by the farmers and other stake holders have helped the state to achieve better agricultural growth. The research and extension led agricultural growth has placed the state in front position at the national level. In order to accomplish this, number of research projects have been functional at different research stations and colleges of Anand Agricultural University. These projects are funded by various agencies like Government of Gujarat, Government of India, ICAR, New Delhi, DBT, DST, NHM, RKVY and several private agencies.

Anand Agricultural University undertakes high standard research in different disciplines of agriculture and its related fields such as Veterinary and Animal Husbandry, Dairy Science, Food Processing Technology, Agricultural Engineering, AgriBusiness Management, Agricultural Information Technology etc. The scientists of the university associated with research in different disciplines put their hard and sincere efforts and inputs to achieve the desired goals. This chapter deals with the research output carried out by the scientists of Anand Agricultural University during the year 2017-18.

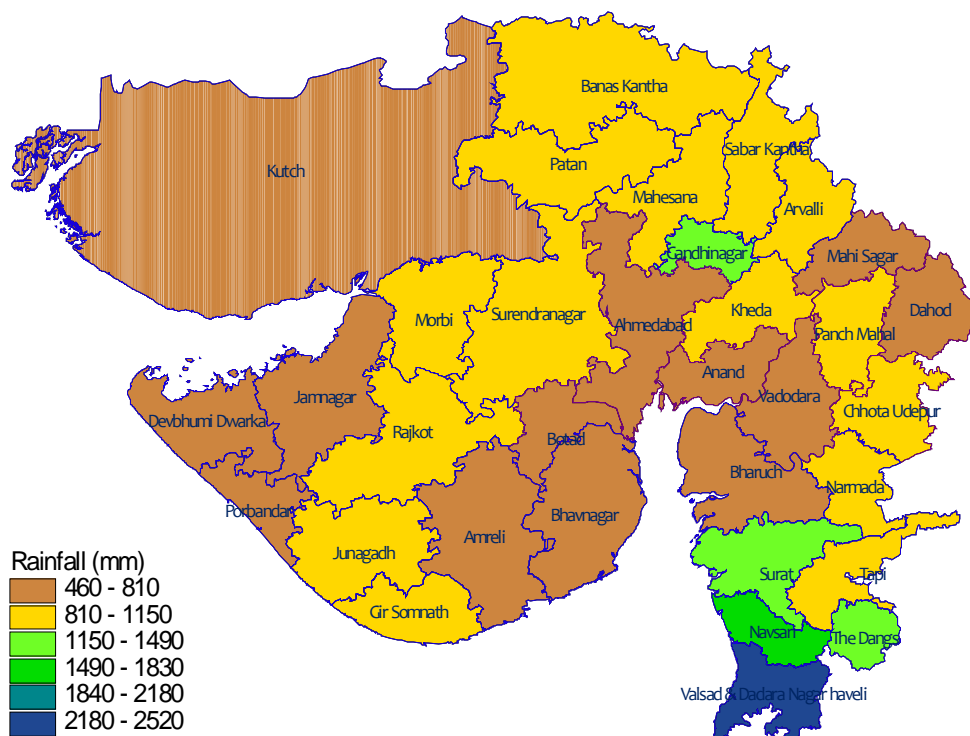
Seasonal weather features of 2017

Gujarat state has received 909 mm rainfall during monsoon 2017, which is 112% receipt against long period average (810 mm). District wise rainfall received and percent against long period average (LPA) are depicted in Map 1 and Map 2, respectively. In middle Gujarat region, Vadodara district received the lowest rainfall (578 mm) which is 65% of its long period average. Mahisagar and Chota udepur received about 80 % rainfall of its LPA. Rainfall receipt of Anand, Panchamahals, Dahod and Kheda

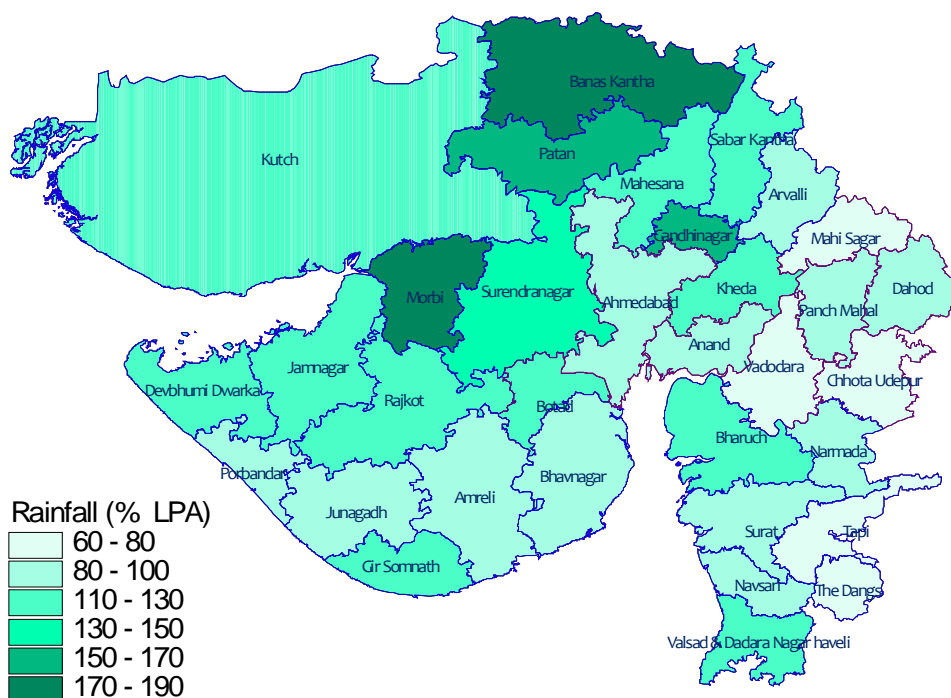
districts was 715, 838, 658 and 858mm, respectively with range of 80-105% of LPA. About 133% of LPA rainfall (754 mm) amount received at Botad district. Temporal distribution of rainfall in the state was fairly good and there wasn't long dryspell condition in any part of the state. Overall, there wasn't drought like condition in the state and the season was favorable for *kharif* crops.

Onset of SW monsoon at Anand took place during the 25th meteorological standard week (MSW) with 57 mm rainfall, followed by 78 mm rainfall in subsequent week. The onset was delayed by only about 4 days from its normal and the *kharif* crops sowing started timely. During the month of June, total rainfall was 125 mm in 5 rainy days against normal of 109 mm. During July month rainfall receipt was 352 mm in 19 rainy days against the normal of 319 mm. There was wetspell like condition from second week of July to the end of the month. Rainfall receipt during August month was 142 mm compared to 252 mm of normal but its temporal distribution (11 rainy days) was good for *kharif* crops. In September month, rainfall receipt was 98 mm in 5 rainy days as compared to 115 mm normal rainfall. The *kharif* crops were favoured by well distributed rainfall with seasonal rainfall amount (727 mm; 85% of LPA) in 40 rainy days. The comparison between normal and actual of rainfall, temperature and relative humidity are presented in Fig. 1 to 3. The weekly maximum temperature was found to be higher than normal during most weeks of winter and summer period. Only few weeks (30 MSW and 49-52 MSW) had significantly lower maximum temperature than normal. Minimum temperature remained slightly lower to its normal during monsoon. During post monsoon season, minimum temperature was markedly lower than normal during 43-48 MSW. During monsoon season of the year, morning relative humidity prevailed more compared to normal. Afternoon relative humidity values were continuously higher during the most part of the year.





Map 1: Rainfall received during monsoon 2017



Map 2: Percentage of rainfall received against long period average during monsoon 2017

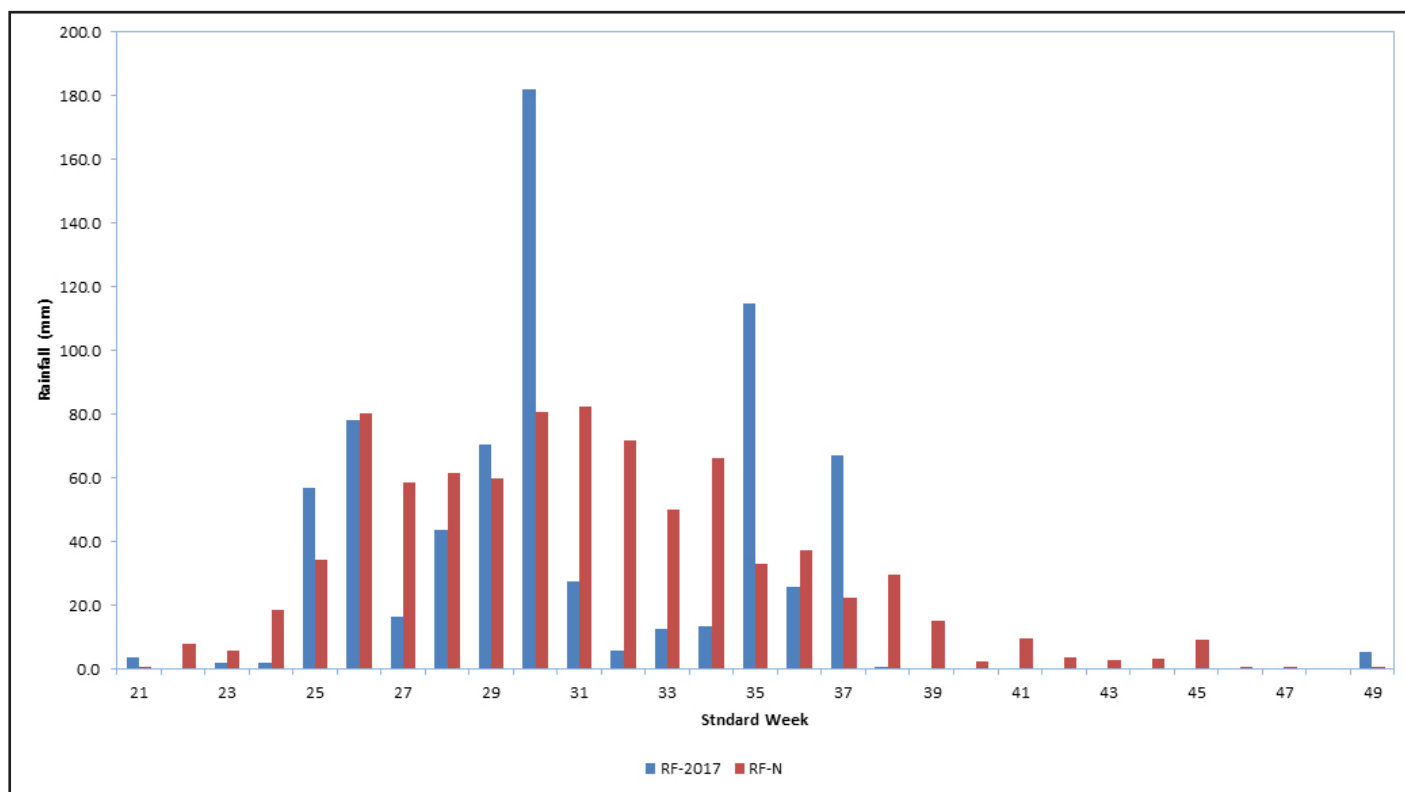


Fig. 1: Normal and actual rainfall during 2017 at Anand

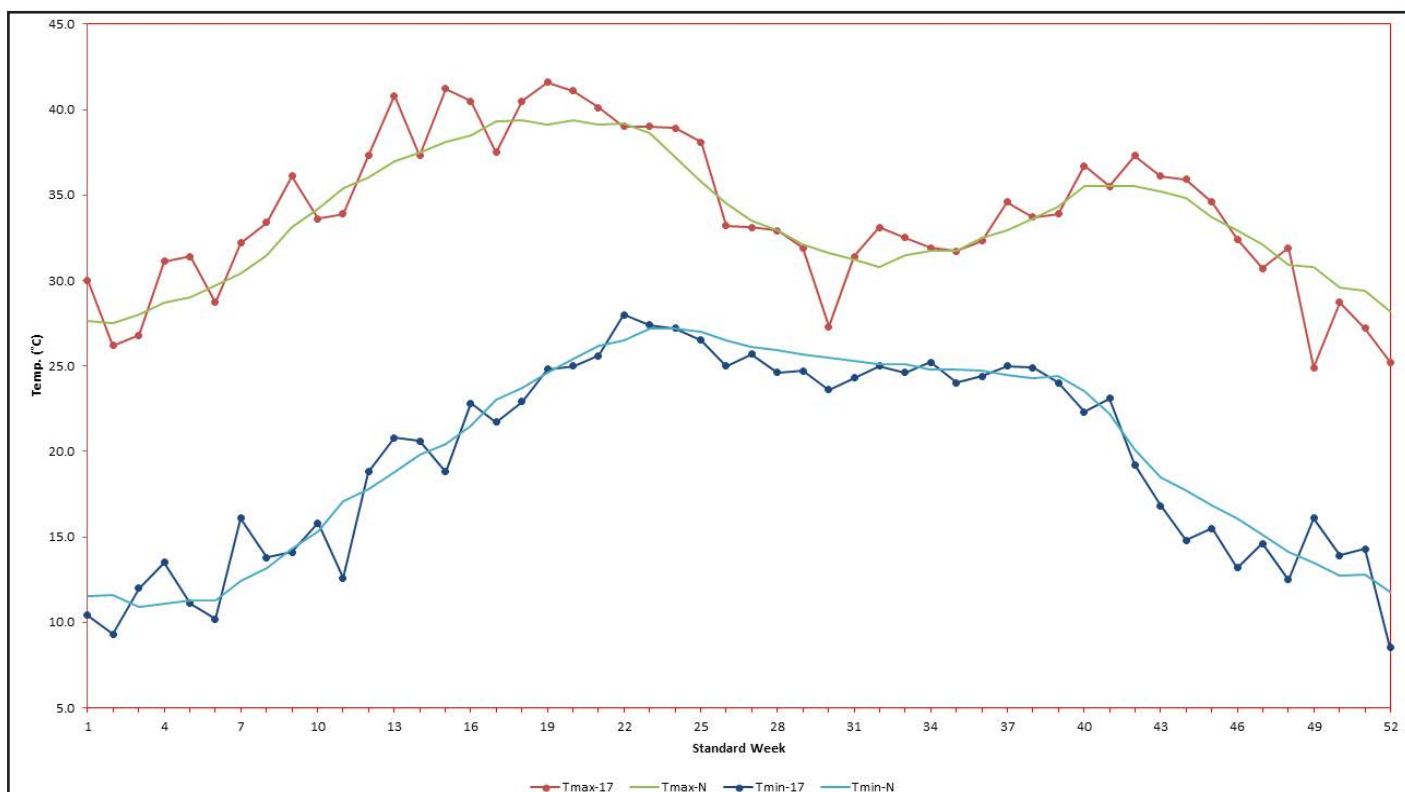


Fig. 2: Normal and actual temperatures prevailed during 2017 at Anand

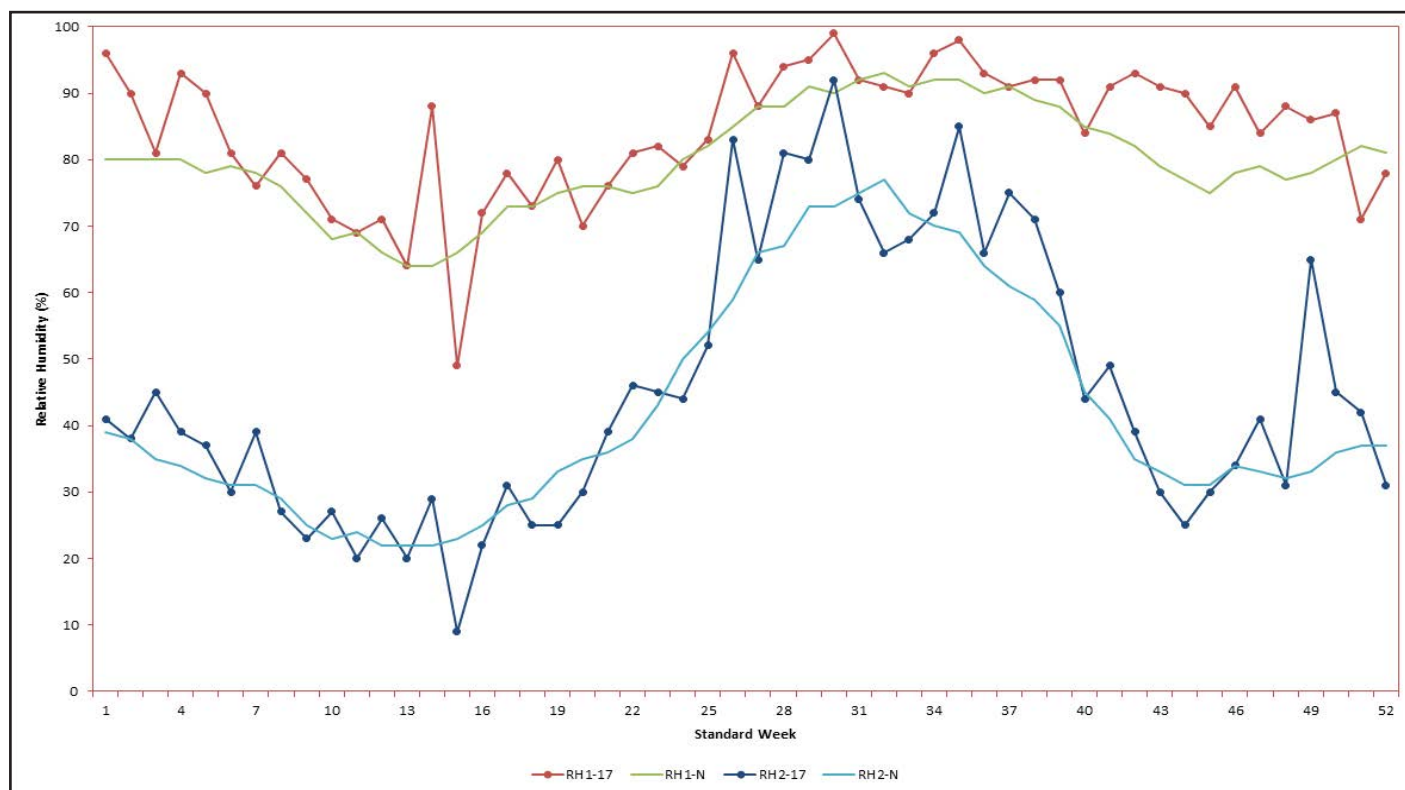


Fig. 3: Normal and actual relative humidity prevailed during 2017 at Anand

RESEARCH COUNCIL

The Research Council (as per following table) section-26 and Common Statutes for Agricultural Universities of Gujarat 2011, Section -26, S-27. has been constituted as per the provision of Gujarat Agricultural Universities Act-5 of 2004, under

Sr. No.	Name, Designation & Address		
1	Dr. N.C. Patel, Vice Chancellor, AAU, Anand		Chairman
2	Deans of the Faculties		
i	Dr. K. P. Patel, Dean, Faculty of Agriculture, AAU, Anand		Member
ii	Dr. J. B. Prajapati, Dean, Faculty of Dairy Science, AAU, Anand		Member
iii	Dr. A. M. Thaker, Dean, Faculty of Vety. Science, AAU, Anand		Member
iv	Dr. D. C. Joshi, Dean, Faculty of Food Processing Tech. & Bio-energy, AAU, Anand and Dean, Faculty of Agril. Engineering and Technology AAU, Godhra		Member
v	Dr. R. Subbaiah, Dean, Faculty of Agril. Engineering and Technology AAU, Godhra		Member
vi	Dr. D. R. Kathiriya, Dean, Faculty of Agril. Information Technology, AAU, Anand		Member
vii	Dr. Y. C. Zala, Principal, IABMI, AAU, Anand		Member
3	Dr. Arun Patel, Director of Extension Education, AAU, Anand		Member
4	The Conveners of the AGRESCO Sub-committees		
i	Dr. D.R.Kathiriya, Convener of Agricultural Engineering & Technology and Agricultural Information Technology Research Sub Committee, AAU, Anand		Member



	ii	Dr. Sasidharan N., Convener, Crop Improvement Research Sub Committee and Professor and Head, Dept. of Genetics and Plant Breeding, BACA, AAU, Anand	Member
	iii.	Dr. B. D. Patel, Convener, Crop Production Research Sub Committee and Agronomist, AICRP on Weed Control, BACA, AAU, Anand	Member
	iv	Dr. B. A. Patel, Convener, Plant Protection Research Sub Committee and Professor & Head, Dept. of Nematology, BACA, AAU, Anand	Member
	v	Dr. N. B. Chauhan, Convener, Social Science Research Sub Committee and Professor and Head, Dept. of Extension Education, BACA, AAU, Anand	Member
	vi	Dr. R. F. Sutar, Convener, Dairy Science and Food Processing Technology & Bio-energy Research Sub Committee and Professor and Head, Dept. of Post Harvest Engineering and Technology, College of FPT & BE, AAU, Anand	Member
	vii	Dr. G. C. Mandali, Convener, Animal Health Research Sub Committee and Professor, Dept. of Vet. Medicine, CoVS & A.H., AAU, Anand	Member
	viii.	Dr. S. C. Dubbal, Convener, Animal Production Research Sub Committee and Professor, Dept. of Anatomy and Histology, CoVS & A.H., AAU, Anand	Member
	5 Two Eminent Scientists outside the university nominated by the Vice Chancellor in consultation with Director of Research		
	i	Dr. Anil R. Chinchmalatpure, Principal Scientist & Head, Central Soil Salinity Research Institute, Regional Research Station, P.O. Maktampur, Bharuch	Member
	ii	Dr. P.R. Bhatnagar, Head, ICAR-Indian Institute of Soil and Water Conservation, Research Centre, Vasad	Member
6	Five Professors or their equivalent from the university nominated by the Vice Chancellor in consultation with Director of Research		
	i	Dr. N. I. Shah, Professor & Head, Dept. of Horticulture, BACA, AAU, Anand	Member
	ii	Dr. K. N. Wadhwani, Prof. & Head, Dept. of LPM, Vety. College, AAU, Anand	Member
	iii	Dr. Atanu Jana, Prof. & Head, Dept. of Dairy Tech., DSC, AAU, Anand	Member
	iv	Dr. R. V. Prasad, Prof. & Head, Dept. of Food quality Assurance, College of FPT & BE, AAU, Anand	Member
	v	Dr. R. Swarnkar, Prof. & Head, Dept. of FMPE, College of Agril. Engg., AAU, Godhra	Member
7	One Progressive Farmer nominated by the Vice Chancellor in consultation with Director of Research		
	i	Shri. Ravat Rupsingbhai Ratansingbhai, At. Agara, Ta. Limkheda, Dist. Dahod	Member
8	The Director of Agriculture/Horticulture/Animal Husbandry		Member
9	The Associate Directors of Research (Agriculture and Animal Science)		
	i	Dr. D. M. Korat, Associate Director of Research, (Agriculture), AAU, Anand (From 1-04-2017 to 30-06-2017)	Member
		Dr.H.R.Patel, Associate Director of Research, (Agriculture), AAU, Anand (From 1-07-2017 onwards)	
	ii	Dr. M. K. Jhala, Associate Director of Research (Animal Science), AAU, Anand	Member
10	Dr. K.B. Kathiria, Director of Research & Dean, PG Studies, AAU, Anand		Member Secretary

RESEARCH SUB-COMMITTEES

To evaluate the research work and to finalize the technical programmes for future research, the research areas of different subjects have been sub-grouped in 8 research sub-committees, as follows.

Faculty of Agriculture

- 1 **Crop Improvement Research Sub-Committee:** Genetics & Plant Breeding, Plant Biotechnology, Nanotechnology, Plant Physiology and Biochemistry
- 2 **Crop Production Research Sub-Committee:** Agronomy, Soil Science, Horticulture, Meteorology and Bio-fertilizer
- 3 **Plant Protection Research Sub-Committee:** Entomology, Plant Pathology and Nematology
- 4 **Social Science Research sub-committee:** Agril. Statistics, Agril. Economics, Extension Education and International Agril. Business Management

Faculty of Veterinary Science

- 5 **Animal Production Research Sub-Committee:** Animal Biotechnology, Animal Breeding and Genetics, Animal Physiology & Bio-chemistry, Livestock Production and Management, Animal Nutrition, Reproductive Biology and Poultry Science
- 6 **Animal Health Research Sub-Committee:** Vet. Medicine, Vet. Microbiology, Vet. Pharmacology,

Vet. Parasitology, Vet. Surgery, Vet. Pathology, Gynaecology & Obstetrics, Veterinary Public Health, Vet. Clinics and Anatomy.

Faculty of Dairy Science and Food Processing Technology & Bio-Energy

- 7 **Dairy Science and Food Processing Technology & Bio-Energy Research Sub Committee:** Dairy Microbiology, Dairy Engineering, Dairy Technology, Dairy Economics, Food Biotechnology, Dairy Chemistry, Post Harvest Technology, Food Processing Technology and Bio-Energy

Faculty of Agril. Engineering and Agril. Information Technology

- 8 **Agril. Engineering and Agril. Information Technology Research Sub Committee:** Soil and Water Conservation, Farm Power Machinery, Agril. Product Processing and Renewable Energy, Agril. Information Technology

4.1 NEW CROP VARIETIES, FARM IMPLEMENTS AND VARIOUS AGRICULTURAL AND ALLIED SCIENCE TECHNOLOGIES DEVELOPED

Research Sub-Committees met and finalized different research programmes considering the feedback received from farmers through extension machinery and educational needs as per the requirement. As a result of sincere efforts of the scientists, the research accomplishments made are given below.



Name of the sub-committee	Date of Meeting	No. of recommendations finalized	
		For farmers	For scientific community and entrepreneurs
Crop Improvement	14-15 March, 2017		
• Genetics & Plant Breeding		06	01
• Basic Science		01	01
Crop Production	6-7 March, 2017		
• Cultural Practices		08	-
• Nutrient Management		10	01
• Water Management		03	-
• Weed Management		01	01
Plant Protection	2-3 March, 2017		
• Insect Pest Management		07	21
• Disease Management		02	03
Dairy Science, Food Processing	20-21 March, 2017	21	06
Agril. Engineering & Agril. IT	27 Feb, 2017	04	05
Animal Health	17-18 Feb, 2017	01	03
Animal Production		04	08
Social Science	13-14 Feb, 2017	-	09
Joint AGRESCO, AAU, Anand	21 March, 2017	68	59
Combined AGRESCO of SAU's at SDAU, Sardarkrushinagar	5-7 April, 2017	68	59

The details of recommendations of AAU, Anand approved in the combined AGRESCO meeting of SAUs of Gujarat held at SDAU, Sardar Krushinagar are given here.



RECOMMENDATIONS FOR FARMING COMMUNITY

CROP IMPROVEMENT

Varieties Released

1. Crop : Bottle Gourd

Variety: Gujarat Anand Bottle Gourd Hybrid1 (GABGH 1)



This hybrid of bottle gourd was developed through hétérosis breeding method having long vine growth habit. Fruits are cylindrical in shape with attractive light green colour, long peduncle with flat shape of apex at peduncle end. The hybrid gave 252.7q/ha yield as compared to check ABG 1 (190.7 q/ha) as well as check Pusa Naveen (175.3 q/ha). It recorded 32.5 (%), 44.1 (%), 38.6 (%) and 29.2 (%) higher yield over the checks viz., ABG 1, Pusa Naveen, NDBG 104 and NDBGH 4, respectively. It has low incidence of Mosaic and Downy mildew as compared to checks. GABGH-1 has higher chlorophyll content, moisture % and reducing sugar (%) as compared to all the checks. This hybrid is recommended for both *kharif* and summer seasons under irrigated condition in middle Gujarat and for *Kharif* season only in Saurashtra region.

2. Crop : Tomato

Variety : Gujarat Anand Tomato 5 (GAT 5)



This variety of tomato GAT 5 has determinate plant type with dark green foliage, medium intensity of green colour on fruit before maturity; Fruits are circular in shape at longitudinally section and flat shape at blossom end. This variety exhibited 47.93, 46.71 and 92.96 per cent higher fruit yield over the check variety AT 3, DVRT 2 and JT 3, respectively. This variety had low incidence of the TLCV, leaf miner and fruit borer damage as compared to the check varieties. This variety contains higher total soluble solid (5.54°Brix) and total soluble sugar (4.78%) as compared to the check varieties. This variety recommended for cultivation in middle Gujarat.

3. Crop : Kuvarpathu

Variety: Gujarat Anand Kuvarpathu1 (GAK1)





The variety GAKP 1 yielded 106.40 t/ha fresh leaf which is 44.11 and 25.75% higher than checks Anand local and Kutch Selection, respectively. It yielded 62.79 t/ha mucilage which was 57.72 and 38.36% higher than checks Anand local and Kutch Selection, respectively. GAKP 1 produced 23.27 kg/ha Aloin-A which was 105.92 and 109.26 per cent higher over the checks Anand local and Kutch Selection, respectively. Low incidence of leaf spot disease. This variety is recommended for cultivation in Gujarat state.

4. Crop : Soybean

Variety: NRC 37 (Ahilya-4)



This variety NRC 37 found superior for seed yield by 17.8 % over national check JS 335 as well as 35.66 and 47.29 % over local check GS1 and GS3, respectively in Middle Gujarat. The seeds are attractive due to its shape and colour. It possesses 19.15 % oil. The variety

NRC 37 is non-shattering in habit, white coloured flowers and hairy pods. This variety is recommended for cultivation in middle Gujarat

5. Crop : Durum Wheat

Variety: Gujarat Anand Durum Wheat 3 (GADW 3)



This variety having attractive bold amber grains with test weight of 56-62 grams as compared to GW 1 (52-58 g). The variety GADW 3 produced on an average 1508 kg/ha grain under timely sown rainfed condition which is 10.72% higher than GW 1 (1362 kg/ha). Moderately resistant to black and brown rust disease. The grains of GADW 3 having high β -Carotene (2.11 ppm) as compared to GW 1 (1.48 ppm). This variety is recommended for cultivation in Bhal and Coastal agro climatic Zone-VIII of Gujarat state.

6. Crop : Bidi Tobacco

Variety: Gujarat Anand Bidi Tobacco Hybrid 2 (GABTH 2)



This hybrid gave on an average (3948 kg/ha) 16.98 percent higher yield than existing hybrid MRGTH 1(3375 kg/ha) under irrigated conditions. It produce more number of leaves per plant with good spangling and puckering and comparable to MRGTH 1 in chemical constituents of leaf. This hybrid is recommended for irrigated tobacco cultivated area of middle Gujarat

CROP PRODUCTION

CULTURAL PRACTICES

1 Relay cropping of castor in legume crops

The farmers of middle Gujarat agro climatic zone are recommended to adopt soybean-castor relay cropping system for getting castor equivalent higher yield and net return. Soybean NRC 37 is to be sown 45 cm apart in first fortnight of July and castor GCH 7 in second fortnight of August wherein, skip one row for sowing of castor after two rows of soybean.



2 To study the castor based intercropping system preceding *kharif* crop under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing *rabica* castor (GCH 7) are recommended to grow three rows of chickpea (GG 1) for green pods at 30 cm spacing between two rows of castor sown at 150 cm spacing during 1st fortnight of October for getting castor equivalent higher yield and net return.

3 Effect of different date of planting and spacing on dry biomass yield of *Artemisia annua* Linn.)

The farmers of middle Gujarat agro climatic zone cultivating artemisia in *rab* season are recommended to transplant artemisia during 3rd week of November to 3rd week of December with the spacing of 60 x 60 cm for securing higher dry biomass yield and net return.

4. Assessment of cropping sequences for bidi tobacco growing area of middle Gujarat agro climate zone

The farmers of Middle Gujarat agro climatic zone are recommended to adopt prevailing *bidi* tobacco-pearl millet crop sequence for getting higher yield and net return.

5 Effect of intercropping pattern on soybean and maize yield in middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone are recommended to grow soybean (NRC 37) and maize (GM 6) as intercrop in 3:2 row ratio with distance of 45 cm during *kharif* season for getting higher yield and net return.



Soybean and maize intercropping
(3:2 row ratio)

6 To evaluate sowing time and varieties of chickpea for green pod yield in middle Gujarat agro climatic conditions

The farmers of middle Gujarat agro climatic



zone growing chickpea for green pods are recommended to sow variety GG 2 during 4th week of September to 2nd week of October for getting higher yield of green pods and net return.

7. Influence of different spacing and plant growth regulators on growth and flower yield of spider lily under middle Gujarat Agro-climatic conditions

The farmers of middle Gujarat Agro climatic zone are recommended to grow spider lily at spacing of 60 x 60 cm with recommended dose of fertilizer (20 t FYM, 300 + 200 + 200 kg NPK/ha) and 2 spray of gibberellic acid @ 200 mg/liter of water for getting higher yield and net return.

Apply spray of gibberellic acid at 45 and 60 days after planting of bulbs in first year and from second year onwards, spray at 45 and 60 days after cutting of leaves.

8 Evaluation of the possibility of inter-cropping system with banana cultivation in tribal area of Chhotaudepur region of middle Gujarat

The farmers of middle Gujarat Agro climatic zone are recommended to grow banana (cv. Grand Naine) at 1.8 × 1.8 m spacing and adopt intercropping with cauliflower or cabbage (30 × 30 cm) at the row ratio of 1:4 to get the additional yield and income without affecting the yield of banana.



NUTRIENT MANAGEMENT

9 Response of castor (*Ricinus communis* L.) to N, P and K under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone

are recommended to apply 100 kg N/ha (50 kg as basal and 50 kg at 45 DAS) and 25 kg P₂O₅/ha as basal in soils having phosphorous availability medium to sufficient to castor grown in late *kharif* for getting higher yield and net return.



10. Response of wheat (*Triticum aestivum* L.) to N, P and K under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing wheat are recommended to apply 120 kg N/ha (60 kg as basal and 60 kg at tillering stage) and 30 kg P₂O₅/ha (soil having medium to high P status) as basal for getting higher yield and net return.



11 Response of N, P and bio-fertilizers on summer pearl millet (*Pennisetum glaucum* L.) under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing summer hybrid pearl millet are recommended to apply 140 kg N/ha (70 kg as



basal + 70 kg at 30 DAS) and 40 kg P_2O_5 /ha as basal for securing higher yield and net return.



12 Effect of cow dung and anubhav bio degrader bacterial consortium (ABBC) on composting of banana pseudostem or maize fodder (waste) for preparation of vermicompost

The farmers of middle Gujarat agro climatic zone are recommended to prepare vermicompost from banana pseudostem or maize fodder using anubhav bio degrader bacterial consortium @ 1 L/t along with 5 % cow dung which gives high quality compost 15 days earlier than normal vermi composting method.

Method for preparation of vermicompost from banana pseudostem or waste maize fodder (100 kg)

- (1) Make small pieces (5-10 cm) of banana pseudostem or maize fodder (waste) and dry it under sunlight. Put the dried pieces of banana pseudostem or maize fodder (waste) in plastic bed (size 3.0x1.0x0.6 m).
- (2) Sprinkle water on pseudostem or maize fodder (waste) to get it wetted.
- (3) After one week, mix the anubhav bio degrader bacterial consortium 100 ml/10 L water & spread on materials kept in the bed. Similarly, spread the slurry prepared by mixing 5 kg cow dung in 10 L water. Release 400 g earthworms (*Eisenia fetida*) in 100 kg pieces of banana pseudostem or maize fodder (waste) in bed.
- (4) Cover the bed with old gunny bags till the compost is ready by sprinkling the water.

- (5) Sprinkling of water is discontinued when compost is ready. Vermicompost is collected after 8-10 days, thereafter sieve the material for use.

The vermicompost will be ready within 70 to 75 days.



13 Effect of different organic manures and nitrogen levels on yield of vernonia (Kalijiri); *Vernonia anthelmintica* (L) Willd under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing vernonia are recommended to apply FYM 10 t/ha along with 50 kg N/ha (25 kg as basal and 25 kg as top dressing at 45 DAS) and 25 kg P_2O_5 /ha as basal for securing higher seed yield and net return



FYM 10 t/ha+ 50 kg N /ha

14 To revalidate the fertilizer recommendation of widely cultivated bidi tobacco varieties

The farmers of middle Gujarat agro climatic



zone growing *bidi* tobacco (GT 7 and A 119) are recommended to apply 140 kg N/ha whereas, 180 kg N/ha to MRGTH 1 for getting higher yield and net return.

15 Performance of single cross hybrid maize in varying levels of nitrogen and phosphorus under rainfed conditions

The farmers of middle Gujarat agro climatic zone growing rainfed maize hybrids GAYMH 1 and GAWMH 2 in Panchmahal district are recommended to fertilize the crop with 160 kg N and 20 kg P_2O_5 per hectare, while in Dahod district, farmers are recommended to fertilize the crop with 160 kg N and 60 kg P_2O_5 per hectare in soils having low P_2O_5 for getting higher yield and net return. The nitrogen should be applied in four equal splits i.e., at basal, 4 leaves, 8 leaves and tasseling stage while P_2O_5 as basal.

16 Effect of different levels of nitrogen and phosphorous on yield of castor under supplementary irrigation in Bhal region

The farmers of *Bhal* and coastal agro climatic zone growing semi *rabi* castor (GCH 7) under conserved soil moisture conditions are recommended to apply 37.5 kg N/ha and 50 kg P_2O_5 /ha as basal and 37.5 kg N/ha in two equal splits after irrigation at 21 and 45 DAS for getting higher yield and net return.



(75 kg N ha⁻¹ + 50 kg P_2O_5 ha⁻¹)

17 Effect of chemical fertilizers and organic manures in high density planting system on growth, yield and quality of banana cv. Grand Naine

The farmers of middle Gujarat Agro climatic zone interested to grow banana (cv. Grand Naine) are recommended to plant at 1.2 x 1.2 x 2.0 m paired row system to get higher yield and net return. To obtain consistent yield the organic manure as basal dose (10 kg FYM) and chemical fertilizers (300-100-200 g NPK per **plant**) be given through drip in six equal splits at 90, 105, 120, 135, 150 and 165 days after planting. Apply irrigation through drip at alternate day @ 0.8 PEF (October to February 2 hours 30 minutes and March to June 5 hours) and system laid out with 2 drippers (4 lph capacity) for each plant.



18 Assessment of Natural Organic Liquid (NOL) and inorganic nutrient supply system on yield and quality of banana cv. Grand Naine

The farmers of middle Gujarat Agro climatic zone interested to grow banana (cv. Grand Naine) are advised to apply recommended dose of fertilizer (10 kg FYM and 300-100-200 g NPK per plant) and AAU PGPR (Plant Growth Promoting Rhizobacteria) bio NPK consortium @ 1 ml/plant near root zone after one month of planting.

OR

Recommended dose of fertilizer (10 kg FYM and 300-100-200 g NPK per plant) and AAU PGPR (Plant Growth Promoting Rhizobacteria) bio NPK consortium @ 1 ml/plant after one month of planting along with drenching of NOL @ 500 l/ha near root zone of plant each at 30 and 45 days after planting for getting higher yield and net return.

NOL preparation

Materials required	Quantity of materials required for soil application
Water	500 L
Cow dung	50 kg
Cow urine	25 L
Jaggery / Molasses	5 kg
Butter milk	5 L
Pulse flour	5 kg
Soil under banyan tree	2.5 kg
Period	7 days

Mix the above materials in barrel or tank and keep it for 7 days

- The above mixture should be stirred two times daily



RDF + FYM + Biofertilizer AAU PGPR bio NPK consortium
RDF + FYM + Biofertilizer AAU PGPR bio NPK consortium + NOL Drenching @ 500 L/ha at 30 and 45 DAP

WATER MANAGEMENT

19 Effect of irrigation intervals on dry biomass yield of dodi (*Leptadenia reticulata* W. & A.)

The farmers of middle Gujarat agro climatic zone growing dodi crop in *kharif* are recommended to irrigate the crop at 0.8 IW/CPE ratio (12 irrigations each at interval of 20-25 days in winter and 12-15 days in summer) after first cutting i.e. 90 DATP for securing higher dry biomass yield and net return.



20 Response of different nitrogen levels and time of application through fertigation on green cob yield of sweet corn (*Zea mays* L. Sachharata Strut) under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing sweet corn in *rabi* season are recommended to adopt drip irrigation at 0.8 PEF and fertilize the crop with 75% of RDN (90 kg/ha) in five equal splits (*i.e.* at basal, 20, 30, 40 and 50 DAS) through fertigation and 60 kg P₂O₅ as basal for getting higher yield and net return.

System details:

1	Lateral spacing	90 cm
2	Dripper spacing	45 cm
3	Dripper discharge	4 lph
4	Operating pressure	1.2 kg/cm ²
5	Operating frequency	Alternate day
6	Operating time	55 minutes

21 Nitrogen management in summer sesame (*Sesamum indicum* L.) under drip irrigation system in goradu soil of middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing summer sesame (Gujarat Sesame 2) are recommended to sow the crop adopting paired row (30-30 cm x 15 cm : 60 cm) in last week of February and adopt drip irrigation at 0.8 PEF and fertilize with 40 kg N/ha *i.e.* 10 kg N/ha as basal and 30 kg N/ha in 5 equal splits at weekly interval starting from 25 DAS and 25 kg P as basal and liquid biofertilizer, *Azospirillum* and PSB, *Bacillus coagulans* @ 1 L/ha for getting higher yield and net return.

System details:

1	Lateral spacing	90 cm
2	Dripper spacing	45 cm
3	Dripper discharge	4 lph
4	Operating pressure	1.2 kg/cm ²
5	Operating frequency	Alternate day
6	Operating time	March-April 55 minutes and May 90 minutes



WEED MANAGEMENT

22 Assessment of premix broad spectrum herbicides for weed management in wheat

The farmers of middle Gujarat agro climatic zone growing wheat are recommended to apply premix broad spectrum herbicide clodinafop propargyl (15%) + metsulfuron methyl (1% WP) 64 g/ha or sulfosulfuron (75%) + metsulfuron methyl (5%) WG 32 g/ha (mix in 500 litres of water) as post emergence application (25-30 DAS) or carry out hand weeding at 20 and 40 days after sowing for effective management of complex weed flora and higher net return. No adverse effect of herbicides on succeeding crops was observed.



Clodinafop + metsulfuron (Pre mix) (64 g/ha)
PoE Sulfosulfuron + metsulfuron (Pre mix)
(32 g/ha) PoE



PLANT PROTECTION

AGRICULTURAL ENTOMOLOGY

1. Bio-efficacy of some insecticides against Bihar hairy caterpillar, *Spilosoma obliqua* Walker on cowpea, *Vigna unguiculata* (Linnaeus) Walpers

For effective and economical control of Bihar hairy caterpillar, *Spilosoma obliqua* Walker in cowpea, farmers of middle Gujarat are

recommended to apply one spray of any one of the following insecticides at the initiation of the pest.

- 1) Thiodicarb 75 WP, 0.15% (20 g/10 litre of water)
- 2) Indoxacarb 15.8 EC, 0.0158% (10 ml/10 litre of water)
- 3) Emamectin benzoate 5 SG, 0.0025% (5 g/10 litre of water)

Recommendation for PHI as per CIB guidelines

Year	Crops	Pest	Pesticides with formulation	Dosage/ha				Appl. schedule	Waiting period/PHI (Days)
				g. a.i.	Quantity of formulation (g/ml)	Conc. (%)	Dilution in water (litre)		
2017	Cowpea	Hairy Caterpillar	Thiodicarb 75% WP	750	1000	0.15	500	One spray at flowering stage	17
			Indoxacarb 15.8% EC	79	500	0.0158	500		12
			Emamectin benzoate 5% SG	12.50	250	0.0025	500		14

2 Integrated management of termite in wheat

The farmers of middle Gujarat growing irrigated wheat are recommended to apply cake before sowing and sow the seeds air dried for 12 hours after treating with any one of the following insecticides diluted in 5 litre of water for the management of termite.

- (1) Castor cake @ 1 ton/ha and fipronil 5 SC 500ml/100 kg seeds
- (2) Castor cake @ 1 ton/ha and chlorpyrifos 20 EC 400 ml/100 kg seeds
- (3) Neem cake @ 1 ton/ha and fipronil 5 SC 500 ml/100 kg seeds

3 Bio-efficacy of selected insecticides against pink bollworm in Bt cotton

The farmers of Gujarat growing *Bt* cotton are recommended to apply any one of the following insecticides alternatively, first spray at 75 days after sowing and second at 15 days of first spray for effective management of pink bollworm.

- (1) Indoxacarb 15.8 EC, 0.0079 % (5 ml/ 10 litre of water)
- (2) Emamectin benzoate 5 SG, 0.0025 % (5 g/10 litre of water)
- (3) Spinosad 45 SC, 0.014 % (3 ml/10 litre of water)

Year	Crop	Pest	Pesticides with formulation	Dosage/ha				Appl. schedule	Waiting period / PHI (Days)
				g. a.i.	Quantity of formulation (g/ml)	Conc. (%)	Dilution in water (litre)		
2017	Cotton	Pink bollworm	Indoxacarb 15.8 EC	39.5	500	0.0079	500	75 and 90 DAS	14
			Emamectin Benzoate 5 SG	12.5	500	0.0025			10
			Spinosad 45 SC	67.5	300	0.014			10



4 Impact of sowing periods on incidence of pest complex in pigeon pea.

Farmers of middle Gujarat are advised to sow pigeon pea variety Anand Gujarat Tur-2 (AGT-2) from 25th June to 1st July (26th std week, onset of monsoon) to minimize the incidence of pod borers and thereby increase the seed yield.

5 Bio-efficacy of microbial insecticides against sucking pests in *Bt* cotton

The farmers of middle Gujarat growing *Bt* cotton are advised to spray *Lecanicillium lecanii* 2 x 10⁸ cfu/g (1% WP) @ 40 g /10 litre water) or *Beauveria bassiana* 2 x 10⁸ cfu/g (1% WP) @ 40 g /10 litre water) at fortnightly interval for three times starting from initiation of sucking pests for the effective biological control.

Year	Crop	Pest	Pesticides with formulation	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				a.i/ ha	quantity of formulation /ha	Conc (%)	Dilution in water			
2016 -17	<i>Bt</i> Cotton	Sucking pests (Aphid, jassid, whitefly, thrips)	<i>Lecanicillium lecanii</i> (1% WP)(2 x 10 ⁸ cfu/g) or <i>Beauveria bassiana</i> (1% WP)(2 x 10 ⁸ cfu/g)	---	1.8 kg	--	450 liter	Spray of <i>Lecanicillium lecanii</i> (1% WP) @ 40 g /10 litres water)/ <i>Beauveria bassiana</i> (1% WP) @ 40 g /10 litres water) at fortnightly interval for three times starting from initiation of sucking pests	---	---

6 Bio-efficacy of insecticides against stem borer (*Chilo partellus*) infesting maize

Farmers of the middle Gujarat growing *kharif* maize for grain purpose are

advised to apply whorl application of carbofuran 3 G @ 10 kg/ha two times at 30 and 40 days after germination for the effective and economical management of stem borer.

Year	Crop	Pest	Pesticides with formulation	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i/ ha	quantity of formulation /ha	Dilution in water (10 lit.)			
2017	Maize (<i>Kharif</i>)	Stem borer (<i>Chilo partellus</i>)	Carbofuran 3G	300	10 kg		Two whorl application at 30 and 40 days after germination.	60 days	-

7 Bio-efficacy of insecticides against girdle beetle *Oberea brevis* Swedenbord of soybean

Farmers of middle Gujarat growing soybean are recommended to treat the seeds with imidacloprid

600 FS @ 9 ml/ kg seeds and spray twice with chlorantraniliprole 18.5 SC, 0.006% (3 ml/ 10 litre of water) at 40 and 55 days after sowing for effective management of stem borer(girdle beetle).

Year	Crops	Pest	Pesticides with formulation	Dosage/ha				Appl. schedule	Waiting period /PHI (Days)	Remark
				g. a.i.	Quantity of formulation (g/ml)	Conc. (%)	Dilution in water (litre)			
2017	Soybean	Girdle beetle, <i>Oberea brevis</i> Swedenbord	Seed treatment with imidacloprid 600 FS @ 9 ml/ kg seeds and spray twice chlorantraniliprole 18.5 SC @ 0.006% (3 ml/ 10 litres of water)	5.4 g/ kg seed & 30 g	150	0.006	500	At the time of sowing and 40 and 55 DAS	22	--

8 Bio-efficacy of different insecticides against major lepidopteran pests of soybean

Farmers of middle Gujarat growing soybean are advised to apply two sprays (first at initiation of pest and second at 15 days after first spray) of chlorantraniliprole 18.5 SC, 0.006 % (3 ml/10

litre of water, 30 g.a.i./ha) or indoxacarb 15.8 EC, 0.0079 % (5 ml/ 10 litre of water, 39.5 g.a.i./ha) alternatively for effective control of lepidopteran pests viz; *Spilosoma obliqua* (Walker) and *Spodoptera litura* Fab.

Year	Crop	Pest	Pesticides with Formulations	Dosage/ha				Appl. schedule	Waiting period /PHI (Days)
				g.a.i.	Quantity of formulation g/l	Conc. (%)	Dilution in water (10 lit)		
2017	Soybean	Bihar hairy caterpillar, <i>Spilosoma obliqua</i> (Walker) and leaf eating caterpillar, <i>Spodoptera litura</i> Fab.	Chlorantraniliprole 18.5 SC	30	0.3	0.006	3 ml	First spray at initiation of pest and second at 15 days after first spray	22
			Indoxacarb 15.8 EC	39.50	0.5	0.0079	5 ml		

PLANT PATHOLOGY AND NEMATOLOGY

9 Impact of agro-shade net on damping-off disease in bidi tobacco Nursery

Farmers of middle Gujarat growing bidi tobacco nursery are recommended to raise the nursery by covering the nursery beds either with green

agro-shade net of 75% or 90% shade about 60 cm height from soil and spray drench with azoxystrobin 23 SC, 0.023% (10 ml/10 litre water/ 100 m²) as and when required to minimize damping-off disease and thereby getting more number of healthy seedlings

Year	Crop	Pest	Pesticide with formula-tion	Dosage				Application schedule	Waiting period/ PHI (days)
				g. a.i./ ha	Quantity of formula-tion/ ha	Conc (%)	Dilution in water (10 lit.)		
2017	Bidi Tobacco (Nursery)	Damping-off	Azoxystrobin 23 SC	230	1 lit.	0.023	10 ml	Spray drench at the initiation of the disease and as and when required thereafter.	--

10 Bioefficacy of fungicides against powdery mildew of clusterbean

Farmers of middle Gujarat growing cluster bean in *kharif* season are recommended to spray hexaconazole 5 SC, 0.005% (10 ml/ 10 L water) twice to manage powdery mildew. The first spray is to be applied at the time of initiation of the disease and second at 15 days of first spray.



BASIC SCIENCES

PLANT PHYSIOLOGY

1 Seed priming and foliar spray of stress mitigating chemicals for ameliorating moisture stress in conserved moisture condition in chickpea

The farmers of *Bhal* & Coastal Agro-climatic Zone –VIII growing *rainfed* chickpea are advised to soak seeds with Thiourea @ 500 ppm (0.5 g/l) per kg seed for one hour before sowing and apply two spray of Thiourea @ 1000 ppm (1.0 g/l) at vegetative stage (30-35 DAS) and at



pod filling stage (45-50 DAS) to get maximum seed yield and net return”.

DAIRY SCIENCE / FPT&BE

DAIRY SCIENCE

1 Study on use of *mulberry* in development of natural ice cream

The entrepreneurs and food processors interested in manufacturing of natural *mulberry* ice cream are recommended to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves incorporating *mulberry* pulp @ 8.0% by weight of ice cream mix, along with the addition of sago @ 1.0% and WPC-70 @ 0.5% as the natural source of stabilizer and emulsifier, respectively.

2 Utilization of paneer whey in cultured butter milk

Dairy industry and entrepreneurs are recommended to use method developed by Anand Agricultural University for the preparation of probiotic cultured buttermilk with acceptable sensory qualities and enhanced biofunctional properties by blending *dahi* with fermented paneer whey in 60:40 ratio (w/w) using starter cultures *Lactobacillus helveticus* MTCC 5463 and *Lactococcus lactis* subsp. *diacetylactis* (NCDC 60) in 1:1 ratio at 1% rate of inoculum. The product stored in PET bottles has shelf life of 5 days at $7\pm 1^{\circ}\text{C}$.

3 Development of value added buttermilk, *dahi* and ice cream containing drumstick.

Dairy industry and entrepreneurs are recommended to use method developed by Anand Agricultural University for manufacturing of buttermilk containing *Moringa* leaf powder as an ingredient. One serving size (300 g) per day of the product could be a good source of Vitamin A, calcium and iron providing 10, 18 and 11% DV vs. 3.6, 15 and 2.83% DV respectively present

in buttermilk without addition of *moringa*. Moreover, the product contains considerable amount of Vitamin C (~9% DV). The acceptability of the product could be improved by addition of two blends of spices viz. Blend A (consisting of equal quantities of roasted cumin and ginger powder) and Blend B (consisting of mixture of dry mango and black pepper in the proportion of 80:20 w/w) @ 0.20 and 0.30 % (w/w) of buttermilk, respectively. The product had a shelf-life of 20 days at $7\pm 2^{\circ}\text{C}$ when packaged in Polyethylene terephthalate (PET) bottles.

4 Evaluation of bacterial culture for treatment of dairy effluent

Dairy industry and entrepreneurs are recommended to adopt method developed by Anand Agricultural University using aerobic bacterial culture *B. cereus* MTCC 25641 for the reduction of effluent treatment loads of commercial dairy plants. This culture is found effective in reduction of COD by about 90% in 7 days of aeration when added @ 2 % in pilot scale experimental plant.

5 Development of oat based probiotic smoothie

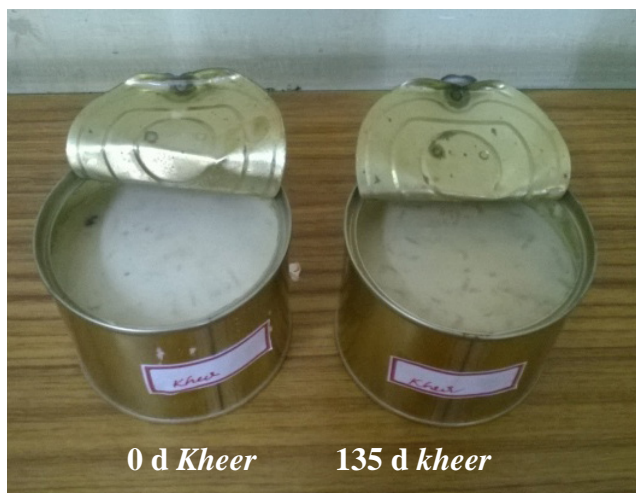
Dairy industry and entrepreneurs are recommended to adopt method developed by Anand Agricultural University for the preparation of probiotic smoothie using functional ingredients like oat bran (5%), SMP (9%), WPI (1%) with addition of sugar (7.5%) and mango pulp (12.0%). The product is made using *Streptococcus thermophilus* MTCC 5460 as starter and *Lactobacillus helveticus* MTCC 5463 as probiotic culture. Shelf life of the product is 24 days in polypropylene cups at $4\pm 2^{\circ}\text{C}$.

6 Engineering interventions for commercial production of *kheer*

Dairy industry and entrepreneurs are recommended to adopt method developed by Anand Agricultural University for manufacture



of thermally treated (118°C for 15 min.) *kheer*. It is made from standardized milk (4.5% fat & 8.5 % SNF) concentrated to 2 times concentration level using scraped surface heat exchanger (SSHE) and added with basmati rice and sugar at the rate of 7 and 11.5%, respectively of concentrated milk. The product has a shelf life of 135 days at room temperature (35±2 °C). The technology developed for the manufacture of *kheer* is recommended for its commercial exploitation.



7 Process re-engineering for the manufacture of '*shrikhand*'

Dairy industry and entrepreneurs are recommended to adopt method developed by Anand Agricultural University for the manufacture of acceptable quality of *shrikhand* without removal of whey from Reconstituted Concentrated Skim Milk (RCSM) and cream. RCSM (35% Total solids) is inoculated with Sacco culture @ 1% of RCSM, and incubated at 40 °C until 2% acidity is developed. Then it is added with sugar @ 50% of dahi and 70% fat cream to get 6% fat in *shrikhand*. It is mixed well and thermized at 90 °C/10 min in SSHE and then added with 0.2% cardamom powder. *Shrikhand* was packed and stored at refrigeration temperature (7 ± 2 °C). The developed *shrikhand* has more yields and is cost effective compared to *shrikhand* manufactured by traditional method.



FOOD PROCESSING TECHNOLOGY

8 Production of high quality powder with maximum retention of essential oil using cryogenic grinding "*Cumin*" & "*Coriander*"

Farmers, entrepreneurs and agro-processing units involved in grinding of spices are recommended to use the technology of cryogenic grinding developed by Anand Agricultural University, Anand for superior quality cumin and coriander powder with higher retention of volatile oil (84 & 93 % respectively) compared to conventional grinding.

9 Sterilization of Red Chilli using irradiation

The entrepreneurs and spice processors are recommended to adopt gamma irradiation protocol developed by Anand Agricultural University, Anand for fungal decontamination of chilli powder. The technology results in safe storage of packed and irradiated (7.5 kGy) ground chilli powder in ambient condition for six months and more.

10 Development of vacuum dried *khaman*

The entrepreneurs interested in production of new product like dried *khaman* (ready-to-rehydrate) are recommended to adopt processing technology developed by Anand Agricultural University, Anand. The technology involves vacuum drying (600 mmHg, 80°C, 180 min) of *khaman* pieces.

Final product packed in aluminium laminated pouches can be stored under ambient storage condition ($27\pm 2^{\circ}\text{C}$) for 60 days. This can be easily rehydrated for consumption in 5 min using warm water ($\sim 50^{\circ}\text{C}$) with addition of 68 g water to prepare 100g product.



Dried Khaman

Fresh Khaman

11 Ohmic heating of mango pulp

The entrepreneurs and fruit pulp processors interested in preservation of mango pulp are recommended to use ohmic heating processing technology developed by Anand Agricultural University, Anand. The processing parameters are voltage (160 V), temperature (80°C), with holding time of 4 min. The pulp retains better nutrients (7.1 Overall Acceptability), is stable and acceptable upto sixty-seven days of storage in glass bottles, under refrigerated condition at $7\pm 2^{\circ}\text{C}$. Energy requirement for ohmic heating of mango pulp was almost 3.5 times lesser than the conventional heating.

12 Effect of gamma irradiation on milling and cooking characteristics of pigeon pea

The entrepreneurs and dal millers interested in pulse processing are recommended to adopt gamma irradiation technology developed by Anand Agricultural University, Anand for improving milling and cooking quality of pigeon pea. Irradiation (10 kGy) resulted in good milling characteristics, reduction in cooking time ($\sim 50\%$) and phytic acid content ($\sim 66\%$), and improving protein digestibility (80%).

13 Popping of sorghum grains using microwave energy

The entrepreneurs and food processors interested in production of ready to puff sorghum grains using microwave energy are recommended to use technology developed by Anand Agricultural University, Anand. The process involves use of Gujarat local (White) variety (17% moisture content, 1.33% salt, 10% oil). The technology enables production of puffed sorghum in domestic convective cum microwave oven (18 W/g, 160s). The pre-treated grains can be stored safely for 3 months and more in microwavable pouches.

14 Design and development of grader for aonla fruits

Farmers, entrepreneurs and food processors are recommended to use the size based grader for aonla fruits developed by Anand Agricultural University, Anand, for grading aonla fruits. The developed grader has high capacity (300kg/h) efficient and economical (about $1/5^{\text{th}}$ cost of manual) over manual grading the aonla fruits.



15 Development of ready to eat extruded food product from tomato pomace

The entrepreneurs and food processors interested in production of extruded food product from tomato pomace are recommended to use the

technology developed by Anand Agricultural University, Anand. The extruder is to be operated at 140°C barrel temperature, 400 RPM screw speed, raw material moisture content of 16.44%. This technology involves use of dehydrated pomace @5% and its extrusion with the corn @80% and bengal gram @15% resulting in extruded product rich in protein, fiber and lycopene.

16 Production technology for superior quality malt flour from finger millet (Ragi)

The entrepreneurs and food processors interested in manufacturing of malt based products are recommended to adopt the production technology of finger millet malt developed by Anand Agricultural University, Anand. The technology involves soaking and germination of finger millet for 12 and 24 h, respectively, followed by drying at standard temperature and then milling. This process reduces the anti-nutritional factors like Phytic Acid and Trypsin Inhibitor Activity to 60.02 and 49.96%, respectively.

17 Canning of mango slices

The entrepreneurs and mango fruit processors interested in production of canned mango slices are recommended to adopt processing technology developed by Anand Agricultural University, Anand. Canned mango slices put in 20°Brix sugar syrup and thermally processed (retorted) at 100°C for 10 minutes results in good quality product. Processed mango slices can be stored at ambient storage condition (30±2°C) for one year.

18 Development of carotenoid fortified cookies

The entrepreneurs and food processors interested in production of fortified cookies using carotenoid are recommended to use the technology developed by Anand Agricultural University, Anand. This technology involves use of carotenoid extract obtained by super critical fluid extraction from vacuum dried

pumpkin powder. Addition at the rate of 350 mg of extract per 100g of refined wheat flour is recommended. The cookies thus obtained contained 42.17 mg of β-carotene per 100g of product with a shelf life of 60 days.

19 Development of production technology for sesame spread

The entrepreneurs and fat spread manufacturers interested in production of sesame spread are recommended to adopt processing technology developed by Anand Agricultural University, Anand. Sesame spread can be prepared by treatments includes, roasting (180 °C for 20 min) of de-hulled sesame, cooling, mixing of sesame seeds with sugar (7.3%), lecithin (1.2%), hydrogenated vegetable oil (5%) and salt (1.2%) and grinding the mix for 3 min at low speed to produce good quality sesame spread. Sesame spread can be stored at refrigerated condition (7±2°C) for three months.

20 Super critical extraction of essential oil from curry leaves

The entrepreneurs and food processors interested in production of essential oil from curry leaves are recommended to use supercritical extraction technology developed by Anand Agricultural University, Anand. This technology involves recovery of essential oil (1.3%) using drying, sieving and CO₂ supercritical fluid extraction at controlled pressure (125 bar) and temperature (45°C). The process results in superior quality essential oil compared to conventional extraction methods.

21 Development of poultry dropping based biogas system for energy utilization in poultry farm

Poultry owners are recommended to adopt a technology developed by Anand Agricultural University, Anand for biogas production from poultry dropping. The biogas yield from poultry

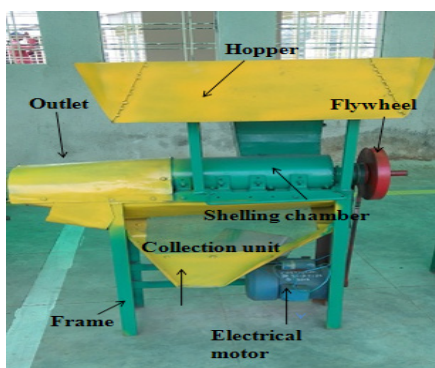
dropping was about 12.87% more than cattle dung for 2m³/day capacity biogas plant. The cost of biogas production from poultry dropping was calculated as Rs.31/m³/day. The produced biogas can be used to operate poultry brooders. By using the gas, 403.2 kWh electricity can be saved in three weeks duration for raising 1000 chicks as against electrically operated brooders.

AGRICULTURAL ENGINEERING AND AIT

AGRICULTURAL ENGINEERING

1 Development of a low cost power operated maize sheller for small and marginal farmers

Electric power operated maize sheller developed by Anand Agricultural University is recommended for small and marginal farmer's use and commercial exploitation. The machine works satisfactorily for shelling 1000 kg maize cobs/h. The developed sheller reduce cost of shelling by 96.87 and 92.00 % over hand and pedal operated maize sheller respectively.



2 Development of a low cost planting unit for conventional plough

A low cost planting unit for bullock drawn conventional plough developed by Anand Agricultural University for maize (seed size of 7 to 10 mm) sowing is recommended for small and marginal farmers' use and commercial exploitation as it saves about 38 & 93% time of sowing and 50 & 71% cost of sowing as compared to conventional plough with funnel type seeding

device and dibbling method, respectively.



3 Modifications in hand operated disc type maize sheller

A pedal operated disc type maize sheller developed by Anand Agricultural University is recommended for small and marginal farmers' use and commercial exploitation as its through output capacity and shelling efficiency were observed as 67.9 kg/h and 99.44 respectively.



ANIMAL PRODUCTION

1 Formulation and evaluation of total mixed ration comprising of pigeon pea (*Cajanus cajan*) straw in adult sheep

Sheep owners are advised to maintain adult flock on total mixed ration comprising of equal quantity of *jowar* hay and pigeon pea straw.

2. **Formulation and evaluation of total mixed ration comprising of gram (*Cicer arietinum* L) straw in adult goats**

Goatsowners are advised to maintain adult flock on total mixed ration comprising of equal amount of *jowar* hay and gram straw.

3. **Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to adult sheep during hot summer.**

Sheep owners are advised to feed a combination of bypass fat and yeast (*Saccharomyces cerevisiae*) each at 2% of feed intake to adult sheep during hot summer (April to June) in order to reduce the impact of heat stress.

4 **Methane mitigation in cattle using legume straw based total mixed ration with SSF biomass.**

Farmers are recommended to feed total mixed ration with 30% groundnut haulm (*gotar*), 30% wheat straw and 40% concentrate mixture, instead of total mixed ration with only 60% wheat straw and 40% concentrate mixture in order to reduce methane emission by 11% in adult cattle and buffalo.

ANIMAL HEALTH

1 **Effect of nutritional management of transition period on blood profile, puerperal events and postpartum fertility in buffaloes: a demonstration to tribal farmers**

The buffalo owners in tribal areas of around taluka Santrampur, district Mahisagar are recommended to provide additional nutrients supplementation over routine feeding to their animals during transition period for 2 months each pre- and postpartum (1.5 kg compound concentrate, Type-I, BIS & 50 g chelated ASMM) with injectable slow releasing multi micro-minerals at around 2 months prepartum

and again on the day of calving to reduce the peri parturient complications, and significantly improve postpartum fertility along with better economic return.

RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY AND ENTREPRENEURS

CROP IMPROVEMENT

1 **Screening of wild germplasm of okra for YVMV resistance**

Among different species of okra including cultivated (*Abelmoschus esculentus*) and wild (*A.moschatus*, *A.moschatus* subsp. *tuberosus*, *A.manihot* var. *tetraphyllus*, *A.tuberculatus*, *A.angulosus* var. *grandiflorus* and *A.ficulneus*), two accessions of *A.moschatus* sub sps. *Tuberosus* (IC 470750 and IC 413569) found resistant to YVMV (Yellow Vein Mosaic Virus) disease. These accessions may be used in pre-breeding programme to introgress the desirable genes for YVMV resistance into the cultivated okra.

CROP PRODUCTION

1 **Influence of weed management practices on growth and seed yield of oat (*Avena sativa* L.)**

Application of pendimethalin 0.90 kg/ha as pre emergence followed by hand weeding at 40 days after sowing of oat found effective for weed management with higher seed yield and net return.

2 **Soil test based fertilizer prescriptions through inductive cum targeted yield model for rice**

The ready reckoner is developed on STCR basis for kharif rice grown in middle Gujarat condition for fertilizers alone or fertilizers with FYM 5 t/ha. The ready reckoners prepared on the basis of below mentioned targeted yield equations and soil test values for getting targeted yield.



i) Sole use of chemical fertilizers

$$FN = 51.37 T - 1.04 SN$$

$$FP_2O_5 = 27.71 T - 3.24 SP$$

$$FK_2O = 62.93 T - 0.98 SK$$

ii) Conjoint use of chemical fertilizers and FYM 5 t/ha

$$FN = 29.09 T - 0.62 SN - 0.10 FYM N$$

$$FP_2O_5 = 26.45 T - 4.08 SP - 0.48 FYM P$$

$$FK_2O = 38.93 T - 0.79 SK - 0.17 FYM K$$

PLANT PROTECTION

AGRICULTURAL ENTOMOLOGY

1 Bio-efficacy of different insecticides against mealy bug infesting custard apple

Two sprays of profenophos 50% EC 0.05% (10 ml/10 L of water) starting from appearance of the pest proved effective in the management of mealybug in custard apple.

2 Bio-efficacy of insecticidal molecules against cucumber leaf miner, *liriomyza trifolii* (Burgess)

Seed treatment either with thiamethoxam 30 FS or imidacloprid 600 FS @ 10 ml/kg seed followed by two foliar sprays of thiamethoxam 25 WG (0.01%; 4 g/10 L water; 50 g a.i./ha) first at 30 days after sowing and second at 15 days after first spray for effective control of cucumber leaf miner, *Liriomyza trifolii*.

3 Bio-efficacy of different insecticides against stem borer infesting durum wheat

For effective and economical management of stem borer in durum wheat, apply foliar spray of chlorantraniliprole 18.5 SC 0.006 % (3 ml/ 10 liters of water) at 50th days of sowing. OR seed treatment of chlorpyrifos 20 EC, 4 ml in 50 ml water/ kg seeds (0.8 g a.i./kg seeds) + foliar spray

of chlorantraniliprole 0.006% (3 ml/ 10 liters of water) at 50th days of sowing.

4 Residues and persistence of triazophos 40 EC in/on cucumber

Two foliar sprays of triazophos 40 EC in cucumber at 10-day interval @ 300 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in cucumber fruits if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if triazophos 40 EC is recommended in cucumber with MRL of 0.05 µg/g.

5 Residues and persistence of chlorpyrifos 20 EC in/on cucumber

Two foliar sprays of chlorpyrifos 20 EC in cucumber at 10-day interval @ 300 g a.i./ha at fruiting stage resulted in its residue below the MRL 0.2 µg/g (by FSSAI) in cucumber fruits if harvested from 7th day after the last application. Therefore, PHI of 7-day could be suggested if chlorpyrifos 20 EC is recommended in cucumber.

6 Residues and persistence of quinalphos 25 EC in/on cucumber

Two foliar sprays of quinalphos 25 EC in cucumber at 10-day interval @ 300 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in cucumber fruits if harvested from 7th day after the last application. Therefore, PHI of 7-day could be suggested if quinalphos 25 EC is recommended in cucumber with MRL of 0.05 µg/g.

7 Residues and persistence of ethion 50 EC in/on cucumber

Two foliar sprays of ethion 50 EC in cucumber at 10-day interval @ 500 g a.i./ha at fruiting stage resulted in its residue below the MRL 1.0 µg/g (by FSSAI) in cucumber fruits if harvested from 1st day after the last application. Therefore, PHI



of 1-day could be suggested if ethion 50 EC is recommended in cucumber.

8 Residues and persistence of carbendazim 50 WP in/on cucumber

Two foliar sprays of carbendazim 50 WP in cucumber at 10-day interval @ 150 g a.i./ha at fruiting stage resulted in its residue below the MRL 0.5 µg/g (FSSAI) in cucumber fruits if harvested from 1st day after the last application. Therefore, PHI of 1-day could be suggested if carbendazim 50 WP is recommended in cucumber

9 Residues and persistence of profenophos 50 EC in/on cucumber

Two foliar sprays of profenophos 50 EC in cucumber at 10-day interval @ 500 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in cucumber fruits if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if profenophos 50 EC is recommended in cucumber with MRL of 0.05 µg/g.

10 Residues and persistence of cypermethrin 25 EC in/on cucumber

Two foliar sprays of cypermethrin 25 EC in cucumber at 10-day interval @ 50 g a.i./ha at fruiting stage resulted in its residue below the MRL 0.07 µg/g (by CODEX) in cucumber fruits if harvested from 3rd day after the last application. Therefore, PHI of 3-day could be suggested if cypermethrin 25 EC is recommended in cucumber.

11 Residues and persistence of spiromesifen 22.9 SC in/on chilli

Two foliar sprays of spiromesifen 22.9 SC in chilli at 10-day interval @ 96 g a.i./ha at fruiting stage resulted in its residue below the MRL (0.50 µg/g by EU/UK & 0.45 µg/g by US) in chilli fruits if harvested from 15th day after the last application.

Therefore, PHI of 15-day could be suggested if spiromesifen 22.9 SC is recommended in chilli.

12 Residues and persistence of lambda-cyhalothrin 5 EC in/on chilli

Two foliar sprays of lambda-cyhalothrin 5 EC in chilli at 10-day interval @ 15 g a.i./ha at fruiting stage resulted in its residue below the MRL (0.10 µg/g by EU/UK, 0.2 µg/g by US & 1.0 µg/g by Japan) in chilli fruits if harvested from 1st day after the last application. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin 5 EC is recommended in chilli.

13 Residues and persistence of bifenthrin 10 EC in/on chilli

Two foliar sprays of bifenthrin 10 EC in chilli at 10-day interval @ 50 g a.i./ha at fruiting stage resulted in its residue below the MRL (0.50 µg/g by CODEX) in chilli fruits if harvested from 1st day after the last application. Therefore, PHI of 1-day could be suggested if bifenthrin 10 EC is recommended in chilli.

14 Residues and persistence of triazophos 40 EC in/on bitter gourd

Two foliar sprays of triazophos 40 EC in bitter gourd at 10-day interval @ 300 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in bitter gourd fruits if harvested from 7th day after the last application. Therefore, PHI of 7-day could be suggested if triazophos 40 EC is recommended in bitter gourd with MRL of 0.05 µg/g.

15 Residues and persistence of profenophos 50 EC in/on bitter gourd

Two foliar sprays of profenophos 50 EC in bitter gourd at 10-day interval @ 500 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in bitter gourd fruits if harvested from 7th day after the last application. Therefore, PHI of 7-day could be



suggested if profenophos 50 EC is recommended in bitter gourd with MRL of 0.05 µg/g.

16 Residues and persistence of ethion 50 EC in/on bitter gourd

Two foliar sprays of ethion 50 EC in bitter gourd at 10-day interval @ 500 g a.i./ha at fruiting stage resulted in its residue below the MRL 1.0 µg/g (by FSSAI) in bitter gourd fruits if harvested immediately after the last application. Therefore, PHI of 1-day could be suggested if ethion 50 EC is recommended in bitter gourd.

17 Residues and persistence of cypermethrin 25 EC in/on bitter gourd

Two foliar sprays of cypermethrin 25 EC in bitter gourd at 10-day interval @ 50 g a.i./ha at fruiting stage resulted in its residue below the MRL (0.20 µg/g by EU & 2.0 µg/g by Japan) in bitter gourd immediately after the last application. Therefore, PHI of 1-day could be suggested if cypermethrin 25 EC is recommended in bitter gourd.

18 Residues and persistence of quinalphos 25 EC in/on bitter gourd

Two foliar sprays of quinalphos 25 EC in bitter gourd at 10-day interval @ 250 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in bitter gourd fruits if harvested from 3rd day after the last application. Therefore, PHI of 3-day could be suggested if quinalphos 25 EC is recommended in bitter gourd with MRL of 0.05 µg/g.

19 Residues and persistence of chlorpyrifos 20 EC in/on bitter gourd

Two foliar sprays of chlorpyrifos 20 EC in bitter gourd at 10-day interval @ 300 g a.i./ha at fruiting stage resulted in its residue below the MRL of 0.20 µg/g (by FSSAI) in bitter gourd from 3rd day after the last application. Therefore, PHI of 3-day could be suggested if chlorpyrifos 20 EC is recommended in bitter gourd.

20 Residue and persistence of carbendazim 50 WP in/on bitter gourd

Two foliar sprays of carbendazim 50 WP in bitter gourd at 10-day interval @ 150 g a.i./ha at fruiting stage resulted in its residue below the MRL of 0.50 µg/g (by FSSAI) in bitter gourd from 3rd day after the last application. Therefore, PHI of 3-day could be suggested if carbendazim 50 WP is recommended in bitter gourd.

21 Residues and persistence of imidacloprid 17.8 SL in/on bitter gourd

Two foliar sprays of imidacloprid 17.8 SL in bitter gourd at 10-day interval @ 20 g a.i./ha at fruiting stage resulted in its residue below the MRL (1.0 µg/g by EU, 0.40 µg/g by Japan and 0.50 µg/g by US) in bitter gourd immediately after the last application. Therefore, PHI of 1-day could be suggested if imidacloprid 17.8 SL is recommended in bitter gourd.

PLANT PATHOLOGY AND NEMATOLOGY

22 Incidence and severity of frog eye spot disease on bidi tobacco in relation to agro-meteorological parameters

- (1) The weather parameters RDAY, MINT and VP1 were responsible for FES in tobacco nursery.

The logistic regression model developed for FES in nursery is as under.

$$FES_{code}(1, 0) = \log \left(\frac{P_i}{1 - P_i} \right)$$

$$FES_{code}(1, 0) = \log \left(\frac{P_i}{1 - P_i} \right)$$

$$= -27.0169 + 0.7352 * RDAY + 3.0285 * MINT - 2.0776 * VP1$$

- (2) The weather parameters BSS, MAXT, MINT and TOTRF were responsible for FES in tobacco field.

The logistic regression model developed for FES



in field is as under.

$$FES_{code}(1, 0) = \log \left(\frac{P_i}{1} - P_i \right)$$

$$FES_{code}(1, 0) = \log \left(\frac{P_i}{1} - P_i \right)$$

$$= 9.2280 + 0.5272 * * B S S - 0.5321 * * MAXT + 0.3275 * * MINT - 0.00305 * * TOTRF$$

23 Screening of blackgram germplasm against Yellow mosaic disease

VUG-14-1 genotype of blackgram found resistant against yellow mosaic disease under high disease pressure in field conditions.

24 Bio-efficacy of fungicides against powdery mildew of clusterbean

Spray hexaconazole 5 SC, 0.005% (10 ml/ 10 L water) twice to manage powdery mildew in *kharif* clusterbean. Apply first spray at the time of initiation of the disease and second at 15 days of first spray.

BASIC SCIENCE

1 Effect of benzyladenine (BA) on water deficit stress in rice seedlings

It is informed to scientific community that for alleviating adverse effect of water deficit stress, rice seeds be treated with 100 ppm benzyladenine for 8 hrs. to maintain adequate level of osmolytes such as total soluble sugars, phenols and proline with low membrane injury upto 20 days old seedlings.

DAIRY SCIENCE

1 Comparative appraisal of physical, chemical, instrumental and sensory evaluation methods for monitoring oxidative deterioration of ghee

- ♦ The prediction based on regression model comprising peroxide value by FOX method,

carbonyl value and flavor score obtained by sensory evaluation of ghee on storage at $80 \pm 2^\circ\text{C}$ as variables is promising for predicting shelf life of ghee at ambient temperature ($35 \pm 2^\circ\text{C}$).

- ♦ The use of rancimat is not promising to predict the shelf life of ghee on storage at ambient temperature ($35 \pm 2^\circ\text{C}$).

2 Screening of qualitative tests for detection of adulterants in milk

Inter-adulterant interference in detection of adulterants in milk by selected qualitative tests

- ♦ Mixing of urea at 0.8% or more in milk interferes in detection of detergents by Methylene blue test given by FSSAI (2015).
- ♦ Mixing of formalin at 0.4% or more in milk interferes in detection of detergents by Methylene blue test given by FSSAI (2015).
- ♦ Mixing of sodium hydroxide at 0.08% or more in milk interferes in detection of detergents by Methylene blue test given by FSSAI (2015).
- ♦ Mixing of formalin at 1.0% or more in milk interferes in detection of ammonium sulphate by Phenol test given by FSSAI (2015).
- ♦ Mixing of sodium hydroxide at 0.04% or more in milk interferes in detection of Glucose by Barfoed method given by FSSAI (2015).
- ♦ Mixing of formalin at 0.1% or more in milk interferes in detection of sucrose by Seliwanoff test given by Srivastava (2010).
- ♦ Mixing of sodium hydroxide at 0.01% or more in milk interferes in detection of Maltodextrin by Iodine test given by Sharma et al. (2012).
- ♦ Mixing of urea at 0.4% or more in milk interferes in detection of starch by Iodine test given by BIS (1960).
- ♦ Mixing of ammonium sulphate at 0.1% or more



in milk interferes in detection of starch by Iodine test given by BIS (1960).

- ♦ Mixing of sodium hydroxide at 0.01% or more in milk interferes in detection of starch by Iodine test given by BIS (1960).
- ♦ Mixing of sodium hydroxide at 0.01% or more in milk interferes in detection of sulphate by Barium chloride given by FSSAI (2015).
- ♦ Mixing of sucrose at 0.4% or more in milk interferes in detection of formaldehyde by Leach test given by BIS (1961).

Note:

While applying the aforementioned qualitative tests, interference as caused by the coexisting respective adulterant should be taken into account for interpretation of the respective qualitative tests. Such interference by the coexisting adulterants suggests the need for suitable modification or for further research on alternate tests.

Effect of Processing on detection of adulterants in milk by selected qualitative tests

- ♦ Pasteurization and sterilization of milk affects detection of detergents in milk by methylene blue test given by FSSAI (2015).
- ♦ Pasteurization, boiling and sterilization affects detection of Urea by DMAB test given by FSSAI (2015).
- ♦ Chilling, pasteurization, boiling and sterilization affects detection of glucose in milk by Barfoed test given by FSSAI (2015).
- ♦ Sterilization affects detection of sucrose in milk by Seliwanoff test given by Srivastava (2010).
- ♦ Sterilization affects detection of formaldehyde in milk by Leach test given by BIS (1961).
- ♦ Chilling, pasteurization, boiling and sterilization

affects detection of Hydrogen peroxide in milk by ρ -Phenylenediamine test given by Draaiyeret *al.* (2009).

- ♦ Sterilization affects detection of Neutralizers by Rosolic acid test given by (DGHS, 2005).

3. Application of infrared spectroscopy in detection of foreign fats and oils in ghee

- ♦ FT-MIR spectroscopy in reflectance mode using HATR and FT-NIR spectroscopy in transmittance mode are suitable for evaluation of physical and chemical parameters of ghee.
- ♦ FT MIR ($4000-650\text{ cm}^{-1}$) spectra of ghee have 14 peaks and position of peaks (wavenumbers) are at 3005, 2922, 2853, 1744, 1466, 1418, 1377, 1236, 1161, 1114, 1098, 966, 870 and 721 cm^{-1} .
- ♦ FT NIR ($10000-4000\text{ cm}^{-1}$) of ghee have 9 peaks and position of peaks (wavenumbers) are at 8258, 7185, 7076, 5790, 5677, 5262, 5180, 4976 and 4700 cm^{-1} . The intensity of absorbance is higher in case of cow ghee compared to buffalo ghee.

FOOD PROCESSING TECHNOLOGY

4 Experimental determination of rate of respiration and heat load of important commodities of the region.

Persons interested in designing cold/low temperature storage facilities for fruits/vegetables such as green chilli, guava, brinjal, mango, custard apple, cluster beans and cucumber are recommended to use the data on respiration rate and heat of respiration for the above commodities for various temperatures and RH's, generated by Anand Agricultural University, Anand.

5 Prevalence and study of antibiotic resistant pattern of Salmonella in raw milk in Anand town

Analysis of raw milk samples collected around Anand region reveals prevalence of Salmonella



in 8.57%. These Salmonella strains found to be sensitive to antibiotics and pasteurization temperature.

6 The study on in vitro antioxidant and antidiabetic activity of garden cress seed (*Lepidium sativum*)

Antioxidant activity of garden cress seed was determined by DPPH, ABTS, FRAP and TPC found 22.63 (% inh), 13.78 (% inh), 48.07 (RP%) and 788.46 (mg %), respectively. In vitro antidiabetic activity studied using non enzymatic glycosylation of haemoglobin assay and α -amylase inhibition power found 70.20 (% inh) and 66.53 (% inh), respectively.

AGRICULTURAL INFORMATION AND TECHNOLOGY

1 Web based application for analysis of Completely Randomized Design, Latin Square Design, and Split Plot Design

Web based application developed by Anand Agricultural University is useful to analyze the data of the experiments using designs like Completely Randomized Design, Randomized Block Design, Latin Square Design, Split plot design and Strip Plot design and also for illustration purposes as well as for the researchers with interest in experimental designs.

2 Development of Web based Annual Budget Management System

Web based online Annual Budget Management System developed by Anand Agricultural University automates annual budgeting and funding process of State Agricultural Universities. It is recommended to use at State Agricultural Universities Council and SAUs of Gujarat.

3 Web based application for Dead Stock and IT Asset information Management

Web based Dead Stock and IT Asset information

Management System developed by Anand Agricultural University is useful to store, retrieve and track dead stock items and IT assets details. It is recommended to use by the IT users of the concerned unit/sub-unit of the SAUs of Gujarat.

4 Online Information Management for Extension Education Centers of AAU

Web based online Information Management for Extension Education Centers system developed by Anand Agricultural University is used to store and manipulate the training data, FLD information, budget information, extension activities, results of OFT and success stories of the unit/sub-unit of SAUs and can generate necessary reports for management. It is recommended to use by all the respective unit/sub-unit of SAUs of Gujarat who are involved in extension activities.

5 Parameterization of probability models for sub derivation using geomorphological model of a catchment response

The NGO's, planners and irrigation specialists are advised to adopt two parameter weibull distribution over two parameter gamma distribution coupled with geomorphological model of catchment response for development of synthetic unit hydrograph and the flood hydrographs from ungauged catchments of Panam river basin system.

ANIMAL PRODUCTION

1. Development of area-specific mineral mixture formulations for Mahisagar district

Based on prioritization of limiting minerals in Mahisagar district, the area specific mineral mixture has been formulated to make up for the deficiency when dairy animals are fed @ 30g/head/day in addition to the current feeding practices.



Sr. No.	Mineral Element	Per Cent Requirement
1	Calcium	20.00
2	Phosphorus	12.01
3	Magnesium	4.61
4	Sulphur	1.00
5	Copper	0.17
6	Zinc	1.77
7	Manganese	0.51
8	Iron	0.40
9	Cobalt	0.01
10	Iodine	0.03

2 Formulation and evaluation of total mixed ration comprising of pigeon pea (*Cajanus cajan*) straw in adult sheep

The pigeon pea straw can replace 50 % *jowar* hay in total mixed ration (with roughage to concentrate ratio 70:30) for adult sheep without any adverse effect on body weight, rumen parameters and digestibility of nutrients.

3 Formulation and evaluation of total mixed ration comprising of gram (*Cicer arietinum* L) straw in adult goats

The gram straw can replace 50 % *jowar* hay in total mixed ration (with roughage to concentrate ratio 70:30) for adult goats without any adverse effect on body weight, rumen parameters and digestibility of nutrients.

4 Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to adult sheep during hot summer.

Sheep during hot summer when supplemented with a combination of bypass fat and yeast (*Saccharomyces cerevisiae*) each at 2% of feed intake caused significant reduction in rectal temperature and respiration rate and thus reduced the impact of heat stress.

5 Methane mitigation in buffalo on legume straw based total mixed ration

Inclusion of groundnut haulm (*gotar*) @ 30% replacing wheat straw in total mixed ration (pelleted) with roughage to concentrate ratio 60:40 increases rumen microbial protein synthesis by 8.95% as compared to total mixed ration without groundnut haulm in Surti buffalo.

6 Methane mitigation in buffalo on legume straw based total mixed ration

Inclusion of groundnut haulm (*gotar*) in mash and pelleted form @ 30% replacing wheat straw in total mixed ration with roughage to concentrate ratio 60:40 reduces methane emission (g/kg DDMI) by 8.7 and 18.93 % and also digestible energy loss through methane by 5 and 12.92% in mash and pelleted form, respectively, as compared to total mixed ration without groundnut haulm in Surti buffalo.

7 Methane mitigation in cattle using legume straw based total mixed ration with SSF Biomass.

Inclusion of groundnut haulm (*gotar*) @ 30% replacing wheat straw in total mixed ration with roughage to concentrate ratio 60:40 increases rumen microbial protein synthesis by 13.26 % as compared to total mixed ration without groundnut haulm in cattle.

8 Methane mitigation in cattle using legume straw based total mixed ration with SSF Biomass.

Inclusion of groundnut haulm (*gotar*) @ 30% replacing wheat straw in total mixed ration with roughage to concentrate ratio 60:40 reduces methane emission (g/kg DDMI) by 15.13 % and digestible energy loss through methane by 10.80 % in cattle. Inclusion of Solid State Fermentation biomass 5% in the same ration further reduces methane emission by 10.60 % and digestible



energy loss through methane by 4.26 %.

ANIMAL HEALTH

1 Studies on prevalence, haemato-biochemical alterations and diagnostic aspects of trypanosoma evansi using blood smear examination and polymerase chain reaction (pcr) in cattle and buffaloes.

Polymerase chain reaction based diagnosis of Trypanosoma evansi is more effective than routine blood smear examination which has showed 30.23% sensitivity in relation to PCR in cattle and buffaloes.

2 Effect of nutritional management of transition period on blood profile, puerperal events and postpartum fertility in buffaloes: a demonstration to tribal farmers

Buffaloes during transition period in tribal area of talukaSantrampurdistrictMahisagar when supplemented with additional nutrients over routine feeding for 2 months each pre- and postpartum (1.5 kg compound concentrate, type I, BIS & 50 g chelated ASMM) along with injectable micro-minerals (Se 25mg, Zn 200mg, Cu 75 mg, Mn 50 mg ,i/m) at around 2 months pre partum and again on the day of calving optimized the plasma metabolites, minerals and hormonal profiles, and reduced the incidence of peri parturient complications, enhanced uterine involution and significantly improved postpartum fertility with reduced infertility and calving interval. Injection of micro-minerals alone found more economical over concentrate alone or a combination of concentrate and micro-minerals in optimally fed animals.

3 Ultrasonography of udder and teat in dairy animals

Ultrasonography of bovine udder and teats

using 7.5 MHz linear transducer with water bath method provides optimum visualization of the teat canal, rosette of Furstenberg, teat cistern, teat wall and blood vessels, whereas 10 MHz linear transducer with direct gel technique provides excellent visualization of udder parenchyma, gland cistern, vessels and supramammary lymph nodes.

SOCIAL SCIENCE

1 Development of yardstick of CV % for Arnej center (*Bhal* and Coastal Zone) crops field experiments

The yard stick of CV% for accepting the results of Arnej center (*Bhal* and Coastal Zone) crops experiments is 20 per cent for yield character.

2 Development of yardstick of CV % for Dhandhuka center (*Bhal* and Coastal Zone) crops field experiments

The yard stick of CV% for accepting the results of Dhandhuka center (*Bhal* and Coastal Zone) crop experiments is 14 per cent for yield character.

3 Development of yardstick of CV % for *Bhal* and Coastal Zone crops field experiments

The yard stick of CV % for accepting the results of *Bhal* and Coastal Zone crops experiments is 18 per cent for yield character.

4 Development of yardstick of CV % for gram (*Bhal* and Coastal Zone) crop field experiments

The yard stick of CV% for accepting the results of gram (*Bhal* and Coastal Zone) crop experiments is 19 per cent for yield character.

5 Development of yardstick of CV % for wheat (*Bhal* and Coastal Zone) crop field experiments

The yard stick of CV% for accepting the results of wheat (*Bhal* and Coastal Zone) crop experiments



is 15 per cent for yield character.

6 Development of yardstick of CV % for cotton (*Bhal* and Coastal Zone) crop field experiments

The yard stick of CV % for accepting the results of cotton (*Bhal* and Coastal Zone) crop experiments is 21 per cent for yield character.

7 Development of yardstick of CV % for safflower (*Bhal* and Coastal Zone) crop field experiments

The yard stick of CV% for accepting the results of safflower (*Bhal* and Coastal Zone) crop experiments is 24 per cent for yield character.

8 Development and standardization of scale to measure the attitude of farmers towards Farmers Interest Group

No	Statements	SA	A	UD	DA	SDA
1	I think that Farmers Interest Group (FIG) provides opportunity to solve those issues which are difficult to solve individually(+)	5	4	3	2	1
2	I think that FIG creates conflict among the farmers.(-)	1	2	3	4	5
3	I feel that FIG helps in acquiring costly inputs which are difficult to manage single-handedly (+)	5	4	3	2	1
4	I believe that FIG means too many cooks spoil the broth (-)	1	2	3	4	5
5	I think FIG is ideal platform to bridge extension personnel with farmers. (+)	5	4	3	2	1
6	I think that FIG creates conflict between resource poor and rich farmers (-).	1	2	3	4	5
7	I like to be a member of FIG (+).	5	4	3	2	1
8	I believe that FIG creates misunderstanding within the farmers (-)	1	2	3	4	5
9	I believe that input buying capacity of farmer improves joining FIG (+)	5	4	3	2	1
10	I believe that FIG provides forum in sharing advantageous issues (+)	5	4	3	2	1
11	I feel that FIG is a prospective system to empower farmers. (+)	5	4	3	2	1
12	I feel that FIG is a potential tool for women empowerment. (+)	5	4	3	2	1

9 Development and standardization of scale to measure attitude of extension personnel towards training programmes organized by EEI, Anand

No	Statements	SA	A	UD	DA	SDA
1	I believe that training programmes organized by EEI help to improve work performance of extension personnel. (+)	5	4	3	2	1
2	I believe that medium of instruction in training programmes organized by EEI is not suitable to level of understanding of extension personnel. (-)	1	2	3	4	5
3	Training programmes organized by EEI result in improving practical skills of extension personnel. (+)	5	4	3	2	1
4	I believe that module of training programmes organized by EEI are more information oriented than performance oriented. (-)	1	2	3	4	5
5	I feel that training programmes organized by EEI help in inculcating extension leadership amongst the extension personnel. (+)	5	4	3	2	1
6	I hold opposite views for the methods of training adopted in training programmes organized by EEI. (-)	1	2	3	4	5
7	I believe that course contents of training programmes organized by EEI are outdated for extension personnel. (-)	1	2	3	4	5



8	I feel that training programmes organized by EEI create motivating environment for extension personnel. (+)	5	4	3	2	1
9	I feel that training programmes organized by EEI are incapable to introduce recent extension skill amongst extension personnel. (-)	1	2	3	4	5
10	I believe that trainers working at EEI to train extension personal are incompetent. (-)	1	2	3	4	5
11	I believe that training equipments used in training programmes organized by EEI are discouraging. (-)	1	2	3	4	5
12	I feel that the scope of career development is limited in training programmes organized by EEI. (-)	1	2	3	4	5
13	I think in general approaches adopted at EEI for training are learner centered. (+)	5	4	3	2	1
14	I think that training programmes organized by EEI result in overall improvement of extension productivity. (+)	5	4	3	2	1

DISCIPLINE / AREA / LOCATION WISE RESEARCH RESUME

conducted at Nawagam, Dabhoi, Arnej, Dahod and Thasra centers of Middle Gujarat.

4.2 Agricultural Crops

4.2.1 Cereals

Rice

Crop Improvement

- ♦ Rice is the predominant cereal crop of central Gujarat. A large number of varieties have been developed by the Main Rice Research Station, Nawagam, Gujarat. Presently, the centre is working for the development of new varieties/ hybrids in rice. In addition, various breeding activities like development of fresh crosses, handling of segregating generations, screening of germplasm and different categories of varietal trials are regularly conducted at the station.
- ♦ During the year 2017-18 a total of 41 trials were successfully conducted for Crop Improvement viz; transplanted trials, AICRIP trials, IRRI Nursery, AICRIP hybrid rice trials and other agency trials.
- ♦ In *Kharif*-2017, a total of 1969 plant progenies of different generations were evaluated from which 1230 IPS and 268 bulks were made in crop improvement department.

State Transplanted Trials

- ♦ During *Kharif*-2017, 11 transplanted trials were

AICRIP Trials

- ♦ During *Kharif*-2017, 18 AICRIP trials at Nawagam and Dabhoi centres were conducted. Likewise, under AICRIP, hybrid rice 4 trials were conducted at Nawagam and Dabhoi locations.

State Drilled Rice Trials

- ♦ A total of 08 trials at Derol and Dabhoi were successfully undertaken during *Kharif*-2017.

Hybrid Rice Research :

♦ CMS Lines Multiplication Programme

At MRRS, AAU, Nawagam, a total of 9 CMS lines were maintained and multiplied under strict isolation and with intensive roughing/purification. The flower duration and distinguishing morphological traits were studied in case of all the CMS lines and their corresponding maintainer lines. Further, a complete genetically pure nucleus block was maintained in case of IR-58025 A & B line. Apart from this GR-104 and GR-7 were planted with IR-58025 A line for development of hybrids. Total 16 crosses were conducted to check fertility restoration ability of high yielding rice genotypes.



Rice Trials: (ARS, Derol)

- ♦ In LSVT-EE, total 15 genotypes including three checks were evaluated. Out of the 15 genotypes, DDR-144 gave numerically higher yield as compared to best check AAUDR 1.
- ♦ In LSVT-E, total 18 genotypes and three checks were evaluated in this trial. Out of the 18 genotypes, DDR100 gave significantly higher yield as compared to best check GR9.
- ♦ In SSVT-E, 15 genotypes were evaluated including four checks. None of the genotypes gave higher yield as compared to best check AAUDR1.
- ♦ Among 20 genotypes evaluated in SSVT- Aerobic paddy, none of the genotypes gave higher yield as compared to best check AAUDR1.
- ♦ In AVT 1 - EDS of paddy, out of 17 genotypes evaluated none of the genotypes gave higher yield as compared to best check AAUDR1.
- ♦ In IVT-E DS of paddy, out of 42 genotypes evaluated including one check genotype 234 gave higher yield as compared to check AAUDR1.
- ♦ In AVT 1 – Aerobic of paddy, out of 18 genotypes evaluated including one check genotype 5310 gave higher yield as compared to check AAUDR1.
- ♦ In AVT 2- Aerobic of paddy, out of 23 genotypes evaluated including one check none of the genotypes gave higher yield as compared to best check AAUDR1.

Rice Trials: (HMRS, Dahod)

Drilled Rice

- ♦ At Hill Millet Research Centre, Dahod, five experiments of drilled rice were conducted under state trials. Total 59 genotypes of drilled rice were evaluated. Out of these, 12 genotypes viz., NVSR-2230, NVSR-2231, NVSR-2174, IET-25130, IET-26170, IET-26168, IET-25662, IET-26190, IET-25640, IET-26165, IET-26178 and NVSR-H-

1014 were found promising.

Transplanted Rice

- ♦ At Hill Millet Research Centre, Dahod, one experiment of transplanted rice was conducted under state trial. Total 13 genotypes of transplanted rice were evaluated. Out of these, 2 genotypes viz., NWGR-9147 and NWGR-12080 were found promising.

Crop Production

- ♦ Apart from Main Rice Research Station, Nawagam, two other centres Dabhoi and Thasra also conducted research experiments on transplanted and drilled paddy.
- ♦ During the reporting period, total 5 experiments (AICRP 3 + State 2) were conducted on different agronomical aspects. In AICRP trials, different varieties were tested with various nitrogen doses, sowing dates in transplanted and aerobic rice as well as on cropping system and weed management. In state trials, research was carried out on response of rice to nitrogen, phosphorus and biofertilizers.

Plant protection

For plant protection in rice, 31 experiments (AICRP 22 + State 9) were conducted.

A total of 235 genotypes as well as advanced cultures including various local checks were screened for their reaction against major insect-pests at Nawagam and Navsari during Kharif-2017. Out of 235 entries from Nawagam, 18 entries and from Navsari 54 entries showed 1 Damage Score (DS) against leaf folder. While 27 entries at Nawagam and 84 entries at Navsari were found promising against yellow stem borer. Total 63 entries were found superior against WBPH and sheath mite at Nawagam and Navsari, respectively.

Screening of paddy genotypes was done for their



resistance to major pests, monitoring of pests and their natural enemies, monitoring the activity of insect pests through light trap and evaluation of newer insecticides for the management of paddy pests. Moreover, studies were also conducted on pathological screening of genotypes for their resistance to leaf blight, blast and sheath rot diseases, field monitoring of virulence of major causal organisms and evaluation of newer fungicides against major diseases of paddy.

Maize

Crop Improvement

Kharif 2017

Testing of hybrids/varieties

Testing of hybrid/varieties developed by AICRP on maize Centers and private sectors across the country was done as decided in 60th Annual Maize Workshop meeting held from 7-9th April, 2017 at Udaipur. Total 10 trials were conducted successfully comprising of normal maize and specialty corn. Total 3 zonal trials were conducted successfully.

Station (Location specific) programme

Research programme was conducted for testing hybrids/varieties developed by Godhra centre. Trials were taken at Godhra, Dahod, Jabugam and Bhiloda centre for evaluation of single cross hybrids and varieties of Normal maize and Speciality corn. Total 25 trials were conducted successfully at three locations to test 110 single cross hybrids in normal and specialty corn.

Total 186 inbred lines in yellow maize were maintained, multiplied in winter maize nursery programme and these lines were used directly for developing single cross hybrids. Total 98 single cross hybrids were developed in normal yellow and white maize, 49 hybrids in QPM, 12 hybrids in high oil corn, 22 hybrids in sweet corn and 18 hybrids in pop corn were developed to evaluate in *kharif* and *rabi* season multilocation trials.

Under project CRMA (Climate Resilience Maize for Asia) total 291 hybrids were evaluated in 12 trials for identifying hybrids for drought condition.

Rabi 2016-17

Testing of hybrids/varieties

Testing of hybrid/varieties developed by different centers of AICRP on Maize and Private sectors across the country was done. Total 6 trials were conducted successfully to test 120 hybrids of different maturity groups and results were submitted.

Station (Location specific) programme

Research programme was conducted for testing hybrids/varieties developed by this centre. Trials were taken at Godhra, Dahod, Jabugam and Bhiloda centre for evaluation of single cross hybrids and varieties of Normal maize and Speciality corn. Total 25 trials were conducted successfully at three locations to test 110 single cross hybrids in normal and specialty corn.

Crop Production

The different experiments on testing of nutrient management with different density of pre-released Maize hybrids were taken at the station allotted by IIMR (ICAR), Ludhiana as well as station trials on baby corn and normal corn were also taken.

The recommended technologies of nutrient management and spacing as well as weedicides were also demonstrated in farmer's field during front line demonstration.

Plant Protection

- ♦ The highest diseases severity, TLB occurred at Amirgadh, Chhotaudepur and Pavijetpur whereas the lowest severity of TLB diseases were found at Garbada, Amirgadh and Modasa and Chhotaudepur locations, respectively. Whereas, the highest intensity of stem borer and cob borer insect-pests occurred at Godhra, Khanpur, Dahod, Ambaji, Biloda, Idar and Modasa. In



general, it observed that the diseases and insect-pests incidence was higher in irrigated compared to rainfed crop.

- ♦ *In-vivo* evaluation of new ways of control of plant diseases, the plot treated with salicylic acid (4mM) spray along with seed treatment @ 0.75 mM seed treatment was found significantly control of maydis leaf blight, turcicum leaf blight and curvularia leaf spot diseases, 100 ppm salicylic acid (SA) (SP and foliar spray after 24 hrs after inoculation) was found best in checking banded leaf and sheath blight (BLSB) disease severity and stripped plant with hybrid GM-6 was found best in checking banded leaf and sheath blight (BLSB) disease severity under field conditions.
- ♦ The protected plots were sprayed with azoxystrobin @ 0.5% at 35 and 45 days after sowing. The avoidable yield loss due to curvularia leaf spot (CLS) was estimated to 16.91 per cent.
- ♦ The treated plot with tobacco decoction (2%) gave higher grain and fodder yield with the least per cent infestation of stem borer and aphid infestation.
- ♦ Total 980 maize entries were observed against maize diseases in 32 breeding trials of station programme, AICRP (Maize) and CRMA-CIMMYT Programme under field conditions in *rabi* 2016-17. Out of 980 entries 162 entries were found moderately resistant against Turcicum leaf blight disease in *rabi*.
- ♦ Total 498 maize entries were observed against maize diseases in 33 breeding trials of station programme, AICRP (Maize), Zonal, CRMA and NICRA trials under field conditions in *kharif* 2017. Out of 498 entries, 18, 22 and 15 entries were found moderately resistant against maydis leaf blight, turcicum leaf blight and curvularia leaf spot diseases in *Kharif*-2017.

Wheat

Crop Improvement

Triticum aestivum

RRS, Anand

Total four trials were conducted at the centre

- ♦ The experiment was conducted with 26 genotypes including 5 checks under SST (TS). None of the entries exhibited its superiority for yield over the best check variety GW- 322.
- ♦ Under Large Scale Trial, total 11 genotypes including four checks were evaluated. None of the genotype showed significant differences over than the best check variety GW 322.
- ♦ Total nine genotypes including three checks viz. GW 173, GW 11 and Lok-1 were evaluated in LSVT (TS) Late sown. None of the entries significantly out yielded over the best check variety GW- 11.
- ♦ Total seven entries were evaluated with three check varieties in AVT (RI). However genotypes, UAS 462(D) (4511 kg/ha) and UAS 385 recorded numerically higher yield than the best check DBW 11

Triticum durum

- ♦ At ARS Dhandhuka, 75 new crosses were attempted for development of high yielding varieties suitable under rainfed conditions. Out of 961 progenies, 849IPS were selected.
- ♦ At ARS Dhandhuka, total 10 different trials viz. AVT (RI), NIVT-5B (RI), LST(RF), SST-I(RF), SST-II(RF), PYT(RF), PET(RF), SST-I (RI) & Pro. Bulks Set I, II, III & IV & Agronomy Trail were allotted and conducted successfully
- ♦ At RRS, Anand, the experiment LSVT (duram) was conducted with seven genotypes including 3 check varieties. The genotypes difference



was found to be non-significantly for yield performance.

- ♦ At ARS, Arnej, 7 experiments viz., LST(RF) *Triticum durum*, SST(RI) *T durum* set –I, SST(RF) *T durum* set-II, PYT(RF) *T durum*, PET(RF) *T durum* set-1 and NIVT-5B-RI-TS-TDM were conducted successfully.
- ♦ At ARS, Arnej, in wheat, total 119 entries were tested. Among them, 21 genotypes / entries of Arnej centre were found promising and will be promoted in respective trial.

Crop Production

At ARS, Arnej, following research experiments for production technology in wheat were conducted during the reporting period.

1. Nutrient management through organic source in wheat (GW-496) in *Bhal* region
2. Effect of different levels of nutrient, phosphorus and bio-fertilizer on yield of irrigated (*Triticum aestivum* L.) in *Bhal* region

Crop Protection

At ARS, Arnej

- Seed treatment with thiamethoxam 30 FS and soil application of fipronil 0.3% G was found very good treatment in protecting un-irrigated wheat crop against stem borer and wire worm by recording higher plant population at initial and harvest, minimum plant population reduction (%) as well as dead heart (%) at 30,45,60 and 75 days after sowing (DAS)

Bajra

Crop Improvement

Kharif-2017 (RRS, Anand)

- Under Large Scale Hybrid Trial, total 24 hybrids were evaluated. GHB-1214 was found promising.

- ♦ In Small Scale Hybrid Trial, total 36 hybrids were evaluated. Three hybrids GHB-1233, GHB-1234 and GHB-1241 were found promising.
- ♦ Total 16 hybrids were evaluated in Advanced Hybrid Trial (AHT – M). Seven hybrids viz., AHT-401 A, AHT-404 A, AHT-408 A, AHT-411 A, AHT-413 A, AHT-414 A and AHT-415 A were found promising.
- ♦ Under Advanced Hybrid Trial (AHT – L), total 5 hybrids were evaluated. Three hybrids AHT-502 A, AHT-501 A and AHT-504 A were found promising.
- ♦ In Initial Hybrid Trial (IHT-M), total 40 hybrids were evaluated. Nine hybrid IHT-204, IHT-203, IHT-227, IHT-239, IHT-221, IHT-201, IHT-206, IHT-220, IHT-230 and IHT-214 were found promising.
- ♦ Under Initial Hybrid Trial (IHT-L), total 36 hybrids were evaluated. IHT-335 was found promising.

Summer - 2017

- ♦ In Large Scale Hybrid Trial, total 12 hybrids were evaluated. Three hybrids GHB-1195, GHB-1194 and GHB-1197 were found promising.
- ♦ In the coordinated hybrid trial, (SHT) total 19 hybrids were evaluated. fifteen hybrids were found promising.
- ♦ In the PHT-1, total 31 hybrids were evaluated. Five hybrids GHB 1612, GHB 1625, GHB 1622, GHB 1619 and GHB 1624 were found promising.
- ♦ In PHT 2, total 31 hybrids were evaluated. Three hybrids GHB 1657, GHB 1656 and GHB 1650 were found promising.

Crop Protection

- ♦ Total 473 pearl millet hybrids were screened against downey mildew (DM) disease. Out of which, 361 were free from DM disease in 6



successfully conducted trial.

- ♦ Total 51 pearl millet hybrids were screened against blast disease. Out of which, 39 were free from blast disease. Ten line found moderately resistant (score 3.1–5.0), none of the lines were noted susceptible (score 5.1–7.0), two lines was highly susceptible (score 7.0–9.0).

Finger Millet and Kodo Millet

Crop Improvement

Kharif-2017

- ♦ At Hill Millet Research Centre, Dahod, seven experiments of finger millet were conducted under AICRP state and station trials. Total 86 genotypes of finger millet were evaluated. Out of these, 25 genotypes viz., AVT I & II-8, IVT-7, IVT-4, IVT-28, IVT-5, IVT-3, IVT-26, IVT-8, WN-494, WN-585, WN-550, WN-591, WN-569, WVN-35, WN-630, WN-629, WN-587, WN-586, WN-544, WN-567, DN-4, DN-5, DN-10, DN-6 and DN-3 were found promising for grain yield.
- ♦ Four varietal trials were conducted under AICRP, state and station trials in Kodo Millet and 36 genotypes were tested. Out of these, 16 genotypes viz., KAVT-2, KAVT-5, KAVT-3, KAVT-8, KAVT-9, DK-151, DK-124, DK-159, DK-141, DK-164, DK-156, DK-152, DK-166, DK-174, DK-173 and DK-168 were found promising for grain yield.

4.2.2 Pulses

Mungbean

Crop Improvement

RRS, Aamnd

Summer- 2017

- ♦ In LSVT trial total six genotypes of mungbean were evaluated. The genotype ANDGG-13-01

was found promising.

Kharif-2017

- ♦ In Large Scale Varietal Trial, out of nine genotypes SKNM-1502 and SKNM-1206 recorded significantly higher yield than the best check variety GM 4 to the tune of 29.35 and 29.07 percent, respectively.
- ♦ 51 germplasm lines were maintained. 56 plants were selected from segregating generations.

Pulse Research Station, Vadodara

Summer- 2017

- ♦ In PET trial, none of the entry was found superior over check.
- ♦ In SSVT trial, genotypes VMS-13-12 and VMS-15-1 were found to be numerically superior.
- ♦ In LSVT trial, the genotype ANDGG-13-01 was found promising.

Kharif-2017

- ♦ In PET trial, none of the entry was found superior over check.
- ♦ In SSVT trial, none of the entry was found promising.
- ♦ In LSVT trial, the genotypes SKNM-1502, SKNM-1516, SKNM-1514 and NKM-15-08 were found promising.
- ♦ In kharif 2017, 9 new crosses were attempted for development of high yielding varieties. Total 68 plant progenies of various generations were raised. Out of these progenies, 63 IPS were selected.

ARS, Derol

Kharif-2017

- ♦ In LSVT, 9 genotypes including two checks were evaluated. None of the genotype was found promising.



- ♦ In SSVT, 8 genotypes were evaluated. The genotype SKNM-1514 was found promising

HMS, Dahod

- ♦ Two experiments of mungbean were conducted under state trials. Total 13 genotypes of mungbean were evaluated. Out of these, 6 genotypes viz., NMK-15-08, SKNM- 1502, SKNM-1516, SKNM-1514, SKNM- 1606 and SKNM- 1605 were found promising.

Crop Production

Pulse Research Station, Vadodara

- ♦ Effects of sowing dates and spacing on semi-rabi greengram (*Vigna radiata* L.), wherein the treatment in 3rd week of September sowing with the spacing 30 cm between rows recorded higher grain and straw yield.

Crop Protection

Pulse Research Station, Vadodara

Kharif-2017

- ♦ The mungbean genotypes were screened under LSVT, SSVT and PET trials, where in white fly count varied from 2.0 (VMS16-1) to 12.0 (SKNM 12-06). Aphid count varied from 2.0 (VMS16-8) to 16.0 (GAM-4). Thrips count varied from 3.0 (VMS16-1) to 12.0 (SKNM 1512). The range of pod damage was found to vary from 8.0 (MEHA and GAM-5) to 15.0 % (GM-04).]
- ♦ **Screening of mungbean genotypes against insect pests and diseases**

Among the 17 genotypes /varieties, GAM5 and VMG-67 were found considerably less susceptible to the insect pests of mungbean during summer and kharif 2017.

Dept. of Plant Pathology, BACA, Anand

- ♦ Detection of Bean common mosaic virus (BCMV) was done in seed coat, cotyledon

and embryo of mungbean seeds of varieties GM3, GM4, K-851, Meha and Pusa Navbahar of cluster bean through ELISA. BCMV was detected in discoloured seed coat and cotyledons of seeds variety GM3. Similarly, in K-851, the virus was detected in seed coat and cotyledons of discoloured seeds. In Meha, the virus was found in cotyledon of discoloured seeds. However, In GM4, the virus was not detected in any parts of healthy and discoloured seeds. In Pusa Navbahar, the virus was detected in embryo, cotyledons and seed coat of discoloured seeds

- ♦ DAS-ELISA technique was used for detection of the Bean common mosaic virus (BCMV) in GM-4 and GAM-5 varieties of mungbean. The result confirms the presence of the virus in various parts of the seed. Whereas, the whole seed, seed coat, cotyledons, as well as embryo of discoloured seeds of mungbean variety of GM4 showed negative reaction and did not show the presence of the virus in these parts of the seeds.

Pigeon Pea

Crop Improvement

Pulse Research Station, Vadodara

- ♦ In LSVT-ME Pigeon pea trial, none of the entries showing superiority over best check UPAS 120.
- ♦ In PET Pigeon pea trial, the entries AAUVT-15-13 and AAUVT-16-2 gave significantly higher yield than best check Vaishali.
- ♦ In *pre rabiseason* in 2017, 87 new crosses were attempted of different generations for development of high yielding varieties. Total 292 plant progenies of various generations were raised. Out of these progenies, 553 IPS were selected.
- ♦ Total 665 germplasm of pigeon pea were maintained and 40 new germplasm were also collected during the year.



ARS, Derol

- ♦ In SSVT (M) total 16 genotypes including four checks were tested. Among them none of the entry found having higher yield than best check.
- ♦ In LSVT (M), NPMK 15-05 (1723 kg/ha) yielded higher than best check.

HMS, Dahod

- ♦ At Hill Millet Research Centre, Dahod, one experiment of pigeonpea was conducted under state trial. Total 5 genotypes of pigeonpea were evaluated. None of these was found promising.

Crop Protection

Pulse Research Station, Vadodara

- ♦ In various trial of plant protection viz. PET, LSVT (ML), SSVT (ML), IVT (ML), IVT (ME), LSVT (ME) and LSHT (ME), different genotypes were screened. The pod damage due to *Helicoverpa* was found in the range of 8.0% (AGT2) to 14.0% (BDN2, 611 and 627) at harvest. The pod damage due to *M. obtusa* was found in the range of 8.0% (GJP1602 and AAUVT 14-02) to 13.0% (BDN 2) before harvest. Per cent grain weight loss due to pod fly was found in the range of 6.5% (SKNP 1315) to 11.0% (BDN2), the pod damage due to *Helicoverpa* was found in the range of 8.0% (SKNP 1315 and AAUVT-1335) to 14.0% (Vaishali) at harvest. The pod damage due to *M. obtusa* was found in the range of 9.0% (SKNP-1233, GJP-1303 and AAUVT-1335) to 12.0% (GJP-1406, BP-1104, BDN2 and Vaishali) before harvest.

At ARS, Derol

- ♦ The population of blue butterfly/plant was found significantly lowest in vaishali (C) (0.00) which is at par with VPG-58, VPG-66, VPG-487, VPG-550 and VPG-580. *Helicoverpa armigera*/plant was found significantly lowest in VPG-78 (0.00) and VPG-580 (0.00) which is at par with VPG-

522 and VPG-72. The range of green pod damage was found vary from 0.28 to 15.95 per cent, whereas, that at harvest ranged from 0.28 to 8.44 per cent. The range of grain damage at harvest due to pod fly was found ranged from 24.90 to 82.02 per cent.

Chickpea

Crop Improvement

- ♦ At ARS, Derol, In LSVT, none of the genotypes recorded significantly higher yield than the best check GG5.
- ♦ Out of the 17 genotypes including three checks evaluated in SSVT, none of the genotypes was found significantly superior to best check GG 1.
- ♦ At ARS, Arnej, in chickpea, total 119 entries were tested in different six trials including co-ordinated, state and station trial. Among them, 21 genotypes /entries of Arnej centre were found promising and will be promoted in respective trial.
- ♦ At Hill Millet Research Centre, Dahod, 3 experiments of chickpea were conducted under state trial. Total 43 genotypes were evaluated. Out of these, 12 genotypes viz., GJG-1205, GJG-1202, GJG-1421, GJG-1401, GJG-1316, GJG-1409, GJG-1504, GAG-1620, GJG-1610, GJG-1606, GJG-1611 and GJG-1607 were found promising.

Crop production

- ♦ At ARS, Derol, an experiment on effect of sowing time and spacing on growth and yield of chickpea for green pod yield was conducted. Among the different main plot treatments, treatment D3:1st-Oct (40th Std. Week) recorded highest yield.

Crop Protection

- ♦ At, ARS, Derol, a trial was undertaken to study the management of wilt in chickpea through



bio-agents and fungicides. Significantly, the lowest disease was observed in seed treatment with carboxin 37.5 % + thirum 37.5 % (Vitavax Power) @ 3 g/kg seed + *Trichoderma viride* @ 10 g/kg with higher yield

Soybean

Crop Improvement

TRTC, Devgadhi Baria

- 105 germplasm lines were maintained, including 11 newly collected germplasm.
- Under PET (early group), variety JS 20-69 recorded higher seed yield in early maturity group during *kharif*-2017.
- Under PET, among all entries tested, genotype DBSGP-29 and DBSGP-22 recorded significantly maximum seed yield during *kharif*-2017.
- Under AVT, total 39 coded genotype were evaluated for their seed yield performance.
- Under Initial Varietal Trial, total 46 genotype were tested. The genotype T-36 recorded highest seed yield during the *kharif*-2017.

Dept. of Genetics and Plant breeding

- Forty diverse genotypes of soybean were studied for yield, morphological characters and quality traits during *kharif* 2017. The maximum seed yield was observed in the genotype NRC-37 followed by MACS-303, JS-335 and AGS-109. The genotype TAX-34251 recorded highest number of pods per plant followed by CAT-148, GS-2, DS-83-12-2 and MACS-303. The genotype JS-9560 matured earlier followed by AGS-51 and JS-9305. Regarding biochemical parameters, the genotype J-301 recorded highest protein content followed by DS-83-12-2 and NRC-7, whereas maximum oil content was depicted by genotype HIMSO-5506 and J-158 followed by NRC-7, DS-87-4 and VLS-20.

Crop Production

TRTC, Devgadhi Baria

- The experiment was conducted on the response of seed rates on different soybean (*Glycine max* L.) varieties, results indicated that the highest soybean yield was recorded under variety V₁ – NRC-37 and seed rate R₂ – 80 kg ha⁻¹.
- The experiment on application of Foliar nutrition on soybean productivity was conducted. Among all the treatments T₅ (RDF + 19:19:19 (NPK) 2% at pod initiation) showed best in growth parameters (plant height, branches per plant, pods per plant, plant dry weight at 30, 45 and 60 DAS) and also yield and yield parameters (seed index, seed yield and straw index).
- The results of the experiment on the effect of row spacing on different soybean varieties were found non-significant with respect to seed and straw yield of soybean. The highest soybean yield was recorded under variety V₁ – NRC37 and spacing S₂ – 45 x 10 cm.

Clusterbean

Crop Improvement

ARS, Derol

- In summer 2017, in PET (branching) trial, total 22 genotypes including two checks were evaluated. Genotype HG-2-20 was found promising.
- In summer 2017, in PET (single stem) trial, total 20 genotypes including two checks were evaluated. None of the genotypes was found significantly superior to best check GG 2.
- In *kharif* 2017 PET in PET (branching) trial, total 22 genotypes including two checks were evaluated. HG 870 was found promising.
- In SSVT/LSVT of guar, total 10 genotypes including two checks were evaluated. Among the 10 entries 6 entries viz. GAUG 1305, GAUG



1304, GAUG 1502, GAUG 1507, GAUG 1609 and GAUG 1612 were found promising.

- In *kharif* 2017 in PET (Single stem) trial, total 20 genotypes including two checks were evaluated. none of the genotypes was found significantly superior to best check GG 1.

Blackgram

Crop Improvement

At PRS, Vadodara

Summer 2017

- ♦ In PET-I trial, among the tested genotypes, VUG-40 was found promising.
- ♦ In ZVT trial, on overall basis, genotype DBUGP-6-1 (744 kg/ha) was found numerical superior. While on the basis of Yellow Mosaic Disease, the genotype DBUGP-6-2 was found to be resistant at all locations except Derol center.

Kharif 2017

- ♦ In SSVT + LSVT trial, On the basis of average performance, genotypes viz., SKNU-1613 and SKNU-1606 were found promising.
- ♦ In ZVT trial, on overall basis, genotypes DBUGP-2-2, DBUGP-2-5, DBUGP-6-1 and DBUGP-6-2 were found promising

ARS, Derol

- ♦ In ZVT (Summer & *kharif* 2017) trial, total 10 genotypes were evaluated but none of the entry was found promising.

HMS Dahod

- ♦ During summer 2017, one experiment on blackgram was conducted under state trial, wherein, total 8 genotypes were tested, of which, 2 genotypes viz., DBUGP-2-2 and DBUGP-2-5 were found promising.
- ♦ During *kharif* 2017, two experiments on

blackgram was conducted under state trial, wherein, total 16 genotypes were tested, of which, 6 genotypes viz., SKNU-1606, SKNU-1613, DBUGP-2-5, DBUGP-6-2, DBUGP-6-1 and DBUGP-2-2 were found promising.

Devgad Baria

- ♦ Under Zonal Varietal Trial, total 10 genotypes including two checks were evaluated for their seed yield performance. The genotype DBUGP 6-2 recorded highest seed yield and YVM resistance during the *kharif*-2017.
- ♦ Under LSVT trial, total ten genotype including two checks were evaluated. The genotypes GJU-1509 and SKNU-1613 recorded maximum seed yield during the *kharif*-2017.
- ♦ Under PET, total ten genotype including two checks were evaluated. The genotype DBUGP 16-1 recorded maximum seed yield during the *kharif*-2017.

ARS Sansoli

- ♦ Total 10 genotypes were tested in ZVT trial during summer, 2017. Among them, test entries viz., DBUGP 2-5, DBUGP 2-2 and DBUGP 6-1 recorded significantly higher seed yield than the best check GU-1. These entries showed moderate resistance to YMD.
- ♦ Total 10 genotypes were tested in ZVT trial during *kharif*, 2017. Among them, test entries viz., VUG 32 and DERUG 17-5 recorded significantly higher seed yield than the best check GU-1. The minimum Yellow Mosaic Disease (YMD) incidence was recorded in the cultivars VUG-23, DERUG-16-1 and DERUG-17-5.

Crop Production

PRS, Vadodara

- ♦ Nutrient management through organic sources in *summer* blackgram, wherein the treatment T₈ [Castor Cake @ 0.25 t ha⁻¹ + Bio NP (*Rhizobium*



and PSB)] recorded significantly higher grain yield than rest of the treatments.

Crop Protection

PRS, Vadodara

Kharif -2017

- ♦ In trials ZVT and SSVT+LSVT, different gynotypes of blackgram were screened. Wherein whitefly count varied from 3.0 (SKNU-1613, VUG-19 and VUG-23) to 8.0(GU1).Aphid count varied from 3.0(DBUGP-2-2, SKNU-1602 and VUG-19) to 8.0(DERUG-16-1 and GU1).Thrips count varied from 3.0 (VUG-23 and VUG-19 to 7.0 (GU1). The range of pod damage was found to vary from 6.0 (VUG-23) to 13.0 % (GU1 and T9).

Among 20 genotypes /variety, VUG-07 and VUG-33 were found considerably less susceptible to the insect pests. Gynotype VUG-45 was found as susceptible.

Summer-2017

Among the 20 genotypes /variety, VUG-07 and VUG-33 were found considerably less susceptible to the insect pests. Genotype VUG-45 was found as susceptible.

4.2.3 Oilseeds

Castor

Crop Improvement

RRS Anand

- ♦ 20 new germplasm lines were collected and total 210 lines were maintained for future breeding work.
- ♦ For new inbred development programme, 16 new crosses were made and from different generations 764 plants with desired characters were selected. Eight new inbred lines were bulked.
- ♦ Total 60 new crosses were made using four pistillate line SKP 84, Geeta, ANDCP 1601,

ANDCP 1602 with different inbred lines for new hybrid.

- ♦ Nine experiments including coordinated, state and station trials on castor were conducted.
- ♦ The Initial Varietal Hybrid Trial (IVHT), total 13 hybrids/varieties including five check hybrids/varieties were tested in irrigated condition. Four hybrids viz., JHB 1027, SLCH 172, RHC 426 and SCH 53 and one variety JI 423 were found promising.
- ♦ Eight hybrids were tested with three checks under irrigated and rainfed conditions in Advance Hybrid Trial. None of the hybrids exhibited superiority than best check DCH-177. However, ICH 68 and Maharaja-9 recorded higher yield than the best check DCH 177.
- ♦ Total six varieties/hybrids were tested against two checks viz., GC 3 and GCH 7 under irrigated conditions. None of the hybrids/varieties were found promising against superior check GCH-7.
- ♦ In Replacement of Existing wilt susceptible pistillate line VP-1 trial total 12 entries were tested to know the performance of wilt resistance VP-1 based hybrids in comparison to wilt susceptible VP-1 based hybrids. The entry SKN-1601 noted found promising.
- ♦ In Zonal trial total ten entries were tested including five hybrids, two varieties and three checks under irrigated conditions. Hybrid SCH 53 was recorded significantly higher yield than the check GCH-7 with tune of 29.42 per cent.
- ♦ In Preliminary Hybrid Trial (PHT-1) 12 hybrids and three checks were tested. The hybrid CEH 253 recorded significantly higher yield than the best check GCH-7 with the tune of 34.56 per cent.
- ♦ Preliminary Hybrid Trial (PHT-2) was conducted with 25 hybrids and one check i.e GCH 7. None of the hybrid recorded significantly higher yield than the check GCH-7.



ARS, Sansoli

- ♦ In castor, total 52 entries were tested in different three trials including state, zonal and station trial.
- ♦ SCH-53 contributed for wilt resistance testing at S.K. Nagar and Anand.
- ♦ SCH-53 contributed for yield performance at State Level in PHT Trial.
- ♦ Fifty-four germplasm lines of castor were evaluated and maintained.
- ♦ New germplasm of castor was collected and 60 crosses were evaluated for their yield and other characters.
- ♦ Four hybrids were contributed for yield performance at State Level in PHT Trial.

Mustard

Crop Improvement

RRS Anand

- ♦ Total twelve genotypes including three check varieties were evaluated in LSVT trial under irrigated condition. Genotypes SKM 1214 and SKM 1328 recorded highest yield than best check.
- ♦ Total eleven genotypes including two check varieties were evaluated in PET under irrigated condition. Among all the entries, only one genotypes ANDM-14-9 was recorded significantly higher yield than best check variety GDM4.

Groundnut

Crop Improvement

At RRS Anand

Summer-2017

- ♦ In Summer season, 13 entries were bulked and put in PET trial for their evaluation.

- ♦ Under initial varietal trial-I, total 18 coded entries including one check GG-6 were evaluated for their pod yield performance. Among the test entries, only one genotype INS-I-2016-18 was found promising.
- ♦ Total 15 genotypes were evaluated against local check GG-6 under IVT-II. Among the tested entries, only two entries INS-I -2015-14 and INS-I-2015-15 recorded significantly higher pod yield than the check GG-6.
- ♦ Total eight genotypes were evaluated against four check varieties under large varietal scale trial-SB. Among the test entries, only one genotype AG-2012-06 was found promising.
- ♦ Total 12 genotypes including four checks were evaluated under SSVT-SB. None of the genotypes exhibited significantly surpassed pod yield over the best check TG-26.
- ♦ The trial ZVT was conducted with 13 accessions including four checks. Among the tested entries, five entries, AG-2012-06, AG-2012-17, AG-2013-13, AG-2013-14 and AG-2015-10 recorded significantly higher pod yield over the check TG 37A.
- ♦ Total 13 genotypes including four checks were evaluated under PET. Among the test entries, only two genotype AG-2016-1 and AG-2016-6 was found promising.

Kharif 2017

- ♦ In LSVT total eight genotypes tested against four checks. Genotype J-95 recorded significantly higher pod yield than the best check JL-501.
- ♦ Total 22 entries including four checks viz., GG-7, GJG-9, JL-501 and TG-37A were evaluated for their pod yield performance under SSVT. None of the entry found significantly higher yield than best check JL 501.



4.2.4 Fibre crops

Cotton

Crop Improvement

RRS, Anand

Kharif 2017

- ♦ In PHT-National Trial (H x B), 8 hybrids including checks were tested. Among the eight coded test hybrids, hybrid Phule Dhara had recorded the highest seed cotton yield followed by RHB 1002 and RHB 1142. The lint yield ranged from 387 to 681 kg/ha.
- ♦ In the coordinated H x B hybrids trial, CHT (Zonal Trial), total seven coded H x B inter-specific cotton hybrids were evaluated. The coded hybrid RHB-1008, Phule Dhara and LAHB- 1 were found promising. The lint yield ranged from 403 to 579 kg/ha.
- ♦ In the Coordinated Varietal Trial of *Gossypium barbadense*, total five coded cotton genotypes were evaluated and the genotype DB-1502 noted the highest seed cotton yield and lint yield.
- ♦ In PVT of *Gossypium barbadense* cotton under irrigated condition, total seven *G. barbadense* genotypes were evaluated. The genotype RHCb-1014 yielded the highest seed cotton yield and lint yield.

ARS Viramgam

- ♦ In kharif 2017-18, different trials of *deshi* cotton (*G. herbaceum*) including state and station trials were conducted for seed cotton yield and fibre quality performance and seven other rainfed locations of Gujarat. The result of MLT, LSVT and SSVT trials revealed that entries viz. GVhv 767, GVhv 817, GVhv 916, GVhv 917, GVhv 845, GVhv 871, GVhv 879, GVhv 923, GVhv 925, GVhv 938, GVhv 950, GVhv 952, GVhv 989, GVhv 920, GVhv 926 and GVhv 956 were

found promising for seed cotton yield as well as fibre quality parameters.

- ♦ Fourteen new hybrids have been developed based on male sterile line VRG GMS-1 of Viramgam centre. New fuzzy genotype (GVhv 1057) has been evaluated in PET trial for cotton seed yield and its special character of fuzziness.
- ♦ For breeding work in cotton, total 881 progenies were raised, out of them, 354 crosses were made during the year

Plant Protection

Studies on population dynamics of key pests of cotton, surveillance of lepidopterous pests through sex pheromone, survey of insect pests in *Bt* as well as non-*Bt* cotton and screening of *deshi* cotton varieties for their resistance to key pests under rainfed conditions were carried out at Viramgam.

Similarly, survey of diseases of *deshi* as well as *Bt* cotton and screening of *deshi* cotton varieties for resistance to various diseases under rainfed conditions were also carried out at Viramgam.

4.2.5 Cash Crops

Bidi Tobacco

Kharif-2017

Crop Improvement

- ♦ In AVT-I, none of the entry showed significant superiority for cured leaf yield over checks GT 7 and MR GTH 1.
- ♦ In AVT-II, none of the entry showed significant superiority for cured leaf yield over checks GT 7 and MR GTH 1.
- ♦ In breeding trial for normal planting, Line ABD 173, ABD 177 and ABD 181 showed significant superiority for cured leaf yield over check GT 7.
- ♦ In breeding bidi tobacco genotypes for early



maturity, the cured leaf yield differences among the lines were significant. All the lines showed significant superiority over check A 119 (except ABD 168, ABD169 and ABD 171).

- ♦ In variety assessment trial, GABT 11 gave significant superiority for yield than rest of the varieties and hybrid.
- ♦ Breeding for resistance to drought trial, the cured leaf yield differences due to soil moisture regime were significant, three entries viz., Line -120-1, Line -142-27 and Line -286-39-34 were showed significant superiority for cured leaf yield over better check GT 7.
- ♦ In evaluation of bidi tobacco hybrids, six hybrids viz; BTH 344, BTH 348, BTH 349, BTH 352, BTH 353 and BTH 356 showed significant superiority for yield over MR GTH 1.

Rustica Tobacco

- ♦ In initial varietal trial, none of the entries showed significant superiority over better check GC 1.
- ♦ In AVT I, line AR 121 gave numerical maximum yield.
- ♦ IN AVT II, line AR 126 gave numerical maximum yield.
- ♦ In breeding trial for normal planting I, the entries AR 137 showed numerical higher yield over checks.
- ♦ The yield differences were significant among the genotypes tested in NP II. The lines AR 147, AR 148, AR 151 and AR 152 showed significant superiority for yield over checks GC 1 and GCT 2.

Crop Production

- ♦ The results on “Effect of long term manuring on yield and quality of bidi tobacco and soil productivity” revealed that yield and different morphological characters of tobacco variety

GABT 11 were not changed significantly due to different treatments of bulky manures.

- ♦ An experiment carried out on “Effect of secondary and micro nutrients on growth, yield and quality of tobacco” indicated that, among all the secondary and micro nutrient treatments none of treatment exerted their significant effect on yield and yield attributes of bidi tobacco variety GT 7.
- ♦ Different quality parameters of bidi tobacco were significantly affected due to different secondary and micro nutrients except chloride content.
- ♦ Experimental results on “Assessment of cropping sequences for bidi tobacco growing area of middle Gujarat agro climatic zone” indicated that significantly the highest tobacco equivalent yield and maximum net return were obtained from Tobacco- Pearl millet (Summer) cropping sequence than remaining cropping sequences. Tobacco (*Kharif-Rabi*) alone was found the second best treatment in incurring higher net profit.
- ♦ Assessment of alternate crop sequences for bidi tobacco growing area of middle gujarat agro-climatic zone indicated that significantly the highest tobacco equivalent yield (5622 kg/ha) and maximum net profit (147704 Rs/ha) was obtained from Maize (*Kharif*) - Potato (*Rabi*) cropping sequence than remaining cropping sequences. Whenever, Pigeon pea + Pearl millet (*Kharif-Rabi*) – Cluster bean (Summer) cropping sequence recorded significantly lower tobacco equivalent yield (2777 kg/ha) which was statically at par with Sesamum (*Kharif*) – Potato (*Rabi*) cropping sequence.

Crop Protection

Entomological Research

- ♦ Establishment of entomophage bio-diversity park revealed that activity of various natural



enemies like spider, coccinellids, *Nesidiocoris tenuis*, *Geocoris ochropeterus* and *Rhinocoris* sp, were found on different crops raised under entomophage park. Out of various bio agents' maximum activity of *N. tenuis* was found in tobacco.

- ♦ Studies on population dynamics of the important insect pest revealed that rove beetle and leaf eating caterpillar were found under nursery conditions. The population of whiteflies continued throughout the crop season in field. Under field conditions whitefly, *Spodoptera litura* and *Helicoverpa armigera* established correlation with weather parameters.
- ♦ Evaluation of insecticidal toxicity against tobacco mealy bug *Phenacoccus solenopsis* Tinsley and its parasites & predators under laboratory conditions. The insecticides viz., triazophos 40% EC, azadirachtin 1%, EC imidacloprid 17.8% SL, thiamethoxam 25% WG and buprofezine 25% SC tested against mealy bug and its parasitoids under net house and laboratory conditions were found highly toxic to both.
- ♦ Screening of different *rustica* tobacco lines, against leaf eating caterpillar showed that the population of leaf eating caterpillar was not sufficiently build up and for the reason nursery remained free from infestation of *Spodoptera litura* (F).
- ♦ Screening of different 610 bidi tobacco cultures / genotypes raised under nursery conditions was carried out. The results revealed that none of the cultures / genotypes was found free from infestation due to *S. litura* under natural infestation.

Plant Pathology and Nematology

- ♦ In a trial on monitoring resistance development in *Pythium aphanidermatum* to metalaxyl MZ in nursery conditions. 24 per cent damping-off disease incidence in comparison with control was

recorded in the treatment of metalaxyl MZ

- ♦ In a trial on search for resistance to damping-off and root-knot in tobacco, out of 14 genotypes/lines, a line ABD 145 showed moderately resistant reaction to damping-off disease in the nursery conditions, while all the lines were either susceptible or highly susceptible to root-knot disease in pots.
- ♦ In a trial on monitoring resistance development in *Pythium aphanidermatum* to azoxystrobin in nursery conditions. 16 and 19 per cent damping-off disease incidence in comparison with control was recorded in the treatment of azoxystrobin and azoxystrobin + difenoconazole, respectively.
- ♦ In a trial on screening of advanced breeding materials /introductions for leaf curl and *Cercospora* leaf spot diseases under field conditions, out of one hundred bidi tobacco entries, forty entries were found free from leaf curl infection during 2016-17.
- ♦ In a trial on breeding for resistance to tobacco mosaic in bidi tobacco, eighty-two (including twenty-three mosaic resistant cultures) entries grown in different generations were artificially inoculated with tobacco mosaic virus and evaluated for resistance to mosaic. Out of these, 66 entries including segregation materials showed resistance to the disease and these materials are maintained by plant breeding section for further breeding work.

4.2.6 Forage Crops

Crop Improvement

Rabi-2016-17

Oat (AICRP Trials)

- ♦ Under IVT (single cut),total twelve entries were tested, the entry OL-1869-1 gave significantly higher GF yield. While entry JO-05-7 produced significantly higher DM yield and CP yield.



- ♦ Under Second Advance Varietal Trial (Single cut), Eleven entries including three checks were evaluated. The entries OL-1769-1, OS-424 and UPO-10-3 were found significantly superior for GF, DM and CP yield respectively. While the entry O.S.-432 was found best for crude protein content and per day GF yield. The higher DM yield producing entry OS-424 also remained at the top for per day DM yield.
- ♦ Under Initial Varietal Trial (Multicut), ten entries were evaluated for their yield performance for two cuts. The national check variety R.O.-19 produced significantly higher GF yield as well as highest per day GF yield, while the other national check variety UPO-212 gave significantly higher DM and CP yield as well as highest per day DM yield. The entry JO-05-301 was recorded highest crude protein content.
- ♦ In Initial Varietal Trial (Dual purpose), total twelve entries including two checks were evaluated. The entry R.O.-11-1 gave significantly higher GF and CP yield than other entries and also stood first for per day GF yield, while the entry OL-1769 gave significantly higher DM yield and also stood first by producing the highest per day DM yield.
- ♦ Under First Advance Varietal Trial (Multicut), total eight entries were evaluated for multicut (two cuts) yields. The entries OL-1842 was found significantly higher yielder for GF and CPbarring the entry JO-4-321 for GF yield. The same entry also remained at the top for crude protein content and per day GF productivity, while the entry HFO-514 gave significantly higher DM yield and per day DM productivity.

Lucerne

AICRP Trials

- ♦ Under Varietal Trial in Lucerne, total twelve entries were evaluated. The entry VTLU-2016-2 gave significantly higher GF, DM and CPyield and also remained at the top for per day

productivity yield.

STATE Trials

- ♦ In LSVT trial, six entries were evaluated along with two checks. the entry AL-62 gave significantly higher GF and DM and CP yield.
- ♦ In SSVT trial, none of the entry was found promising against check.

Barley

AICRP Trials

- ♦ In Initial Varietal Trial (dual), the entry IVTIRTSDP-10 produced significantly the highest grain yield among all the entries.
- ♦ In Advance Varietal Trial (dual), the check variety RD-2552 produced significantly higher GF yield than all other entries except RD-2927 and Azad. The said check variety also gave significantly higher grain yield than all other entries except the entry Azad.

Babycorn

STATE Trials

- ♦ In Experimental Babycorn Composites/Hybrids, total eight baby corn entries were evaluated for their forage and baby corn yield. The entry GYH-0370 produced significantly higher GF and DM, while the entry GYC-9842 gave numerically higher cob yield with husk as well as cob yield without husk.

Kharif-2017

Forage Maize

AICRP Trials

- ♦ In Initial Varietal Trial, total sixteen entries were tested alongwith check variety African Tall. The check variety African Tall gave the highest GF, DM and CP yields among all the entries.



STATE Trials

- ♦ In Large Scale Varietal Trial, total five entries were tested. The entry AFM-8 gave the highest GF yield among all the entries. The check variety African Tall produced significantly the highest DM yield among all the entries.

Forage Pearl millet

STATE Trials

- ♦ In Large Scale Varietal Trial (ML), total six entries including three checks were tested for single cut. The entry AFB-37 produced significantly higher GF yield than the check varieties GFB-1 and AFB-3 barring the entries AFB-32, AFB-38 and Giant Bajra. The said entry AFB-37 gave significantly the highest DM yield among all the entries.

Forage Sorghum

AICRP Trials

- ♦ In Initial Varietal Trial (Multicut), Sixteen entries were tested. The entry 5004, 5061 and 5108 were found promising.
- ♦ In Advance Varietal Trial (Single cut), fourteen entries were tested. The entries, 6007, 6055 and 6107 were found promising.

STATE Trials

- ♦ In Large Scale Varietal Trial (SC), eight entries were tested including three checks. Entry AFS-64 produced significantly higher GF and DM yield.
- ♦ Under Large Scale Varietal Trial (SC), seventeen entries were tested. The entry SRF-332 gave significantly higher GF yield than all other entries. The said entry SRF-332 also gave significantly higher DM yield than all other entries except SRF-345, AFS-53 and CSV21F (LC).

Forage Cowpea

AICRP Trials

- ♦ In Initial Varietal Trial, twelve entries including one local check variety GFC-1 were tested. The entry IVTC-8 yielded the highest GF and it was significantly superior to other entries barring the entry IVTC-11. The entry IVTC-11 produced the highest DM and CP yields among all the entries.
- ♦ Under Second Advance Varietal Trial, comprising of ten entries including two local check varieties viz. GFC-1 & GFC-2. The entry AVT2C-4 produced significantly the highest GF, DM and CP yields among all the entries.
- ♦ In Second Advance Varietal Trial, ten entries were tested along with two checks for seed potentiality. The seed yield difference was found significant. The entry AVT2CS-3 gave significantly higher seed yield than all other entries barring the entry AVT2CS-4.

Cenchrus ciliaris

AICRP Trials

- ♦ This Varietal Trial is continued since *kharif*-2015. During the third year, two cuts (7th & 8th) were harvested under rainfed condition. among the entries tested, entry VTCC-15-9 gave significantly higher GF yield than all other entries except VTCC-15-3. The said highest yielder entry also produced significantly higher DM and CP yields than all other entries.

Cenchrus setigerus

AICRP Trials

- ♦ This Varietal Trial is continued since *kharif*-2015. During the third year, two cuts were taken within a period of 328 days. None of the entries were found superior to local check variety GAAG1 for GF, DM and CP yields.



Pennisetum hybrid

AICRP Trials

- ♦ Ten entries were evaluated under rainfed condition. Five cuts were taken within a period of 310 days. The check variety GAAG1 produced significantly higher GF yield than all other entries except the hybrids IGPISH-2, IGPISH-5 and IGPISH-8 while entry IGPISH-5 produced significantly higher DM yield and CP yield.

Bajra x Napier hybrid (Perennial)

- ♦ This Varietal Trial is continued since *kharif*-2015. During the third year, four cuts (6th to 9th) were harvested. The BN hybrid VTBN-5 produced significantly higher GF than all other entries except VTBN-8, VTBN-9 and Local check hybrid CO3. Whereas the hybrid VTBN-9 gave significantly higher DM yield than all other entries barring the hybrid VTBN-5.

Desmenthus

- ♦ Six entries were tested under rainfed condition. The entry VTD-6 has produced significantly higher GF than all other entries. Whereas the entry VTD-4 produced significantly higher DM yield than all other entries except the entries VTD-3 and VTD-6.

Crop Production

AICRP trial

- ♦ An experiment on studies on carbon sequestration in perennial grass based cropping systems. Treatment T₁ (BN hybrid at recommended spacing) recorded significant the highest green forage, dry matter and crude protein yields. Same trend was observed in Plant height, No. of tillers/ meter row, leaf length and leaf breadth

STATE trials

- ♦ An experiment on effect of cutting management and fertility levels on growth and seed yields of

multicut fodder sorghum [*Sorghum bicolor* (L.) Moench] var. CoFS-29 was conducted. GF yield of the forage sorghum var. CoFS-29 recorded significantly the highest in C₃ treatment (two cut for GFY at 50 days interval). Treatment C₂ (One cut at 50 DAS for green fodder then seed production) recorded significantly the highest seed yield.

Application of 160 kg N/ha recorded significantly the highest green forage, seed and no. of tillers. Application of phosphorus did not exert significant variation in yield and yield attributing characters.

- ♦ A trial on influence of nitrogen levels on yield and quality of guinea grass was conducted. Variety V₁ [Co (GG)-3] found significantly superior than V₂. It produces significantly the highest total GFY, DMY and CPY.

Application of 50 kg N ha⁻¹ recorded significantly the highest green forage, dry matter and crude protein yields in as compared to other levels of nitrogen application.

- ♦ An experiment on effect of boron and cutting management in seed production of Lucerne was conducted. Significantly the highest seed yield was registered under treatment B₁ (0.02 %) compared to other treatments. Test weight of Lucerne was also recorded significantly the highest with same treatment while dry matter and crude protein yields were found significantly the highest with treatment B₀ i.e no boron application. Whereas cutting management is concerned, Green forage yield of Lucerne was found significantly higher under treatment C₄ (Last cut at 2nd week of March & leave for seed production) but it was remained at par with treatment C₃ (Last cut at 1st week of March & leave for seed production), while dry matter and crude protein yields of the Lucerne was found significantly the highest under treatment C₄ (Last cut at 2nd week of March & leave for seed production) compared to other treatments.



4.3 Horticultural Crops

4.3.1 Vegetables

Kharif – Rabi: 2016-17

Brinjal

Crop Improvement

- ♦ In brinjal crop, 11 experiments were conducted (six trials of state and five trials of AICRP) during *kharif* and *rabi* seasons. So far as evaluation of germplasm is concerned, 194 germplasms were maintained and 21 new germplasms were collected.
- ♦ For heterosis breeding, 6 fresh crosses were made as well as 17 crosses were made for ongoing programme. Total 215 germplasms were evaluated and maintained. Moreover, 246 segregating progenies were evaluated and individual plant selection was made for the next year.

Chilli

Crop Improvement

- ♦ Nine trials (Six trials of state and three trials of AICRP) were conducted.
- ♦ For heterosis breeding, 12 fresh crosses were made as well as 11 crosses were made for ongoing programme. Total 136 germplasm lines were maintained. Two crosses were made for hybrid evaluation. Total 315 segregating progenies were evaluated and individual plant selection was made for the next year, out of which 1 CMS line was maintained.

Tomato

Crop Improvement

- ♦ In tomato, 12 experiments were conducted, which include six state trials and six AICRP trials.
- ♦ Total 90 germplasm lines were maintained and

evaluated. Six fresh crosses were made as well as 14 crosses were made for ongoing programme. In all 127 progenies of segregating materials were evaluated and individual plant selection was made for the next year.

Potato

- ♦ Four state trial was conducted during *rabi* season.
- ♦ Total 53 germplasm lines were maintained and evaluated including 12 new collected germplasm.

Summer and Kharif-2017

Bottle gourd

- ♦ Total 143 germplasm lines were maintained and evaluated including 15 new collected germplasm. Five fresh crosses were made for hybrid evaluation.

Muskmelon:

- ♦ Total 155 germplasm lines were maintained and evaluated. Two fresh crosses were made for hybrid evaluation.

Ridge gourd

- ♦ One trial was conducted during *kharif* season.
- ♦ Total 200 germplasm lines were maintained and evaluated including 74 new collected germplasm.

Sponge gourd

- ♦ Two trials were conducted including one state trial and one AICRP trial during *kharif* and summer season.
- ♦ Total 167 germplasm lines were maintained and evaluated.

Cucumber:

- ♦ Total 198 germplasm lines were maintained and evaluated. Two fresh crosses were made for hybrid evaluation.



Okra

- ♦ Eight trials were conducted including six state trials and two AICRP trials during *kharif* season.
- ♦ Total 403 germplasm lines were maintained. Twenty-four crosses were made for hybrid evaluation. Total 381 segregating progenies were evaluated and individual plant selection was made for the next year.

Pulses

- ♦ Two state trials of clusterbean were conducted during *kharif* season.
- ♦ Two state trials of cowpea were conducted during *kharif* season.
- ♦ Total 53 germplasm lines of cowpea were maintained during *kharif* season, where as 41 germplasm lines of Indian bean and valor were maintained and evaluated during *rabi* 2017-18.

4.3.2 Medicinal and Aromatic Plants

Crop Improvement

Isabgol

Crossing programme in Isabgol

- ♦ To develop male sterile line and its maintainer in Isabgol, sib mating programme was carried out in 98 male sterile plants in 10 different lines, 50 to 80 percent male sterility was recorded.
- ♦ All the mutants were crossed with normal females in order to obtain novel combinations.
- ♦ Selfing programme in Isabgol included 40 diverse germplasm. Twenty different cultures of Isabgol were maintained through sib mating. In addition to this, 4 other promising lines were crossed with GI-2 in order to obtain superior hybrids.

Following experiments in isabgol were conducted during the year 2017-18

AICRP trials

- ♦ AVT II: Advanced Varietal Evaluation trial of Isabgol (Early maturing group 90-100 days)

Ashwagandha

AICRP trials

- ♦ AVT I Evaluation of promising lines of Ashwagandha

Crossing programme in Ashwagandha

In ashwagandha, different 224 accessions were maintained.

- ♦ Total 66 fresh crosses were made for hybrid evaluation and 94 crosses are retained.
- ♦ 80F₁ lines were grown and selfed for further breeding programme
- ♦ 84F₂ progenies were grown and selected plants were selfed for further breeding programme.
- ♦ 60 F₃ progenies were grown and selected plants were selfed for further breeding programme

Aloevera

Crossing programme in Aloe vera

- ♦ In *Aloe vera*, out of 10 crosses made between 5 promising lines, no seed set was observed.

Safed musali

- ♦ Evolution of promising lines of Safed Musli

Turmeric

- ♦ Under statetrial 'Evaluation of selected entries of turmeric for rhizome yield', 12 entries which were tested for the yield potential. Anand local performed superior and provided highest results which was followed by GNT-1 and Suvarna.



Asalio

- Under state trial 'Evaluation of promising lines of Asalio', genotype T₁₀ recorded significantly highest seed yield among all the genotypes under consideration which was at par with genotype T₅, T₁₅ and T₆.

Basil

AICRP trials

- AVT-II Evaluation of promising lines of basil for high yield and quality (AB-1 to AB-20)
- AVT-II Evaluation of promising lines of basil (seed purpose) for high yield and quality (OB-1 to OB-24)
- IET-II Evaluation of promising lines of tulsi basil (seed purpose) for high yield and quality (AB-1 to AB-20)

STATE trials

During the year 2017-18, three MLT experiments were assigned by DMAPR, Boriavi.

- MLT AVT-II Evaluation of promising lines of Basil for high yield and quality (AB-1 to AB-20)
- MLT AVT-II Evaluation of promising lines of Basil (seed purpose) for high yield and quality (OB-1 to OB-24)
- MLT-IET evaluation of promising lines of Tusli for high yield and quality (AB-1 to AB-20)

Kalmegh

- AVT-II Evaluation of promising lines of kalmegh for yield and quality

Charoli

- Collection, conservation and establishment of Charoli (*Buchanania lanzan* Spreng) genotypes at Anand. Whereas five plants had been collected from the Junagadh district of Gujarat.

Crop production

Following experiments were conducted on different crops during the year 2017-18.

- A trial was conducted on effect of different levels of nitrogen and phosphorus on dry biomass yield of *Dodi*. Significantly higher dry biomass yield was found with application of nitrogen @ 200 kg/ha, which was statistically at par with nitrogen @ 150 and 100 kg/ha. Whereas, Significantly the highest value of dry biomass yield was recorded under application of phosphorus 25 kg /ha on pooled basis.
- A trial on effect of organic manures on yield and quality of Tulsi (*Ocimum sanctum*) was conducted. Significantly higher dry biomass yield of tulsi crop was observed under application of FYM @ 15 t/ha.
- A trial on effect of different spacing and date of planting on dry biomass yield of *Artemisia* (*Artemisia annua* Linn.) was conducted. Significantly higher dry biomass yield of artemisia crop was observed under treatment of D4: 3rd week of December with S1 :60 cm x 60 cm spacing.

1.1.3 Fruit Crops

Department of Horticulture, BACA

Following eight field trials were conducted during the year 2017-18 on different horticultural crops. Out of these, two trials were on flower crops.

- Effect of plant growth regulators on growth, flowering and flower yield of Deshi Red Rose (*Rosa damascena* L.)
- Effect of integrated nutrient management on growth, flowering and flower yield of annual white chrysanthemum (*C. coronarium* L.) cv. Local
- Comparative performance of leafy vegetables



under net house conditions

- (4) Effect of rejuvenation on growth, yield and quality in old orchard of mango cv. Rajapuri under Middle Gujarat agroclimatic conditions
- (5) Effect of different organic manures and PGPR consortium on growth, yield and quality of sapota (*Manilkara achras* L.) cv. Kallipatti
- (6) High density plantation and canopy management in mango cv. Kesar
- (7) High density plantation and pruning in guava cv. Allahabad Safeda
- (8) Effect of different spacing on growth & yield of capsicum under open ventilated poly house

Crop Improvement

Following three field trials were conducted during the year 2017-18 on different guava.

- (1) Evaluation of red flesh guava
- (2) Evaluation of red flesh guava hybrid
- (3) Evaluation of white flesh guava hybrid

Guava: Details of crosses made during (2017-18)

Name of cultivar	No. of crossed fruits
Seedless guava X Allahabad Safeda	17
Seedless guava X Lalit	23
Seedless guava X AGRS 8	07
Seedless guava X AGRS 4	21

College of Horticulture

- ♦ Following experiments were conducted during the year 2017-18.
 - (i) Effect of different plant spacing on growth and yield of capsicum under open ventilated poly house
 - (ii) Evaluation of vegetables during different seasons under different shade net conditions

- (iii) Effect of nitrogen and phosphorus on growth, flowering and yield of gladiolus (*Gladiolus grandiflorus* L.) cv. American Beauty under middle Gujarat Agro climatic conditions
- (iv) Nutrient management through organics in onion (*Allium cepa* L.) as intercrop in sapota orchard

Crop Protection:

- (v) Evaluation of botanicals against powdery mildew of fenugreek.
- (vi) Bio-efficacy of agrochemical against bacterial canker (*Xanthomonas axonopodis* pv. *citri*) in citrus.
- (vii) Bio-efficacy of different insecticides against leaf webber infesting mango.

Crop Improvement:

- (viii) Evaluation of sesame genotypes in summer season along with molecular characterization

Post Harvest Technology:

- (ix) Development of value added product containing wheat and chickpea *ponk*.
- (x) Technology for production of Indian gooseberry (aonla) *murabba*
- (xi) Production technology for clarified wood apple juice
- (xii) Development of production technology for vegetable based juice from carrot and tomato
- (xiii) Development of functional low calorie muffins.

Social Sciences:

- (xiv) Growth and dimension change in cropping pattern in Gujarat.
- (xv) Evaluation of statistical models for forecasting area, production and productivity of fruit crops in Gujarat



4.4 Pesticide Residues, Agril. Ornithology, Plant Protection and Micronutrients

Pesticide Residues

Following trials were conducted by Pesticide Residue Laboratory during the year 2017-18.

• Sponsored supervised field trials (Other Agency Trials Routed Through ICAR)

- (1) Residues and persistence study of fluopyram 400 SC in/on cucumber (1st Season)
- (2) Residues and persistence of fluopyram 400 SC in/on banana (1st season)
- (3) Residues and persistence of chlorpyrifos 20 EC in/on groundnut
- (4) Residues and persistence study of pyraclostrobin 20 WG in/on groundnut
- (5) Residues and persistence study of pyraclostrobin 20 WG in/on maize
- (6) Residues and persistence of fosetyl Al 80 WP in/on tomato (2nd season)
- (7) Residues and persistence study of pyraclostrobin 20 WG in/on tomato
- (8) Residues and persistence of fluopyram 400 SC in/on cucumber (2ndSeason)
- (9) Residues and persistence study of flonicamid 50 WG in/on cotton
- (10) Residues and persistence study of spiromesifen 22.9 SC in/on cotton
- (11) Residues and persistence study of pyraclostrobin 20 WG in/on cotton (1st Season)
- (12) Residues and persistence study of thiocyclam Hy. Ox. 4 G in/on paddy
- (13) Residues and persistence study of flonicamid 50 WG in/on paddy
- (14) Residues and persistence study of spiromesifen 22.9 SC in/on brinjal
- (15) Residues and persistence study of mancozeb 75 WP

in/on potato

- (16) Residues and persistence study of chlorpyrifos 20 EC in/on gram
- (17) Residues and persistence study of imidacloprid 600 FS in/on gram
- (18) Residues and persistence study of chlorpyrifos 20 EC in/on mustard
- (19) Residue and persistence study of carbendazim 12% + mancozeb 63% WP in/on cotton
- (20) Residue and persistence study of flonicamid 50 WG in/on paddy
- (21) Residue and persistence study of flubendiamide 20 WG in/on paddy

♦ Field Trials as per Good Agricultural Practices (GAP)

- (1) Residues and persistence of lambda-cyhalothrin 5 EC in/on cucumber
- (2) Residues and persistence of acephate 75 SP in/on cucumber
- (3) Residues and persistence of imidacloprid 17.8 SL in/on cucumber
- (4) Residues and persistence of spiromesifen 22.9 SC in/on cucumber
- (5) Residues and persistence of lambda-cyhalothrin 5 EC in/on cauliflower
- (6) Residues and persistence of imidacloprid 17.8 SL in/on cauliflower
- (7) Residues and persistence of spiromesifen 22.9 SC in/on cauliflower
- (8) Residues and persistence of cypermethrin 25 EC in/on capsicum
- (9) Residues and persistence of ethion 50 EC in/on capsicum
- (10) Residues and persistence of lambda-cyhalothrin 5 EC in/on capsicum
- (11) Residues and persistence of imidacloprid 17.8 SL in/



on capsicum

- (12) Residues and persistence of spiromesifen 22.9 SC in/on capsicum
- (13) Residues and persistence of acephate 75 SP in/on tomato
- (14) Residues and persistence of lambda-cyhalothrin 5 EC in/on cabbage
- (15) Residues and persistence of spiromesifen 22.9 SC in/on cabbage
- (16) Residues and persistence of imidacloprid 17.8 SL in/on cabbage
- (17) Residues and persistence of acephate 75 SP in/on bitter gourd
- (18) Residues and persistence of lambda-cyhalothrin 5 EC in/on bitter gourd
- (19) Residues and persistence of spiromesifen 22.9 SC in/on bitter gourd
- (20) Residues and persistence of lambda-cyhalothrin 5 EC in/on brinjal
- (21) Residues and persistence of spiromesifen 22.9 SC in/on okra
- (22) Residues and persistence of lambda-cyhalothrin 5 EC in/on okra
- (23) Residues and persistence of ethion 50 EC in/on chilli

NABL activities (ISO/IEC 17025:2005): Reassessment was successfully carried out and accreditation granted for pesticide residue analysis up to 29th June, 2018.

♦ **Studies on the estimation of pesticide residues for agricultural commodities at Anand.**

- 1 Studies on the estimation of pesticide residues for agricultural commodities at Anand – Plan Project, Govt. of Gujarat.
- 2 Studies on pesticide residue analysis from food, feed, water and soil for food safety in Gujarat– Plan Project, Govt. of Gujarat.
- 3 Monitoring of surface and ground water for pesticide residues in the SSP command Phase -I area

– Sponsored by SSNNL.

- 4 Monitoring of surface and ground water for pesticide residues in the SSP command Phase -II area– Sponsored by SSNNL.
- 5 Monitoring of pesticide residues at national level– Sponsored by Ministry of Agriculture & Farmer's welfare, GOI.

Agril Ornithology

Following research work was carried out in the project of Agril. Ornithology

♦ **Impact of mustard crop as intercrop for management of *H. armigera* through birds in chickpea**

Total 15 bird species were recorded in both chickpea and chickpea+ mustard (5:1) plots. The total bird number was observed higher in Chickpea + mustard plot (418 birds) as compared to chickpea alone (179 birds). The results indicated that mustard crop as intercrop for management of *H. armigera* through birds in chickpea was not found effective.

♦ **Establishment of set-aside field for conservation of insectivorous birds**

The agricultural land was acquired to establish the set-aside plot for conservation of insectivorous birds in July 2017. The sunhemp in monsoon and cow pea in winter was sown as green manuring crop to improve soil fertility and add organic matter. The birds recorded in sunhemp crop were almost negligible.

♦ **Identification of breeding colonies of Painted stork in Gujarat**

Total 64 nesting sites were surveyed during October-November 2017. Total 20 colonies of painted storks were identified and 3026 nests were recorded. Out of 3026 nests, the highest number of nests were recorded in Pil garden (Bhavnagar) (669 nests) followed by Charal (424 nests). About 64 nesting sites of Gujarat state



were surveyed. Breeding colonies were recorded in 20 % of previously recorded sites. Many of the colonies were succeed to breed and raised chicks successfully.

- ♦ **Identification of breeding colonies of Open-billed stork in Gujarat**

Total 34 nesting sites from 12 districts of Gujarat are reported and presented in GIS map. Out of 34 site visited, 17 sites having an active nest and successfully raised the young ones. Total number of nests of Open-billed Stork recorded was 2467 nests. Highest number of nests in colony was recorded at Chalthana (1000 nest) followed by Godhavi (260) and Bharuch (200) sites.

- ♦ **Ecological significance of wild fleshy fruit trees for conservation and management of depredatory and predatory birds: Indian sandalwood, *Santalum album***

Total 5 species of birds visited the Sandalwood tree with low frequency and number during year 2017. The birds foraged on sandalwood tree were found low during both the year 2016 and 2017. The Indian cuckoo was found chasing other birds visiting for forage on tree and protecting valuable resources. Because of that overall mean number of birds observed on tree was negligible.

- ♦ **Impact assessment of technology through large scale demonstration**

- ♦ Earthen nests, bird feeders and reflective ribbons were distributed to 65 tribal farmers at KVK, Vyara as a part of demonstration under tribal sub plan
- ♦ Distribution of sparrow nest boxes throughout year. On occasion of world sparrow day 200 earthen nest boxes were distributed in school at Chikhodra.
- ♦ The demonstration on effectiveness of reflective ribbon to deter birds visiting crop fields were conducted at AICRP weed control during

September-November 2017.

- ♦ The demonstration on effectiveness of egg solution to deter birds visiting crop fields were conducted at Regional Research Station, Anand during November-December 2017.

- ♦ **Monitoring of bird population in wetlands of Gujarat**

Waterfowl census was carried out on 58 important wetlands of Gujarat state in January-February 2018. Total number of birds recoded from 58 sites was 4,18,568 birds of more than 104 different bird species. The birds numbers was recorded highest at Tarakpur (180000) followed by Nava talav (70000), Malan Bandhara (35014) and Bherai tank (23415). Tarakpur was found important site supporting 50 % of total birds recoded from 58 sites here.

- ♦ **Management of wild boar in agricultural crops**

The study was carried out on management of wild boar in maize crop by biological barrier at farmer field of Jahangirpura village, Anand. There was on an average 62 percent damage was observed in grain filling stage. The experiment was concluded that the castor as screen crop to protecting maize crop from wild boar damage was not effective.

- ♦ **Monitoring avian diversity in different agro-climatic zones: central Gujarat**

Total 52 bird species were recorded from four different habitats viz., crop land, wetland, fallow land and horticultural crops. The highest number of species diversity was observed in crop land (32) followed by wetland (30), fallow land (26) and plantation crops (21). However, number of birds were recorded highest in wetland ecosystem (833) followed by crop land (456), fallow land (140) and plantation crop (116).



- ♦ **Monitoring of breeding performance and population status of Sarus Crane**

Total 548 Sarus were recorded from Gujarat state during May-June 2017. Highest number of Cranes was recorded at Gobarapura talav (400 cranes) of Limbasi tahsil followed by Kanewal (148). Out of total 548 cranes sighted were 492 adults and 56 juveniles. The geo-coded data of Sarus sightings were presented in map.

- ♦ **Documentation of Wetland Biodiversity in selected agro-ecological regions of Gujarat**

Odonates diversity of Gujarat: A total of 68 species belonging to two suborders and 47 genera under ten families were recorded from Gujarat. Twenty-three species of Zygoptera (damselflies) and 45 species of Anisoptera (dragonflies) were recorded. Thirty-two species are being recorded for the first time from Gujarat state includes two Western Ghats endemic species, *Burmagomphus laidlawi* and *Onychogomphus acinaces* and one Threatened species *Indothemis carnatica* listed in IUCN Red data (IUCN 2016). Thirteen species reported by earlier workers were not encountered during present study. Hence, now total checklist of Odonata of Gujarat has reached to 81 species.

- ♦ **Monitoring of Flamingos breeding ground in Rann of Kachchh**

On observation of MODIS images indicated that Rann of Kachchh was inundated during south-west monsoon of 2017, particularly during late September. As the water depth was high at Kuda-Bet, flamingo city and area north to Nada bet, nesting of flamingo was anticipated at all three sites. The Greater flamingos and lesser flamingo were bred at Kuda bet and Little Rann of Kachchh, successfully. It was concluded that MODIS image of NASA can be used to monitor extent of inundation and the period of inundation of the breeding ground of flamingos on Rann of Kachchh. If the area remains inundated for ≤ 90

days there are *cent* percent chances of successful breeding of both the species of flamingos.

Micronutrients

Brief results of the work carried out during the period under report are given below.

- ♦ Under the Nutrient indexing of micro- and secondary nutrients deficiency in rice-wheat growing area of middle Gujarat. The soil and leaf samples of rice and wheat were collected at critical stage as well as grain and straw at harvest for both the crops.
- ♦ In role of organic manure in maintenance of micronutrient status under continuous cropping in loamy sand soils of Anand, significant improvement in grain, straw and total yields of *bajri*, mustard and cowpea crops were noticed due to application FYM.
- ♦ The significant effect of application of different rates and frequency of Zn on grain, straw and total yields of maize and wheat was recorded under phasing of Zn application on fate of Zn pools in maize- wheat cropping system in loamy sand soils of middle Gujarat.
- ♦ Either alternate application of 1.0 kg B ha^{-1} or every year application of 0.5 kg B ha^{-1} was found beneficial for groundnut crop (3rd year crop) under the phasing of B application on fate of Zn pools in groundnut-cabbage cropping system in loamy sand soils of middle Gujarat.
- ♦ In the study of bio-toxic effects of heavy metals on animal-human health, the soil and plant samples were collected from non-contaminated and contaminated fields of different study areas. The overall mean content of all heavy metals in contaminated and non-contaminated soil and plant samples found more or less same.
- ♦ Pot experiment was conducted on spinach to find out the critical limit of nickel in soil.



- ♦ After screening four multi heavy metal tolerance isolates viz. *Pseudomonas azotoformans*, *Bacillus infantis*, *Bacillus megaterium*, *Micrococcus terreus*, pot experiment was conducted to assess the efficacy of heavy metals tolerant native bacterial culture for bioremediation of heavy metals using multi-cut forage sorghum.
- ♦ Under the assessment and characterization of micronutrient contents and heavy metals accumulation in different vegetables grown in industrial and peri urban areas in Gujarat, 244 food grain samples like, cereals, pulses, spices, oil seeds etc. were collected from various markets of different districts in the state.
- ♦ Under the assessment of organic and inorganic nutrient supply system on yield and quality of crops under different crops/ cropping system. Experiments were conducted on wheat, gram and sapota at different locations.
- ♦ The Soyabean crop was grown to evaluate the comparative efficiency of S containing fertilizers as source of plant available sulphur. But, the yields of soybean observed very low below state average in all the three years. Therefore, the proposal is made to conclude the experiment.
- ♦ To assess the efficacy of sulphur and zinc containing complex fertilizer for maximizing yield and quality through balanced nutrition of mustard crop. Significantly higher yield of mustard grain was recorded due to different treatments. The percent increments of grain, straw and total yield was to the tune of 18.6 to 29.1, 11.7 to 19.2 and 13.3 to 21.2% respectively over control.
- ♦ Under the evaluation of efficacy of sulphur and zinc containing complex fertilizer for maximizing yield and quality through balanced nutrition of groundnut crop. The maximum improvement in yield was to the tune of 24.8 % due to recommended dose of P, S and Zn through

traditional sources over control.

- ♦ FLDs on brinjal, okra, tomato and scarlet guard vegetables conducted to enhance crop productivity through micronutrients (FeSO_4) in Vansada taluka of Dang district. Organized farmers day and several farmer shibir to advocate the technology developed by the department.
- ♦ Total 5066 (Total readings 29713) soil /plant / feed /fodder /blood /effluent /fertilizers samples have been analysed and recommended/suggested to the farmers/ PG students/entrepreneurs/private agencies etc. accordingly.

Agril. Entomology, BACA, AAU, Anand and Vaso

Following research work has been carried out during the year.

- ♦ Among the 15 interaction of insecticides and spraying schedule, spraying of indoxacarb 14.5 SC at maturity stage was found more effective in checking cross infestation of pulse beetle in green gram and also recorded higher seed germination.
- ♦ Neem oil 1%, garlic bulb extract 5%, ginger rhizome extract 5% and imidacloprid 17.8 SL 0.004% were found effective in managing thrips and aphids in cumin. The effect of these treatments reflected on yield of cumin. There was no significant effect of evaluated treatments on population of coccinellids.
- ♦ On the basis of thrips incidence on shoots and fruits of pomegranate as well as yield of fruits, the treatments of spinosad 45 % SC 0.01%, cyantraniliprole 10.26% OD 0.008% and buprofezin 15% + acephate 35% - 50 WP 0.063% were found more effective in checking the pest of pomegranate.
- ♦ The foraging activity of different honeybee species viz., *Apis dorsata*, *A. florea*, *A. mellifera*, *A. cerenaindica* and *Trigona* sp. was observed on different crops viz., cotton, green gram, maize, soybean, shankhpuspi, gallardia, golden



rod, mustard, bajara, sunflower, sesamum and damro throughout the year. There was no any activity of honeybees in any of the crop at 6 hrs in the morning. The foraging activity was found between 8 and 16 hrs on different crops during crop season. The higher foraging activity of different species was observed between 10 and 14 hrs on most of the crops except shankhpushi, on which the activity was found only between 8 and 12 hrs. Among different crops, the maximum foraging activity was found on shankhpushi by *A. florum*

Plant Pathology, BACA, AAU, Anand

Studies on identification of source of resistance in vegetable crops for certain diseases, monitoring of seed-borne diseases, determination of host-range of bean common mosaic, standardization of bio-priming for seed borne diseases and management of early blight of potato were carried out.

In addition to above, facilities for mushroom cultivation and studies on epidemiology and management of yellow mosaic of pulses and vegetable crops have been strengthened.

Achievements

- ♦ **Detection of seed borne nature of MYMV and BCMV of urdbean and mungbean**

Urdbean: DAS-ELISA technique was used for detection of the Mungbean Yellow Mosaic Virus (MYMV) in T9 and Pant U-40 varieties of urdbean. The O.D value of whole seed, seed coat, cotyledons and embryo of T9 recorded were 2.916, 2.205, 1.594 and 1.151 respectively as compared to negative control with O.D value of 0.340. The result confirms survival of virus in these parts of the seed. Whereas, the whole seed, seed coat, cotyledons as well as embryo of discoloured seeds of urdbean variety of Pant U-40 showed negative reaction and did not show the presence of the virus in these parts of the seeds.

From the results of PCR amplification by MYMV & MYMIV virus specific primer it confirms survival of virus in different parts of the seed, followed by Sanger sequencing it is observed that MYMV & MYMIV infected urdbean sample of T9 variety has viral gene integration that shows 94-99% sequence similarities with previously available MYMV & MYMIV virus gene sequence.

Grow out test was conducted in insect proof cage under protected conditions using MYMV infected seeds of urdbean (Variety T9). Seeds from resistant variety i.e. Pant U 40 were also grown under the protected conditions. No symptoms of MYMV appeared under protected conditions. At trifoliolate stage of seedlings, molecular detection was conducted and no band was observed, it indicates the absence of specific virus gene that cause virus infection in the seedlings.

Mungbean: DAS-ELISA technique was used for detection of the Bean Common Mosaic Virus (BCMV) in GM4 and GAM5 varieties of mungbean. The O.D value of whole seed, seed coat, cotyledons and embryo of GAM5 recorded were 1.350, 1.141, 1.612 and 1.250, respectively as compared to negative control with O.D value of 0.365. The result confirms the presence of the virus in these parts of the seed. Whereas, the whole seed, seed coat, cotyledons, as well as embryo of discoloured seeds of mungbean variety of GM4 showed negative reaction and did not show the presence of the virus in these parts of the seeds.

- ♦ **Effects of different substrates on the growth and yield of Oyster Mushroom**

Among the treatments paddy straw recorded maximum diameter of cap (29.82 cm) and length of stipe (8.97) as compared to other treatments. Whereas, wheat straw yielded highest number of fruiting body (31) and also gave highest yield (199 g) which is at par with paddy straw with



reference to the yield.

- **Detection and molecular characterization of BCMV of mungbean**

Detection of bean common mosaic virus (BCMV) was done in seed coat, cotyledon and embryo of mungbean seeds of varieties GM3, GM4, K851, Meha and Pusa Navbahar of cluster bean through ELISA. BCMV was detected in discoloured seed coat and cotyledons of seeds variety GM3. Similarly, in K851, the virus was detected in seed coat and cotyledons of discoloured seeds. In Meha, the virus was found in cotyledon of discoloured seeds. However, In GM4, the virus was not detected in any parts of healthy and discoloured seeds. In Pusa Navbahar, the virus was detected in embryo, cotyledons and seed coat of discoloured seeds.

4.5 Centre for Plant Biotechnology

Work carried out at Department of Agricultural Biotechnology during the year 2017-18 is summarized below :

- ♦ The crops in which research was carried out are okra, guar, *deshicotton*, custard apple, tomato, urdbean, legumes, cumin, and rice. The planning was done to carry out crop based research for improvement of yield and quality. The work related to breeding varieties/hybrids for resistance to various biotic (disease and insect resistance) and abiotic stresses (drought and salinity resistance), identification and molecular characterization, cloning of genes for economic traits and development of transgenic plants was carried out. Crop-wise research activities carried out at this department under various schemes are given below:

Desi Cotton

- ♦ Interspecific hybridization in cotton.
- ♦ Development of colchipooid in *deshi* cotton.

- ♦ Development of Single Nucleotide Polymorphisms in diploid cotton (*Gossypium herbaceum*) through Genotyping-by-Sequencing technique on Illumina Miseq NGS platform with library of 12 genotypes developed using isoschizomers MboI and Sau3AI.

Maize (*Zea mays* L.)

- ♦ Morphological characterization of 96 genotypes (31 white and 65 yellow) with 31 DUS characters
- ♦ Biochemical characterization of 96 genotypes for total carotenoid and beta-carotene content.
- ♦ Attempts to develop tissue culture regeneration protocol in maize through immature zygotic embryo.
- ♦ Genetic transformation of maize using GLT-2 gene by In Planta transformation protocol.
- ♦ Screening of T1 generation of GLT-2 transformed maize seeds is under progress.
- ♦ Transformation of CCD-2 gene in maize initiated.

Okra

- ♦ Screening of wild germplasm of okra for YVMV resistance
- ♦ Interspecific hybridization in okra

Urdbean

- ♦ DNA fingerprinting analysis of 8 different urdbean genotypes from different region of Gujarat and other state by AFLP marker system.

Tomato

- ♦ Transcriptome profiling of resistant and susceptible solanum genotypes in response to interaction by Tomato leaf curl virus (ToLCV)
- ♦ Interspecific hybridization in Tomato (*Solanum lycopersicum* L).
- ♦ Identification of aQTL (Quantity Trait Loci)



conferring nematode resistance in Tomato

Guar

- ♦ Development of genomic SSR marker using Illumina Mi-Seq NGS Platform through genome survey sequencing.
- ♦ Diversity analysis of 50 guar genotypes using 21 newly developed genomic SSR markers

Rice

- ♦ Population structuring of 120 rice genotypes using 6K SNP chip on illumina beadarray platform.
- ♦ Initiation of mapping population development program for identification of markers associated with Bacterial Leaf Blight (BLB) resistance in rice.
- ♦ Validation of aroma specific marker in 18 rice genotypes.

Legumes

- ♦ Diversity study of 58 chickpea genotypes of different geographical origin using 21 SSR markers.
- ♦ Validation of known SSR marker associated with sterility mosaic disease (SMD) resistance in pigeonpea [*Cajanuscajan* (L.) Millsp.] for marker assisted screening of resistant genotypes in germplasm.

Custard apple (*Annona* species)

- ♦ Interspecific hybridization among various *Annona* species.

Transcriptome Analysis

- ♦ Transcriptome profiling of resistant and susceptible solanum genotypes in response to interaction by Tomato leaf curl virus (ToLCV) was initiated to identify gene network responsible for ToLCV resistance.
- ♦ Leaf samples of resistant (*Solanum habrochaites*;

IIHR 2101) and susceptible (GT2) genotypes were collected from distant hybridization field at flowering stage.

- ♦ To collect the samples from control plants, the seedlings were grown in plastic pots under the control conditions in seed germinator.



- ♦ Total RNA from four leaf samples two from each genotypes were extracted using Trizol method. Good quality of RNA was successfully isolated and analyzed on agarose gel. QC of RNA on 1% Formaldehyde Denature Agarose Gel; 1. GT2 control, 2. GT2 diseased, 3. IIHR2101 control and 4. IIHR2101 diseased. Nearly 1 ug RNA was recovered from each genotypes with acceptable 260/280and 260/230 ratio.
- ♦ Clear and sharp banding pattern indicated that high quality RNA has been recovered for further analysis and transcriptomics.
- ♦ Sharp cDNA profile of extracted RNA on Bioanalyzer HS chip suggested that further RNA-seq can be proceed to generate sequencing data.
- ♦ Four cDNA libraries were bar code tagged and sequenced on the flow cell.

Molecular marker development

Guar

- ♦ In guar, genomic SSR markers were developed for the first time through survey sequencing on illumina Miseq NGS platform to examine the

variability in a set of 50 genotypes.

- ♦ After trimming the adaptors and removal of duplications, the remaining 521767 high quality read sequences were used for further analysis. A total of 25679 SSRs were identified.
- ♦ To validate, a set of 25 SSR primer pairs were randomly selected for amplification and polymorphism survey on 50 guar genotypes. Amplicon size ranged from 100bp to 620bp which suggested remarkable variation in the number of repeats between the different alleles.
- ♦ Out of 25 primers, 21 primers amplified successfully suggesting that primers were of good-quality. Of 21 primers, 10 were recorded as polymorphic in guar.
- ♦ Estimated polymorphism information content (PIC) ranged from 0.00 to 0.67 (CBM-4). Among the all pair-wise combinations of genotypes, dissimilarity coefficients based on SSR markers ranged from 0.0 to 0.28 with an average value of

0.12.

- ♦ Despite narrow genetic base, the NJ clustering from SSR data grouped 50 genotypes into four clusters. These gSSR primers will be important genomic resources for purity testing and identification of genotypes.

DNA Fingerprinting

- ♦ A total of 75 DNA fingerprints in various crops have been generated using different marker systems.
- ♦ Robust and polymorphic markers were selected for generating successful DNA fingerprints.
- ♦ A total of 199 SSR, 97 ISSR, 466 RAPD and 12 AFLP markers were used for generating crop specific DNA fingerprints.
- ♦ DNA fingerprinting profile of these crops was sent to their respective Research Station for further use.

Summary of DNA fingerprint profile generated in various crops during 2017-18

Crops	Number of varieties	DNA Markers			
		SSR	ISSR	RAPD	AFLP
Year 2017-18					
Rice	06	-	-	-	√
Tomato	03	-	-	-	√
Castor	02	-	-	-	√
Asalio	04	-	-	-	√
Garlic	04	05	4	3	-
Sorghum	05	14	-	-	-
Groundnut	03	08	-	8	-
Pigeon pea	18	12	-	-	-
Chilli	30	10	-	-	-
Total	75	49	4	11	

Distant hybridization

Okra

- ♦ In *summer*, a total of 21 F₃, 30 F₅, 113 F₇, 6 F₈ and 16 F₁₀ were sown and respectively out of these, there were only 13, 30, 27, 5 and 16 lines,

having plant stand equal to 5 or above and hence, considered for YVMV observation. In F₃, F₅, F₇, F₈ and F₁₀, the number of promising lines showing 0 % YVMV incidence were 11, 30, 26, 5 and 15, respectively. A total of 7, 32, 50 and 7 IPS were made from F₃, F₅, F₇ and F₁₀, respectively. 18 new



crosses were attempted in Okra in Summer-2017.

- ♦ In *kharif*, a total of 92 germplasm [64+28 (Dahod Collection)] were sown. As a whole, there was very less incidence of YVMV in this season, so there were 30 accessions showing no symptoms of YVMV due to insufficient disease load out of total 64, whereas none of the germplasms from Dahod had plant stand equal to or more than 5. Out of 16 parents, all the parents showed 0 % YVMV incidence except Kashi Vibhuti (20%).
- ♦ In *kharif*, segregating lines including 15 F_2 , 7 F_4 , 32 F_6 , 50 F_8 and 7 F_{11} were sown. As a whole, there was very less incidence of YVMV in this *kharif*, so there were many lines from all the segregating materials showing no symptoms of YVMV due to insufficient disease load. In *kharif* a set of 91, 7, 29 and 26 IPS were made from F_2 , F_4 , F_6 and F_8 , respectively.

Tomato

- ♦ A total of 61 entries involving 36 parents (10 cultivated, 17 wild species and 9 cherry type), 14 selections and 11 TGRC lines were evaluated for TLCV and other yield and related attributes [Table DH-2(A)]. Nine (9) entries viz. *Solanum chilense* (WIR 5032)(0%), *Solanum chmielewski* (EC-520047) (0%), *Solanum pipinellifolium* (IIHR 1966)(0%), *Solanum habrochaites* (IIHR 2101) (0%), ATL-10-6 (0%), ATL-10-7(0%), ATL-10-9(0%), 2014/TOCLV RES-5 (IVT) (0%) and *S. esculentum* var. *cerasiforme* (EC-528372) (6.67%) were found better among parents for TLCV resistance. Among the selections, five selections viz. DHT-14-1, DHT-14-9, DHT-15-1, DHT-15-2 and DHT-15-4 were found promising with 0 % TLCV whereas among TGRC material *Solanum habrochaites* (IIHR 2101) (0%), *S. arcanum* (LA 2157) (0%) and *S. pipinellifolium* (LA 3859) were found promising for resistance against TLCV.
- ♦ A total of 2 F_1 , 3 BC_1 and 2 BC_2 crosses were

raised. There was very less plant stand as a whole and only one BC_1 [AT4 x (AT4 x IIHR2101)] had 10 plant stand with 0 % TLCV. 1 BP cross F_2 (AT3 x DHT-14-1) x F_2 (GT2 x LA 02807) showed sufficient plant stand with 0% TLCV incidence.

- ♦ A total of 32 F_2 , 50 BC_1F_2 and 25 F_3 were raised. On the basis of observation for TLCV resistance, intensity of fruit bearing, Plant growth habit, early maturity, number of fruits per cluster and fruit characters (Size, Shape, Color and Taste), there were 11 F_3 IPS, 107 BC_1F_3 IPS and 65 F_4 IPS were selected.
- ♦ A total of 10 direct crosses, 35 backcrosses and 6 three way crosses were attempted utilizing tomato lines imported from TGRC, California during Kharif-Rabi-2017-18. Eight (8) new crosses have been made utilizing an introgressed line of tomato (*S. lycopersicum* -LA 4440) with 8 improved lines of tomato procured from AVRDC, Taiwan.

Cotton

- ♦ Out of the total 40 parents, the minimum days to flowering of 62 days was exhibited by PA 255, PA 402, PA 528, AKA 5, AKA 7, GISV-218, G.Cot 16, G.Cot 20, Suvin, GSB 41, GSB 43 and GSB 44. The maximum No. of bolls were reported by 1027 ALF (83), 4011 (80) and Gvhv 602 (77.4) with 189, 171 and 110 gm yield per plant, respectively. The top four high yielders were found to be 1027 ALF (189), 4011 (171), Gvhv-473 (138.20) and Suvin (138).
- ♦ There were total 9 three-way F_3 , 42 BC_1F_3 , 49 F_4 and 38 F_5 selected from three way F_2 , BC_1F_2 , F_3 and F_4 in cotton on the basis of traits like cotton yield / Plant, Cotton weight (g), seed weight / Plant (g) and fiber length (mm).
- ♦ Out of the total 9 three-way F_2 lines selected, 6 lines were found to have fiber length more than 27 mm. Total number of lines selected to be

advanced as BC_1F_3 from BC_1F_2 was 42, out of which 6 lines had fiber length equal or more than 27 and 1 line (AKA-8401 x 4011) x 4011 had fiber length of 28.8mm.

- ♦ There were 24 lines having fiber length equal to or more than 28mm out of 49 F_3 whereas out of total 38 F_4 , 2 lines exhibited fiber length more than 28mm.

Development of colchiploid in *deshicotton*

- ♦ The seed material of genotype ALF 1027 was subjected to colchicine treatment with different concentrations (0.2%, 0.4%, 0.6%, 0.9%, 1.0% and 1.5%) utilizing three different methods viz. treatment after germination, seed soaking treatment and cotton swabbing method.
- ♦ There were only two plants survived after subjecting 850 seeds of ALF 1027 to colchicine treatment with different concentrations (0.2%, 0.4%, 0.6%, 0.9%, 1.0% and 1.5%) under the treatment of cotton swabbing method at a concentration of 0.2 and 0.6 % but were found to be mixoploids. The optimization of the protocol to get complete polyploidy is going on.

Custard apple

- ♦ Six New F_2 plants of *A. cherimoya* x Balanagari have been established in the farm.
- ♦ Three new crosses were attempted in custard apple taking three combinations viz., *A. atimoya* x *A. reticulata* (forage), *A. reticulata* (forage) x *A. atimoya* and *A. reticulata* (forage) x Balanagari.
- ♦ The grafting has been attempted in three interspecific hybrid plants of custard apple where fruiting taking occurred after three years of plantation. *A. squamosa* as a root stock.

Tissue culture work carried out during the year 2017-18 is summarized below:

- ♦ Development of tissue culture protocol for mass

multiplication of seedless lemon

- ♦ Development of regeneration protocol for large scale production of Coconut (*Cocos nucifera* L.)
- ♦ Refinement of date palm micropropagation protocol for early callus induction and for other stages
- ♦ Technology development for micropropagation of Indian sandalwood (*Santalum album* L.)
- ♦ Technology development for mass multiplication using tissue culture and sex determination using molecular markers in papaya
- ♦ Development of cell lines resistant to *Alternaria* blight (*Alternaria burnsii* var. *cumini*) of cumin (*Cuminum cyminum* L.) using *in vitro* techniques

Nanotechnology

Nanotechnology is a quickly rising invigorating multidisciplinary field of science, endowed with several potentialities and multiple applications. Nanotechnology has emerged as a technological advancement that could develop and transform the entire agri-food sector, with the potential to increase agricultural productivity, food security and economic growth for industries. The development of nanobiotechnology provides a novel method and protocol for life science. Nanoparticles as gene carriers become popular in the mammalian cultured cells, whereas its application in plant cells is still very limited. Minimizing the evaporation of soil water by using special matrix based material which will retain the water inside the soil, and also does not interfere with the other physiological activity forming a permeable membrane. The water loss due to transpiration can also be minimized using such biological activity permeable membrane. Formulating novel nanoparticle hybrid materials to control spoilage-related microflora can significantly decrease the loss due to spoilage,



that generally takes place during long distance transportations of nutritive goods.

Nanotechnology work carried out during the year 2017-18 summarized below:

- ♦ **Green synthesis of metallic nanoparticles and their antimicrobial activity against plant pathogens**
- ♦ **Antibacterial activity**
- ♦ The antibacterial activity of commercially available ZnNP was compared with streptomycin at different dilutions (NP:SDW - 50:50, 25:75, 12.50: 87.5, 6.25:9.75, 3.12:96.88 and 1.56:98.44). The maximum zone of inhibition was observed for ZnNP synthesized using ZnSO₄ as a substrate.
- ♦ Each synthesized ZnNP particles were evaluated for its antibacterial activity against *Xanthomonas* sp. isolated from infected rice leaves under *in vitro* conditions.
- ♦ Different dilutions of ZnNP was assessed for its maximum zone of inhibition (mm) wherein particle synthesized using 0.1 M ZnSO₄ solution at pH 9.50 and 10.0 gave highest inhibition zone of 23.33 mm compared to 20 µg mg⁻¹ each of streptomycin (21.67 mm).
- ♦ Higher dilutions of ZnNP also gave good inhibition zone compared to streptomycin at higher concentration.
- ♦ **Synthesis and characterization of hydroxyapatite nanoparticles and its potential applications as phosphorous fertilizers**
- ♦ **Effect of CMC concentration and sonication time (mins):**
- ♦ **Size (nm):**
- ♦ Effect of different CMC concentration (0.5 and 1.0%) as a stabilizing agent for HAp (4000 ppm)

was studied. Among which, intensity based Z-average size range of HAp NP was found to be between 535.7 nm to 1565 nm with minimum particle size of 535.7 nm for 0.5% CMC-Hap dispersed through sonication for 15 mins.

- ♦ **Polydispersity index (pdi)**
- ♦ The pdi value of CMC-HAp NP synthesized at different concentration of CMC ranges from 0.182 to 1.0 with minimum pdi of 0.182 for 0.5% CMC-HAp and dispersed through sonication for 10 mins.
- ♦ **Count rate (kcps)**
- ♦ The count rate (kcps) of CMC-HAp NPs at different concentration of CMC ranges from 196.4 to 470.9 with maximum count rate of 470.9 for 1.0% CMC-HAp for five mins sonication.
- ♦ **Effect of CMC concentration**
- ♦ **Size (nm):**
- ♦ Effect of different CMC concentration as a stabilizing agent for HAp (4000 ppm) was studied. Among which, intensity based Z-average size range of HAp NP was found to be between 227.5 nm to 633 nm with minimum particle size of 227.5 nm for 0.02% CMC-HAp dispersed through sonication for 15 mins.
- ♦ **Polydispersity index (pdi)**
- ♦ The pdi value of CMC-HAp NP synthesized at different concentration of CMC ranges from 0.247 to 0.364 with minimum pdi of 0.247 for 0.04% CMC-HAp and dispersed through sonication for 10 mins.
- ♦ **Count rate (kcps)**
- ♦ The count rate (kcps) of CMC-HAp NPs at different concentration of CMC does not differ significantly among the treatments.



(3) Effect of synthesized HAP on soyabean seeds under *in vitro* conditions

- ♦ Soyabean variety NRC 37 was treated with different concentration of hydroxyapatite nanoparticles and $\text{Ca}(\text{H}_2\text{PO}_4)_2$ to assess the effects of nano and bulk particles.
- ♦ Seeds were exposed to different incubation durations (10, 20 and 30 mins) of nanoparticles and bulk particles, among which seeds treated with these particles for twenty minutes showed good response for all the studied parameters.
- ♦ Highest germination (%) and increase in shoot and root length (cm) was found to be maximum in 20 minutes treated soyabean seeds.
- ♦ Overall, seeds treated with hydroxyapatite nanoparticles showed better response than its bulk counterparts.
- ♦ **Characterization of zinc and iron oxide nanoparticles and its effect on artificially aged soybean seeds**
- ♦ **Characterization of zinc and iron oxide nanoparticles**
- ♦ The hydrodynamic diameters of Zn and Fe NPs determined by DLS were 20.65 ± 0.07 nm and 39.81 ± 0.31 nm, respectively.
- ♦ The perfect correlogram of both the metallic nanoparticles clearly suggests monodisperse particle solution with polydispersity index (Pdi) of 0.32 and 0.36 for zinc and iron oxide nanoparticles, respectively.
- ♦ The zeta potential of these particles was found to be 41 mV which is a strong zeta values for zinc nanoparticles and -0.49mV for iron nanoparticles.
- ♦ The particles concentration per mL was found to be 32.02×10^8 for zinc oxide nanoparticles and 39.01×10^8 for iron oxide nanoparticles

Experiment for seed treatment

- ♦ An experiment was carried out for determination

incubation time (1, 2, 3, 4 and 5 hrs.) and different morpho-physiological parameters were recorded.

- ♦ Seed germination percentage was found to be highest with 2hrs treated seeds.
- ♦ Maximum shoot and root length was recorded in seeds immersed in FeNPs solution for two hours.

Biochemical studies for artificially aged seeds

- ♦ Artificial aged seeds for 0, 1, 2, 3 and 4 days were provided by Department of Seed Science and different biochemical parameters were assessed.
- ♦ Eight biochemical parameters like total chlorophyll, chlorophyll 'a' and 'b', anti-oxidants enzymes like peroxidase, SOD, Catalase and protein and sugar content were checked for their changes for artificially aged seeds.
- ♦ Zinc and iron particles exhibited significant biochemical changes among the treatments.
- ♦ Artificially aged soybean seeds treated with nanoparticles showed better response compared to bulk particles especially effect of zinc nanoparticles was found to be more prominent compared to iron nanoparticles.
- ♦ **Synthesis and characterization of sulphur nanoparticles and study of its anti-fungal activity against phytopathogens**
- ♦ **Effect of different 5% plant leaves extract on sulphur nanoparticle (SNP) green synthesis**
- ♦ **Size (nm)**
- ♦ Effect of 5% plant leaves extract i.e. neem, ardui and calotropis using sodium thiosulphate (0.1 and 0.2 M) was studied. Among which, intensity based Z-average size range of SNP was found to be between 136.3 nm to 375.6 nm with minimum particle size of 136.3 nm for 5% neem leaves extract using 0.2 M sodium thiosulphate at 0 day.

Polydispersity index (pdi)

- ♦ The pdi value of SNP synthesized ranges from



0.183 to 0.294 with minimum pdi of 0.183 for 5% calotropis leaves extract on 0 day.

- ♦ **Count rate (kcps)**

- ♦ The count rate (kcps) of SNPs ranges from 290 to 357.8 with maximum count rate of 357.8 for 5% arduisi leaves extract on 0 day.

- ♦ **Effect of incubation study (25 and 37°C)**

- ♦ These synthesized sulphur nanoparticles were evaluated for their stability studies at two temperatures (25 and 37°C) and storage bottles (white and amber).

A. White and Amber storage at 25°C

- ♦ **Size (nm)**

- ♦ After 15 days of incubation, intensity based Z-average size ranges from 131.3 nm to 475.1 nm with minimum particle size of 131.3 nm SNP stored in white bottle. However, the size variation among the two bottles is not significantly higher after 15 days of incubation.

- ♦ After 30 days of incubation, intensity based Z-average size ranges from 156.6 nm to 825.3 nm with minimum particle size of 156.6 nm for SNP synthesized using neem leaves extract using 0.2M Na₂S₂O₃ and stored in amber bottle. After 30 days of incubation, the effect of storage is prominent which leads to increase in size of SNP.

- ♦ After 45 days of incubation, intensity based Z-average size ranges from 241.6 nm to 1087 nm with minimum particle size of 241.6 nm for SNP synthesized using neem leaves extract using 0.2M Na₂S₂O₃ and stored in amber bottle.

- ♦ **Polydispersity index (pdi)**

- ♦ The variation in pdi is not significantly higher among both the storage conditions. However, SNP stored in amber color bottles remains stable even after 45 days of incubation.

- ♦ **Count rate (kcps):**

- ♦ The variation in kcps is not significantly higher among both the storage conditions. However, SNP stored in amber color bottles have higher particle count ever after 45 days of incubation.

- ♦ **White and Amber storage at 37°C**

- ♦ **Size (nm):**

- ♦ After 15 days of incubation, intensity based Z-average size ranges from 152.6 nm to 1137 nm with minimum particle size of 152.6 nm for SNP synthesized using neem leaves extract using 0.2M Na₂S₂O₃ and stored in amber bottle.

- ♦ After 30 days of incubation, intensity based Z-average size ranges from 268.4 nm to 838.7 nm with minimum particle size of 268.4 nm for SNP synthesized using neem leaves extract using 0.2M Na₂S₂O₃ and stored in amber bottle.

- ♦ After 45 days of incubation, intensity based Z-average size ranges from 463.6 nm to 1359 nm with minimum particle size of 463.6 nm for SNP synthesized using neem leaves extract using 0.2M Na₂S₂O₃ and stored in amber bottle.

- ♦ **Polydispersity index (pdi):**

- ♦ The variation in pdi is not significantly higher among both the storage conditions. However, SNP stored in amber color bottles remains stable ever after 45 days of incubation.

- ♦ **Count rate (kcps):**

- ♦ The variation in kcps is not significantly higher among both the storage conditions. However, SNP stored in amber color bottles have higher particle count ever after 45 days of incubation.

Effect of neem plant leaves extract concentration (5 and 10%), volume (25, 50 and 75 ml), reducing agent (sodium thiosulphate concentration)

- ♦ **Size (nm):**

- ♦ Effect of 5% neem plant leaves extract using



sodium thiosulphate at different concentration could effectively synthesized sulphur nanoparticles (SNP). Among which, intensity based Z-average size range of SNP was found to be between 10.43 nm to 635.0 nm with minimum particle size of 10.43 nm for 75ml of 5% neem leaves extract using 0.2 M sodium thiosulphate at 0 day.

- ♦ The range of size for 10% neem leaves extract was recorded between 17.93 nm to 233.2 nm minimum particle size of 17.93 nm for 75ml of 10% neem leaves extract using 0.1 M sodium thiosulphate at 0 day
- ♦ **Polydispersity index (pdi)**
- ♦ The pdi value of SNP synthesized ranges from 0.02 to 0.273 with minimum pdi of 0.02 for 5% calotropsis leaves extract on 0 day.
- ♦ **Count rate (kcps)**
- ♦ The count rate (kcps) of SNPs ranges from 143.6 to 412.5 with maximum count rate of 412.5 for 25ml of 5% neem leaves extract using 0.1 M sodium thiosulphate on 0 day.

Effect of incubation study after three months

- ♦ **Size (nm)**
- ♦ The size of SNP synthesized using 75ml of 5% neem leaves extract and 0.2 M sodium thiosulphate has increased from 10.43 to 18.16 nm after three months of incubation.
- ♦ The size for 10% neem leaves extract has increased from 17.93 nm to 30.39 nm during incubation of three months.
- ♦ **Polydispersity index (pdi)**
- ♦ The pdi value of SNP synthesized has also increased and ranges from 0.086 to 0.807 with minimum pdi of 0.086 for 75ml of 5% neem leaves extract using 0.1 M of $\text{Na}_2\text{S}_2\text{O}_3$.

- ♦ **Count rate (kcps)**
- ♦ The count rate (kcps) of SNPs ranges from 145.6 to 465.8 with maximum count rate of 465.8 for 50ml of 5% neem leaves extract using 50 mM of $\text{Na}_2\text{S}_2\text{O}_3$.
- ♦ **Evaluation of efficacy of zinc nanoparticles for its enhancement of growth of groundnut crop**

Zinc nanoparticles (ZnNP) are synthesized using pH mediated approach. Three different pH i.e. 10.5, 11.0 and 11.5 were set using NaOH. Effect of stabilizing agent and dispersion approach of synthesized ZnNP were assessed for their ability to precise synthesis of nanoparticles.

Effect of stabilizing agent concentration.

- ♦ **Size (nm)**
- ♦ Four different concentration of stabilizing agent (1000, 1500, 2000 and 2500 ppm) were assessed for each pH value (10.5, 11.0 and 11.5). Among these treatment combinations, 1000 ppm stabilizing agent at pH 11.5 could effectively synthesized ZnNP with the least size of 6.95 nm. The size ranges from 6.95 to 300.3 nm at 0 day.
- ♦ **Polydispersity index (pdi)**
- ♦ The pdi value of ZnNP synthesized ranges from 0.213 to 0.535 with minimum pdi of 0.213 for ZnNP synthesized at pH 11.5 and stabilized by 1000 ppm stabilizing agent.
- ♦ **Count rate (kcps)**
- ♦ The count rate (kcps) of ZnNPs ranges from 142.6 to 405.5 with maximum count rate of 405.5 for ZnNP synthesized at pH 11.5 and stabilized by 2000 ppm stabilizing agent on 0 day.

Effect of incubation study after thirty days and dispersion using sonication or stirring.

- ♦ **Size (nm)**
- ♦ The size of ZnNP synthesized has increased from



6.95 to 402.8 nm after thirty days of incubation following dispersion of particle through stirring.

- ◆ However, nanoparticle synthesized at pH 11.0 and stabilized using 1000 ppm stabilizing agent exhibits <100 nm size ranges i.e. 17.64 nm following stirring.
- ◆ Overall, sonication of nanoparticle solution was found to be effective in controlling the size after thirty days of incubation.
- ◆ **Polydispersity index (pdi)**
- ◆ The pdi value of SNP synthesized has also increased and ranges from 0.211 to 0.467 with minimum pdi of 0.211.
- ◆ **Count rate (kcps)**
- ◆ The count rate (kcps) of ZnNPs ranges from 161.6 to 449.8 with maximum count rate of 449.8 for 1000 ppm stabilizing solution and at pH 11.5 dispersed using sonication.

Stability studies of zinc nanoparticles (ZnNP) from optimized parameters

Effect of incubation study (25 and 37°C)

pH mediated synthesized zinc nanoparticles were evaluated for their stability studies at two temperatures (25 and 37°C) and storage bottles (white and amber).

A. White and Amber storage at 25°C

- ◆ **Size (nm)**
- ◆ After 15 days of incubation, intensity based Z-average size ranges from 14.40 nm to 123.2 nm with minimum particle size of 14.40 nm ZnNP stored in white bottle. However, the size variation among the two bottles is not significantly higher after 15 days of incubation.
- ◆ After 30 days of incubation, intensity based Z-average size ranges from 13.78 nm to 158.8 nm with minimum particle size of 13.78 nm for

ZnNP synthesized and stored in white bottle. After 30 days of incubation the average particle size of ZnNP does not varied significantly.

- ◆ After 45 days of incubation, intensity based Z-average size ranges from 13.53 nm to 152.3 nm with minimum particle size of 13.53 nm for ZnNP synthesized at 11.5 pH and stored in white bottle. At the end of incubation period of 45 days, the variation in size among both the treatments does not differ significantly.
- ◆ **Polydispersity index (pdi)**
- ◆ The variation in pdi is not significantly higher among both the storage conditions. However, ZnNP stored in white bottles remains stable even after 45 days of incubation.
- ◆ **Count rate (kcps):**
- ◆ The variation in kcps is not significantly higher among both the storage conditions.
- ◆ **Zeta potential (mV)**
- ◆ The variation in zeta potential of pH assisted ZnNP is not significantly higher among both the storage conditions.
- ◆ **White and Amber storage at 37°C**
- ◆ **Size (nm)**
- ◆ After 15 days of incubation, intensity based Z-average size ranges from 118.7 nm to 166.3 nm with minimum particle size of 166.3 nm ZnNP stored in amber color bottle.
- ◆ After 30 days of incubation, intensity based Z-average size ranges from 123.1 nm to 210.1 nm with minimum particle size of 123.1 nm for ZnNP synthesized and stored in amber bottle. After 30 days of incubation the average particle size of ZnNP does not varied significantly.
- ◆ After 45 days of incubation, intensity based Z-average size ranges from 133.4 nm to 145.4

nm with minimum particle size of 133.4 nm for ZnNP synthesized at 11.5 pH and stored in white bottle. At the end of incubation period of 45 days, the variation in size among both the treatments does not differ significantly.

♦ **Polydispersity index (pdi)**

♦ The variation in pdi is not significantly higher among both the storage conditions.

♦ **Count rate (kcps)**

♦ The variation in kcps is not significantly higher among both the storage conditions.

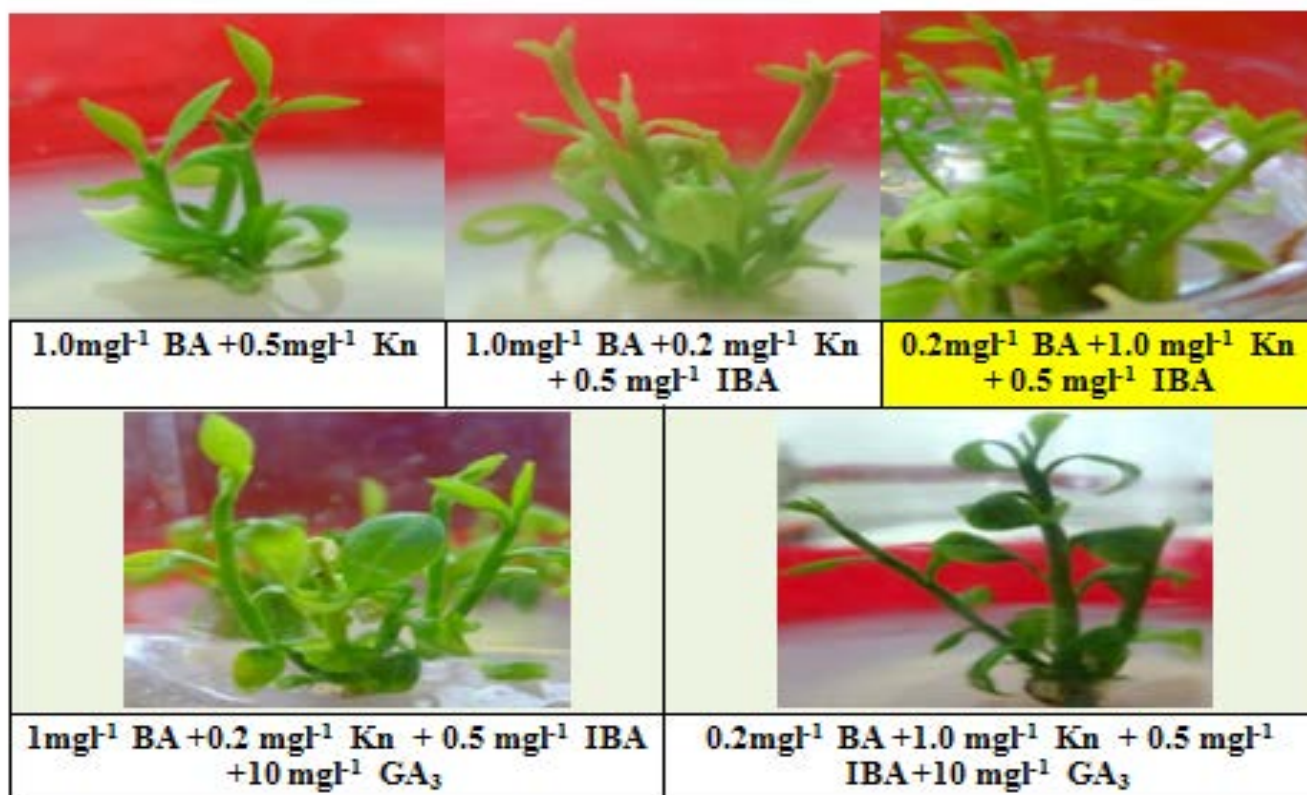
♦ **Zeta potential (mV)**

♦ The variation in zeta potential of pH assisted ZnNP is not significantly higher among both the storage conditions.

Stabilization and characterization of multiwalled carbon nanotubes (MWCNTs) and its effects on maize, tomato, soybean seeds

♦ Different surfactants (SDS, CTAB, Tween 20 and Triton X100) were assessed for their effect on stabilizing MWCNTs.

♦ Among these surfactants, SDS was found to be best suited for stabilization of MWCNTs.



Effect of various plant growth regulators for shoot multiplication in lemon

4.6 Planning and Monitoring, Agricultural Research and Education

Planning and development committee was constituted as per Common Statutes for Agricultural University of Gujarat, 2011 under section-III of statutes No. 48 to 51.

Agricultural Research and Education

♦ The financial provision made by project-in-charge was scrutinized, compiled and prepared plan budget. This budget proposal was put up in Planning and Development Committee, Finance committee and Board of Management. Thereafter,



it was submitted to Government of Gujarat for provision in budget of the year 2017-18.

- ♦ An Annual plan of Rs.7394.43 Lakhs was approved by Government of Gujarat for Agricultural Research and Education and same amount was also approved in Revised budget and released the grant accordingly by state Government. The detail provision of plan is as follow.

Head	On going	New Item	Total
Education	3887.40	319.50	4206.90
Extension Education	429.28	0.00	429.28
Research	2659.25	99.00	2758.25
Total	6975.93	418.50	7394.43

- ♦ Review meetings were conducted in February, 2018 with concern scheme-in-charge. After that, grant was reallocated as per the demand and utility in the project.
- ♦ A correspondence review meeting was held in November, 2017 and March, 2018, necessary action related to grant had been taken up.
- ♦ Quarterly and Annual progress reports of plan schemes were prepared and submitted to Government of Gujarat.
- ♦ Liaisoning work for Legislative Assembly Question (LAQ), Rajysabha Starred Question (RSQ) and Legislative Starred Question (LSQ) raised during the year were taken up.

Indian council of Agricultural Research (ICAR) Development Grant.

Strengthening and Development of Agricultural Education in SAU's

- ♦ The demand of Rs. 2076.64 Lakhs for "Strengthening and development of Agricultural Education in SAU's was submitted to the Indian Council of Agricultural Research (ICAR) as per the demand received from the University Officers

and Principal/Deans of Colleges.

- ♦ The grant of Rs. 530.40 lakhs was released by ICAR for "Strengthening and Development of Higher Agricultural Education in India".

Student READY

- ♦ The demand of Rs. 70.13 Lakhs for "Student READY" was submitted to Indian Council of Agricultural Research (ICAR) as per the demand received from Dean's of various faculties. The grant of Rs.59.49 lakhs was released by ICAR for "Student READY". Annual Utilization Certificate (AUC) of said grant was submitted to ICAR, New Delhi for the financial year 2017-18.

National Talent Scholarship

- ♦ The demand of Rs. 36.16 Lakhs for "National Talent Scholarship" was submitted to Indian Council of Agricultural Research as per the demand received from Director of Student Welfare. The grant of Rs. 40.83 lakhs was released by ICAR for "National Talent Scholarship". Annual Utilization Certificate (AUC) of said grant was submitted to ICAR, New Delhi for the financial year 2017-18.
- ♦ The demand of Rs. 132.00 Lakhs for "Library Strengthening in Agricultural Universities" was submitted to Indian Council of Agricultural Research (ICAR) as per the demand received from University Librarian. The grant of Rs.70.00 Lakhs was released by ICAR for the "Library Strengthening in Agricultural Universities". Annual Utilization Certificate (AUC) of said grant was submitted to ICAR, New Delhi for the year 2017-18.
- ♦ Annual Progress Report of the year 2017-18 were submitted to ICAR as per the activities carried out during the year.
- ♦ Review meetings for progress of ICAR Development grant were conducted in January, 2018 and March 2018 during the year 2017-18.



4.7 Water Technology

Considering the importance of irrigation in Agriculture, Agricultural Research Station for irrigated crops, Thasra, conducted some experiments as listed below:

- ♦ **Nutrient management through fertigation in Guava**
- ♦ The results are non-significant for tree canopy, stem girth and tree height but found significant for no. of fruits per plant and fruit yield per plant and per hectare due to fertigation treatments.
- ♦ Treatment I₄ (100% RDF) being at par with treatments I₃ (75% RDF) recorded significantly higher fruit yield per hectare (16477, 21375, 25660 and 21171 kg/ha) during 2015-16, 2016-17, 2017-18 and in pooled, respectively.

Extension and demonstration schemes for irrigation funded by Sardar Sarovar Narmada Nigam Limited at sub center of Anand Agricultural

University viz. Thasra, Dhandhuka, Dabhoi and Khandha, organized 98 training programmes on campus and off campus on the subject of irrigation scheduling, method of irrigation and related aspects. In all 3761 farmers attended the training programme.

4.8 Agricultural Rural Development Studies

Rural development programme revolves around raising economic and social level of the rural people as the main objective.

Research in context with the above said objectives can throw some light in the direction of bringing rural development. Keeping this in view, research in extension education was conducted in the broad areas of: Adoption and diffusion of innovations, transfer of technology, role of mass media in dissemination of technology, impact of different programmes and centres on rural development, communication behavior of rural people/farmers, bench mark surveys etc.

Other Indicators

Anand Agricultural University (AAU), Anand signed MoU with different institutes during the year 2017-18 as follow.

Sr. No.	Name of Institute	Area
1	University of Alberta, Canada	Agril. Education and students' exchange programmes
2	Florida Agricultural & Mechanical University, Florida, USA	To establish cooperative relations in the areas of science, technology, research and agriculture (STRA) as well as faculty exchange program, student exchange program and capacity building
3	Margosa Biogrow India Pvt. Ltd., Vadodara	Transfer of liquid biofertilizer technology

4.9 Veterinary Science & Animal Husbandry

Research endeavor of various research projects under Veterinary Science & Animal Husbandry faculty has focused on two broad areas viz. Animal Production and Animal Health.

Animal Production Group

• Animal Genetics & Breeding

The department is known at national level for

its contribution in molecular characterization of indigenous livestock breeds. The department is actively engaged in molecular analysis of various lesser known livestock breeds like Kachchi donkey, Halari donkey, Kahmi goat, Nari cattle, Gujarat Malvi cattle etc by microsatellite markers, SNP genotyping and its association with reproduction traits related to infertility in cattle & buffalo. The department also performing whole genome sequencing of Gir cattle and



Jaffarabadi buffalo to identify the SNPs (single Nucleotide Polymorphism) related to production and reproduction traits. The department besides NDDDB is the only center in the state carrying out karyotyping and cytogenetic screening of breeding bulls for chromosomal aberration and for genetic diseases viz. BLAD, Bovine Citrulinaemia, DUMP, CVM and Factor XI deficiency.

Following two technical programmes were carried out

- ♦ 70 (26 cattle and 44 buffalo) animals including breeding bulls screened for karyotyping and chromosomal aberration. A total of 180 blood samples of indigenous as well as crossbred bulls screened for genetic defects (BLAD, Citrulinaemia, Factor – XI, DUMP and CVM), out of that 8 animals were found carrier for DUMPS.
- ♦ Identified some SNPs related to disease resistance and production by whole genome sequencing for the breeds of Gir cattle and Jaffarabadi buffaloes.

Department of Animal Biotechnology, College of Veterinary Science and Animal Husbandry, AAU, Anand carried our research work under following areas;

- ♦ Evaluation of carbohydrate active enzymes obtained from rumen through metagenomic analysis
- ♦ To evaluate oral supplementation of various enzymes harvested from rumen on productions in poultry
- ♦ Enrichment of rumen bacteria using various lignin rich diet
- ♦ Semen sexing in cattle.
- ♦ Whole Genome Sequencing and development of Allied Genomic Resources in Two commercially important Fish *Labeo rohita* and *Clarias*

batrachus

- ♦ Identification of “Molecular Portraits” in Squamous Cell Carcinoma of Horn in Kankrej (*Bos indicus*) Bullocks
- ♦ Controlling Enteric Pathogens of Poultry: Host/ Microbiota Interactions, Risk Assessment and Effective Management Interventions
- ♦ Host Transcriptomics and Gut Microbiome Analysis in Broilers with Contrasting Feed Conversion Ratio
- ♦ Cloning, Characterization and Functional Screening of Industrially Important Novel Cellulose Encoding Genes from the Bovine Rumen Microbial Community using Metagenomic Approach
- ♦ Functional metagenomics of camel rumen microbiome for novel key glycoside hydrolases (GH) to benefit animal nutrition and biofuels
- ♦ Metagenomic analysis of Paharai Cattle Rumen to identify microflora involved in low grade roughage utilization

Poultry Research Station

Poultry Research Station was established during the year 1964 under Institute of Agriculture. Since then the centre is actively engaged in Poultry Research, Extension and Education activities. Apart from this the centre is having poultry feed manufacturing unit which caters the need of experimental feed required for Anand centre. The centre is also imparting Poultry Training to unemployed youth for self employment. Poultry training centre is conducting three courses of 10 weeks duration in a year starting from first Monday of July, October & January. Since 1978 the activities of the research station have increased tremendously on account of establishment of ICAR project on AICRP on Poultry Breeding. Now, the centre is able to cater the need of the poultry farmers of Gujarat State



on various aspects of poultry farming through Poultry Training Centre, correspondence and advisory services provided to the farmers when they visit to the centre. The research station is also providing facilities and technical guidance for under graduate & post graduate students of various departments of the college and other Agricultural University of the State.

Reproductive Biology Research Unit

Research work on endocrinology of reproduction for different projects and PG students of various departments of the Veterinary College (Viz., Gynaecology, LPM, Physiology, Medicine etc.) are carried out. Research on embryo biotechnology (*IVF*/ Uterine environment studies) in buffaloes are carried out. Attempts to improve fertility in buffalo heifers and early pregnancy diagnosis in buffaloes are carried out. Extension activities viz., “*Mahila Pashupalan Talim Yojna*” is continuing with the financial support of GCMMF and “*Surti Buffalo Breeders Association*” with the financial help of Department of A.H., Government of Gujarat. These three facilities are only here in AAU, among four SAUs of Gujarat.

In the *Strengthening of RBR unit* scheme, work regarding Study on hormonal profile and ovarian conditions to validate *ITK* (Indigenous Traditional Knowledge) on feeding sprouted *moth* beans (*Phaseolus aconitifolius*) and *moong* beans (*Phaseolus mungo*) to pubertal buffalo heifers to hasten puberty was carried out. In experimental group, after feeding moth beans buffalo heifers exhibited estrus within 30 days and body wt. was 274.50 kg. (wt. gain 8.00 kg.) at the age of 27.58 months.

Under “*Mahila Pashupalan Talim Yojna*” a total of 26, One-week training programmes were conducted and 695 women were trained from April 2017 to March 2018. The work on “*Surti Buffalo Breeders Association*” scheme is mainly pertaining to the owners of Surti buffalo regarding training, field visit, calf rally etc.

Animal Nutrition Research Station

The department made immense contribution to the science of animal nutrition by contributing research papers in referred journals as well as recommendation for farmers and scientific community. The major research areas of the center are: Animal Nutrition Survey in different districts of Gujarat state, fodder production and utilization, nutrient requirements of animals, utilization of agro-industrial byproducts and waste materials, studies on evolving area specific mineral mixtures and strategies for feeding of livestock during scarcity period.

Currently the department is engaged in research work on formulation and evaluation of crop residue based total mixed rations for various categories of livestock, development of area specific mineral mixtures to correct deficiencies and Bypass Nutrient Technology and to develop the feeding strategies to minimize the methane emission in animals.

The work carried out during the year 2017-18 includes

- Study of nutritional status of dairy animals of Chhotaudepur district.
- Validation of findings of Nutritional status of dairy animals in Mahisagar District.
- Effect of supplementing Jivanti (*Leptadeniareticulata*) and bypass fat in total mixed rations on nutrient utilization and milk production of Surti goats.
- Effect of supplementing Fenugreek (*Trigonella foenumgraecum*) seeds in total mixed ration (TMR) of surti goats on nutrient utilization and milk production.
- Estimation of milk urea nitrogen (MUN) of lactating dairy animals.
- Development of area-specific mineral mixture formulations for Botad district.



- Development of feeding strategy to enhance body weight gain in surti kids.
- Studies on aflatoxin M1 level in milk of dairy animals in Anand District.
- Effect of methane mitigation on growth performance of crossbred calves through feeding legume straw based TMR.
- Study on the effect of different crop residues on methane emission in cattle.
- Analysis of macro and micro mineral content in mineral mixture marketed by different Companies.
- Assessment of quality of compound cattle Feed (Proximate Analysis) available in market
- Studies on effect of different SSF Biomass in TMR on digestibility of nutrients and rumen fermentation in small ruminants.

Livestock Research Station

Livestock Research Station, CVSc&AH, AAU, Anand working on to develop crossbred dairy herd with 75% HF and 25% Kankrej inheritance, management problem of such crossbred, to generate reliable data and to supply superior genetic materials to breeding agency. Introduction of mechanization on dairy farm, Conservation and improvement of Kankrej cattle along with innate immunity, disease resistance and to identify β -casein variant (A1 & A2) in indigenous cattle of Gujarat are major area of work. Improvement in milk yield of cows, control of TB and JD diseases, adaptation of indigenous cattle to pipeline milking machine, A1A2 typing of β -casein are salient achievement of this research station.

Animal Health Group

Veterinary Pathology

During the year under carcass Collection Scheme, 71 carcasses of animals and 2646 carcasses of layer type birds were received for postmortem

examination. Histopathological diagnosis was given in 655 tissue specimens received from various parts of Gujarat State. The scheme was useful to the farmers and field veterinarians as they were provided diagnostic services and advice for prevention and treatment of animal and poultry diseases. The scheme also provided useful material for undergraduate and postgraduate teaching for better understanding of the subject of Veterinary Pathology. A total of 7587 carcasses of broilers were received for postmortem diagnosis under the Etiopathological Studies on mortality in broilers and major disease conditions were recorded. The poultry farmers were provided guidelines for prevention, treatment and control of disease in broilers.

Department of Veterinary Microbiology

The Department has 3 AAU funded Research Schemes (Non-plan) viz., Central Disease Research Station (Bacterial), Diagnostic Centre for Mastitis and Research Centre for Viral Diseases. The department has under taken AGRESCO approved two research projects, in addition to the diagnostic services being provided for various bacterial, viral and fungal diseases of animals and birds.

Veterinary Physiology & Biochemistry

This department is engaged with analysis of various clinical samples coming from different villages of Anand district and also from college clinic and from dairy. Physiological, biochemical, hormonal and hematological detail of animals evaluated. Department having some international and national publication.

Livestock Production Management

This department is pioneer in India in the establishment of LFC (previously known as Instructional Farm) with the financial assistance from ICAR for imparting practical training to students. The farm has (a) **cattle unit** (Kankrej, Gir, Sahiwal, Tharparkar, Rathi & HF x Kankrej crossbred) (b) **Sheep unit** (Marwari, Patanwadi, Dumma, Deccani



and Merino x Patanwadi crossbred, Avikalin, Magara, Russian Merino) (c) **Goat unit** (Marwari, Zalawadi, Kutchhi, Sangamneri & Surti,) (d) **Equine unit** (Kathiawadi horses) (e) **Rabbit unit** (Newzeland white) (f) **buffalo unit** (Surti, Meshana, Jaffarabai and Banni) Fodder production unit with 10 hectares of land. The Instructional farm generates a sizeable income of 11 to 12 lacks per annum.

Veterinary Surgery & Radiology

A total of 4127 major / minor surgical interventions / radiographic examinations/ wild life/ emergency/ambulatory treatments were done in the Department of Surgery & Radiology. 2112 Emergency cases were also referred and treated at department. Camps and expertise services were provided to farmers of different districts, A. H. Department, Gujarat State and Co-operative dairies and forest department as and when required.

Veterinary Public Health

During the period under report, a total of 387 samples were processed in the department comprising of skin scrapings/hairs/nail lesions (128), raw milk samples (104), diarrhoeal samples of buffalo calves and human beings (155).

Analysis of 387 samples was processed to study prevalence of Dermatophytosis, *Coxiella burnetii* and detection of group A rotavirus by employing standard microbiological techniques. In present study, 128 samples of skin scrapings/hairs/nail lesions from affected animals and human beings were screened by standard techniques for prevalence of Dermatophytosis. Analysis of 128 samples, comprising of 52 from cattle, 22 from buffaloes, 18 from dogs and 36 from human beings. The prevalence of dermatophytes in human and animals were recorded 33.33 % (12/36) and 32.61% (30/92), respectively. Among the Dermatophytes the maximum isolates were *Trichophyton verrucosum* 16.41% (21/128) followed by *Trichophyton rubrum* 6.25% (8/128), *Trichophyton mentagrophytes* 5.47% (7/128) and *Microsporum*

canis 4.69% (6/128). Isolation rate for Sabouraud's Dextrose Agar (SDA) and Dermatophyte Test Medium (DTM) was 27.34 % (35/128) and, 32.81% (42/128), respectively. The efficiency of DTM was found better than SDA. The prevalence of *Coxiella burnetii* was studied by I- ELISA in the 104 raw milk samples which collected from 82 cattle and 22 buffaloes from organized farm in and around Anand. Overall 28.85% (30/104) prevalence was observed comprising of 28.05% (23/82) in cattle and 31.82% (07/22) in buffaloes, respectively. A total of 155 diarrhoeal samples were screened for group A rotavirus. Out of the 155 samples, 100 from buffalo calves aged less than 3 months and 55 from children of aged under 5 years who had presented with acute watery diarrhoea. Out of 155 samples, 12(7.74%) samples were found positive by Double antibody sandwich enzymatic immunoassay (DAS- ELISA) and 3 (1.94%) were found positive by Reverse transcriptase polymerase chain reaction (RT- PCR) in animal population. None of the children diarrhoeal samples was found positive by both the methods.

Veterinary Pharmacology & Toxicology

The research is undertaken on the areas like indigenous medicinal plants, toxicology of xenobiotics, pharmacokinetics of drugs. Provide guidance and information to field veterinarians.

Department of Animal Reproduction, Gynaecology and Obstetrics

Under 'Cattle Infertility Scheme' studied the causes of infertility in bovine by attending 277 cases at College Clinic. The portable USG Unit was used for diagnosis of early pregnancy in cattle and buffaloes as well as for diagnosis of pregnancy/pseudo-pregnancy/pyometra in canine/goat/mares with the total of 179 cases examined. Under the scheme 'Imparting Education on Semenology & Frozen Semen Technology to the Students and Field Veterinarians, a total of 626 semen ejaculates were obtained from 11 bulls (1 Pure HF; 1 HFxK F1; 3 Gir and 3 Surti and 3 Murrah buffalo) and were evaluated macro- and micro-



scopically. Findings of the research project entitled 'AICRP on Nutritional and Physiological Interventions for Enhancing Reproductive Performance in Animals' revealed that both the PRID+PMSG and Doublesynch protocols were equally efficacious in terms of estrus induction and conception in anestrus and cyclic repeat breeder cattle and buffaloes; optimum feeding right from calf hood improves growth rate, body weight and thereby enhances early onset of puberty in both crossbred cattle and Surti buffalo heifers. Further, a peripartum supplementation of multi-minerals (100 g) and bypass fat (100-250 g) for 90 days overall and above routine farm feeding also enhanced uterine involution and improved postpartum fertility as well as milk production in Jafarabadi buffaloes.

4.10 Dairy Science

Dairy Technology Department

The department submitted two recommendations viz. "Study on use of *mulberry* in development of natural ice cream" and "Development of value added buttermilk, *dahi* and ice cream containing drumstick" (In collaboration with Dairy Microbiology Department). The dairy technology department has focused research on (i) Value addition to dairy products through use of membrane processed dairy ingredients, and (ii) Developing mozzarella cheese analogue based on casein(s) and vegetable/milk fat.

Dairy Chemistry Department

The Dairy Chemistry Department carry out research activities in three plan research projects and two other agency project. In a plan project on development of methods for detection of adulterants, the MIR and NIR spectra of *ghee* samples were acquired in reflection and transmission mode respectively. Selected qualitative tests for detection of common adulterants in milk were optimized. In a plan project on natural food additives, the comparison of effectiveness/antioxidant potential of common culinary spices such as ginger, nutmeg, clove and

turmeric with synthetic antioxidant (BHA) in *ghee* was carried out. In the plan project of whey utilization, whey based medium for biomass production of lactic acid bacteria was developed. Further, synbiotic sherbet candy was prepared using paneer whey. In other agency projects, the compilation of the data of project entitled "Evaluation of MilkoScreen for its efficacy in analysis of Milk" was carried out.

Dairy Microbiology Department

- ♦ The Dairy Microbiology Department is a partner in a collaborative project on development of technology for the preparation of fermented rice beverage in Meghalaya and evaluation of its functional properties, DBT, GOI, (BH: 18457-74).
- ♦ The Dairy Microbiology Department is also a partner in a collaborative project on "Bio-prospecting of lactic culture from North Eastern region to develop functional fermented soya foods with potential health benefits" with North Eastern Hill University (NEHU), Tura, Meghalaya which is financed by DBT, New Delhi.
- ♦ The Dairy Microbiology Department has a GSBTM sponsored project on Bioprospecting of oxalate degrading lactic acid bacteria to develop a functional product with potential in preventing kidney stone disease, GoG (BH: 18457-71)
- ♦ The Department supplied the dairy cultures to private entrepreneurs, educational institutions and dairy industry on several occasions.
- ♦ The department is a partner in the project on VTCC (Dairy Microbes) funded by ICAR and characterization of 24 isolates was carried out up to morphological and biochemical level.
- ♦ The department came up with three recommendations, one for industry and two for scientific community which are mentioned below.
- ♦ A total of 19 samples were collected and 120 isolates were picked up for further



characterization. Among the isolates tried for selection of starter cultures, NK6+NS4 (*Lactococcus lactis* + *Lactobacillus rhamnosus*), culture MD2+NS6 (*Streptococcus thermophilus* + *Lactobacillus rhamnosus*) and culture NK6+NS6 (*Lactococcus lactis* + *Lactobacillus rhamnosus*) were found to be very good for preparation of fermented milk products such as *dahi* and butter milk.

- ♦ Lactic acid bacteria with oxalate degradation potential has been isolated
- ♦ Project on 'Evaluation of Exopolysaccharide (EPS) and non EPS producing strains of lactic acid bacteria for production of *dahi*' is concluded. *Dahi* with good texture and sensory qualities can be prepared by using combination of EPS and Non-EPS producing cultures such as combinations of cultures of *Streptococcus thermophilus* and *Streptococcus lactis* in the proportion of 75: 25 and combination of cultures *Lactobacillus helveticus* MTCC 5463, an EPS producer and *Streptococcus thermophilus* MTCC 5460 in proportion of 50:50. The products packaged in polypropylene cups had a shelf life of 21 days at refrigerated temperature ($5\pm 2^{\circ}\text{C}$).

Dairy Engineering Department

The R&D activities of Dairy Engineering Department are directed towards process mechanization of Indigenous Dairy products, mathematical modelling for many unit operations and many need based research projects. Some of the important Technologies/equipment developed are indicated below.

- ♦ Development of batch type khoa making machine.
- ♦ Design and development of continuous *Basundi* making machine.
- ♦ Development and performance evaluation of scraped surface heat exchanger for Design and Development of inert spouted bed dryer for

drying of milk.

- ♦ Development of mathematical model and its utility in design of laminar air flow systems.
- ♦ Analysis of various unit operations through mathematical modeling and energy conservations in dairy processing operations.
- ♦ Development of pilot model for development of pilot model for Sandesh making machine
- ♦ Design and development of laminar air flow unit.
- ♦ Design and developed various equipments to perform different unit operations for dairy industry using renewable source of energy.

4.11 Agricultural Engineering and Technology

The six departments of the college, i.e., Soil & Water Conservation Engineering (SWE), Farm Machinery & Power Engineering (FMPE), Renewable Energy Engineering (REE), Processing & Food Engineering (PFE), Irrigation & Drainage Engineering and Basic Engineering & Applied Sciences are to develop site specific or area specific technologies for progressive farming with enhanced returns through efficient management & utilization of natural resources (land, water, vegetation and energy), agricultural mechanization, agricultural processing and post-harvest technology. During the year all the six departments carried out research work on different topics. Study on farm machines like maize sheller, planters, weeders, sprayer maize cob dehusker, combined tillage tool and harvester as well as vibration on tractors, canal scheduling, rainfall forecasting, drip irrigation in maize, moisture sensor, seed properties, light intensity effect on rose, post-harvest techniques for custard apple, maize cob drying & angle of repose measurement for grains, biomass combustion drying systems for ginger and turmeric and multipurpose solar food processor was carried out by different departments.



4.12 Food processing Technology and Bio Energy

Developed production technologies/processes of high quality cardamom using cryogenic grinding, vacuum drying for *Moringa oleifera* leaves, accelerated drying of Aonla segments using pulsed osmotic microwave vacuum dehydration, juice extraction from wood apple fruit, preservation technique to store idli batter, bioethanol production from potato processing starch waste by thermotolerant strain of *Saccharomyces cerevisiae* ETGS1, production of bio-manure granules from digested slurry of biogas plant, eco-friendly mobile vending cum storage system for fruits and vegetable, mechanized *kajukatli* production systems and development of arduino powered Delta robot for handling of food product and new products such as whey based RTS beverage from muskmelon and lime, pumpkin carotenoid fortified ice cream and low fat spread.

4.13 Agricultural Information Technology

- This institute prepares human resources in the field of Agriculture Information Technology (AIT) as a tool to sharpen the edges of the agriculture structure in the country. It takes the onus to develop and hone the sector and its changing environment. College/Faculty is equally involved in IT related agricultural research projects recently approved by AGRESCO committee which are as under :
- Web-Based Application for Combined Analysis of Variance
- Annual Award Module for Colleges of AAU and integrate in student corner
- Transformation of Information through Multimedia based Interactive media for Mungbean Crop
- Transformation of Information through Multimedia based Interactive media for Maiz Crop
- Asset Mapping of Anand Agricultural University

(Geo-tagging)

- Web Base Application: Student Information management system (SIMS) for School of Bakery

4.14 Information Technology Center

The Information Technology Center at Anand Agricultural University caters to the demand for the use of Information Technology in the field of agriculture for the State Agricultural Universities of Gujarat. On inclusion in various committees of the university, the Director, IT took several measures to carry forward the IT activities at various levels. During the year, substantive work was done not only in the technical or administrative matters of ITC, but also pertaining Network problems at all the four universities.

Projects developed during the year

♦ Web Based AGRESCO Project Information & Monitoring Management System

The system can be a framework to track the progress of a project and help to increase its success rate. User can create new team, projects and will be able to select the multiple team members i.e. users for the particular project. Users can add tasks to the assigned project. User will allow uploading different kind of files like audio, video, text file etc. related to their task. System can enable the team to track the status of the project.

♦ Web Based Information Management System for Planning and Budget Processes

Online information management for planning and budget helps to dynamically manage the budget and planning details for fiscal year. System provides the transparent environment and increases the accuracy of data. The system will store the data related to the pay allowance, recurring, non-recurring, salary details of employee, Income and Expenditure, nonrecurring item, salary plan details fiscal year wise. Unit head will be able to download the different kind of reports as per their needs.



♦ **Web Based Complain Management System for IT Related Services at AAU**

This system will be helpful to keep the track of IT software related complain and their services. Users from the different department can generate a token and submit a complain related to software and complain will be tracked and solution will be provided within the timeframe.

♦ **Decision Support System for Plant Protection**

This system will be helpful to store the details of insecticides in regional language. System will store the chemical insecticides information, crop insecticides information and insect insecticides information. The information provided will help the users to select the most effective management methods/treatment and the best time to use the insecticides.

♦ **Web Based System for Enrolment of Post Graduate Students (Campus Form) – Adding A New Module in Post Graduate Information System**

This system stored and manages all the information of campus form used for certification of PG students. System will store the information of different courses, subjects and their credit (theory and practical), major – minor guide details etc. System will allow the students to enter the details of courses, subjects and credits semester wise, etc.

♦ **GEA – Mobile App - Emergency Alert Mobile Application for Hostelite Girl Students of SAU's of Gujarat)**

This app will be designed keeping in mind the concept of personal safety of girl students of State Agricultural Universities. It incorporates the essential features such as GPS tracking, emergency contact numbers. This system will provide the automatic alerts to the hierarchy of

emergency contacts and transmission of GPS-determined location with just a tap of a button. The app will be equipped with buttons like high, accidental, teasing or medical emergency. By clicking on particular button, it will send alerts by SMS and EMAIL to a preconfigured number along with your location and a link of Google Map.

4.15 Fisheries Science

In order to create awareness among the farmers for adopting fish farming and to utilize available resources in a fruitful manner for generating employment opportunities in rural youths, trainings have been imparted at grass root level by imparted identified fisheries thrust areas on the basis of Inland Fisheries Resources and fish production of middle Gujarat. It has been found out that there are certain needs of the training and encourage farmers for fish farming through Fish seed rearing at village tank, carp breeding and hatchery management, Composite fish culture through village pond and fresh water prawn culture management. One training programme was conducted in the subjects of Freshwater Aquaculture techniques for village ponds in which total 50 farmers were trained. Under extension activities, celebration of National Fish farmers' Day, participation in goathies, one exhibition, one field day, 21 field & diagnostic visits, 41 farmers visit to center, 2 lectures delivered, 2 press note and 56 advisory services have been carried out in this year. One collaborative research study with RRC, ICAR-CIFA on "Evaluation of optimum stocking density for nursery rising of *Labeo rohita* Spawn under Hapa system (Multi-location trial) in village ponds of middle Gujarat" was carried out.

4.16 Food Science and Home Economics

Polytechnic Food Science and Home Economics is actively involved in research work apart from teaching and extension. During the year, two ongoing research projects were carried out by the polytechnic as follows.



Ongoing projects

- ♦ Extension of shelf life of bread using suitable ingredients.
- ♦ Development of antidiabetic and antioxidant rich health drink and cookies using garden cress seed (*Lipidiumsativum*).

New projects

- ♦ Development of high fiber bakery products viz. bun, cookie, bread and cake using *Madhukaindicaflores*.
- ♦ Development of high fiber cookies using tomato pomace.
- ♦ Womens' empowerment and nutritional status of their children in Dholka and Anand taluka

4.17 Agricultural Meteorology

The following research work was carried out during the reporting period.

- ♦ **Crop weather relationship and crop growth simulation modelling of *kharif* pearl millet.**
- ♦ Higher straw yield, earhead length and grain weight per ear played significant role in obtaining highest grain yield of pearl millet under onset of monsoon (27/06/2017) sowing and 10 days after first sowing (07/07/2017).
- ♦ Higher straw yield, earhead length, grain weight per ear and test weight played significant role in obtaining highest grain yield of pearl millet under variety GHB744.
- ♦ **Development of weather based models for predicting outbreak of mustard aphids**
- ♦ Flowering to seed development phase is the most crucial time for aphid infestation.
- ♦ Aphid occurrences observed during flowering to seed development phase found to least affected

by variation in weather parameters.

- ♦ Mustard yield restricted to <1500 kg/ha when aphid population is higher than aphid index value 1.7
- ♦ Sowing on 10th October and 20th October found most appropriate for more production and escaping high aphid intensity in mustard.
- ♦ **Crop growth simulation modeling and crop weather relationship of wheat**
- ♦ Higher straw yield, harvest index, test weight, number of tillers per plant, grain weight per ear head, number of spikelets per spike and plant height played significant role in obtaining highest grain yield of wheat under 15th to 30th November sowing.
- ♦ Long photoperiod (BSS) is associated with low productivity.
- ♦ Wheat yield is associated with the weather experienced by the crop during CRI to flowering growth period.
- ♦ Simulations made by DSSAT v4.6 were average to poor for wheat phenology, growth and yield of all cultivars. The models performance may improve with rigorous calibration with more seasonal data.

AICRP- NICRA

The Weather based Agro-Advisory Bulletins were prepared considering the stage of standing crops and IMD weather forecast with technical input received from Subject Matter Specialist of KVK Mangalbharti, Golagamdi, Sankheda. The bulletins were disseminated through personal contact, panchayat notice board, Newspaper etc. During the year total 88 Weather based Agro-Advisory Bulletin has been prepared and issued to the farmers. During the year total 92 weather based Agro-Advisory Bulletin has been prepared and issued to the farmers.



The feedback for the advisories reflected that majority of the farmers are very cautious regarding pest and diseases outbreak in their crops. For majority of the farmers, rainfall and temperature forecasts are most crucial to them and they were interested in a detailed advisory on plant protection measures for cotton and paddy crops.

IMD-FASAL

♦ Development of yield forecasting models based on weather parameters.

The actual yield data for the crops for which forecast is supposed to issue was collected from Directorate of Agriculture, Gandhinagar and weather data from the agro-meteorological surface observatories situated in respective districts. The mid-season and pre-harvest crop yield forecast of *kharif* cotton for Vadodara and Sabarkantha districts was given. For *rabi* season the forecast for wheat (Anand, Kheda, Panchmahal, Dahod, Banaskantha, Bhavnagar Sabarkantha and Vadodara), mustard (Banaskantha and Sabarkantha) and potato (Banaskantha, Sabarkantha and Kheda) crop was given for year 2017-2018 and remained to validate.

SMAP (SAC-ISRO-AAU JOINT STUDY)

♦ Calibration and Validation of SMAP Soil Moisture over Semi-arid Agricultural Patches in Gujarat

Temporal relation of soil moisture and satellite backscatter for different region will be valued and soil moisture can be estimated which can further be utilized for irrigation if temporal data is available.

SCATSAT-1 (Collaborative project with SAC-ISRO)

♦ Utilization of project on Rice Productivity from SCATSAT-1 Data

NDVI of MODIS and ratio of SCATSAT HH and

VV pol data will be evaluated. Regression model will be developed based on yield data of Rice area.

Forecasting sugarcane Production (SAC-ISRO-AAU JOINT STUDY)

♦ Forecasting sugarcane Production at mill catchment in Bharuch, Gujarat with remote sensing and ancillary information

- ♦ Base map preparation of sugarcane catchment area of the sugar mill and prepare GIS map for sugarcane and ratoon crop of the catchment area along with mill officials.
- ♦ Crop cutting experiments in selected samples for biomass estimation of fresh and ratoon crops. Analysis of field data and development of statistical relationship between crop parameter measurements and Remote Sensing data
- ♦ Study of high-resolution RS data with sugarcane crop parameters for determining relations of RS based indices like LSWI, NDVI etc.
- ♦ Generation of crop biomass model and spatial map of crop biomass. Validation with field data.
- ♦ Development of a model for sugar content from sugarcane crop biomass at catchment level.

Decision Support System (DSS)(SAC-AAU JOINT STUDY)

♦ Development of a Decision Support System (DSS) for planning storage infrastructures and Supply Chain Logistics

The Ministry of Food Processing Industries (MoFPI) plays a major role in reduction of the wastage of perishable agricultural produce that are not covered with Minimum Support Price (MSP), enhancing shelf life of food products, ensuring value addition to agricultural produce, diversification & commercialization of agriculture, generation of employment, enhancing



income of farmers and creating surplus for the export of agro & processed foods. In the light of above it is pertinent to do better utilization and value addition of agricultural produce for enhancement of income of farmers by minimizing wastage at all stages in the food processing chain by the development of infrastructure for storage, transportation and processing of agro-food produce. Remote sensing inputs and geospatial technology are proposed to be used for infrastructure and planning for supply chain logistics in India. The distribution of different produce from surplus to deficit areas routing through 'Cold Chain' and 'Mega Food Park' can be done using network analysis components. The satellite remote sensing data will be a valuable input for 'Food grid' generation for potato, tomato and onion. The space based inputs would strengthen the planning and management of augmentation and expansion of food processing and storage infrastructure projects taken up by the Ministry. Towards establishing cold chain and food parks, the production centres for perishable foods are categorized viz, Fruits & Vegetable, Dairy, Inland and Poultry, which can be considered for evaluating future investment potential. This work plan is mainly focusing towards geographic information system (GIS) based standalone software development for modules likes network analysis, gap area & service area, weather advisory and site suitability for setting up post-harvest infrastructure all of which will requires certain parameters derived from space and field information on a pilot study. The work will include organising the database of food processing industries and storage facilities, major crop grown areas, current and weather forecast data, high-resolution grid-wise yield forecast, transport network, socio-economic data, census data, extent of electrification, land use & land cover, digital elevation model (elevation, slope, aspect), soil type, meteorological data

(rain, temperature) and other related ancillary database. Such datasets will be required for testing and executing the proposed development of decision support system in order to assess the quantity, time, and place of requirement, place of availability of farm produce and their optimal routing / movement in the country.

- ◆ Decision Support Software (DSS) Source Code and Executable.
- ◆ User Manual of the DSS.

Sensor system studies for the GISAT

- **Land Surface Albedo estimation from Agriculture using GISAT data**

In order to achieve the above objectives, Anand district was selected as the study area. Initially GISAT equivalent satellite data product collected from MISR sensor, which captures earth's geometry in nine different view directions at four distinct bands (blue, green, red and near-infrared) at a resolution 275 meter over Anand district in local mode over a period of one year from December 2015-2016. The MISR data requires lengthy pre-processing involving block to imagery conversion, stripping data and quality indicator values, removing fill values etc. The Radiance may be obtained from the Radiance/RDQI by right-shifting 2 bits, then multiplying the result by the scale factor (radiometric) contained in the Radiance Grid Metadata. The processing was done to generate 36 (9 angles x 4 bands) radiance imagery for each satellite pass. Then 60° aft data and backward data was taken into consideration. And the Aft data was subtracted from the backward data. The Aerosol Reflectance Difference (ARD) was calculated for 60° image with the following equation:

$$\text{ARD} = 0.00350114 * \text{Difference Image} + 0.00278346$$

Finally the Aerosol Optical Depth (AOD) images



was calculated from the ARD images produced by the following equation:

AOT=

$$13.561329 (ARD)^2 + 3.797385 (ARD) + 0.020967$$

Currently validation of this product is being done with the ground truth data collected in the earlier phase over the same temporal period and MODIS AOD product also acquired so as to see the agreement between the spatial and temporal variation of the data. This entire work is significant to this project since it will help us to view the equivalent AOD product of GISAT.

Conclusion

Under the project, Bidirectional reflectance (BRF) data were acquired for wheat canopy using Spectro-Goniometer setup to validate with corresponding albedo measurement of wheat. Further, canopy radioactive transfer model PROSAIL is used to simulate BRF in GISAT bands to evaluate the simulated albedo with measured value.

- ♦ **Calibration and validation of SUBSTOR model (DSSAT 4.6) for three cultivars of potato under different sowing time and variety.**
- ♦ **Effect of sowing dates:** Results revealed that days to emergence, days to tuber initiation, number of tuber per plant and straw yield were found significantly affected by different date of sowing while days to maturity and maximum leaf area index were found non-significant. Days to emergence, days to maturity, and number of tuber/plant, tuber yield and straw yield were found highest in D2 sowing except to days to tuber initiation and maximum leaf area index.
- ♦ **Effect of Variety:** Data further showed that phenology, tuber yield and all attributing correctors (Emergence, days to tuber initiation,

days to maturity, and number of tuber/plant, tuber yield, straw yield and maximum leaf area) were significantly influenced due to various varieties/cultivars. Highest tuber yield, straw yield and number of tuber/ plant were observed in V_1 as compared to V_2 and V_3 .

- ♦ **Interaction:** Interaction effect of sowing dates and varieties on days to tuber initiation and straw yield were found to be significant. Treatment combination D_1V_1 recorded highest days taken to tuber initiation while highest straw yield was recorded in treatment D_2V_1
- ♦ **Prediction of Monthly Rainfall of Anand using Double Fourier series**

To predict monthly rainfall of the year 2012 to 2017 by Double Fourier series model, due to climate change input data series must be used from 1989 to 2016 and omit earlier data from 1958 to 1988. Predictions were with greater accuracy and obtained PE was less than 10% in the month of June to September for the year 2017.

4.18 Seed Production

Ensuring quality of seeds to farmers, Anand Agricultural University has registered its trademark and logo of “ANUBHAV SEED” with the Trademark Registration Authority of India. All the seed producing centres/units of Anand Agricultural University, Anand is well equipped with seed production machinaries required for all operations starting from land preparation to harvesting. The total seed production of the year 2017-18 is **5726.46** quintals showing nearly two and half times increase over the year 2004-05 (2247.83 quintal). The seed processes and seed testing facilities have been made available, which has boosted the efforts of seed quality assurance.



Seed and Seedling production

AAU seed production 2017-18 (Quintals)

Sr. No.	Crop	Nucleus/ Parent	Breeder	Foundation	Certified	T/L	Total
1	Paddy	6.040	158.45	1027.40	1163.30	489.90	2845.09
2	Maize*	—	99.00	22.40		35.90	157.30
3	Wheat*	—	175.00	48.20	865.30	504.50	1593.00
	Pulses						
4	Green gram*	—	8.00	—	—	45.55	53.55
5	Gram*	2.530	25.00	80.00	119.00	112.60	339.13
6	Pigeonpea	—	2.25	—	—	22.50	24.75
	Oilseeds						
7	Castor (Hy.)	—	—	—	—	214.50	214.50
8	Groundnut	—	75.30	—	—		75.30
9	Soybean	0.030	15.20	14.50	59.30	54.49	143.52
10	Sesamum	—	—	—	—	1.30	1.30
	Cash/ Other crops						
11	Cotton*	2.450	37.93	—	—	13.10	53.48
12	Tobacco	0.110	—	—	—	38.26	38.37
13	Cluster bean (Seed)	—	—	—	—	7.55	7.55
14	Sunhemp	—	—	—	—	11.60	11.60
	Forage crops						
15	Lucerne*	0.860	10.50	—	—	7.00	18.36
16	Oat*	4.000	75.00	—	—	14.00	93.00
17	Rajka-Bajra	—	—	—	—	3.90	3.90
18	Sorghum	—	—	—	—	11.14	11.14
19	Maize Fodder*	—	—	—	—	2.30	2.30
	Total (Field crops)	16.020	681.63	1192.50	2206.90	1590.09	5687.14
	Vegetables						
20	Cluster bean (Veg.)	0.150	4.000	—	—		4.150
21	Pigeonpea(Veg.)	0.050	—	—	—	4.000	4.050
22	Cowpea (Veg.)	0.090	1.000	—	—		1.090
23	Chilli (Veg.)	0.020	0.240	—	—	0.310	0.570
24	Brinjal	0.010	—	—	—	1.520	1.530
25	Okra	0.030	0.350	—	—	3.840	4.220
26	Tomato	0.007		—	—	0.060	0.067
27	Bottle gourd	0.020	0.010	—	—	0.210	0.240
28	Cucumber	0.005	—	—	—	0.130	0.135
29	Pumpkin	0.010	—	—	—	0.040	0.050
30	Ridge gourd	0.010	—	—	—	0.070	0.080

Sr. No.	Crop	Nucleus/ Parent	Breeder	Foundation	Certified	T/L	Total
31	Drumstick	–	–	–	–	0.020	0.020
32	Indian bean	0.020	–	–	–	–	0.020
33	Musk melon	0.005	–	–	–	–	0.005
34	Onion	0.005	–	–	–	–	0.005
Spices (Seed)							
35	Cumin	–	–	–	–	11.070	11.070
36	Dill seed	–	0.010	–	–	5.650	5.660
37	M & A plants seed	–	–	–	–	6.360	6.360
Total (Horti. Crops)		0.432	5.610			33.280	39.322
Grand Total		16.452	687.24	1192.50	2206.90	1623.37	5726.46

Planting material production of AAU, 2017-18

Seedlings and Planting materials (Lakhs)		Nos.	Seedlings and Planting materials (Lakhs)		Nos.
1	Tobacco	18.70	Horti. Seedlings/ planting material		
2	Napier/ Gajraj rooted slips	2.50	Fruit Planting materials		
Total		21.20	8	Chandan/ Rayan plant	900
Tissue cultured plants (Nos.)			9	Kagzi Lime/ Sarbati lime plant	7000
1	Date palm	450	10	Cashewnut plants	260
2	Parval	5500	11	Rangooni badam plants	14000
3	Stevia	2500	12	Custard apple plants	760
4	Kankoda	1600	13	Guava plants	10
5	Pomegranate	1050	14	Phalsa plants	470
Total		11100	15	Jambu plants	960
Veg. Seedlings/ planting material (Lakhs)			16	Drumstick plants	3100
1	Brinjal	1.23	17	Jackfruit plants	500
2	Chilli	3.59	18	Karamada/ Gunda plants	2200
3	Tomato	0.10	19	Fruit plants bud sticks	800
4	Onion	0.05	20	Other plants of fruits	1170
Total		4.97	Total		35650
Horti. Seedlings/ planting material			Flowers And Ornamental Plants (Nos.)		
Fruit Planting materials			1	Rose (Deshi)	16899
1	Sapota grafted	150	2	Mogra	2502
2	Mango grafted	640	3	Ixora	890
3	Custard apple grafted	1700	4	Bogain vellia	2499
4	Jambu / Bijora grafted	40	5	Chrysanthemum	2003
5	Guava grafted	730	6	Jasud	1274
6	Pomegranate/ Mulberry grafted	50	7	Chandan	143
7	Fig/ Litchi/ Cherry grafted	210	8	Climbers different types	1606



Planting material production of AAU, 2017-18 (contd..)

Flowers And Ornamental Plants (Nos.)			Medicinal & aromatic plants (nos.)		
9	Seasonal flower seedling	3392	12	Lsanvel	87
10	Seasonal seed packet	514	13	Putranjiva	49
11	Plants of different types	32353	14	Sindur	130
12	Trees of different types	5394	15	Mithi limadi	139
13	Potted plant (big)	780	16	Anantmul	123
14	Potted plant (medium)	521	17	Citronella grass	96
15	Hanging Basket	64	18	Parijat	120
16	Plastic pot (big size)	5	19	Chavs	185
17	Chrysanthemum seedling	25000	20	Dam Vel	102
18	Marigold seedling	36500	21	Karmada	468
19	Gaillardia seedling	2000	22	Fudino	108
20	Seasonal seedling others	22650	23	Closimum	82
21	Bouquets	378	24	Aradusi	97
22	Loose flowers (kg)	225	25	Sitafad	32
23	Cut flowers	1136	26	Riceplant	254
Total		158728	27	Safed chitrak	177
Medicinal & aromatic plants (nos.)			28	Baheda	123
1	Madhunasini	125	29	Safed musali	151
2	Jammulemon grass	388	30	Ajamapan	102
3	Tulsi	562	31	Lindi pipar	72
4	Parnfuti	272	32	Ashwgandha	141
5	Cuttings	245	33	Brahmi	165
6	Dodi	4736	34	Kalmegh Seedling	35000
7	Satavari	461	35	Lajavanti	77
8	Rajani gandha	194	36	Arjun	136
9	Galo	337	37	Safed Shankhaval	125
10	Kuvarpathu	4202	38	Others	947
11	Hadsakad	140	Total		50950



College of Horticulture, AAU, Anand



College of Agricultural Engineering and Technology, AAU, Godhra



College of Agricultural Information Technology, AAU, Anand

Chapter - 5

EXTENSION EDUCATION

The Directorate of Extension Education has to plan, coordinate, organize and guide the extension education programs in the University and to ensure efficient working of the extension education activities in close coordination with the development departments, voluntary and private organizations. Moreover, this Directorate encourages, guides and supports the extension education centres of the University to organize different extension education activities for the benefit of farming community.

Extension Education Council

The Extension Education Council has been constituted to consider and recommend the extension education programs/activities of the University. The Tenth meeting of the Extension Education council was held on 01/11/2017 at Yagnyavalkya Hall, AAU, Anand under the chairmanship of Dr. N. C. Patel, Hon'ble Vice Chancellor, AAU, Anand. The following members of Extension Education Council actively participated in the meeting.

1	Dr. N. C. Patel, Vice-Chancellor, AAU, Anand	Chairman
2	Dr. K. B. Kathiria, Director of Research & Dean, PG Studies, AAU, Anand	Member
3	Dr. K. P. Patel, Dean, Faculty of Agriculture, AAU, Anand	Member
4	Dr. A. M. Thaker, Dean, Faculty of Vety. Science, AAU, Anand	Member
5	Dr. Y. C. Zala, Principal & Dean, International Agri-Business Management Institute, AAU, Anand	Member
6	Dr. J. B. Prajapati, Dean, Faculty of Dairy Science, AAU, Anand	Member
7	Dr. K. P. Patel, Principal & Dean, College of Horticulture, AAU, Anand	Member
8	Dr. R. F. Sutar, Dean, Faculty of Food Processing Tech. & Bio-energy, AAU, Anand	Member
9	Dr. R Subbaiah, Principal & Dean, College of Agricultural Engineering & Technology, AAU, Godhra	Member
10	Dr. R. S. Parmar, Principal & Dean, Agricultural Information Technology, AAU, Anand	Member
11	Dr. N. B. Chauhan, Professor & Head, Extension Education Dept. BACA, AAU, Anand	Member
12	Dr. Arun Patel, Director, Extension Education Institute, AAU, Anand	Member
13	Shri H. B. Parekh, Represntataive of Director of Horticulture Gujarat State, Gandhinagar	Member
14	Dr. S. M. Patel, Represntataive of Director of Animal Husbandry, Gujarat State, Gandhinagar	Member
15	Dr. H. B. Patel, Associate Director of Extension Education, DoEE, AAU, Anand	Member
16	Dr. B. M. Mehta, Senior Scientist, KVK, Mangalbharati, Dist.Chhotaudepur	Member
17	Shri S. U. Zala, Represntataive of Senior Scientist, KVK, Dethali, Dist.Kheda	Member

18	Shri G. K. Bhabhor, Represenataive of Senior Scientist, KVK, AAU, Dahod	Member
19	Dr. Girish J. Patel, Training Organiser, Tribal Research cum Training Centre, AAU, Devgadbaria	Member
20	Dr. V. J. Patel, Asso. Professor, Polytechnic in Agri., AAU, Anand	Member
21	Dr. D. K. Dobariya, Associate Professor, WALMI, Anand	Member
22	Shri P. B. Parmar, Represenataive of SAMETI, Gandhinagar	Member
23	Shri Dipsinh Parmar, Progressive Farmer, Po. Kamboi, Ta. Limkheda, Dist.Dahod	Member
24	Dr. D. D. Patel, Technical officer, VC Office, AAU, Anand	Member
25	Dr. Arun Patel, Director of Extension Education, DoEE, AAU, Anand	Member Secretary

Zonal Research and Extension Advisory Committee (ZREAC)

The Committee consists of Director of Research, Deans of the faculty, representatives of development departments, centres of extension education, crop and subject matter specialists, co-operative sectors, industries and progressive farmers. Meetings are conducted regularly twice in a year (*kharif* and *rabi* season). The committee discusses in depth the adoption and its feedbacks on research

recommendations and existing transfer of technology programs. The approved recommendations are then passed on to the concerned. The ZREAC was held for *Rabi* season on 27/09/2017 & for *Kharif* season on 14/02/2018.

Centres of Extension Education

Under the aegis of Directorate of Extension Education, following centres/ activities are functioning:



Dr. N.C. Patel, Hon. VC, AAU addressing during *Kharif* ZREAC Meeting at AAU, Anand



Sr. No.	Type	Name of Centre / Training	Location
1	Certificate Course	Training in Baking Technology	Anand
		Training in Commercial Poultry Farming / Advanced Training in Commercial Poultry Technology	
		Training in Gardening, Landscaping and Nursery Management	
		Training Program on Food Processing Technology	
		Training Program on Organic Farming	
		Training Program on Weed Management	
		Training Program on Integrated Pest Management	
		Training Program on Medicinal and Aromatic Plants	
		Training Program on Seed Production	
2	Training Centres for Extension Workers	Extension Education Institute (EEI)	Anand
		Training and Visit Training Centre (T&V)	
3	Training Centres for Farmers/ Farm Women/Rural Youth	Sardar Smruti Kendra (SSK)	Anand
		Krushi Vigyan Kendra (KVK)	Arnej (Dist.Ahmedabad)
		Krushi Vigyan Kendra (KVK)	Dahod
		Krushi Vigyan Kendra (KVK)	Devataj (Dist. Anand)
		Tribal Training Centre (TTC)	Dahod
		Tribal Research cum Training Centre (TRTC)	Devgadhbaria
		Tribal Farm Women Training Centre (TFWTC)	Dist:Dahod
		Dairy Vigyan Kendra (DVK)	Vejalpur Dist:Panchamahar
		Pashu Vigyan Kendra (PVK)	Limkheda, Dist: Dahod
		Transfer of Technology Centre for Tribal (TOT)	Godhra
		Farm Technology Training Centre (FTTC)	Sansoli Dist:Kheda.
		Training Center (TC)	Jabugam Dist:chhotadepur
		Demonstration cum Training centre for Inland Fish Culture (DTCIF)	Devataj Dist:Anand

4	Advisory Services	Agricultural Technology Information Centre (ATIC)	Anand
		Transfer of Technology Centre (TOT)	Arnej Dist: Ahmedabad
		Agri Polyclinic Centre (APC)	Dahod
		Publication Unit (PUB)	Anand
		Sardar Patel Agricultural Educational Museum (SPAEM)	Anand
5	Others	NARP Extension Scheme (MMRS)	Godhra Dist:Panchmahal
		NARP Extension Scheme (ARS)	Arnej Dist:A Ahmedabad
		<i>Krusha Mahotsav</i>	Anand
		Kisan Call Centre (KCC)	
		<i>Krusha library</i>	
		Directorate and Sameti	
		<i>Mera Gaon Mera Gaurav</i> (MGMG)	

Extension Education Schemes

Under the Directorate of Extension Education, Twenty-Three plan schemes, seven non plan schemes, four ICAR schemes and eight other agencies schemes operating are given in Annexure 5.1.

Front Line Demonstrations, On Farm Trials and Case Studies Conducted by Extension Education Centres

(i) Front Line Demonstrations (FLDs)

The FLDs are aimed to demonstrate the production potentialities of newly released and pre-released production technologies on farmers' fields. The KVKs and other extension education centres have organized total **1670 FLDs** on various crops, farm implements, livestock and fishery during *Kharif*, *Rabi* and Summer seasons. The details of FLDs conducted during the year 2017-18 are given in the Tables 5.1 to 5.6.





Table 5.1 FLDs Conducted by KVK, Arnej (Dist. Ahmedabad)

(A) Oilseeds /Pulses / Cereals / Horticultural Crops / Commercial Crops

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha)	Average Yield of Demo. plot (q/ha)	Local Yield (q/ha)	Yield Increase (%)
1	Castor	Wilt resistant variety	GCH-7	10	04	23.00	19.00	21.00
2	Castor	Control of Semi looper	GCH-7	10	04	22.00	20.00	10.00
3	Chickpea	Fertilizer and Biofertilizer	GG-3	10	04	13.30	11.20	18.75
4	Chickpea	Pheromone Trap	GG-3	10	04	12.40	10.20	21.56
5	Chickpea	Bioagent	GG-3	10	04	12.60	10.10	24.75
6	Paddy	Control of loose smut	-	10	04	55.50	45.50	21.97
7	Paddy	Use of Leaf Colour Chart	-	10	04	55.70	49.50	12.50
8	Wheat	Micronutrient ZnSO ₄	-	10	04	12.20	11.20	08.92
9	Tomato	Pheromone Trap	-	10	04	285.00	270.00	05.26
10	Tomato	Alternate furrow irrigation	-	05	02	304.00	271.00	12.17
11	Chilli	Introduction of improved variety	GAVC-111	05	02	101.00	91.00	10.99
12	Chilli	Artificial defoliation		05	02	98.00	90.00	08.00
13	Okra	Introduction of improved variety	GO-5	05	02	98.00	87.00	12.64
14	Cumin	Fertilizer dose	-	10	04	07.40	6.70	10.45
15	Dilseed	Introduction of new crop and variety	GAD-1	10	04	07.52	6.90	08.98
16	Cotton	Introduction of variety	GADC-2	10	04	15.80	14.20	11.26
17	Castor	Variety, trichoderma	GCH-7	100	50	23.00	17.47	31.65
18	Chickpea	Variety, bio fertilizer, pheromone trap and trichoderma	GJG-3	50	20	12.80	10.60	20.75

(B) Farm Implements and Machinery

Sr. No.	Crop	Technology Demonstrated	No. of Farmer	Area (ha)	Major Parameters	Filed Observation (Output/Man hour)		% Change in Major Parameter
						Demo.	Check	
19	Wheat	Tractor Operated Rotavator (CIAE, Bhopal)	10	04	Man hour/q	01.00	02.00	100
					Cost of operation (₹./q)	22.25	44.50	100

(C) Livestock

Sr. No.	Category	Technology Demonstrated	No. of Demo.	No. of Units	Major Parameters (Milk Yield in kg)		% Change in Major Parameter
					Demo.	Check	
20	Mehasani Buffalo	By pass fat	20	20	10.98 Day (6.4% Fat)	10.00 Day (6.1% Fat)	9.8% Milk Increased (4.58% Fat Increased)

Table 5.2 FLDs Conducted at KVK, Dahod

(A) Cereals / Horticultural Crops / Oilseeds / Pulses/ Commercial Crops

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha)	Yield of Demo. Plot (q/ha)	Local Yield (q/ha)	Yield Increase (%)
1	Wheat	Variety	GW-366	25	10	28.75	23.80	20.79
2	Maize	Variety	GAWMH-2	25	10	17.50	14.28	22.54
3	Pulses Pigeon pea	Variety	AGT-2	25	10	08.40	06.98	20.34
4	Clusterbean	Variety	PNB	20	04	92.80	73.40	26.43
5	Chilli	Variety	GVC-111	20	04	88.40	72.60	21.76
6	Okra	Variety	GAO-5	20	04	96.35	82.15	17.29
7	Brinjal	Variety	GAOB-2	20	04	172.50	122.96	40.29
8	Onion	Variety	GAWO-2	20	02	205.70	166.90	23.25
9	Soybean	Variety & Bio-fertilizer	NRC-37	125	50	16.74	14.36	16.57
10	Greengram	Variety, bio fertilizer & insecticide	GAM-5	50	20	08.56	06.43	33.13
11	Chickpea	Variety, bio fertilizer & insecticide	GJG-3	50	20	14.00	09.30	50.53

(B) Plant Protection

Sr. No.	Category	Technology Demonstrated	No. of Demo.	No. of Units	Major Parameters Yield (q/ha)		% Change in Major Parameter
					Demo.	Check	
12	Soybean	Neem oil	25	10	13.35	12.40	7.66
13	Ginger	Carbendazim	10	04	122.50	112.70	8.69
14	Tomato	NPV	50	10	152.20	140.08	5.80
15	Gram	Trichoderma	25	10	14.20	13.10	8.40
16	Gram	Bio-control (Pheromone trap)	25	10	13.60	12.70	7.09

(C) Farm Implements and Machinery

Sr. No.	Crop	Technology Demonstrated	No. of Farmer	Area (ha)	Major Parameters	Filed Observation (Output/Man hour)		% Change in Major Parameter
						Demo.	Check	
17	Maize	Maize Sheller	20	-	Shelling cost (₹./100kg)	46 ₹./q	61 ₹./q	32.61



18	Soybean	Seed-cum-Ferti Drill	10	4.0	kg/ha	15.86	15.20	4.34
19	Paddy	Electric Operated Paddy Thresher	25	-	Threshing capacity (kg/ha)	198.50 (kg/ha)	63.60 (kg/ha)	212.10

(D) Women Empowerment

Sr. No.	Technology Demonstrated	Crop	No. of Demo.	Name of Observation	Field Observation (Output/ Man hour)	
					Demo. (m ² /h)	Check (m ² /h)
20	Wheel hoe	Maize	25	Time saving and drudgery reduction	275.60	75.30
21	Wheel hoe	Vegetable	25	Time saving and drudgery reduction	394.80	93.70

(E) Livestock

Sr. No.	Category	Technology Demonstrated	No. of Demo.	No. of Units	Major Parameters (Milk Yield in kg)		% Change in Major Parameter
					Demo.	Check	
22	Buffalo/ Cow	Deworming & Disinfestations	50	50	04.96	04.23	17.26
23	Buffalo/ Cow	Ovsynch Protocol	20	20	In progress		
24	Heifer (Cow)	Mineral mixture and Deworming	15	15	In progress		
25	Goat Kids	Mineral mixture and Deworming	20	60	68.37	62.66	09.88
26	Poultry birds	Breed: Kadaknath	30	10/farmer	In progress		

Table 5.3 FLDs Conducted at KVK, Devataj (Dist. Anand)

(A) Oilseeds/ Pulses / Cereals / Horticultural Crops / Cash Crops

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha)	Yield of Demo. Plot (q/ha)	Local Yield (q/ha)	Yield Increase (%)
1	Greengram	Seed + Bio fertilizer+ Multi micronutrient+ Quizalofop ethyl Neem Oil	GAM-5	75	30	In Progress		
2	Paddy	Variety Introduction	Mahisagar	10	4.0	58.70	52.00	12.88
3	Wheat	Variety Introduction	GW451	10	4.0	33.60	32.00	5.00
4	Okra	New variety	GAO-5	10	4.0	102.50	89.20	14.91
5	Brinjal	New variety	GAOB-2	10	4.0	335.00	280.00	19.64
6	Potato	INM	-	10	4.0	24.50 (t/ha)	20.50 (t/ha)	19.51



7	Mustard	Seed + 90% Sulphur Fertilizer + Neem oil + Bio fertilizer	NRCHB-101 (Hybrid)	75	30.0	21.6	17.6	22.7
8	Castor	Seed + BF + Trichoderma viridi + Neem oil + Sulphur 90%	GCH-7 (Hybrid)	103	40.8	19.2	18.4	4.3

(B) Livestock

Sr. No.	Category	Technology Demonstrated	No. of Demo.	No. of Units	Milk Yield / day		% Change in Major Parameter
					Demo.	Check	
9	Cross Bred Cows	Anubhav Chelated Mineral Mixture	20	20	04.70	04.0	17.50
10	Buffaloes	Guinea Grass	10	10	570.00	430.00	32.55

(C) Fisheries

Sr. No.	Technology Demonstrated	Variety	No. of Farmers	Area (ha)	Yield (q/ha)		% Change in Parameter
					Demo.	Check	
11	Composite fish culture	CIFAX	05	05	37.00	28.50	29.82

Table 5.4 FLDs Conducted at TRTC, Devgadhbariya

Sr. No.	Crop	Technology Demonstrated	Variety	Yield of Demo. (kg/ha)	Yield of Check (kg/ha)	% Increase & Profit ₹./ha
1	Maize (Kharif)	Nitrogen (N) 160 kg/ha and Phosphorous (P) 60 kg/ha	GAYHM-1	4750	3590	32.31
2	Maize (Kharif)	Nitrogen (N) 160 kg/ha and Phosphorous (P) 60 kg/ha	GAYHM-2	4700	3480	35.00
3	Maize (Rabi)	Variety	GAYHM-1	4970	4120	20.63
4	Maize (Rabi)	Variety	GAYHM-2	4530	3900	16.15
5	Wheat (Rabi)	Control of dicot and monocot weed	GW-451	4920	3560	38.20
6	Soybean (Kharif)	Variety	NRC-37	1300	950	36.84
7	Soybean (Kharif)	Weed control	-	1171	960	22.00

8	Soybean (Kharif)	Sucking pest control	-	1132	960	18.00
9	Soybean & Maize (Kharif)	Intercropping (Soybean-NRC 37 & Maize-GM 6)	NRC 37	₹.21,859/- (Profit in Soybean – Maize intercropping)	₹.20,378/- (Profit in sole soybean crop) ₹.7,458/- (Profit in sole Maize crop)	₹.1,050/- (Profit over sole soybean crop) ₹.14,401/- (Profit over sole Maize crop)

Table 5.5 FLDs Conducted at ARS, Sansoli

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha.)	Yield of Demo. (kg/ha)	Yield of Check (kg/ha)	% Increase
1	Wheat	Variety	GW 451	01	0.50	3420	2790	16.13
2	Green gram	Variety	GAM 5	02	1.00	-	-	-

Table 5.6 FLDs Conducted (Area specific Mineral Mixture) at DVK, Anand

Sr. No.	Category	Kg Mineral mixture allotted to individual farmer	No. of Beneficiary	Average production of a animal before FLD	Average production of a animal after three months of FLD
1	Animals	3 kg per farmer	226	3.25 lit/day	3.50 lit/day



(ii) On Farm Trials (OFTs)

The On Farm Trials' (OFTs) aim was to conduct 'On Farm Testing' for identifying technologies in

terms of location specific sustainable land use system. The KVKs have organized a total 621 OFTs on various crops/enterprises. The OFTs conducted during the year 2017-18 are given in Table 5.7 to 5.9.

Table 5.7 OFTs conducted at KVK, Arnej (Dist. Ahmedabad)

(A) Integrated Crop Management / Weed Management

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
1	Paddy (Kharif)	Varietal assessment of Mahisagar paddy	T1. Cultivation of local variety of Paddy (<i>Gurjari</i>) (Farmers Practice)	05	5400	48,400	2.77	<i>Mahisagar</i> variety had higher yield compared to GAR 13 and <i>Gurjari</i> variety as no. of tillers were higher. The net return was also very high	1. High yielding variety 2. No lodging 3. Good quality of rice 4. Fetch more market price a good milling and cooking quality
			T2. Cultivation of <i>Mahisagar</i> variety		5520	71,360	3.54		
			T3. Cultivation of GAR-13 variety		5410	58,560	3.11		
2	Wheat	Assessment of recommended dose of fertilizer and micronutrient in GW-1	T1. Injudicious use of fertilizer and no use of micronutrient (Farmers Practice)	05	830	18,490	2.90	20kg phosphorus + 25kg Zinc Sulphate (as a basal Dose) + 20kg Nitrogen gives higher yield, higher net return and more number of tillers.	Application of basal dose of fertilizer along with Zinc Sulphate and two irrigation in durum wheat gives higher yields.
			T2. 20kg phosphorus + 20kg Zinc Sulphate (as a basal Dose) + 20kg Nitrogen will be given at the 1 st irrigation after 21 DAS + Second irrigation will be given at 40-45 DAS		1300	32,420	3.36		
			T3. Seed treatment with Azotobacter @ 30 gm / kg seed + 20kg phosphorus + 25kg Zinc Sulphate (as a basal Dose)		1080	25,955	3.17		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
3	Wheat	Assessment of seed bed preparation implements in wheat crop in <i>Bhal</i> region	T1. Farmers practices (Cultivator + blade harrow)	05	1140	25,405	2.90	Result showed that seed bed preparation through tractor operated rotavator saving in cost of Rs.2915 per hactor (11.47%) and in energy of 690 MJ/ha. (7.5%). Over farmer practices (cultivator + blade harrow)	1. Good practice to reduce seed bed preparation operation cost in wheat crop. 2.Saves energy
			T2. Tractor operated rotavator		1230	28,320	3.09		
4	Wheat	Assessment of seed treatment for control of Termite in wheat	T1. Farmers practice (No seed treatment)	05	840	18,640	2.88	Seed Treatment with Chlopyriphus 20 EC @ 4 ml/kg seed (08 gm ai / kg seed) or fipronil 5 SC @ 5 ml / kg seed (0.025 gm ai / kg seed) before sowing of 24 hours	Seed treatment with Chlopyriphus is feasible and easy to adopt practice to control the termite in goradu soil
			T2. Seed Treatment with Chlopyriphus 20 EC @ 4 ml / kg seed (0.8 gm ai / kg seed) or fipronil 5 SC @ 5 ml / kg seed (0.025 gm ai / kg seed) before sowing of 24 hours		1070	25,420	3.32		
			T3. T2 + One irrigation given at a grain formation stage		1120	26,680	3.34		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
5	Paddy (Kharif)	Assessment of recommended practices for control of Stem Borrrer in rice	T1. Farmers practice	05	4800	49,000	1.40	Cartap	Cartap
			T2. Cartap Hydrochloride 4G 25 kg/ha (1 kg ai/ha)		5400	57,650	0.40	Hydrochloride 4G 25 kg/ha (1 kg ai/ha)	Hydrochloride 4G control
			T3. Pheropmon trap @ 30 trap/ha kept in after 30 days of transplanting of paddy with equal distance		5000	51,730	0.60	gives higher production with net return and less percentage of infected plant	the rise stem borer as well as other damaging sucking insect. Use of pheromone trap in paddy is not feasible
6	Cucumber (Rabi)	Assessment of HYVs of Cucumber	T1. Cultivation of local variety of cucumber (Farmers Practice)	05	202	99,250	2.89	Cultivation of HYV of cucumber (GC-1) gives higher yields with net return	Lust green colour of cucumber (GC-1) fetch more price
			T2. Cultivation of HYV of cucumber (G.C.-1)		233	1,20,500	3.22		
			T3. Cultivation of HYV of cucumber (<i>Khira</i> Variety)		228	1,17,550	3.19		
7	Tomato (Rabi)	Nutrient management in Tomato	T1. Higher dose of fertilizer (Farmers Practice)	05	271	1,04,600	2.17	Use of balance fertilizer should be adopted	T2. Application of 90kg Nitrogen in two equal split and 30kg phosphors + 0 kg Potash (Recommended Practice) gives higher yield, net return and had higher bB ratio as compared to T1. Higher dose of fertilizer
			T2. Application of 90kg Nitrogen in two equal split and 30kg phosphors + 0 kg Potash (Recommended Practice)		282	1,10,150	2.27		

(B) Buffalo

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Growth (kg/month)	Treatment cost/ calf / month (₹.)	Results of Assessment	Feedback from the Fartmer
8	Buffalo heifer	Assessment of bypass protein feeding in buffalo heifer	T1. Farmers Practices (No use of cake/ Concentrate)	16	07	-	Additional cost of bypass protein reducing 1 st service days and increased body weight of heifers	Bypass protein was very much beneficial to reducing service days and improved the body condition of heifers
			T2. T1 + bye pass protein concentrated @ 1 kg/day/heifer		13	1773		
			T3. T1 + Feeding cake / daan @ 1 kg/day/heifer		11	1557		
9	Buffalo calves	Assessment of the feeding of calf starter in buffalo calves	T1. Farmers Practices (No. use of cake/ Concentrate)	16	06	-	Supply of calf starter increased body weight, reducing calf mortality and increased a shining of coat colour	Reduced calf mortality and increased calf weight
			T2. T1 + Calf starter @ 100 gm / calf / day		10	198		
			T3. T2 + Deworming		11	248		

Table 5.8 OFTs conducted at KVK, Dahod

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Fartmer
1	Maize	Varietal Testing of Maize	T1: Composite (GM-6)	03	14.20	11,250	1.71	The yield increased over control (T1) was 33.09 and 22.18 per cent in T2 and T3, respectively.	White seeded GAWMH-2 variety is suitable for cultivation and fodder purpose.
			T2: GAYHM-1 (Assessment)		17.35	19,390	2.06		
			T3: GAWHM-2 (Assessment)		18.90	22,675	2.24		
2	Green gram	Varietal Testing of Green gram	T1: Local-GM 4 (Farmers practices)	03	5.70	12,476	1.57	The yield increased over control (T1) was 42.10 and 13.15 per cent in T3 and T2, respectively.	GAM-5 variety is suitable for cultivation and higher yield
			T2: Meha Assessment)		6.45	14,041	1.57		
			T3:GAM-5 (Assessment)		8.10	23,941	1.97		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
3	Tomato	Varietal Testing of Tomato	T1: Local (Farmers practices) T2: GT-2 T3: AT-3	03	162.30 190.45 201.75	1,53,460 1,87,14 2,00,750	4.71 5.52 5.85	AT-3 Variety of Tomato gave higher yield and net realization	Less infestation of tomato leaf curl virus and early blight disease
4	Okra	INM in Okra	T1: Farmers practices (Low use of fertilizers) T2: RDF i.e. 100 + 50 + 50 kg. NPK kg./ha. + Micronutrient @ 20 kg/ha T3: RDF i.e. 100 + 50 + 50 kg. NPK kg./ha. + Foliar spray of micronutrients @ 3 g/ltr. Every month of crop tenure.	03	In progress				
5	Paddy	Management of stem borer in paddy crop	Cartap hydrochloride 4g@25 kg /ha+ Removal of leaf tips before TP	03	18.75 19.95 20.30	7,313 8,813 9,325	1.28 1.34 1.35	T3 gave maximum grain yield and higher net return	Cartap hydrochloride 4g is effective in reducing stem borer infestation
6	Pigeon Pea	Management of wilt in Pigeon Pea	Carboxin 37.5 % + thirum 37.5 % @ 3g/kg seed followed by seed treatment with trichoderma viride @ 10g/kg seed + Trichoderma viride @ 1 kg/100 kg seed FYM at the time of sowing	03	9.40 11.80 11.90	19,040 28,580 28,690	1.98 2.44 2.43	T3 encountered minimum disease incidence as well as given maximum yield	Carboxin 37.5% + thirum 37.5% and seed treatment with trichoderma viride helps in reducing wilt incidence

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
7	Agril. Engg.	Evaluation of different type of hand operated wheel hoe in Rabi maize	T1 : Farmers practices	03	16.60	-	-	Results showed that the lowest time required in T3 (4.50 days). The time saving increased over control (T1) was 65.06 and 72.89 per cent in T2 and T3, respectively.	1. It is effective for interculturing and weeding. 2. Less time consume during interculturing operation 3. Very effective for soybean, maize and vegetables. 4. Suitable for men, farm women and rural youth.
			T2 : CIAE, Bhopal make		5.80	1,922.40	-		
			T3 : Dharati make, Ahmedabad		4.50	2,153.80	-		
8	Agril. Engg.	Evaluation of sowing methods for gram crop	T1 : Farmer's practices (tradition methods by deshi plough)	03	1260	23,728	2.00	Results showed that the highest yield T2 (1470 kg /ha). The yield increased over control (T1) was 16.67 and 9.52 per cent in T2 and T3, respectively.	1.Uniform germination 2.No plant damage is occurred during weeding and other operations. 3. Nearly 10-16 per cent more yield
			T2 : Sowing with seed cum-ferti-drill		1470	36,193	2.80		
			T3 : Sowing with Zero till seed-cum-ferti drill		1380	35,246	3.00		
9	Animal Science	Improving milk production in low producing buffaloes	T1 : Farmer's practices T2: Mineral mixture (area specific) supplementation @ 30 g/day T3: Chelated Mineral mixture supplementation @ 30 g/day	30	In progress				
10	Animal Science	Management of livestock to improve success rate of ovsynch protocol	T1 : Farmer's practices T2: Repeat Breeder/ Anoestrus cattle treated using Ovsynch protocol + Mineral mixture supplementation @ 30 g/day + Deworming using fenbendazole @ 3g/animal	30	In progress				

Table 5.9 OFTs Conducted at KVK, Devataj (Dist. Anand)

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
1	Paddy	Assessment of the age of seedling for transplanting of paddy crop under salt affected area	T1: 25-30 Days seedling TP (Reco. Practices)	03	6240	58,230	2.50	25-30 Days seedling TP found 5.41% more yield	With the use of recommended practices for TP, more number of tillers and higher yield with early maturity of seed
			T2: 35 -40 Days seedling TP (Farmers Practices)		5920	52,360	2.30		
2	Wheat	Assessment of different Weedicides effects in Wheat	T1: farmers' practices (Pendimethaline 30 EC, PE)	03	2400	24,100	2.30	T3 gave higher yield than other treatment and more control of monocot and dicot weeds in field	Treatment T3 gave more control of monocot and dicot weed in field than others.
			T2: Sulfosulfuron (75%) + Metsulfuron methyl 5% WG PoE)		2800	30,590	2.70		
			T3: Clodinafop propargyl 15 % + Metsulfuron methyl 1% WP) PoE (Recommended)		3040	34,710	2.90		
3	Cowpea	Varietal assessment of Cowpea	T1. Pusa falguni (Farmer practice)	03	109	1,63,600 Rs. / ha	2.98	- 21.10 % higher over control	Farmers preferred AVCP-1 variety due to its long, green and less fibrous pod with higher yield. Less incidence of YVMV found in AVCP-1 as compared to Pusa falguni.
			T2. Anand vegetable cowpea-1 (AVCP-1)		132	2,38,200 Rs. / ha	4.90		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer
4	Chilli	Varietal assessment of Chilli	T1. Nisha (Farmers Practice)	03	111.8	1,55,500	3.48	-	preferred GVC-111 due to due to more pungency, longer self life as well as higher market price. Fruits of Nisha and AVNPC-131 varieties had less self life due to high amount of moisture in fruits as compared to GVC-111. Higher incidence of leaf curl found in Nisha variety. GVC-111 and AVNPC-131 varieties found tolerant to leaf curl.
			T2. GVC-111		136.2	2,41,750	5.67	21.82% higher over control	
			T3. AVNPC-131		125.5	1,83,150	4.54	12.25% higher over control	
5	Livestock	Improvement of reproductive status of Buffalo by feeding of Bypass fat after de-worming	T1. Farmer practice: 4 to 5 kg concentrate mixture + 10-15 kg dry fodder	10	5	300	1.01	26% higher over control	Progressive livestock farmers are convinced to use bypass fat feeding after deworming due to improvement in milk yield and conception rate in bypass fat fed animals.
					3.8				
					50				
			T2. Concentrate mixture + By pass fat @ 200 gm+ after de-worming		6.3	13,436	1.53		
					4.8				
					20				

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Production kg/ha	Net Return (Profit) in ₹./unit	BC Ratio	Results of Assessment	Feedback from the Farmer	
6	Livestock	Improvement of milk production and body coat of cross bred cows by control of internal and external parasites	T1: Farmer practice of feeding: 4 to 5 kg Concentrate mixture + 10-15 kg dry/green fodder	10	4.0	700	1.04	20% over control	Livestock farmers are convinced to use deworming and topical application of Deltamethrin to control internal and external parasites as milk yield is increased and body coat is improved after treatment.	
					4.0					
			T2: Farmer practice of feeding + De-worming		4.8	9900	1.52			
					4.3					





(iii) Production of seeds and planting material and bio-products

The seeds and Planting materials were produced by KVKs of AAU during 2017-18 are given in Table 5.10 and 5.11.

Table 5.10 Production of seeds by the KVKs of AAU during 2017-18

Name of KVK	Crop	Name of the Variety	Quantity of Seed (q)	Value (₹.)
KVK, Arnej (Ahmedabad)	Wheat	GW-1	100.50	3,00,000
	Chick pea	GG-3	22.00	2,15,000
	Dilseed	GAD-1	04.00	16000
	Cumin	GC-4	00.70	14000
KVK, Dahod	Wheat	GW-451	20.00	60000
	Soybean	NRC-37 (Certified)	45.00	243000
	Green gram	GAM-5	02.50	25000
	Gram	GJG-3	50.00	400000
	Shan hemp	Local	04.00	22000
KVK, Deavataj (Anand)	Paddy	GR-7	69.30	Seed stored for next year
	Paddy	Gurjari	57.40	
	Wheat	GW-496	16.0	
	Wheat	GW-451	06.00	

Table 5.11 Production of Planting materials by KVKs, of AAU during 2017-18

Name of KVK	Crop	Name of the crop	Name of the variety	Number
KVK, Arnej (Ahmedabad)	Vegetable seedlings	Tomato	AT-5	20000
		Chilli	GAVC-111	130000
		Brinjal	GOB-1	15000
KVK, Devataj (Anand)	Vegetable seedlings	Chilli	GVC-111	38950
			AVNPC-131	
		Brinjal	GABH-3 (Hybrid)	9450
		Tomato	GT-2	3950
		Drumstick	PKM-1	148
	Fruit	Papaya	Madhu bindu	2030
		Guava	Allahabad Safeda	35
		Mango rootstock, Custard Apple, Jamun, Drumstick etc.	-	300
	Medicinal, Aeromatics and Ornamental plants	Tulsi, Kariyatu, Brahmi, Arduji, Alovera, Neem, Different creepers and Ornamental planting materials	-	2200
	Fruit production	Sapota	Kalipatti, Cricket ball	64 kg

(iv) Impact of KVKs of AAU

The impact of KVKs of AAU during 2017-18 are given in Table 5.12.

Table 5.12 Impact of KVKs of AAU on specific technology/skill transferred during 2017-18

Name of specific technology/ skill transferred	No. of participants	Production increase %	Change in income (₹./ha)			
			Before	After		
(A) KVK, Arnej (Ahmedabad)						
Cereals						
Leaf colour chart in paddy	10	12.50	38,750	52,625		
Control of loose smut in paddy	10	21.97	35,750	49,990		
Use of micro nutrient Zn So ₄ in wheat	10	8.92	25,180	28,280		
Pulses						
Use of pheromone trap in Gram	60	21.56	23,220	30,604		
Use of bio fertilizer in Gram	60	18.75	28,035	35,040		
Use of bio agent in Gram -	60	24.25	23,160	31,610		
Oil Seed						
Control of semilooper	110	21.80	54,500	63,700		
Wilt resistant variety	110	10.00	50,700	68,400		
Horticultural crops						
Use of pheromone trap in tomato	10	5.26	1,02,700	1,28,000		
Alternate furrow irrigation in tomato	05	12.17	1,42,300	1,68,150		
Introduction of new variety of okra GAO-5	05	12.64	1,02,400	1,23,175		
Introduction of new variety of chilli GAVC-111	05	13.00	1,15,800	1,35,400		
Artificial defoliation in chilli GAVC-111	05	08.00	1,07,650	1,21,400		
Introduction of new crop and variety of dil seed	10	08.96	23,400	26,144		
Balance dose of fertilizer in cumin	10	9.10	83,500	96,000		
Commercial crop						
Introduction of new variety of Desi cotton GAD 2	05	11.26	41,030	48,300		
Cattle						
Health and Disease management	20	9.80% Milk Increased 4.58% Fat Increased	All the expenditure of roughages and concentrates were common for demonstrated and check animals. Demonstrated animals were supplied additional 100 gm bypass fat/ animal/ day up to 90 days. As a result of that technology, milk yield was increased 9.8 % (Range: 0.5- 1.4 L), fat percentage (4.58%) and reducing service periods (55% animals).			
Ag. Enginnering						
. CIAE double screen cleaner	10	Cost and labour saving 100 percent change in Man hour/q & Cost of operation (₹/q)				
(B) KVK, Dahod						
Varietal replacement- Maize	9125	90.30	7883	10894		
Varietal replacement -Wheat	1256	85.68	15592	20632		



Varietal replacement -Pigeon pea	2521	75.86	13905	19690
Varietal replacement -Green gram	852	81.23	8335	15513
Varietal replacement -Gram	3542	88.56	12440	27512
Varietal replacement -Soybean	7882	80.92	20762	26343
Varietal replacement -Vegetables	1780	58.10	109440	149098
Dairy management - Buffalo/ Cow	2356	62.84	1117 / animal	1747/ animal
Poultry birds- Breed replacement :Kadaknath	1254	85.86	1440	2720
Small Farm tools	4235	65.38	-	Saving ₹. 2492/ha
Electric operated paddy thresher	754	42.75	-	Saving ₹. 370 (per 100 kg)
Farm Implement	3564	35.82	-	More income ₹. 1914 /ha
(C) KVK, Devataj (Anand)				
Production technology of wheat	100	78	8900	12500
Production technology of Paddy	100	82	18600	24600
Use of Mineral Mixture with concentrate in buffalo	100	75	4700	5900
Composite Fish Culture in Village pond	50	60	41500	70500

NB: The data were based on actual study, questionnaire/group discussion etc. with ex-participants.

Extension Education Programs

1. Certificate Courses for Farm Youths/Farmers/Input Dealers

Anand Agricultural University conducts seven certificate courses on various subjects. Under these courses, total 325 farm youths/farmers/input dealers who completed the courses during the year 2017-18 is given in Table 5.13.

Table 5.13 No. of Students/Farmers/Input Dealers Completed the Certificate Course During 2017-18

Sr. No.	Name of Certificate Course	Centre	Duration	No. of Training (batch per year)	No. of Farm Youths/Farmers/ Input Dealers Completed the Course
1	Training in Baking Technology	FPT & BE, Anand	20 Weeks	02	48
2	Training in Commercial Poultry Farming / Advanced Training in Commercial Poultry Technology	Poultry Research Station, Anand	10 Weeks	03	57
3	Training in Gardening, Landscaping and Nursery Management	Horticulture Dept., BACA, Anand	6 Months	01	22

Sr. No.	Name of Certificate Course	Centre	Duration	No. of Training (batch per year)	No. of Farm Youths/Farmers/ Input Dealers Completed the Course
4	Vocational Course on Agriculture Engineering and Technology	CAET, Godhara	One Year	01	10
5	Certificate Course on Soil and Water Testing for Agriculture for farmers	Agril. Chem. & Soil Sc., Dept. BACA, Anand	3 Weeks	03	63
6	Certificate in Agricultural Extension Services for Input Dealers	SSK, Anand	6 Months	02	75
7	Diploma in Agricultural Extension Services for Input Dealers	IDEA, Anand	One Year	01	50





2. Special Training Programs for Farmers

Six special training programs on various subjects for farmers were sanctioned during 12th FYP and these are run by AAU. The details of 57 special training programs carried out under the schemes are given in Table 5.14.

Table 5.14 Special Training Programs Conducted by Various Training Centres

Sr. No.	Subject of Training Programs	Centre/Place	No. of Training	No. of Beneficiaries
1	Food Processing Technology(FPT)	College of Food Processing and Bio-Energy, AAU, Anand	03	437
2	Organic Farming(OF)	Agronomy Department, BACA, AAU, Anand	07	198
3	Weed Management(WM)	Weed Control Department, BACA, AAU, Anand	11	349
4	Integrated Pest Management(IPM)	Agricultural Entomology Department, BACA, AAU, Anand	12	421
5	Medicinal and Aromatic Plants (MAP)	Medicinal and Aromatic Plants Research Station , AAU, Anand	06	229
6	Seed Production(SP)	Seed Science & Technology Department, BACA, AAU, Anand	10	257
7	Gobar Gasnu Mahtav ane teni Upyogita	College of Agricultural Engineering & Technology, Godhra	01	50
8	Krushni Pakoni Kapnina Adhunik Yantrono Parichay		01	60
9	Tapak Shichai Padhdhati the panino karyxam upyog		01	60
10	Hydrological and Crop Simulation Modeling in the Arena of Climate Change		01	17
11	Maximizing income through farm mechanization	College of Agricultural Engineering & Technology, Godhra	01	100
12	Introduction to the modern crop harvesting equipments		01	50
13	Scientific farming practices and value addition of custard apple		01	50
14	Scientific farming practices and value addition of soybean		01	50





Dr. N.C. Patel, Hon. VC, AAU addressing the Honey Bee trainees during training programme



3. Training Programs for Extension Functionaries

(a) Extension Education Institute

The Extension Education Institute, Anand caters the extension training needs of middle level functionaries of various development departments of Western Zone States viz; Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Maharashtra, Goa and UTs

of Diu, Daman and Dadara Nagar Haveli. The aim is to improve their job performance, wherever, they are working in different capacities. The Management Committee of EEI approves action plan and reviews the progress of EEI activities. Total 77 training courses were conducted for 2055 trainees by the EEI, Anand during the year as shown in Table 5.15.



Table 5.15 Training Programs Conducted During the Year 2017-18

Sr. No.	Type of Courses / Workshops	No. of Courses	No. of Participants
1	On-Campus	31	585
2	Peripatetic (Off-Campus)	31	1022
3	Collaborative (On-Campus)	03	85
4	Consultancy	11	341
5	Skill Taining Programme	01	22



(b) Training & Visit Scheme

The Anand Agricultural University has taken up the task of training for the extension personnel of the Department of Agriculture through the Training and Visit Centre at Anand. The details about bi-



monthly workshops, pre-seasonal trainings and special training programs organized for the extension personnel of the Department of Agriculture and the number of SMSs/AEOs attended the programs during 2017-18 is given in Table 5.16.

Table 5.16 Training Programs Organized by T&V during the Year 2017-18

Sr. No.	Type of Program	No. of Training Programs	No. of Extension Personal	No. of Farmers
1	Bi-Monthly Workshops	05	178	-
2	Pre-seasonal Trainings	02	69	-
3	Trainings on Greenhouse/Nethouse	03	-	125
4	NMSA staff Training	04	86	-



4 Training Programs for Farmers / Farm Women / Farm Youths/Extension Workers and Others

Training is essential to increase the efficiency of the farmers, farm women and farm youths and extension workers. On-campus as well as off-campus training programs are organized based on the needs and interests of the stakeholders

through the Front Line Transfer of Technology (TOT) Centres. Total 607 (On campus-400 and off campus-207) training programs was organized by extension education centres of AAU for 21308 beneficiary farmers and extension workers during 2017-18. The centre wise details of the training programs and their beneficiaries are given in Table 5.17.

Table 5.17 Training Programs Organized by TOT Centres during 2017-18

Sr. No.	TOT Centre	No. of Training Programs	Farmers	Farm Women	Farm Youths	Extension Workers/ Other	Total
1	SSK, Anand	A 53	1211	976	-	106	2293
2	KVK, Arnej	A 69	1308	599	234	75	2216
		B 70	1219	758	-	-	1977
3	KVK, Dahod	A 34	679	203	43	24	949
		B 50	598	493	102	24	1217
4	KVK, Devataj	A 24	445	7	17	-	469
		B 34	485	299	-	-	784
5	TRTC, Devgadhbaria	A 10	344	36	-	-	380
		B 04	228	-	-	-	288
6	TFWTC, Devgadhbaria	A 27	31	1107	-	-	1138
		B 05	81	136	-	-	217
7	DVK, Vejalpur	A 42	1935	695	-	-	2630
8	PVK, Limkheda	A 11	17	438	-	-	455
		B 31	19	779	-	-	798
9	FTTC, Sansoli	A 20	764	-	-	-	764
10	TC, Jabugam	A 10	486	-	-	-	486
11	DTCIF, Devataj	A 01	150	-	-	-	150
12	ATIC, Anand	A 29	842	357	-	58	1257
13	TOT, Arnej	A 01	150	-	-	-	150
14	APC, Dahod	A 14	694	-	-	-	694
		B 12	241	-	-	-	241
15	TTC, Dahod	A 01	50	-	-	-	50
		B 01	22	-	-	-	22
16	MMRS, Godhra	A 13	304	-	178	-	482
17	School of Baking, Anand	A 35	-	1111	-	-	1111
18	KCC, Anand	A 04	-	-	-	80	80
19	DEE	A02	70	-	-	-	70
Total A		A 400	9410	5529	472	343	15824
Total B		B 207	2893	2465	102	24	5484
Grand Total (A+B)		607	12303	7994	574	367	21308

A = On-campus B = Off-campus



5. Extension Education Activities

The KVKs, TOT centres as well as the Advisory service centres and other centres have also planned and organized extension education activities. More than 2,53,175 beneficiary farmers were benefited through various extension education activities conducted by

various extension, education and research centres of AAU whereas, 1,30,649 beneficiary farmers were benefited by providing mobile advisory services (Voice and Text both) through KVKs by AAU during 2017-18. The details of the extension education activities organized under various centres/schemes are given in the Tables 5.18 to 5.21.

Table 5.18 Extension Education Activities Carried Out by KVKs of AAU during 2017-18

Activities	No. of Programmes	No. of Farmers	No. of Extension Personnel	Total
Advisory services	1042	1,07,435	-	1,07,435
Telephone helpline	879	759	120	879
Diagnostic visits	185	525	12	537
Field days	41	1191	77	1268
Group discussions	71	784	38	822
<i>Kisan goshthis</i>	25	839	33	872
Film shows	177	5370	199	5569
Self Help Groups (SHGs)	05	62	-	62
Scientists' visit to farmers field	303	1772	20	1792
Farm Science Clubs	05	128	03	131
Ex-trainees <i>Sammelan</i>	03	78	-	78
Farmers' seminar/ <i>Sammelan</i>	02	757	24	781
Lectures delivered	229	14,219	266	14,485
Method demonstrations	33	857	57	914
Celebration of important days	21	2853	118	2971
Exposure visits	21	1091	60	1151
Farmers visit to KVK	369	2358	08	2366
Newspaper coverage	24	Mass	Mass	Mass
Celebration of Technology week	02	399	-	399
Animal health camps	13	524*	20	544

* 1950 Animals treated

Table 5.19 Mobile Advisory Services provided by KVKs of AAU during 2017-18

Name of KVK	Message Type	Type of Messages						Total Beneficiaries
		Crop	Livestock	Weather	Marketing	Awareness	Other Enterprise	
Arnej (Dist. Ahmedabad)	Text only	34	48	-	-	260	80	422
	Voice only	38	32	-	-	560	170	800
	Voice & Text both	18	25	-	-	75	90	208
Dahod	Text only	06	01	01	-	04	06	22766
Devataj (Dist. Anand)	Text only	02	-	-	05	02	01	1,06,453
Total		98	106	01	05	901	347	1,30,649

Table 5.20 Extension Education Activities Carried Out in Tribal Area by TOT Centres during 2017-18

Sr. No.	Activities	TTC Dahod	APC Dahod	TRTC Devgadhbhar	TFWTC Devgadhbhar	PVK Limkheda	TOTC Godhra	MMRS Godhra	TC Jabugam	DVK Vejalpur
1	<i>Khedut shibirs/Pashupalan shibirs/Krushgi goshthis/Group discussion</i>	-	02 (17)	10 (615)	21 (950)	2 (214)	10 (952)	10 (952)	1 (25)	-
2	Guidance to farmers	03 (95)	05 (90)	10 (378)	03 (4)	-	10	10	-	-
3	Films/Video shows	-	01 (50)	2 (70)	07 (345)	18 (867)	-	02 (60)	-	-
4	Guidance through letters/ Telephone/ SMS	35	117	117	129	141	250	340	177	-
5	Field visit/ Crop diagnostic services	03 (75)	28 (303)	19 (150)	08 (1279)	114 (256)	-	-	96 (359)	-
6	Cattle health camps	-	-	-	-	-	-	-	-	09 (610)
7	Lectures delivered for new Technology	-	-	15 (510)	14 (1500)	39 (1723)	11 (4296)	39 (2232)	17 (185)	-
8	Pressnote	09 (Mass)	-	-	-	02	04	01	-	-
9	Educational tour	02 (90)	-	-	-	-	-	-	-	-
10	Tick Control Programme	-	-	-	-	-	-	-	-	09 (555)
11	Deworming Programme	-	-	-	-	957	-	-	-	09 (571)
12	Crop Demo/Int. Demo	-	-	-	-	957	-	-	-	-

Note: Figures in parentheses indicate numbers of participants/beneficiaries

Table 5.21 Extension Education Activities Carried Out by TOT Centres during 2017-18

Sr. No.	Activities	SSK Anand	SPAEM Anand	ATIC Anand	PUB Anand	TOT Arnej	FTTC Sansoli	DTCIF Devataj
1	Farmers /Field Days	-	-	-	-	02 (90)	-	02 (150)
2	<i>Khedut shibirs/Pashupalan shibirs/Krushigosthis</i>	-	-	-	-	03 (115)	06 (204)	1 (200)
3	Group discussions	140 (1541)	-	122 (690)	-	-	11 (265)	-
4	Guidance to farmers	13599	-	3870	1757	511	535	5445
5	Films/Video shows	112 (3450)	124 (7476)	72 (1720)	-	-	10 (244)	-
6	Guidance through letters/ Telephone/SMS	1120	-	923	2700	77	356	-
7	Field visit/ Crop diagnostic services	130 (5732)	-	52 (1012)	-	2 (27)	148 (233)	21 (34)
8	Newspaper coverage	10	-	01	03	-	-	02
9	Lectures delivered for new Technology	118 (4802)	-	92 (1084)	02 (80)	03 (88)	102 (1308)	02 (32)
10	Escorting the visitors	88	20364	3870	70	-	-	41
11	Crop Demo / Interactive Demo	-	-	-	-	03 (15)	06 (29)	-
12	Video Conference	01 (80)	-	-	-	-	-	-

Note: Figures in parentheses indicate numbers of participants/beneficiaries

6. Agricultural Fairs and Exhibitions

To communicate the agricultural technologies to many farmers at a time, AAU has organized/ participated in different agricultural fairs and exhibitions. The profile of AAU and the latest technologies developed by the University were displayed. Interaction between scientists and the

farmers was also organized. The literature on the latest technologies was distributed to farming community during such fairs and exhibitions. More than 2,00,000 farmers were benefited through 15 agricultural fairs and exhibitions. The details of Agricultural fairs/ exhibitions held during the year are given in Annexure 5.2.



Hon. Chief Minister of Gujarat, Shri Vijaybhai Rupani & Dignitaries visiting the Agricultural Exhibition during Mega Event *Krusha Mahotsav* 2017

7 Publications

(i) Farm Magazine

The publication unit publishes the monthly farm magazine 'Krushigoviddya' regularly since May, 1948. The main objective of this farm magazine is to disseminate and to popularise improved and scientific methods of agricultural and allied subjects in a very digestible and easily understandable manner for farming community. There were 9900 subscribers registered for this magazine during the year 2017-18.



Best Article Award

The AAU gives the Uttam Lekh Awards (best articles awards) for authors whose articles publishes in Krushigovidya farm magazine from the year 2004-05. These Awards were given to 69 authors for their published 27 articles in 12 issues of 69th volume of Krushigovidya farm magazine. Among them, 47 AAU scientists (63.77 %) received the Uttam Lekh Awards. The detail is given in Annexure 5.5.

Shabda Chetana Gaurav Sanman Award



Bharatmata Temple, Sanand; Samanvay Parivar, Gujarat and Lokseva Trust, Ahmedabad jointly organized its ninth 'Samanvay – Shabda Chetana Gaurav Sanman' programme at 'Sanskardham', Village Manipur, Ta. Sanand, Dist. Ahmedabad to honour the Editor/ Trust/ Organization continuously publishing a magazine for more than 50 years to radiate/disseminate truth, culture, consciousness and awareness among the human societies.

The Cabinet Minister of Revenue and Education, Gujarat State, Hon. Shri Bhupendrasinhji Chudasama; Swamishri Adhyatmanandji, Shivanand Ashram Amdavad; Shri Shivanandgiriji; Sadhwishri Suryadeviji, Gayatri Temple, Sanand; Shri P.K. Laheri, Ex-Chief Secretary; Shri R.K. Shah; Padmashri recipient; Shri Kumarpal Desai, Shri Vishnubhai Pandya as well as social workers; Shri Pankajbhai Modi; Bhimjibhai Nakrani remained present and graced the occasion.

The Shabda Chetana Gaurav Sanman Award and Cash Prize of ₹ 5100/- was received by the Editor Dr. N.V. Soni and Associate Director of Extension

Education, Dr. V. R. Boghra on behalf of Hon. Vice Chancellor of Anand Agricultural University, Anand, from Hon. Shri Bhupendrasinhji Chudasama in recognition of publishing a monthly farm magazine 'Krushigovidya' continuously for 70 years.



(ii) AAU Newsletter

The Directorate of Extension Education publishes a quarterly 'AAU Newsletter' regularly. The AAU newsletter gives research highlights, technical events/news, extension activities and noteworthy work done by the scientists of AAU.





(iii) Books

The publication unit has published 10 books during 2017-18 for sale on various subjects for the

benefit of farming community. This unit has published and distributed the farm literature during 2017-18 is shown in the Table 5.22 & 5.23.



Table 5.22 Books published and sold by Publication Unit, DoEE, AAU, Anand during 2017-18

Sr. No.	Name of Book	No. of Copy Sold
1	<i>Masharoomni kheti</i>	69
2	<i>Falpako</i>	350
3	<i>Greenhouse ane nethouse technology</i>	357
4	<i>Jaivik Niyantran</i>	188
5	<i>Vrukshoni Kheti</i>	114
6	<i>Deri udyog ane doodhanu mulya vardhan</i>	186
7	<i>Sukshma piyat paddhati</i>	234
8	<i>Vermicompost</i>	476
9	<i>Krushikshetre vaprata kitnashako</i>	356
10	<i>Kheti temaj prathamik prasanskaran matena ojar, yantro ane sadhano</i>	197
11	<i>Ghaschara pako</i>	351
12	<i>Kitchen garden</i>	666
13	<i>Khetipakona agatyana rogo ane tenu niyantran</i>	432
14	<i>Pak samrakshan</i>	978
15	<i>Sajeev Kheti</i>	1152
16	<i>Krushhi Pakoma Processing ane Mulya Vardhan</i>	1095
17	<i>Telibiya pakoni vaigyanik kheti</i>	1005
18	<i>Jaivik Khataro</i>	1566
19	<i>Aadarsh beej utpadan</i>	630
20	<i>Shakbhaji pako</i>	764
21	<i>Fulpako</i>	627
22	<i>Soyabinani vaigyanik kheti ane mulya vardhan</i>	571
23	<i>Khetina adhunik abhigamo</i>	660
Total		13024

Table 5.23: Farm Literature Published and Distributed by Publication Unit, DoEE, AAU, Anand during 2017-18

Sr. No.	Name of Publication	Type of Publication	No. of Copy Published	No. of Copy Distributed
1	<i>Krushhi Gyan Samput-2017</i>	Book	20000	20000
2	<i>Khedutopyogi sansodhan bhalamano 2017</i>	Booklet	4000	4000
3	<i>Gujaratna khedutono avak bamani karavani path darshika</i>	Booket	2000	2000
4	AAU Profile	Booklet	-	260
5	AAU at a Glance	Folder	-	1000
6	<i>Anand krushi university ek vihangavlokan</i>	Folder	-	1500
7	<i>Anand krushi university diary 2018</i>	Diary	2000	2000
8	AAU Newsletter (Quarterly)	Newsletter	3300	3300
9	<i>Krushigovidya Farm Magazine (Monthly)</i>	Farm Magazine	91209	91209
Total			1,22,509	1,25,269



Total 1,25,269 farm literature was distributed by publication unit to farming and scientific community during 2017-18.

(iv) Agricultural Literature

The books, booklets, folders, brochures, reports, directory, worksheets, training and practical manuals, diary etc. on various subjects were published by different extension, education and research centres of AAU during the year under report. More than 60,905 books, 16,900 booklets, 1,95,500 folders & literature, and more than 11,000 other literature were

published and distributed to beneficiaries by AAU in all, list of 153 publications are given in Annexure 5.3.

(v) Video Films (DVD)

Eighteen video films were prepared by AAU. Among them, Two e-technology packages (video films of Eight Subjects) were prepared and distributed in 4995 villages and 273 krushi libraries during *Krushi Mahotsav 2017 programme* of central Gujarat. The details of video films (DVD) are given in Annexure 5.4.



8 Mass Media

(i) Radio Talks

During the year, 24 AAU scientists have delivered 32 radio talks on different topics related to agriculture, horticulture, animal husbandry on all India Radio, Vadodara and Godhra. The details of radio talks are given in Annexure 5.5.

(ii) TV Programs

Thirty-nine TV talks on different aspects covering agriculture, horticulture, animal husbandry, home science etc. and eleven phone-in-live programs were telecast through Doordarshan Kendra, Ahmedabad in 'Gram Jagat' program for the benefit of the farming community. The details of TV programs are given in Annexure 5.6.

(iii) Kisan Call Centre

The Kisan Call Centre (free call Service- 1800-180-1551) for the State of Gujarat and U.T. of Dadra and Nagar Haveli has begun functioning effectively from 1.11.2004 at Ahmedabad. Since 10th June, 2004,

the Call Centre service had been made available right from 6 a.m. to 10 p.m.

Directorate of Extension Education, AAU, Anand acts as a nodal agency for KCC of the Gujarat State. The Director of Extension Education looks after and monitors the system in the entire Gujarat State. The Directorate of Extension Education imparts training to Level- I and Level - II officers of KCC.

(iv) Krushi Library

The *Krushi* library scheme is started during the year 2015-16. The main objective of the scheme is to establish the *Krushi* Libraries in selected villages of Central Gujarat for disseminating the farm literature i.e. Books, Booklets, Folders and farm magazines etc.

Total 273 *Krushi* libraries were established under the scheme in nine districts of Central Gujarat for the benefit of farming community. The information regarding distribution of farm literature as reading materials (i.e. 14383 farm literature) for *Krushi* libraries is given in Table 5.24.

Table 5.24 Farm Literature and Farm Magazine Distributed in *Krushi* library during 2017-18

Sr. No.	District	No. of <i>Krushi</i> Library	No. of Books	No. of Monthly Farm Magazine issues*	No. of Free Literature	
					Books	Folders
1	Ahmedabad	29	348	580	290	377
2	Anand	47	704	860	463	470
3	Botad	05	145	60	80	80
4	Chhotaudepur	22	264	440	198	264
5	Dahod	39	468	780	312	312
6	Kheda	36	432	720	324	396
7	Mahisagar	36	544	656	320	252
8	Panchamahar	30	360	600	300	360
9	Vadodara	29	348	580	348	348
Total		273	3613	5276	2635	2859

*Krushigovindya & Krushijivan Farm Magazine

9. Coordination with Development Departments

The AAU has planned and organized various extension education programs/activities in close coordination with line departments of the State. The structural linkages exist under Training and Visit scheme by way of constituting technical committees at district, zonal and state levels.

The functional linkages also exist under T&V Scheme through bi-monthly workshops, pre-seasonal trainings, diagnostic team, and state level crop seminars/ workshops etc. The coordination exists in follow-up programmes as well as planning of farm trials. In AGRESCO, the officers of the line departments are the members and they generously contribute to the formulation of technical programs as well as in finalizing recommendations for the farmers.

Interface of AAU scientists with functionaries of the departments of the State, NGOs and other

agencies was organized at state as well as at campus levels during the year of report.

The agricultural programmes of All India Radio as well as *Doordarshan* were finalized by coordinated efforts. For transfer of technologies to the farmers at large, farmers day, *Krushi Mela*, farmer-scientist interactions, group discussions etc. were organized through collaborative efforts.

10. Krushi Mahotsav Program

Krushi Mahotsav is a knowledge sharing rendezvous event for farming community of Gujarat. It is a fortnight to one-month long event that brings together the farmers, scientists, Government officials and many more individuals concerned with agriculture. This *Mahotsav* generally begins on the auspicious planetary affluence of 'Akshay Tithiya (Akhatrij)', a day for worshipping *Balramji*, the God of farmers.



Dr. N. C. Patel, Hon. VC, AAU gave the memento to Hon. Chief Minister of Gujarat, Shri Vijaybhai Rupani during Mega Event of *Krushi Mahotsav* 2017

Encouraged by the grand success of the previous year's *krushi mahotsav* in transfer of agricultural technologies, developing awareness among farmers, planning for ensuing kharif crops and to make familiar with various government schemes for the benefit of farming community, *krushi mahotsav* for 23 days from 06 to 27 May 2017 was launched by the Government of Gujarat. Under this programme a Seminar – cum – Exhibition and mega event was organized on 6 May 2017 at Nadiad (Dist. Kheda) by Anand Agricultural University in collaboration with district administration, Kheda and Dept. of Agriculture, Co-operation and Farmers Welfare, GoG, Gandhinagar.

The mega event was inaugurated by Hon. Chief Minister of Gujarat, Shri Vijaybhai Rupani. Several State and Cabinet Ministers of Gujarat, Legislative Assembly Members, District Panchayat/

Taluka Panchayat Presidents, Directors of various Dept. of Gujarat State; Vice Chancellor of AAU, Dr. N. C. Patel, VCs of other Agricultural Universities of Gujarat and many other dignitaries remained present and graced the occasion.

The Hon. Chief Minister has also inaugurated the Agricultural Exhibition arranged with 100 stalls related to agricultural and allied fields of which 30 stalls were displayed by AAU, Anand demonstrating research and development activities as well as new technologies developed by the University. The Agricultural Exhibition was kept open for a day for the farmers. The farmers interacted directly with the scientists to solve their queries and problems. The university also displayed its district specific technologies at other four places of central Gujarat by arranging 30 stalls. The list of event organised is given in table 5.25.

Table 5.25 Event Organized during *Krushi Mahotsav* 2017

Sr. No.	Place	Date	District Covered for Mega Event	Event Organized	No. of Book* Distributed
1	Nadiad (Dist.Kheda)	06/05/2017	Anand, Kheda	Seminar & Agril. Fair cum Exhibition	2500
2	Godhra (Dist.Panchmahals)	14/05/2017	Mahisagar, Panchmahals	Seminar, Agril. Fair cum Exhibition & Pasu Arogya Mela	2500
3	Chhotaudepur	18/05/2017	Vadodara, Chhotaudepur		2500
4	Dahod	22/05/2017	Dahod		2500
5	Bavla (Dist.Ahmedabad)	26/05/2017	Ahmedabad		2500

* *Krushi Gyan Samput* 2017

On this occasion, two books namely (i) *Krushi Gyan Sampoot* 2017 (ii) Export of Fruits and Vegetables from India: Growth, Opportunities and Challenges were released by the dignitaries

DVDs on various subjects viz, DVD Set I: (i) *Greenhouse Technology* (ii) *Tapak Piyat Paddhati* (iii) *Choksai Purvakani Kheti* (iv) *Khetima Sukshma Tatvonu Mahatva* & DVD Set II: (v) *Fal-Shakbhajini*

Mulyavardhit Banavato (vi) *Madhmakhi Palan* (vii) *Maragha Palan* (viii) *Pashu Poshan: Khanij Tatvonu Mahatva* were also released for farming community. These two sets of DVDs were distributed in all the villages of central Gujarat. The farm literature & DVDs were distributed in villages of central Gujarat are given in table 5.26.

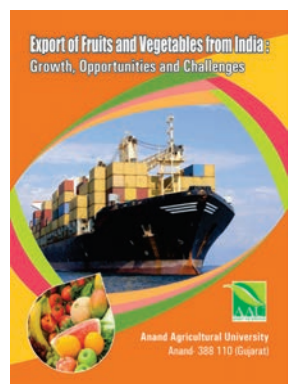


Table 5.26 Farm Literature & DVDs distributed in Central Gujarat during Krushi Mahotsav 2017

Sr. No.	District	No. of Booklets Distributed		No. of two DVD Sets Distributed in Villages
		Village	Krushi Library	
1	Ahmedabad	438	100	438
2	Anand	361	100	361
3	Botad	211	100	211
4	Chhotaudepur	870	100	870
5	Dahod	693	100	693
6	Kheda	453	100	453
7	Mahisagar	696	100	696
8	Panchmahals	631	100	631
9	Vadodara	642	100	642
Total		4995	900	4995

Total five seminars were held in each mega event covering the following topics related to each district by AAU is given in table 5.27.

Table 5.27 Seminar Organized on Marketing and Value Addition during Krushi Mahotsav 2017

Sr. No.	Place of Seminar	Date	Topic of Seminar	Name of Scientist
1	Nadiad	06/05/2017	a. Shuksm Piyat Paddhati par Drop More Crop	Dr. G. R. Patel
			b. Baagayati Pako – Dharu Uchher temaj Rakshit Kheti	Dr. H. C. Patel
			c. Pashuposhanthi Uttam Pashu Svasthya	Dr. Safi Vohra
			d. Krushi Bajar Vyavastha – Vadhu Aavakani Guru Chavi	Dr. V. K. Gondaliya
2	Godhara	14/05/2017	a. Makaini Choksaaipurvakani Kheti	Dr. M. M. Khanorkar
			b. Mashroomani Vaigyanik Kheti	Dr. R. G. Parmar
			c. Pashu Paalan, Pashu Rogo ane Pashu Prajanan	Dr. G. C. Mandli
			d. Varsaadi Panino Sangrah ane Karyakhsam Upayog	Dr. M. M. Trivedi
			e. Krushi Bajar Vyavastha – Vadhu Aavakani Guru Chavi	Dr. A. S. Shekh

Sr. No.	Place of Seminar	Date	Topic of Seminar	Name of Scientist
3	Chhotaudepur	18/05/2017	a. <i>Kathol Pakona Choksai Purvakani Kheti ane Mulya Vardhan</i>	Dr. R. J. Machhar
			b. <i>Vaigyanik Dhabe Madhamakhi Uchher ane Madh Utpadan</i>	Dr. C. C. Patel
			c. <i>Pashu Paalan, Pashu Rogo ane Pashu Prajanan</i>	Dr. G. C. Mandli
			d. <i>Paak Sanrakshan – Samajpurvakanu Vyavasthapan</i>	Dr. R. K. Thumar
			e. <i>Krushhi Bajar Vyavastha – Vadhu Aavakani Guru Chavi</i>	Dr. A. S. Shekh
4	Dahod	22/05/2017	a. <i>Soyabinani Vaigyanik Kheti</i>	Dr. J. G. Patel
			b. <i>Jal Sanrakshan ane Vyavasthapan</i>	Dr. M. M. Trivedi
			c. <i>Nafakarak Bakari Paalan</i>	Dr. K. N. Vadhvani
			d. <i>Vaigyanik Dhabe Madhamakhi Uchher ane Madh Utpadan</i>	Dr. C. C. Patel
			e. <i>Krushhi Bajar Vyavastha – Vadhu Aavakani Guru Chavi</i>	Dr. K. S. Jadav
5	Bavala	25/05/2017	a. <i>Dangarani Vaigyanik Kheti – Navi Khsitijo</i>	Dr. K. S. Prajapati
			b. <i>Food Processing Dvara Gramy Kakshae Mulyavardhan</i>	Dr. R. L. Rajput
			c. <i>Nafakarak Pashu Paalan</i>	Dr. K. N. Vadhvani
			d. <i>Desi Kapasani Vaigyanik Kheti ane Paak Avashesh Vyavasthapan</i>	Dr. T. T. Patel
			e. <i>Krushhi Bajar Vyavastha – Vadhu Aavakani Guru Chavi</i>	Dr. K. S. Jadav

During the mega events, AAU., *Anubhav* brand products viz. bio-fertilizers, *Trichoderma*, mineral mixture, vermicompost, seed of crop varieties etc as well as tissue culture plants, medicinal products, dairy products (candy, ice cream etc.) and bakery products were offered for sale on nominal/ special discounted price to the farmers. Besides this, literature in the form of books, booklets, folders and pamphlets on various subjects was also distributed to the farmers.

The state ministers, Government officials and officers of various line departments of the state Government also accompanied the group of scientists at various villages during seminar and agricultural exhibition cum sale.

Impacts/Benefits of *Krushhi Mahotsav*

- ♦ Direct interaction of farmers with Agriculture scientists/Officers Intimacy between the farmers and Agriculture Scientists/Officers increased
- ♦ Farmers started their interaction with Agricultural Scientists/Officers without any hesitation for their questions/information/technology.
- ♦ Farmers started adopting the new techniques which in turn increased their income more than double.
- ♦ Due to systematic cultivation and use of proper inputs, their cultivation cost reduced and hence their income increased.

- ♦ Water accumulation/storage, water level came up due to which the irrigation area increased.
- ♦ Farmers started growing new crops so, the loss due to growing of routine type of crops, risk reduced.
- ♦ State border level farmers also adopted New Agriculture Technology system.
- ♦ Due to easy availability of information of State/Central Govt. schemes, farmers came forward to take benefits of Assistance Schemes.

12. Mera Gaon Mera Gaurav Program

An innovative 'Mera Gaon Mera Gaurav'(MGMG) has been implemented to promote the direct interface of scientist with the farmers to hasten the Lab to Land transfer of latest technologies. The objective of this scheme is to provide farmers with required information, knowledge and advisory

on regular basis by adopting villages. Presently, various agencies are working in agriculture and farmers are keen to know about the services provided by them. The technologies developed and refined by Research Institute, Agricultural Universities, Private & other organizations are accepted and adopted to various extent by farming community. Therefore, the awareness among farmers about the organizations and their programmes need to be created on regular basis.

Anand Agricultural University has prepared 47 teams (each of four scientists) of 188 scientists of various disciplines covering 235 villages and also a separate 6 teams of 37 scientists of KVKs covering 41 villages. Thus, in all 276 villages has been adopted under 'MGMG' scheme by the Anand Agricultural University.

The Extension Education Activities organized by AAU under MGMG program during 2017-18 is given in Table 5.28.



Table 5.28: Extension Education Activities under taken by AAU under MGMG during 2017-18

Sr. No.	Activities	No. of Activity	No. of Beneficiary Farmers
1	Visit of village by teams	217	16195
2	Interface meetings / <i>Goshthies</i>	183	4250
3	Trainings	42	912
4	Demonstrations	280	280
5	Mobile based advisories	542	7229
6	Distributions of literature	66	2271
7	Development of linkages with other agencies	17	3240
8	Distribution of new varieties	34	8135
9	Transfer of technology	21	78
10	Animal health camp	-	-
11	General Awareness	-	2189
Total		1402	44,779





Annexure 5.1

Extension Education Schemes

Sr. No.	Scheme	Centre
A	Plan Schemes	
1	Training Programme on Food Processing Technology	Anand
2	Training Programme on Organic Farming	
3	Training Programme on Weed Management	
4	Training Programme on Integrated Pest Management	
5	Training Programme on Seed Production	
6	Training Programme on Medicinal and Aromatic Plants	
7	Training in Gardening, Landscaping and Nursery Management	
8	Training in Baking Technology	
9	Training in Commercial Poultry Farming / Advanced Training in Commercial Poultry Technology	
10	Strengthening of Directorate of Extension Education	
11	Strengthening of Centre to Agricultural Extension Information System	
12	Agricultural Technology Information Centre	
13	Upgrading of existing Sardar Smruti Kendra	
14	Establishment of Technological Resource Centre and Educational Museum	
15	Establishment of Transfer of Technology Centre	Arnej
16	Establishment of Agri Poly Clinic for Tribal Farmers	Dahod
17	Strengthening of Demonstration cum Training Centre for Fish Culture	Devataj
18	Establishment of Tribal Farm Women Training Centre	Devgadhbaria
19	Transfer of Technology Centre	Godhra
20	Training Centre	Jabugam
21	Pashu Vigyan Kendra	Limkheda
22	Farm Technology Training Centre	Sansoli
23	Dairy Vigyan Kendra	Vejalpur
B	Non Plan Schemes	
1	Directorate of Extension Education	Anand
2	Publication Scheme	
3	Establishment of Sardar Smruti Kendra Museum	
4	Farm Advisory Scheme	
5	Training and Visit Scheme	
6	Tribal Training Centre	Dahod
7	Tribal Research cum Training Centre	Devgadhbaria



C	ICAR Schemes	
1	Overseeing of KVKs through Directorate of Extension Education	Anand
2	Krushi Vigyan Kendra	Arnej
Sr. No.	Scheme	Centre
3	Krushi Vigyan Kendra	Dahod
4	Krushi Vigyan Kendra	Devataj
D	Other Agency Schemes	
1	<i>Krushi Mahotsav</i>	Anand
2	Training and Visit Scheme (Plan)	
3	NARP Extension Scheme	Arnej
4	NARP Extension Scheme	Godhra
5	Kisan Call Centre (KCC)	Anand
6	<i>Krushi Library</i>	
7	Directorate and Sameti	
8	<i>Mera Gaon Mera Gaurav Program</i>	



Krushi Vigyan Kendra, AAU, Devataj



Krushi Vigyan Kendra, AAU, Arnej



Tribal Research cum Training Centre, AAU
Devgadbaria



Farm Technology Training Centre, AAU, Nenpur

Annexure 5.2

Agriculture Fairs/Exhibitions Helds During 2017-18

Sr. No.	Agriculture Fair/ Exhibition	Place	Duration	No. of Beneficiaries (Approx.)
1	<i>Kishan Maha Kumbh 2017</i>	Palanpur Dist. Banaskantha	08-11 April 2017	40,000
2	<i>Krusha Mahotsav</i> Agricultural Exhibition	Nadiad Dist. Kheda	6 May 2017	22,000
3	<i>Krusha Mahotsav</i> Agricultural Exhibition	Godhra Dist. Panchmahal	14 May 2017	21,000
4	<i>Krusha Mahotsav</i> Agricultural Exhibition	Chhotadaipur	18 May 2017	25,000
5	<i>Krusha Mahotsav</i> Agricultural Exhibition	Dahod	22 May 2017	20,000
6	<i>Krusha Mahotsav</i> Agricultural Exhibition	Bavala Dist. Ahmedabad	25 May 2017	21,000
7	Agricultural Fair/Exhibition	Jambughoda Dist. Panchmahal	15 December 2017	560
8	Agricultural Fair/Exhibition	Godhra Panchmahal	4 January 2018	2000
9	Agricultural Fair/Exhibition	Godhra Panchmahal	6 January 2018	2300
10	<i>Agrotech Krushimela</i>	Near Umabhavan, Anand	20-23 January 2018	30,000
11	<i>Mechinery & Technology Demonstration Mela</i>	JAU campus, Junagadh	22-23 January 2018	10,000
12	Agricultural Fair/Exhibition	Kadana Dist. Mahisagar	9 February 2018	750
13	Agricultural Exhibition	Shastri Park, Anand	11 February 2018	2100
14	Agricultural Fair/Exhibition	Arad Ta. Halol, Dist. Panchmahal	16 February 2018	2500
15	Agricultural Fair/Exhibition	Santrampur Dist. Mahisagar	27 February 2018	850

Annexure 5.3

Publication of Agricultural Literature during 2017-18

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
Books		
1	<i>Jaivik khataro</i>	EXT-5-13:2017:2000 ISBN-978-81-934018-4-2
2	<i>Shakbhaji pako</i>	EXT-5:17:2017:2000 ISBN-978-81-934018-7-3
3	<i>Phool pako</i>	EXT-5:18:2017:2000 ISBN-978-81-934018-6-6
4	<i>Soyabinni vaigyanik kheti ane mulyavardhan</i>	EXT-5:19:2017:2000 ISBN-978-81-934018-3-5
5	<i>Khetina aadhunik abhigamo</i>	EXT-5:20:2017:2000 ISBN-978-81-934018-4-2
6	<i>Dairy udhyog</i>	EXT-5:21:2018:2000 ISBN-978-93-5311-456-5
7	<i>Madhmakhi palan</i>	EXT-5:22:2018:2000 ISBN-978-93-5311-466-4
8	<i>Masala pako</i>	EXT-5:23:2018:2000 ISBN-978-93-5311-881-5
9	<i>Gruh udhyog tarike bekari vangio</i>	EXT-5:24:2018:2000 ISBN-978-93-5311-455-8
10	<i>Manav aahar ane poshan</i>	EXT-5:25:2018:2000 ISBN-978-93-5311-925-6
11	<i>Sajiv kheti: prakrutina sathvare</i>	EXT-11:4:2018:5000 ISBN-978-93-5300-921-2
12	<i>Aaushadhiy ane sugandhit pakoni vaiganik kheti</i>	EXT-15:1:2017:3000 ISBN-978-93-5288-043-0
13	<i>Narmada vistarni piyat kalji</i>	EXT-17:1:2017:2000 ISBN-978-81-934018-8-0
14	<i>Dudhnu mulyavardhan – safaltani chavi</i>	EXT-28:1:2017:1000 ISBN-978-93-5268-272-0
15	<i>Krushi gyan samput-2017</i>	EXT-35:2:2017:20000 ISBN-978-81-934018-1-1
16	<i>Shakbhaji masala pakoma vaigyanik abhigam</i>	RES-5:2:2017:100
17	<i>Masala pakoni shakbhajima agatyata ane teni kheti paddhati</i>	RES-5:3:2017:100



Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
18	Varieties of Vegetable Crops by MVRS	RES-5:5:2017:5
19	<i>Shakbhaji masala pakoma nutan abhigam</i>	RES-5:7:2018:200
20	<i>Kitnashakono vaprash</i>	RES-10:1:2017:2000 ISBN-978-93-5268-656-8
21	<i>Margha palan</i>	RES-18:3:2018:5000 ISBN-978-81-935614-2-6
22	Export of Fruits and Vegetables from India: Growth, Opportunities and Challenges	RES-24:5:2017:2000 ISBN-978-93-5279-070-8
23	Professional Extension Skills	EDU-1:11:2017:500 ISBN-978-93-5279-053-1
Booklets		
24	<i>Gujaratna khedutoni aavak bamni karvani pathdarshika</i>	EXT-3:12:2017:2000
25	<i>Pashu palan: bamni aavakno strot</i>	EXT-6:1:2018:1000
26	<i>Dudh ganga- mahila pashupalakoni safal varta</i>	EXT-20:1:2017:500
27	<i>Anand krushi university dvara juda juda pakoni vividh jatonu gunvattasabhar beej utpadan (Anubhav Brand)</i>	RES-4:2:2018:3000
28	<i>Dangarni aadhunik kheti paddhati</i>	RES-27:1:2018:2000
29	<i>Deshi kapasni sajiv kheti</i>	RES-47:1:2017:4000
30	<i>Jal ane jamin vyavasthapan</i>	EDU-4:11:2018:300
31	<i>Soyabinni vaigyanik kheti ane mulyavardhan</i>	EDU-4:12:2018:100
32	14 th Annual Convocation : Programme and Procedure	GEN-1:15:2017:1000
33	14 th Annual Convocation : Welcome Address	GEN-1:16:2017:1000
34	14 th Annual Convocation : Convocation Address	GEN-1:17:2017:1000
35	<i>Chaudmo varshik padvidan samarambh : Prasangik pravachan</i>	GEN-1:18:2017:1000
Training Manuals/Modules		
36	<i>Krushima havamanani agatyata (Module-1)</i>	EXT-1:9:2017:50
37	<i>Jamin ane tenu swasthya (Module-2)</i>	EXT-1:10:2017:50
38	<i>Sankalit poshan vyavasthapan (Module-3)</i>	EXT-1:11:2017:50
39	<i>Sankalit rog-jivat niyantran (Module-4)</i>	EXT-1:12:2017:50
40	<i>Pak utpadan, postharvest ane khetima yantrikaran (Module-5)</i>	EXT-1:13:2017:50
41	<i>Piyat vyavasthapan (Module-6)</i>	EXT-1:14:2017:50
42	<i>Krushu vishayak kayadao (Module-7)</i>	EXT-1:15:2017:50

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
43	<i>Krusha dhiraan, pak vimo ane mahiti tantrikta (Module-8)</i>	EXT-1:16:2017:50
44	<i>Krushima havamanani agatyata (Module-1)</i>	EXT-1:17:2018:50
45	<i>Jamin ane tenu swasthya (Module-2)</i>	EXT-1:18:2018:50
46	<i>Sankalit poshan vyavasthapan (Module-3)</i>	EXT-1:19:2018:50
47	<i>Sankalit rog-jivat niyantran (Module-4)</i>	EXT-1:20:2018:50
48	<i>Pak utpadan, postharvest ane khetima yantrikaran (Module-5)</i>	EXT-1:21:2018:50
49	<i>Piyat vyavasthapan (Module-6)</i>	EXT-1:22:2018:50
50	<i>Krusha vishayak kayadao (Module-7)</i>	EXT-1:23:2018:50
51	<i>Krusha dhiraan, pak vimo ane mahiti tantrikta (Module-8)</i>	EXT-1:24:2018:50
52	<i>Shakbhaji masala pako: talim sampat</i>	RES-5:4:2017:100
53	<i>Manual of Vegetable Varieties Registered in PPV & FR Act</i>	RES-5:6:2017:5
54	<i>Gobargasnu mahatva ane teni upyogita</i>	EDU-4:1:2017:150
55	<i>Krushima yantrikaran thaki aavak vadharvana upayo</i>	EDU-4:2:2017:100
56	<i>Surya urjani khetima upyogita</i>	EDU-4:4:2018:200
57	<i>Sitafalni vaigyanik kheti paddhati ane mulyavardhan</i>	EDU-4:5:2018:100
58	<i>Krusha pakoni Kapnina adhunik yantrono parichay</i>	EDU-4:5:2018:100
59	<i>Makaina pakma kapni pachini vividh prakriyao, vyavasthapan ane mulyavardhan</i>	EDU-4:10:2018:100
60	<i>Khetima havamaan ane jaminni bhumika (Module-1)</i>	EDU-8:12:2017:60
61	<i>Pak utpadan (Module-2)</i>	EDU-8:13:2017:60
62	<i>Beej utpadan (Module-3)</i>	EDU-8:14:2017:60
63	<i>Sankalit poshan vyavasthapan(INM) (Module-4)</i>	EDU-8:15:2017:60
64	<i>Piyat vyavasthapan (Module-5)</i>	EDU-8:16:2017:60
65	<i>Pak sanraksan (Module-6)</i>	EDU-8:17:2017:60
66	<i>Farm yantrikaran ane kapni pachini tantriktao (Module-7)</i>	EDU-8:18:2017:60
67	<i>Vistaran vyavastha ane vyaktitva vikas (Module-8)</i>	EDU-8:19:2017:60
Practical Manuals		
68	Entrepreneurship Development	EDU-01-07-2017-600 ISBN-978-93-5268-517-2



Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
69	Extension Methodologies for Transfer of Agricultural Technology	EDU-01-08-2017-400 ISBN-978-93-5268-439-7
70	Laboratory Manual of Veterinary Pharmacology & Toxicology Paper-1	EDU-3:6:2018:300
71	Laboratory Manual of Veterinary Pharmacology & Toxicology Paper-1	EDU-3:7:2018:300
72	Fundamentals of Renewable Energy Sources	EDU-4:3:2018:600
73	Remote sensing and GIS Application SWCE 4.8.4	EDU-4:3:2018:150
74	Drying and Storage Engineering	EDU-4:7:2018:100
75	SOP of post Harvest Technology	EDU-4:8:2018:100
76	Crop Process Engineering	EDU-4:9:2018:100
77	Soil mechanics	EDU-4:13:2018:300
78	Fluid Mechanics and Channel Hydraulics	EDU-4:14:2018:300
Folders		
79	<i>BT kapasma chusiya prakarni jivatonu sankalit vyavasthapan</i>	EXT-13:1:2018:5000
80	<i>Vanaspati janya kitnashako, vish pralobhikani banavat ane upyog</i>	EXT-13:2:2018:5000
81	<i>Safed ghainnu vyavasthapan</i>	EXT-13:3:2018:5000
82	<i>Madhmakhi palan dvara malti vividh pedasho ane teno upyog</i>	EXT-13:4:2018:5000
83	<i>Kitnashako same pratikarakta ane tena atkayati upayo</i>	EXT-13:5:2018:5000
84	<i>Rakshit khetima sankalit jivat vyavasthapan</i>	EXT-13:6:2018:5000
85	<i>Makaini sankar jatonu beej upadan</i>	EXT-14:1:2018:2000
86	<i>Divelani sudhrel jatonu beej upadan</i>	EXT-14:2:2018:2000
87	<i>Bajrini sudharel jatonu beej upadan</i>	EXT-14:3:2018:2000
88	<i>Dangarni sudharel jatonu beej upadan</i>	EXT-14:4:2018:2000
89	<i>Pashuona khorak par vividh prakriyathi poshan mulyama vruddhi</i>	EXT-22:8:2018:2000
90	<i>Azola- janvaro mate ek poorak aahar</i>	EXT-22:9:2018:2000
91	<i>Ghascharana vividh pako</i>	EXT-22:10:2018:2000
92	<i>Pashu aaharnu aayojan</i>	EXT-22:11:2018:2000

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
93	<i>Divelani kheti paddhati</i>	EXT-22:12:2018:2000
94	<i>Raini kheti paddhati</i>	EXT-22:13:2018:2000
95	<i>Ghauni kheti paddhati</i>	EXT-22:14:2018:2000
96	<i>Dangarni kheti paddhati</i>	EXT-22:15:2018:2000
97	<i>Deshi gulabni aadhunik kheti paddhati tatha mulyavardhan</i>	EXT-22:16:2018:2000
98	<i>Papaiya aadhunik kheti paddhati tatha mulyavardhan</i>	EXT-22:17:2018:2000
99	<i>Saragava aadhunik kheti paddhati tatha mulyavardhan</i>	EXT-22:18:2018:2000
100	<i>Bagayati pakoma mulyavardhan</i>	EXT-22:19:2018:2000
101	<i>Aadarsh pashupalan</i>	EXT-28:1:2017:1000
102	<i>Navjat bachchano uchher, mavjat ane teni kalaji</i>	EXT-28:2:2017:1000
103	<i>Hadakava- ek jivlen pratisancharit rog</i>	EXT-28:3:2017:1000
104	<i>Chepi garbhpat- ek mahatvano pratisancharit rog</i>	EXT-28:4:2017:1000
105	<i>Makaini vaigyanik kheti paddhati</i>	EXT-30:1:2018:15000
106	<i>Ghauma nindan vyavasthapan</i>	RES-8:1:2017:10000
107	<i>Gajarghasnu sankalit vyavasthapan</i>	RES-8:2:2017:10000
108	Accomplishments on agriculturally beneficial micro-organism for sustainable agriculture	RES-12:3:2016:500
109	<i>Anubhav pravahi jaivik khatar</i>	RES-12:7:2017:2000
110	<i>Anubhav pravahi jaivik khatar</i>	RES-12:8:2017:5000
111	Anubhav pravahi jaivik khatar	RES-12:9:2017:10000
112	Success Story: Liquid Biofertilizer and Bio NPK(PGPB) Consortium Functional for Organic Farming and Sustainable Agriculture	RES-12:10:2017:1000
113	<i>Success Story: Anubhav Liquid Biofertilizer and Bio NPK(PGPB) Consortium key inputs to Accelerate Organic farming In India</i>	RES-12:9:2018:1000
114	<i>Chanani popta kori khanar lili iyal ane tenu sankalit vyavasthapan</i>	RES-15:1:2017:10000
115	<i>Kapasni jivatona kudrati dushmanone jano</i>	RES-15:3:2017:5000
116	<i>Magfalina safed mundanu sankalit vyavasthapan</i>	RES-15:4:2018:5000
117	<i>Pashu aahar</i>	RES-19:1:2017:5000
118	<i>Pashuono dainik aahar</i>	RES-19:2:2017:5000
119	<i>Khetima agatyana kitakbhakshi pakshio</i>	RES-24:1:2017:3000
120	<i>Krushima pakshionu mahatva</i>	RES-24:2:2017:3000
121	<i>Makaina pakma pakshionu niyantran</i>	RES-24:3:2017:3000



Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
122	<i>Krushy paryavaranma pakshio</i>	RES-24:4:2017:2000
123	<i>Krushy sanshodhan Kendra-sansoli : ek parichay</i>	RES-41:1:2017:2000
124	<i>Sankar divelani khetima sankalit jivat vyavasthapan</i>	RES-41:2:2017:2000
125	<i>Importance of Training in agriculture</i>	RES-42:1:2017:2000
126	<i>Krushy kshetre talimnu mahatva</i>	RES-42:2:2017:2000
127	<i>Khetima jamin svasthyanu mahatva</i>	RES-45:4:2018:2000
128	<i>Kathol vargno agatyano pak-tuver</i>	RES-45:5:2018:2000
129	<i>Jirani vaigyanik kheti padhati</i>	RES-48:1:2017:2000
130	<i>Suvani vaigyanik kheti padhati</i>	RES-48:2:2017:3000
131	<i>Sajiv khetima rog jivat niyantran</i>	RES-49:4:2018:2000
132	<i>Ardhshiyalu talni vaigyanik kheti paddhati</i>	RES-49:5:2018:2000
133	<i>Jiruma rog jivat niyantran</i>	RES-49:6:2018:2000
134	<i>Madhmakhi palan</i>	EDU-1:12:2017:5000
135	<i>Pratisancharit rogo (zoonosis)</i>	EDU-3:3:2017:5000
136	<i>Dangar mahisagarni aadhunik kheti paddhati</i>	
137	<i>Ushmiy shakti melavava mate up draft throat prakarnu biomass gasifire</i>	
138	<i>Aaushadhiy pak tajagyata</i>	
139	<i>Dudhal pashuoni utpadakta vadharava mate bypass fetno upyog</i>	
140	<i>Dudhal pashuoni utpadakta vadharava mate proteinno fetno upyog</i>	
141	<i>Pashu vyandhytva nivaran thaki safal pashupalan</i>	
142	<i>Pashuaaharma khaniyatvonu mahatva</i>	
Leaflet		
143	<i>Janvaroma thato chepi garbhpaat- Brucellosis</i>	EDU-3:5:2018:1000
Brochures		
144	Placement Brochure-2018	EDU-4:6:2018:200
145	Placement Brochure-2018 for college	EDU-6:21:2017:200
146	Centre of Excellence-Cum Incubation Centre on Food Processing	EDU-6:22:2018:500
Magazine		
147	Food Technica	EDU-6:23:2018:300
148	Vasodhara	EDU-10:1:2017:100

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
149	<i>Krushigovidya</i> Farm Magazine (Monthly)	Year:69:No.12:Vol.828:6976 Year:70:No.01:Vol.829:7585 Year:70:No.02:Vol.830:6791 Year:70:No.03:Vol.831:6870 Year:70:No.04:Vol.832:7104 Year:70:No.05:Vol.833:8828 Year:70:No.06:Vol.834:7227 Year:70:No.07:Vol.835:7409 Year:70:No.08:Vol.836:7013 Year:70:No.09:Vol.837:6942 Year:70:No.10:Vol.838:8564 Year:70:No.11:Vol.839:9900
Newsletter		
150	AAU Newsletter (Quarterly)	Vol.14 No.1:700 Vol.14 No.2:800 Vol.14 No.3:900 Vol.14 No.4:900
Compendium		
151	Success Stories of Women Farmers / Agripreneur of Western Region	
Report		
152	13 th AAU Annual Report	GEN:1:14:2017:300
Diary		
153	Anand Krushi University Diary 2018	EXT-3:13:2018:2000

Annexure 5.4

Publication of Video Film (DVD) during 2017-18

Sr. No.	Topic/Subject	No.
1	<i>Pashu Poshan: Khanij tatvonu mahatva</i>	5000
2	<i>Fal- Shakbhajini mulyvardhit banavato</i>	
3	<i>Madhmakhi Palan</i>	
4	<i>Margha palan</i>	
5	<i>Khetima suksmtatvonu mahatva</i>	5000
6	<i>Green House Technology</i>	
7	<i>Tapak piyat padhati</i>	
8	<i>Choksaipoorvakani kheti</i>	
9	<i>Pashuoma rasikaran</i>	100
10	<i>Swachch doodh utpaadan</i>	100
11	<i>Pashuaharama mineral mixturenu mahatva</i>	100
12	<i>Sajiv kheti</i>	100
13	<i>Khetima milchingno upayog</i>	100
14	<i>Mishra pak padhdhati</i>	100
15	<i>Anubhav Pravahi Jaivik khatar</i>	100
16	<i>Krusha Pakoma Tissue cultureno upayog</i>	100
17	<i>Jaivik niyantran</i>	100
18	<i>Anaj sangrahamaa jivaat niyantran</i>	100

Annexure 5.5

Radio Talks Delivered during 2017-18

Sr. No.	Name of Scientist	Topic	Date
1	Dr. R. K. Thumar	<i>Krushipakoni jivatonu bin rasayanik paddhatithi niyantran</i>	07/04/2017
2	Dr. S. K. Patel	<i>Krishimaa nana ane mota khet ozaroni agatyata</i>	08/05/2017
3	Dr. R. J. Modi	<i>Dudhalu gayo/bhensoni pasandgi</i>	09/05/2017
4	Dr. R. Radha Rani	<i>Dudhala pashuoni vaigyanik mavajaj</i>	15/05/2017
5	Dr. S. M. Khanonkar	<i>kharif makai ni kheti paddhti</i>	06/06/2017
6	Prof. H. L. Kacha	<i>Chomasu Shakhbaji pakoni vaigyanik kheti padhdhati</i>	12/06/2017
7	Dr. U. M. Patel	<i>Divelani vaigyanik kheti padhdhati</i>	12/06/2017
9	Dr. M. B. Patel	<i>Makai pak ma pak sanraksan ne lagta prashno</i>	19/06/2017
10	Shri K. H. Patel	<i>Chomasu mag ni vaigyanik kheti paddhti</i>	26/06/2017
11	Shri V. J. Patel	<i>Makai pak ma jamin ane khatar vyavasthapan</i>	11/07/2017
12	Shri K. H. Patel	<i>Sajiv kheti ni agatyata</i>	31/07/2017
13	Shri K. V. Vala	<i>Shakhbajima cold chain Management</i>	08/08/2017
14	Prof. N. D. Makwana	<i>Chanani vaigyanik kheti padhdhati</i>	21/08/2017
15	Dr. S. K. Singh	<i>Skill development in youth</i>	05/09/2017
16	Dr. A.Y. Makani	<i>Kapaas ni Mukhya Jivato</i>	20/09/2017
17	Shri D. B. Ramjiyani	<i>Tapak Sinchai Paddhti na Faydao</i>	28/09/2017
18	Shri D. B. Ramjiyani	<i>Divelama Jivat Niyantran</i>	28/09/2017
19	Dr. K. K. Hadiya	<i>Pashu vyandhatva ane tenu nivanan</i>	06/10/2017
20	Dr. D. P. Gohil	<i>Ravi shakhbaji pakona vavetarnu aayojan</i>	07/11/2017
21	Dr. D. C. Patel	<i>Vaikalpik aaharma lilacharana vikalp</i>	23/11/2017
22	Mr. J. M. Patel	<i>Pashupalanma Krutrim viryadannu mahatva</i>	27/11/2017
23	Dr. Girish J Patel	<i>Unalu Magafali ni Kheti</i>	25/12/2017
24	Dr. N. B. Patel	<i>Sankalit Jivat Vyavasthapan</i>	26/12/2017



Sr. No.	Name of Scientist	Topic	Date
25	Shri K. H. Patel	<i>Makai ni nafakarak kheti</i>	01/01/2018
26	Dr. S. K. Patel	<i>Khet ozarono upyog kari khedutoni aavak bamani karavana upayo</i>	03/01/2018
27	Prof. H. L. Kacha	<i>Bhindani vaigyanik kheti padhdhati</i>	03/01/2018
28	Dr. R. Radha Rani	<i>Dudhala pashuoma aahar vyavasthapan</i>	03/01/2018
29	Prof. N. D. Makwana	<i>Magni vaigyanik kheti padhdhati</i>	03/01/2018
30	Prof. N. D. Makwana	<i>Khedutoni aavak bamani karavana chaviroop pagalao</i>	04/01/2018
31	Dr. R. R. Gajera	<i>Fal ane shakbhaji pakoma processing ane mulyavardhan</i>	05/01/2018
32	Prof. N. K. Rathod	<i>Chanana pakoma sankalit jivaat vyavasthapan</i>	08/01/2018
33	Dr. R. J. Modi	<i>Pashuoma tanavgrast paristhitio ane nivaran</i>	06/02/2018
34	Shri K. H. Patel	<i>Makaini vaigyanik kheti (Khedut sathe charcha)</i>	16/02/2018
35	Smt. Shefali K. Modi	Soil Health	07/03/2018
36	Dr. M. B. Patel	<i>Makaini mulya vardhit jato</i>	12/03/2018
37	Er. J. J. Chavda	<i>Pavan Chakkini Upayogita</i>	13/03/2018
38	Shri D. M. Rathod	<i>Makai pak ma jaivik khatar ni agatyta</i>	13/03/2018
39	Dr. B. N. Thakker	<i>Makai ma avti jivato nu sankalit niyantran</i>	13/03/2018
40	Shri D. P. Patel	<i>Gramya Mahilao nu Shasktikaran</i>	13/03/2018
41	Prof. K. L. Dabhi	<i>Importance of farm Mechanization</i>	14/03/2018
42	Shri V. J. Patel	<i>Jaminni faldrupta vadharvana upayo</i>	14/03/2018
43	Dr. D. K. Vyas	<i>Krushima Solar Power no Upayog</i>	16/03/2018

Annexure 5.6

Television Programs Telecasted during 2017-18

Sr. No.	Name of Scientist	Topic	Date
1	Dr. R. K. Thumar	<i>Magfalima dhain ane tenu sankalit vyavasthapan</i>	07/04/2017
2	Dr. R. R. Aacharya	<i>Shakbhajini khetima vaigyanik abhigam</i>	19/04/2017
3	Dr. R. K. Thumar	<i>Krushhi pakoni jivatonu bin rasayanik paddhatithi niyantran</i>	02/05/2017
4	Dr. P. K. Borad	<i>Kapasni jivatonu sankalit vyavasthapan</i>	12/05/2017
5	Dr. V. P. Ramani	<i>Suksmtatvoni kheti pakoma agatyata</i>	23/05/2017
6	Dr. R. J. Modi	<i>Dudhala gayo/bhensoni pasandagi</i>	31/05/2017
7	Dr. S. M. Khanorkar	<i>Chomasu makaini kheti paddhati</i>	13/06/2017
8	Dr. A. J. Dhami Dr. J. A. Patel	<i>Pashu prajanan samasyao</i>	16/06/2017 (Phone in Live)
9	Dr. K. D. Mevada	<i>Sukshma piyatnu mahatva</i>	21/06/2017
10	Dr. D. D. Chaudhari	<i>Kharif pakoma Sankalit nindan vyavasthapan</i>	28/06/2017
11	Dr. R. J. Modi	<i>Svachha dudh utpadan</i>	09/08/2017
12	Dr. K. S. Prajapati	<i>Dangarma pak sanrakshan</i>	11/08/2017
13	Dr. V. P. Ramani	<i>Chomasu pakoma gaun ane sukshmatatvo</i>	22/08/2017
14	Dr. R. R. Gajera	<i>Fal ane shakbhaji pakoma mulyavardhan</i>	30/08/2017
15	Dr. C. C. Patel	<i>Madhmakhi uchher</i>	04/09/2017
16	Dr. M. V. Patel	Precesion Farming	12/09/2017
17	Dr. V. P. Ramani	<i>Ghascharana pakoma sukshmatatvoni agatyata</i>	15/09/2017
18	Dr. J. N. Patel	<i>Shakbhaji pakoni jato ane khasiyato</i>	19/09/2017
19	Dr. R. R. Aacharya	<i>Ravi shakbhaji pakona vavetarnu aayojan</i>	18/10/2017
20	Dr. S. D. Patel	<i>Tuverma jivatonu sankalit vyavasthapan</i>	31/10/2017
21	Prof. K. H. Patel	<i>Siyalu makaini vaigyanik kheti</i>	08/11/2017
22	Dr. C. C. Patel Dr. R. K. Thumar	<i>Kapasni gulabi iyal ane tenu sankalit vyavasthapan</i>	10/11/2017 (Phone in Live)



Sr. No.	Name of Scientist	Topic	Date
23	Dr. K. D. Mevada	<i>Ravi pakoma piyat vyavasthapan</i>	21/11/2017
24	Dr. D. D. Chaudhari	<i>Ravi pakoma sankalit nindan vyavasthapan</i>	29/11/2017
25	Dr. K. K. Hadiya	<i>Pashu vandhyatva ane tenu nivaran</i>	12/12/2017
26	Dr. Kaushik D. Parmar	<i>Jantunashak davana avshesho nivarvana upayo</i>	20/12/2017
27	Dr. C. C. Patel Ku. Miral Suthar	<i>Anaj sangrah paddhati</i>	29/12/2017 (Phone in Live)
28	Dr. C. C. Patel Ku. Miral Suthar	<i>Anaj sangrah paddhati</i>	05/01/2018 (Phone in Live)
29	Dr. R. R. Gajera	<i>Fal ane shakbhaji pakoma processing ane mulyavardhan</i>	09/01/2018
30	Dr. P. K. Borad	<i>Kapasma gulabi iyalna niyantran mate sankalit vyavasthapan</i>	12/01/2018 (Phone in Live)
31	Dr. R. R. Aacharya	<i>Unalu shakbhaji pakni kheti paddhati</i>	17/01/2018
32	Dr. R. J. Modi	<i>Pashuoma tanavgrast paristhitio ane nivaran</i>	30/01/2018
33	Shri K. V. Vala	<i>Pandalavala shakbhajima mulyavardhan</i>	07/02/2018
34	Dr. B.D. Patel Dr. D. D. Chaudhari	<i>Vividh pakoma sankalit nindan vyavasthapan</i>	09/02/2018 (Phone in Live)
35	Dr. V. P. Ramani	<i>Pak poshan vyavasthama sukshmatatvoni agatyata</i>	20/02/2018
36	Dr. K. S. Sadariya	<i>Prani sarvarma gharghatthu upchar</i>	28/02/2018
37	Dr. Amit M. Patel	<i>Dudhnu mulyavardhan</i>	13/03/2018
38	Dr. P. K. Borad Dr. N. M. Gohel	<i>Bagayati pakoma rog jivat vyavasthapan</i>	16/03/2018 (Phone in Live)
39	Dr. P. D. Patel	<i>Bhal vistarma thata jamfal ane dadamni kheti paddhati</i>	21/03/2018



Agricultural Technology Information Centre, AAU, Anand



Sardar Smruti Kendra, AAU, Anand



Chapter - 6

STUDENTS' WELFARE



The office of Director, Students' Welfare, Anand Agricultural University was established with effect from 01/05/2004. This office is looking after various students' activities/facilities including housing, sports, cultural events, fellowships, recreation, health, adventure, counseling, placement etc. More over, dignitaries of different fields are invited to share their thoughts, experiences and views among staff and students.

6.1 Students' Representative Council

All the constituent colleges of the University have the Students Representative Council (SRC) formed as per University rules by the Principal/Dean of the respective colleges by selecting the sincere and leading students. The Council is formed with a view that the students can represent their problems through their representatives. The SRCs organize and monitor various extracurricular activities of students like planning forum, sports, debate and elocution, preparation of college magazine, cultural programmes, NSS etc. in collaboration and guidance from Directorate of Students' Welfare.

Apart from this, Alumni Associations in all the nine colleges have been formed. One day seminars were organized for strengthening the professional brotherhood and creating the atmosphere of oneness amongst alumni.

6.2 Students' Amenities

Hostel

Hostel environment plays an important role in the development of personality and character of the students. Good hostel facilities are provided to all the under-graduate and post-graduate students of the University as a residential University with an attached mess. In some of the hostels, self-managed mess is

governed by the students while some are managed by contract system under the supervision of Rector/Asst. Rector/Asst. Warden. Library facility is also available for the use of students. The other facilities for day to day requirements like laundry, tailor, canteen, cycle store, provision store, telephone, post office, bank, ATM; etc. are also available in the University premises. The Rector and Asst. Rectors & Hostel Warden are appointed in each college for maintenance of student facilities and solving the residential problems of the students.

Health Facilities

Anand Agricultural University has made MOU with Charutar Arogya Mandal, Karamsad, for providing better health facility to students and staff from April 1, 2008. Special facility of Physician for various specialties like Dental, Skin, Eye, Gynecology, Homeopathy and other disciplines are made available on campus.

The number of cases registered under various medical treatments at University Health Center during the year is as under;

Sr. No.	Test/ Treatment	No. of cases / patients Turned up
1	Allopathic	10,808
2	Dental	89
3	Skin	-
4	Homeopathic	1450
5	Blood Sugar BS/FBS/ PP2bBS, test ,Lipid Profile, Creatinine, Jaundice/S.G.P.T/ SGOT/Albumin, Uric Acid, Blood group & Laboratory test in Health Center.	2742



Sr. No.	Type of Patients	No. of cases/ patients Turned up
1	University Employee	3,371
2	University Employee Family members	344
3	Students	2,965
4	Farm labours	1,328
5	Pensioners	2,889

Placement Cell

Anand Agricultural University has an excellent placement record with top-notch organizations in Banks, Agriculture companies, Irrigation companies, Tractor companies, various Dairy and Food Industries, IT companies, Pharmaceuticals, Semi Government with a strong and supportive alumni

network holding prime position in reputed companies. We not only ensure a job for the deserving students but also instill a lifetime confidence and growth. Our dedicated placement cell is constantly in touch with the industries. The Student Counseling & Placement Cell looks after students' well-being, Placement and Campus Interview.

Statement showing the details of students' placement (2017-18)

Name of the Faculty	Name of the College	Placement			
		Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
Agriculture	B. A. College of Agriculture, Anand	Zydex, Vadodara	06	-	06
		Mordor Intelligence, Hyderabad	-	01	01
		My Crop Ltd., Ahmedabad	05	-	05
		GATL, GSFC, Vadodara	05	04	09
		Vimax Crop Sci., Rajkot	03	-	03
		Castor Oil Mill, Jagana, Palanpur	01	-	01
		Eleven Enterprise India, Vadodara	03	-	03
		CPF (India) Pvt. Ltd., Bangalore	-	02	02
		Crop Life Science Ltd., Vadodara	06	-	06
		Agro Star, Ahmedabad	04	01	05
		Rallis India. Ltd	03	03	06
		Federal Bank	-	01	01
		GPSC, Gandhinagar	13	08	21
		Total	49	20	69
Veterinary Science	College of Veterinary Science and Animal Husbandry	Post graduate study in SAUs	-	24	24
		Post graduate study in Other State	-	07	07
		GCMMF-Cooperative Dairies	25	-	25
		Maahi Milk Producer Comp. Ltd, Rajkot	02	-	02
		NGO/Trust			
		Jivdaya Charitable Trust (JCT), Ahmedabad	01	-	01



Name of the Faculty	Name of the College	Placement			
		Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
		Sayaji group, Ahmedabad	01	-	01
		Panjrappole- Godhara	01	-	01
		Private Practice	02	-	02
		Abroad- USA	03	-	03
		Total	35	31	66
Dairy Science	SMC College of Dairy Science	Adare Food Ingredients Pvt. Ltd., VU Nagar	02	01	03
		Vidya Dairy, Anand	02	-	02
		Sumul Dairy, Surat	17	-	17
		Amulfed Dairy, Gandhinagar	04	02	06
		GCMF Ltd., Anand	-	04	04
		Uttam Dairy, Ahmedabad	11	-	11
		Mother Dairy, Delhi	05	-	05
		Amul Dairy, Anand	06	05	11
		Dudhdhara Dairy, Bharuch	04	-	04
		Panchamrut Dairy, Godhara	06	-	06
		Vasudhara Dairy, Valsad	03	-	03
		Total	60	12	72
Food Processing Technology & Bio-Energy	Food Processing Technology & Bio-Energy	Saraf Foods Ltd., Vadodara	01	-	01
		Flourish Pure Foods Ltd., Ahmedabad	01	-	01
		Balaji Wafers, Valsad	-	01	01
		Gujarat Enterprises, Ahmedabad	01	-	01
		Deep Kiran Foods, Ahmedabad	02	-	02
		Parle Products Pvt. Ltd., Bhuj	-	01	01
		Jubilant Food Works Ltd., Ahmedabad	01	-	01
		Cilantro Food Products Pvt. Ltd., Ahmedabad	01	-	01
		Fresham Foods, Ahmedabad	01	-	01
		Geo-fresh Organic, Sidhpur, Mehsana	01	-	01
		Jayant Snacks & Foods, Rajkot	01	-	01
		Sonya Foods Pvt Ltd, Kadi	01	-	01
		Unity Milk & Food Products Pvt. Ltd., Rajkot	01	-	01
		Satvam Nutri Foods Ltd., Himatnagar	01	-	01
		Sarhad Dairy, Kutch	01	-	01
		Azafran Innovation, Ahmedabad	01	-	01
		Jal Pan Foods, Ahmedabad	-	01	01
		Dynamix Dairy, Baramati	-	01	01
		Total	15	04	19

Name of the Faculty	Name of the College	Placement			
		Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
Agricultural Information Technology	College of Agricultural Information Technology	Deepak Foundation, Vadodara	02	-	02
		ADRI IT Solutions, Vadodara	02	-	02
		Zydex Industries Pvt. Ltd	-	01	01
		Tirth Agro Engineering Pvt. Ltd	-	02	02
		Krishitek Pvt. Ltd	-	01	01
		Gujarat Enterprise Pvt.Ltd	-	03	03
		NBHC Pvt. Ltd	-	01	01
		Janalakshmi Financial Services Pvt. Ltd	-	06	06
		Vimax Crop sciences Pvt. Ltd	-	02	02
		Bharat Krushicare Pvt.Ltd	-	01	01
		RML Agtech Pvt. Ltd	-	03	03
		Deepak Foundation	-	03	03
		Zytex Biotech Pvt. Ltd	-	01	01
		Kotak Mahindra Bank Ltd	-	01	01
		ABS Foods Pvt. Ltd	-	02	02
		Rassi Seeds Pvt. Ltd	-	03	03
		Khedut Agri Engineering Pvt. Ltd	-	01	01
		HDFC Bank Ltd (Agri Division)	-	02	02
		Bharat Krishitech Pvt. Ltd	-	01	01
		Total	-	38	38
Agricultural Engineering	College of Agricultural Engineering and Technology, AAU, Godhra	Jain Irrigation Systems Ltd, Jalgaon	10	-	10
		Captain Tractor Pvt. Ltd., Rajkot	03	-	03
		Netafim Irrigation, Vadodara	04	-	04
		Signet Industries, Vadodara	03	-	03
		Total	20	-	20

6.3 Physical Education Programme

Physical Education and Sports play vital role for development and maintenance of personality, physical fitness, health and body build up of the students. Along with the development of academic career of the students, this university also strives hard to take care of physical fitness and personality development of the students by involving them in physical education,

sports, cultural events, adventurous activities etc. at college level under the direct guidance of Director of Students' Welfare.

(a) Sports Activities & Cultural Events

The students of the university are also trained for the development of skills and excellence in various sports activities. Inter-Collegiate competitions for



various games like Chess, Table-tennis, Badminton, Kabbadi, Volley ball, Basket ball, Kho-kho, Cricket, Cultural activities, Essay competition, Debate, Elocution etc. are arranged at various colleges.

The selected students from Inter-Collegiate competitions are nominated for Inter-University participation. During the year, the following Inter-Collegiate competitions were held;

Inter Collegiate Sports & Cultural Competitions: 2017-18

Sr. No.	Game	Organizing College	Date of Tournament	Position	
1	Cultural Competitions	Dairy Science	29/09/2017		
				Champion	College of Horti.
				Runner-up	Veterinary Science
				Champion	CAET, Godhra
				Runner-up	BACA
				Champion	BACA
				Runner-up	Veterinary Science
				Champion	College of Horti.
				Runner-up	FPT & BE
				Champion	BACA
2	Table-Tennis (Men)	IABMI	3-4/10/2017	Champion	BACA
				Runner-up	Veterinary Science
3	Chess	IABMI	3-4/10/2017	Champion	BACA
				Runner-up	CoA, Jabugam
4	Table-Tennis (Women)	IABMI	3-4/10/2017	Champion	BACA
				Runner-up	Veterinary Science
5	Badminton (Men)	BACA	6-7/10/2017	Champion	BACA
				Runner-up	Veterinary Science
6	Badminton (Women)	BACA	6-7/10/2017	Champion	BACA
				Runner-up	Dairy Science
7	Volley-ball (Men)	CoA, Vaso	03/11/2017	Champion	BACA
				Runner-up	CoA, Vaso
8	Volley-ball (Women)	CoA, Vaso	03/11/2017	Champion	College of Horti.
				Runner-up	BACA
9	Basket-ball	CAIT	06/11/2017	Champion	Veterinary Science
				Runner-up	CAIT
10	Kabaddi	CAET, Godhra	12/11/2017	Champion	CoA, Vaso
				Runner-up	BACA
11	Kho-Kho	Veterinary Science	14/11/2017	Champion	CAET, Godhra
				Runner-up	BACA
12	Football	BACA	12-13/2/2018	Champion	BACA
				Runner-up	Veterinary Science
13	Cricket	College of Horti.	03-08/02/2017	Champion	BACA
				Runner-up	Veterinary Science



Inauguration of Inter Collegiate Cultural Competition



Folk Dance



Drama



Cricket



Table Tennis



Kabaddi



Chess



Basketball



Volleyball

7th Inter Polytechnic Sports

7th Inter Polytechnic Sports event was organized on February 9-10, 2018 at Polytechnic in Agricultural Engineering, Dahod. On this occasion, Hon. Vice Chancellor Dr. N. C. Patel remained present. All the 5 Polytechnics took part in Volley ball, Kho- Kho, Chess & Table Tennis. Sheth M. C. Polytechnic in Agriculture



Kho-kho

won in Volleyball and become Runners-up in Kho-Kho while Polytechnic in Agriculture, Vaso won in Kho-kho and become Runners-up in Table Tennis. Polytechnic in Agricultural Engineering, Dahod became Champion in Table Tennis while Polytechnic in Horticulture, Vadodara became Runners-up in Volleyball.



7th Inter Polytechnic Sports



Inter Collegiate and Polytechnic Athletics Meet

Inter Collegiate and Polytechnic Athletics was held during February 22-23, 2018. Dr. N. C. Patel, Hon. Vice Chancellor, Shri Amit Prakash Yadav, District Development Officer, Anand, Dr. S. H. Akbari, Director, Students' Welfare, Deans and University Officers, staff and students remained

present in the inaugural function. All the athletes showed stunning performance in Athletics event. Dr. N. C. Patel, Hon. Vice Chancellor and Dr. Arun Patel, Director of Extension Education, Dr. S. H. Akbari, Director, Students' Welfare remained present in Closing Ceremony to distribute shields and certificate to the winners.



Inter Collegiate and Polytechnic Athletics

Gujarat State Inter Agricultural University Kabaddi, Kho-Kho, Table Tennis Tournaments at AAU

Gujarat State Inter Agricultural University Kabaddi, Kho-Kho, Table Tennis Tournament was organized

on November 24-25, 2017 at Gymkhana Ground, Anand Agricultural University, Anand. Dr. N.C. Patel, Hon. Vice Chancellor, University Officers, Staff, Team Mangers and Students remained present in the inaugural function. AAU team performed well.



Gujarat State Inter Agricultural University Kabaddi, Kho-Kho, Table Tennis Tournaments

Gujarat State Inter Agricultural University Polytechnics Volleyball, Kho-Kho and Table Tennis Tournament

Gujarat State Inter University Polytechnic

Volleyball, Kho-Kho and Table Tennis tournament 2017-18 was organized by AAU, Anand on February 28, 2018. Anand Agricultural University became Runners-up in Table Tennis.



Gujarat State Inter Agri. University Polytechnic Tournaments at AAU, Anand



Gujarat State Inter Agricultural University Sports, Cultural & Literary Events held during 2017-18

Sr. No.	Name of the host University	Date of event	Name of event	AAU Position
1	NAU	05/10/2017	Drama	Champion
			Mono Acting	Runners- up
			Mime	Runners- up
			Debate (Favour)	Champion
2	NAU	08/11/2017	Badminton (W)	Champion
			Table Tennis (W)	Runners- up
			Volley-ball (W)	Champion
3	SDAU	18/11/2017	Volley-ball	Champion
			Basketball	Runners- up
4	AAU	28/12/2017	Table Tennis (Poly.)	Runners- up
5	JAU	17-18/03/2018	Cricket	Champion
			Chess	Champion

AGRIUNIFEST 2017-18

Anand Agricultural University participated in 18th AGRIUNIFEST held at Sri Venkateswara Veterinary University, Tirupati (A.P.) during February

12-16, 2018. AAU secured Gold Medal in Mono-acting and three Silver Medals in Collage, Cartooning and Cultural Procession events. Hon. Vice Chancellor, Dr. N.C. Patel and Director, Students' Welfare, Dr. S. H. Akbari congratulated to all the participant students.



AGRIUNIFEST 2017-18 at SVVU, Tirupati



AGRIUNISPORTS 2017-18

17th All India Inter Agricultural Universities Games and Sports Meet 2017-18 organized by University of Agricultural Sciences, GKVK, Bengaluru (Karnataka) during January 30, 2018 to

February 03, 2018. Total 32 boy and girl students of AAU participated in Volleyball, Basketball, Table Tennis and Badminton Tournaments. Table Tennis (Women) team reached in Quarter Final while Volleyball (Women) team reached in Pre-Quartet Final.



AGRIUNISPORTS 2017-18 at UAS, GKVK, Bengaluru

(b) National Cadet Corps NCC

(i) For Boys Cadet

It is a voluntary organization helping India in nation-building. The camps organized play a vital role in national integration through interaction among different caste, creed and culture. With a view to giving a boost to the youth in the positive direction, NCC has been included in the course curriculum. The NCC unit of BACA is attached with 4 Gujarat Battalion, NCC, Vallabh Vidyanagar. The unit consists of two platoons of 100 cadets. This year 4 Gujarat Battalion (Boys) organized Combined Annual Training Camps at Khambhat. 55 cadets attended CATC camp. During CATC camp the cadets participated in different activities like weapon training, obstacle, map reading, essay writing, Volleyball competition and tug-of-war.

- ♦ It is a matter of great pride that Captain P.A.Gohil Associate NCC officer was awarded best ANO for the year 2017-18 and got merit certificate from Gp. Commander Brig.Majmudar sir
- ♦ During CATC Thamna cadet Javanaram

Chaudhary got first prize in essay competition, and Babiya Ashiah got first prize and Prdhadiya Hardik got second prize in debate competition. 6 cadets participated in Army attachment camp during August 07-21, 2017 at Gandhinagar.

- ♦ 2 cadets participated in All India National Integration camp during August 24 September. 04, 2017. 24/08/2017 to 04/09/2017 at Rajkot.
- ♦ 34 cadets participated in CATC camp at sarsa,Vadtal and Thamna during the year 2017-18
- ♦ 32 cadets passed 'B' certificate examination with A and B Grade in the year 2017-18.
- ♦ 17 cadets passed C certificate examination. 2017-18. 1 cadet got 'A' grade and remaining got 'B' grade.
- ♦ 26 cadets participated Kartavya Jagruti Kuch from Dandi to Sabarmati on 27 March, 2018 SUO Marvania Abhishek got selected for SSB screening course held at officer training academy Kamptee (Maharashtra) from April 09-18, 2018.





‘C’ certificate convocation ceremony
‘C’ certificate received with A grade from Adg. Maj. Gen. Subhas Saran



Cadets on firing range



Dr. K. P. Patel received memento from Adg. Maj. Gen. Subhas Saran

(ii) For Girls Cadet

The National Cadet Corps is the only organization of its kind which imparts Leadership, Discipline, Integration, Adventure, Physical and Community development training to over 13 lakh youth of the country. With the motto of ‘Unity and Discipline’, NCC provides platform for the equal opportunities to the young Girls and Boys of Schools and Colleges.

Anand Agricultural University also believes in strengthening ability of Girl Students and prepares them for the brighter future by providing equal Platform to excel.

Very first time Anand Agricultural University started Senior wing (SW) of NCC for Girl Students from October, 2017. 32 Girl Cadets have enrolled

from various colleges of the University under 4 GUJ Girls Battalion of V.V. Nagar Group. Rucha Dave, Assistant Professor cleared the interview for Associate NCC officer (ANO) and got selected for the Direct Commission as Lieutenant in senior wing of NCC.

Different Adventures, Sports and Social activities have been carried out during the year.

(1) Swachhata Abhiyan by NCC Girls Cadet

‘Swachhta Abhiyan’ was celebrated by Girl Cadets of 4 GUJ Girls BN of B. A. College of Agriculture, Anand Agricultural University, Anand on December 03, 2017. Total 30 cadets of B. A. College of Agriculture, College of FPT & BE, College of AIT and College of Horticulture of AAU participated in the awareness programme. Event was started by cleaning the university campus followed by a rally with different

slogans. On this occasion Dr. S. H. Akbari, Director of Students Welfare, AAU, Anand remained present and encouraged cadets with motivational speech.

(2) ‘Greenathon’

8 cadets completed Green Run of 10 km ‘Greenathon’ on February 11, 2018 organized by Vidyanagar Nature Club, V.V. Nagar.



Swachhata Abhiyan



Rifle Training

6.4 National Service Scheme (NSS)

The Department of Youth Affairs and Sports, Ministry of Human Resources Development, New Delhi, have started the National Service Scheme in 1969-70. The basic purpose of this scheme is to develop responsibility through social services and realization of work and discipline. National Service Scheme was functioning in all the colleges & Polytechnics of Anand Agricultural University. During the year under

(3) ‘Dandi March’

32 Cadets participated in ‘Dandi March’ from Anand to Bakrol organized by 4 GUJ girls BN on March 28, 2018

(4) ‘Rifle Training’

16 Cadets participated in ‘Rifle Training’ organized by the BN during May 03-05, 2018.



‘Greenathon’



Piping Ceremony

report volunteers registered for regular activity and for special camp are as under :

Sr. No.	Activity	No. of registered volunteers
1	Regular activities	1200
2	Special camp activities	600

During the spare time of academic programme the students are directly involved with the activities

related to the problems and requirements of the society and its development through various fields of N.S.S. activities. They are also inspired to work for Environment, Health, Family welfare, Hospitals and other organizations during natural calamity for the benefit of society and to work with people in villages and slums.

The social activities carried out by N.S.S. are divided in two groups.

4. (A) Regular activities

The regular activities carried out by this university during the reporting year includes;

- ♦ Celebration of World Environment Day
- ♦ Celebration of the Independence day and Republic Day
- ♦ Celebration of 'Matrubhasha Divas'
- ♦ Celebration of Agriculture Education Day
- ♦ Celebration of Janmastami
- ♦ Celebration of Sardar Patel Death Anniversary
- ♦ Charity Day
- ♦ Celebration of Birth Anniversary of Chhatrapati Shivaji Maharaj
- ♦ Team Building workshop
- ♦ Celebration of National Voters Day
- ♦ 'The secret of real education' - a spiritual concept
- ♦ Eye Check up Camp
- ♦ Celebration of 75th year of 'Quit India Movement' and 70th year of 'India's independence'
- ♦ Celebration of NSS Day
- ♦ Programme on 'Beti Bachavo'
- ♦ Celebration of Rakshabandhan
- ♦ Programme on Mosquito Control Awareness
- ♦ Programme on Cancer Awareness
- ♦ Programme on Prevention of Sexual Harassment
- ♦ Programme on Prevention of AIDS
- ♦ Blood donation camp at all the colleges
- ♦ Thalassemia Screening Programme
- ♦ Tree Plantation Programme
- ♦ Swachhh Bharat Abhiyan
- ♦ International Day of Yoga
- ♦ Martyrs Day
- ♦ Celebration of Nashabandhi Week
- ♦ Celebration of International Women's Day
- ♦ Celebration of Birth Anniversary of Swami Vivekanand
- ♦ Khadi for Nation Khadi for Fashion
- ♦ Celebration of Birth Anniversary of Subhashchandra Bose
- ♦ Meditation Programme
- ♦ Ayurvedic medicine 'Kavo' distribution camp against H1-N1



Tree Plantation



Swachh Bharat Abhiyan



Thalassemia Awareness Programme



Blood Donation Camp



Sparrow Conservation



Mother Language Day



Charity Day



Swami Vivekanand Birth Anniversary



Pledge on New India Formation-2022



NSS Day Celebration



4 (B) Special Camp

Sr. No.	Name of College	Duration	Village	Total Volunteers
1	B. A. College of Agriculture	March 19-25, 2018	Mogri	80
2	College of Veterinary Science & A.H.	March 19-25, 2018	Vadod	60
3	College of Dairy Science College	-	-	-
4	College of Food Processing Technology and Bio Energy	March 17-23, 2018	Vaghasi	36
5	College of Agricultural Information Technology	March 22-28, 2018	Sankhej	35
6	College of Horticulture	March 25-31, 2018	Gopalpura	54
7	College of Agricultural Engineering and Technology, Godhra	March 28, 2018 to April 03, 2018	Doctor na Muvada	40
8	College of Agriculture, Vaso	March 17-23, 2018	Siholdi	50
9	College of Agriculture, Jabugam	March 23-29, 2018	Khadakala	40
10	Polytechnic in Agriculture, Anand	March 22-28, 2018	Napad	30
11	Polytechnic in Food Science and Home Economics, Anand	March 17-23, 2018	Vaghasi	30
12	Polytechnic in Agriculture, Vaso	March 17-23, 2018	Siholdi	30
13	Polytechnic in Horticulture, Vadodara	March 23-28, 2018	Sadhi	19
14	Polytechnic in Agricultural Engineering, Dahod	March 20-26, 2018	Moti Sarsi	30

Several activities were carried out during Special camps, viz.

- ♦ Different kinds of Shram-yagnas
- ♦ Surveillance of villagers to know their social, educational, economical and health status along with the epidemiological surveillance of important diseases in animals
- ♦ Writing of slogans on walls
- ♦ Creative painting by NSS Volunteers
- ♦ Volunteers participated in indoor and outdoor games
- ♦ Prabhatpheri in the morning at 6.00 hrs
- ♦ Tree plantation at village

- ◆ Distribution of sparrow nest
- ◆ Collection of Plastic & Gutka pouches for plastic free village.
- ◆ Drama on Andhashradha & Nashabandhi
- ◆ Bhajan Sandhya in village
- ◆ Village Cleaning Programme
- ◆ Visit of progressive farmer's field, green house, poultry farm and anganvaadi
- ◆ Rangoli, Poster making, Musical chair, Quiz, Cartooning etc.
- ◆ School sports programme to motivate student for school regularity and sports activity
- ◆ School cultural programme
- ◆ Jagruti Abhiyan Rally
- ◆ Demonstration for making of Bakery products like biscuits and other products
- ◆ Demonstration of dairy products
- ◆ Panel discussion on 'Women Empowerment' among NSS volunteers
- ◆ *Beti Bhachavo, Beti Padhavo Rally*
- ◆ *Vyasan Mukti Rally*
- ◆ Food Rally on World Food Day
- ◆ Awareness for cashless transaction, Net banking
- ◆ A lecture on 'Gandhian philosophy and NSS'
- ◆ An inspirational visit of Lokgram Seva Kendra of Gujarat Vidhyapith, Dethli and shramdan
- ◆ Help to homeless people by volunteers
- ◆ Lecture on Disaster management
- ◆ Eye check-up camp of school students
- ◆ Distribution of mineral mixture powder to needy people
- ◆ Demonstration of Deworming in animals
- ◆ Lecture on Water conservation

The villagers also actively participated and got benefitted from these programmes. Students participated and gained knowledge on various aspects like health, development of spiritual and cordial relationship, preservation of natural resources and conservation of cultural /historical heritage, animal health, dairy products, etc and strengthened their creativity.



Special Camp at Vaghasi village



Special Camp at Vadod village



Special Camp at Napad village



Special Camp at Siholdi village



Special Camp at Sankhej village



Special Camp at Doctor na Muvada village



Special Camp at Gopalpura village



Special Camp at Moti Sarsi village

National Integration Camp at Ahmedabad

National Integration Camp was organized during August, 12-18, 2017 at Vishwakarma Government Engineering College, Ahmedabad under National Service Scheme. Engineering Students

volunteers of different colleges of 13 states participated in the camp. 10 students of College of Agricultural Engineering & Technology, Godhra represented Anand Agricultural University. Students participated in Yoga, Cultural Programmes and Lecture Series. Dr. S. H. Akbari, Director, Students' Welfare &



Programme Co-ordinator, N.S.S. encouraged students for participating in a camp.



National Integration Camp at Ahmedabad

‘National Service Scheme Day’ at KSKVKU, Bhuj

State Level ‘National Service Scheme Day’ was organized during September 22-24, 2017 at Krantiguru Shyamji Krishna Varma University, Bhuj (Kachchh). Total 12 Students of different Colleges of Anand

Agricultural University were selected by Director, Students’ Welfare Office and sent to participate in the Camp. Students participated in various Competitions like Essay, Elocution, Quiz, Mono Acting, Slogan Writing, Rangoli, Poster Painting etc.



‘National Service Scheme Day’ at KSKVKU, Bhuj





‘National Service Scheme Day’ at KSKVKU, Bhuj



22nd National Youth Festival 2018

Four NSS Volunteers of different Colleges of Anand Agricultural University participated in 22nd

National Youth Festival 2018 organized at Guatam Buddha University, Greater Noida, Uttar Pradesh during January 12-16, 2018.



22nd National Youth Festival 2018 at Greater Noida (U.P.)

6.5 Other Activities of Directorate of Students' Welfare

(1) Yoga Camp

Four days Yoga Camp was organized prior to

‘International Day of Yoga’ during June 16-20, 2017 at Anand Agricultural University. University Officers, staff members, students and family members participated enthusiastically and performed yoga with the help of yoga demonstrator.



Yoga Camp



Yoga Camp

(2) International Day of Yoga

Anand Agricultural University celebrated 3rd International Day of Yoga on June 21, 2017 at University Bhavan. About, 400 people including University Officers, staff members, students and

family members remained present. Yoga performed was as per yoga protocol and instructions by Yoga trainers. 45 minute programme was arranged as per the protocol suggested by Ministry of AYUSH, Govt. of India.



International Day of Yoga

(3) Physiotherapy Camp

Anand Agricultural University and Shri Krishna Hospital, Karamsad jointly organized a Physiotherapy Camp during July 13-14, 2017 at Health Center, AAU, Anand. University officers, staff members,

students and university residential participated in the camp. Joint Pain, Neck Pain, Paralysis, Head Injury, Polio, Osteoarthritis, Sciatica, Nerve Injury, Diabetic Neuropathy, Fracture, Sports Injury etc. tests and treatments were given by the Expert doctors and their team. Total, 80 patients enrolled in a camp.



Physiotherapy Camp

(4) Eye Check up Camp

Anand Agricultural University and Sankara Eye Hospital, Mogar jointly organized Free Eye Check up Camp on August 3, 2017 at Anand Agricultural University, Anand. University officers, staff members,

students and university residential participated in the camp. Retina Check up, Color Vision, Refraction, Cataract and Glaucoma tests were conducted by Expert Doctors. Total, 235 persons took benefit of the camp.



Eye Check up Camp



Eye Check up Camp

(5) Celebration of 71st Independence Day

Anand Agricultural University celebrated 71st Independence Day on August 15, 2017 at University Bhavan. All university officers, staff, students of different faculties and family members remained present to grace this yearly celebration. Dr. N. C.

Patel, Hon. Vice Chancellor hoisted the flag. National Anthem 'Jan Gan Man' and National Flag Anthem 'Zanda Uncha Rahe Hamara' were sung by all. After completion of Programme, tree plantation was made by University Officers, Staff and NSS Volunteers and Students.



71st Independence Day



(6) 'KAVA' Distribution for prevention of H1N1

Director, Students' Welfare and Medicinal and Aromatic Plants Research Station, AAU, Anand jointly benefit.

distributed Medicinal Preparation (KAVA) during August 21-24, 2017 for prevention against Swine flu in the University Campus. University officers, staff members, students and university residential took



'KAVA' Distribution for prevention of H1N1

(7) Essay and Elocution Competition

Department of Education, Gujarat Government decided to arrange debate competition at College, University and State level on 'Khadi for Nation Khadi for Fashion' along with debate as well as essay competition on 'Vaishnavjan to tene re kahiye' and 'Manushya tu bada mahan hai'. Anand Agricultural University had arranged the college and university level competition. 13 students in debate competition and 12 students in essay competition participated

at University level competition. Under elocution competition on the topic 'Khadi for Nation Khadi for Fashion', Mr. Varotariya Abhaya J. of Dairy Science College secured first position. Similarly, Under elocution competition on the topic 'Vaishnavjan to tene re kahiye' and 'Manushya tu bada mahan hai', Miss Ritika Desai of FPT & BE College secured first position. Under essay competition, Mr. Parth Chotaliya of B. A. College of Agriculture secured first position.



Essay and Elocution Competition

(8) Mountaineering Basic Rock Climbing Camp

Basic Rock Climbing Camp for boy students of Anand Agricultural University was organized during September 11-20, 2017 at Swami Vivekananda Mountaineering Institute, Mount Abu by the Director of Students Welfare, AAU, Anand. Total, 50 students of different colleges of Anand Agricultural University

participated in the Basic Rock Climbing Camp.

During the camp, theory lectures were included on Principle & Methods of Climbing and Rappelling, Trekking & Camp manner, Belays: types, methods & calls and Rack formation. Students also learned different types of belays and rappelling techniques like American side, Stomach and Side Rappelling.



Mountaineering Basic Rock Climbing Camp

(9) Celebration of Anti Addiction Week

2nd October is the birth anniversary of ‘Father of Nation’ Gandhiji. Inaugural Programme of ‘Anti Addiction Week’, Anand District for was organized by Anand Agricultural University in association with the Anti Addiction and Excise Superintendent Office, Anand. Dr. N. C. Patel, Hon. Vice Chancellor, AAU, Mr. Saurabh Singh, Superintendent of Police, Anand, Puja Sandhya Didi, Prajapita Brahmakumaris Ishvariya Vishva Vidhyalay, Anand. Dr. S. H. Akbari, Director, Students’ Welfare, AAU, Sh. S. P. Sisodiya, Superintendent, Anti Addiction and Excise Superintendent Office, Anand remained present. Elocution Competition on the topic of Anti Addiction was also organized amongst the students after Inaugural Programme.



Anti Addiction Week

(10) Snehmilan Samaroh

Snehmilan of Vikram Savant 2074, a New Year of Hindu religion was celebrated in immense manner on October 23, 2017. Dr, N.C. Patel, Hon. Vice

Chancellor, AAU, Anand, all the University officers, Deans of the different faculties, staff members and students remained present and greeted each other with ‘New Year-wishes’.



Snehmilan Samaroh

(11) Sardar Patel Jayanti 'Run for Unity'

31st October, the birth anniversary of Sardar Vallabhbhai Patel was celebrated across the country as a 'National Unity Day'. Under which, 'Run for Unity' was organized from University Bhavan to College of Veterinary Science at 8.00 AM morning. All the University Officers, Unit / Sub-Unit heads of Anand Campus, College/Polytechnic teachers, employees and

students participated in the program. On this occasion, Dr. N.C. Patel, Hon. Vice Chancellor and University Officers gave a floral tribute to Sardar Patel's statue at University Bhavan. Hon. Vice Chancellor gave inspiring speech about the life of Sardar Vallabhbhai Patel and his services to the Nation and Gujarat State. Hon. Vice Chancellor flagged off the rally of 'Run for Unity'.



Sardar Patel Jayanti 'Run for Unity'



Sardar Patel Jayanti 'Run for Unity'

(12) Agriculture Education Day

Anand Agricultural University celebrated 'Agricultural Education Day' on December 03, 2017. An Elocution competition was organized amongst the

students on the topic 'Agricultural Education: Status and Prospects' for graduate and postgraduate students of Anand Agricultural University. Staff, Officers and students remained present on the occasion.



Agriculture Education Day



(13) Motivational Lecture by Kishor Butani

A motivational lecture was organized on December 27, 2017 on 'Define and Conquer Your Destiny' by Shri Kishor Butani, CEO and Director, Robatech India, Switzerland. About, 220 students of all the faculties and polytechnic got inspired by the lecture and interacted with Shri Butani.



Motivational Lecture by Kishor Butani

(14) Celebration of 69th Republic Day

Anand Agricultural University celebrated 69th Republic Day on January 26, 2018. All University Officers, staff, students of different faculties and

family members remained present to grace this yearly celebration. Dr. N. C. Patel, Hon. Vice Chancellor hoisted the flag. National Anthem 'Jan Gan Man' and National Flag Anthem 'Zanda Uncha Rahe Hamara' were sung by all.



69th Republic Day

(15) Self Defence Training Programme for Girl Students

Self Defence Training programme for first year girl students of various Colleges/Polytechnics of

Anand Agricultural University was organized during February 20-28, 2018. The training was given by Shri Chetan Fumakiya, Director, Prtibha Academy and Mrs. Rucha Dave co-ordinated the programme. About, 100 girl students were trained by this programme.





Self Defence Training Programme for Girl Students

(16) Celebration of International Women's Day

Anand Agricultural University celebrated International Women's Day on March 08, 2018. The program was organized in the presence of Dr. S.H. Akbari, Director, Students' Welfare and Dr. Sunita Pinto, Chairperson, Gender Cell, Dr. Ankita Killedar, Ex Chairperson, Gender Cell shared her experiences. Dr. Chetna Vyas, Gynecologist delivered a lecture on

women health and hygiene. Women Advocate gave insights of women laws followed by interaction with women and girl student participants. More than 500 Girl students and 50 women attended the programme.

Competitions such as elocution, essay writing, slow cycling and flower decoration were also organized for girl students during March 06-07, 2018 as a part of celebration of International Women's Day.



International Women's Day



(17) Aerobics training to Girl students

Aerobics training for girl students and women staff members of AAU was given by Miss Alpa Khanna

and Mrs. Bhavini Kathiriya during March 20-24, 2018. The aim of the training was to create awareness about health and fitness in changing lifestyle through practice of Aerobics, Zumba and Relaxing exercises.



Aerobics training to Girl students



6.6 Students' Magazine

Students' magazine is published by every college of this university with the aim to bring out the hidden talent and expression of the students. Teachers, staff members and post-graduate students of the college provide the crucial link for the overall development of the students through the various articles, poems, drama and interesting agricultural information useful to farmers and scientific community. The Director of Students' Welfare provides the Financial Assistance. The detailed report of sports and adventure activities in addition to educational activities is included in the Magazine.

6.7 Educational Tour

Educational tour is considered as a part of academic syllabus of the degree courses of this university. The duration of educational tour is of 2-3 weeks, which comprises the visits of reputed institutes of Gujarat and out side Gujarat.

The basic purpose of this tour is to gain knowledge and information regarding their study by personal visit of the related institutes, industries, organization, farms, research centers etc. From the educational tour the students of this university gain the important and interesting information regarding the developments of agriculture, veterinary and industrial growth by visiting the research centers of Agricultural Universities and other places.

6.8 Student Discipline

The quality of discipline is being inculcated in students through Sports, N.C.C. and N.S.S. etc, so

as to maintain cordial atmosphere among students, teachers and staff members of this university. No serious case of misbehavior by the students occurred during the year of report.

6.9 Donation received by AAU

Sr. No.	Donation Recieved (₹)	Name of Doner	Name of the Medal and Criterion
1	1,25,000/-	Dr. M.M. Jani and Mrs. Manjula M. Jani, Shree Krishna Park, Near IRMA Gate, Mangalpura Road, Anand	Dr. M.M. Jani and Mrs. Manjula M. Jani Gold Plated Silver Medal to Undergraduate students securing highest CGPA in the subject of 'Basic, Preclinilcal and Clinilcal subjects combined' (Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Parasitology, Public Health and Epidemiology, Pharmacology & Toxicology, Medicine, Gynaecology and Obstetrics, Surgery & Radiology, Clinilcal Practices) Faculty of Veterinary Science and A.H., AAU, Anand.
2	1,00,000/-	Shri Natwarbhai Bababhai Patel, Retd. Asst. Ptofessor, Agriculture College-cum-Agriculture Polytechnic, AAU, Vaso	Shri Natwarbhai Bababhai Patel Gold Plated Silver Medal to the Undergraduate students securing highest GPA in the subject of Agronomy, College of Agriculture, AAU, Vaso

6.10 Leadership and Entrepreneurship Development Training Programme

Leadership & Entrepreneurship Development Training Programme was organized by National Council for Climate Change Sustainable Development and Public

Leadership (NCCSD), Ahmedabad during November 9-10, 2017 at College of Agricultural Engineering and Technology, Godhra and another during February 15-16, 2018 at College of Horticulture, Anand.



Leadership & Entrepreneurship Development Training Programme



Leadership & Entrepreneurship Development Training Programme

6.11 Personality Development Training Programme

Two days Personality Development Programme - 'Ignite Young Minds' was organized by the Office of the Directorate of Students' Welfare at College of Agriculture, Vaso during November

4-5, 2017 and College Veterinary Science & A.H. during November 6-7, 2017. The programme was inaugurated by Dr. N. C. Patel, Hon. Vice Chancellor and Dr. S. H. Akbari, Director of Students' Welfare remained present.



Personality Development Programme

6.12 Financial Assistance to the Students

University provides scholarship and financial assistance on merit basis. Moreover scholarship, Government Scholarship Loan and Fellowship etc are also provided to the students of all the faculties on merit basis as under.

- (1) AAU U. G. Fresh Fellowship Rs.6,000/- per year for the students of all the faculties.
- (2) Merit Scholarship Scheme for Economically Poor UG Scholarship Rs. 6,000/- per year for the students of all the faculties.
- (3) National Talent Scholarship (ICAR) Rs.24,000/- per year to UG students of Agriculture, Dairy, Veterinary, Agricultural Engineering and Technology, F.P.T. and Agri I.T. faculty and Horticulture College.
- (4) National Talent Scholarship (ICAR) Rs.36,000/- per year to PG students of Agriculture, Veterinary, Dairy, Agricultural Engineering and Technology and IABMI faculty.
- (5) AAU Merit fellowship for the first rank holder from each of the faculties of Agri., Veterinary, Dairy and F.P.T., CAET and IABMI for Masters; Rs.18,000/- per year.
- (6) AAU Merit fellowship for the first rank holder from each of the faculties of Agri., Veterinary, Dairy and FPT, CAET and IABMI for PhD studies; Rs.24,000/- per year

Number of NTS, UG and PG Fellowship awarded are as under :

College Name	NTS Scholarship		UG Fellowship	UG Economic Poor Scholarship	PG Fellowship
	UG	PG			
Faculty of Agriculture	25	24	41	01	04
Faculty of Veterinary Science	25	12	48	07	05
Faculty of Dairy Science	11	02	25	08	07
Faculty of Food Processing Technology & Bio-Energy	05	-	16	-	06
Faculty of Agricultural Information Technology	-	-	14	08	-
Faculty of Agricultural Engineering & Technology	06	05	20	08	04
College of Agriculture, Vaso	07	-	26	08	-
College of Horticulture, Anand	02	-	17	06	-
International Agri Business Management of Institute, Anand	-	03	-	-	06
College of Agriculture, Jabugam	-	-	17	08	-
Total	81	46	224	54	32



Chapter - 7

UNIVERSITY LIBRARY



Dr. M. D. Patel Regional e-Library is functioning independently as a separate unit with great pride as 'University Library'. Presently, the library is in possession of 33 Foreign and 69 Indian Journals, 16 Popular Magazines, 10 News papers, 78444 Barcoded Books, 1267 e-books, 11450 Reports, 13602 Back Volumes, 5154 M.Sc. and Ph.D. theses, 280 DVDs, 132 digitized rare books, and several e-resources for the utility of the users. Moreover, Library activities like acquisition, circulation, searching etc. are carried out with Koha Library Software, which has fortified the Library system. Cyberary, a hub of e-activities, is also a part of library providing Internet services to users with 36 computers and 125 mbps internet connectivity. This year, more efforts were put in by the Library for the development of learning resources, infrastructure, library service innovations, information and communication technology and human resource from the grant given by the state government and the ICAR.

Library Management

The University Library functions under the overall supervision of the University Librarian, who is one of the Statutory Officers of the University, directly answerable to the Vice Chancellor. The Library Committee of the University consisting of the following members is constituted under Section-20(4) of the Act to manage the library and render suggestions to the Board of Management on any matter related to the library.

Library Committee

- (1) The Vice Chancellor - Chairman
- (2) The Director of Research and Dean of Post Graduate Studies
- (3) The Director of Extension Education
- (4) The Deans of Faculties
- (5) Five Heads of the University Departments

of different faculties nominated by the Vice Chancellor

- (6) The Registrar
- (7) The Accounts Officer of the University
- (8) The Director of Students' Welfare
- (9) One P.G. Student from each faculty nominated by the Vice Chancellor
- (10) The University Librarian - Secretary

Library Services

- ♦ Circulation
- ♦ Reprographic
- ♦ Reference
- ♦ Document Delivery Request (CeRA)
- ♦ Inter Library Loan
- ♦ Internet Access (Web Surfing)
- ♦ Online Catalogue
- ♦ News Clipping (via e-mail)
- ♦ Question Papers (online) Food For Thought (via e-mail)
- ♦ New Arrivals
- ♦ News Papers and Periodicals
- ♦ Digitization (*Krishikosh*)
- ♦ Electronic Resources (Databases, Journals, e-Books etc.)
- ♦ Technical Support
- ♦ Teaching and Training



Grant allotted and expended during the year of Report

Sr. No.	Type of Grant	Allotment (Rs.Lakh)	Expenditure (Rs.Lakh)
1.	State Government	69.00	68.70
2.	ICAR Development	67.00	62.32

Resources available during the year of report

Resource Type		Number added during the year	Total
Text Books/Reference Books		1137	78444
e-books		230	1267
Journals	Foreign	33	102
	Indian	69	
Back volumes		-	13602
Theses		211	5154
DVDs		184	281
Online Resources		1. Indianjournals.com 2. Indiatat.com 3. CMIE(Commodities) 4. Krishikosh 5. J-Gate 6. Consortium of e-Resources in Agriculture(CeRA) 7. e-Books and Encyclopedias 8. Online Question Papers 9. DELNET	
<i>Krishikosh Repository</i> (http://krishikosh.egranth.ac.in)		M.Sc./Ph.D. Dissertations : 2500 Digitized Books : 99 Digitized Question papers : 3000	

Library activities during the year of report

User Statistics

During the year of report, there were 17,122 Library transactions. Library is visited by 270 users per day on an average basis.

CeRA

Consortium of e-Resources in Agriculture is a repository of e-resources provided by the ICAR. The DDS service is being provided on time by Dr. M. D. Patel Regional e-Library. This year,

the CeRA user statistics indicate 48527 hits and 116 Document Delivery Requests are catered to different users.

KrishiKosh

‘KrishiKosh’- an Institutional Repository has been created under the National Agricultural Innovation Project (NAIP) to provide online access to researchers and scientists all over the world. Since the launching of the Project, AAU has been actively contributing vast material to this repository. Total 2500 M.Sc./Ph.D. Dissertations



are uploaded on Krishikosh. In addition to that innumerable historical photographs, digitized rare books (99), digitized Question Papers, Marketable Technologies, Doctoral Theses, Convocational addresses, Annual Reports, *Krishi Mahotsav* Model and other institutional publications of AAU are available for open access.

▪ **Book Exhibitions**

A Book exhibition was organized by Dr. M. D. Patel Regional e-Library during the year of report, where Kalyani Book Publishers has participated. Several recommendations were received from different Colleges. Multiple Text Books as Books for complete semester, Reference Books, Reference Materials, Research Monographs and books for competitive exams were purchased for the benefit of students' academic and personality development.

▪ **Library Committee Meeting**

The Sixth and Seventh Library Committee

▪ **Learning and Infrastructure Facilities**

meeting after implementation of common statutes for Agricultural Universities of Gujarat was held on 15.07.2017 and 21.02.2018 respectively at the University Bhavan, AAU, Anand and various library related issues were discussed.

• **Digital Library Services**

Presently, the Library successfully renders following services to the users:

- 1 **News Clipping:** This library service is now provided as an attachment in e-mail.
- 2 **Food For Thought:** Library has started to circulate good reading articles to the library users as an attachment in e-mail.
- 3 **Online Question Papers:** Students and Faculties can access old question papers in pdf format.
- 4 **AAU in Media:** News and Coverage of Anand Agricultural University from different print and electronic media are uploaded in the media section of AAU website.



University Library



Cyberary





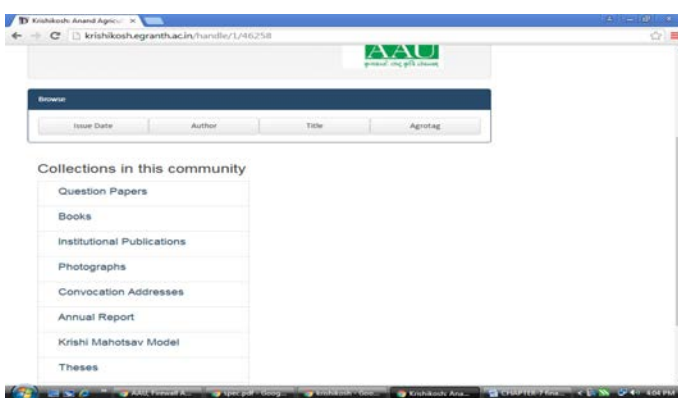
Periodical Room



Air condition Theses Room



Library Committee Meeting



Krishikosh Repository



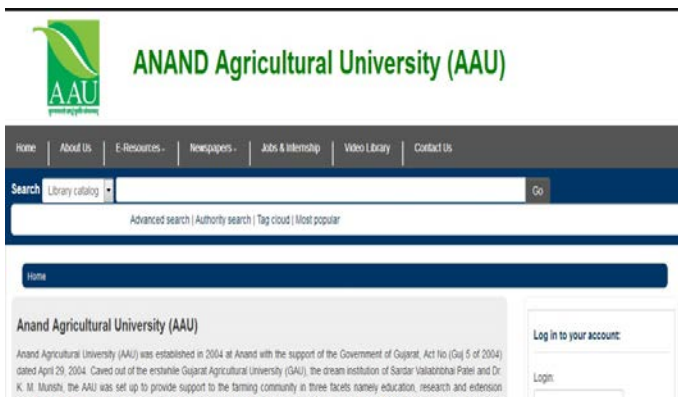
Aircondition Reading Room



e-Resources



RFID based self check-in/check-out Kiosk



Library KOHA OPAC



Appendix -1

CIVIL WORK COMPLETED

Sr. No	Name of Work
1	Construction of common Girls hostel for university at AAU, Anand.
2	Construction of U.G. Boys Hostel for Horticulture college at AAU, Anand
3	Construction of office with farmer training hall at AAU, Derol.
4	Construction of D1 type quarter for medical officer & expansion of health centre at AAU, Anand
5	Construction of IRMA road side protection wall to BTRS farm at AAU, Anand
6	Construction of store room for Horticulture college at AAU, Anand
7	Providing plaster to Agriculture Diploma building at AAU, Anand.
8	Construction of road for old B19 to B30 quarters at AAU, Anand
9	Construction of soak well for guest house at AAU, Anand
10	Upgrading facility in hall of DEE office at AAU, Nadiad
11	Providing protection to wall in Auditorium at AAU, Godhra
12	Strengthening to Principal dairy science quarter at AAU, Anand.
13	Construction of parking shed for Balram hostel at AAU, Anand
14	P/F mosquito jail in Paras hostel at AAU, Anand
15	Construction of different type Vermi compost pits at AAU, Khambholaj
16	Construction of parking shed for veterinary Boys hostel at AAU, Anand
17	Construction of wall near pump room in RRS at AAU, Anand (LRS)
18	Renovation of toilet of Veterinary E type quarters at AAU, Anand
19	Upgrading toilets in KVK office at AAU, Arnej
20	Construction of farm protection wall near Canal (broken)at AAU, Dahod
21	Repairing in new B19 quarters at AAU, Anand
22	Repairing in new c4& c34 quarters at AAU, Anand
23	P/F mosquito jail in GF/FF/SF of swami Vivekanand hostel at AAU, Anand
24	Upgrading HOD chamber in Physiology dept. of Vet. science college at AAU, Anand
25	Providing roofing sheet to Vermicompost at AAU, Khambholaj
26	Renovation for locker facility at Central bank in shopping centre at AAU, Anand
27	Renovation of Gymnasium in ground at AAU, Anand.
28	Providing approach to Pesticide laboratory at AAU, Anand.
29	Addition alteration in central bank at AAU, Anand
30	Additional work for laboratory at AAU, Godhra

Appendix - 2

CIVIL WORK ON HAND



Sr. No	Name of work
1	Construction of new boys hostel at AAU, Jabugam.
2	Construction of Kitchen & Dinning hall for girls hostel at AAU, Anand
3	Construction of building for seed hub under KVK at AAU, Dahod
4	Construction of Toilets for Labour quarters near tank of BACA at AAU, Anand
5	Construction of Toilets block for Labour quarter of animal nutrition department at AAU, Anand
6	P/F mosquito jail in kitchen/dinning hall of hostel at AAU, Vaso
7	Construction of protection wall to north side of RRS Navli farm at AAU, Anand(LRS)
8	Renovation of FF toilet of BACA at AAU, Anand
9	P/F mosquito net in FF/SF of PG Boys hostel at AAU, Anand
10	Strengthening of compound wall from Gaytri Mandir Gate to hostel complex at AAU, Anand
11	P/F mosquito net in PG girls Hostel at AAU, Anand(Megha)
12	P/F crimped net in GF balcony of Gargi hostel at AAU, Anand
13	P/F mosquito net in TF of Swami Vivekanand hostel at AAU, Anand
14	Rewiring & Upgradation facility (Computer base exam hall) at TF of exam hall of BACA at AAU, Anand



Appendix - 3

DEATAILS OF UNIVERSITY SCHEMES



Sr. No.	Budget Head	Name of the Scheme	Center
(1) Plan Schemes			
(I) EDUCATION			
(A) Education schemes in Normal Area			
(i) Agriculture			
1	12134-00	Expansion of Planning & Evaluation Cell	Anand
2	12136-00	Library facilities at AAU	Anand
3	12711-00	Project for Library	Anand
4	12712-02	Land scaping at AAU	Anand
5	12712-03	Creating of the Computer & Communication facilities at AAU	Anand
6	12926-00	Modernization of department of Agriculture Colleges at AAU	Anand
7	12929-01	Strengthening of the facility of bio-agents at department of Plant Pathology.	Anand
8	12930-00	Addition of the facilities for organizing Rural Agricultural Work Experience (RAWE) programme	Anand
9	12931-00	Strengthening facilities for Sericulture, Apiculture and Mushroom cultivation	Anand
10	12931-01	Strengthening of Modern Green house facilities	Anand
11	12946-00	Strengthening of WTO Cell	Anand
12	12947-00	Strengthening of New Department of seed science and technology	Anand
13	12947-01	Strengthening of Department of Nano technology	Anand
14	12947-02	Centre for Weather forecasting and climate change	Anand
15	12948-00	Strengthening of College of Agricultural Information Technology	Anand
16	12949-00	Strengthening of College of MBA (International Agri. Business)	Anand
17	12950-00	Strengthening of College of Food Processing Technology and Bio-energy	Anand
18	12957-00	Strengthening of Polytechnic in Food Science and Home Economics	Anand
19	12957-01	Strengthening of Polytechnic in Agriculture	Anand
20	12957-02	Strengthening of Polytechnic in Horticulture	Vadodara
21	12958-00	Strengthening of Institute of Distance Education	Anand
22	12969-01	Strengthening of Students training centre for food processing	Anand
23	12969-02	Strengthening of Student's Training cum Coaching Centre (STCC)	Anand
24	12969-03	e-Education Solution	Anand
25	12984-00	Strengthening of Polytechnic in Agriculture	Vaso
26	12986-00	Strengthening of Teaching in Agricultural Economics	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
27	12987-00	Vocational Course of Land Scape Gardening	Vadodara
28	12987-02	Strengthening of Horticulture Wing	Anand
29	12987-03	Strengthening of Agriculture Wing	Vaso
30	12987-07	Certificate Course of Soil and Water Testing for Sustainable Agriculture	Anand
31	12987-08	Strengthening of Department of Animal science	Anand
32	12987-10	Strengthening of department of plant physiology	Anand
33	12987-11	Establishment of Department of Food Safety and Testing	Anand
34	12987-14	Establishment of Instructional Processing facilities for students	Anand
(ii) Common and Student facilities			
35	12703-00	Scheme for the award of GAU fellowship for PG studies in various faculties	Anand
36	12865-00	Upgrading of the Student facilities at different colleges of AAU	Anand
37	12967-00	Modernizing the student facilities at different colleges of AAU	Anand
38	12967-01	Scheme for Fellowship for UG Students of various faculties	Anand
39	12967-02	The schemes for Strengthening of Office of the Directorate of Students Welfare, Counseling and Placement Cell at AAU	Anand
40	12967-03	Strengthening of Health Centre	Anand
41	12968-00	Strengthening of a Central Instrument Centre with heavy duty generator set	Anand
42	12987-12	Student and faculty exchange programme under national and international collaboration	Anand
43	12987-13	Merit Scholarship Scheme for economically poor under graduate student at Anand Agricultural University	Anand
(iii) Veterinary Science			
44	12303-08	Imparting education on semen logy and frozen semen technology to the students and field veterinarians	Anand
45	12909-00	Strengthening at College of Veterinary Science & Animal Husbandry- Livestock Production Technology, Veterinary Clinics and Animal Bio-technology	Anand
46	12910-01	Strengthening of the Post-graduate Department at Veterinary College	Anand
47	12911-00	Strengthening of New Department at Veterinary Science College. (i) Vety. Epidemiology & Preventive Medicine, (ii) Vety. Extension	Anand
48	12981-00	Upgrading of College of Veterinary Science and Animal Husbandry as per Veterinary Council of India regulations	Anand
49	12992-01	Strengthening of Entrepreneur programme as per VCI (2008) at Veterinary College	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
(iv) Dairy Science			
50	12351-00	Strengthening and Modernization of Dairy Science for Under graduate and post graduate Teaching	Anand
51	12951-02	Modernization of Student Training Dairy (STD)	Anand
52	12987-09	Modernization of Department of Dairy Engineering	Anand
(B) Education schemes in Tribal Area			
53	12975-00	Strengthening of College of Agricultural Engineering and Technology	Godhra
54	12976-00	Strengthening of Agricultural Engineering Polytechnic	Dahod
55	12987-01	Vocational Courses on Agricultural Engineering and Technology	Godhra
56	12987-04	Strengthening of Agriculture Wing	Jabugam
(II) EXTENSION EDUCATION			
(A) Extension Education schemes in Normal Area			
(i) Agriculture			
1	12505-00	Strengthening of the Directorate of Extension Education at AAU	Anand
2	12507-00	Upgrading of Existing Sardar Smruti Kendra	Anand
3	12508-00	Strengthening of Mali Training Centre at AAU	Anand
4	12942-01	Strengthening of Transfer of Technology Centre	Arnej
5	12943-00	Agricultural Technology Information Centre (ATIC)	Anand
6	12988-00 to 12988-05	Training Programme (Weed Management, Seed Production, Organic Farming, Integrated Pest Management, Medicinal & Aromatic Plants and Food Processing Technology)	Anand
7	12993-00	Strengthening of Farm Technology Training Centre	Sansoli
8	12994-01	Strengthening of Technological Resource Centre and Educational Museum at AAU	Anand
(ii) Veterinary Science			
9	12315-00	Upgrading of Poultry Training Centre	Anand
10	12315-01	Strengthening of Demonstration-cum-Training Centre for inland fish culture	Devataj
(B) Extension Education schemes in Tribal Area			
11	12977-00	Strengthening of Tribal Women Training Centre	Devgadhbaria
12	12978-00	Strengthening of Agro-Polyclinic for Tribal Farmers	Dahod
13	12987-05	Strengthening of Training Centre	Jabugam
14	12993-01	Strengthening of Dairy Vigyan Kendra	Vejelpur
15	12993-02	Strengthening of Transfer of Technology Centre for Tribal	Godhra
16	12993-03	Strengthening of Pashu Vigyan Kendra	Limkheda

Sr. No.	Budget Head	Name of the Scheme	Center
(III) RESEARCH			
(A) Research schemes in Normal Area			
(i) Agriculture			
1	12002-00	Strengthening of Research in Millet	Anand
2	12003-00	Strengthening of Research in Rice	Nawagam & Dabhoi
3	12004-00	Strengthening of Research in Wheat	Anand & Dhandhuka
4	12006-00	Strengthening of Research in Sorghum	Viramgam
5	12007-00	Strengthening of Research in Pulses	Vadodara
6	12008-00	Strengthening of Research in Oilseed (Groundnut)	Anand
7	12009-00	Strengthening of a centre of excellence for Cotton Research	Dhandhuka & Viramgam
8	12010-00	Strengthening of Research in Tobacco	Anand & Dharmaj
9	12012-00	Strengthening of Research in Forage crops	Anand
10	12016-01	Strengthening of Research in Medicinal & Aromatic Plants	Anand
11	12018-00	Expansion of Research in Agricultural Economic	Anand
12	12027-00	Scheme for Management of salt affected soil & poor quality of underground water	Thasra
13	12027-04	Application of Remote Sensing Technique	Anand & Nawagam
14	12041-00	Statistical evaluation of experimental variability and Strengthening research in Agricultural Statistics	Anand
15	12075-00	Development of various Bio-gas Plants to use vegetative wastes	Anand
16	12078-00	Strengthening of Research in Dry-farming	Dhandhuka
17	12092-00	Strengthening of Tissue culture Research & Development at AAU	Anand
18	12131-00	Research on Eco-friendly Biological Fertilizer	Anand
19	12906-00	Centre of Excellence for Soil & Water Management Technology	Anand
20	12907-00	Strengthening of Agrometeorology at AAU	Vadodara
21	12011-00	Centre of Excellence on Agril. Biotechnology	Anand
22	12933-00	Research on Hybrid Development in paddy	Nawagam
23	12937-00	Strengthening Adaptive Research in Agro-climatic zones of AAU	Anand
24	12938-00	Monitoring of heavy metal contamination in agricultural produce in peri urban areas of Gujarat	Anand
25	12959-00	Research on Horticultural fruit and flower Crops	Anand
26	12960-00	Post Harvest Management of some important crops of Middle Gujarat.	Anand
27	12962-00	Strengthening of Intellectual property rights cell	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
28	12963-00	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Anand
	12963-01	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Vadodara
	12963-02	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Derol
29	12963-03	Research and Enhancement of Quality Seed Production of Major Crops of Middle Gujarat	Anand
30	12964-00	Insect Pest Management through Bio-control Agents	BACA, Anand
31	12964-01	Insect Pest Management through Bio-control Agents	Dept. of Bio-control
32	12965-00	Establishment of Organic Farm at different centres	Anand
	12965-01	Establishment of Organic Farm at different centres	Vadodara
	12965-02	Establishment of Organic Farm at different centres	Arnej
	12965-03	Establishment of Organic Farm at different centres	Dhandhuka
	12965-04	Establishment of Organic Farm at different centres	Nawagam
33	12966-00	Strengthening of Centers of Excellence - Medicinal & Aromatic Plants	Anand
34	12969-00	Development of irradiation technology for Agricultural, Animal Dairy and Food products	Anand
35	12970-00	Studies on the estimation of pesticides residues for agriculture commodities	Anand
36	12985-00	Development of Potato varieties and its agro technologies for Middle Gujarat	Khambholaj
37	12985-01	Research on Papaya crops	Khambholaj
38	12989-00	Establishment of Research Centre of Seed Spices for Development of Production Technology	Sanand
39	12989-02	Veritable Development of Chickpea in residue moisture condition of Bhal region	Arnej
40	12989-06	Allele Mining for Fragrance and Colour Principles from Saffron and Sandal Wood	Anand
41	12993-04	Study on Pesticides residues Analysis from Food, Feed, Water and Soil for food safety in Gujarat	Anand
42	12993-05	Development of varieties in Vegetable crops	Anand
43	12993-07	Research Centre for Distant Hybridization in field and fruit crops	Anand
44	12993-08	Development of early maturing and High yielding Castor Hybrids / Varieties suitable to cropping systems in irrigated area of middle Gujarat	Sansoli

Sr. No.	Budget Head	Name of the Scheme	Center
45	12993-09	Evolving Suitable Rice Genotypes for Rabi & Summer Cultivation for Enhancing the Production and Productivity in Middle Gujarat of Agro-climatic Zone - III	Nawagam
46	12993-15	Screening and management of root-knot nematodes in important crop of Gujarat	Anand
47	12993-16	Genetic enhancement and production technologies of clusterbean (Guar) for yield and quality	Derol
48	12993-17	Centre for Advance Research in Plant Tissue culture	Anand
49	12993-18	Centre for Advanced Research on Plant Viruses	Anand
50	12993-19	Research on Organic Farming	Anand
51	12993-20	Advanced Research on Pest Management through birds	Anand
52	12993-21	Development of food decontamination technology for safety and quality of fresh and minimally processed fruits and vegetables	Anand
53	12993-22	Research on supply chain and market integration for key agro commodities for farmer's awareness and income enhancement in middle Gujarat	Anand
(ii) Veterinary Science			
54	12303-06	Research on Embryo Transfer in Buffaloes	Anand
55	12303-07	Introduction of Mechanization on Dairy Farms	Anand
56	12303-10	Strengthening of R.B.R. Unit	Anand
57	12313-00	Study on applied reproduction in Surti & Marwadi Goats of Gujarat State.	Ramna Muwada
58	12928-00	Centre of Excellence in Animal Biotechnology	Anand
59	12353-00	Strengthening of Livestock Research Station	Anand
60	12388-00	Development and maintenance of different population of Poultry	Anand
61	12990-00	Cytogenetics and Cell culture studies in Cattle and Buffaloes	Anand
62	12992-00	Etiopathological studies on mortality of Broilers	Anand
63	12953-00	Strengthening of Livestock & Veterinary component	Anand
64	12956-00	Diagnosis, epidemiology and management of diseases of Live stock	Anand
65	12971-00	Centers of Excellence for Animal Nutrition	Anand
66	12972-00	Modernization of diagnostic facilities - Zoonotic disease and compylobacteriosis	Anand
67	12973-00	Conservation and improvement of indigenous cattle	Anand
68	12989-03	Research on Silvi pasture systems and forage crops	Ramna Muwada
69	12989-04	Research on Silvi pasture systems and forage crops	Meenawada



Sr. No.	Budget Head	Name of the Scheme	Center
70	12993-06	Effect of phytochemicals on nutrient utilization, health attributes and production of ruminants	Anand
71	12993-23	Strengthening of Research and Animal Feed Testing Laboratory	Anand
(iii) Dairy Science			
72	12351-02	Development of Dairy Starter Cultures and Value added Dairy Product	Anand
73	12351-03	Development of methods for detection of adulteration in Milk and Milk products	Anand
74	12351-05	Enhancing Self Life of Indigenous Milk product	Anand
75	12951-01	Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products	Anand
76	12951-04	Plasmid profile of lactic acid bacteria and their use as Bio-medical agents	Anand
77	12951-05	Manufacture of Dairy/Non Dairy Processed Cheese and Mozzarella Cheese Analogues	Anand
78	12974-00	Utilization of whey in dairy and food products	Anand
(B) Research schemes in Tribal Area			
(i) Agriculture			
79	12005-00	Improving Research facilities for Maize	Dahod
80	12007-00	Strengthening of Research in Pulse	Dahod
81	12917-00	Research and demonstrations of bio-fertilizers in Tribal areas of Gujarat	Anand & Godhara
82	12979-00	Genetic enhancement and production technologies of major crops grown in tribal areas	Dahod
	12979-01	Genetic enhancement and production technologies of major crops grown in tribal areas	Devgadhbaria
83	12979-03	Development of Garlic and Ginger varieties suitable for value addition and its production and protection technologies	Dahod
84	12979-04	Maize productivity enhancement through single cross hybrid(s)	Godhra
85	12979-05	Varietal development in Chickpea for Tribal area	Dahod
86	12987-06	Production Potential and Value Addition of Banana Grown in Tribal area of Chhota Udaipur region of Middle Gujarat through multiple approaches	Jabugam
87	12993-10	Advanced centre for research and trainers training on agricultural engineering based interventions	Godhra
88	12993-11	Developing a watershed based conclave for experimental learning at Kankanpur	Kankanpur
89	12993-13	Tailoring Maize for Specific uses thereby nutritional enrichment and security - A better alternatives for Rainfed Farming, particularly Tribal Areas of Gujarat State	Godhra

Sr. No.	Budget Head	Name of the Scheme	Center
2. Non-Plan Schemes			
(I) Education			
1	1311-00	Zonal Engineering Construction Unit	Anand
2	1312-00	North Cattle Breeding Farm, (Vety. College)	Anand
	1312-0A	North Cattle Breeding Farm	Sansoli
	1312-0A	North Cattle Breeding Farm	Jabugam
	1312-0C	North Cattle Breeding Farm	Vegtable
3	1314-00	Institute of Agriculture Veterinary College, Breeding Research Station	Anand
4	1315-00	Institute of Experiment, Dairy Science College	Anand
5	1317-00	Institute of Programme Extension Education	Anand
6	1318-00	Institute of I.D.C. Project	Anand
7	3126-02	B.A. College of Agriculture	Anand
	3126-2L	B.A. College of Agriculture-Library	Anand
8	3248-00	Establishment of Extension Wing	Anand
9	4280-00	Strengthening of Under Graduate Teaching	Anand
10	4500-00	Vice Chancellor Office & Registrar Section	Anand
11	4501-00	Director of Research	Anand
12	4502-00	Comptroller Section	Anand
13	4504-00	Director of Student Welfare	Anand
14	4504-01	Director of Information Technology	Anand
15	4505-00	Director of Extension Education	Anand
16	4571-03	Executive Engineer & Guest House	Anand
17	4571-3D	Executive Engineer & Guest House	Devataj
18	4571-04	Medical Unit Centre	Anand
19	4807-00	Inter University Cultural Activities (FPT&BE College)	Anand
20	4808-00	Inter University Cultural Activities (DSW)	Anand
	4862-00	Inter University Cultural Activities (DSW)	Vaso
21	4862-00	Inter College & Inter University Sports & Quize (BACA)	Anand
22	4862-0A	Inter Colleges & Schools Sports & Student Welfare	Vaso
23	4862-0B	Planning of Sports Game, Maintenance of Ground and Students DA, etc. (IABMI, Veterinary College & Agri. Engg. College, Godhra)	Anand
24	4864-00	Parvatarohan (DSW)	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
25	5106-00	Strengthening of department by providing additional equipment in view of Semester System	Anand
26	5116-00	Establishment of Sardar Smruti Kendra, Museum Information Centre	Anand
27	5228-00	Polytechnic in Agriculture	Anand
	5228-00	Polytechnic in Horticulture	Vadodara
	5228-00	Polytechnic in Agricultural Engineering & Technology	Dahod
	5228-0A	Horticultural Research Station (Vegetable)	Khabholaj
	5228-0B	Polytechnic in Agriculture	Vaso
	5228-0C	Agricultural Research Station	Jabugam
28	5229-00	Establishment of Polytechnic in Home Science & Economics	Anand
29	5711-0L	Establishment of Library	Anand
30	5810-00	Project for Health Centre	Anand
31	6110-01	Strengthening of P.G. Teaching	Anand
32	6119-00	Scheme for Instructional Farm	Anand
33	6502-03	Department of Agricultural Product Process Engineering	Anand
34	6503-02	Department of Nematology	Anand
35	6503-03	Department of Horticulture	Anand
36	6503-04	Department of Bio-chemistry	Anand
37	7712-01	Establishment of Meteorology department	Anand
(II) Extension			
38	3315-00	Poultry Feeding Manufacturing Unit	Anand
39	5255-00	Strengthening of Poultry Training Centre	Anand
40	5301-00	Project for Investigation & Research, Veterinary Science & Animal Husbandry	Anand
41	5309-00	Project for Veterinary Science & Animal Husbandry	Anand
42	5311-00	Project for Reproductive Biological Research Unit	Anand
43	5353-00	Livestock Research Station	Anand
44	6309-00	Scheme for increasing the admission capacity in Degree Course of B.V.Sc. & A.H.	Anand
45	6374-00	Study on Correlated Response to Selection in Patanwadi & Cross Breed Sheep	Anand
46	7228-01	School of Baking	Anand
47	7303-07	Import & Establishment of Exotic Cattle, HF Project	Anand
48	5351-00	Project for the Department of Dairy Science College	Anand
49	5351-0T	Project Dairy Science College (Dept of Biotechnology)	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
(III) Research			
50	3226-00	Scheme of Design Experiment	Anand
51	5002-00	Scheme for Research in Bajara	Anand
52	5003-00	Scheme for Research in Paddy	Nawagam, Dabhoi, Derol & Vadodara
53	5004-00	Scheme for Research in Wheat	Dhandhuka
54	5006-00	Scheme for Research in Jowar	Viramgam
55	5007-00	Scheme for Research in Pulses (Cereals)	Vadodara, Dahod & Arnej
56	5008-00	Scheme for Research in Oilseed	Derol
57	5009-00	Strengthening Research in Cotton	Anand, Thasara, Dhandhuka & Viramgam
58	5010-00	Research in Tobacco	Anand & Dharmaj
	5010-00	Research in Castor & Seed Spices	Sanand
59	5011-00	Scheme for Research in Sugarcane	Thasara
60	5012-00	Scheme for Research in Grasses	Anand
61	5013-00	Scheme for Research in Vegetable Tuber (Tomato)	Anand
62	5014-00	Scheme for Research and Improvement in Fruit Crops	Anand
63	5018-00	Strengthening of Research in Agricultural Economics	Anand
64	5020-00	Scheme for Research in Agriculture Chemistry & Soil Science	Anand
65	5025-00	Scheme for Expansion Mechanical Commercial Farm	Anand
66	5026-00	Scheme for Research in Pest Control & Plant Disease	Anand
67	5026-01	Project for Research in Pest Control & Plant Disease	Anand
68	5029-00	Western Regional Animal Nutrition Station	Anand
69	5042-00	Strengthening of Dry Farming Research Station	Dhandhuka
70	5044-00	Project for Expansion of Plant Pathology Research	Anand
71	5046-0B	Study of Biology Inter control of White Gurb	Anand
72	5073-00	Establishment of Agricultural Product Process Engineering	Anand
73	7078-00	National Agricultural Research Project	Arnej
74	8091-0A	National Agricultural Research Project	Anand
	8091-AB	National Agricultural Research Project (Bio-technology)	Anand
	8091-0B	National Agricultural Research Project	Godhra
	8091-0C	National Agricultural Research Project (RRS, UNIT-5)	Anand
	8091-0C	National Agricultural Research Project	Derol



Sr. No.	Budget Head	Name of the Scheme	Center
75	9091-10	National Agricultural Research Project (Scheme Phase-II)	Anand, Sansoli & Khambholaj
	9091-10A	National Agricultural Research Project (Scheme Phase-II)	Jabugam and Vadodara
76	5002-03	Strengthening of Research in Hill Millet	Dahod
77	5704-00	Tribal Research-cum-Training Centre	Devgadhbaria
77	5704-00	Tribal Research-cum-Training Centre	Devgadhbaria
78	6005-00	Strengthening Research in Maize	Devgadhbaria
79	6009-00	Strengthening Research in Budded Cotton	Devgadhbaria
80	6704-06	Training of Tribal Farmer Women & Farm Youth	Dahod
81	7007-00	Strengthening of Research in Pulses	Dahod

3. I C A R

(a) ICAR CO-ORDINATED SCHEMES (25:75%)

1	2003-00	AICRP on Rice Improvement Project	Nawagam
2	2005-00	AICRP on Maize Improvement Project	Godhra
3	2008-1H	AICRP on Castor	Anand
4	2010-04	All India Network Research Project on Tobacco	Anand
5	2012-00	AICRP on Forage Crops	Anand
6	2020-00	AICRP on Micro & Secondary Nutrients & Pollutant Elements in Soil & Plants	Anand
7	2025-00	AICRP on Integrated Farming System	Devgadhbaria
8	2026-01	AICRP on Nematode in Agriculture	Anand
9	2028-00	AICRP on Nutritional and Physiological approaches for enhancing reproductive performance in cattle and buffalo	Anand
10	2043-00	AICRP on Medicinal & Aromatic Plants	Anand
11	2044-00	AICRP on Biological Control of Crop Pests and weeds	Anand
12	2046-00	AICRP on Weed Management	Anand
13	2080-00	AICRP on National Seed Project (crops) - STR	Anand
14	2084-00	AINP on VPM-Agricultural Ornithology	Anand
15	2093-00	AICRP on Agro-meteorology	Anand
16	2095-00	AICRP on Pesticide Residue	Anand
17	2305-00	AICRP on Poultry for Eggs	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
(b) ICAR AD-HOC SCHEME (100%)			
1	2002-02	Need based contingency for conducting coordinated trials of Finger Millet	Dahod
2	2003-01	Testing fee for cooperative centre	Nawagam, Derol & Dabhoi
3	2003-04	FLD Promote Non-Hybrid Rice Technology	Nawagam
4	2004-01	Frontline Demonstration in Wheat	Anand, Arnej & Dhandhuka
5	2005-01	FLD's Training programme under Accelerated maize improvement	Godhara
6	2005-02	Frontline Demonstration on Maize	Godhara
7	2005-05	AICRP on Maize Contingencies for NSP Project	Anand
8	2005-06	TSP : Encouraging Tribal youths/women for adopting proven Agricultural Engineering & Technology on mechanization value addition & resource conservation in middle Gujarat	Anand
9	2005-07	AICRP on Maize Contingencies for TSP Project	Godhara
10	2005-08	AICRP on Maize Contingencies for Testing Fee	Godhara & Dahod
11	2005-09	AICRP on Maize Operational Expenses for NICRA (National Initiative on Climate Resilient Agriculture) Project	Anand
12	2005-10	Climate Resilient Maize for Asia	Godhara
13	2006-01	District Agriculture Contingency plans for Gujarat State	Anand
14	2007-01	Need based contingency for conducting coordinated trials of Soybean	Devgadh baria
15	2008-01	AICRP on Oilseeds (Safflower)	Arnej & Dhandhuka
16	2008-1H1	Frontline Demonstration on Oilseeds-Castor	Anand
17	2008-02	Conducting the Co-ordinated Trials of AICRP on Castor	Anand, Sanand, Derol & Sansoli
18	2008-03	AICRP on Spices Voluntary Centre	Sanand
19	2008-16	AICRP trials of Rapeseed - Mustard	Anand
20	2008-17	AICRP trials of Pearl-Millet / Bajra	Anand
21	2008-20	AICRP on Groundnut Conducting trials	Anand
22	2009-02	Conducting trials on Cotton crops	Anand & Viramgam
23	2012-02	Barley AICW & BIP trials	Anand
24	2012-03	AICRP on Forage Crops - Expenditure on Poly Cross Nursery Programme (in Lucern)	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
25	2020-01	AICRP on Micro & Secondary Nutrients & Pollution Elements in Soil & Plants for TSP Project at Anand	Anand
26	2025-01	Frontline Demonstration on Oilseeds	Thasara
27	2025-02	AICRP on Integrated Farming System (TSP)	Derol
28	2026-1B	AICRP on Nematode Pest TSP	Anand
29	2029-00	Estimation of Methane emission under Different Feeding Systems and Development of Mitigation Strategies	Anand
30	2030-01	Semen sexing in cattle	Anand
31	2030-02	Entrepreneurship Oriented Male Weaner Goats Rearing & Selling Unit	Anand
32	2030-08	Network Project on Ethno-Veterinary Medical under A. P. Cess fund	Anand
33	2030-10	Seed Production in Agricultural Crops and Horticulture Crops (Field Crops)	Sanand, Vadodara & Derol
34	2030-19	National Initiative on Climate Resilient Agriculture (NICRA)	Anand
35	2032-00	Production & demonstration of tissue culture raised plants under three locations, collection & maintenance of elite germplasm of date palm	Anand
36	2034-00	Establishment of Agro Processing Centre for Gourd, Aloe-vera etc	Anand
37	2036-00	Development of Non Thermal Plasma(NTP) Decontamination Technology for Fruits & Vegetables	Anand
38	2044-01	AICRP on Biological Control of Crop Pests (TSP)	Anand
39	2044-15	Emeritus Scientist Scheme – Calibration & validation of CROPGRO-Cotton, CROPGRO-Pigeon pea, SUBSTOR- Potato & CANEGRO-sugarcane models for different crops of Gujarat for climate change impact studies & yield forecasting	Anand
40	2046-01	Development of Integrated pest management (IPM) packages under selective crop conditions (Tribal Sub Plan)	Anand
41	2076-03	Central Sector Special Food grains production of Breeder Seed (Revolving Fund)	Godhara & Nawagam
42	2076-05	Research & Development efforts on Hybrids in selected crop- Millet, Cotton and Castor (Revolving Fund)	Anand
43	2080-02	AICRP on National Seed Project (TSP)	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
44	2080-03	ICAR Seed Project – Development of serological & molecular diagnostic kit for seed health assessment of rice & cotton (Crops)	Anand
45	2084-01	AINP on Agricultural Ornithology (TSP)	Anand
46	2093-01	AICRP on Agro-meteorology (TSP)	Anand
47	2096-00	All India Coordinated Vegetable Improvement Project (Voluntary Centre)	Anand
48	2305-02	AICRP Poultry Scheme Income Department share	Anand
49	2374-01	Conducting the Co-ordinated Trials under AICRP on Chickpea	Arnej
50	2374-02	Conducting the Co-ordinated Trials under AICRP on Pigeonpea	Anand
51	2374-03	Conducting the Co-ordinated Trials under AICRP on Chickpea	Anand
52	2374-06	Validation & Promotion of IPM Strategies for Nematode Hotspots in Horticultural Crops in India	Anand
53	2704-09	Strengthening of Directorate of Extension Education (KVK)	Anand
54	2704-10	Strengthening of Directorate of Extension Education (KVK)	Devataj, Dahod & Arnej
55	2704-15	Mustard Crop Demonstration Training Organisation	Devataj, Dahod & Arnej
56	2704-20	Frontline Demonstration Oilseed Sub-Component Cropping System Research Potential	Vadodara
57	2704-21	AICRP on Micro and Secondary Nutrient and Pollutant Elements in Soil & Plants towards FLD-Oilseed (PCM)	Anand
58	2704-25	Cluster Frontline Demonstrations of Rabi Pulses 2016-17	Devataj, Dahod & Arnej
59	2704-26	Organizing Trainings for creation of awareness among the farmers & other stakeholders about the provisions of the protection of plant varieties & Farmers Right Act 2001	Dahod & Arnej
60	2704-27	Soil Testing Kit (International Soils Day)	Dahod, Devataj & Arnej
61	2704-28	Kisan Sammelans, Krishi Melas, Kisan Ghosties, Group Meeting & Displaying Exhibitions & Demonstrations of Technologies during pre-Rabi	Dahod, Devataj & Arnej
62	2704-29	Exposure visits for the Farmers & Extension Workers of Gujarat State under National Food Security	Godhara & Devataj
63	2704-32	Veterinary type culture (Dairy Micros)	Anand
64	2704-34	Annual Zonal Workshop of KVKs of Zone VI	Anand
65	2704-34A	Cluster Frontline Demonstrations of Rabi Oilseeds 2016-17	Anand
66	2704-35	Conducting at least two Skill Development Training courses of 200 hours duration through KVK for pulse Cultivation & Micro Irrigation Technologies	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
67	2704-36	Creation of Seed-Hubs for increasing indigenous production of pulses in India	Anand
68	2704-37	Pandit Deen Dayal Upadhyay Unnat Krishi Shiksha Yojna	Anand
69	2704-51	Trial During Kharif under AICRP (Mullarp)	Vadodara
70	2704-52	Production Oriented Survey	Nawagam
(c) Krushi Vigyan Kendras at AAU			
1	2704-04	Krusha Vigyan Kendra	Dahod
2	2704-07	Krusha Vigyan Kendra	Devataj
3	2704-08	Krusha Vigyan Kendra	Arnej
4	2704-09	Director of Extension Education Office	Anand
IV. Other Agency Scheme			
(a) Government of India			
1	18005-01	Experimental Agro Meteorology Advisory Services.	Anand
2	18005-03	Scheme for Modelling of impact of dynamic environment on population of crop pests in Middle Gujarat Zone	Anand
3	18246-01	Central Sector Scheme-Extension Support to Central Institutions (Plan)	Anand
4	18246-04	Training Programme on Kissan Call Centre	Anand
5	18246-05	Green House/Nethouse Training to Farmers	Anand
6	18246-97	Experimental Agromet Advisory Services (EAASU) Unit	Arnej
7	18246-98	Centrally Sponsored Scheme for National Horticulture Mission	Anand
8	18248-00	National Agricultural Extension Project-I (Non-plan)	Anand
9	18252-08	Imparting Training on Officers of Semen Stations in the Country : as a collaborative project	Anand
10	18310-00	Monitoring of Pesticide Residue at National Level	Anand
11	18311-04	Scheme for Award of Merit mans National Fellowship	Anand
12	18311-06	Award of NBAS Fellowship	Anand
13	18311-07	I.C.A.R. Junior Research Fellowship	Anand
14	18311-07J	Indo-Afghanistan Fellowship Programme	Anand
15	18311-07H	Indo-Africa Fellowship Programme	Anand
16	18311-07I	NAARC Fellowship (Nepal Aided Programme)	Anand
17	18311-07K	Scholarship for the J&K Students at Veterinary Science College	Anand
18	18311-7C	Implementation of Award of INSPIRE Fellowship at BACA & Veterinary Science College & Dairy Science College	Anand
19	18311-08	Apprenticeship / Internship Scholarship for Veterinary Students (ICAR)	Anand
20	18382-01	Online Pest Monitoring and Advisory Services (OPMAS) under NFSM-Commercial Crops-Cotton	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
21	18454-29	Bioefficacy Studies of Bio-Nematicide, Actinovate STP against Root-knot Nematodes in Tomato	Anand
22	18454-30	Nutraceutical Importance and Molecular Characterization of Okra	Anand
23	18454-31	Identification, Molecular Characterization and Documentation of Crops specific Efficient and Agrochemical Tolerant Strains of Trichoderma spp. For Sustainable and Eco-friendly Management of Plant Pathogens/Diseases	Anand
24	18454-32	Evaluation of Bio-efficacy and Phytotoxicity of Movento 150 OD (Spirotetramat 15% w/w OD) against Sucking Pest Complex of Cotton	Anand
25	18454-32.1	Bio-efficacy and Phytotoxicity of Imidacloprid 200 SL(Imidacloprid 17.1% w/w SL) against Sucking Insect Pests of Cotton	Anand
26	18495-00	Fortified Formulations of PGPR Consortium and PGPR Metabolites with Humic Acid and Micronutrients followed by Efficacy on Okra, tomato & Chilli Crops	Anand
27	18497-00	FASAL-R&D Area Estimation of Sugarcane and Cotton in Gujarat Using AWIFS and RISAT Data	Anand
28	18498-00	Whole Genome Sequencing and Development of Allied Genomic Research in Two Commercially Important Fish-Labeorohita and Clarisbatrachus	Anand
29	18501-00	Controlling Enteric Pathogenes of Poultry : Host/Microbiota Interactions, Risk Assessment and Effective Management Intervention	Anand
30	18502-00	Sensor System Studies for the GISAT	Anand
31	18502-01	Calibration and Validation of SMAP Soil Moisture Over Semi-Arid Agricultural Patches in Gujarat	Anand
32	18503-00	Developing Advance Diagnostic and Alternative Control Approaches against Bovine Mastitis	Anand
33	18503-01	Bio-prospecting of Crop Residues by Solid State Fermentation to enhance nutrient utilization and feed efficiency in Ruminants	Anand
34	18311-7G	Royal Government of Bhutan Fellowship	Anand
35	18095-00	Surti Buffalo Breeders Association of Gujarat	Anand
36	18802-0P	Communication & Extension Work Services	Anand
37	18457-26	The study of on Evaluating the lampact of Ration Balansing on Methane Emissions in Dairy Animals	Anand
38	18457-30	Magnitude of residues of Cyantraniliprole 10.26 10% OD in Chilli	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
39	18457-33	Evaluation of efficacy of Sulphur and Zinc containing Complex Fertilizers for maximizing yield through balanced nutrition of different crops in India	Anand
40	18457-34	Cloning, characterization and functional screening of industrially important novel cellulase encoding genes from the bovine rumen microbial community using metagenomic approach	Anand
41	18457-38	Host transcriptomics and gut microbiome analysis in broiler with contracting feed conversion ratio	Anand
42	18457-39	Development of pearl millet forage hybrids and pearl millet napier (PN) hybrids for high biomass and quality suited for different agro climatic zones of India	Anand
43	18457-23(1)	Molecular characterisation of lesser known livestock population of Gujarat	Anand
44	18096-00	Measurement to Management M2M : Improved Water Use Efficiency & Agricultural Productivity Through Experimental Sensor Network	Anand
45	18457-74	Development of Technology for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties	Anand
(b) Government of Gujarat			
1	18023-00	Narmada irrigation Research Project	Khandha
2	18023-11	Sardar Sarovar Narmada Irrigation Research Project	Thasra & Dabhoi
3	18023-12	Sardar Sarovar Narmada Irrigation Research Project	Dhandhuka
4	18053-00	Cost of Cultivation Scheme	Anand
5	18246-00	T. & V. Benor Scheme(Plan)	Anand
6	18246-03	T. & V. Scheme under Benor System	Anand
7	18252-00	Training course & seminar to assistance to state for Control of Animal Disease (ASCARD).	Anand
8	18258-01	Krusha Mahotsav	Anand
9	18258-02	Shibir during the Krushi Mahotsav-2011	Anand
10	18274-00	Purchase of Instruments / Equipments for Veterinary Clinic/ Biotechnology Laboratory / Modernisation of Laboratory.	Anand
11	18396-00	Monitoring of Surface and Ground Water for Pesticides Residue in SSP Command Phase-I Area	Anand
12	18396-01	Monitoring of Surface and Ground Water for Pesticides Residue in SSP Command Phase-II Area	Anand
13	18405-00	Soil Health Card programme for state farmers (Plan)	Anand
14	18406-00	Soil Health Card programme for state farmers (Non-Plan)	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
15	18471-00 to 18471-18	CSS-Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds	Anand & Others
16	18476-01	Development of Technology for Production of ACE inhibitory Bio-active peptides through Fermentation of Soy Milk and Bovine Milk	Anand
17	18476-02	Challenges, Opportunity and Expectations of Stakeholders of Dairy Industry of Gujarat and its Implication for Strategy and Policy Formulation: An Indepth case Study	Anand
18	18476-03	Evaluation of Milkoscreem for its Efficacy in Analysis of Milk	Anand
19	18476-04	Bio-processing of Lactic Culture from North-Eastern Region to Develop Functional Fermented Soya Foods with Potential Health Benefits	Anand
20	18476-05	Evaluation of Everest Milk Analyzer and Adulteration Detection Strips for their Efficacy in Analysis of Mil	Anand
21	18490-00	Accelerated Fodder Development Programme	Anand
22	18491-00	Development of EST-SSR Markers for Fibre Quality in Diploid Cotton (<i>Gossypium herbaceum</i>)	Anand
23	18492-00	Incubation Centre-cum-Excellence Centre in Food Processing Technology	Anand
24	18493-00	Biochemical and Molecular Characterization of T.durum Cultivars for its product processing Quality	Anand
25	18499-00	Genome Sequencing for the Breeds of Gir Cattle and Jafarabadi Buffalo	Anand
26	18503-02	Developing Advance Diagnostic & Alternative Control Approaches against Bovine Mastitis (RKVY)	Anand
27	18802-0Q	(1) Image Building & Skill enhancement for Panchayti Raj System & (2) Mainstreaming Gender in Agriculture & Allied Sectors	Anand
28	18457-28	Quality Seed Production in fodder crops under fodder development programme	Anand
29	18457-29	Evaluation of performance of Maize Hybrids	Anand
30	18457-31	Bioefficacy and phytotoxicity evaluation of Tebuconazole 10% + Sulphur 65% WG (XLC 750) against powdery mildew (<i>Oidium mangiferae</i> Bert.) of mango (<i>Mangifera indica</i> L.)	Anand
31	18802-0N	All India Survey on Higher Education (AISHE) at BACA	Anand
32	18457-75	Genetic diversity analysis and development of molecular Markers for drought tolerance in Teak (<i>Tectona grandis</i> L.F) populations of Gujarat	Anand
33	18457-77	Estimation of Methane Emission in cattle and Dietary interventions for its Mitigation	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
34	18457-79	Impact of Climate on Epidemiology of Major Important Diseases of cattle and Buffalo in Middle Gujarat	Anand
35	18457-83	Women Law Awareness Shibir	Anand
(c) NGO & Private Agencies			
1	18035-00	Professor on IFFCO chair.	Anand
2	18284-00	Mahila Pashupalan Talim Karyakram	Anand
3	18299-00	Bt. Cotton Hybrid Trials (approved by GEAC)	Anand
4	18299-03	Bt. Cotton Hybrid Trials (approved by GEAC)	Anand & Dhandhuka
5	18321-00	Refresher Training Programme for Veterinarians of Co-operative Dairies of the State	Anand
6	18411-01(3)	Monsanto Corn Hybrid Evaluation Trials	Jabugam
7	18411-05	Testing Fees for Hybrid of Maize	Nenpur & Sansoli
8	18437-03	Testing of Bioefficacy and Phytotoxicity of Carbosulfan 25% EC against Sucking Pests of Cumin	Virmagam
9	18443-02	Mapping of QTL Associated with Drought Tolerance Related Traits during the Seedlings Stage in Maize	Anand
10	18447-05	Bio-efficacy of Metarrhizium Anisopliae based Bio-insecticides Met 52 EC for the Control of Sucking Pests Complex in Chilli	Anand
11	18447-06	Bio-efficacy of Metarrhizium Anisopliae based Bio-insecticides Met 52 EC for the Control of Sucking Pests Complex in Brinjal	Anand
12	18447-08	(i)Testing the Bio-efficacy of Jump Start in soybean; (ii) Testing the Bio-efficacy optimize 400 in Soybean; and (iii) Testing the Bio-efficacy Taegro in soybean	Anand
13	18447-16	Supervised Field Trial on Residue & Persistence Study of “Monocrotophos on Pigeon pea”	Anand
14	18447-17	Supervised Field Trial on Residue & Persistence Study of “Monocrotophos on Mustard”	Anand
15	18447-19	Study on the Detoxification of Pesticide Residues in/on Tomato and Chilli at Field as well as in House Environment Using “Agroclean”	Anand
16	18447-20	Supervised Field Trial on Residue and persistence Study of “Fluopyram 200 + Tebuconazole 200-400 SC in Chilli”	Anand
17	18447-20.1	Supervised Field Trial on Residue and Persistence Study of “Fluopyram 400 SC in Tomato”	Anand
18	18447-20.2	Supervised Field Trial on Residue and Persistence Study of “Deltamethrin 2.8% EC (Decis 2.5 EC) on Chickpea”	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
19	18447-20.3	Supervised Field Trial on Residue and Persistence Study of “Imidacloprid 350 WG on Chilli, Tomato & Brinjal	Anand
20	18447-20.4	Supervised Field Trial on Residue and persistence Study of UPI 1810 on Cotton	Anand
21	18447-20.5	Supervised Field Trial on Residue and Persistence Study of “Fluopyram 200 + Tebuconazole 200-400 SC on Onion”	Anand
22	18447-20.6	Supervised Field Trial on Residue and Persistence Study of “Flubendiamide 24% + Thiacloprid 24%-480 SC on Redgram”	Anand
23	18447-20.7	(1) Evaluation of Residues of Fosetyl 80 WP in Tomato & (2) Evaluation of Residues of Fluopyram (200) + Tebuconazole (200)-400 SC in Mango at ICAR Unit-9	Anand
25	18447-22	Supervised Field Trial on Residue and Persistence Study of Dimethoate 30% EC on Cotton	Anand
26	18447-23	Evaluation of Performance of Makkhani Grass Hybrid	Anand
27	18447-24	Residues and Persistence Studies of “Pyraclostrobin 25g/L + Fipronil 250g/L + Thiophanate Methyl 225g/L in Groundnut (STANDAK TOP 500G/L FS)	Anand
28	18447-25	Residues and Persistence Studies with “Afidopyropen 50g/L DC” in Cotton (BAS 440 01 L)	Anand
29	18447-26	Residues and Persistence Studies with “Afidopyropen 50g/L DC” in Brinjal (BAS 440 01 L)	Anand
30	18447-27	Residue and Persistence Studies of “Pyraclostrobin 25g/L + Fipronil 250g/L + Thiophanate Methyl 225g/L in Soybean (STANDAK TOP 500G/L FS)	Anand
31	18447-28	Evaluation of Performance of Pearl Millet Hybrid	Anand
32	18454-16	Study the Performance of Bio Gold and Power gold as a Manure and Soil Conditioner in Improving the Cotton (Bt.)Yield and Fertilizer Use Efficacy	Anand
33	18454-23 & 18454-23.1	Payment of Research Study Assignment	Anand
34	18457-ABCD	Evaluation of Syngenta GM Corn Hybrids in BRC-I trial in Rabi 2011-12 at BACA & Godhra	Anand
35	18457-05	Evaluation of Bio-efficacy of Thiamethoxam 12.6% + Lambda cyhalothrin 9.5% ZC (Alika 247 ZC) against Corn pests at Derol	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
36	18457-09	Evaluation of Transgenic Stacked Corn (MON 89034 x NK 603) against Lepidopteron pests, Bioefficacy, Phytotoxicity and Carryover of Roundup formulation (MON 76366) at Derol & BACA	Anand & Derol
37	18457-13	(i) Testing the Bio-efficacy & Phytotoxicity of Chloronutriniliprote 35% WG against Lepidopteran Pests of Okra; and (ii) Testing the Bio-efficacy and Phytotoxicity of Chlorantrimiliprole 35% WG against Lapidopteran pests of Tomato	Anand
38	18457-16	Bioefficacy and Phytotoxicity of Bio-pesticides (Brahmastra, Agniastra & Neemastra) against Sucking Insect Pests of Cotton and Okra	Anand
39	18457-18	Testing Bio-efficacy and Phytotoxicity of HGW 86 10% OD (Cyantranilipole) against Sucking and Lepidopteran Pests of Potato	Anand
40	18457-19	Testing of Cumacin and Florigen in Chilli	Anand
41	18457-20	Evaluation of Performance of Maize (Corn) Hybrid	Derol
42	18802-0F	Diploma in Agril. Extension Services for Impact Dealer	Anand
43	18457-21	Bioefficacy of RDS63 35% WG against Helicoverpa armigera in tomato	Anand
44	18457-21(1)	Bioefficacy of RDS63 35% WG against Spodoptera litura in chilli	Anand
45	18457-21(2)	Bioefficacy of RDS63 35% WG against lepidopteran Pests of cabbage	Anand
46	18457-21(3)	Efficacy of RDS63 20 SC (Dicloromezotiaz) against lepidopteran pests of pigeonpea	Anand
47	18457-22	Hybrid Rice Coded SAU trial	Anand
48	18457-24	Evaluation of MAIRM-08(Difenthrin 47% + Bifenthrin 9.4% SC) against sucking pests (Jassid, Whitefly, Aphid & Thrips) & Bolloworms in Cotton	Anand
49	18457-24(1)	Evaluation of Buprofezin 15% + Acephate 35% WP against Sucking Pests in Cotton	Anand
50	18457-25	Bioefficacy & Phytotoxicity evaluation of carboxin 75% WP against angular leaf spot [Xanthomonas axonopodis pv-malvacearum(smith) Dye] of Cotton	Anand
51	18457-27	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of Brinjal	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
52	18457-27(1)	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of okra	Anand
53	18457-27(2)	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of okra	Anand
54	18457-40	Bayer Fellowship Program	Anand
55	18457-35	ICAR Senior Research Fellowship for post Ph. D. students	Anand
56	18457-41	Providing expert services regarding agriculture crops/ Fodder in setting up of 1 MW Grid Connected Distributed Solar PV Pilot Project at Village: Amrol Dist: Anand- Gujarat at Dire. of Research	Anand
57	18457-42	Development of Resource Model cum Demonstration Farm for Organic Farming at MVRs	Anand
58	18457-43	Bioefficacy evaluation of new insecticide molecule PII 8007 20% SC on insect pests of Pomegranate	Anand
59	18457-44	Feasibility study for enrichment of hygienised dry sewage sludge with Plant Growth Promoting Bacterial consortium (Anubhav Bio-NPK) and to assess its efficacy in potato, tomato and Wheat	Anand
60	18457-45	To study the persistence and dissipation of Chlorpyrifos 20 % EC ON Groundnut	Anand
61	18457-46	Management of pink bollworm, <i>Pectinophora gossypiella</i> (Saunders) using PB Rope Land its impact on sucking insect pests and beneficial Fauna in Bt cotton	Anand
62	18457-47	Bio-efficacy evaluation of a combination product PCT-16 for seed treatment in Cotton crop	Anand
63	18457-48	Bio-efficacy evaluation of a combination product PCT-16 for seed treatment in Groundnut crop	Anand
64	18457-49	Identification of “Molecular Traits” in Squamous Cell Carcinoma of Horn in Kankrej (<i>Bos indicus</i>) Bullocks	Anand
65	18457-50	Effects of Novozymes products on yield and its attributes in chilli	Anand
66	18457-51	Bio-efficacy and Phytotoxicity of Flonicamid 50% WG against sucking insect pests in Bt. Cotton	Anand
67	18457-52	Bio-efficacy and Phytotoxicity of Spiromesifen 22.9% SG against whitefly and mites in Bt. Cotton	Anand
68	18457-53	Bio-efficacy cum Phytotoxicity study of Spiromesifen 22.9% SG against brinjal mite	Anand



Sr. No.	Budget Head	Name of the Scheme	Center
69	18457-54	Agronomic Field Studies with various products of novozymes Pvt. Ltd. N yield of cotton	Anand
70	18457-55	Scheme for promotion of organic farming	Anand
71	18457-56	Evaluation of Bio-efficacy and phytotoxicity of Thiocyclam Hydrogen Oxalate 4% Gr (New source) against major insect pests of Rice	Anand
72	18457-57	Field Bio-efficacy cum phytotoxicity evaluation of Pyraclostrobin 20%WG against Soybean-Cercospora (frog eye) & Alternaria leaf spot	Anand
73	18457-58	Evaluation of bio-efficacy and phytotoxicity of Pyraclostrobin 20%WG against Alternaria leaf spot/blight disease of cotton	Anand
74	18457-59	Evaluation bio-efficacy and phytotoxicity of Pyraclostrobin 20%WG against early blight disease of tomato	Anand
75	18457-60	Bio-efficacy evaluation of Pyraclostrobin 20%WG against Turcicum leaf blight (Exserohilum turcicum) of Maize	Anand
76	18457-61	Field Evaluation of Herbicide. Atrazine 50% WP against weeds of Maize	Anand
77	18457-62	Evaluation of in-vitro and in-vivo efficacy of a formulation containing nanotechnology based alkyl polyglycosides of herbs against mastitis pathogens and its post-exposure effect on gene expression of certain bacteria”	Anand
78	18457-63	To study the persistence and dissipation of the (1) Flonicamid 50% WG on Cotton, (2) Flonicamid 50% WG on Paddy. (3) Spiromesifen 22.9% SC on Cotton, (4) Spiromesifen 22.9% SC ON Brinjal and (5) Thiocyclam Hydrogen Oxalate 4% G on Paddy	Anand
79	18457-64	Chlorothalonil 40% + Difenconazole 4% w/w SC (Bravo Top 550 w/v SC) against Groundnut disease	Anand
80	18457-65	Evaluation of Pydiflumetofen 7.5% + Difenconazole 12.5 w/v (200 sc) against Groundnut diseases	Anand
81	18457-66	Bio-efficacy and Phytotoxicity of Power oil Garnet AG (2.5% v/v) against sucking pests and pink bollworm in Bt. Cotton	Anand
82	18457-67	Feasibility of using Dry vinasse (Commercial Yeast molasses) in cattle ration	Anand
83	18457-68	Certificate in Agricultural extension services for input dealers	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
84	18457-69	To study the residue and dissipation of (1) Flupyrar 400 SC (Velum) in Banana (2) Imidacloprid 600 FS (Gaucho) in Bengal Gram, (3) Flupyrar 400 SC (Velum) in Cucumber, (4) Spirotetramat 150 OD (Movento) in Citrus, (5) Fluopicolide 4.44% + Fosetyl AL 66.67% WG (Profler) in Citrus, (6) Betacyfluthrin 90 + Imidacloprid 180 SC WS (Solomon) in Citrus, (7) Fosetyl AL 80 WP (Aliette) in Tomato”	Anand
85	18457-70	Innovative approaches value additin in dairy products and future prospects in dairy industry	Anand
86	18457-71	Bioprospecting of oxalate degrading lactic acid bacateria to develop afunctional product with potential in preventing kidney stone disease	Anand
87	18457-72	To study the persistence and residues of (1) Carbendazim 12% + Mancozeb 63% WP in cotton and (2) Carbendazim 12% Mancozeb 63% WP in Soyabean	Anand
88	18457-73	Efficacy of Q8U80 500 SC for the management of root knot nematodes on multiple crops (Tomato, Brinjal, Cucumber and Capsicum)	Anand
89	18457-76	Evaluation of different Organic Products in Moong crop	Anand
90	18457-78	Mission for Sustainable Agriculture	Anand
91	18457-80	To study the persisstence and dissipation of (1) Spinetoram + 36% Scin chickpea and (2) Mancozeb 75 WP ON POTATO”	Anand
92	18273-00	National Service Scheme	Anand
87	18457-72	To study the persistence and residues of (1) Carbendazim 12% + Mancozeb 63% WP in cotton and (2) Carbendazim 12% Mancozeb 63% WP in Soyabean	Anand
88	18457-73	Efficacy of Q8U80 500 SC for the management of root knot nematodes on multiple crops (Tomato, Brinjal, Cucumber and Capsicum)	Anand
89	18457-76	Evaluation of different Organic Products in Moong crop	Anand
90	18457-78	Mission for Sustainable Agriculture	Anand
91	18457-80	To study the persisstence and dissipation of (1) Spinetoram + 36% Scin chickpea and (2) Mancozeb 75 WP ON POTATO”	Anand
92	18273-00	National Service Scheme	Anand



Appendix - 4

LIST OF RESEARCH PAPER PUBLISHED



1. FACULTY OF AGRICULTURE

- 1 Afzal K. S. and Patel M. J. (2018). Effect of post-harvest treatments on quality of custard apple CV. Local under ambient temperature. *Journal of Pharmacognosy and Phytochemistry*, 7(1): 557-559.
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6. FACULTY OF AGRICULTURAL INFORMATION TECHNOLOGY

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7. FACULTY OF AGRICULTURAL BUSINESS MANAGEMENT

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- 17 Vahoniya Dilip, Shakti Ranjan Panigrahy and Nikita Vahoniya (2017). Academic climate for government and private school teachers in Anand District, Gujarat, *International Journal of Human Resource Management and Research*, 7(3): 5- 12.
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Appendix - 5

LIST OF THESIS SUBMITTED

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
(A) FACULTY OF AGRICULTURE				
1	ECONOMIC EMPOWERMENT OF TRIBAL WOMEN THROUGH SHGS IN DAHOD DISTRICT OF GUJARAT	M. Sc. (Agri)	Rathod Nilamben Saburbhai	Dr. Ganga Devi
2	STUDY THE EFFECT OF ORGANIC MANAGEMENT ON WITHANOLIDES CONTENTS IN ASHWAGANDHA {Withania somnifera (Linn.) Dunal}	M. Sc. (Agri)	Chaudhary Shamalabhai Rajabhai	Dr. Jitendrakumar
3	COMPARISON OF DIFFERENT ECONOMIC COEFFICIENTS TO SELECT OPTIMUM SELECTION INDEX IN RICE (Oryza sativa L.)	M. Sc. (Agri)	Chaudhary Arvindkumar Purabhai	Dr. D. J. Parmar
4	DIALLEL ANALYSIS OF FRUIT YIELD AND ITS COMPONENT TRAITS IN BOTTLE GOURD [Lagenaria siceraria (Mol.) Standl.]	M. Sc. (Agri)	Niva Dolo	Dr. J. N. Patel
5	WEED MANAGEMENT IN BIDI TOBACCO (Nicotiana tabacum L.) NURSERY	M. Sc. (Agri)	Sonaka Ghosh	Dr. K. M. Gediya
6	ASSESSMENT OF HETEROSIS AND COMBINING ABILITY USING DIALLEL ANALYSIS IN CUCUMBER (Cucumis sativus L.)	M. Sc. (Agri)	Nimitha K.	Dr. R. R. Acharya
7	INFLUENCE OF DIFFERENT STORAGE CONTAINERS AND TEMPERATURE ON STORABILITY OF ONION SEED VAR. GAWO-2	M. Sc. (Agri)	Baldaniya Natubhai Pachabhai	Dr. Kalyan Rao Patil
8	RESPONSE OF OAT (Avena sativa L.) VARIETIES TO METHODS OF SOWING AND NITROGEN LEVELS ON FORAGE YIELD AND QUALITY	M. Sc. (Agri)	Dabhi Manthankumar Sureshbhai	Dr. M. R. Patel
9	LINE x TESTER ANALYSIS OF FORAGE YIELD AND ITS COMPONENT CHARACTERS IN FORAGE SORGHUM [Sorghum bicolor (L.) Moench]	M. Sc. (Agri)	Vekariya Khodabhai Jagdishbhai	Dr. D. A. Patel
10	EFFECT OF IRRIGATION SCHEDULING BY DRIP IRRIGATION SYSTEM AND LEVELS OF NITROGEN IN WHEAT (Triticum aestivum L.) UNDER MIDDLE GUJARAT CONDITIONS	M. Sc. (Agri)	Barkha	Dr. A. S. Bhanvadia
11	STUDIES ON ROOT AND COLLAR ROT [Macrophomina phaseolina (Tassi) Goid.] OF OKRA [Abelmoschus esculentus (L.) Moench] AND ITS MANAGEMENT	M. Sc. (Agri)	Aravind T.	Dr. A. B. Brahmabhatt

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
12	EFFECT OF SEED HARDENING ON GERMINATION, GROWTH AND YIELD OF BLACK GRAM (<i>Vigna mungo</i> L.)	M. Sc. (Agri)	Prajapati Kinjalben Rameshbhai	Dr. D. B. Patel
13	STUDY OF HETEROSIS AND COMBINING ABILITY ANALYSIS IN CASTOR (<i>Ricinus communis</i> L.)	M. Sc. (Agri)	Kugashiya Kirankumar Godadbhai	Dr. B. N. Patel
14	MANAGEMENT OF FRUIT BORERS IN OKRA, <i>Abelmoschus esculentus</i> (L.) Moench	M. Sc. (Agri)	Subbireddy K. B.	Dr. H. P. Patel
15	EFFECTIVENESS OF TRAINING FOR PROMOTING ORGANIC FARMING	M. Sc. (Agri)	Desai Chetankumar Jivanbhai	Dr. J. K. Patel
16	DEVELOPMENT OF SCALE TO MEASURE THE ATTITUDE OF FARMERS TOWARDS FARMER FIELD SCHOOL (FFS)	M. Sc. (Agri)	Haseena Bibi	Dr. J. B. Patel
17	BIOECOLOGY OF APHID, <i>Myzus persicae</i> (SULZER) INFESTING CUMIN, <i>Cuminum cyminum</i> L. AND IT'S CHEMICAL CONTROL	M. Sc. (Agri)	Italiya Laljeebhai Madhabhai	Dr. D. B. Sisodiya
18	MANAGEMENT OF LEAF WEBBER AND CAPSULE BORER, <i>Antigastra catalaunalis</i> DUPONCHEL IN SESAME	M. Sc. (Agri)	Patel Pruthviben Kamleshbhai	Dr. P. K. Borad
19	STUDIES OF YELLOW MOSAIC DISEASE INFECTING MOTHBEAN [<i>Vigna aconitifolia</i> (Jacq.) MARECHAL] AND ITS MANAGEMENT	M. Sc. (Agri)	Rabari Devabhai Shivabhai	Dr. R. G. Parmar
20	RESPONSE OF ORGANIC ACIDS AND INORGANIC FERTILIZERS ON GROWTH, YIELD AND QUALITY OF Rabi maize (<i>Zea mays</i> L.)	M. Sc. (Agri)	Chaudhari Chhayankumar Rajeshbhai	Dr. P. M. Patel
21	GENETIC VARIABILITY, CHARACTER ASSOCIATION, PATH COEFFICIENT AND D2 ANALYSIS IN FORAGE SORGHUM [<i>Sorghum bicolor</i> (L.) Moench]	M. Sc. (Agri)	Damor Hitekshaben Ishvarbhai	Dr. H. P. Parmar
22	FERTILITY EVALUATION OF SALT AFFECTED SOILS OF DHOLKA TALUKA OF Bhal REGION	M. Sc. (Agri)	Patel Pragneshkumar Kantilal	Dr. M. S. Jaksania
23	FLORAL MORPHOLOGY, REPRODUCTIVE BIOLOGY AND DIVERSITY ANALYSIS THROUGH MOLECULAR MARKERS IN TOMATO SPECIES (<i>Solanum section lycopersicum</i>)	M. Sc. (Agri)	Monikaben A. Makwana	Dr. Akarsh Parihar
24	ENTREPRENEURIAL BEHAVIOUR OF POTATO GROWERS	M. Sc. (Agri)	Nidhi Tikariha	Dr. N. V. Soni
25	EFFECT OF POLLINATION TIME AND CROSSING RATIO ON FRUIT SET AND QUALITY OF BRINJAL (<i>Solanum melongena</i> L.) HYBRID UNDER MIDDLE GUJARAT CONDITION	M. Sc. (Agri)	Korat Vishalkumar Rameshbhai	Dr. B. R. Patel



Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
26	LINE x TESTER ANALYSIS FOR FRUIT YIELD AND ITS COMPONENTS IN BRINJAL (<i>Solanum melongena</i> L.)	M. Sc. (Agri)	Balwani Anmol Kanubhai	Dr. J. N. Patel
27	DISSIPATION AND DECONTAMINATION OF INSECTICIDES IN/ON BRINJAL, <i>Solanum melongena</i> Linnaeus	M. Sc. (Agri)	Patel Jaykumar Pravinbhai	Dr. K. D. Parmar
28	EVALUATION OF SOIL FERTILITY AND UNDERGROUND WATER QUALITY OF KHEDA DISTRICT OF GUJARAT	M. Sc. (Agri)	Vaghela Mahipalsinh Bansingh	Dr. J. K. Parmar
29	EVALUATION OF SOIL FERTILITY AND UNDERGROUND WATER QUALITY OF ANAND DISTRICT OF GUJARAT	M. Sc. (Agri)	Patel Mukeshkumar Ishvarbhai	Dr. M. B. Viradiya
30	A STUDY ON INNOVATIVE BEHAVIOR OF BANANA GROWERS IN ANAND DISTRICT OF GUJARAT	M. Sc. (Agri)	Sondarva Yagnesh Mansukhbhai	Dr. C. P. Desai
31	IDENTIFICATION OF GENES ASSOCIATED WITH DIRECT AND INDIRECT ORGANOGENESIS EVENTS DURING MICROPROPAGATION OF SANDALWOOD (<i>Santalum album</i> L.) BY qPCR	M. Sc.	Gareema	Dr. N. Subhash
32	EFFECT OF IRRIGATION SCHEDULING, VERMICOMPOST AND SULPHUR ON GROWTH, YIELD AND QUALITY OF SUMMER SESAMUM (<i>Sesamum indicum</i> L.)	M. Sc. (Agri)	Patel Dharatiben Prakashbhai	Dr. R. A. Patel
33	KNOWLEDGE ABOUT RESEARCH RECOMMENDATIONS OF ANAND AGRICULTURAL UNIVERSITY AMONG THE AGRO-INPUT DEALERS OF ANAND DISTRICT	M. Sc. (Agri)	Khatri Krishna Deepakkumar	Dr. Arun A. Patel
34	EFFECT OF FERTILITY LEVELS AND CUTTING MANAGEMENT ON GROWTH AND YIELD OF FENUGREEK (<i>Trigonella foenum-graecum</i> L.)	M. Sc. (Agri)	Greeshma A.	Dr. J. C. Shroff
35	VOCATIONAL TRAINING NEEDS AS PERCEIVED BY THE FARMERS' SONS IN ANAND TALUKA OF GUJARAT	M. Sc. (Agri)	Thakur Nidhi Bholusinh	Dr. N. B. Chauhan
36	AWARENESS AND ADOPTION OF VEGETABLE GROWERS ABOUT HAZARDOUS EFFECT CAUSED THROUGH PESTICIDE RESIDUES IN VEGETABLES	M. Sc. (Agri)	Vihariya Payal Hargovindbhai	Dr. Mukesh R. Patel
37	STUDY OF HETEROSIS AND COMBINING ABILITY IN INTERSPECIFIC HYBRIDS OF COTTON (<i>Gossypium hirsutum</i> L. x <i>Gossypium barbadense</i> L.)	M. Sc. (Agri)	Gohil Sahadevsinh	Dr. M. B. Parmar
38	SURVEY SEQUENCING FOR DEVELOPMENT OF GENOMIC SSR MARKERS AND DIVERSITY ANALYSIS IN CUMIN (<i>Cuminum cyminum</i> L.)	M. Sc. (Agri)	Ruchika Bharti	Dr. Sushil Kumar

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
39	ESTIMATE OF GENETIC PARAMETER, CHARACTER ASSOCIATION, PATH ANALYSIS AND GENETIC DIVERGENCE ANALYSIS IN PUMPKIN (<i>Cucurbita moschata</i> Duch ex.Poir.)	M. Sc. (Agri)	Chaudhary Deep Jashubhai	Dr. R. R. Acharya
40	PLOT SIZE STUDY THROUGH MATHEMATICAL APPROACH	M. Sc. (Agri)	Sejalben Muniya	Dr. V. B. Darji
41	IDENTIFICATION AND VALIDATION OF TRANSCRIPTIONAL FACTORS IN <i>Andrographis paniculata</i> (Burm.F.) Nees	M. Sc. (Agri)	Patel Hinal Amrutbhai	Dr. Y. M. Shukla
42	ASSESSMENT OF VARIABILITY INDUCED BY PHYSICAL AND CHEMICAL MUTAGENS IN MUNG BEAN (<i>Vigna radiata</i> (L.) R. wilczek)	M. Sc. (Agri)	Hemnani Deepaben Ishwarbhai	Dr. K. V. Patel
43	MIGRATION BEHAVIOUR OF TRIBAL FAMILIES OF DAHOD DISTRICT OF GUJARAT	M. Sc. (Agri)	Patel Alkeshbhai Rameshbhai	Dr. S. R. Patel
44	GENETIC VARIABILITY, CORRELATION AND PATH ANALYSIS OF SEED YIELD AND YIELD COMPONENTS IN TOBACCO (<i>Nicotiana tabacum</i> L.)	M. Sc. (Agri)	Patel Ami	Dr. M. G. Makwana
45	DIALLEL ANALYSIS OF FRUIT YIELD AND ITS COMPONENTS IN BRINJAL (<i>Solanum melongena</i> L.)	M. Sc. (Agri)	Patel Arpita Arvindkumar	Dr. D. P. Gohil
46	INDUCED MUTAGENESIS IN SESAME (<i>Sesamum indicum</i> L.)	M. Sc. (Agri)	Urmila Maibam	Dr. Sneha Makwana
47	SEED HEALTH STATUS OF COWPEA (<i>Vigna unguiculata</i> (L.) Walp) AND ITS MANAGEMENT	M. Sc. (Agri)	Vasava Kamalkumar Ishwarbhai	Dr. V. R. Gohel
48	EFFECT OF DATE OF SOWING AND CROP GEOMETRY ON GROWTH, YIELD ATTRIBUTES, YIELD AND QUALITY OF AMARANTHUS (<i>Amaranthus hypochondriacus</i> L.) UNDER MIDDLE GUJARAT CONDITIONS	M. Sc. (Agri)	Vaghela Gaurang Manilal	Dr. N. P. Chauhan
49	MORPHO-PHYSIOLOGICAL STUDIES ON GROWTH AND PRODUCTIVITY IN WHEAT (<i>Triticum durum</i> Desf.)	M. Sc. (Agri)	Yogesh Yadav	Dr. D. B. Patel
50	ECO-FRIENDLY MANAGEMENT OF INSECT PESTS OF BLACK GRAM, <i>Vigna mungo</i> (L.) Hepper	M. Sc. (Agri)	Berani Nikulkumar Khodabhai	Dr. P. H. Godhani
51	FEASIBILITY OF TRANSPLANTING Rabi MAIZE (<i>Zea mays</i> L.) VARIETIES TO VARYING AGE OF SEEDLING UNDER MIDDLE GUJARAT CONDITION	M. Sc. (Agri)	Chudasama Vishvajitsinh Nagbha	Dr. V. J. Patel
52	SOCIO-TECHNO-ECONOMIC CONSEQUENCES OF IMPROVED SUGARCANE CULTIVATION IN VADODARA DISTRICT OF GUJARAT	M. Sc. (Agri)	Prajapati Jigneshbhai Dahyabhai	Dr. C. P. Desai



Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
53	MOLECULAR CHARACTERIZATION OF PHYTOPLASMA EPIDEMIOLOGY AND MANAGEMENT OF LITTLE LEAF OF BRINJAL (<i>Solanum melongena</i> L.)	M. Sc. (Agri)	Jitaliya Vishvajitsinh Maheshkumar	Dr. R. G. Parmar
54	RESPONSE OF SOURCE AND METHOD OF NITROGEN APPLICATION ON RABI BABY CORN (<i>Zea mays</i> L.) UNDER DRIP SYSTEM	M. Sc. (Agri)	Patel Vashishthakumar Pravinbhai	Dr. G. J. Patel
55	BIO-EFFICACY OF INSECTICIDES AND BOTANICALS AGAINST GRAM POD BORER, <i>Helicoverpa armigera</i> (Hubner) Hardwick	M. Sc. (Agri)	Anjali Sivadasan	Dr. C. C. Patel
56	EVALUATION OF HONEY BEE AS ENTOMOVECTOR OF HaNPV	M. Sc. (Agri)	Vakaliya Mustufa Abdulrahim	Dr. C. K. Borad
57	INTEGRATED NUTRIENT MANAGEMENT IN DRILLED RABI FENNEL (<i>Foeniculum vulgare</i> Mill)	M. Sc. (Agri)	Gamar Prakash	Dr. K. D. Mevada
58	IMPACT OF CROP ROTATIONS IN BIDI TOBACCO BASED CROPPING PATTERN ON CROP YIELD, NEMATODES AND SOIL MICROBES	M. Sc. (Agri)	Panchal Riddhi Manharlal	Dr. H. R. Patel
59	DECONTAMINATION OF PROFENOPHOS, ACEPHATE, TRIAZOPHOS AND ETHION IN GREEN CHILLI, OKRA AND BRINJAL	M. Sc. (Agri)	Vanee Yadav	Dr. P. G. Shah
60	BIOLOGY AND MANAGEMENT OF APHID, <i>Aphis craccivora</i> Koch INFESTING FENUGREEK, <i>Trigonella foenum-graecum</i> Linnaeus	M. Sc. (Agri)	Sarvaiya Rameshbhai Mathurbhai	Dr. R. M. Patel
61	AN ECONOMIC ANALYSIS OF PRODUCTION AND MARKETING OF LITTLE GOURD (<i>Coccinia grandis</i>) IN CENTRAL GUJARAT	M. Sc. (Agri)	Chotaliya Janki Amrutlal	Dr. R. S. Pundir
62	BIO-EFFICACY OF INSECTICIDES AND BOTANICALS AGAINST CASTOR LEAF EATING CATERPILLAR, <i>Spodoptera litura</i> (FABRICIUS)	M. Sc. (Agri)	Baria Minaldevi Subhashchandra	Dr. R. K. Thumar
63	STUDIES ON DRY ROOT ROT [<i>Macrophomina phaseolina</i> (Tassi) Goid.] OF MUNGBEAN (<i>Vigna radiata</i> (L.) Wilczek) AND ITS MANAGEMENT	M. Sc. (Agri)	Patel Hemaliben Bipinchandra	Dr. N. M. Gohel
64	DETECTION AND MANAGEMENT OF SEED MYCOFLORA ASSOCIATED WITH GROUNDNUT CULTIVARS	M. Sc. (Agri)	Vaghela Kesharsinh Dilipsinh	Dr. N. M. Gohel
65	GENETIC ANALYSIS AND SEED LONGEVITY STUDIES IN SESAME [<i>Sesamum indicum</i> L.]	M. Sc. (Agri)	Patel Gunjanben Shankarbhai	Dr. N. Sasidharan
66	IDENTIFICATION OF HOUSEKEEPING GENES FOR REAL TIME PCR ANALYSIS IN DILL SEED (<i>Anethum sowa</i> Roxb. ex Fleming)	M. Sc. (Agri)	Patel Swatiben Hemantbhai	Dr. H. L. Dhaduk

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67	EFFECT OF PLANTING DATE AND CHEMICAL DESUCKERING ON MORPHO-PHYSIOLOGICAL PARAMETERS, YIELD AND QUALITY OF BIDI TOBACCO VARIETIES (<i>Nicotiana tabacum</i> L.)	M. Sc. (Agri)	Garasiya Vipulkumar Bhalsinh	Dr. J. C. Chavda
68	INVESTIGATIONS ON EFFECT OF ROOT-KNOT NEMATODES (<i>Meloidogyne</i> spp.) ON OKRA (<i>Abelmoschus esculentus</i> L. Moench)	M. Sc. (Agri)	Chaudhary Bharatbhai Nagjibhai	Dr. A. D. Patel
69	CHARACTERIZATION OF SOYBEAN (<i>Glycine max</i> L.) GENOTYPES THROUGH BIOCHEMICAL AND SSR MARKERS FOR NUTRITIONAL QUALITY	M. Sc. (Agri)	Chaudhari Kalyaniben Kiritbhai	Dr. N. J. Patel
70	EFFECT OF NITROGEN UNDER DIFFERENT LATERAL SPACING IN DRIP IRRIGATED WHEAT (<i>Triticum aestivum</i> L.)	M. Sc. (Agri)	Dholiya Sagarkumar Nareshbhai	Dr. A. S. Bhanvadia
71	INFLUENCE OF SEED PRIMING AND PLANT GROWTH REGULATORS ON GROWTH, SEED YIELD AND QUALITY PARAMETERS OF OKRA, <i>Abelmoschus esculentus</i> (L.) Moench	M. Sc. (Agri)	Naga Tharun Atmuri	Dr. A. D. Patel
72	EPIDEMIOLOGY AND MANAGEMENT OF STEM AND ROOT ROT [<i>Macrophomina phaseolina</i> (Tassi) Goid.] OF SESAME (<i>Sesamum indicum</i> L.)	M. Sc. (Agri)	Ashish Kumar Satpathi	Dr. N. M. Gohel
73	EFFECT OF PREHARVEST APPLICATION OF CHEMICALS AND PLANT GROWTH REGULATORS ON FRUIT QUALITY AND SHELF LIFE OF MANGO (<i>Mangifera indica</i> L.) CV. AMRAPALI	M.Sc. (Horti.)	Pradeep Kumar Vishwakarma	Dr. M. M. Masu
74	MORPHOLOGICAL AND BIOCHEMICAL SCREENING OF GUAVA (<i>Psidium guajava</i> L.) HYBRIDS	M.Sc. (Horti.)	Pawan Kumar Nagar	Dr. B. N. Satodiya
75	EFFECT OF GA ₃ AND COW URINE WITH DIFFERENT MEDIA ON SEED GERMINATION AND SEEDLING GROWTH OF PAPAYA (<i>Carica papaya</i> L.) CV. MADHUBINDU UNDER NET HOUSE CONDITION	M.Sc. (Horti.)	Desai Amitbhai Bhembhai	Dr. B. H. Panchal
76	INFLUENCE OF STORAGE PERIOD AND GROWING MEDIA ON SEED GERMINATION, GROWTH AND DEVELOPMENT OF ACID LIME SEEDLINGS (<i>Citrus aurantifolia</i> Swingle) CV. KAGZI	M.Sc. (Horti.)	Prajapati Dineshbhai Gajabhai	Dr. B. N. Satodiya
77	EFFECT OF DIFFERENT COATING TREATMENT ON STORAGE BEHAVIOUR AND SHELF-LIFE OF MANGO (<i>Mangifera indica</i> L.) cv. AMRAPALI	M.Sc. (Horti.)	Christian Hetal Jayantilal	Dr. H. H. Sitapara



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78	EFFECT OF GIBBERELIC ACID AND NAPHTHALENE ACETIC ACID ON SEED GERMINATION AND SEEDLING GROWTH OF KHIRNI (Manilkara hexandra Roxb.) CV. LOCAL	M.Sc. (Horti.)	Bamaniya Jyotikaben Rameshbhai	Dr. K. M. Patel
79	EFFECT OF PRE-HARVEST SPRAY OF CALCIUM ON QUALITY AND SHELF LIFE OF SAPOTA (Manilkara achras (MILL.) FORSBERG) FRUITS CV. KALIPATTI	M.Sc. (Horti.)	Patel Harsh Ashvinbhai	Dr. M. J. Patel
80	EFFECT OF GIBBERELIC ACID AND CALCIUM CHLORIDE ON QUALITY AND SHELF LIFE OF PAPAYA (Carica papaya L.) cv. MADHU BINDU	M.Sc. (Horti.)	Kalasava Ansuyaben Ramanbhai	Dr. A. V. Kotecha
81	EFFECT OF POST HARVEST APPLICATION OF SOME CHEMICALS ON THE SHELF LIFE OF BER (Zizyphus mauritiana Lamk.) FRUITS	M.Sc. (Horti.)	Surani Bhavikkumar Ramanlal	Dr. A. P. Patel
82	EFFECT OF IRRADIATION AND CYCOCCEL ON FRUIT QUALITY AND SHELF LIFE OF GUAVA (Psidium guajava L.) cv. ALLAHABAD SAFEDA	M.Sc. (Horti.)	Chaudhary Ashaben Ishvarbhai	Dr. D. D. Nayee
83	EFFECT OF GROWING MEDIA AND AGE OF ROOTSTOCK ON EPICOTYL GRAFTING OF MANGO cv. LANGRA	M.Sc. (Horti.)	Patel Jaykumar Naileshbhai	Dr. K. M. Patel
84	EFFECT OF ZnO NANOPARTICLES ON GERMINATION, GROWTH AND YIELD OF GROUNDNUT (Arachis hypogaea L.)	Ph. D. (Agri)	Parmar Snehalbhai Jashwantbhai	Dr. K. P. Patel
85	CONSORTIUM DEVELOPMENT FROM PHYLLOSPHERIC AND RHIZOSPHERIC METHYLOTROPHIC BACTERIA OF PADDY AS LIQUID PLANT PROBIOTICS AND ITS EFFICACY ON CV. GURJARI	Ph. D. (Agri)	Prajapati Ronakkumar Rameshbhai	Dr. R. V. Vyas
86	PHYSIOLOGICAL INVESTIGATION FOR PRODUCTIVITY IN BLACK GRAM (Vigna mungo L.) UNDER DIFFERENT ENVIRONMENTS.	Ph. D. (Agri)	Anil Kumar Gupta	Dr. D. B. Patel
87	EFFECT OF ZINC OXIDE NANOPARTICLES ON GERMINATION, GROWTH AND YIELD OF MAIZE (Zea mays L.)	Ph. D. (Agri)	Pankaj Kumar Tiwari	Dr. K. P. Patel
88	INVESTIGATION ON NOISE ATTENUATION PERFORMANCE OF EXHAUST MUFFLERS OF FARM TRACTORS WITH APPROPRIATE DESIGN ALTERATIONS	Ph. D. (Agri)	Vora Mohammadhanif Davalbhai	Dr. R. Swarnkar
89	MOLECULAR STUDIES OF MAPPING POPULATION FOR BACTERIAL LEAF BLIGHT (BLB) RESISTANCE GENES IN RICE (Oryza sativa L.)	Ph. D. (Agri)	Soni Bhargavkumar Bharatkumar	Dr. N. Subhash

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90	MANAGEMENT OF BRINJAL MITE, <i>Tetranychus urticae</i> Koch UNDER MIDDLE GUJARAT CONDITION	Ph. D. (Agri)	Patel Nainesh Balubhai	Dr. C. C. Patel
91	RESPONSE OF LINSEED (<i>Linum usitatissimum</i> L.) TO INTEGRATED PLANT NUTRIENT SYSTEM AND ITS CROP RESIDUE EFFECT ON TRANSPLANTED SUMMER PEARL MILLET (<i>Pennisetum glaucum</i> L.) WITH RESTRICTED DOSE OF FERTILIZERS	Ph. D. (Agri)	Pooja Singh Patil	Dr. M. V. Patel
92	INVESTIGATIONS ON ENTOMOPATHOGENIC FUNGI INFESTING PAPAYA MEALYBUG, <i>Paracoccus marginatus</i> Willium and Granara de Willink	Ph. D. (Agri)	Patel Mayank Vinubhai	Dr. D. M. Mehta
93	EFFICACY OF NATIVE PGPR CONSORTIUM AND FORTIFIED FORMULATIONS BY PHYTO-EXTRACTS FOR MANAGEMENT OF SOIL BORNE DISEASE COMPLEX WITH SPECIAL EMPHASIS ON ROOT KNOT NEMATODE IN CUCUMBER (<i>Cucumis sativus</i> L.)	Ph. D. (Agri)	Panpatte Deepak Gopalrao	Mrs. H. N. Shelat
94	LINE X TESTER ANALYSIS OVER ENVIRONMENTS USING PISTILLATE IN CASTOR [<i>Ricinus communis</i> L.]	Ph. D. (Agri)	Nakarani Dipenkumar Bhailalbhai	Dr. R. R. Acharya
95	TRANSCRIPTOME BASED IDENTIFICATION AND LEVEL OF EXPRESSION STUDY OF CANDIDATE GENES RELATED TO ANDROGRAPHOLIDE CONTENT AND THEIR VALIDATION IN <i>Andrographis Paniculata</i> (Burm. f.) NEES.	Ph. D. (Agri)	Ankitababen Atulkumar Patel	Dr. Y. M. Shukla
96	GENETIC ARCHITECTURE FOR GRAIN YIELD, ITS COMPONENTS AND QUALITY TRAITS IN RICE (<i>Oryza sativa</i> L.)	Ph. D. (Agri)	Patel Sunil Gnanshyambhai	Dr. Akarsh Parihar
97	MAPPING QTLs FOR IRON AND ZINC CONCENTRATION IN RICE (<i>Oryza sativa</i> L.)	Ph. D. (Agri)	Dhara Kantilal Savsani	Dr. Y. M. Shukla
98	ODONATES DIVERSITY OF GUJARAT AND THEIR DNA BARCODING FOR TAXONOMIC VALIDATION	Ph. D. (Agri)	Rathod Darshanaben Manibhai	Dr. B. M. Parasharya



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99	REAL TIME NITROGEN MANAGEMENT IN KHARIF MAIZE (<i>Zea mays</i> L.) UNDER MIDDLE GUJARAT CONDITIONS	Ph. D. (Agri)	Dinesh Kumar	Dr. R. A. Patel
100	STATUS OF INSECTICIDAL RESISTANCE, MORPHOMETRIC STUDIES AND MANAGEMENT OF <i>Helicoverpa armigera</i> (Hubner) Hardwick IN PIGEONPEA FROM DIFFERENT LOCATIONS OF MIDDLE GUJARAT	Ph. D. (Agri)	Parmar Vaishaliben Rajeshbhai	Dr. C. C. Patel
101	GENETIC ANALYSIS OF SEED YIELD AND ITS COMPONENT CHARACTERS OVER ENVIRONMENTS IN CASTOR (<i>Ricinus communis</i> L.)	Ph. D. (Agri)	Patel Bhumitkumar Dipakkumar	Dr. B. N. Patel
102	REAL TIME NEED BASED NITROGEN MANAGEMENT THROUGH ORGANIC AND INORGANIC FERTILIZER IN WHEAT AND THEIR RESIDUAL EFFECT ON GREEN GRAM	Ph. D. (Agri)	Patel Pratikkumar Dhanjibhai	Dr. M. V. Patel
103	MOLECULAR CHARACTERIZATION AND DEVELOPMENT OF IN VITRO PROTOCOL FOR MORPHOGENESIS IN <i>Annona squamosa</i> L.	Ph. D. (Agri)	Minipara Dipalben Bharatbhai	Dr. H. L. Dhaduk
104	DIFFERENTIAL GENE EXPRESSION AND PROTEOMICS STUDY DURING ROOT KNOT NEMATODE (<i>Meloidogyne incognita</i>) INFECTION IN TOMATO (<i>Solanum lycopersicum</i> L.)	Ph. D. (Agri)	Vyomesh Shailesh Patel	Dr. Y. M. Shukla
105	CALIBRATION AND VALIDATION OF CROPGRO- peanut (DSSAT v.4.6) MODEL FOR SUMMER GROUNDNUT AND SENSITIVITY ANALYSIS TO CLIMATE CHANGE IN MIDDLE GUJARAT	Ph. D. (Agri)	Mote Balaji Mohan	Dr. Vyas Pandey
106	CALIBRATION OF OILCROP-SUN (DSSAT 4.5) MODEL FOR SUNFLOWER (<i>Helianthus annuus</i> L.) CULTIVARS UNDER DIFFERENT PLANT DENSITIES IN MIDDLE GUJARAT REGION	Ph. D. (Agri)	Jadhav Madhukar Gangaram	Dr. H. R. Patel
107	YIELD SIMULATION MODELING AND EVALUATION OF CLIMATE CHANGE IMPACT ON SUMMER MUNGBEAN (<i>Vigna radiata</i> L.) USING CROPGRO MODEL (DSSAT4.6) UNDER DIFFERENT IRRIGATION REGIMES AND ROW SPACINGS	Ph. D. (Agri)	Karande Baban Ishwar	Dr. H. R. Patel
108	IDENTIFICATION AND VALIDATION OF MOLECULAR MARKERS ASSOCIATED WITH APHID [<i>Lipaphis erysimi</i> (Kalt.)] RESISTANCE IN Brassicas	Ph. D. (Agri)	Wawge Mohan Nivrutti	Dr. N. Sasidharan

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109	DIRECT AND RESIDUAL EFFECT OF ORGANIC MANURES AND INORGANIC FERTILIZERS ON MAIZE (Zea mays L.) - CHICKPEA (Cicer arietinum L.) CROPPING SEQUENCE	Ph. D. (Agri)	Lakum Yogeshkumar Chaturbhai	Dr. M. V. Patel
110	GENETIC VARIABILITY AND CORRELATION STUDIES OF DIFFERENT GENOTYPES OF PAPAYA (Carica papaya L.) UNDER MIDDLE GUJARAT CONDITIONS	Ph. D. (Horti)	Kore Prabhakar Nilkanth	Dr. M. J. Patel
111	EFFECT OF GROWTH REGULATORS AND CHEMICAL ON FLOWERING, YIELD AND QUALITY OF ACID LIME (Citrus aurantifolia SWINGLE) CV. KAGZI	Ph. D. (Horti)	Lokesh Yadav	Dr. N. J. Vihol
112	INTEGRATED NUTRIENT MANAGEMENT ON GROWTH, YIELD AND QUALITY OF SAPOTA [Manilkara achras(Mill.) FORSBERG] CV. KALIPATTI	Ph. D. (Horti)	Patel Mehulkumar Chhabildas	Dr. N. J. Vihol
(B) FACULTY OF VETERINARY SCIENCE AND ANIMAL HUSBANDRY				
113	STUDIES ON MORPHOMETRIC CHARACTERISTICS OF UDDER AND TEATS AND THEIR ASSOCIATION WITH MILK YIELD AND INCIDENCES OF SUB-CLINICAL MASTITIS IN GIR COWS IN ANAND DISTRICT	M.V.Sc.	Modh Ronak Hasmukhlal	Dr. K. N. Wadhwani
114	SONOANATOMICAL STUDIES ON STOMACH OF ADULT SURTI BUFFALO (Bubalus bubalis)	M.V.Sc.	Vanila Shukla	Dr. D. M. Bhayani
115	MORPHOLOGY AND MORPHOMETRY OF CEREBRAL HEMISPHERES AND ITS COMPONENTS OF BRAIN OF SURTI BUFFALO (Bubalus bubalis)	M.V.Sc.	Alka Suman	Dr. Sweta Pandya
116	GROSS, BIOMETRICAL AND HISTOLOGICAL STUDIES ON THE RUMINANT STOMACH OF THE SURTI GOAT (Capra hircus)	M.V.Sc.	Soni Tanviben Mahendrakumar	Dr. K. M. Panchal
117	PATHOLOGICAL AND MOLECULAR STUDIES ON UPPER RESPIRATORY TRACT INFECTIONS IN BROILERS WITH SPECIAL REFERENCE TO LOW PATHOGENIC AVIAN INFLUENZA (H9N2) INFECTIOUS BRONCHITIS VIRUS , ESCHERICHIA COLI AND AVIAN MYCOPLASMA	M.V.Sc.	Chaudhari Sonalben Vishnubhai	Dr. B. P. Joshi
118	ETIOPATHOLOGICAL STUDY OF LOW PATHOGENIC AVIAN INFLUENZA (H9N2) COMPLICATED BY ESCHERICHIA COLI WITH REFERENCE TO DETECTION OF VIRULENCE GENES OF ESCHERICHIA COLI IN LAYERS	M.V.Sc.	Choudhary Komal Rameshvarlal	Dr. D. J. Ghodasara



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119	SEROPREVALENCE OF BRUCELLOSIS IN SMALL RUMINANTS AND HUMANS OF ANAND DISTRICT	M.V.Sc.	Padher Radhaben Ramubhai	Dr. J. B. Nayak
120	EVALUATION OF DOUBLESYNCH AND PRID+PMSG FOR OESTRUS SYNCHRONIZATION IN POSTPARTUM ANOESTRUS BUFFALOES	M.V.Sc.	Patel Arpitkumar Jagdishbhai	Dr. J. A. Patel
121	DETECTION OF TETRACYCLINE ANTIBIOTIC RESIDUES IN MILK OF ANAND DISTRICT	M.V.Sc.	Mistry Urvish Pravinbhai	Dr. M. N. Bramhbhatt
122	EVALUATION OF ANIMAL PROTEIN FREE SEMENEXTENDERSFORCRYOPRESERVATION OF CATTLE AND BUFFALO SEMEN	M.V.Sc.	Chaudhary Parth Jesingbhai	Dr. A. J. Dhami
123	DEVELOPMENT OF SCALE TO MEASURE ATTITUDE OF BROILER FARMERS TOWARDS BROILER FARMING IN MIDDLE GUJARAT	M.V.Sc.	Joshi Nayankumar Harishankar	Dr. A. C. Vaidya
124	COMPARATIVE EFFICACY OF VARIOUS PROTOCOLS OF ESTRUS SYNCHRONIZATION IN CYCLIC AND ACYCLIC BUFFALOES	M.V.Sc.	Prajapati Jigneshkumar Popatlal	Dr. D. M. Patel
125	EVALUATION OF DIFFERENT ESTRUS SYNCHRONIZATION PROTOCOLS FOR IMPROVING FERTILITY IN CYCLIC AND ACYCLIC CROSSBRED CATTLE	M.V.Sc.	Prajapati Ashokkumar Ramanlal	Dr. A. J. Dhami
126	DETECTION OF PASTEURELLA MULTOCIDA LOAD IN EXPERIMENTALLY INFECTED MICE AND ITS DETECTION BY DIRECT BLOOD AND TISSUE POLYMERASE CHAIN REACTION	M.V.Sc.	Patel Brijeshkumar Pravinbhai	Dr. B. B. Bhanderi
127	STUDY ON GENITAL INFECTIONS IN POSTPARTUM AND REPEAT BREEDER CROSSBRED CATTLE	M.V.Sc.	Raval Saurabhkumar Rameshchandra	Dr. M. T. Panchal
128	UTILIZATION OF GREEN GRAM (Vigna radiata L.) STRAW IN THE TOTAL MIXED RATION FOR CATTLE	M.V.Sc.	Patel Shvetababen Naginbhai	Dr. D. C. Patel
129	STUDIES ON HELMINTHIC INFECTION IN HORSE (Equus caballus)	M.V.Sc.	Prakriti Singh	Dr. P. V. Patel
130	STUDIES ON THERAPEUTIC AND SURGICAL MANAGEMENT OF CORNEAL AFFECTIONS IN CANINES	M.V.Sc.	Ratnu Devanginiba Aniruddhasinh	Dr. P. V. Parikh
131	STUDIES ON RENOPROTECTIVE EFFECT OF AQUEOUS AND ALCOHOLIC BIHERBAL EXTRACTS OF Bryophyllum calycinum AND Solanum xanthocarpum IN WISTAR RATS	M.V.Sc.	Patel Dhavalkumar Bhailalbhai	Dr. S. K. Raval

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132	CLINICAL, HAEMATO BIOCHEMICAL AND THERAPEUTIC MANAGEMENT OF RUMINAL ACIDOSIS IN GOATS	M.V.Sc.	Chavelikar Pratikkumar Rameshchandra	Dr. G. C. Mandali
133	STUDIES ON OCULAR NEOPLASIA IN DOMESTIC ANIMALS	M.V.Sc.	Gondaliya Ravi Bhandas	Dr. P. V. Parikh
134	THE GROSS, HISTOLOGICAL AND HISTOCHEMICAL STUDIES ON THE HIPPOCAMPUS OF THE SURTI BUFFALO (<i>Bubalus bubalis</i>)	M.V.Sc.	Gori Harishbhai Punjabhai	Dr. S. C. Dubal
135	STUDIES ON MORPHOMETRIC CHARACTERISTICS OF UDDER AND TEATS AND THEIR ASSOCIATION WITH MILK YIELD AND INCIDENCE OF SUB-CLINICAL MASTITIS IN WATER BUFFALOES IN ANAND DISTRICT	M.V.Sc.	Khatri Sunil Bhomaram	Dr. M. M. Trivedi
136	ETIOPATHOLOGY OF FEMORAL HEAD NECROSIS IN BROILERS WITH SPECIAL REFERENCE TO PATHOGENIC ESCHERICHIA COLI	M.V.Sc.	Aashwina Madhwal	Dr. D. J. Ghodasara
137	STUDIES ON COMPARATIVE THERAPEUTIC EFFECT OF FEBUXOSTAT AND ALLOPURINOL ON GOUT INDUCED MODEL IN BROILER CHICKS	M.V.Sc.	Rathod Rajeshkumar Chandubhai	Dr. B. P. Joshi
138	AMELIORATIVE EFFECT OF FEBUXOSTAT ON GOUT INDUCED MODEL IN BROILER CHICKS	M.V.Sc.	Patel Mayankkumar Kanaiyalal	Dr. C. J. Dave
139	CLINICOPHYSIOLOGICAL AND HAEMODYNAMIC STUDIES ON GUAIFENESIN-KETAMINE AND ISOFLURANE ANAESTHESIA IN BOVINE	M.V.Sc.	Tank Jatin Kishorbhai	Dr. P. V. Parikh
140	DETECTION OF GENES FOR VIRULENCE ASSOCIATED FACTORS, ANTIBIOTIC RESISTANCE AND PLASMID PROFILE AMONG PASTEURELLA MULTOCIDA ISOLATES OBTAINED FROM ANIMALS AND AVIAN SPECIES IN GUJARAT	M.V.Sc.	Parmar Rahul Ashokkumar	Dr. B. B. Bhandari
141	COMPARATIVE EFFICACY OF DOUBLE SYNCH AND ESTRADOUBLE SYNCH PROTOCOLS OF ESTRUS SYNCHRONIZATION IN GIR HEIFERS	M.V.Sc.	Chaudhari Niteshkumar Jerambhai	Dr. D. M. Patel
142	ETIOPATHOLOGY OF FIELD OUTBREAKS OF INCLUSION BODY HEPATITIS, ITS SEROTYPING AND EXPERIMENTAL VACCINE EFFICACY STUDY IN COMMERCIAL BROILER CHICKS	M.V.Sc.	Raval Dishaben Yogeshkumar	Dr. D. J. Ghodasara



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143	ETIODIAGNOSIS AND THERAPEUTIC MANAGEMENT OF CANINE PYODERMA WITH SPECIAL REFERENCE TO INFECTIONS CAUSED BY MRSA AND MRSP	M.V.Sc.	Shah Bansari Rohitkumar	Dr. D. S. Nauriyal
144	STUDIES ON PHARMACOKINETICS AND SAFETY OF GEMIFLOXACIN IN BROILER BIRDS	M.V.Sc.	Gohel Rahulkumar Harsukhbhai	Dr. K. A. Sadariya
145	INVESTIGATION OF FACTORS AFFECTING SIRE CONCEPTION RATE (SCR) AND DAUGHTER PREGNANCY RATE (DPR) IN BUFFALO AND APPROPRIATE MODELS FOR ESTIMATION OF THEIR BREEDING VALUES	M.V.Sc.	Solanki Bhaveshkumar Ramjibhai	Dr. R. S. Joshi
146	STUDIES ON PHACOEMULSIFICATION IN CATARACTOUS DOGS	Ph. D.	Kelawala Divyesh Naresh	Dr. P. V. Parikh
147	STUDIES ON PREVALENCE, HAEMATO-BIOCHEMICAL ALTERATIONS AND DIAGNOSTIC ASPECTS OF Trypanosoma evansi USING ADVANCED MOLECULAR TOOL AND BLOOD SMEAR EXAMINATION IN CATTLE AND BUFFALOES	Ph. D.	Pandya Suchitkumar Sharadkumar	Dr. J. J. Hasnani
148	THE EFFECT OF SUPPLEMENTING JIVANTI (Leptadenia reticulata) AND BYPASS FAT IN TOTAL MIXED RATION ON NUTRIENT UTILIZATION AND MILK PRODUCTION OF SURTI GOATS	Ph. D.	Devalia Bharatkumar Ravji	Dr. R. S. Gupta
149	MOLECULAR CHARACTERIZATION OF NEWCASTLE DISEASE VIRUSES PRESENT IN INDIAN CHICKENS AND DEVELOPING VECTOR FOR BIVALENT HVT-ND VACCINE	Ph. D.	Jakhesara Subhashchandra Jagdishbhai	Dr. C. G. Joshi
150	ANATOMICAL STUDIES ON CRANIAL MENINGES AND VENTRICLES OF BRAIN IN NON-DESCRIPT GOAT (Capra hircus)	Ph. D.	Goswami Harsh Vinodchandra	Dr. K. M. Panchal
(C) FACULTY OF DAIRY SCIENCE				
151	UTILIZATION OF PANEER WHEY IN SYNBIOTIC SHERBET CANDY	M. Tech	Chaudhary Nishaben Narayanbhai	Dr. Smitha B.
152	DETECTION OF OXIDATIVE RANCIDITY IN GHEE AT AN EARLY STAGE	M. Tech	Vaghela Keyursinh Dipsinh	Dr. B. M. Mehta
153	STANDARDIZATION OF TECHNOLOGY FOR FROZEN YOGHURT FORTIFIED WITH MORINGA	M. Tech	Dudhrejiya Priyankkumar Tulsidas	Dr. S. V. Pinto
154	DEVELOPMENT OF METHOD FOR DETECTION OF RANCID GHEE MIXED IN FRESH GHEE	M. Tech	Chaudhary Bhavesh Nagabhai	Dr. B. M. Mehta

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155	OPTIMIZATION OF SELECTED QUALITATIVE TESTS FOR DETECTION OF COMMON ADULTERANTS IN MILK	M. Tech	Chauhan Mahipalsinh Pravinkumar	Dr. K. D. Aparnathi
156	EVALUATION OF LACTIC ACID BACTERIA FOR B-GALACTOSIDASE ACTIVITY AND ITS USE IN PREPARATION OF LACTOSE HYDROLYSED MILK	M. Tech	Makwana Shrushti Pareshkumar	Dr. Subrota Hati
157	EFFECT OF HEATING, COOLING AND STORAGE OF MILK ON PERFORMANCE OF SELECTED QUALITATIVE TESTS FOR DETECTION OF COMMON ADULTERANTS IN MILK	M. Tech	Arpita Agnihotri	Dr. K. D. Aparnathi
158	PROCESS STANDARDIZATION FOR THE MANUFACTURE OF RAGI BURFI	M. Tech	Narwade Sushil Subhash	Dr. S. V. Pinto
159	CHARACTERIZATION OF MILK LIPIDS OF KANKREJ COW	M. Tech	Miss Bharwade Minal Narayan	Dr. Smitha B.
160	DEVELOPMENT OF FINGER MILLET (<i>Eleusine Coracana</i>) ENRICHED PROBIOTIC FERMENTED MILK PRODUCT	M. Tech	Shaikh Aijaz Shaikh Mohammad	Dr. Sreeja V.
161	ISOLATION AND PURIFICATION OF ACE-INHIBITORY PEPTIDES DERIVED FROM FERMENTED SURTI GOAT MILK	M. Tech	Parmar Heena Premjibhai	Dr. Subrota Hati
162	DEVELOPMENT OF GREEK YOGHURT TYPE PROBIOTIC FERMENTED MILK USING INDIGENOUS CULTURES	M. Tech	Desai Rachana Rameshchandra	Dr. Sreeja V.
163	STUDY ON THE INFLUENCE OF INCORPORATION OF GHEE RESIDUE ON QUALITY OF BURFI	M. Tech	Bhavin Chaudhary	Dr. J. P. Prajapati
164	STUDY ON THE INFLUENCE OF INCORPORATION OF WHEY PROTEIN CONCENTRATE ON THE QUALITY OF RASOGOLLA	M. Tech	Patel Jaiminkumar Narendrabhai	Dr. J. P. Prajapati
165	PERFORMANCE EVALUATION OF FREEZE DRYER FOR MANUFACTURE OF FREEZE DRIED FRUITS AND ITS APPLICATION IN MANUFACTURE OF FRUIT CHOCOLATE CONFECTION	M. Tech	Chaudhary Hardikkumar Karsanbhai	Dr. S. M. Patel
166	MECHANIZED MANUFACTURING OF SELECTED INDIGENOUS DAIRY PRODUCTS UTILIZING MILK POWDER	M. Tech	Velpula Suresh	Dr. A. G. Bhadania
167	INCORPORATION OF ORANGE PEEL FIBER FOR VALUE ADDITION TO BHAPA DAHI	M. Tech	Patel Hardikkumar Mansukhlal	Dr. Atanu Jana
168	EVALUATION OF SELECTED HERBS TO ENHANCE SHELF LIFE OF GHEE AGAINST OXIDATIVE DETERIORATION	Ph. D.	Kapadiya Dhartiben Bipinbhai	Dr. K. D. Aparnathi



Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
169	DEVELOPMENT OF NITROGEN DISTRIBUTION BASED APPROACH TO DETECT ADULTERATION OF MILK WITH NON-PROTEIN NITROGENOUS COMPOUNDS	Ph. D.	Shaikh Ahesanvarish Ismailbhai	Dr. K. D. Aparnathi
170	PROCESS OPTIMIZATION FOR DEVELOPMENT OF DRIED FERMENTED MILK PRODUCT	Ph. D.	Mallik Jarita Mahadeb	Dr. H. G. Patel
(D) FACULTY OF FOOD PROCESSING TECHNOLOGY & BIO ENERGY				
171	BIOCONVERSION OF POTATO PROCESSING WASTE TO ETHANOL USING AMYLOLYTIC YEAST	M.Tech. (FPT)	Patel Axita Chandubhai	Dr. B. H. Joshi
172	UTILIZATION OF EFFLUENT FROM POTATO PROCESSING PLANT FOR BIOGAS PRODUCTION	M.Tech. (FPT)	Disha B Patel	Dr. S. S. Kapdi
173	DEVELOPMENT OF PRODUCTION TECHNOLOGY FOR CARROT BASED BLENDED JUICE	M.Tech. (FPT)	Kuralkar Parth Sanjaybhai	Dr. R. R. Gajera
174	EFFECT OF GAMMA IRRADIATION ON SHELF LIFE OF TOMATO	M.Tech. (FPT)	Desai Devansh Bharatbhai	Dr. D. C. Joshi
175	STANDARDIZATION OF DRYING TECHNIQUE AND EXTRACTION OF BIOACTIVE COMPOUND FROM Moringa oleifera LEAVES	M.Tech. (FPT)	Jadhav Ankita Yashwant	Dr. S. H. Akbari
176	EFFECT OF GAMMA IRRADIATION ON MICROBIAL AND CHEMICAL QUALITY OF WHOLE AND POWDERED DRIED RED CHILLI	M.Tech. (FPT)	Rabari Bhavikaben Ramsinh	Dr. A. K. Sharma
177	DEVELOPMENT OF A PORTABLE RIPENING SYSTEM FOR SELECTED FRUITS	M.Tech. (FPT)	Prachi Rajendra Umale	Dr. R. F. Sutar
(E) FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY				
178	CANAL BASED IRRIGATION SCHEDULING AND CONJUNCTIVE WATER USE PLANNING FOR OPTIMAL CROPPING PATTERN IN SELECTED PANAM CANAL COMMAND IN PANCHMAHAL DISTRICT, GUJARAT	M. Tech. (Agri. Engg.)	Deepak Kumar	Dr. S. K. Raul
179	FOAM MAT DRYING OF CUSTARD APPLE PULP AND STORAGE STABILITY OF CUSTARD APPLE POWDER	M. Tech. (Agri. Engg.)	Khodifad Bhargavbhai Chitharbhai	Dr. Navneet Kumar
180	DEVELOPMENT OF TRACTOR DRAWN LOW COST COMBINED TILLAGE TOOL	M. Tech. (Agri. Engg.)	Manjeet Prem	Dr. R. Swarnkar
181	SCREENING OF DIFFERENT DRYING TECHNIQUES OF FRESHLY HARVESTED MAIZE COBS	M. Tech. (Agri. Engg.)	Chauhan Ajitsinh Dadusinh	Dr. Neeraj Seth
(F) FACULTY OF AGRI-BUSINESS MANAGEMENT				
182	GEOGRAPHIC MARKET SEGMENTATION OF COTTON GROWING TRACTS OF AMRAVATI REGION OF MAHARASHTRA	MBA	Patil Chakradhar Dattatraya	Dr. Dilip R. Vahoniya

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
183	MAPPING AND SEGMENTATION OF THE MUSTARD GROWING AREAS FOR INTRODUCTION OF RIGHT PRODUCTS	MBA	Pushpendra Kumar Gupta	Dr. Y. C. Zala
184	MARKET MAPPING FOR PEARLMILLET AND MAIZE IN RAJASTHAN AND FORMULATION OF STRATEGIES FOR PRODUCT EXPANSION	MBA	Nisha Chauhan	Dr. M. R. Prajapati
185	A STUDY OF MAJOR DEALERS OF ORGANIC INPUTS IN SELECTED DISTRICTS OF GUJARAT	MBA	Anand Kaushal	Dr. Dilip R. Vahoniya
186	PERFORMANCE EVALUATION AND JOB SATISFACTION OF THE EMPLOYEES AT GUJARAT ENTERPRISE	MBA	Chavan Aishwarya Suresh	Dr. Shaktiranjana Panigrahy
187	A STUDY ON MARKET POTENTIAL AND FARMERS' PURCHASING BEHAVIOUR TOWARDS 'MAGIC GRO SUPER' FOR BANANA AND VEGETABLE IN SELECTED TALUKAS OF VADODARA DISTRICT OF GUJARAT	MBA	Parmar Chirag Arvindbhai	Dr. Ritambhara Singh
188	A STUDY ON CUSTOMIZED SALES FORCE AUTOMATION IN BIO-AGRIBUSINESS	MBA	Jadhav Sushil Dilip	Dr. M. R. Prajapati
189	MARKET POTENTIAL FOR BAKERY PREMISES AND BREAD IMPROVER IN SELECTED CITIES OF GUJARAT	MBA	Pansuriya Chirag Mansukhbhai	Dr. R. S. Pundir
190	FARMERS' AND DEALERS' SATISFACTION AND BRAND PREFERENCE FOR SEED DRILL IN RAJKOT AND JUNAGADH DISTRICTS OF GUJARAT	MBA	Malaviya Abhishek Vithalbhai	Dr. Ritambhara Singh
191	AGRI VALUE CHAIN IN CONTEXT TO FINANCE : A CASE STUDY OF SAMUNNATI FINANCIAL INTERMEDIATION AND SERVICES PRIVATE LIMITED	MBA	Modh Rifaliben kamleshbhai	Dr. Snehal Mishra
192	MARKET ANALYSIS OF GRANULAR INSECTICIDES FOR PADDY IN MIDDLE GUJARAT	MBA	Ramoliya Ravi Keshavlal	Dr. Ritambhara Singh
193	A STUDY ON FARMERS' BUYING BEHAVIOUR TOWARDS MOBILE SHREDDER	MBA	Borade Nilesh Ganpat	Dr. M. R. Prajapati
194	A STUDY ON FARMERS' PERCEPTION TOWARDS ORGANIC INPUTS IN SELECTED DISTRICTS OF GUJARAT	MBA	Dave Anand Anirudhdhbhai	Dr. Snehal Mishra
195	SCOPE OF ADVANCE MACHINERY AND TECHNOLOGY IN DAIRY FARMING	MBA	Chauhan Nimesh Mahendrasingh	Dr. R. S. Pundir
196	MARKET POTENTIAL AND AWARENESS OF DIFFERENT FUNGICIDES FOR CONTROL OF DISEASES IN TOMATO IN ANAND DISTRICT	MBA	Patel Primalkumar Bharatbhai	Dr. Y. A. Lad
197	A STUDY ON CONCEPT SELLING PRODUCT 'MAGIC GRO SUPER' FOR POMEGRANATE IN SURENDRANAGAR DISTRICT OF GUJARAT	MBA	Pirzada Umer Aadil Shah	Dr. M. R. Prajapati



Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
198	A STUDY ON MARKET POTENTIAL AND FARMERS' PURCHASING BEHAVIOUR TOWARDS 'MAGIC GRO SUPER' FOR OKRA IN VYARA TALUKA OF TAPI DISTRICT OF GUJARAT	MBA	Jadav Akashkumar Naginbhai	Dr. Dilip R. Vahoniya
199	MARKETING OF BIOMASS FOR POWER GENERATION IN GUJARAT	MBA	Nilam Makwana	Dr. Dilip R. Vahoniya
200	MARKET ANALYSIS OF ORGANIC MILK AT AHMEDABAD, GANDHINAGAR AND VADODARA	MBA	Patel Brijeshkumar Mukeshbhai	Dr. Shaktiranjan Panigrahy
201	McCAIN'S GOOD AGRICULTURAL PRACTICES AND THEIR DOCUMENTATION IN SELECTED VILLAGES OF MEHSANA AND SABARKANTHA	MBA	Harsh Dhama	Dr. Y. A. Lad
202	A STUDY ON MARKET POTENTIAL AND FARMERS' PURCHASING BEHAVIOUR TOWARDS 'MAGIC GRO SUPER' FOR BANANA AND TOBACCO IN SELECTED TALUKAS OF ANAND DISTRICT OF GUJARAT	MBA	Patel Hirenkumar Dineshkumar	Dr. Snehal Mishra
203	McCAIN'S GOOD AGRICULTURAL PRACTICES AND THEIR DOCUMENTATION IN SELECTED VILLAGES OF MEHSANA AND BANASKANTHA	MBA	Solanki Mayurkumar Sureshbhai	Dr. Snehal Mishra
204	MAPPING AND PRODUCT ANALYSIS OF MAJOR ORGANIC INPUT COMPANIES IN INDIA	MBA	Munj Nikita Gurunath	Dr. Y. A. Lad
205	MARKET ANALYSIS OF PROM FERTILIZER IN GUJARAT	MBA	Vyas Dhrutiben Shyamkumar	Dr. Y. A. Lad
206	A STUDY TO UNDERSTAND THE SCOPE AND MARKET POTENTIAL FOR FLAVOURS IN PHARMA INDUSTRIES IN GUJARAT	MBA	Prabhat Sirohi	Dr. R. S. Pundir
207	PRESENT STATUS AND PROSPECTS OF STRAW BALER MACHINE IN GUJARAT	MBA	Jodhani yogeshkumar Hansraj	Dr. R. S. Pundir
(G) FACULTY OF DISTANCE EDUCATION				
208	ATTITUDE OF AGRICULTURAL PERSONNEL TOWARD E- AGRICULTURAL PORTAL	M.Sc. (Agril. Jour)	Patel Pratik Harshadbhai	Dr. M. R. Patel
209	OPINION OF FARMERS ABOUT AGRICULTURAL DVD MAGAZINE	M.Sc. (Agril. Jour)	Dhandhukiya Hetal Hasmukhbhai	Dr. A. R. Makwan
210	GROWTH, INSTABILITY AND PRICE BEHAVIOUR OF MAJOR SEED SPICES OF GUJARAT STATE	M. Sc. (Agri. Mkt)	Ghanchi Mahmmedrizawan Yakubbhai	Dr. K. S. Jadav

Appendix - 6

LIST OF SEMINAR, SYMPOSIA, CONFERENCE AND WORKSHOP ORGANIZED



Sr. No.	Title	Duration	Sponsored Authority
1 Faculty of Agriculture			
1	Training programme on cultivation and Benefits of <i>Azolla</i>	29 th June, 2017	Sadguru Foundation, Chosala, Dist. Dahod
2	Training programme for PG students on organic farming	1 st & 2 nd August, 2017	Regional center for Organic Farming, RCOF, Nagpur
3	Seminar on “Nematode awareness day” at Majirai, Ta. Bhuj, Dist, Kutch in presence of Project Coordinator Dr. R. K. Walia.	7 th September, 2017	AICRP(Nematode), ICAR
4	Seminar on Quality Seed Production in Paddy (At. Kanisa, Ta. Khambhat)	12 th September, 2017	Directorate of Seed Research (DSR) (ICAR) MAU, UP
5	Symposium on “ <i>Microbial Antagonists and Their Role in Biological Control of Plant Diseases</i> ”	5-7 th October, 2017	Indian Phytopathological Society, New Delhi
6	Training on Technology of value addition in maize for south Gujarat extension officers and gram sevaks	12-13 th October, 2017	Project Directorate of Maize (ICAR) IIMR, Ludhiana
7	Training on scientific maize cultivation technology for middle-Gujarat extension officers and gram sevaks	29-30 th November, 2017	Project Directorate of Maize (ICAR) IIMR, Ludhiana
8	Training on scientific maize cultivation technology for north-Gujarat extension officers and gram sevaks	21-22 nd December, 2017	Project Directorate of Maize (ICAR) IIMR, Ludhiana
9	Farmers’ Awareness programme on “Importance of weather forecast and agro advisory services for farmers” at KVK, Mangalbharti, Dist. Chotaudaipur.	22 nd December 2017	India Meteorological Department, New Delhi
10	Training on <i>ravi pako ni vaigyanik kheti padhdhati</i>	18-20 th January, 2018	AATMA Project, RKVY
11	Training programme on “Nematodes: Awareness and Management” at Devgadhbaria Dist. Dahod.	23 rd January, 2018	AICRP(Nematode), ICAR
13	State level Workshop on <i>Bagayati pakoma samvardhan</i> and nursery <i>vyavsthapan</i>	5-6 th February 2018.	Bagayat Vikas Parisad, Anand
14	“XX Biennial Group Meeting on Nematodes in Cropping System”	15-17 th February, 2018	AAU, Anand, Gujarat & AICRP (Nematode), ICAR, New Delhi.



Sr. No.	Title	Duration	Sponsored Authority
15	A Students' sensitization seminar on "Startup Opportunities in Food and Agriculture Business"	15 th March, 2018	SSIP Cell, AAU, Anand and SSIP Cell, AAU, Jabugam
16	Training programme for tribal farmers of Panchmahal and Dahod districts under AICRP NSP (Crops) Tribal Sub Plan project, Dept. of Plant Pathology, BACA, Anand and KVK, Dahod on the topic "Fungi and insect/pests damaging seeds/ food grains during storage and their management".	15-16 th March, 2018 and 23 rd March, 2018	ICAR- Indian Institute of Seed Science, Mau, UP
2 Faculty of Veterinary Science			
17	National seminar on "Antimicrobial Resistance: From Awareness to Action"	29 th April 2017	AAVCA & GVA
18	Training on management of goat farm	06 September, 2017	ATMA, Gujarat
19	Hand on training on management of Goat	07 th September, 2017	ATMA, Gujarat
20	Goat health management	08 th September, 2017	ATMA, Gujarat
21	Kishan goshthi	20 th September, 2017	ATMA, Gujarat
22	Veterinary emergency response Operations – Block Course	9-12 th October, 2017	World Animal Protection, New Delhi
23	Fire mock drill on "saving of life in emergency" at veterinary college, anand.	9 th October, 2016	World Animal Protection, New Delhi
24	Need based training to students and teachers of biotechnology and allied field	Round the year	SAU and other universities of Gujarat and India
25	Training of veterinarians from "GVK-EMRI 1962 Karuna Ambulance"	14-17 th November, 2017	GVK-EMRI, Ahmedabad
26	Goat farming orientation to members of Sadguru Foundation, Dahod	24 th November, 2017	Sadguru Foundation, Dahod
27	Specialized training on "Laboratory Techniques for Evaluation of Bovine Frozen Semen for Lab Technicians" of Semen Stations of the country	20-25 th November, 2017	NDP-1
28		04-09 th December, 2017	NDP-1
29		18-23 rd December, 2017	NDP-1
30	Workshop on "Management of injured birds during Utarayan" for UG students of Veterinary College, Anand	22 nd December, 2017	Nil
31	Hands on training to handle injured birds to forest officials and NGO's volunteers	29 th December, 2017	Forest Department, Anand

Sr. No.	Title	Duration	Sponsored Authority
32	Hands on training and workshop on “Management of Injured birds” for Newly appointed Gov. Mobile Ambulance Doctors of Vadodra	6 th January, 2018	Nil
33	Workshop on “Management of injured birds during Utarayan”	9 th January, 2018	Forest Department, Bodakdev
34	Specialized training on Laboratory Techniques for Evaluation and Quality Control of Bovine Frozen Semen for Veterinary Officers and Quality Control Officers	1-13 th January, 2018	NDP-1
35	Kishan goshthi	08 th January, 2018	ATMA, Gujarat
36	Aadarsh pashupalan	08 th February, 2018	ATMA, Gujarat
37	Aadarsh pashupalan	23 rd February, 2018	ATMA, Gujarat
38	Khedut- <i>Vaigyanik vartalap</i>	20 th March, 2018	ATMA, Gujarat
3 Faculty of Dairy Science			
39	Enhancing effectiveness of animal husbandry input services	10 th June, 2017	IDA(Gujarat Chapter) and SMC College of Dairy Science
40	Raw milk quality - The First Critical Step to Ensure Food Safety	17 th November, 2017	IDA(Gujarat Chapter) and SMC College of Dairy Science
41	Role of examination system in increasing effectiveness of dairy science education and career movement of dairy professionals	26 th March, 2018	ICAR
4 Faculty of Food Processing Technology and Bio-energy			
42	52 nd Annual convention of Indian Society of Agricultural Engineers (ISAE) and national symposium on “ <i>Doubling Farmers’ Income through Technological Interventions</i> ”	8-10 th January, 2018	Indian Society of Agricultural Engineers (ISAE), New Delhi and Anand Agricultural University, Anand, Gujarat
43	Students sensitization seminar on “startup opportunities in agriculture and food processing”	06 th February, 2018	SSIP Cell, Anand Agricultural University, Anand
44	Personality Development programme entitled ‘Sprinter’ for Enhancing the Employability Quotient of Food Tech graduates	12-13 th March, 2018	T&P Cell, College of FPTBE, Anand Agricultural University, Anand and Scientific and Digital Systems, New Delhi



Sr. No.	Title	Duration	Sponsored Authority
5 Faculty of Agricultural Engineering Technology			
45	Two days farmers training programme on <i>krushi na vividh sadhano ni jalavani</i>	23-24 th August, 2017	University Budget Head, AAU, Anand
46	One day farmers training programme on “ <i>Gobar Gasnu Mahtav ane teni Upyogita</i> ”	15 th September, 2017	Plan Scheme -12993-10, AAU, Anand
47	One day farmers training programme on <i>krushi ma yantrikaran thaki aavak vadharava na upayo</i>	11 th October, 2017	Plan Scheme -12993-11, AAU, Anand
48	Hydrological and crop simulation modeling in the arena of climate change	6 -13 th February, 2018	Directorate of Extension Department of Agriculture Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, GOI, New Delhi
49	Training program on Scientific farming practices and value addition of custard apple	20 th February, 2018	University Budget Head, AAU, Anand
50	One day farmers training programme on <i>krushi ma pako ni kapani na adhunik yantro no parichay</i>	27 th February, 2018	Plan Scheme -12993-10, AAU, Anand
51	One day farmers training programme on <i>tapak sichai padhdhati thi pani no karyaksham upayog</i>	08 th March, 2018	Plan Scheme -12993-10, AAU, Anand
52	Organized one day Training on “Thing Speak in IoT and App Designing in Matlab”	15 th March, 2018	University Budget Head, AAU, Anand
53	Training program on scientific farming practices and value addition of soybean	17 th March, 2018	University Budget Head, AAU, Anand
6 Faculty of Agricultural Information Technology			
54	Expert Lecture Series on “Embedded Systems using Aurdino”	9-13 th March, 2017	CAIT, AAU, Anand
55	A State level Technical festival “Tech KrishIT - 2017”	14 th September, 2017	CAIT, AAU, Anand
56	Training-cum-workshop programme on ‘Improving e-Governance in Agriculture’	5-7 th September, 2017	MANAGE, Hyderabad
57	Training Programme on Data Analysis Using SAS, MATLAB and SPSS	9-13 th October, 2017	CAIT, AAU, Anand

Appendix - 7

LIST OF UNIVERSITY TEACHER WHO PARTICIPATED IN SEMINAR, SYMPOSIA, CONFERENCE AND TRAINING PROGRAMMES ORGANIZED BY THE OTHER INSTITUTIONS



1. FACULTY OF AGRICULTURE

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Dr. K. K. Patel	Attended 60 th Annual Maize Workshop of AICRP on Maize held at MPUAT, Udaipur	02-04-2017	04-04-2017
2	K. H. Patel Dr. P. K. Parmar Dr. S. K. Singh Dr. S. M. Khanorkar	60 th Maize workshop organized by IIMR (ICAR) Ludhiana at MPUAT Udaipur (Rajasthan)	05-04-2017	07-04-2017
3	Dr. V.K. Gondalia Rachana Bansal	National Seminar on “Doubling Indian Farmers Income by 2022: Opportunities and Challenges” organized by the Society of Economics and Development at PAU, Ludhiana.	07-04-2017	—
4	Dr. M. M. Trivedi Dr. R. M. Rajpura	“Antimicrobial Resistance: From Awareness to Action” Organized by Vet college, Anand in collaboration with AAVCA & GVA, Gandhinagar.	19-04-2017	—
5	Dr. N. V. Soni Dr. A. R. Makwan Dr. J. B. Patel Dr. Vinaya Kumar, H. M. Gita R. Chaudhari M. B. Zala S. A. Sipai C. B. Damor	National Seminar on “Extension Plus: Expanding the Horizons of Extension for Holistic Agricultural development” at SDAU, Sardarkrushinagar	21-04-2017	22-04-2017
	Dr. G. G. Patel K. H. Patel Dr. B. N. Thakkar Dr. G. J. Patel Dr. G. N. Thorat	National Seminar on “Extension Plus: Expanding the Horizons of Extension for Holistic Agricultural development” at SDAU, Sardarkrushinagar	21-04-2017	22-04-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
6	Dr. C. S. Baladhiya	Workshop on “Communications skills for effective extension services, EEI, Anand	24-04-2017	29-04-2017
7	Dr. Ranganathswamy Math, Dr.G.L.Kadam	New Education Policy-Future of Academic Performance Indicator (API) -Challenges, Modifications and Alternatives, One Day National Level Workshop held at M.S.U., Vadodara, Gujarat.	07-05-2017	—
8	M.V. Lunagariya	“Apiculture Training” at PAU, Ludhiana,”	08-05-2017	12-05-2017
9	Dr. V. I. Joshi	Work shop on ‘ Up Gradation of HRD Skills for Effective Extention Services’ held at EEI, AAU, Anand	08-05-2017	13-05-2017
10	Mrs. H. N. Shelat	Conference on the Natural Farming Summit at Bangalore	09-05-2017	10-05-2017
11	Dr. K. D. Mevada	National level Vigyan Sammelan & Expo at Pune	12-05-2017	14-05-2017
12	Dr. R. A. Patel Dr. M. V. Dabhi, Dr. G. N. Motaka Dr. V.P.Ramani	Refresher Course “Special RC for Teachers Educators” at HRDC, SPU, V V Nagar	15-05-2017	04-06-2017
13	Rachana K. Bansal	National Seminar on “Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers in India: Special Focus on Eastern States of India” held at AERC (Agro-Economic Research Centre), Ministry of Agriculture & Farmers Welfare, Govt. of India SPU, V V Nagar	16-05-2017	17-05-2017
14	N. J. Chaudhari	Annual Workshop of at DBSKKV, Dapoli.	22-05-2017	23-05-2017
15	Dr. N. M. Gohel Dr. Vinaya Kumar, H. M. Dr. R. K. Thumar Dr. A. S. Patel	National Conference on “Technological changes and innovations in Agriculture for enhancing farmers’ income” sponsored by ASM Foundation, New Delhi at JAU, Junagadh	28-05-2017	31-05-2017
16	C. B. Dhobi	Training on “Integrated Soil Nutrient Management” held at AAU, Anand and organized by AAU, Anand, VRTI, Mandvi and National Council for Climate Change and Sustainable Development, Ahmedabad.	01-06-2017	—

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
17	Dr. R. R. Gajera	National Seminar on ‘Sustainable Food Value Chain in the Arena of Climate Change’ held at NAU, Navsari	02-06-2017	–
18	Dr. B. N. Patel	Research Orientation Programme organized by Nirma University, Ahmedabad	05-06-2017	10-06-2017
19	M. B. Zala Dr. D. R. Patidar K. J. Suthar R. B. Chauhan	Collaborative Training Programme with MANAGE, Hyderabad on “Use of Social Media for Transfer of Technology” at EEI, AAU, Anand	20-06-2017	23-06-2017
20	Dr. R. V. Vyas	Conference for incubator community in Gujarat at International Centre for Entrepreneurship and Technology campus at iCreate, Ahmedabad	22-06-2017	–
21	Rachana K. Bansal	International Conference On Agriculture, Horticulture and Plant Science” held at Rishikesh, Uttarakhand, India organized by International Journal of Tropical Agriculture and Serials Publications Private Limited, New Delhi, India.	24-06-2017	25-06-2017
22	Dr. M. S. Kulshrestha	Workshop on “R & D in Remote Sensing for emerging Applications of Space Tech. in Agriculture and Allied Sectors at Space Application Centre (SAC), Ahmedabad	28-06-2017	29-06-2017
23	Dr. Sajid M. Dr. Vinod B. Mor P. S. Panchal Dr. Hemlata Saini Anjana Prajapati C. B. Dhobi Gita R. Chaudhari K. J. Suthar Dr. Y. C. Lakum	National Seminar on “Developing Climate Services; Along with weather forecast for buliding climate smart farmers” by NCCSD, Ahmedabad at AAU, Anand	30-06-17	–
24	Dr. Vinaya Kumar, H. M.	Training course on Knowledge Management System and web designing for agriculture and allied fields at EEI, AAU, Anand	03-07-2017	08-07-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
25	Dr. R. K. Thumar Dr. M.P. Patel Gita R. Chaudhari	Workshop on “State level Biosafety capacity building” at AAU, Anand	13-07-2017	–
26	Dr. P. G. Shah Dr. K. D. Parmar Dr. R. L. Kalasariya Dr. N. S. Litoriya N. R. Chauhan	25 th Annual workshop of “AINP on Pesticide Residues” organized by SKUAST, Srinagar	14-07-2017	15-07-2017
27	Dr. M.P. Patel	Perspective and Challenges in Agricultural Education, Research and Development at MPUAT, Udaipur	16-07-2018	–
28	Anjana Prajapati	Training on “Refresher Course in Nematology” held at Department of Nematology, CPPS, TNAU, Coimbatore.	17-07-2017	25-07-2017
29	Dr. Vikas Pali Dr. G. N. Thorat J. S. Doshi	Training programme on “ICT Applications and use of M-Kisan portals in Agriculture & Allied Fields” at EEI, AAU, Anand.	24-07-2017	29-07-2017
30	M. D. Suthar M.V. Lunagariya Dr. R. G. Machhar C. B. Damor D. M. Rathod V. J. Patel Gita R. Chaudhari Dr. M. Patel	Training on “Production Record Keeping and Improved irrigation Technologies and Soil Moisture Managements strategies” at DEE, AAU, Anand	25-07-2017	–
31	V. D. Rathva	Training on Office Administration at SPIPA, Ahmedabad	27-07-2017	29-07-2017
32	Shri D. D. Chaudhari Dr. H. K. Patel M.V. Lunagariya Dr. Y. B. Chauhan	Training programme on “Promotion of Integrated Pest Management” at EEI, AAU, Anand.	31-07-2017	04-08-2017
33	Dr. K. D. Parmar, Dr. R. L. Kalasariya Dr. N. S. Litoriya	Indo-US workshop on Security of Dual Use of Agrochemicals” organized by GFSU, Gandhinagar	04-08-2017	–
34	Ankit M. Raiyani H. D. Rahevar D. M. Rathod	Writing skills for print and electronic media (workshop)	08-08-2017	12-08-2017

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
35	Dr. G.J. Mistry	Summer School training programme on “Waste to Wealth: Biocompost production and Utilization Innovations in Organic Agriculture” sponsored by Indian Council of Agricultural Research, New Delhi	10-08-2017	30-08-2017
36	Dr. M. R. Dabhi Dr. M. V. Dabhi Dr. R. N. Pandey Dr. N. M. Gohel Dr. A. B. Brahmbhatt Dr. R. G. Parmar Dr. B. D. Patel D. D. Chaudhari Dr. H. K. Patel Dr. A. H. Barad Dr. K. D. Parmar Dr. R. L. Kalasariya N. R. Chauhan Dr. V. I. Joshi V.K. Chuadhari M. B. Zala	State Level Seminar on “ <i>Adhunik Khetima Pak Sanrakshan: Samasya ane Samadhan</i> ” sponsored by PPAG at JAU, Junagadh	19-08-2017	—
37	Dr. H. N. Prajapati	“ <i>Krusha Shabdavali English-Hindi-Gujarati- Abhyas evam Nirman</i> ” at S. P. University, V V Nagar	19-08-2017	20-08-2017
38	Dr. J. B. Patel, Dr. V. K. Gondalia Dr. A. H. Barad Dr. C. H. Rawal Dr. C. J. Patel K. J. Suthar Dr. D. R. Patidar	Orientation Programme at UGC-HRDC, S.P.University, V V Nagar	21-08-2017	17-09-2017
39	Anjana Prajapati	Training on “Technologies for utilization of Entomopathogenic nematodes for sustainable management of soil insect pests” at NBAIR, Bengaluru.	28-08-2017	01-09-2017
40	Rucha Dave Dr. Vikas Pali	Training on “Application of Remote Sensing and Geographic Information Systems (GIS) in Agricultural Development” at EEL, Anand	28-08-2017	01-09-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
41	Dr. M. V. Patel, Dr. R. A. Patel, Dr. S. N. Shah	Seminar on “English-Hindi-Gujarati Agricultural Glossary Study and Creation” organized by Commission for Scientific and Technical Terminology, New Delhi	29-08-2017	30-08-2017
42	Dr. B. D. Patel	National Workshop on “Weed Risk Assessment” NIPHM, Hyderabad	30-08-2017	31-08-2017
43	Dr. A. P. Patel	Winter School training on “Approaches for doublings farmers income” at NAU, Bharuch	01-09-2017	21-09-2017
44	Dr. Hemlata Saini	CAFT Training on Extension Strategies for Nutritional Sensitive Agriculture to Address Sustainable Development Goals at IARI, New Delhi	02-09-2017	22-09-2017
45	M.D.Suthar V.K. Chuadhari	Training on stored grain pest detection, identification and management organized at NIPHM, Hyderabad	04-09-2017	08-09-2017
46	Dr. M. P. Patel V. B. Patel	Participatory training programme on planning, monitoring and evaluation , at EEI, AAU, Anand	4-09-2017	09-09-2017
47	Dr. T. T. Patel	Refresher course on “Genomic, proteomic and metabolomics application in crop improvement” at Department of Biotechnology, Junagadh Agricultural University, Junagadh	04-09-2017	24-09-2017
48	H. D. Rahevar Dr. M. V. Dabhi Rachana K. Bansal Dr. S.B. Yadav A.B. Parmar J. H. Bhatt Dr. S. K. Singh Dr. M. B. Patel Dr. B. H. Panchal P. S. Panchal	Training cum Workshop on “Improving e-Goverence in Agriculture” organized by Manage and CAIT, AAU, Anand	05-09-2017	07-09-2017
49	Dr.G.L.Kadam	Summer school on “Developing Strategies for Doubling Farm Income In Low Rainfall Areas” held at ICAR-Central Arid Zone Research Institute, Jodhpur	05-09-2017	25-09-2017

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
50	Dr. Ranganathswamy Math	Summer school on “Current techniques and advances in mass culturing of microbials for the production of biopesticides”	05-09-2017	25-09-2017
51	V.B Vaidya	Training on Air temperature and Sensible Heat Flux and Estimation of ET by Micrometeorological Methods. National short term on “Crop Micrometeorology” organized at CAFT, College of Agriculture, Pune (MS).	07-09-2017	22-09-2017
52	Dr. Vinod B. Mor	Summer school on “Recent Advances in Abiotic Stress Management for Climate Smart Agriculture” at ICAR-NIASM, Baramati, Maharashtra.	08-09-2017	28-09-2017
53	D. D. Chaudhari Dr. G. G. Patel	CAFT Training on “Organic Production Management: Approaches and Practices” , Udaipur, Rajasthan	11-09-2017	01-10-2017
54	Dr. S.B. Yadav	Training on “Development of Climatic Risk Management Tools in Agriculture using ERFs” organized by RVSKVV, Gwalior and IMD, New Delhi	18-09-2017	24-09-2017
55	Dr. P. G. Shah Dr. K. D. Parmar Dr. R. L. Kalasariya Dr. N. S. Litoriya N. R. Chauhan Ms. N.N. Chaudhary	11 th Annual workshop of “Monitoring of Pesticide Residues at National Level” organized by AAU, Anand	22-09-2017	—
56	Dr. V. J. Patel Dr. R. G. Machhar C. B. Damor K. H. Patel	Training on Promotion of Organic Farming for Sustainable Agriculture, Organized by Directorate of Extension Education, AAU, Anand	25-09-2017	29-09-2017
57	Dr. R. N. Pandey Dr. A. B. Brahmabhatt Dr. R. G. Parmar Dr. N. M. Gohel Dr. V. R. Gohel Dr. Puja Pandey Dr. R.S. Fougat Dr. Sushil Kumar Dr. Ranganathswamy Math Dr. H. N. Prajapati Dr. S. K. Singh Dr. R. V. Vyas	Special Symposium on “Microbial antagonists and their role in plant diseases” sponsored by IPS, New Delhi at AAU, Anand	05-10-2017	07-10-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
58	Dr. Vinaya Kumar, H. M.	Green Revolution in Eastern India: Constraints, Opportunities and Way Forward during at NASC, Pusa, New Delhi, India. 2017	09-10-2017	10-10-2017
59	Dr. T. T. Patel	XXVIII Workshop of AICRP on Spices at Guntur, ANGRAU	09-10-2017	12-10-2017
60	Dr. S.B. Katole	Training on Management of Commodity Interest Group & Farmers Organizations held at EEI, Anand	09-10-2017	14-10-2017
61	Dr. Ajay Kumar Maru Anjana Prajapati Dr. R. L. Kalasariya	Training on “Office Administration” at SPIPA, Ahmedabad, Gujarat.	11-10-2017	13-10-2017
62	Dr. H. C. Parmar	National Conference of Maharashtra Society of Agril. Economics at SKRAUT, Jammu.	22-10-2017	24-10-2017
63	Dr. A. N. Khokhar R. L. Chotaliya	Orientation Program at UGC-HRDC Centre, Gujarat University, Ahmadabad.	23-10-2017	19-11-2017
64	Dr S. R. Bhise	Winter school training programme on “Advances in food processing and nutritional linkages for entrepreneurship development” at Punjab Agricultural University, Ludhiana	25-10-2017	14-11-2017
65	Dr. G. N. Thorat	ICAR Sponsored winter school “New Initiatives for Veterinary Extension, ARYA, Farmers First and MGMG” organized by Department of A.H. Extension Education, Bihar Veterinary College, Patna-14. Bihar.	30-10-2017	19-11-2017
66	Dr. H. N. Prajapati	International Conference on “Plant Health for Human Welfare” at University of Rajasthan, Jaipur.	01-11-2017	04-11-2017
67	Dr. N. M. Gohel Dr. P. K. Borad Dr. R. K. Thumar Dr. K. D. Parmar	ICAR sponsored Winter School on “Pest Risk Analysis – A tool in selection of quality planting material and pest forecast” at ACHF, NAU, Navsari	01-11-2017	21-11-2017

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
68	B.I. Karande V. B. Vaidya	“Fundamentals of Agricultural Meteorology” organized by CAFT, Department of Agricultural Meteorology, and MPKV. Pune	01-11-2017	21-11-2017
69	Dr. V. I. Joshi Dr. Y. C. Lakum	ICAR sponsored “Winter School on Approaches for Doubling Farmers Income”, held at College of Agriculture, NAU, Campus Bharuch, Gujarat.	01-11-2017	21-11-2017
70	Dr. H. N. Prajapati	CAFT training Programme on Use of Biotechnological and Conventional tools in understanding Virus-Host Interaction	07.11.2017	27.11.2017
71	Dr. A. S. Patel	Third International Conference Bio resource and stress Management held at Jaipur, Rajasthan, India.	08-11-2017	11-11-2017
72	Dr. H. C. Parmar	Short training course on “Value addition and post harvest management of Agricultural and Horticultural crops” at EEI, AAU, Anand.	20-11-2017	25-11-2017
73	Dr. H. K. Patel	CAFT Training “Organic Agriculture Intensification” MPUAT, Udaipur, Rajasthan	22-11-2017	12-12-2017
74	Dr. K. C. Patel Dr. V.P.Ramani	National Seminar on “ Development in Soil Science -2017 organized by Indian Society of Soil Science, New Delhi at Amity University, Kolkata	11-12-2017	14-12-2017
75	Dr. Sajid M.	Training on “Environmental studies” at UGC, Ahmedabad	18-12-2017	01-01-2018
76	Dr. K. S. Jadav	Refresher Course on “Statistical Techniques in Agricultural Research” Organised by Department of Department of Agricultural Statistics, College of Agriculture, Dharwad.	19-12-2017	08-01-2018
77	Azadchandra S. Damor Anjana Prajapati C. B. Dhobi A. P. Patel C. B. Damor G. D. Hadiya Dr M. B. Patel Dr B.N. Thakker D. M. Rathod Dr. R. A. Patel	Training Programme for newly recruited Assistant Professor and its equivalent on Research activities and modalities at AAU, Anand	26-12-2017	—



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
78	A.B. Parmar	Gender mainstreaming and leadership skills in Agriculture (Training Programme) held at EEI, Anand	01-01-2018	06-01-2018
79	Dr. C. S. Baladhiya Dr. R. R. Gajera J.S. Doshi	Participating in national symposium on “Doubling farmers’ income through technological interventions” held at AAU, Anand	08-01-2018	10-01-2018
80	Dr. Amarjeet Singh Th.	Training of Trainers (TOT) of Good Agricultural and Collection Practices for Medicinal Plants organized at DMPR, ICAR, Boriavi, Anand	08-01-2018	12-01-2018
81	Dr. R.D. Shinde	CAFT Training Programme on ‘Soil management approaches for climate mitigation in sustainable agriculture system’ held in Dept. of SSAC, JNKVV, Jabalpur (MP)	09-01-2018	29-01-2018
82	Dr. B. N. Satodiya	Refresher course on “Protected cultivation with special reference to soilless cultivation, hydroponics and aeroponics.” at Seed Unit, University of Agricultural Sciences, Dharwad	09-01-2018	29-01-2018
83	Dr. Akarsh Parihar Mr. Amar A Sakure	Training programme “Techniques for Estimation of Nutraceutical Properties from Crops”	16-01-2018	25-01-2018
84	Dr.G.L.Kadam Dr. V. K. Patel	Training for NSS programme officer at ETI , NSS, Gujarat Vidyapith, Ahmedabad	17-01-2018	23-01-2018
85	Dr. P. K. Borad	Model Training course on “Eco-friendly Management of Insect Pests for Sustainable Agriculture” at Junagadh	17-01-2018	24-01-2018
86	M. B. Zala	Participated in Orientation Programme organized by UGC-HRDC, S. P. University, V. V. Nagar	22-01-2018	18-02-2018
87	J. H. Bhatt	Recent Advances in Bioactive Compounds from Marine Organisms and Development of High Value Products for Health Management held at CMFRI, Kochi	23-01-2018	12-02-2018

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
88	Dr. K. D. Parmar Dr. R. L. Kalasariya	“Sampling of fruits, vegetables and other items for Pesticide Residue Analysis & Calibration of Laboratory equipment’s for PRA” at NIPHM, Hyderabad	29-01-2018	02-02-2018
89	Dr. Sneha Macwana	National Seminar on “International Pollution and Climate Change” Jointly organized by Department of Environment Science & Technology ISTAR, Department of Biological and Environment Science, NVPAS.	30-1-2018	–
90	Dr. J. J. Dhruve	Emerging Techniques in Food Sample Analysis	31-01-2018	–
91	Dr. S.B. Katole	Nutritional Challenges for Raising Animal Productivity to Improve Farm Economy held at JAU, Junagadh	01-02-2018	03-02-2018
92	Dr. B. H. Panchal	National seminar on “Technological and sustanibility of protected cultivation for Hi- valued vegetable crops” at NAU, Navsari	01-02-2018	03-02-2018
93	Dr. H. B. Shakya	Winter School of “Start Up Opportunities based on agriculture of Engineering Technologies” at Technology Trasfer Division Central Institute Agricultural Engineering, Nabi bagh, Berasia Road, Bhopal (M.P)	01-02-2018	21-02-2018
94	Dr. V. J. Patel Ankit M. Raiyani P. S. Panchal Dr. N. M. Gohel Dr. A. B. Brahmhatt Dr. Puja Pandey Arjunsinh Rathva Dr. B. D. Patel D. D. Chaudhari Dr. H. K. Patel M.D. Suthar C. B. Dhobi	State level workshop on “ <i>Bagatayee pako ma sanvardhan ane nursery vyavasthapan</i> ” by State Horticulture Mission and Gujarat Baghayat Vikas Parishad at AAU, Anand	05-02-2018	06-02-2018



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
	Dr. S. N. Shah Dr. H. C. Patel Dr. D. D. Nayee Dr. A. H. Barad D. R. Paradva Dr. H. N. Prajapati Dr. C. H. Rawal Dr. V. I. Joshi A.B. Parmar Dr. B. H. Panchal Dr. V. K. Patel Dr. R. J. Makwana V. D. Rathva	State level workshop on “ <i>Bagatayee pako ma sanvardhan ane nursery vyavasthapan</i> ” by State Horticulture Mission and Gujarat Baghayat Vikas Parishad at AAU, Anand	05-02-2018	06-02-2018
95	Ranjit J. Patel	Short training course on “Use of Social Media for Transfer of Technology” at EEI, AAU, Anand.	05-02-2018	09-02-2018
96	Dr. G. B. Chaudhari	Short training course on Data analysis Using SAS, MATLAB and SPSS	5-02-2018	09-02-2018
97	Dr M. S. Kulshrestha	Hydrological and Crop Simulation Modeling in the Arena of Climate Change at CAET, AAU, Godhra	06-02-2018	13-02-2018
98	Dr. V. I. Joshi A.B. Parmar	Participated in State level seminar on “ <i>Shakbhaji masala pako ma nutan Abhigam</i> ” held at AAU, Anand.	07-02-2018	08-02-2018
99	Prof. Rucha Dave	Training on “Soil Moisture estimation using NISAR-SMAP” SAC, ISRO, Ahmedabad	07-02-2018	09-02-2018
100	Dr. S.B. Yadav	Seminar on “Science based Agriculture and climate change” organized at EEI, Anand	15-02-2018	--
101	Dr. N. D. Patel	Statistical Analysis for Scientific & Technical Research & Applications, Dept. of Mathematics, BVM, VVNagar	19-02-2018	24-02-2018

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
102	N. J. Chaudhari	“Application of advanced agro-meteorological tools in agricultural production system” at CCSHAU campus, Hisar.	22-02-2017	03-03-2017
103	Dr. S. B. Katole A.B. Parmar J. H. Bhatt	Training on PRA tools and Techniques held at EEI, Anand	27-02-2018	01-03-2018
104	Dr. Vinod B. Mor	Conference on “Farmers First for Conserving Soil and Water Resources in Western Region” at AAU, Anand	01-03-2018	03-03-2018
105	Dr. Prity Kumari	Participated in training Programme on “Statistical Advances for Agricultural Data Analysis” under the aegis of Centre of Advanced Faculty Training (CAFT) at IASRI, Library Avenue, Pusa, New Delhi	03-03-2018	23-03-2018
106	Gita R. Chaudhari	Training on “Recording of Data in Coordinated Wheat Trials and Nurseries at IARI-RS, Indore.	05-03-2018	07-03-2018
107	Dr. Puja Pandey	Training Programme on “Production Protocol for Biocontrol agents, Quality Analysis and Quality Management of Microbial Biopesticides and Biofertilizers” held at National Institute of Plant Health Management, Hyderabad.	08-03-2018	28-03-2018
108	Dr. G. G. Patel	National conference on KVKs held at ICAR-IARI, New Delhi	16-03-2018	17-03-2018
109	Dr. M. P. Patel Gita R. Chaudhari	National Seminar on “Role of examination system in increasing effectiveness of dairy science education and career movement of dairy professionals”. organized by S. M. C. College of Dairy Science, AAU, Anand	26-03-2018	—



2. FACULTY OF VETERINARY SCIENCE

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Dr. A.J. Dhami Dr. J.A Patel	Seminar /Workshop on AI delivery system to improve conception rate under field conditions	15-04-2017	-
2	Dr. S. G. Vahora	Extension Plus: Expanding Horizons of Extension for Holistic Agricultural Development	21-04-2017	22-04-2017
3	Dr. R. J. Modi Dr. M. M. Islam Dr. D.N.Rank Dr. R.S. Joshi Dr. A.C Patel Dr. B. R. Devalia Dr. M. A Shekh Dr.B. B. Bhanderi Dr. R. A. Mathakiya Dr. J. H. Chaudhary Dr. S. K. Raval Dr. G.C. Mandali Dr. N. J. Bhagora Dr. R. K. Mishra Dr. K. K. Sorathiya Dr. N.P.Sarvaiya Dr. J. K. Mahla Dr. S.K. Bhavsar Dr. A.J. Dhami Dr. M.T. Panchal Dr. J.A. Patel Dr. K.K. Hadiya Dr D.V. Chaudhari Dr. N.P.Sarvaiya	National Seminar on “Antimicrobial Resistance: From Awareness to Action	29-04-2017	--
4	Dr. D.V. Chaudhari Dr. B. B. Bhanderi	Office Administration (GoI)	10-05-2017	12/5/2017
5	Dr. Neha Rao	Refresher Course “Special RC for Teachers Educators” at HRDC, SPU, V V Nagar	15-05-2017	04-06-2017

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
6	Dr. R. J. Modi Dr. M. M. Islam Dr. B. R. Devalia Dr. R. A. Mathakiya Dr. B. B. Bhanderi Dr. M. A. Shekh Dr. R. A. Mathakiya Dr. B. B. Bhanderi Dr. K.A. Sadariya Dr. J. H. Chaudhary Dr. J. K. Mahla Dr. S. K. Raval Dr. A. B. Patel Dr. N. J. Bhagora Dr. D.V. Chaudhari	Seminar on “Enhancing Effectiveness in Animal husbandry Input Services”	10-06-2017	--
7	Dr. J. H. Chaudhary Dr. A. C. Vaidya Dr. V. R. Nimavat	Use of Social Media For Transfer of Technology	20-06-2017	23-06-2017
8	Dr. K. K. Sorathiya Dr. J. H. Chaudhary	Developing climate services; Along with Weather Forecast For Building Climate Smart Farmers	30-06-2017	--
9	Dr. K. K. Sorathiya	Office administration	22-07-2017	29-07-2017
10	Dr. M. A. Shekh	38 th Orientation Programme	21-08-2017	17-09-2017
11	Dr. J. J. Parmar	CAFT Training Programme on “Addressing challenges in Veterinary Surgery and Anaesthesia”	30-08-2017	19-09-2017
12	Dr. A. J. Dharmi Dr. D. V. Chaudhari	5 th Annual Convention of SVSBT and National Seminar on “Opportunities and Challenges of Translational Research in the Frontier Areas of Animal Biotechnology”	22-09-2017	23-09-2017
13	Dr. R. J. Modi Dr. M. T. Panchal Dr. N. P. Sarvaiya	One day seminar on “Emerging and re-emerging infectious diseases of livestock and poultry: Role of veterinarian”	24-09-2017	--
14	Dr. J. H. Chaudhary Dr. B. B. Bhanderi	Recent Approaches in Animal Disease Diagnostics and Vaccinology	26-09-2017	16-10-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
15	Dr. G. C. Mandli	Vulture conservation- A future perspective	7-10-2017	--
16	Dr. D.V. Chaudhari	ICAR Winter School of 21 days duration on "Omic technologies and modern breeding approaches for conservation and productivity enhancement of indigenous cattle resources"	01-11-2017	21-11-2017
17	Dr.B.P.Joshi Dr.D.J.Ghudasara Dr.C.J.Dave	XXXIV Annual Conference of Indian Association of Veterinary Pathologists on Emerging horizons in diagnosis of animals and poultry diseases – towards sustainable production in Asian countries	9-11-2017	11-11-2017
18	Dr. V.P. Belsare Dr. C.P. Parmar	Training for Installation of Biometric Machine & New Software	10-11-2017	--
19	Dr. G. C. Mandli	Raw milk quality- The first critical step to ensure food safety	18-11-2017	--
20	Dr.Ankita Killedar	Role of women veterinarian in enhancement of livestock production, health and welfare	21-11-2017	22-11-2017
21	Dr. P.V.Parikh	41 st Annual Congress of ISVS and National Symposium on "New horizons in cancer research pertaining to effect on health, production and reproduction in animals"	14-12-2017	16-12-2017
22	Dr. S.K. Bhavsar	Annual conference of ISVPT and national symposium on "combating antimicrobial resistance"	20-12-2017	22-12-2017
23	Dr K M Panchal Dr.D.M.Bhayani	Advances and Application of Vet. Anatomy in Livestock, Pet, Lab Animals and Wild Life Health and Production. & XXXII National Symposium & Annual Convention of IAVA	21-12-2017	23-12-2017
24	Dr. M. M. Pathan	XXVI Annual conference & National symposium on Physiological Innovations to Forecast the Impact of Climate Change and to Evolve Strategies for Sustainable Livestock Production	21-12-2017	22-12-2017
25	Dr.K.K. Sorathiya	Training programme for research activities	26-12-2017	--
26	Dr.V.D.Chauhan Dr. D. B. Sadhu	Training Programme on Gender Mainstreaming and Leadership Skills in Agriculture	01-01-2018	06-01-2018

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
27	Dr. S.K. Bhavsar	“Implementing Appropriate Vaccination Regimen for Improved Animal health and Sustained Production”	08-01- 2017	--
28	Dr.D.S.Nauriyal	“Innovative Techniques, Emergency Issues and Advancement in Veterinary Medicine to meet Challenges : Present and the Future”/ 36 th ISVM Convention	01-02-2018	03-02-2018
29	P.M.Lunagariya Dr. K. K. Sorathiya	XVII Biennial Animal Nutrition Conference on “Nutritional Challenges for Raising Animal Productivity to Improve Farm Economy”	01-02-2018	3/02/2018
30	Dr.M.A.Gamit	Use of Social Media for Transfer of Technology	05-02-2018	09-02-2018
31	Dr. R. A. Mathakiya	Student sensitization seminar on “Start-up opportunities in Agriculture and Food Processing” organized by SSIP cell, AAU, Anand	06-02-2018	--
32	Dr. N. J. Bhagora	Advances in Poultry Production and its impact on changing global scenerio	7-02-2017	27-02-2017
33	Dr. A.J. Dhami Dr. D.V. Chaudhari	33 rd Annual Convention of ISSAR & National Symposium on “Use of Reproductive Technologies and Production Improvement in Livestock Species Aiming at Socio-Economic Development of Rural Mass”	09-02-2018	11-02-2018
34	Dr. S.J.Jakhesara	Application of OMICS tools and techniques for Agricultural Germplasm Improvement	09-02-2018	01-03-2018
35	Dr. N.D.Hirani Dr.V.D.Chauhan	XXVII National Congress of Veterinary Parasitology and National Symposium on “Technologies for sustainable parasite control and readdressal of detection methods directed for upliftment of rural economy”	12-02-2018	14-02 2018
36	Dr. K.K. Hadiya	Seminar on “Advancement in Bovine Reproduction Biotechnologies to increase Breeding Efficiencies”	13-02-2018	--
37	Dr. G.C. Mandali	Inclusive agriculture and doubling farmer income	15-02-2018	--



3. FACULTY OF DAIRY SCIENCE

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Dr. Sreeja V.	“Communication Skills for Effective Extension Services” at Extension Education Institute, AAU, Anand.	24-04-2017	29-04-2017
2	Dr. A.K.Makwana Dr. M.C.Prajapati	Faculty Development Program “Business Simulation” at BIMTECH campus, Greater Noida, New Delhi	06-05-2017	07-05-2017
3	Ms. Mital R Kathiriya	Job satisfaction & organizational accountability organized by Vidya Dairy, Anand	25-05-2017	--
4	Dr. BM Mehta Dr. AK Jain Dr. SC Parmar Dr. Smitha B Mr. S I Patel Dr. M.C.Prajapati Dr. K.C.Kamani Dr. J. B. Upadhyay Dr. Sunil Patel Mr. Kunal Gawai	“Enhancing Effectiveness in Animal Husbandry Input Services”. organized by IDA (Gujarat Chapter) and S. M. C. College of Dairy Science, AAU, Anand	10-06-2017	--
5	Er. Arpita M. Rathva	Developing Climate Services; along with weather for building climate smart farmers at Anand Agricultural University.	30-06-2017	--
6	Dr. Sreeja V.	One day “State Level Biosafety Building Workshop” at University Bhavan, AAU, Anand	13-07-2017	--
7	Mr. Kunal Gawai	One day training session for ‘Competency’ training programme by the Mentors and Enblers, Vododara	18-07-2017	--
8	Dr. AK Jain Dr. SC Parmar Dr. M.C.Prajapati Dr. K.C.Kamani Dr. M.D.Gurjar Er. A. D. Patel Er. Arpita M. Rathva Mr. KunalGawai	A Seminar on “ Rheology of Dairy Products” organised by SMC college of Dairy Science, AAU, Anand In Association with Anton Paar India Pvt. Ltd., on 21th July, 2017	21-07-2017	--

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
9	Dr. A. K. Jain Dr. S. C. Parmar Prof. Rachana Rathwa Er. Arpita M. Rathva	Training programme on ‘Office Administration’ organized by SPIPA, Ahmedabad, Gujarat.	27-07-2017	29-07-2017
10	Dr. A. Jana	Delivered one lecture on ‘Value addition to dairy products to uplift milker’s economic status’. In Souvenir of Winter school on ‘Approaches for doubling farmers income’ held at College of Agriculture, Navsari Agricultural University, Bharuch, 1-21 November, 2017, pp. 339-334.	01-11-2017	21-11-2017
11	Dr. Sreeja V.	“27 th Swadeshi Science Congress” organized by Swadeshi Science Movement - Kerala & Amrita Vishwa Vidyapeetham, Amrita University, Kollam, Kerala	07-11-2017	09-11-2017
12	Dr. B. M. Mehta Dr. A. K. Jain Dr. S. C. Parmar Dr. Smitha B Mr. S.I. Patel Dr. M.C.Prajapati Dr. K.C.Kamani Dr. M.D.Gurjar Mr. Kunal Gawai Er. A. D. Patel Er. Arpita M. Rathva	One day seminar on “Raw Milk Quality-The First Critical Step to Ensure Food Safety” organized by Indian Dairy Association (Gujarat State Chapter) in association with SMC college of Dairy Science and College of Veterinary Science and Animal Husbandry, AAU, Anand.	18-11-2017	--
13	Er. Arpita M. Rathva	One day training programme on “Research Activities and modalities” organized by Directorate of research Anand agricultural university, Anand.	26-12-2017	--
14	Dr. Subrota Hati Er. I. A. Chauhan	52nd Annual Convention of Indian Society of Agricultural Engineers and National Symposium on Doubling Farmers Income through Technological interventions	08-01-2018	10-01-2018



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
15	Dr. AI Shaikh Mr. SI Patel Er. I. A. Chauhan Er. A. D. Patel	National Seminar on 'Emerging Techniques in Food Sample Analysis' jointly organized by Food Quality Testing Laboratory, College of FPT & BE, AAU, Anand and Lab India Analytical Instruments Pvt. Ltd.	31-01-2018	--
16	Dr. Sreeja V. Dr. A.K.Makwana Dr. M.C.Prajapati	46 th Dairy Industry Conference and Dairy Expo at Adlux International Convention and Exhibition Centre, Angamali, Kochi	08-02-2018	10-02-2018
17	Dr. BM Mehta Dr. SC Parmar	Training programme on "Leadership development & team building skills for extension personnel" organized at Extension Education Institute, Anand, Gujarat.	19-02-2018	24-02-2018
18	Dr. A.K.Makwana Dr. M.C.Prajapati Dr. K.C.Kamani Mr. M.D.Gurjar Dr. J. B. Upadhyay Dr. Sunil Patel Er. I. A. Chauhan Er. A. D. Patel Er. Arpita M. Rathva	National Seminar on "Role of examination system in increasing effectiveness of dairy science education and career movement of dairy professionals". organized by S. M. C. College of Dairy Science, AAU, Anand	26-03-2018	--

4. FACULTY OF AGRICULTURAL INFORMATION TECHNOLOGY

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Dr. J. V. Suthar	Training programme on 'Use of Social Media for Transfer of Technology'	20-06-2017	23-06-2017
2	Prof. D. K. Parmar	Workshop on Knowlegde Managenmet System and Web Designing for Agrocultre and Allied Field	03-07-2017	08-07-2017
3	Prof. N. M. Vegad	Refresher Course on 'Extension Management'	05-07-2017	25-07-2017
4	Dr. D. R. Kathiriya Dr. J. V. Suthar Prof. N. M. Vegad	Training programme on 'Improving e-Governance in Agriculture'	05-09-2017	07-09-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
5	Prof. N. M. Vegad	Three days State NSS days celebration programme	22-09-2017	24-09-2014
6	Dr. D. R. Kathirya	National workshop on “Emerging Trends in Information Technology for University Management”	19-12-2017	21-12-2017
7	Dr. J. V. Suthar	One day training on ‘Research activities and Modalities’	26-12-2017	-

5. FACULTY OF FOOD PROCESSING TECHNOLOGY AND BIO-ENERGY

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Er. A.N. Nakiya Er. M.A. Makwana	Special refresher course for teachers educators (Subject: Mechanical Engineering) at UGC-HRDC, Sardar Patel University, VV Nagar	15-05-2017	04.06.2017
2	Mr. P.S. Parsania	44 th Refresher Course at UGC-HRDC, Sardar Patel University, VV Nagar	19-06-2017	09-07-2017
3	Er. T.H. Bhatt	ICAR Sponsored Summer School on “Analytical, instrumental & imaging techniques relevant to food safety management” organised by ICAR-Central Institute of Agricultural Engineering (C.I.A.E.), Bhopal (M.P.)	06-07-2017	27-07-2017
4	Er. Harsh Sharma	19 th Annual conference on “Food Processing and Technology” organised by conference series LLC in collaboration with generous support and cooperation from enthusiastic academicians and editorial board members, Paris, France	23-10-2017	25-10-2017
5	Dr. D.H. Patel	ICAR sponsored short term training course on “Techniques for Estimation of Nutraceutical Properties from Crops” at Department of Biochemistry, B.A. College of Agriculture Anand Agricultural University, Anand - 388110, Gujarat, India	13-11-2017	22-11-2017



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
6	Dr. A.K. Sharma Dr. Anurag Nema Dr. H.G. Bhatt Dr. B.H. Joshi Dr. R. V. Prasad Dr. R.F.Sutar Dr. S. Dutta Dr. S.H. Akbari Dr. S.S. Kapdi Er Amee Ravani Er. H. Pandey Er. Harsh Sharma Er. K.V. Vala Er. R.B. Modi Er. T.H. Bhatt Mr. G.P. Tagalpallewar Mr. K.S. Damle Mr. J.K. Momin Mr. R.M. Dhingani	52 nd Annual convention of Indian Society of Agricultural Engineers (ISAE) and National symposium on “Doubling Farmers’ Income through Technological Interventions” at Anand Agricultural University, Anand - 388110, Gujarat, India	08-01-2018	10-01-2018
7	Er Amee Ravani	ICAR sponsored short term training course on “Techniques for Estimation of Nutraceutical Properties from Crops” at Department of Biochemistry, B.A. College of Agriculture Anand Agricultural University, Anand - 388110, Gujarat, India	16-01-2018	25-01-2018
8	Mr. K.S. Damle	ICAR Sponsored Winter School on “Recent Advances in Bioactive Compounds from Marine Organisms and Development of High Value Products for Health Management” organized by ICAR– Central Marine Fish Research Institute (CMFRI), Kochi-682 018, Kerala	23-01-2018	12-02-2018
9	Dr. S. Dutta	National Seminar on “Emerging techniques in food sample analysis” organised by FQA Dept, College of FPTBE, AAU, Anand & Labindia Analytical Instruments Pvt. Ltd.	31-01-2018	--
10	Dr. S. Dutta	National Conference on “Incubating Rural and Social Enterprises” organised by Institute of Rural Management, Anand	26.02.2018	--

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
11	Dr. S. Dutta	ICAR sponsored National Seminar on “Role of Examination System in Increasing Effectiveness of Dairy Science Education and Career Movement of Dairy Professionals” organised by SMC College of Dairy Science, AAU, Anand	26.03.2018	--

6. FACULTY OF AGRICULTURAL BUSINESS MANAGEMENT

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Prajapati M.R. Ritambhara Singh	Refresher course on Management and Business studies organized by S.P.University, UGC HRDC, Vallabh Vidyanagar	15-05-2017	04-06-2017
2	Pundir R.S. Snehal Mishra Vahoniya D.R. Zala Y. C.	National Seminar on “Assessment of the Status of Dairying and Potential to Improve Socio-Economic Status of the Milk Producers in India: Special Focus on Eastern States of India”.	16-05-2017	17-05-2017
3	Pundir R.S.	National Seminar on “Sustainable Food Value Chain in Arena of Climate Change”.	02-06-2017	--
4	Zala Y. C. Vahoniya D.R.	National Seminar on “ Water Governance in India: Sustainable Management of Water Resources in Agriculture Jointly organised by International Water Management institute (IWMI) ,Colombo-Anand office & Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar during	16-06-2017	17-06-2017
5	Snehal Mishra	National Seminar on “Developing Climate Services; Along with Weather Forecast for Building Climate Smart Farmers” at AAU, Anand.	30-06-2017	--
6	Dudhagara C. R. Khanna V. R.	Training Programme for Research Activities for newly appointed Assistant Res. Sci. / Associate Res. Sci. and its equivalent staff of AAU	26-12-2017	--



Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
7	Prajapati M.R.	Workshop on Farm business management organized by EEI, AAU, Anand	15-01-2018	20-01-2018
8	Lad Y.A.	National Seminar on Changing Focus of Accounting and Disclosure	27-01-2018	--
9	Dudhagara C. R. Khanna V. R. Mahera A.B.	Training / Workshop on “Agribusiness & Marketing Information System” at, Extension Education Institute, Anand	29-01-2018	3-02-2018
10	Khanna V. R.	Training programme on “CCC+” at SPIPA Ahmedabad	19-02-2018	06-03-2018
11	Dudhagara C. R. Khanna V. R. Lad Y.A. Mahera A.B. Prajapati M.R. Ritambhara Singh Snehal Mishra Vahoniya D.R.	National Seminar on “Role of Examination System in Increasing Effectiveness of Dairy Science Education and Career Movement of Dairy Professionals” organized by SMC College of Dairy Science, AAU, Anand	26-03-2018	--

7. FACULTY OF AGRIL ENGINEERING AND TECHNOLOGY

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
1	Dr. D. K. Vyas Dr. M. K. Tiwari Dr. Navneet Kumar	National Conference on “Technological Changes & Innovations in Agriculture for Enhancing Farmers’ Income”, at JAU, Junagadh, Gujarat organized jointly by ASM Foundation, New Delhi, and JAU, Junagadh, Gujarat.	28-05-2017	31-05-2017
2	Er. A. N. Kunapara	Developing Climate Services; along with weather for building climate smart farmers at Anand Agricultural University.	30-06-2017	--
3	Er. A. N. Kunapara	“Satellite based Hydrology and Modeling” Training at SAC, ISRO, Ahmedabad	08-08-2017	11-08-2017
4	Er. A. N. Kunapara	Research Training for Newly recruited Scientist at AAU, Anand	26-12-2017	--

Sr. No.	Name of Teacher/ Scientist	Participated	Duration	
			From	To
5	Dr. Pankaj Gupta Dr. Neeraj Seth Dr. D. K. Vyas Er. J. J. Chavda Dr. M. K. Tiwari Er. Kapil Mandloi Er. Chirag Jadav Dr. Gautam Kamani S. S. Chinchorkar Hetel Tanna Shefali Modi Er. Sravankumar Mr. Hardik Sharma Er. K. R. Jethva Dr. Navneet Kumar Dr. R. Swarnkar K.L.Dabhi Er. R. C. Salunkhe Er. R.S. Godhani	52 nd ISAE National Convention on Doubling Farmers Income Through Technological Interventions at AAU, Anand	08-01-2018	10-01-2018
6	Dr. Pankaj Gupta Er. A. N. Kunapara Dr. Mukesh K. Tiwari Shefali Modi	Conference on Farmers First for Conserving Soil and Water Resources in Western Region (FFCSWR-2018) held at Anand Agricultural University, Anand, organized by Indian Association of Soil and Water Conservationists, Dehradun, Uttarakhand	01-02-2018	03-02-2018





Appendix - 8

MAME & DEATAILS OF THE DIGNITARIES VISITED



Sr. No.	Name	Date of visit
1	Ms Jaonne Baczuk, Director, Business Development and Economic Analysis, Saskatoon Regional Economic Development Authority (SREDA)	04-05-2017
2	Stephen McLane, Business Development Specialist, SREDA, Saskatchewan, Canada	
3	Sreehari Marar, Senior Research Analyst, Tractus Asia (India) Pvt. Ltd., Pondicherry, India	
4	DR. A. S. Rajput Regional Director, Regional Center of Organic Farming, (GOI), Nagpur	20-05-2017
5	Mr Chileshe Kandeta, Media and Public Affairs, Ministry of Finance, Republic of Zambia	26-05-2017
6	Medson Moyo , Senior Budget Analyst, Minister of Finance, Republic of Zambia	
7	Bangwe Navilley, First Secretary (Press & Tourism), High Commission of The Republic of Zambia, New Delhi, India	
8	Mr. Saka, Zambia Embassy, New Delhi	
9	Dr. D. B. Parakh, Principal Scientist (Plant Pathology), Division of Plant Quarantine, ICAR- NBPGR, New Delhi	08-06-2017
10	Dr. Y. R. Meena, Additional Commissioner (Ext.), Ministry of Agriculture and Farmer Welfare, GOI, New Delhi	29-06-2017
11	Dr. S. D. Attri, Dy. Director General MD, India Meteorological Department (MES, GOI), New Delhi and Shri. B. P. Singh Retired Justice and chairman NSSD,	30-06-2017
12	Dr. V. Celia Chalam, Principal Scientist Plant Virology Laboratory, Division of Plant Quarantine, ICAR- NBPGR, New Delhi	12-07-2017
13	India-South Africa Joint Delegation Mr. Daan du Toit, Deputy Director General of International Cooperation and Resources within DST, South Africa	
14	Dr. Amarnath Thakur Deputy Executive Director at Indian National Science Academy (INSA), New Delhi, India	14-08-2017
15	Mr. Ashwani Kumar, Joint Secretary Ministry of Agriculture & Farmer's Welfare, Krishi Bhavan, New Delhi	22-09-2017
16	Dr. P. N. Mathur, Former DDG (Agri. Extension), ICAR, New Delhi and Dr. V. V. Sadamate, Former member planning commission, Pune	25-09-2017
17	Dr. P. S. Shukla, GBPUAT, Pantnagar	02-10-2017



Sr. No.	Name	Date of visit
18	Mr. R. H. Ghoghala , Mr. Camaro, Mr. Abubaunor and nine others. African delegates from Guinea	06-10-2017
19	Dr. Christoph Amberger and delegates of Germany	07-10-2017
20	Shri. Vikas Chandra Rastogi, Project Director Agriculture in Maharashtra and observer election commission	08-12-2017
21	Stephen Devadoss, Emabeth Thompson Endowed Professor, Department of Agricultural and Applied Economics, Texas Tech University,	14-12-2017 to 16-12-2017
22	Dr. H. Shivanna, Vice Chancellor, UAS, Bengaluru, Karnataka	21-12-2017
23	Dr. Gordhanbhai Patel, President JP Laboratories USA	25-12-2017
24	Dr. Stephen Searcy, President, American Society of Agricultural and Biological Engineers, USA	08-01-2018
25	Mr. Harriett A. Paul, Director FAMU International Agriculture Programs, USA	
26	Prof. K. P. Singh, Hon'ble Vice Chancellor, CCS, HAU, Hisar	
27	Dr. M. K. Garg, OSD to Vice Chancellor, CCS, HAU, Hisar	
28	Dr. Albert Schram, Hon. Vice Chancellor and Dr. S. Gopalkrishnan, Professor, PNG, University of Technology, Papua New Guinea	12-01-2018
29	Participants of India-Israel Innovation Meet	18-01-2018
30	Dr. G. N. Patel, President, JP Laboratories, Inc., New Jersey, USA and Shri Jivrajbhai Sutariya	24-01-2018
31	Dr. S. A. Patil, Former Vice Chancellor , UAS Dharwad	31-01-2018
32	Dr. Mashood Ali, Kanpur, Dr. H. K. Senapati, Bhuvaneshwar, Dr. A. L. Pharande , MPKV Rahuri, Dr. Rajesh Gera, QRT members	06-02-2018
33	Dr. M. S. Rao, Head, Entomology and Nematology ICAR IIHR, Bangalore	16-02-2018
34	Dr. G R ANAP, QRT member, CIRCOT and former world bank consultant East africa	18-02-2018
35	Julius A. Makundi, Managing Director, Tanzania	24-02-2018
36	Senior officials of industries department Government of Kerala with Mr. Sivanambattu Entrepreneurship Development Institute of India (EDI), KILA Campus, Mulamkunnathukavu, Thrissur	28-02-2018



INDIAN COUNCIL OF AGRICULTURAL RESEARCH




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(N.S. Rathore)
Dy Director General (Edn)

16 July 2018, New Delhi


(Trilochan Mohapatra)
Director General

