Cover page

Anand Agricultural University

First Annual Report

1-5-2004 to 31-3-2005

Anand Agricultural University
Anand-388 110
(Gujarat)

First Annual Report

1-5-2004 to 31-3-2005

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Anand Agricultural University
Anand -388 110
Gujarat, India

From the Vice Chancellor's Desk ….

On the eve of submission of the First Annual Report, I consider it my privilege to proudly claim that Anand Agricultural University is that magical tree which has gained firm roots, even while it is still an offspring.

AAU is an institution born with a mission – to materialize the dreams of visionaries like Sardar Patel and Dr K.M. Munshi, and to reach out to the sons of soil who toil relentlessly through blooming spring, scorching summer, stormy rains, and biting cold to keep us content and comfortable. We describe them as the Backbone of our country. I prefer to acknowledge them as the Lifeline of our Land. Our substantial endeavors through Teaching, Research, Education, Extension and experimentation are to draw on the farmers' native experience and expertise to mingle with our sophisticated means and technological skills to reinforce the green revolution.

Since its inception, Anand Agricultural University has proved itself to be a frontrunner with its various accomplishments. The University's Information Technology Center is recognized by the Government of Gujarat as Central Data Center for its ambitious Soil Health Card Project, under which the mammoth task of digitally feeding and analyzing district-wise data on farmers' land from approximately 18,000 villages of the state has been undertaken. The number of aspirants clearing the NET and JRF examinations, and the increasing number of students going abroad for higher studies establishes the academic excellence of this institution.

Our Library, acclaimed to be the foremost Regional Library in the west zone by the ICAR, with its rich collection of foreign and Indian journals, online database and Cyberary is a bonanza of references for researchers and students. To fulfill the requirements of the farmers for the enhanced sustainable agriculture, the University has developed and released 8 improved varieties in different crops, besides evolving a fine-grained, pest-disease resistant paddy variety, GR-12. The University has recommended 32 crop production and protection technologies in different areas. In order to strengthen the extension education programs, our University has organized 223 training programs and trained 6500 extension workers for beneficial crop practices in their respective areas.

To meet the human resource requirement of the food processing industry, the new Faculty of Food Processing Technology and Bio-Energy has been established. Realizing the significance of IT for overall development, and following the government's directive giving IT a pro-people and pro-development thrust, a post-graduate diploma program in Information Technology in Agriculture has been formulated to create competent agricultural human resource. His Excellency, Dr A.P.J. Abdul Kalam inaugurated the Experimental Plant for the production of Biodiesel on 14 December 2004 at AAU. The Government of Gujarat paved the way for the establishment of the Center for Organic Farming at the University by providing fund towards Strengthening Residue Analysis Laboratory. In the avenue of Extension, with the fiscal aid by the ICAR, a new KVK has been sanctioned and inaugurated by Hon'ble Minister of Agriculture on 25th December, 2004 at Arnej for Ahmedabad district.

On a different plane, Vidya Dairy, a unique blend of academia-cum-commerce unit affiliated to Dairy Science College, won laurels by being the first in the country to be certified for **HACCP and ISO – 9000 by QAS, Australia,** besides being the recipient of the most coveted **Rajiv Gandhi National Quality Award** for large scale food industry. On the Veterinary front, the most significant development is the University signing an MoU with NDDB for the newly developed but highly sophisticated Embryo Transfer Technology, with a view to enriching herd productivity.

The above achievements are only to name a few. Any report trying to review all the hyperactivity taking place throughout the year at Anand Agricultural University can never be all-comprehensive. A lot may be said, yet a lot would be left out unsaid. Similarly, a lot is accomplished; a lot more is yet to be accomplished.

All the accomplishments are the outcome of the united efforts of all the wings – academic, technical and administrative - of our institution. I heartily commend the entire personnel of AAU for their efficiency, diligence and devotion. The oncoming year, I assure, is going to witness more activity, more zeal and further success.

(M.C. Varshneya)
Vice Chancellor
Anand Agricultural University

Contents

Executive Summary

Way back, in the 'Forties, Krishi-Go-Vidya Bhavan, the groundwork of Gujarat Agricultural University, was not merely an educational institution, but a mission, a cause, primarily conceived to revitalize agriculture, following Gandhiji's call for village regeneration. It was the outcome of two visionaries namely, Sardar Patel and Dr K.M. Munshi, and what the institution today is a tribute to the vision , skill, diligence and enterprise of all those who helped to plan and execute it.

The Anand Agricultural University, carved out of the erstwhile Gujarat Agricultural University, came into existence with effect from 1.5.2004. AAU is located in Central Gujarat, in the Milk City Anand, five kilometers away from the Railway Station, at 72.5° longitude and 22.35° latitude to the south, consisting of an area of approximately 301 hectares. The University's jurisdiction encompasses six districts, i.e., Ahmedabad, Anand, Kheda, Vadodara, Panchmahal and Dahod, with a network of three Colleges (B.A. College of Agricuture, SMC College of Dairy Science and College of Veterinary Science and Animal Husbandry), 17 Research Centers and six Extension Education Institutes.

The Govt. of Gujarat appointed Prof. M.C. Varshneya as the first Vice Chancellor with effect from 21-5-2004. As soon as he assumed his office, Academic Council, Boards of Studies, Faculties, Research Councils, Extension Council and such other authoritative bodies were constituted.

The three constituent colleges of erstwhile GAU became the constituent colleges of AAU, imparting education in Agriculture, Veterinary and Dairy Science faculties through semester system. In the year 2004-2005, 176 graduate and 103 postgraduate students successfully completed their studies. 229 candidates cleared various Diploma and Certificate courses organized by AAU. The University has launched postgraduate diploma courses in Agricultural Information Technology, Food Processing Technology and Bio- Technology this year.

All the 17 research stations, which became part of AAU, focus on productivity, sustainability, and improvement of the socio-economic condition of the farming community. These goals of AAU encompass newer areas such as distributing Soil Health Card, manufacturing Bio-fuel, growing medicinal plants along with the conventional crops and processing of food products on the agricultural plane, while animal scientists are busy conducting high quality research for preventive and curative measures against infection/infestation, high productivity in poultry/livestock, and different measures in animal nutrition. Under the Dairy Technology, emphasis is being placed on uplifting the standards of milk and milk products to compete at international level.

AAU is also actively engaged in transferring the technology from the lab to the land through various training centres to SMS and Farmers. The main motto of AAU as regards reaching out to the farmers right at the grass root level is being diligently carried out by the Extension Educationists.

There were other activities such as NCC, NSS, sports and games, youth festivals, quiz and debate competitions, discussion forum providing platform to the students to express themselves, to focus on technical and behavioral skill, and personality development of the students.

As per the directive of Gujarat government, Soil Health Card project was undertaken, according to which, soil samples from each village were scrutinized, and needed suggestions were given to farmers with regard to the fertilizers to be used as per the specific requirements of the soil tested. A databank of all the farmer clients is decided to be prepared along with the required software and network. So far, seven lakh eighty five thousand soil samples have been tested for fertility and the results are to be installed in the database.

Dr M.D. Patel Library was selected by NATP, ICAR, New Delhi, as the Regional Library, to form a part of the nation-wide consortium of eighteen libraries, and eventually, acquired the status of Regional e-Library, with 256 kbps connectivity, more than sixty six thousand entries electronically catalogued, two thousand one hundred seventy theses abstracts digitized, and with the issue of e-cards, now e-circulation is fully operational in the Library. It caters to the educational needs of all the three colleges.

A detailed account of AAU activities is presented in the subsequent chapters of the report. It is our continued endeavor to make agricultural research, education, and extension more responsive towards development needs of our farmer community.

CHAPTER-1

An Overview

The Manifesto of Anand Agricultural University

- To contribute to the advancement of knowledge in agricultural science and technology.

- To meet the agricultural manpower need through teaching, research, practical training and extension education.

- To promote learning in an environment conducive to free thinking and to acquire latest skills to keep in tune with the current trends.

- To cater the need for knowledge in our rural society, and focus on lifetime employability rather than mere employment.

- To undertake basic research to make breakthrough in newer areas of knowledge.

- To solve the environmental problems in order to make human living more comfortable.

The University

Way back, in the 'forties, erstwhile Gujarat Agricultural University, popularly known as Krishi-go-Vidya Bhavan, was not merely an educational institution, but a mission, a cause, primarily conceived to revitalize agriculture, following Gandhiji's call for village regeneration. It was the outcome of two visionaries namely, Sardar Patel and Dr K.M. Munshi and what the Institution today is a tribute to the vision, skill and enterprise of all those who helped to plan and execute it.

The Anand Agricultural University – AAU –, carved out of the erstwhile Gujarat Agricultural University, was established at Anand with the support of the Government of Gujarat, Act No. 1969 (N0.13), Gujarat Five of Two Thousand Four on April Twenty Nine, Two Thousand Four. Through AAU, the farming community is being provided support in all the three facets, namely education, research and extension activities in agriculture and all its allied fields.

AAU is located in Central Gujarat, in the Milk City Anand, five kilometers away from the Railway Station, seventy two point five degrees longitude and twenty two point three five degrees latitude to the south, consisting of an area of approximately three zero one hectares. The Central Gujarat climatic zone includes six districts, i.e., Ahmedabad, Anand, Kheda, Vadodara, Panchmahal and Dahod, with a network of three colleges, seventeen research centers, and six extension education institutes.

The university imparts education in Agriculture, Veterinary and Dairy Science faculties through semester system. In the year two thousand four and five, one seventy-six graduate and one zero three postgraduate students successfully completed their studies. Two

twenty nine candidates cleared various Diploma and Certificate courses organized by AAU. The University has launched postgraduate diploma courses in Agricultural Information Technology, Food Processing Technology and Bio- Technology this year.

All the research activities of AAU focus on productivity, sustainability, and improvement of the socio-economic condition of the farming community. These goals of AAU encompass newer areas such as distributing Soil Health Card, manufacturing Bio-fuel, growing medicinal plants along with the conventional crops and processing of food products on the agricultural plane, while animal scientists are busy conducting high quality research for preventive and curative measures against infection/infestation, high productivity in poultry/livestock, and different measures in animal nutrition. Under the Dairy Technology, emphasis is being placed on uplifting the standards of milk and milk products to compete at international level.

Our Extension discipline is actively engaged in transferring the technology from the lab to the land. The main motto of AAU as regards reaching out to the farmers right at the grass root level is being diligently carried out by the Extension Educationists. They are committed to integrating development and innovation in the rural areas through promoting sustainable and equitable rural progress.

There were other activities such as NCC, NSS, sports and games, youth festivals, quiz and debate competitions, discussion forum providing platform to the students to express themselves, to focus on technical and behavioral skill, and personality development of the students.

As per the directive of Gujarat government, Soil Health Card project was undertaken, according to which, ten soil samples from each village were scrutinized, and needed suggestions were given to farmers with regard to the fertilizers to be used as per the specific requirements of the soil tested. A databank of all the farmer clients is decided to be prepared along with the required software and network. So far, seven lakh eighty five thousand soil samples have been tested for fertility and the results are to be installed in the database.

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A detailed account of AAU activities is presented in the subsequent chapters of the report. It is our continued endeavor to make agricultural research, education, and extension more responsive towards development needs of our farmer community.

Venturing into New Avenues

Salient achievements :

1. Food Processing Technology & Bio-Energy

To meet the standards and challenges set up by the WTO, and to cope with the human resource requirement of the food processing industry, the new faculty of Food Processing Technology & Bio-Energy has been established at AAU, leading to the degree of M.Tech. in Food Processing Technology.

a) Information Technology in Agriculture

Realizing the significance for IT in the overall development in agriculture, basing on the recommendations of the government, a post-graduate diploma program in Information Technology has been formulated with a view to exposing the students to seek IT-based solutions to all field-related problems.

b) Biotechnology and Organic Farming

To keep in tune with the burden of sustainability, Government of Gujarat has sanctioned the Center of Excellence in Biotechnology at AAU, besides providing fund for Strengthening Residue Analysis Laboratory to detect hazardous metal and pesticide residues, thereby paving the way for the Center of Organic Farming in the University.

c) Bio-Diesel Project

Bio-Diesel, a product of the hardy shrub Ratan Jyot or Jatropha, has been identified as eco-friendly proxy for Diesel at global scale. On the recommendation of the Planning Commission, the government of Gujarat has sanctioned a project for the development of post harvest processing technology at AAU, with special emphasis on the processing of Jatropha seeds for biodiesel. Accordingly, the Experimental Plant for the Production of Biodiesel has been established and inaugurated by His Excellency, the President of India, Dr A.P.J. Abdul Kalam on December 14, 2004.

d) Embryo Transfer Technology

In order to improve the herd productivity in a short span by using the newly developed and highly sophisticated embryo transfer technology, AAU has signed an MoU with NDDB.

e) Vidya Dairy

Conceptualized by Dr Kurien, Vidya Dairy, an integral part of AAU, provides one year hands-on training to the students of Dairy Science in Dairy plant operation and management. This is only one of its kind – an innovative need-based experiment to narrow the gap between the academia and the commercial world. In order to achieve excellence in quality, the dairy has taken many initiatives, and is the first in the country to be certified for **HACCP and ISO - 9000** by QAS, Australia. In addition, it has been awarded the prestigious **Rajiv Gandhi National Quality Award** for large-scale food industry.

f) A new addition to our KVKs

Following the government scheme of one KVK in each district, with the financial support of ICAR, a new KVK has been sanctioned and inaugurated by Hon'ble Minister of Agriculture, Gujarat on December 25, 2004 at Arnej, Ahmedabad.

g) Dr M.D. Patel Regional e-Library

Formally inaugurated by our Honorable Vice Chancellor, Prof. M.C. Varshneya on 6 December 2004, Dr M.D. Patel Regional e-Library was originally adopted by the NATP LIS (O&M), ICAR, New Delhi, to form an integral part of a nation-wide consortium consisting of 18 regional libraries, and was duly accorded a voluminous grant of Rs. 202 lakhs during 2002-2005 towards modernization, automation and digitization. With a collection of more than 66,000 entries electronically catalogued, a Cyberary with 27 work-stations, 100 mbps LAN connectivity and 2 mbps Internet, 11 CD-ROM database, online data access available to other state agricultural universities through the university web www.aau.in, and e-card & e-circulation systems, the Library is acclaimed as the first-rater by the ICAR, New Delhi.

h) Best Research Award

Dr D.R. Patel (Professor, Cytogenetics & Plant Breeding), Dr Subhash N. (Associate Professor, Dept. of Botany), BACA were recipients of Dr Vikram Sarabhai Award for their outstanding breakthrough research on **Development of Micro propagation Technology in Date Palm** by Science & Technology Council, Govt. of Gujarat.

i) Success of our Students

i) Shri Amit Jhala, a Ph.D. student in Agronomy, has been selected for the International Fellowship sponsored by Ministry of Human Resource Development, Government of India.

ii) 54 students from all the three colleges of AAU successfully cleared JRF examination conducted by ICAR, New Delhi.

iii) 26 students of Veterinary College, AAU passed GPSC examination conducted by the Government of Gujarat.

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CHAPTER-2

The new born Varsity : A Kaleidoscopic preview

Our Logo

The Logo of the University was designed by the IPCOWALA Fine Arts College.

Our Motto : Krunavanto Rashtram Krushisampannam
sS'6JgTM ZFQ8\= S'lQF;\5gGDŸf

Our Song

CM ;\:S'lT S'lQF Jt;,DŸ4 S<IF6 SLHM D\U,DŸ4
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ S'6JgTM ZFQ8= S'lQF ;\5gGDŸ
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ
;ZNFZ UFYF U]H" ZL4 RF~ VD}, RZMTZL4
1FLZ ;\:S'lT DCF;FUZ4 VFlTyI VFNZ ;[EZLP
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ
0FSMZ zL 9FSMZ SF4 SFIFZMC6 SFl,SF4
J0TF, EF, U],F,4 ;}G SZTF, W}G GFZFI6L4
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ
;\TZFD AM0F6F zLDNŸ4 ClZ DFZUL HMAG EUT4
lN, S[lNI[H,T[lSI[4 U]\HL ULZF ZlJX\SZL4
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ
;ZNFZ ZF; V0F;D[\4 AF5] R,[Y[;FY D[\4
lJnFGUZ VF6\N D[\4 lJ7FG 7FG U\UMTZL4
S'6JgTM ZFQ8= S'lQF ;\5gGDŸ

0¶FP AF,S'Q6 HMQFL

The Legacy: History

Even before the idea of rural university was mooted by the Radha Krishnan Commission the foundation of a rural education and research institute for training of farmers' son was laid in Anand by Sardar Vallabh Patel, the iron man of India far back as in 1936. His dream later on took a shape in 1940 as the Institute of Agriculture, Anand with active cooperation of Dr. K.M. Munshi, the co-author of the Indian Constitution. The Institute of Agriculture, Anand (IAA) flourished as a premier Institute of Agriculture in the State. Under the aegis of the IAA, first college of Agriculture viz. B.A. College of Agriculture was established in 1947with the donation of Sheth Amrutlal Hargovandas in the name of his late son Bansilal Amritlal. It was followed by establishment of Dairy Science College in 1961 with a donation of Sheth Mansukhlal Chhaganlal. Mean while the Govt. of Gujarat has also established a college of Veterinary Science in 1962 in the vicinity of IAA. The colleges were affiliated to Sardar Patel University, Vallabh Vidyanagar. In 1969 the Govt. of Gujarat passed the Gujarat Act No.13 and thereby established the Gujarat Agricultural University with transfer of the activities of State Agriculture Department and Animal Husbandry Dept. related to Agriculture Education, Research and Extension Education, along with the transfer of activities of IAA.

The Anand Agricultural University came into existence with effect from 1-5-2004 by enactment of Gujarat Agricultural Universities Act, 2004 (Gujarat Act., No.5 of 2004). The Govt. of Gujarat has dissolved the GAU, Sardar Krushinagar (Dantiwada), the AAU was one of its four campuses. With dissolution of the GAU four new agricultural universities were established. A notification in this regard was published in Govt. Gazette Vol. XLV dated April 29, 2004. The GAU Act, 2004 was assented by the Hon'ble Governor of Gujarat on 4th March, 2004 and it was first published in Govt Gazette Vol. XLV Part IV dated 6th March, 2004 thereby four new agricultural universities were incorporated as teaching and affiliating universities for imparting education in agriculture and allied sciences in the State of Gujarat to be known as Anand Agricultural University, Navsari Agricultural University, Junagadh Agricultural University, Sardar Krushinagar Dantiwada Agricultural University.

Map of AAU, Jurisdiction

The Year that was:

The year 2004 was momentous in the history of the agricultural academics of Gujarat State in two respects – one is the dissolution of Gujarat Agricultural University by repealing the existing Gujarat Agricultural University Act 1969 (Gujarat Act No.13 of 1969), and the "re-establishment and up gradation" of the four zonal campuses of the erstwhile Gujarat Agricultural University into four autonomous State Agricultural Universities viz., Anand Agricultural University, Navsari Agricultural University, Junagadh Agricultural University and Sardarkrushinagar-Dantiwada Agricultural University, - under the auspices of the Gujarat Agricultural Universities Act (No.5) 2004, which was assented by His Excellency, the Governor of Gujarat on 4th March, 2004. Consequently, six districts namely, Anand, Ahmedabad, Vadodara, Panchmahal and Kheda, three colleges, i.e., College of Agriculture, Dairy Science College and Veterinary College, as well as 17 research centers came into the purview of Anand Agricultural University.

The Act proclaims His Excellency, the Governor of Gujarat State to be the Chancellor of the University and he is, by virtue of his Office, Head of the University i.e. Hon'ble Chancellor. Shri Kailashpati Mishra was the Governor during the period 1.4.2004 to 2.7. 2004, Shri Balaram Jhakkad, Governor of MP, from 23.7.2004 to 23.7. 2004 and presently Shri Nawal Kishore Sharma graced the Chancellorship from 24.7.2004 till date.

As per the Notification issued by the Agriculture & Cooperation Department, Sachivalaya, Gandhinagar (No.GHKH-25/102004/549/k2, dated 20th May 2004), the visionary and Professor and Head of Agri. Meteorology, MPKV, CASAM, Pune , Prof. M.C. Varshneya, was appointed the first Vice Chancellor of the newly-born Anand Agricultural University. The Vice Chancellor is the Chief Executive of the University as well as the ex-officio chairman of the Board of Management and Academic Council, while the Registrar, by virtue, is the Member Secretary of Board of Management and Academic Council. For smooth and effective working of the institution, the University adopted the principle of decentralization of powers, and accordingly the administrative, financial, research and academic dominions are distributed among various heads of Units and Sub-units.

University Officers

According to the Gujarat Agricultural Universities Act No 5 of 2004, Chapter – 3, Section 8, basing on the Buch Committee recommendations, and as per the Notification issued by the Agriculture & Cooperation Department, Sachivalaya, Gandhinagar (No.GKV-102004-1661-k2, dated 1.5.2004), Officers of the erstwhile Gujarat Agricultural University were re-designated to hold various offices in the newly formed Anand Agricultural University. Hence, with reference to the above-mentioned notification, Dr P.H. Bhatt was appointed as the Director of Research, Dr K.F. Patel as the Director of Extension Education, Shri V.P. Macwan as the Registrar, and Shri P.S. Vyas as the Comptroller-cum-Account Officer.

Details of the University Officers during the period of annual report are as under:

Sr. No.	Designation	Name	Period
1.	Chancellor	Shri Kailashpati Mishra Shri Balram Jakkad Shri Nawal Kishore Sharma	1.4.04 to 2.7.04 2.7.04 to 23.7.04 24.7.04 onwards
2.	Vice-Chancellor	Prof. M.C. Varshneya	21.5.04 onwards
3.	Registrar	Shri V.P. Macwan	3.5.04 onwards
4.	Director of Research & Dean, P.G.Studies	Dr. P.H. Bhatt Dr. A.R. Pathak	3.5.04 to 31.12.04 1.1.05 onwards
5.	Dean, Agriculture	Dr D J Patel Dr. A.M. Shekh	1.5.04 to 30-6-04 1-7-04 onwards
6.	Dean, Dairy Science	DR.S.S.Sannabhadti	1.5.04 onwards
7.	Dean, Veterinary Sc.	Dr. M.C. Desai	1.5.04 to 31.3.05
8.	Dean, Food Processing Tech. & Bio-energy	Dr. D.C. Joshi	27.1.05 onwards
9.	Director, Extension Education	Dr. K.F. Patel	3.5.04 onwards
10.	Comptroller -cum-Account Officer	Shri P.S. Vyas	3.5.04 onwards
11.	Librarian	Dr.V.V. Ushabala	1.5.04 onwards
12.	Director, Student Welfare	Dr. A.M. Thakar	21.7.04 onwards
13.	Director, Information Technology	Dr. J.G. Sarvaiya	18.6.04 onwards
14.	Executive Engineer	Shri B.N. Bhalia	1.4.04 onwards

The Authorities of the University

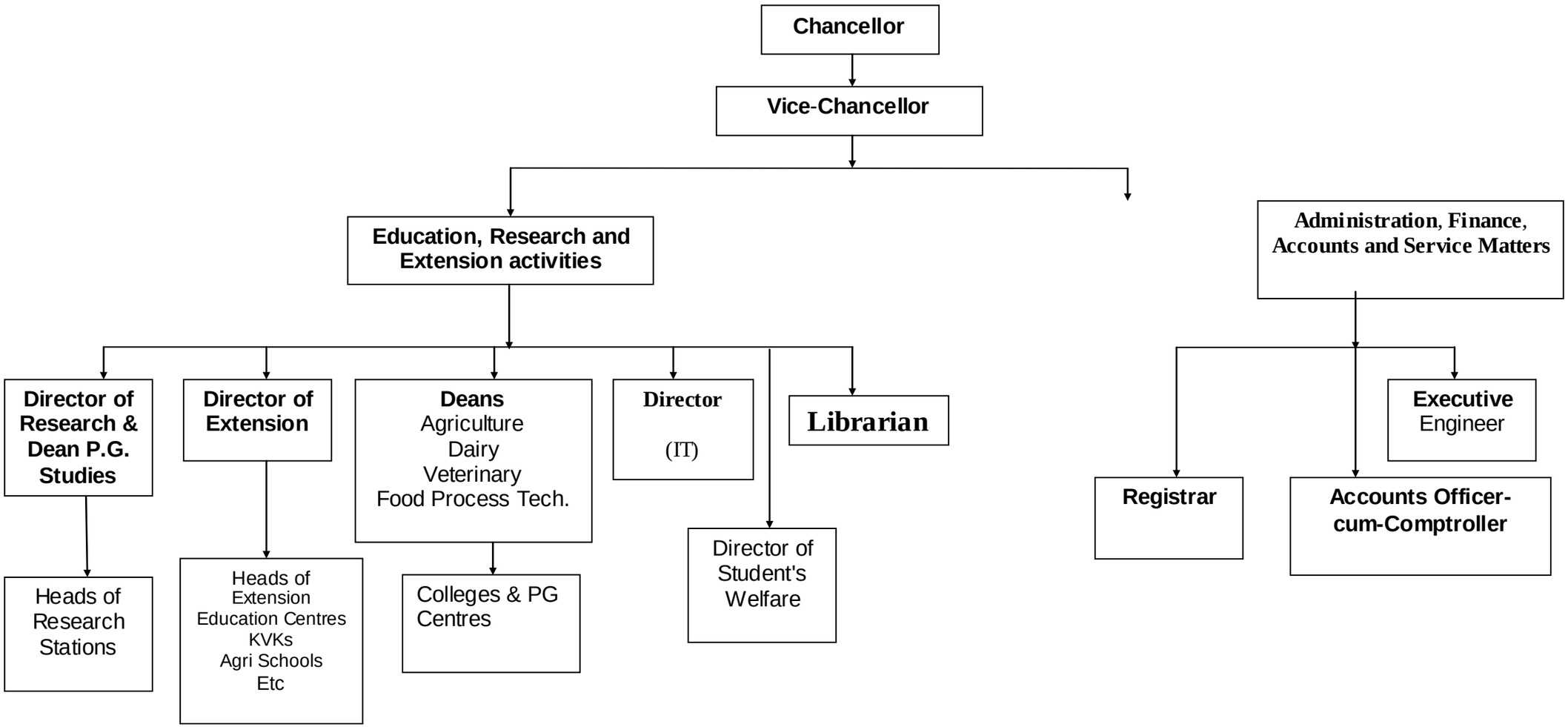
As per the Gujarat Agricultural Universities Act - 2004, Chapter 17, following authorities were functioning during the year under report:

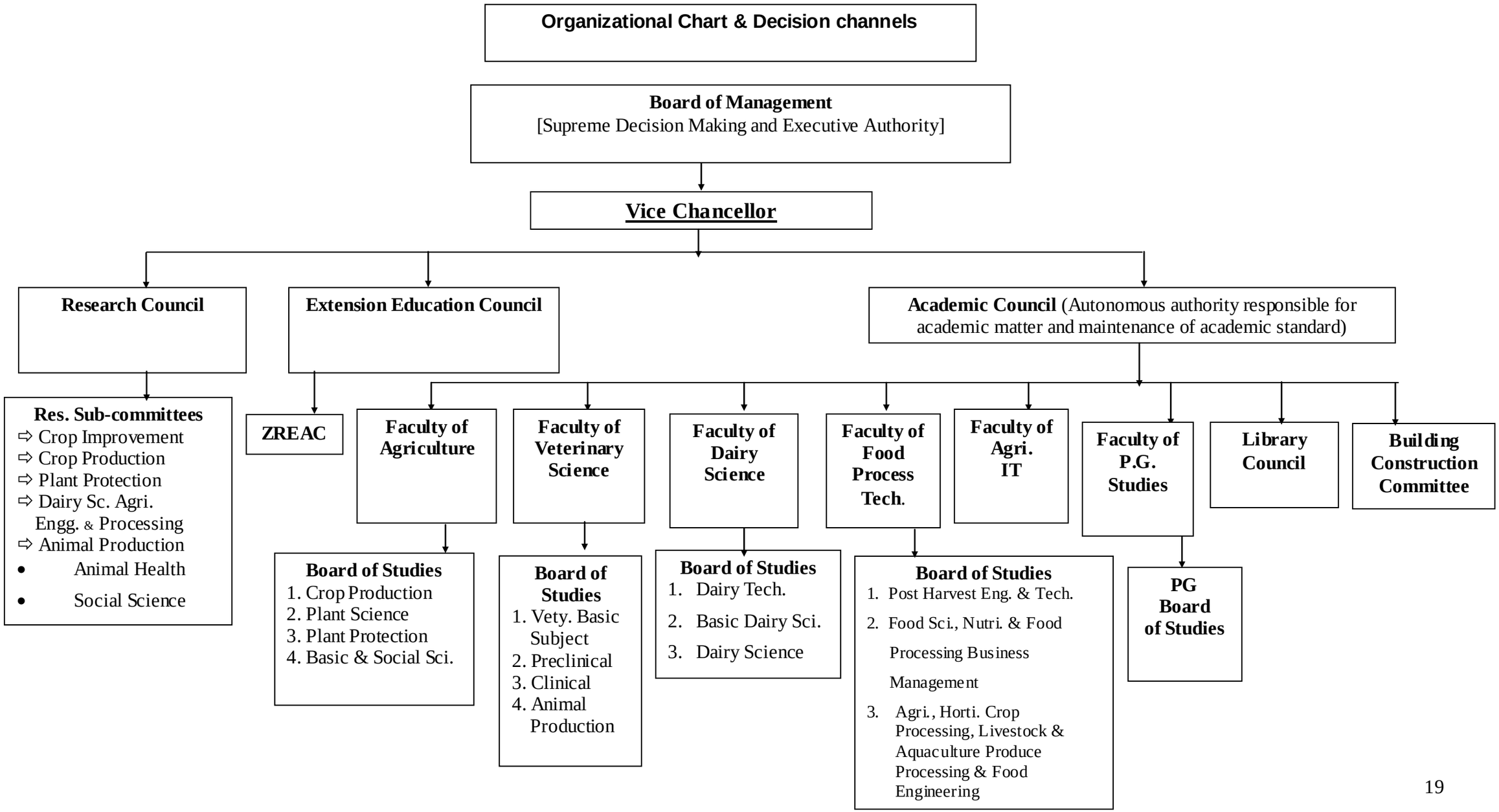
i) Board of management
ii) Academic Council
iii) Faculties
iv) Boards of Studies

Other Bodies of the University

(i) Research Council
(ii) Extension Education Council
(iii) Library Council
(iv) Zonal Research & Extension Advisory Committee (ZREAC)
(v) Construction Committee
(vi) Management Committee of EEI

ORGANIZATIONAL SET-UP




Organizational Chart & Decision channels
Board of Management
[Supreme Decision Making and Executive Authority]
Vice Chancellor
Research Council
Extension Education Council
Academic Council (Autonomous authority responsible for academic matter and maintenance of academic standard)
Res. Sub-committees
⇨ Crop Improvement
⇨ Crop Production
⇨ Plant Protection
⇨ Dairy Sc. Agri. Engg. & Processing
⇨ Animal Production
• Animal Health
• Social Science
ZREAC
Faculty of Agriculture
Faculty of Veterinary Science
Faculty of Dairy Science
Faculty of Food Process Tech.
Faculty of Agri. IT
Faculty of P.G. Studies
Library Council
Building Construction Committee
Board of Studies
1. Crop Production
2. Plant Science
3. Plant Protection
4. Basic & Social Sci.
Board of Studies
1. Vety. Basic Subject
2. Preclinical
3. Clinical
4. Animal Production
Board of Studies
1. Dairy Tech.
2. Basic Dairy Sci.
3. Dairy Science
Board of Studies
1. Post Harvest Eng. & Tech.
2. Food Sci., Nutri. & Food Processing Business Management
3. Agri., Horti. Crop Processing, Livestock & Aquaculture Produce Processing & Food Engineering
PG Board of Studies

a) Board of Management

The Board of Management is the highest decision-making and executive authority of this University. The Gujarat Agricultural Universities Act, 2004, Chapter-4, Section-18 ordains the Vice Chancellor to be the Chairman of this Board. The regular members of the Board comprise of the Secretaries of Agriculture, Education or persons from these departments holding a portfolio not below the cadre of Deputy Secretaries, and Secretary, Finance departments of the State Government, Director of Agriculture, Director of Animal Husbandry, Director of Horticulture, and one of the Deans from the University nominated by the Vice Chancellor. The Board has one member from the Legislature nominated by the State Government, two agricultural scientists having back ground of agricultural research or education, one Farmer, and one member nominated by the Director General, ICAR.

The Board of Management considers and reviews all the financial, administrative and academic issues of the institution, assisted by the Academic Council, Boards of Studies and the Officers of the University in its policy-making and decisions.

Members of the Board of Management

The Members of the Board of Management are as follows:

Sr. No.	Name	Designation
1.	Prof. M.C. Varshneya	Vice Chancellor, Chairman
2.	Dr. K.N. Shelat	Secretary, Agri.; & Co-op. Dept., Gandhinagar
3.	Shri A.K. Joti	Secretary, Finance Dept., Gandhinagar
4.	Shri P. Paneervel	Secretary, Education Dept., Gandhinagar
5.	Dr. R.A. Sherasiya	Director of Agriculture, Gandhinagar
6.	Dr. R.B. Shukla	Director of Animal Husbandry, Gandhinagar
7.	Dr. B.R. Shah	Director of Horticulture, Gandhinagar
8.	Dr. M.C. Desai	Dean, Veterinary College, AAU, Anand
9.	Shri V.P. Macwan	Registrar, AAU, Anand. Member Secretary

During the year, membership under class-II - ordinary members category remained vacant.

Meetings of the Board of Management

During the year under report, two scheduled/Regular and one circulation meetings of the Board of Management have taken place.

Sr. No.	Meeting No.	Date	Venue	Chairman
1.	1.	26-10-2004	Anand	Prof. M.C. Varshneya
2.	2.	19-02-2005	Anand	Prof. M.C. Varshneya
3.	Circulation	29-03-2005	Anand	Prof. M.C. Varshneya

ii) **Academic Council**

Honorable Vice Chancellor, AAU, in exercise of the powers vested under Section 62(1) of the Gujarat Agricultural Universities Act 2004, constituted the Academic Council of the University by Notification No AAU/REG/Meet-AC (2)/5597-5646/04 dated 28-9-2004.

Constitution

According to the Gujarat Agricultural Universities Act , 2004, Chapter-4, Section-21, the Vice Chancellor is the Chairman of the Council, whereas the Director of Research and Dean PG studies, Deans of various faculties and six Heads of Departments and Research Scientists on rotational basis constitute the regular members of the Council. The Academic Council can co-opt for not more than ten persons related to several fields in Agriculture, or may be from the teaching community of the University, or from any other discipline directly or indirectly associated with the University. Section 15 of the Act proclaims the Registrar to be the Member Secretary of the Council. Academic Council is the main academic body of the University, in control of the academic affairs related to teaching and the entire educational system of the University.

Members of the Academic Council

Sr. No.	Name	Designation	*Period*
1	Prof. M.C. Varshneya	Vice Chancellor	*1.5.04 onward*
2 **Directors**	Dr. P.H. Bhatt	Director of Research & Dean, P.G. Studies	*1.5.04 to 31.12.04*
	Dr. A.R. Pathak	Director of Research & Dean, P.G. Studies	*1.1.05 onward*
3. **Deans**	Dr D J Patel	Dean, Agriculture	*1.5.04 to 30-6-04*
	Dr. A.M. Shekh		*1-7-04 onward*
	Dr. M.C. Desai	Dean, Veterinary Science.	*1.5.04 to 31.3.05*
	Dr. S.S.Sannabhadti	Dean, Dairy Science	*1.5.04 onward*
	Dr. D.C.Joshi	Dean, Food Processing Technology & Bio-energy	*1.5.04 onward*
4.	Dr.K.F. Patel	Director, Extension Edu.	*1.5.04 onward*
5. Nominated **HOD / Research Scientist**	Dr. S.K. Dixit	Prof. & Head, Agricultural Statistics (Nominated)	*28.9.04 onward*
	Dr. G.C. Jadeja	Prof. & Head, Agricultural Botany (Nominated)	*28.9.04 to 20.2.05 onward*
	Dr. S.N. Goyal	Research Scientist, Godhara (Nominated)	*21.2.05 onward*
	Dr.N.K.Kalyanasundaram	Prof. & Head, Agril. Chemistry & Soil Sc. (Nominated)	*28.9.04 to 31.3.05*
	Dr. J.V. Solanki	Prof. & Head, Animal Genetics & Breeding (Nominated)	*28.9.04 onward*
	Dr. M.B. Pandey	Prof. & Head, Animal Nutrition (Nominated)	*28.9.04 to 31.3.05*
	Dr. P.N. Thakar	Prof. & Head, Dairy Business Management (Nominated)	*28.9.04 onward*
6. **Co-opted Members**	Dr. D.J. Koshiya	A.D.R. (Co-opt.)	*24.11.04 onward*
	--	Librarian, (Co-opt.)	*24.11.04 onward*
	Dr. F.S. Kavani	Prof. & Head, Gynecology (Co-opt.)	*24.11.04 onward*
	Dr.K.P.Kikani	Rtd. Prof. Horticulture (Co-opt.)	*24.11.04 onward*
	Prof. S.M. Patel	Head, Computer Science V.V.Nagar, (Co-opt.)	*24.11.04 onward*
	Dr. Veena Gandotra	Dean, Home Science, M.S.University (Co-opt.)	*24.11.04 onward*
	--	Director, Student Welfare	*24.11.04 onward*
7.	Shri V.P. Macwan	Registrar & Member Secretary	*1.5.04 onward*

Meetings of the Academic Council

During the year under report, three meetings of the Academic Council were conducted, the date and venue of which are as under:

Sr. No.	Meet. No.	Venue	Date
1.	First	Anand	26.10.04
2.	Second	Anand	19.2.05
3.	First Special	Anand	29.3.05

Faculties:

By the authority given to the Vice Chancellor under section 62 the faculties were constituted and approved by the Academic Council and the Board as under:

Constitution:

Section 23 of the Gujarat Agricultural Universities Act-2004 provides that there shall be faculties of Agriculture and allied sciences and such other faculties as may be prescribed. Accordingly, the Academic Council in its first meeting constituted following structure of the faculties as under:

Dean of the concerned faculty shall be a Chairman. Other members are all Principals/Deans, All HOD of the concerned faculty, Director of Research & Dean P.G. Studies, Director of Extension Education, Principal of concerned colleges, One Professor or its equivalent (other than HOD) from each department, Two Associate Professor or equivalent, Two Assistant Professor or equivalent are to be nominated by the Vice Chancellor, Deputy Registrar as Member Secretary.

Following meetings of the different faculties were conducted during the year under report:

Sr. No.	Name of the Faculty	Meet. No.	Venue	Date
1.	Agriculture	First	Anand	7.1.2005
2.	Dairy Science	First	Anand	8.1.2005
3.	Veterinary Science	First	Anand	8.1.2005

Boards of Studies

Section 24 of the Gujarat Agricultural Universities Act-2004 provides that there shall be a Board of Studies for every subjects or group of subjects as may be prescribed. Accordingly, the Academic Council in its first meeting constituted following Boards of Studies for the group of subjects under different faculties.

1. **Board of Studies of Faculty of Post Graduate Studies**:

2. **Agricultural Faculty**:
   a. Board of Studies of the subjects of Crop Production
   b. Board of Studies of the subjects of Plant Science
   c. Board of Studies of the subjects of Plant Protection
   d. Board of Studies of the Basic and Social Science subjects.

3. **Veterinary Faculty**:
   a. Board of Studies of the Basic subjects of Veterinary Faculty.
   b. Board of Studies of the Pre-clinical subjects of Veterinary Faculty.
   c. Board of Studies of the Clinical subjects of Veterinary Faculty.
   d. Board of Studies of the subjects of Animal Production.

4. **Dairy Science Faculty**:
   a. Board of Studies of the subjects of Dairy Technology.
   b. Board of Studies of Basic subjects of Dairy Science Faculty.
   c. Board of Studies of Food Science subjects of Dairy Science Faculty.

Constitution:

The constitution of Board of Studies of P.G. Studies is given as under:

a. The Director of Research and Dean of Post Graduate Studies as Chairman.
b. The Registrar as Member Secretary.
c. All Deans and Associate Deans.
d. The Director of Extension Education
e. One from each faculty scientist P.G. Teacher, Extension Educationist of the University to be nominated by the director of Research and Dean of Post Graduate Studies with the approval of the Vice Chancellor.

Likewise the constitution of the other Boards of Studies is given as under:

a. The Head of the Department Ex. Officio…. Chairman
b. Professor in each subject comprised in the Board from each constituent College/Department.
c. One academic staff members for each subject comprised in the Board other then. Professors to be nominated by the concerned Associate Dean/ Principal from his constituent/ affiliated college.
d. One member from amongst the development department and allied fields related to concerned Board of Studies to be nominated by the Vice Chancellor.
e. One progressive person having specialized knowledge about related subjects to be nominated by the Vice Chancellor.
f. Chairman of the concerned Board of Studies under the remaining Agricultural Universities in the State.

New Identity:

New identity was given to Anand Agricultural University by designing of new logo (common seal), Song and Flag of the University. Common seal and the Flag were designed by the IPCOWALA Fine Arts College, Vallabh Vidyanagar while the song was constructed by Dr. Balkrishna Joshi, Retd. Research Scientist, Junagadh Agricultural University.

First Statutes of the University

The Vice Chancellor made and submitted draft of statutes of the University to the Board of Management in its first meeting dated 26-10-04. The Board constituted a committee of following members for the draft to be vetted out.

1. Dean (Veterinary), College of Vet. Science & Animal Husbandry……Chairman AAU, Anand.
2. Director, Director of Agriculture, Gujarat State, Gandhinagar.
3. Director of Research and Dean P.G. Studies, AAU, Anand.
4. Account Officer and Comptroller, AAU, Anand.
5. Shri V. P. Macwan, Registrar, AAU, Anand .....Member Secretary

IMPORTANT EVENTS

The newly established university had different dignitaries as visitors. It also organized following function, seminars/workshops during the year.

- His Excellency Governor of Gujarat, Shri Nawal Kishore Sharma and Hon'ble Minister of Agriculture, Gujarat State Shri Bhupendrasinhji Chudasama, inaugurated seminar on, "Market Potential of Medicinal Plants of Gujarat" on 22.9.2004.

- XIII Annual Review Meeting of Agro-Advisory Services of NCMRWF and IARM of Economic Impact Assessment of Agro-Advisory Services was held at Anand Agricultural University, Anand on October 25-27, 2004.

- Dr. M. D. Patel Regional e-library was inaugurated on December 6, 2004 by Prof. M. C. Varshneya, Hon'ble Vice Chancellor, AAU, in the gracious presence of Shri R. K. Patel, Joint Secretary, Agriculture and Co-operation, Gujarat State, Gandhinagar.
- **His Excellency, the President of India, Dr. A. P. J. Abdul Kalam inaugurated, "Pilot Bio-diesel Plant of Jatropha" on December 14, 2004.** HE Governor of Gujarat Shri Naval Kishor Sharma presided and Hon'ble Shri Vajubhai Vala, Finance Minister and Hon'ble Shri Kaushikbhai Patel were the guest of honour of the function.

- Inauguration of Krishi Vigyan Kendra at Arnej, Dist. Ahmedabad was done by Hon'ble Minister of Agriculture, Gujarat Shri Bhupendrasingji Chudasama on December 25, 2004.

- The first issue of Gujarat Newsletter KRUSHIDARSHAN SAMACHAR was published and released by Shri Bhupendrasinhji Chudasama, Honb'ble Minister of Agriculture, Gujarat on December 25, 2004.

- New buildings of Modern Classroom, examination hall and laboratory at College of Veterinary Science and Animal Husbandry, Anand were inaugurated by Shri Bhupendrasinhji Chudasama, Hon'ble Minister of Agriculture, Gujarat on December 31, 2004.

- AAU signed a collaborative project with NDDB on "Embryo Transfer in Cattle" in vibrant Gujarat on January 12, 2005. The project outlay is Rs.1.62 crore.

- Mr. Kochi Ogura, a Technical Representative of Shin-Etsu Chemical Co. Ltd., Tokyo, Japan visited the Department of Entomology, B. A. College of Agriculture, Anand.

- Dr. N. S. Talekar, Entomologist, AVRDC, Taiwan visited the Department of Entomology, Anand on June 7-8, 2004.

Chapter – 3

Education:Agritech Entrepreneurs in Making

The Gujarat Agricultural Universities Act, 2004 is enacted "to establish and incorporate teaching and affiliating Universities for imparting education in agriculture and allied sciences in the state of Gujarat…". The main motto of Anand Agricultural University, as manifested in its mandate, is academic excellence and reiteration of Green Revolution in the country through intensive research.

AAU imparts effective education in Agriculture through residential semester system of under-graduate and post-graduate degree program, providing the degrees in three faculties namely, Agriculture, Dairy Science and Veterinary Science and Animal Husbandry.

As per the clause (c) of subsection (1) of Section 66 of the GAU Act, 2004 following colleges ceased to be the constituent colleges of the dissolved University and became the constituent colleges of Anand Agricultural University.

1. Bansilal Amrutlal College of Agriculture, Anand.
2. College of Veterinary Science and Animal Husbandry, Anand.
3. Sheth Mansukhlal Chhaganlal College of Dairy Science, Anand.

In Agriculture faculty, education involves exposure to concepts, skills and knowledge. In the faculty of Agriculture, so far, 4987 graduates, 1284 Post-graduates and 204 Ph.D. candidates have completed their studies through the portals of B.A. College of Agriculture which is the one of the five oldest colleges of the country, started in 1947.

In the faculty of dairy Science, Sheth M.C. College of Dairy Science had started in 1961, and the then SMC graduates were being awarded Diploma (IDD, Indian Dairy Diploma). Through years, the College broadened its educational horizons, and the dairy students started earning their Bachelor of Science degrees in Dairy Technology. In 1989, the course work was upgraded to an enormous extent with many new subjects and wider orientations. Students starting their education in 1989 and after were awarded the Degree of B.Tech. (Bachelor of Technology) in Dairy Technology.

In Veterinary Science and Animal Husbandry, the College of Veterinary Science & Animal Husbandry, Anand, established in the year 1964, played a key role in development and growth of livestock sector in Gujarat. The College shoulders major responsibilities in teaching subjects of Veterinary and Animal Science, conducting high quality research, and enhancing the economic productivity, as well as transferring the technology to the farmers.

With a great heritage behind, Anand Agricultural University (AAU) stands for revitalization of technology in order to develop rural community and caters the need for knowledge workers make India a developed country. On one hand, this University imparts graduate and post-graduate programs in Agriculture, Veterinary Science and

Dairy Technology under the administration of the Registrar, and on the other, it imparts diploma and certificate courses in Agriculture, Home Science, Extension Education and Baking Technology under the supervision of Director of Extension Education.

Graduate Study Program and Admission Procedure

The University is mainly a residential one and follows semester system. Duration of B.Sc. (Agri.) and B.Tech. (Dairy Technology) study course is of four years/eight semesters and for B.V.Sc. & A.H, it is of five years/ten semesters. The candidates should pass Higher Secondary School Certificate examination in science stream with English, Physics, Chemistry, Biology and Mathematics for all the degree courses run by the University. Candidates are selected for admission strictly on merit basis and the medium of instruction is English. 7% of total seats are reserved for the category of SC, 15% for ST, and these seats are interchangeable between both the groups. 15% seats for Agriculture and Dairy Technology are reserved for candidates through All India Common Entrance Test, conducted by the ICAR, and for B.V.Sc. & A.H., through the common test conducted by the Veterinary Council of India, New Delhi. 27% are reserved for candidates who are in SEBC category. The candidates of Central Board of Secondary Education of Gujarat will be admitted on pro rata basis to the Gujarat Secondary Education Board students.

For B.Sc. (Agri.) course, 10 seats are reserved for candidates recommended by Sheth Amruthlal Hargovind Das Trust, and three seats for Sheth Mansukhlal Chhaganlal Trust. SMC Trust reserves 2 seats for Dairy Technology course.

Weightage of 5% marks is given to the members of farmers' family on submission of certificate (7-12 record) from a competent authority for having land in Gujarat under cultivation. At graduation level, 10 seats of each college are reserved as NRI/NRI sponsored/Payment seats. The fee for NRI seat is $3500 for each semester, and for the payment seats, one needs to pay Rs.25,000/-. Three per cent seats are reserved for the physically challenged candidates according to the verdict of the Supreme Court.

The number of seats and the actual admitted students' details for the academic year 2004-05 are shown in the Table 3.1.

Graduate study course

Sr. No.	Graduation & its duration	Name of the College	Admission capacity				Students Admitted	Students Passed
			Gen/ SC/S T OBC	NRI/ Payment	ICA R/ VCI	Do nor		
1.	B.Sc. (Agri.) 4 years (8 Semesters)	B.A. College of Agriculture, Anand	65	10	10	13	57	92
2.	B.V.Sc.& A.H. 5 year (10 Semester)	College of Vet. Sci. & A. H.	50	10	9	0	58	46
3.	B.Tech. (Dairy Tech.) 4 years (8 Semesters)	Sheth M. C. College of Dairy Science, Anand	40	10	6	2	46	38

Post-Graduate study course

There is no separate building or department for the PG study program. The faculties meant for the UG studies and Research handle the PG studies of their respective subjects.

Admission procedure

A candidate aspiring to take admission in PG studies should have a graduate degree of the related field with an OGPA of not less than 6.00/10.00. A basic science graduate should have55% in aggregate as well in the field in which he/she seeks admission.

Eligible applicants will have to appear for the entrance test and personal interview. The basis of selection is the performance in the entrance test, interview, and as per the intake capacity.

Two academic years are required for the course work, research thesis preparation and examination leading to the Master's Degree. A minimum period of three academic years (6semesters) is required for the Ph.D. degree.

The details of admission in PG studies have been given in Table 3.2.

The University runs following PG Courses leading to Masters and Ph.D. in various Faculties:

Agriculture

Agricultural Chemistry and Soil Science, Agricultural Economics, Agricultural Entomology, Agricultural Meteorology, Agricultural Microbiology, Agricultural Statistics, Agronomy, Extension Education, Horticulture, Nemotology, Plant Biochemistry, Plant Breeding and Genetics, Plant Pathology and Plant Physiology and Ecology.

Veterinary Science and Animal Husbandry

Anatomy, Animal Genetics and Breeding, Animal Nutrition, Animal Physiology and Bio-chemistry, Livestock Production, Parasitology, Reproductive Biology, Veterinary Extension and Animal Husbandry, Veterinary Medicine, Veterinary Micro-biology, Veterinary Obstetrics and Gynecology, Veterinary Pathology, Veterinary Pharmacology and Toxicology, Veterinary Public Health, Veterinary Surgery.

Dairy Science and Technology

Dairy Chemistry, Dairy Engineering, Dairy Microbiology, Dairy Technology.

Admission and Output

During the year under report following admissions were given in different faculties at Masters and Ph.D. level.

Post-graduate Courses

Sr. No.	Name of the Course	Duration of the course	Name of the College	Students Admitted	*Students passed*
1.	M.Sc. (Agri.)	2 Years (4 semesters)	B.A. College of Agriculture, Anand	76	*50*
2.	M.V. Sc.	2 Years (4 semesters)	College of Vety. Sci. & A. H., Anand	31	*41*
3.	M.Sc. (Dairying)	2 Years (4 semesters)	S.M.C. College of Dairy Science, Anand	--	*02*
4.	M. Tech.(Dairy) (M.Sc. Dairy)	2 Years (4 semesters)	S.M.C. College of Dairy Science, Anand	--	*01*
5.	M.Sc.	3 Years (6 semesters)	M.C. College of Dairy Science, Anand	05	--

6.	*Ph. D.*	*3 Years (6 semesters)*	*All the three colleges mentioned above*	*18*	*09*

Examination:

The University conducted its examinations regularly and timely for the various degree courses mentioned above and the results were also declared in time. Annual Board Examinations prescribed by Veterinary Council of India for B.V.Sc. and A.H. were conducted during Sept.-October 2004 and February 2005.

Earlier, the common examinations for faculty of agriculture were conducted for all the four colleges. This was continued even after creation of four Universities. Common examinations and common evaluations were conducted during the period under report.

Chapter – 4

Research

Anand Agricultural University is a mission-oriented institution. Its main motto is to enhance production and productivity of Agricultural commodities, and to uplift the living standards of the farming community. AAU's agricultural research is multi-dimensional, right from the varieties of soil, seeds, pests, pathogens, irrigation methods, and climate and eco factors to the value added products suitable to withstand the highly competitive market demands. Since agricultural advancement obviously involves improvement of the existing animal breeds, their health and an increase in their productivity, all the endeavors of our Veterinary scientists are mainly focused on these factors. On the other hand, following the precept of current global dairy marketing in the four thrust areas of a) dairy business development, b) productivity and prolonged shelf-life of milk and milk products, c) quality improvement, and d) utilization of information for decision-making, the University has aimed at launching large-scale research in dairy technology and milk products processing with the aid of agriculture product process engineering. The AAU scientist community is now actively engaged in developing cutting-edge technologies in several quarters of agriculture as per the requirements of different agro-climatic zones and ecological situations at different research station located in AAU jurisdiction (Table-4.1).

Table- 4.1 : Research Stations of Anand Agricultural University

Sr. No.	Name of Centre	Research on Crop / Mandate
1	Bidi Tobacco Research Station Anand	Tobacco
	Forage Research Station, Anand	Forage crops
	Vegetable Research Station Anand	Vegetable crops
	Medicinal & Aromatic Plants Project, Anand	Medicinal & Aromatic Plants
	Bio-control Research Project Anand	Biocontrol Research
	Micronutrient Research Project, Anand	Micronutrient
	Department of Food Processing Technology and Bio-energy, Anand	Processing technology of horticultural crops and food crops as well as biofuel & biogas
	Centre for Organic Farming, Anand	Organic food testing and production

	Regional Research Station, Anand	Research on Cotton, Oilseeds, Pearl millet, Wheat, Water management and Seed Production on commercial base and its research and training.
	Centre of Excellence on Bio-technology for Agriculture, Veterinary and Food Processing, Anand	Biotechnological work of Plant, Animal and Dairy Science Food
	H. F. Project, Anand	Bull mother farm
	Livestock Research Station, Anand	
	Poultry Complex, Anand	Poultry breeding for egg type chicken, Rural poultry farming and training to the rural youth.
	Reproductive Biological Research Unit, Anand	Improving in reproductive efficiency of surati buffaloes, surati and marvari goat through management and applied reproduction
	Animal Nutrition Research Station, Anand	Animal nutrition survey of different district of Gujarat, Evaluation of different agro-industries byproduct, Study of micronutrient status of feed, fodder, animal and soil in different agro-climatic zones of Gujarat
2	Main Rice Research Station Nawagam	Paddy Research & Seed production
3	Maize Research Station, Godhra	Maize Research & Seed production
4	Agril. Research Station, Derol	Drilled paddy, Pulses and Oil seeds
5	Agril. Research Station, Thasra	Research on Sugarcane, Cotton, and irrigated crops.
6	Pulse Research Station Vadodara	Pulses crops, production of cuttings/sapling of horticultural crops.
7	Paddy Research Station, Dabhoi	Paddy and Seed production programme Water management in Narmada Command.
8	Hillmillet Research Station Dahod	Minor Millet, Drilled Paddy, Maize and Pulses, KVK
9	Tobacco Research Station, Dharmaj	Tobacco and Seed production
10	Narmada Irrigation Research Project, Khandha	Water management on field and horticultural crops in Narmada command.

11	Tribal Research-cum-Training Centre, Devgadh baria	Maize and Budded cotton
12	N. C. Farm, Chharodi	Breeding of Kankrej cow, Arid Horticultural crops and Jetropha. Seed production.
13	Tobacco Research Station, Sanand	Seed production of Cotton, Virginia tobacco.
14	Regional Cotton Research Station, Viramgam	Deshi Cotton and Dual Sorghum & Seed production.
15	Agril. Research Station, Dhandhuka	Rainfed wheat, gram, cotton and water management, Seed production.
16	Agricultural Research Station Arnej	KVK. Research on "Bhal Zone" problematic soils and related crops. KVK, NCMRWF – Climatological Research, Seed Production.

As a manoeuvre towards materializing these aims, as per the provision made by the Agricultural Universities Act 2004, and the notification issued by the Agriculture & Cooperation Department, Sachivalaya, Gandhinagar, bearing the No GKV-102004-1661-k2, dated 1.5.2004, Dr P.H. Bhatt had taken over the charge of the Director of Research and continued in the office from 1.5.2004 to 31 .12. 2004 and succeeded by Dr A.R.Pathak, who has taken over charge on 1.1.2005 and holds office till date.

SEASONAL WEATHER AND CROP CONDITION DURING 2004- 05

Kharif season

The onset of monsoon took place on 12th June 2004 (24 standard week) with weekly rainfall of 68.6 mm received in four days. Just after onset of monsoon, there was dry spell of 17 days duration. There was light rain during 5-9 July; otherwise the dry spell was of 29 days duration. 59.2 mm rain received on 17 July was helpful in reviving the crops. There were intermittent rains between 17 to 29 July. The rain spell, which started on 30th July, was continuously observed for about 25 days. The continuous cloudiness and rains resulted in less sunshine and were favourable for disease infestation. Timely sown groundnut crop was damaged (25 to 70 %) due to stem rot disease. Again there was virtually no rain after 23rd August and the crops experienced moisture stress condition. Although the total rain (866.0 mm) received at Anand during the year was normal (853 mm), the erratic distribution caused

both dry spell as well as water logging. June received 68.6 mm against normal of 107.5 mm and July received 230.2 mm against normal of 285 mm (Table 1). However, August received higher rainfall (556.6 mm), which was 213 % of the normal (261 mm).

District wise rainfall

The weekly rainfall in all the districts of middle Gujarat is depicted in Fig. 6. It may be seen that onset rains were received in standard week 24. Thereafter, there was dryspell of two weeks in all the districts. During 29 and 30th weeks there were light rains in all the districts. Heavy continuous rains were received during weeks 31, 32 and 33 in all the districts. Thereafter there was dry spell. All the districts except Kheda received rainfall more than the normal (Ahmedabad 115%, Anand 106%, Dahod 151%, Panchmahal 125% and Vadodara 109%) the erratic distribution caused crop failure either due to moisture stress or due to heavy rains resulting water logging.

The weekly weather data for year 2004-05 along with the normal values are graphically displayed in Figures 1 to 4. The weekly mean maximum temperature, which was around 40 ^{0}C, before onset of monsoon decreased continuously during monsoon season and came down to 28 ^{0}C during August. With the withdrawal of monsoon the maximum temperature increased upto 36 ^{0}C during September end & October. It may be seen that due to dry spell in July, the maximum temperature was higher than the normal while during 29 to 33 weeks it was lower than the normal. The lowering of temperature was mainly due to continuous rain and overcast sky prevailed during this period.

The weekly mean minimum temperature which was highest (27.4 ^{0}C), during onset period of monsoon decreased slowly during the monsoon season and reached to its lowest value of 24.4 ^{0}C at the end of monsoon period. The weekly mean morning relative humidity (RH 1) during monsoon season varied between 85 to 96 % while the afternoon relative humidity (RH 2) fluctuated between 50 to 90 %. The bright sunshine hours (BSS) during monsoon season was lowest and it was less than 1 hrs/day during period of continuous rains. The rate of evaporation was low during monsoon season and varied between 2 to 7 mm/day.

***Rabi* season**

During *rabi* season there was no rain but the sunshine hours varied between 7 to 10 hrs/day. Due to cloudiness the BSS fall decreased from 9.5 to 7 hrs/day during last week of

December and January, which was less than normal. Relative humidity (RH 1 & RH 2) was above normal during the *rabi* season. Maximum temperature was more than normal during December, however, it was less than normal during January & February.

Summer season

During summer season there was rain of 7.2 mm in second week of May. This resulted in lowering of maximum temperature by 3 mm/day, BSS by 3.4 hrs/day and rate of evaporation by 3 mm/day during standard week 19. Relative humidity was more than the normal during summer season.

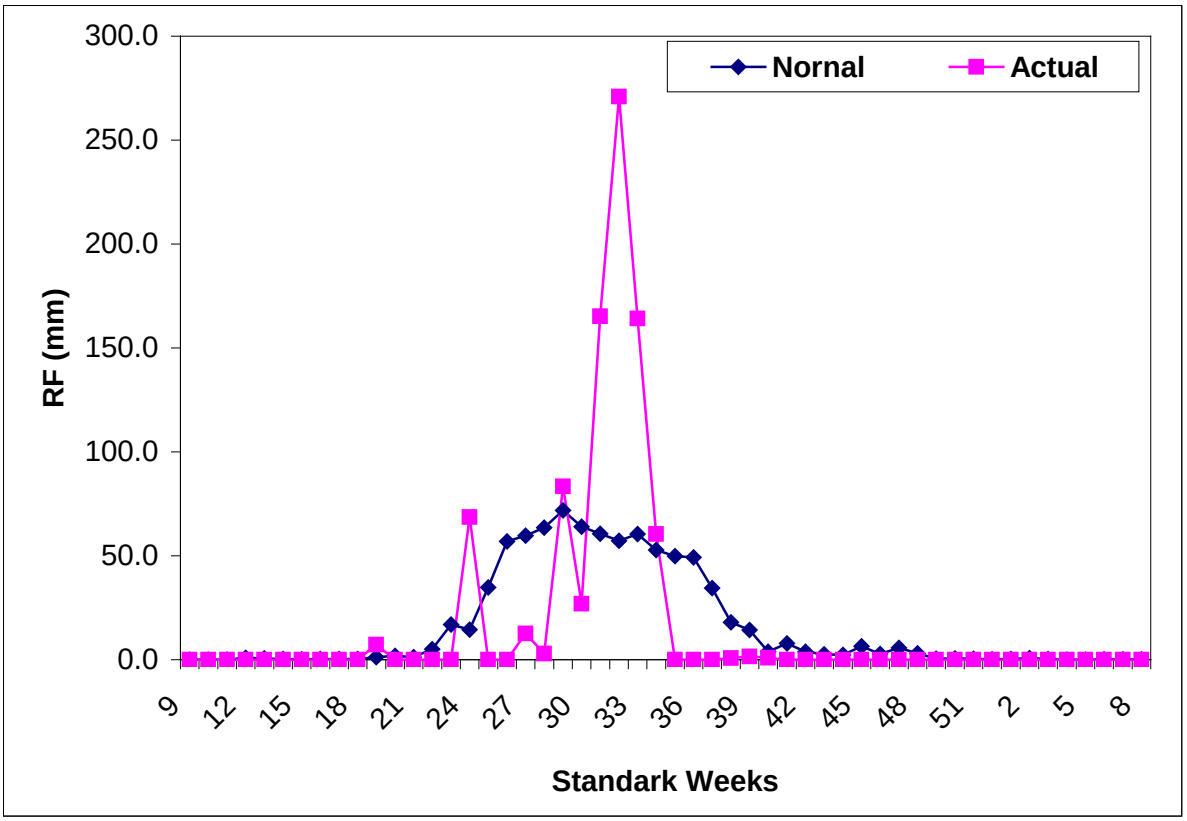


Fig. 1: Normal and actual rainfall at Anand during 2004-05

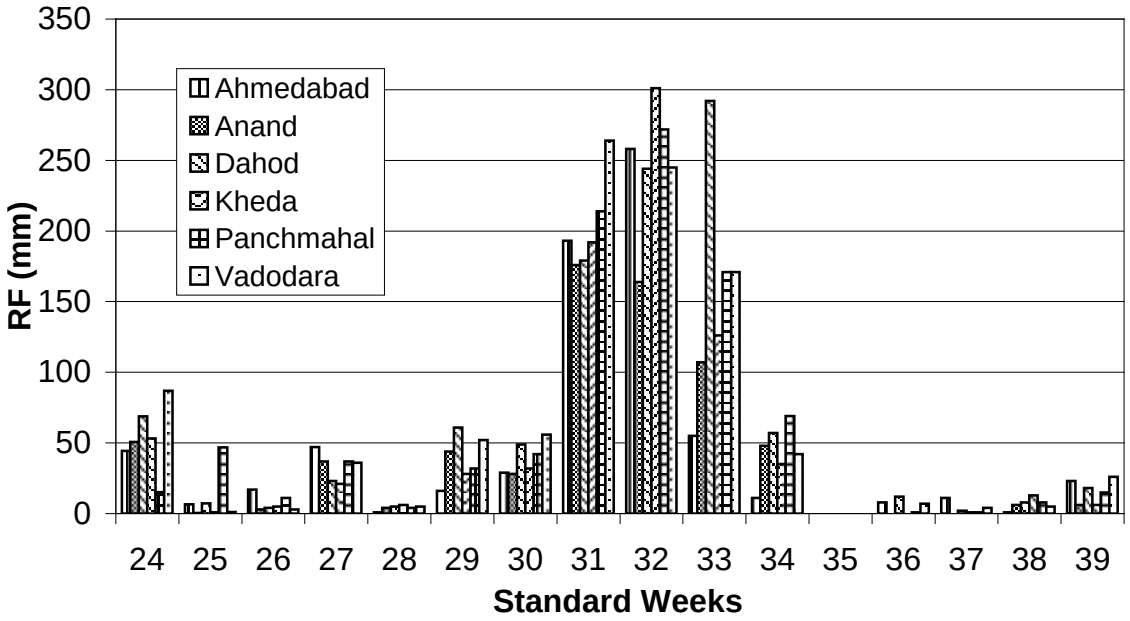


Fig. 2: District wise weekly rainfall in Middle Gujarat

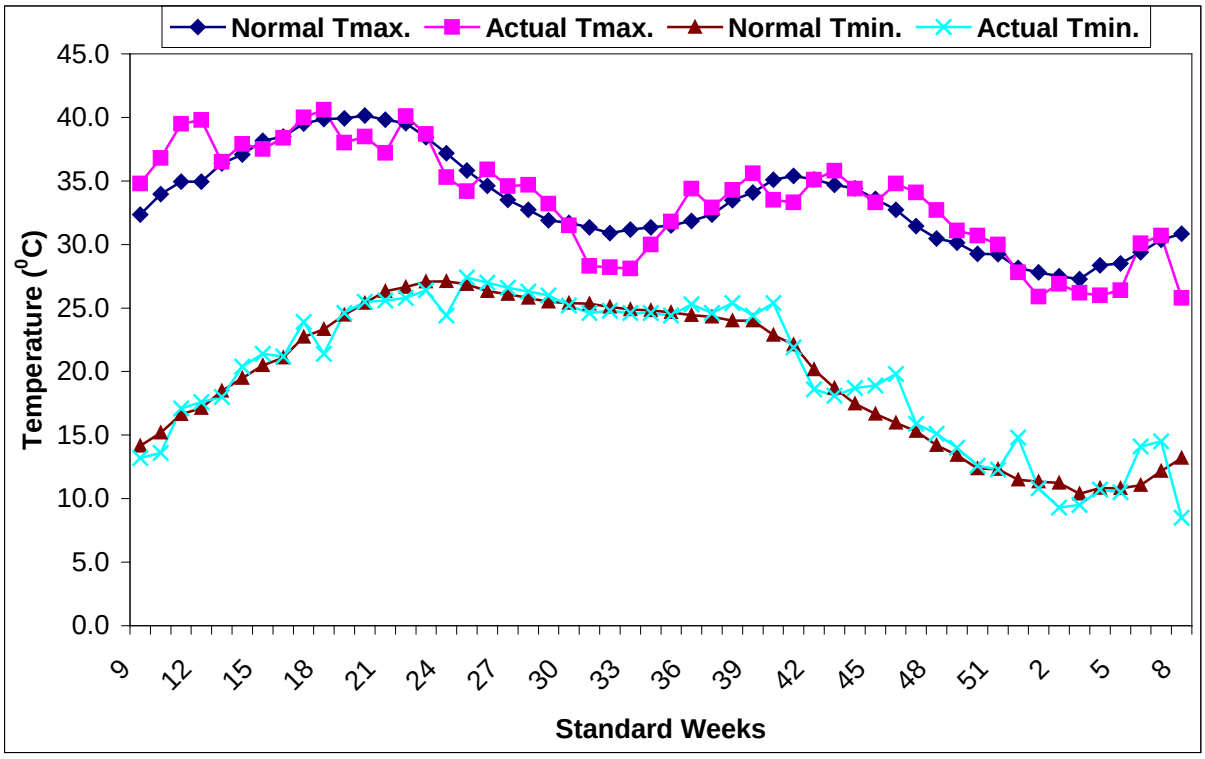


Fig. 3: Normal and actual maximum and minimum temperature during 2004-05

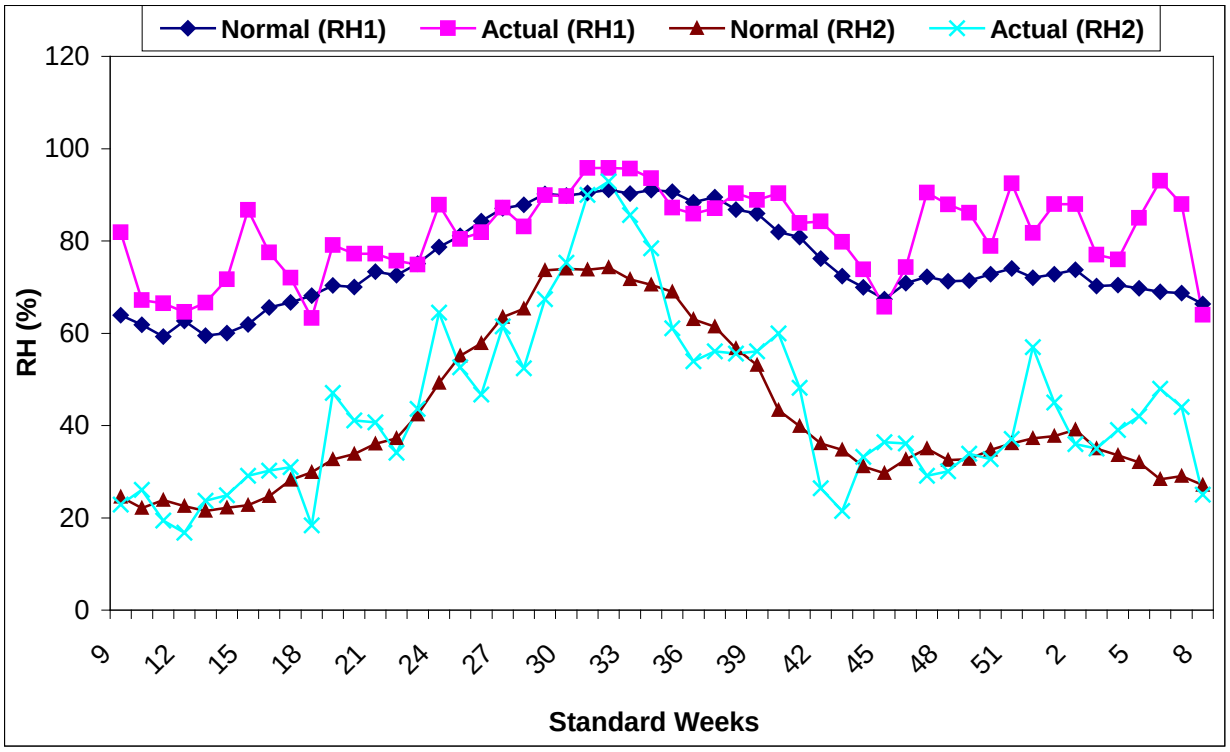


Fig. 4: Normal and actual morning and afternoon relative humidity (RH 1 & RH 2) during 2004-05

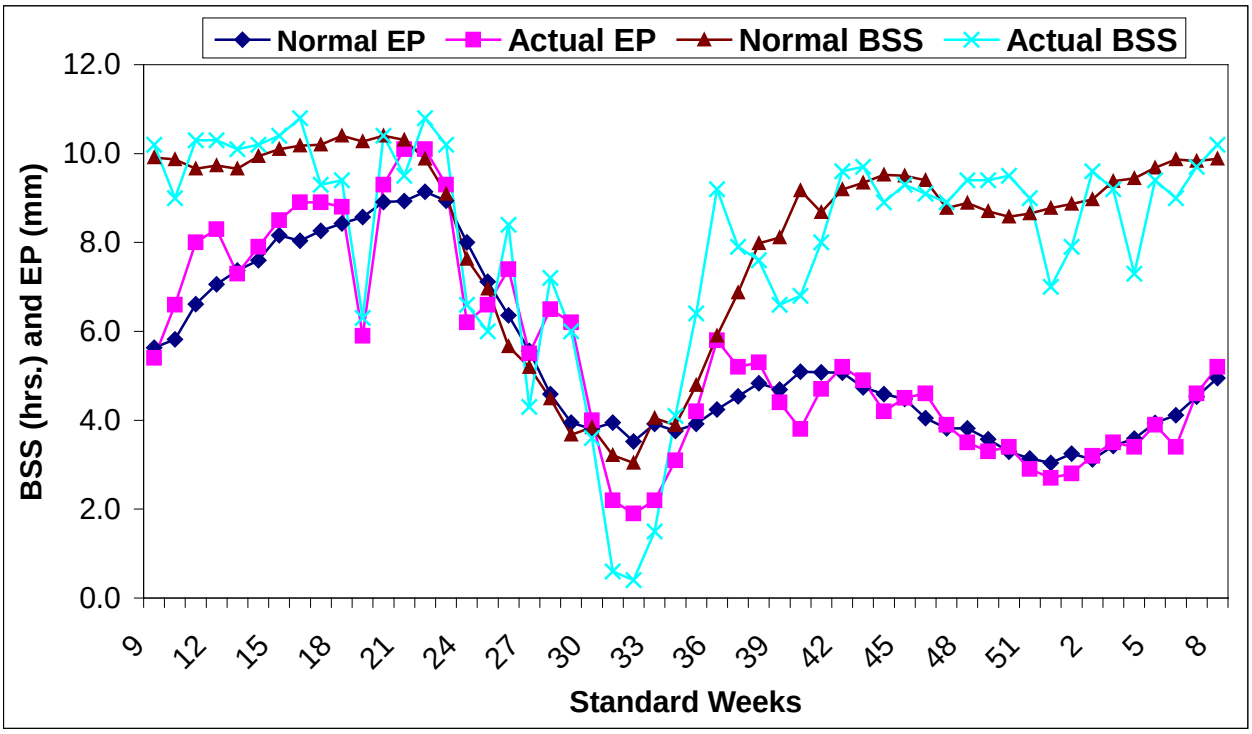


Fig. 5: Normal and actual pan evaporation (EP) and Bright sunshine hours (BSS) during 2004-05

Table : Weekly weather parameters during the year 2004-05 at Anand

WEEK	EP	BSS	RF	WS	MAXT	MINT	RH1	RH2
9	5.4	10.2	0.0	1.8	34.8	13.2	81.9	22.9
10	6.6	9.0	0.0	2.1	36.8	13.6	67.2	26.1
11	8.0	10.3	0.0	2.3	39.5	17.1	66.5	19.4
12	8.3	10.3	0.0	2.3	39.8	17.6	64.6	16.8
13	7.3	10.1	0.0	1.9	36.5	18.0	66.6	23.7
14	7.9	10.2	0.0	2.8	37.9	20.4	71.7	24.9
15	8.5	10.4	0.0	3.7	37.5	21.4	86.7	29.1
16	8.9	10.8	0.0	3.9	38.4	21.2	77.5	30.2
17	8.9	9.3	0.0	3.6	40.0	23.9	72.0	31.0
18	8.8	9.4	0.0	3.3	40.6	21.4	63.3	18.4
19	5.9	6.3	7.2	4.9	38.0	24.6	79.1	47.1
20	9.3	10.4	0.0	7.2	38.5	25.5	77.2	41.1
21	10.1	9.5	0.0	8.9	37.2	25.6	77.2	40.7
22	10.1	10.8	0.0	6.2	40.1	25.8	75.7	34.1
23	9.3	10.2	0.0	6.2	38.7	26.4	74.9	43.6
24	6.2	6.6	68.6	4.2	35.3	24.4	87.8	64.5
25	6.6	6.0	0.0	10.0	34.2	27.4	80.4	52.6
26	7.4	8.4	0.0	7.1	35.9	27.0	81.9	46.7
27	5.5	4.3	12.6	5.3	34.6	26.6	87.2	61.5
28	6.5	7.2	3.0	7.0	34.7	26.3	83.1	52.4
29	6.2	6.0	83.4	4.9	33.2	26.0	89.9	67.4
30	4.0	3.6	27.0	4.0	31.5	25.2	89.7	75.3
31	2.2	0.6	165.2	3.6	28.3	24.6	95.8	90.0
32	1.9	0.4	271.0	1.3	28.2	24.8	95.8	92.9
33	2.2	1.5	164.2	1.1	28.1	24.6	95.7	85.6
34	3.1	4.1	60.4	1.8	30.0	24.6	93.6	78.4
35	4.2	6.4	0.0	3.3	31.8	24.4	87.2	61.1
36	5.8	9.2	0.0	2.1	34.4	25.3	85.9	53.9
37	5.2	7.9	0.0	2.5	32.9	24.6	87.1	56.1
38	5.3	7.6	0.8	2.4	34.3	25.4	90.3	55.6
39	4.4	6.6	1.6	1.6	35.6	24.4	88.9	56.1
40	3.8	6.8	1.0	1.8	33.5	25.4	90.3	60.0
41	4.7	8.0	0.0	2.3	33.3	21.9	83.9	48.2
42	5.2	9.6	0.0	1.0	35.1	18.6	84.2	26.4
43	4.9	9.7	0.0	1.1	35.8	18.1	79.8	21.5
44	4.2	8.9	0.0	1.4	34.4	18.7	73.8	33.2
45	4.5	9.3	0.0	1.8	33.3	18.9	65.7	36.4
46	4.6	9.1	0.0	1.2	34.8	19.8	74.3	36.1
47	3.9	8.9	0.0	0.6	34.1	15.9	90.5	29.1

48	3.5	9.4	0.0	0.8	32.7	15.1	87.9	30.1
49	3.3	9.4	0.0	1.1	31.1	14.0	86.1	33.9
50	3.4	9.5	0.0	1.5	30.7	12.6	78.9	32.7
51	2.9	9.0	0.0	1.1	30.0	12.3	92.5	37.1
52	2.7	7.0	0.0	1.4	27.8	14.8	81.7	57.0
1	2.8	7.9	0.0	2.0	25.9	10.8	88	45
2	3.2	9.6	0.0	2.1	26.9	9.3	88	36
3	3.5	9.2	0.0	2.0	26.2	9.5	77	35
4	3.4	7.3	0.0	2.2	26.0	10.7	76	39
5	3.9	9.4	0.0	2.2	26.4	10.5	85	42
6	3.4	9.0	0.0	1.3	30.1	14.1	93	48
7	4.6	9.7	0.0	3.3	30.7	14.5	88	44
8	5.2	10.2	0.0	3.4	25.8	8.5	64	25

RESEARCH COUNCIL

As per the first statute of AAU (Proposed), Chapter 7, Item No. 42, the Research Council of AAU was formulated.

Constitution of Research Council

A. Vice Chancellor, AAU, Anand — Chairman

B. Director of Research & Dean P.G. Studies, AAU, Anand — Secretary

C. Associate Director of Research, AAU, Anand — Member

D. Dean of the Faculties — Member

   i. Agriculture

   ii. Dairy

   iii. Veterinary

   iv. Food processing technology & Bio Energy

   v. Agriculture Information Technology

E. Director of Extension, AAU, Anand — Member

F. Conveners of the Agresco Sub-Committees — Member

   i. Crop Improvement

   ii. Crop Production

iii. Plant Protection

iv. Social Science

v. Dairy Science, Agriculture Engineering & Processing

vi. Animal Health

vii. Animal Production

G. Two eminent scientists of ICAR institute nominated by the Vice -Chancellor — Member

i. Dr. Satyabrata Maiti, Director, (Medicinal & Aromatic Plants & Betelvine), Boriavi-387 310

ii. Dr. B. G. Bagle, Principal Scientist & Head, Central Horticultural Experiment Station, Vejalpur

H. Two progressive farmers nominated by the Vice Chancellor — Member

i. Mr. Gunvantbhai Ravjibhai Patel ,At & Po. Sarsa, Dist. Anand

ii. Mr. Ranchhodbhai Patel, At & Po. Radhavanaj, Ta. Matar, Dist. Kheda

Functions and Duties of Research Council

- To monitor and determine the research priorities of the University.
- To advise the Board of Management on policy matter of research.
- To plan, executive and manage the research activities in the university efficiently.
- To organize and coordinate research programmes on Agriculture in the University.
- To review critically the ongoing research programmes and make suggestions for improvement or modifications, if any.
- To transfer research recommendations to the Scientists/Farming Community and Industry through the Extension Agencies.
- To make recommendations on allocation of funds to Research Schemes and Projects.
- To decide and recommend the terms and conditions for acceptance of the Research Project/Consultancy Projects and funds thereof.
- To approve Research Projects submitted by the Research Scientists / Institutions / Department.
- To perform such other duties and functions as may be prescribed from time to time.

To carry out research work in particular direction, the research areas of different subject under Anand Agricultural University has been sub-grouped in 7 research sub-committees. They are as follows.

FACULTIES AGRICULTURE

1. Crop Improvement (Plant Breeding and Genetics, Plant Physiology & Biochemistry)
2. Crop Production (Agronomy, Soil Science, Horticulture and Meteorology)
3. Plant Protection
4. Social Science

FACULTIES VETERINARY SCIENCE

5. Animal Production
6. Animal Health

FACULTIES DIARY SCIENCE AND PROCESS ENGINEERING

7. Dairy Science & Dairy Engineering

These committees met as per requirement and finalized different research programmes considering the requirement of farmers, burning problems and education need of today's global requirement in agriculture sciences. As a result of sincere efforts of the scientists research accomplishments made are as under.

I RESEARCH ACCOMPLISHMENTS AND RECOMMENDATIONS

Name of the sub-committee	No. of recommendations finalized
Crop improvement	**08**
Crop production	**14**
• Cultural practices	04
• Nutrient management	04
• Organic farming (Bio-fertilizers)	02
• Water management	03
• Soil amendments/ managements	01
Plant Protection	**03**

• Pest Management	01
• Disease management	02
Dairy Science & Agril. Engineering	**07**
Animal Producion	**03**

The details of recommendations approved under different subject of various Research Sub-Committees of the Research Council are given here under.

AGRICULTURE

1. CROP IMPROVEMENT (Plant Breeding and Genetics, Plant Physiology & Biochemistry)

A. PLANT BREEDING

The crop improvement programmes have resulted in development of eight improved varieties of different crops (Table-4.2). Rice variety **GR-12** has been released for middle Gujarat during the period under report. This variety has unique features such as, multiple disease resistance, higher grain yield over checks, fine grain quality and early maturity.

The year under report was earmarked for vegetable crops; a total six varieties were approved by this group. The chilli variety **GVC-101** has large green shining fruits and higher green fruit yield over the most popular variety S-49, hence released for middle and north Gujarat conditions. This variety is noted for its higher green fruit yield with higher chlorophyll and ascorbic acid content, more shelf-life and low incidence of major pests than the existing varieties. Because of superior performance in comparison to National checks, the said variety has also been identified for release at National level as **ANAND JYOT-49**. Another variety of chilli **GVC-121** has been identified for cultivation in middle and south Guajrat, because of its higher fruit yield and good quality, larger fruit size in respect to length and girth with high ascorbic acid content and less capsacin, recommended to replace the variety G-4.

Brinjal variety **Gujarat Oblong Brinjal-1 (GOB-1)** has been released for middle Gujarat and Saurashtra region. This variety has attractive black colour, oblong shape with less number of seeds higher fruit yield and low incidence of sucking pests.

The newly developed **Guj.Tomato-2 (GT-2)** recommended for middle Gujarat and Saurashtra region. The fruits of this variety has been heart shaped, medium in size, attractive dark red colour with good TSS and pulp to juice ratio.

The ever first improved variety of **Cucumber Guj.Cucumber-1** has been recommended for whole Gujarat except Saurashtra region for cultivation during summer season. This variety gives higher yield with long tender fruits, attractive light green skin colour with stripes, long shelf-life and having less infestation to major pests.

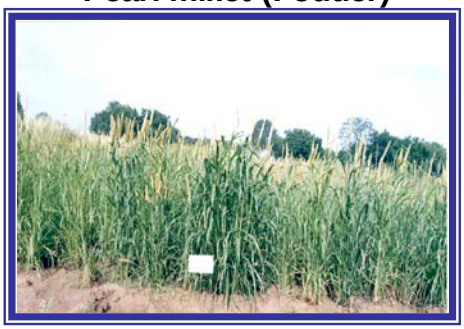
The newly developed variety **Guj. Muskmelon-3** proved its yield superiority over local and national (Punjab Sunhari) checks. It has an acceptable fruit quality, fruits medium in size, brown spotted with sweet and attractive green colour pulp. It has been recommended for summer cultivation in middle Gujarat.

The University has released multicut fodder variety of **Bajra GFB-1** for milch animals looking to the importance of dairy industry. This variety is recommended for summer cultivation. It has profuse tillers and good regeneration ability besides yield advantage.

Table-4.2 : Varieties recommended for farmers

Crop & Name of Variety	Average Yield (kg/ha)	Salient features
Rice  **Gujarat Rice-12 (GR-12)**	5327	Higher yield over checks, multiple diseases resistant, long fine grain, curved kernel beak, long compact well exerted panicle, tipped awns, early maturity. Recommended for Middle Gujarat.
Chilli  **Anand Jyot – 101**	14489	High green fruit yield, fruit appearance similar to S-49 with high chlorophyll and ascorbic acid content, large green shining fruits. More shelf-life. Low incidence of major pests than S-49. Recommended for Middle, North Gujarat. Also identified at National level, Proposed name is **ANAND JYOT-49.**
Chilli  **Gujarat Vegetable Chilli - 121**	12853	High yield over G-4, semi-determinate plant, fruits larger in length and girth with high ascorbic acid content and less capsaicin than G-4. More shelf-life. Recommended for Middle and South Gujarat.

Brinjal  **Gujarat Oblong Brinjal - 1**	48690	Higher yield over checks, attractive black colour with oblong shape, less seeds. Low incidence of sucking pests. Recommended for middle Gujarat and Saurashtra.
Tomato  **Gujarat Tomato 2**	34045	High yield over Junagadh Ruby and Pusa Ruby. Determinate plant type, fruits medium in size, dark red in colour with heart shaped, with good TSS and pulp to juice ratio, long shelf-life, tolerant to leaf miner and fruit borer. Recommended for Middle Gujarat and Saurashtra.
Cucumber  **Gujarat Cucumber 1**	25074	High yield over local checks, long, tender fruits with attractive light green strips, soft non-hairy skin, Long shelf-life, less infestation of major pests. Recommended for Gujarat except Saurashtra in summer season.
Muskmelon  **Gujarat Muskmelon 3**	12705	Higher yield over checks, fruits medium size with brown spotted attractive green coloured pulp. Sweet in taste. Recommended for Summer cultivation in Middle Gujarat.

Pearl millet (Fodder)  **Gujarat Fodder Bajra 1**	116300 (Green) 26340 (Dry)	High green and dry fodder yield under multicut management with good regeneration capacity. Recommended for Summer cultivation in North and Middle Gujarat.

B. PLANT PHYSIOLOGY

Chilli

For seed production of chilli, the farmers are advised to harvest chilli fruits as and when they ripe. The red ripe fruits gave higher seed yield and germination percentage in comparison to mature wrinkled or dried fruits.

2. CROP PRODUCTION (Agronomy, Soil Science, Horticulture and Meteorology)

A. CULTURAL PRACTICES

Sugarcane

The farmers of Middle Gujarat Agro-climatic Zone-III (AES-II) growing sugarcane C.V. Co.No. -91132 are advised to plant sugarcane crop at 45-90-45 cm paired row and intercrop with cabbage for getting higher cane yield (133.58 t/ha) and net realization of Rs.1,11,531/ha for more profitable sugarcane cultivation (CBR 1:4.48).

Pandadiu (Chicorium intybus L.)

The farmers of Middle Gujarat Agro-climatic Zone-III (AES-II) growing pandadiu are advised to use seed rate of 10 kg/ha and fertilize the crop with 45 kg N/ha after each cut to obtain higher green forage, dry matter and crude protein yields and for getting higher net realization. (A common basal dose of 30 kg N/ha + 30 kg P_2O_5/ha should also be applied to the crop).

Rustica Tobacco

The farmers of North Gujarat Agro-climatic Zone-IV (AES-5,1) are advised to grow GC-1 at a spacing of 60 x 45 cm and fertilize with 200 kg N/ha, of which 90 kg N as basal and

remaining N should be top dressed @ 20, 30, 30 and 30 kg N/ha, respectively at 15, 30, 50 and 70 DAT for getting maximum cured leaf yield and net return.

B. NUTRIENT MANAGEMENT

Sorghum

The farmers of Bhal and Coastal Agro-climatic Zone, growing fodder sorghum 'Solapuri' under conserved moisture condition during rabi season are advised to apply 30 kg N + 15 kg P_2O_5/ha for getting higher yield and net profit.

Pigeonpea

The farmers of middle Gujarat agro climatic zone-III (AES-IX) growing Kharif Pigeonpea (BDN-2) on black cotton soil having marginal Fe and Zn status are advised to spray 1% foliar grade of multi-micronutrient having Fe 4%, Mn 1%, Zn 6%, Cu 0.3% and B 0.5% equivalent to Govt. notified grade IV (For Fe & Zn deficiency) at 60, 90 and 120 DAS to get higher yield and net return.

Aonla

The farmers of Middle Gujarat (AES-VI) growing aonla are advised to apply 100 g CuSO4 (24% Cu) or 200 gm boric acid (17% B) in soil at the onset of monsoon followed by three sprays of 0.2% $CuSO_4$ and 0.4% boric acid in first week of July, third week of July and first week of August for getting higher yield as well as more healthy fruits.

Okra

The farmers of Middle Gujarat Agro-climatic Zone (AES-II) growing okra (Prabhani Kranti) on soil having marginal Fe and Zn status are advised to apply soil application on multi micronutrient mixture having Fe 2%, Mn 0.5%, Zn 0.5%, Cu 0.2% and B 0.5% equivalent to Government notified grade V at the time of sowing along with recommended NPK dose to get higher yield and net return. Alternatively, the farmers are advised to spray 1% of foliar grade of multi-micronutrient having Fe 4%, Mn 1%, Zn 6%, Cu 0.3% and B 0.5% equivalent to Government notified grade-IV (For Fe and Zn deficiency) at 15, 30, 45 and 60 DAS to get higher yield and more economic return.

Groundnut and Wheat

Farmers following groundnut – wheat sequence in middle Gujarat (AES-II) are advised to adopt the following practices of micronutrient supplementation in soil having marginal to deficient status of Zn/Mn/Mo.

Zinc :

(a) Groundnut : A basal soil application of $ZnSO_4$ $7H_2O$ (21% Zn) @ 25 kg/ha is recommended for getting higher yield and more income.

(b) Wheat : The seeds should be treated with zinc oxide (ZnO).
(Seed treatment method : Mix 10 ml of ZnO (30% Zn) solution with 1 kg seed of wheat before sowing).

Manganese :

(a) Groundnut : Seed treatment of MnO_2 (Seed treatment method; Mix 12 ml. of MnO_2 (25% Mn) solution with 1 kg seed of groundnut before sowing)

(b) Wheat : The seed treatment of $MnCl_2$
(Seed treatment method: Mix 10 ml. of $MnCl_2$ (25% Mn) solution with 1 kg seed of wheat before sowing).

Molybdenum:

Groundnut and Wheat: Seed treatment of Ammonium Molybdate solution (seed treatment method ; Mix 6 ml. of Ammonium Molybdate solution (12.5 % Mo) with 1 kg groundnut/wheat seeds before sowing.)

C. WATER MANAGEMENT

Wheat

Farmers of Middle Gujarat Agro-climatic Zone-III, (AES-IX) are advised to irrigate wheat (Var. GW-496) with 4 irrigation each of 60 mm depth as per following interval to get higher yield and net return (CBR 1:2.26).

(a) 1^{st} irrigation just after dry sowing.

(b) 2^{nd} irrigation after 25-30 days followed by 1^{st} irrigation.

(c) Remaining two irrigation at an interval of 30-35 days.

Gram

Farmers of Middle Gujarat Agro-climatic Zone-III (AES-IX) are advised to irrigate Gram (Var. ICCC-4) with 4 irrigation each of 60 mm depth as per following interval to get higher yield and net return (CBR 1:3.03).

(a) 1st irrigation just after dry sowing.

(b) 2nd irrigation after 40-45 days followed by 1st irrigation.

(c) 3rd irrigation after 30-35 days followed by 2nd irrigation.

Potato

The farmers growing potato in sandy loam soils (AES : P_{1-2}) of Middle Gujarat Agro-climatic Zone are advised to adopt drip irrigation system for getting 29 per cent higher tuber yield with a saving of 43.3 per cent water. The crop should be fertilized @ 60 per cent of recommended dose (180 kg N/ha) of nitrogen. They should apply 25 per cent of the total nitrogen as basal and remaining 75 per cent through fertigation in 4 equal splits at 10 days interval. The fertigation should be started after 40 days of planting.

The system should be laid out at a spacing of 90 cm (middle of two crop rows) with 4 LPH discharge dripper placed at a distance of 45 cm (six plants per dripper) and operated at 1.2 kg/cm^2 pressure for about 50 minutes on alternate days.

D. WEED MANAGEMENT

Maize and Pigeonpea

The farmers of Middle Gujarat Zone (AES-II) practicing maize-pigeonpea intercropping system are advised to perform three hand weeding at 30, 45 and 60 DAS or inter culturing and hand weeding at 30 and 60 DAS. Under paucity of labours, pre-emergence application of alachlor @ 0.5 kg/ha or oxadiazon @ 0.25 kg/ha is recommended for efficient weed management and better return.

Clusterbean

The farmers of middle Gujarat zone (AES-II) growing clusterbean for seed purpose are advised to follow two inter culturing and two hand weeding at 30 and 45 DAS for effective weed control. Under paucity of labours, pre-emergence application of pendimethalin or fluchloralin or trifluralin or butachlor @ 0.5 kg/ha with interculturing at 30 DAS is recommended for efficient weed management.

E. SOIL AMENDMENT

Pigeonpea

Farmers of middle Gujarat agro-climatic Zone-III (AES-IX) growing *Kharif* Pigeonpea (BDN-2) in deep black soil are advised to apply 15 t pressmud to improve soil physico-chemical properties viz., OC, Infiltration, WHC and to get maximum grain yield and net realization.

3. PLANT PROTECTION

A. AGRICULTURAL ENTOMOLOGY

Cotton

For the management of pest complex and to conserve entomophage diversity in cotton Hybrid-10, following IPM package is recommended to the farmers of Middle Gujarat Zone (ICBR 1:1.67).

(i) Hand picking of different stages of pests and putting them in 60 mesh wire screen cage twice during peak incidence.

(ii) Interspersing of 10% maize with cotton crop, sowing of cotton and maize should be done simultaneously.

(iii) One release of *Chrysoperla carnea* @ 14,000 larvae (2-3 days old) synchronizing with the appearance of the pests.

(iv) Release of *Trichogramma chilonis* @ 1,50,000 per hectare per week (5 releases), first release should be synchronized with the appearance of the bollworms.

B. PLANT PATHOLOGY

Fennel

The farmers of Middle Gujarat are advised to give seed treatment with metalaxyl MZ @ 6 g/kg seeds followed by soil drenching of metalaxyl MZ 0.02% @ 1 litre/m^2 at seed germination and two more soil drenchings at 10 days interval (ICBR 1:4.49) for the effective management of damping off of fennel in nursery.

Turmeric

For effective management of root-knot nematodes in turmeric, the farmers of Middle Gujarat Agro-climatic Zone are advised to follow soil solarization with 25 µ LLDPE clear plastic film for 15 days in summer (ICBR 1:6.21) or rabbing with bajra husk @ 7 kg/m^2 (ICBR 1:5.18).

4. DAIRY SCIENCE, AGRICULTURAL ENGINEERING & PROCESSING

AGRICULTURAL ENGINEERING & PROCESSING

Development of fruit harvester

The tractor operated multi elevator platform attachment is recommended for the use by farmers and orchard owners for efficient harvesting of fruits, the attachment being a versatile and reliable worker positioning system may also be used for many alternate uses such as tree pruning, spraying, cleaning etc.

Processing Technology

Vegetable

The food processing entrepreneurs interested in dehydration of vegetables are recommended to use the technology for the production of dehydrated fenugreek. The product obtained is acceptable to the consumers and it is superior to the sun dried product. The technology is simple and economically viable.

Fruits

The food processing entrepreneurs interested in dehydration of aonla are recommended to use the technology for the production of dehydrated aonla. The product obtained is acceptable to the consumers and it is superior to the sun dried product. The technology is simple and economically viable.

Production of quality Chhas

To produce uniform and good quality Chhash (from skim milk) with improved shelf life, it is recommended to employ *Streptococcus thermophilus (HST)* and *Lactobacillus delbrueckii* subsp. bulgaricus (LBW) starter culture in proportion of 1:1 @ 2.0% (v/v) of skim milk. The desirable level of total solids in Chhash is 7.0% and preferred acidity 0.6% L.A. To prevent / retard the whey separation, either sodium alginate or guar gum can be employed at the rate of 0.05% (w/v) of Chhash.

Improvement of shelf life of dairy product

For improving the shelf life of Chhash, it can be homogenized (at 60^{o}C and 100 kg/cm^2 pressure) and heat-treated at 75^{o}C / 5 min in Batch method or 75^{o}C/16 sec in HTST method. In order to improve the taste of the product, cumin in the form of powder (< 250 µm) and

common salt can be employed at the rate of 0.4 and 0.5% (w/v) of Chhash, respectively. Fresh whey can be used up to the rate of 20% (v/v) of dahi in making Chhash.

Food product with high nutritive value

It is recommended to replace 25% of gram flour with equal proportion of the papain modified soya flour and whey protein concentrate (WPC) in preparing Sev (noodles) with improved nutritive value. Microwave heating (450 W for 3 min and with dual cooking setting) is a better alternative to deep fat frying and hence is recommended.

Fabrication of dairy machinery

Low cost vaccum bottle filler, a simple machine for filling any general fluid in bottle, has been fabricated and is recommended for small scale industry.

The batch type SSHE fabricated for kneading cum cooking of Chhana-sugar mixture is recommended for mechanized production of Sandesh.

5. ANIMAL PRODUCTION

Nutrition for large animal

Four percent urea treatment of roughage left over with supplementation of molasses/salt can meet energy needs of non-producing large ruminants. However, it is advisable to feed 0.5 kg protein and phosphorus rich feed (e.g. groundnut cake) to each animal per day to meet their protein and phosphorus requirements.

Complete feed formulation

Complete feed with 42 % threshed wheat straw, 25 % de oiled groundnut cake, 10 % Prosopis juliflora pods, 8 % rich polish, 12 % molasses, 2 % mineral mixture and 1 % salt can be used as ration for calves without any adverse effect on growth, rumen fermentation and digestibility. It reduces feed cost per kg gain by 33 % over conventional system of feeding.

Nutritive value of grass

Guttan panic grass hay provides 1.64% DCP and 60.43% TDN on dry matter basis.

II NUCLEUS, BREEDER AND OTHER STAGES SEED PRODUCTION

Seed is the main key factor for raising the production and productivity of any crop and for wide adaptation of released variety. Anand Agricultural University has been producing nucleus as well as breeder seeds in enough quantities to cater the needs of seed industry in public and private sectors. During the year 2004-05, Anand Agricultural University produced about 284.5 quintals of breeder seed of state as well as national varieties

of eleven important crops. The major quantity was produced in paddy (184 qtls) and maize (69 qtls) followed by gram and cluster been (vegetable).

Nucleus seed of different crop varieties following standard methods to ensure 100% genetic purity was also produced keeping in view the spread of the variety and future needs. It is note-worthy that Anand Agricultural University is only maintaining the vegetable type cluster been variety Pusa Navbahar and producing breeder seed in the country.

Apart from the production of nucleus and breeder seed, the university has also managed to produce truthful / general seed of the most adapted varieties in large quantity, which is being directly distributed to the farmers. The University also distributes seedlings of vegetable crops and tobacco for farmers.

The crop wise quantity of breeder as well as truthful seed produced during the year 2004-05 is given in the following Table 4.4.

Table- 4.4 : Seed and Seedling production

Sr. No.	Crop	Quantity produced (q)	
		Breeder	Other stages
SEED			
1	Paddy	184.00	1500.00
2	Maize	69.00	68.00
3	Deshi cotton	17.00	98.75
4	Tobacco	-	149.00
5	Lucern	0.50	7.25
6	Oat	2.00	27.50
7	Guar (Veg.)	2.18	9.94
8	Guar (Fodder)	-	36.00
9	Gram	8.77	28.00
10	Cowpea (Veg.)	0.78	2.34
11	Tomato	-	0.04
12	Brinjal	0.06	0.33
13	Cucumber	-	0.04
14	Chilli	0.20	6.39
15	Bottlegourd	-	0.08
16	Okra	0.01	4.09
17	Field bean	-	0.58
18	Sorghum (Fodder)	-	25.00
	TOTAL…	**284.50**	**1963.33**
SEEDLING			
1	Tobacco	70.00 lacs	
2	Chilli	26.00 lacs	

III RESEARCH PROJECTS

(i) ICAR PROJECTS

Sr. No	Name of Project	Location
1.	AICRP on Agril. Meteorology	Anand
2.	AICRP on Weed Control	Anand
3.	AICRP on Pesticide Residue	Anand
4.	AICRP on Biological Control	Anand
5.	AICRP on Seed Technology Research (NSP)	Anand
6.	AICRP on Micronutrient	Anand
7.	AICRP on Ornithology	Anand
8.	AICRP on Improvement of Feed Resources and Nutrient Animal product	Anand
9.	AICRP on Maize Improvement	Godhra
10.	AICRP on Forge Crops	Anand
11.	AICRP on Tobacco	Anand
12.	AICRP on Farm Research	Baroda
13.	AICRP on Rice	Nawagam
14.	AICRP on Poultry For Eggs	Anand
15.	AICRP on Groundnut	Anand
16.	AICRP on Nematodes	Anand
17.	AICRP on Medicinal and Aromatic Plant	Anand
18.	Network Project on HS	Anand
19.	Network Project on Animal Feed	Anand
20.	Network Project on Animal Genetics Resources	Anand
21.	Network Project on Mechanization of Basundi Making	Anand

(ii) ICAR ADHOC PROJECTS

Sr. No	Name of Project	Location
1.	Insecticide Testing as a cooperative centre	Nawagam
2.	Network programme of Haemorthagic Septicaenia	Anand
3.	FLD Promote Non-Hybrid Rice Technology	Nawagam
4.	Frontline Demonstration in Wheat	Arnej
5.	FLD's Training programme under Accrelerated maize Improvement	Godhra
6.	Frontline Demonstration on Maize	Godhra
7.	Exploitation of maize x Tesimite Hybrids for fodder production	Anand
8.	Rapeseed Mustard	Anand
9.	AICRP on Tobacco	Anand
10.	Monitoring of varietal improvement & nucleus / breeder seed programme	Anand
11.	Technology Evaluation and impact Assessment Implementation Project	Devataj
12.	AICRP Australia project on Stylosanthes	Anand
13.	Scheme for Network Promotion on Hybrid Research Vegetable Crops	Anand
14.	Scheme for characterization, serodiagnosis and monitoring of seed borne viruses of Vigna SPP.	Anand
15.	DEID-Indian U.K. Project on Intergrated Management of Fruit Flies in India	Anand
16.	Design and Development of Seed Pelletizer	Anand
17.	Management of Helicoverpa armigera using entomopathogenic nematodes	Anand
18.	Studies on Root-knot cyst Nematodes in Pigeonpea	
19.	Studies on the Reniform Nematodes Rotylenchulus reniformis	Anand
20.	Potential of native EPN, Steinernema Sp. Aproaches	Anand
21.	Establishment of core laboratory under Network Programme	Anand
22.	R/O Survey unit on Ankleswar Poultry under Network project on AGR	Anand
23.	Surati Buffaloes	Anand

24.	Identification of differentially expressed genes during lactogenesis in buffaloes	Anand
25.	Root knot Nematodes	Anand
26.	Assessment and Characterization of heavy metal contamination in Agril. Soil & Plant in Pen Urban Area	Anand
27.	Dev. of cotton diseases 7 pests data base reporting system & estt. of National IPM Network	Anand
28.	Network project on Implication of inter action in the integrated pest management	Anand
29.	AICRP on Biological Control Mass Production of quality bio-agents/ bio-pesticides	Anand
30.	Central Sector Special Foodgrains Prod of Breeder Seed	Anand
31.	Research & Development efforts on Hybrids in selected crop Millet Cotton Castor	Anand
32.	National Seed Project-III	Anand
33.	Evaluation and reduction of Energy losses in Dairy Processing operations	Anand
34.	Revolving Fund (KVK)	Devataj
35.	Revolving Fund (KVK)	Devgadhbaria
36.	Working as voluntary centers on seed processing experiments under NSP (Crops)	Anand
37.	Determination of spatid irrigation requirement and production potentialities for major crops over Narmada Canal commands area using crop models and GIS	Anand
38.	Survey of Genetic resources of Zalawadi breed of Goat	Anand
39.	Biochemical & Normal study of Follicular fluid of Unovulated follicles of supperrevulared carprine overies	Anand
40.	Assessment characterization & Sero-Diagnosis of Viruses of Mothbean crop in 'Rajsthan & Gujarat"	Anand
41.	Genetic aspect of very low density lopoproteion and its association with important economic traits in egg type chicken	Anand
42.	Endorise probite dating different phase of reproduction in jaffrabadi buffaloes	Anand
43.	Conducting the Co-ordinated Trials of AICRP on Chickpea	Arnej
44.	Mustard Crop Demonstration Training Organisation	Devataj Devgadhbaria
45.	Frontline Demonstration Oilseed Sub-Component Cropping System Research Potential	Anand
46.	AICRP on Micro and Secondary Nutrient and Pollutant Elements in Soil & plants towards FLD-Oilseed (PCM)	Anand

47.	Frontline Demonstration of Oilseeds & Revolving Fund	Devataj
48.	Front Line Demonstration on Pulses Crop during Rabi & Summer	Devgadhbaria
49.	Pigeonpea	Vadodara Derol
50.	Screening for High sex ratio and Dev. Hybrid Aonla	Anand
51.	AICRP Castor (Voluntry)	Anand
52.	Frontline Demonstration of Cotton Crops	Devgadhbaria Viramgam Arnej Dhandhuka
53.	Trial During Kharif 2004 under AICRP (Mullarp)	Vadodara

(iii) PLAN SCHEMES

1.	Modernisation of the department of Agriculture Colleges	Anand
2.	Scheme for the Award of GAU Fellowship for PG studies in various faculties	Anand
3.	Project for Library	Anand
4.	Land scaping at different campuses	Anand
5.	Creating of the Computer & Communication facilities at different campuses	Anand
6.	Expansion Planning & Evaluation Cell	Anand
7.	Establishment of Department of Plant physiology, Tissue culture & Biotechnology of Agriculture College	Anand
8.	Library Facilities at all campuses	Anand
9.	Modernisation of Dept. of Agriculture Colleges at all campuses	Anand
10.	Establishment of Agro-meteorological cell at Agriculture College	Anand
11.	Establishment of Microbiology cell at Dept. of Plant Pathology.	Anand
12.	Addition of the facilities for organizing Rural Agricultural Work Experience (RAWE) programme	Anand
13.	Strengthening facilities for Sericulture, Apiculture and Mushroom cultivation	Anand
14.	Establishment of Modern Green-house facilities	Anand
15.	Establishment of Post Graduate Diploma Programme in the Faculty of Agricultural Information Technology	Anand

16.	Establishment of Faculty of Food Processing Technology and Bio-energy	Anand
17.	Upgrading of the Student facilities at different campuses.	Anand
18.	Modernising the student facilities at different campuses	Anand
19.	Scheme for Fellowship for UG Students of various faculties	Anand
20.	Campus Development Programme	Anand
21.	Establishment of a Central Instrument Centre with heavy duty generator set	Anand
22.	Modernisation of the department of Veterinary Science College	Anand
23.	Opening of New Dept. at College of Vety.Science & Animal Husbandry - Livestock Production Technology - Animal Nutrition - Veterinary Clinics - Animal Biotechnology	Anand
24.	Modernisation of the Post-graduate Department at Veterinary College	Anand
25.	Establishment of New Department at Veterinary Science College - Vety. Epiemiology & Preventive Medicine - Veterinary Extension	Anand
26.	Modernisation of Department of Dairy Science College	Anand
27.	Strengthening of Existing Department of Management Science in faculty of Dairy Science	Anand
28.	Strengthening of Dairy Science College	Anand
29.	Modernisation of Student Training Dairy (STD)	Anand
30.	Starting a PG Programme in Dairy & Food Quality Assurance	Anand
31.	Up-grading of the existing Agricultural School	Anand ,Vadodara
32.	Strengthening of the Directorate of Extension Education at University & zonal level	Anand
33.	Upgrading of Existing Sardar Smruti Kendra	Anand
34.	Establishment of Mali Training Centre at all campuses	Anand
35.	Establishment of Centre to Agricultural Extension Information System	Anand
36.	Centre for Communication Network	Anand
37.	Establishment of Transfer of Technology Centre	Anand ,Arnej
38.	Agricultural Technology Information Centre (ATIC)	Anand
39.	Upgrading of Poultry Training Centre	Anand
40.	Strengthening of Agricultural School	Dahod

41.	Minor & Original Works at Campuses/Zones	Anand
42.	Strengthening of Research in Millet	Anand
43.	Strengthening of Research in Rice	Nawagam, Dabhoi
44.	Strengthening of Research in Wheat	Anand,Dhandhuka
45.	Strengthening of Research in Sorghum	Viramgam
46.	Strengthening of Research in Pulses	Vadodara
47.	Strengthening of Research in Oilseed (Groundnut)	Anand
48.	To establish a centre of Excellence for Cotton Research	Anand, Viramgam, Dhandhuka
49.	Strengthening of Research in Tobacco	Anand ,Sanand
50.	Streng of Research in Forage crops	Anand
51.	Research in Vegetable crops	Anand
52.	Strengthening of Research in Medicinal & Aromatic Plants	Anand
53.	Expansion of Research in Agril Economic	Anand
54.	Scheme for Management of salt affected soil & poor quality of underground water	Thasra
55.	Application of Remote Sensing Technique	Anand ,Nawagam
56.	Statistical evaluation of experimental variability for improving efficiency of field experimentation	Anand
57.	Development of various Bio-gas Plants to use vegetative wastes	Anand
58.	Strengthening of Research in Dry-farming	Dhandhuka
59.	Strengthening of Tissue culture Research & Development at all campuses	Anand
60.	Project on Fertigation in Horticultural crops	Anand
61.	Scheme on Insect Pest Management in fruit crops	Anand
62.	Strengthening of Horticultural Research & Development activities	Anand
63.	Research on Eco-friendly Biological Fertilizer	Anand
64.	Classified works at Campuses Zones	Anand
65.	Creation of additional posts as per Supreme Court orders	Chharodi
66.	Campus Development Programme (On campuses)	Anand
67.	Farm Development Programme	
68.	Creation of Infrastructural facility & Manpower for Research in Agricultural Statistics at all campuses	Anand
69.	Establishing Organic farming cell at all campuses	Anand
70.	Centre of Excellence for Soil & Water Management Technology	Anand
71.	Strengthening of Agro-meteorology at AAU	Vadodara
72.	Establishment of New Department of Genetic Engineering and Biotechnology	Anand

73.	Epidemiology & Management of Yellow Mosaic virus of Pulses	Anand
74.	Centre of Excellence on Agril. Biotechnology	Anand
75.	Research on Hybrid Development in paddy	Nawagam
76.	Research on Hybrid Development in Chilli, Okra & Tomatto	Anand
77.	Strengthening Resaearch in G.Herbaceum cotton	Viramgam
78.	Strengthening Adaptive Resaearch in all Agro-climatic zones of the state	Anand
79.	Development of Mathodologies for detection of heavy metal contamination	Anand
80.	Initiating Research in Embryo Transfer in Cattle & Buffaloes	Anand
81.	Scheme for Import & Establishment of Exotic Cattle	Anand
82.	Central Sperm Station	Anand
83.	Strengthening of R.B.R. Unit	Anand
84.	Study on applied reproduction in Surti & Marwadi Goats of Gujart State.	Anand
85.	Streng of Livestock Research Station	Anand
86.	Random Breed Control Population on Poultry	Anand
87.	Cytogenetics and Cell culture studies in Cattle and Buffaloes	Anand
88.	Etiopathological studies on mortality of Broilers	Anand
89.	Strengthening of Livestock & Veterinary component	Anand
90.	Diagnosis and Epidomology of important diseases in Animal	Anand
91.	Enhancing Feed Efficiency through use of Enzymes and Altering Rumen Fermentation in Bovines and Poultry	Anand
92.	Diseases Management in Live Stock	Anand
93.	To standardize a method for Commercial Manufacture of Dahi with enhanced acceptability and stability	Anand
94.	Development of Technology for utilization of Soyabean & Groundnut and their meals as protein rich materials for fabrication of foods for human consumption	Anand
95.	Application of Memberance processing technology in manufacture of selected indegenious and western dairy products	Anand
96.	Enhancing Self Life of Indigeneous Milk product	Anand
97.	Standardization of Process for Manufacture of Annato butter colour	Anand
98.	Plasmid profile of lactic acid bactaria and their use as Bio-medical agents	Anand
	Manufacture of Dairy/Non Dairy Processed Cheese and Mozzararella Cheese Analogues	Anand

99.	Improving Research facilities for Maize	Dahod
100.	Strengthening of Research in Pulse	Dahod
101.	Improving Research facilities for Cotton	Devgadhbaria
102.	Creation of additional posts as per Supreme Court order	Dahod
103.	Research on Paddy in Tribal Area	Dahod
104.	Research and demonstrations of Bio-fertilizers in Tribal areas of Gujarat.	Anand ,Godhra
105.	State share for Co-ordinated Research Project in Agricultural Science	Anand
106.	State share for Co-ordinated Research Project in Animal Science	Anand

(iv) NON PLAN SCHEMES

1.	Scheme of Design Experiment	Anand
2.	Scheme for Research in Bajara, RRS, Unit-5	Anand
3.	Scheme for Research & Extension Work on Rice	Nawagam, Derol Dabhoi
4.	Scheme for Research in Wheat	Dhandhuka
5.	Scheme for Research in Jowar	Chharodi
6.	Scheme for Scientific work for improvement of Cereals	Baroda, Dahod Arnej
7.	Scheme for Oilseed Research	Derol
8.	Scheme for strengthening Research in Cotton Investigation of Fibre Crops other than Cotton Development of Remie Fibre	Anand, Thasara Dhandhuka, Viramgam
9.	Scheme for Research in Tobacco	Anand, Sanand Dharmaj
10.	Scheme for Research in Sugarcane	Thasara
11.	Scheme for Research in Grasses	Anand
12.	Scheme for Research in Vegetable Tuber (Tomato)	Anand
13.	Scheme for Research and Improvement in Fruit Crops	Anand
14.	Scheme for Research Studies in Agricultural Economics	Anand
15.	Scheme for Research in Agriculture Chemistry & Soil Sceicne	Anand
16.	Scheme for Expansion Mechanical commerical farm, ECFP	Anand
17.	Scheme for Research in Pest Control & Plant Disease, BACA	Anand
18.	Project for Research in Pest Control & Plant Disease, Vegetable Res. Scheme, Unit-27	Anand
19.	Western Regional Animal Nutrition Station, Vety. College	Anand
20.	Strengthening of Dry Farming Research Station	Dhandhuka
21.	Project for Expansion of Plant Pathology Research, BACA	Anand

22.	Study of Biology Inteer control of White Gurb	Anand
23.	Scheme for Esta. of Product Process Engineering, Dairy Science College	Anand
24.	Establishment of Seed Technology Cell	Anand
25.	Research in Azola & Bio-fertilizer, NARP	Anand
26.	National Agricultural Research Project	Arnej
27.	National Agricultural Research Project	Anand
28.	National Agricultural Research Project	Godhra
29.	NARP RRS, UNIT-5	Anand
30.	National Agricultural Research Project	Derol
31.	NARP Scheme Phase-II - Animal Nutri Dept	Anand
32.	NARP Scheme Phase-II	Chharodi
33.	ICAR HRA Recovery Anand Zone	Anand
34.	Zonal Engineering Const. Unit	Anand
35.	North Cattle Breeding Farm	Chharodi
36.	Veterinary College, Unit-3	Anand
37.	Dairy Science College, Unit-4	Anand
38.	Inst of Prog. Extension Education (Publication)	Anand
39.	I.D.C. Project, Unit-7	Anand
40.	Payment of arrears to teachers under Career Advancement Scheme, Adm-cum-A/c. Office, Unit No.1	Anand
41.	B.A. College of Agriculture	Anand
42.	Establishment of Extension Wing	Anand
43.	Strengthening of Under Graduate Teaching	Anand
44.	Vice Chancellor Office & Registrar Section	Anand
45.	Director of Research	Anand
46.	Comptroller Section	Anand
47.	Office of the Executive Engineer	Anand
48.	Exeutive Engineer Section	Anand
49.	Director of Student Welfare, Unit-1	Anand
50.	Director of Information Technology	Anand
51.	Director of Extension Education (Unit-1)	Anand
52.	Director of Extension Education (Unit-10)	Anand
53.	Zonal Administration Office	Anand
54.	Zonal Accounts Office	Anand
55.	Executive Engineer & Guest House	Anand
56.	Medical Unit Centre	Anand
57.	Zonal Dy. Director of Research Office	Anand
58.	Dy. Director of Extension Education Office	Anand
59.	Award of Fellowship	Anand
60.	Director of Student Welfare, Unit-1	Anand

61.	Inter College/University Sports & Quize Tournament	Anand
62.	Inter Agril. School's Sports Scheme	Anand
63.	Sports of Anand & Centre Agril.School School, Anand, Vadodara, Dahod & Chharodi	Anand
64.	Sports of Agril.School, Anand, Unit No.10	Anand
65.	Sports of Agril.School, Chharodi	Chharodi
66.	Training of Student, DSW, Unit No.1	Anand
67.	Director of Student Welfare, Unit No.1	Anand
68.	Strengthening of Department by providing additional equipment in view of Semester System	Anand
69.	Esta. of Sardar Smruti Kendra Museum Information Centre,	Anand
70.	Project for Agricultural School	Anand, Chharodi Baroda, Dahod
71.	School of Baking, Anand	Anand
72.	Home Science School, Unit-10	Anand
73.	Establishment of Library, BACA	Anand
74.	Project for Health Centre	Anand
75.	Strengthening of P.G. Teaching	Anand
76.	Scheme for Instructional Farm, BACA	Anand
77.	Establishment of Farm Advisory Service, Unit-10	Anand
78.	Upgrading of School of Baking	Anand
79.	Department of Agricultural Product Process Engineering	Anand
80.	Department of Namatology, BACA	Anand
81.	Department of Horticulture, BACA	Anand
82.	Department of Bio-chemistry, BACA	Anand
83.	Establishment of Meteorology Dept, BACA	Anand
84.	Strengthening of VC Office (Zonal Acct)	Anand
85.	Bank Interests & Advances	Anand
86.	Pension & Graduities to retire University employee	Anand
87.	Maintainance & Repairs to University Building	Anand
88.	M & R University Building (Income)	Anand
89.	Strengthening of Existing School of Baking	Anand
90.	Misc. Receipt / Expenditure	Anand
91.	Misc. Interest & Deposit	Anand
92.	Project for Livestock Research Station, Vety Scicnce College	Anand
93.	Poultry Feeding Manufacturing Unit	Anand
94.	Strengthening of Poultry Training Centre	Anand
95.	Project for Investigation & Research, Veterinary & Animal Husbandry	Anand
96.	Project for Veterinary Science & Animal Husbandry	Anand
97.	Project for Reproductive Biological Research Unit	Anand

98.	Scheme for increasing the admission capacity in Degree Course, Vety. Science College.	Anand
99.	Study of Corrlection response to selection Patanwadi Cross Breed Sheep	Anand
100.	Import & Establishment of Exotic Cattle, HF Project, IDC Unit	Anand
101.	Project for the Dept. of Dairy Science College	Anand
102.	Strengthening Research in Maize	Devgadhbria Godhara
103.	Strengthening Research in Budded Cotton	Devgadhbria
104.	Strengthening of Research in Hill Millet	Dahod
105.	Training of Tribal Farmer Women & Farm Youth	Dahod
106.	Strengthening of Research in Pulse	Dahod
107.	Tribal Research-cum-Training Centre	Devgadhbaria

(v) OTHER AGENCY SCHEMES

Sr. No.	Name of Project	Location
Government of India		
1.	Scheme for Regional Extension Service Centre	Anand
2.	Food & Civil Supply (Modernization single/huler of Rice Mill)	Nawagam
3.	Genetic enhancement of rice productivity through development of hybrids	Anand
4.	Project Proposal on Neem based urea coating powder	Nawagam
5.	Upland Rice Shuttle Breeding network	Nawagam / Derol
6.	National Centre for Medium Range Weather Forecasting (NCMRWF) stating of Agro advisories on Experimental basis.	Anand
7.	Scheme for Modelling of impact of dynamic environment on population of crop pests in Middle Gujarat Zone	Anand
8.	Conducting study on economics impact of advisory of different crops	Anand
9.	Food Processing Vet-College	Anand
10.	Utilization and finding of OO verity of Mustard Cake v/s conventional variety of mustard cake in Broilers	Anand
11.	Tobacco Seed Multification	Anand
12.	Soil Vegetation Atmosphere Interaction Studies	Anand
13.	Study of land surface processes over wheat crop	Anand
14.	Hydrological modeling of the land surface process over Sabarmati river basin	Anand
15.	Micro wave application for estimation of crop growth parameters on rice crop using SAR data under RESAT-JEP	Anand
16.	Remote Sensing technology in AAU	Anand
17.	Scheme for medicinal and aromatic, GOI, Deptt. of Agri. Co-op., Directorate Cocoa	Anand
18.	Scheme for medicinal and aromatic, GOI, Deptt. of Agri. Co-op.,	Anand

	Directorate Cocoa	
19.	Strengthening of on-going project on Estt. of Production of Unit	Anand
20.	Respond Project	Anand
21.	Energy water balance & crop based monitoring using satellite data	Anand
22.	Evaluating manorial value of sewage sludge hygienised through irradiation	Anand
23.	Extension Education Institute, Strengthening of Plan	Anand
24.	Annual Rev. Meeting Agro Advisory Services & first meeting of economic impact assessment of Agro Advisory Services	Anand
25.	Scheme of Jatropha Plantation and Nursery (Tree Borne oilseeds)	Chharodi
26.	Scheme of Jatropha plantation and nursery (Tree borne oilseeds)	Anand
27.	Scheme of Jatropha plantation and nursery (Tree borne oilseeds), APPE	Anand
28.	Extension Education Institution	Anand
29.	E.T. project of NDDB & AAU	Anand
30.	Understanding crop vegetation signature in carto sat data	Anand
31.	Scheme for livestock health and reprodutive health scheme	Anand
32.	Training of PRA techniques for 7 days (EEI)	Anand
33.	Comparative study of mammary gland tumors in human & cannie	Anand
34.	Testing efficacy of Jatropha formulations against root knot nematodes in tomato	Anand
35.	Scheme for award of merit mans National Fellowship	Anand
36.	ICAR award of seminar fellowship	Anand
37.	Department of Atomic Energy	Anand
38.	Award of ICAR National Talent Scholarship on Agril. Sci.	Anand
39.	Revolving fund scheme (Ext. Edu.Unit)	Anand
40.	Testing fee of foreign students (Lund Uni.)	Anand
41.	Training of PRA techniques for 7 days (EEI)	Anand
Government of Gujarat		
42.	Preparation of 'DATE' Plants through Tissue culture method	Anand
43.	Vegetable Scheme	Anand
44.	APEDA Scheme for Research & Development	Anand
45.	Narmada irrigation Research Project (Khandha)	Khandha
46.	To avail grant for Post-graduate Research scheme	Anand
47.	Agril. Research study in SPP command	Dabhoi / Thasra
48.	Agri. Res. Study in SPP command	Dhandhuka
49.	Rastriya Jalstrotra Yojna	Anand
50.	Rastriya Jalstrotra Yojna	Devgadhbaria
51.	Present status of heavy metals of pesticide condition & their effect on Fauna and flora around Naroda & Vatva regions	Anand
52.	Mass production of biological control agents & their application in the earth quake affected people in area of Kutchh	Anand

53.	Analysis of soil sample	Anand
54.	Payment of TA/DA to experts of AAU for work done for Sardar Sarovar	Anand
55.	Green house / poly house for commercial for commercial high value	Anand
56.	Scheme for greening of degraded areas of arid and semi-arid zones	Anand
57.	Project Proposal on conservation of endangered species of entomophages in Gujarat	Anand
58.	Quantification of Heavy Metals in milk and milk products	Anand
59.	Scheme for creation of permanent machinery for studying the cost of cultivation/production of principal crops growing in Gujarat	Anand
60.	T & V Benor Scheme	Baroda
61.	Study of wet land habitats in north & central Gujarat region & suggesting management strategies for it	Anand
62.	T & V Benor Scheme	Anand
63.	District Rural Development Agency	Nadiad
64.	Development of pulses workshop seminar on pulses crops	Anand
65.	State level programme on new technology	Godhra
66.	To impart refresher training to technical officers of the Animal Husbandry Deptt.	Anand
67.	Financial assistance for Hybrid Cotton / Musli demonstration plot	Anand
68.	Exhibition plot & farmer day for safed musali	Dahod
69.	Training programme on Hoof Management for Veterinary in Western region Dairy co-operative	Anand
70.	Refresher training to the technical staff of Deptt. of Animal Husbandry	Anand
71.	Seminar on food processing	Anand
72.	Training programme for triabl farmer / boys and girls	Anand
73.	Training programme for triabl farmer / boys & girls	Anand
74.	Training programme for tribal farmer / boys & girls	Anand
75.	Project for shafed muslis kanal ropa & farmers day in tribal area	Devgadhbaria
76.	One training on water management & conversation for 3 days	Anand
77.	Training for developing MIS for two days	Anand
78.	Two training on participatory monitoring and evaluation for 3 days	Anand
79.	Assistance to state for centre of animal disease	Anand
80.	Study to the draftability of aged bullocks above 16 years of age	Anand
81.	Strengthening of nodel centre for wild life health care & diseases diagnosis	Anand
82.	Award of NBAS fellowship	Anand
83.	Apprenticeship / Internship scholarship for Vety. students	Anand
84.	State level paper presentation competition	Anand
85.	Short Term Refresher course of cheese tech.	Anand
86.	Enhancing biological control by manipulating cropping system	Anand

	under IPM	
87.	Soil Health Card Programme for State farmers	Anand
88.	B.A. College of Agriculture	Anand
89.	Scheme for training organization	Anand
90.	Practical Manual to under-graduate (Agri.) students	Anand
91.	To publish "Krushi-Go-Vidya" from the income of advertisement	Anand
92.	Training Scheme for Human Resource Development(Horti.)	Anand
NGO and Private Organisation		
93.	Kribhco-indo-British Rainfed Farming Project Research Grant to AAU Collaborate Maize Research Programme	Godhra
94.	Testing efficacy of NPVS of spondoptra & helicoverpa	Anand
95.	Effect of IPL-SOP on yield and quality of Bidi-Tobacco	Anand
96.	Project on Testing the 72% WP against damping off in Bidi Tobacco	Anand
97.	Evaluation of Mon 8709 & 37085 against annual and perennial weed	Anand
98.	Project Proposal for testing of Sumitomo chemical product (IGRS)	Anand
99.	Testing Project Evaluation of Bio-efficacy of 50 EC & Polytril-44 EC Vegetable crop in Middle Gujarat	Anand
100.	Bio-efficacy trials with azadirachtin (10,000 PPM)formulation	Anand
101.	Project for testing of till 25% EC against dieback disease chilli	Anand
102.	Testing the bio-efficacy of Actara 25 WG and polo 50 WP against pest of Okra	Anand
103.	Managementof Tomato Leaf Curl Project	Anand
104.	Project R 7465 (C) development & integrated pest management strategy for the control of Egg plant fruit & Shoot Borer in South Asia	Anand
105.	Testing of insecticides Indoxacarb 15 SC & methomyn 40 SP against Chilli & Tomato pest	Anand
106.	Testing of Bio-efficacy of Actara 25 WG and Polo 50 WG against pests of mango and citrus cultivation in Middle Gujarat	Anand
107.	Evaluation of Bio-efficacy of Endosulphan + cypermethrin against boll worms of cotton and fruit bore	Anand
108.	Bio-efficadcy studies on newly developed product Endosulfan cypermethrin	Anand
109.	Bio efficiency studies on Xloses	Anand
110.	Testing of Bt. K. & fenproathrin 30% EC against pest of cabbage, cauliflower, chillies & okra	Anand
111.	Bio-efficacy/phytotoxicity of carbosulfan on Cotton & Chillies	Anand
112.	Bio-efficiency of KN 128 15 EC for the control of Heliocoverpa armigera (hubner) in cotton	Anand
113.	Cotton IPM using PB-ROPE LTT on Pink Ball Worm in Gujarat	Anand
114.	Bio-efficiency of KN128 15 EC against in the pigeon pea	Anand
115.	The trial KN128 15% against P. zylostella in cabbage	Anand
116.	Testing of penconazola 10% AC against Powdery mildew of Okra	Anand
117.	Evaluation of fungicide of the De Nocil Crop	Anand

118.	Evaluation of fungicide of the De Nocil Crop	Anand
119.	Immunological analysis of nuclear inclusion protein of poly-viruses	Anand
120.	Scheme for analysis of Bio compost nature	Anand
121.	Scheme of evaluation of soil testing of kit of Traspeak	Anand
122.	Bio-efficacy of Pyrazosulfaron ethyl WP in transplanted Paddy	Anand
123.	Project on use of effluents of the Arvind Mills Ltd. for vegetation	Anand
124.	Sponsored project on Namatodes in agricultural financed by GSFC	Anand
125.	Project on "Studies" Phosphogypsum, Sulphur Muck & ETP waste for agril. use	Anand
126.	Project on liquid Bio-fertilizers	Anand
127.	Project on sulphur in balanced fertilizer	Anand
128.	Testing of organic fertilizer nutrogold super granules & Nutrogold liquid BDW based	Anand
129.	The scheme of testing of Achook (Azadirachtin) 0.15% W/W) against cotton, pigeon pea & okra	Anand
130.	Utilization of industrial effluents in Agril.	Anand
131.	Professor of IFFCO Chair	Anand
132.	Testing of product XL OSHT against chilli mites for bio-efficacy phytotoxity & effect on Predater & Parasites	Anand
133.	Project on testing of organic soil conditioner	Anand
134.	Product evaluation of clenzan	Anand
135.	Research project on enrichment of FYM for sustainable soil productivity	Anand
136.	Testing charge for bio-product of the AO Starch Products Ltd.	Anand
137.	Scheme for AAU & GVT (Gramin Vikas Trust) Collaborative Research Programme on maize	Godhra
138.	Gramin Vikas Trust	Nawagam
139.	Effect of Neozyme Ru Supplementation on production performance of cattle	Anand
140.	Short term research scheme submitted by Dairy Chemistry Deptt. from Dudh Sagar Dairy,Mehsana	Anand
141.	Bt. Brinjal hybrid trial of Mahyco seed	Anand
142.	Bio-efficacy with spodocide NPVof spodopetra litura	Anand
143.	Testing of Neem based formulation containing of Azadirachtion 10,000 ppm on Paddy	Anand
144.	Gyatri Dairy Products (Donated amount) Students Fellowship	Anand
145.	To avail financial assistance from the Private Cooperative Institutions	Anand
146.	Project proposal for efficacy of Treeplan 48 EC against weeds in onion & cumin	Anand
147.	Collaborative research on genetic polynohisim of milk protein in cattle and buffaloes as indicator production training	Anand

IV RESEARCH PUBLICATIONS

a. Research Papers Published

A.	**FACULTIES OF AGRICULTURE**	**:**	**58**
B.	**FACULTIES OF DAIRY SCIENCE**	**:**	**39**
C.	**FACULTIES OF VETERINARY SCIENCE**	**:**	**51**

Author and title of research papers published are given in **Annexure-I**

b. Research Papers Presented

A.	**FACULTIES OF AGRICULTURE**	**:**	**52**
B.	**FACULTIES OF DAIRY SCIENCE**	**:**	**40**
C.	**FACULTIES OF VETERINARY SCIENCE**	**:**	**19**

The faculty wise information on research papers/ articles/review papers/lead papers presented in national / international seminar, symposium, workshop, group meetings etc. are given in **Annexure-II**

V DISTINGUISHED AWARDS

a. Best Research Award

Dr. D. R. Patel, Professor and Dr. Subhash N., Associate Professor, B. A. College of Agriculture were awarded, "Dr. Vikram Sarabhai Award" for their outstanding meritorious breakthrough scientific research on, "Development of micropropagation technology in Date Palm" by Gujarat Council on Science and Technology, Govt. of Gujarat.

b. Best Research Papers

- Dr. V. R. Boghra, Professor and Dr. R. S. Sharma, Ex. Principal, SMC College of Dairy Science was awarded for their research paper entitled, "Extraction of Antioxigenic principles from tulsi leaves and their effects on oxidative stability of ghee" by Association of Food Scientists and Technologists (India), Mysore.
- Dr. P. S. Prajapati and Dr. B. P. Shah, Professor, SMC College of Dairy Science were awarded for their paper entitled, "Effects of SSHE shape in heat transfer co-efficient in basundi making" by Indian Dairy Association, New Delhi.
- Dr. R. H. Patel, Associate Professor, Shri Vishal Sharma and Shri V. P. Usadadia, B. A. College of Agriculture were awarded for their best paper entitled, "Influence of

irrigation schedule, spacing and nitrogen on growth, yield and quality of mustard [*Brassica juncea* (L.) Czern and Coss] published in the journal of Research on Crops 5 (2&3) : 290-293 by Agricultural Research Information Centre, Hissar.

- Shri A. J. Jhala and Dr. R. H. Patel, Associate Professor, B. A. College of Agriculture were awarded for their best poster paper presentation, "Management of root-knot nematode, *Meloidogyne incognito* through soil solarization and intercropping" organized by University of Agricultural Sciences, Bangalore during November 17-19, 2004.
- Dr. A. J. Dhami, Professor, Livestock Research Station, College of Veterinary Science & Animal Husbandry was awarded for his best paper published in Indian Journal of Dairy Science, 2003 entitled, " Effect of Ciphadex gel filtrations on mortality, viability and morphology of bull spermatozoa at initial, posto and postreberigeration stages " by Indian Dairy Association.

IMPORTANT EVENTS

- XIII Annual Review Meeting of Agro-Advisory Services of NCMRWF and IARM of Economic Impact Assessment of Agro-Advisory Services was held at Anand Agricultural University, Anand on October 25-27, 2004.
- Dr. M. D. Patel Regional e-library was inaugurated on December 6, 2004 by Prof. M. C. Varshneya, Hon'ble Vice Chancellor, AAU, in the gracious presence of Shri R. K. Patel, Joint Secretary, Agriculture and Co-operation, Gujarat State, Gandhinagar.
- **His Excellency, the President of India, Dr. A. P. J. Abdul Kalam inaugurated, "Pilot Bio-diesel Plant of Jatropha" on December 14, 2004.** HE Governor of Gujarat Shri Naval Kishor Sharma presided and Hon'ble Shri Vajubhai Vala, Finance Minister and Hon'ble Shri Kaushikbhai Patel were the guest of honour of the function.
- Inauguration of Krishi Vigyan Kendra at Arnej, Dist. Ahmedabad was done by Hon'ble Minister of Agriculture, Gujarat Shri Bhupendrasingji Chudasama on December 25, 2004.
- The first issue of Gujarat Newsletter KRUSHIDARSHAN SAMACHAR was published and released by Shri Bhupendrasinhji Chudasama, Honb'ble Minister of Agriculture, Gujarat on December 25, 2004.

- New buildings of Modern Classroom, examination hall and laboratory at College of Veterinary Science and Animal Husbandry, Anand were inaugurated by Shri Bhupendrasinhji Chudasama, Hon'ble Minister of Agriculture, Gujarat on December 31, 2004.
- AAU signed a collaborative project with NDDB on "Embryo Transfer in Cattle" in vibrant Gujarat on January 12, 2005. The project outlay is Rs.1.62 crore.
- Mr. Kochi Ogura, a Technical Representative of Shin-Etsu Chemical Co. Ltd., Tokyo, Japan visited the Department of Entomology, B. A. College of Agriculture, Anand.
- Dr. N. S. Talekar, Entomologist, AVRDC, Taiwan visited the Department of Entomology, Anand on June 7-8, 2004.

Annexure-I

A. FACULTIES OF AGRICULTURE

AGRONOMY

(1) Patel, G. J., Patel, G. N., Patel, B. G. and Goyal, S. N. (2004). Productivity and economics of maize intercropping system under rainfed condition. *Indian J. Dryland Agric. Res. & Dev*. 19(2): 179-180.

(2) Patel, R. H., and Soumyadeep Dutta (2004). Integrated farming system approach for sustainable yield and economic efficiency. *Agric. Review*. 25(3): 210-215.

(3) Patel, R. H., Jagruti Shroff and Usadadia, V. P. (2004). Influence of N and weed management practices in coriander. *Indian J. Weed Sci*. 36 (1&2): 86-88.

(4) Patel, R. H., Vishal Sharma and Usadadia, V. P. (2004). Influence of irrigation schedule, spacing and N on growth, yield and quality of mustard. *Res. On Crops*. 51(2&3): 290-293.

(5) Patel, R. H., Meisheri, T. G., Usadadia, V. P., Upadhyaya, P. N., J. R. Patel and Chavda, J. R. (2004). Direct and residual effect of organic manure and fertilizers nutrients on pearlmillet – wheat cropping system. *J. Farming Systems Res. & Development*. 10(1&2): 13-17.

(6) M.A.Patel, D.H.Patel, S.J.Macwan, S.Sriram and N.V.Upadhyay (2005). *Safed musli in vaigyanic kheti paddhati. Adijati Vistarma Bagayat Vikash Vishashank, Bagayat Khatu, Gujarat Rajya, P. 44-47.*

(7) D.H.Patel and S.Sriram (2005). Kariyata ni vaigynic kheti paddhati.Adijati Vistarma Bagayat Vikash Vishashank Bgayat Khatu, Gujarat Rajya, P. 48-49.

(8) M.A.Patel, D.H.Patel, S.J.Macwan, S.Sriram and P.B.Patel (2005). Dodi (Jivanti) ni kheti paddhati. Adijati Vistarma Bagayat Vikash Vishashank, Bhagayat Khatu, Gujarat Rajya, P. 50-52.

(9) D.H.Pael, P.N.Upadhyay, K.V.Patel, J.B.Patel and B.K.Patel (2004). Effect of Method of sowing time of harvesting and nitrogen application on dry root yield of Ashwagandha (*Withania somnifera*). Journal of Medicinal & Aromatic Plants Science 26 (2004) 288-292.

WEED CONTROL

(1) Patel, R. B.; Barevadia, T.N., Patel, B. D. and Meisuriya, M. I. (2004) Effect of cultural and chemical methods on weeds and fruit yield of green chilli. Indian J. Weed Sci., **36** (3&4) : 300-301.

(2) Patel, R. B.; Barevadia, T.N., Patel, B. D. and Meisuriya, M. I. (2004). Efficacy of herbicides in Transplanted Tomato under Earthingup and without Earthingup situation. . Indian J. Weed Sci., **36** (3&4) : 302-303.

(3) Patel, R. B.; Patel, B. D; Meisuriya, M. I. and Patel, V. J. (2004). Effect of methods of Herbicide Application on weeds and Okra. Indian J. Weed Sci., **36** (3&4): 304-305.

BIO-FERTILIZER

(1) Patil, R.K., Goyal, S.N., Vora, M.S. & Vaishnav, P.R. (2002), GAU Res. J. 2001& 02. **37** (1&2) pp. 13-17.

AGRICUKTURAL CHEMISTRY AND SOIL SCIENCE

1. Maliwal, G.L., Patel, K.P., Patel, K.C. and Patel, N.N. (2004). Effect of continuous irrigation of mized industrial effluent on soil and crops. Poll. Res., 23(1) : 169-172.

2. Maliwal, G.L., K.P. Patel, K.C. Patel, and Patel, N.N. (2004). Distribution of heavy metals in soils irrigated with mixed industrial effluents and their relationship with soil properties. Eco. Env. & Cons. 10(3) : 323-328.

3. Patel, K.P., Chauhan, N.B., Patel, K.C. and Patel Nimesh (2005). Impact of use of effluent water in agriculture on various factors as perceived by the farmers. Eco. Env. & Cons. 11(2) : 219-224.

4. Patel, K.P., Pandya, R.R., Maliwal, G.L., Patel, K.C., Ramani,V.P. and George, V. (2004). Heavy metal contents of different effluents and their relative availability in soils irrigated with effluent waters around major industrial cities of Gujarat. J. Indian Soc. Soil Sci. 52(1) : 89-94.

5. K.P.Patel, R.R.Pandya, K.C.Patel, V.George, M.V.Singh and V.P.Ramani (2005). Effect of Farm Yard Manure and Gypsum on yield of sweet corn and Cu-fractions of sewage irrigated soil. Poll. Res. 24(1) : 127-134.

6. Patel, K.P. and Maliwal , G.L. (2004). Sinchai jal mein bhari tatvoki samasyayein (Hindi). Kheti., 56(11) : 17-19.

7. K.P.Patel, V.P.Ramani, K.C.Patel, J.A.Patel and V. George (2004). Guan ane sukshma tavto no kheti ma upyog (Book in vernacular language). Published by Krishigovidya, December, 2004.

8. Maliwal, G.L., Patel, K.P, K.C. Patel and Patel, N.N. (2005). Suitability of industrial effluent water for irrigation around Vadodara industrial zone of Gujarat. Ecol. Env. And Cons. 8(1) : 123-128.

AGRICULTURAL METEOROLOGY

(1) G. B. Chaudhari, Vyas Pandey, R. P. Vadodaria, B. K. Bhatt and A. M. Shekh. 2004. Mustard growth and development in relation to interception of Photosynthetically active radiation. *J. of Agrometeorology* Vol. (6, Special issue): 38-42

(2) Vyas Pandey, G. B. Chaudhary, H. R. Patel, R. P. Vadodaria, B. K. Bhatt and A. M. Shekh. 2004. Radiation interception and radiation use efficiency in wheat an Anand. *J. of Agrometeorology* Vol. (6, Special issue): 43-46.

(3) Vyas Pandey, D. S. Patel, B. M. Patel and S. I. Patel. 2004. Effect of weather variables on outbreak and spread of powder mildew disease in Ber. *J. of Agrometeorology* Vol. (6, Special issue): 124-128.

(4) K. I. Patel, G.B. Chaudhary, Vyas Pandey and A. M. Shekh. 2004. Rainfall climatology of Gujarat state. *J. of Agrometeorology* Vol. (6, Special issue): 252-257.

(5) K. I. Patel, R. P. Vadodaria, G. B. Chaudhary, A. M. Shekh, H. R. Patel and M. B. Savani. 2004. Phenophase wise effect of weather on growth and development of cumin. J. of Agrometeorology. Vol 6 (Sp. Issue): 77-84.

(6) Shekh, A.M., Manoj Kumar, and R.S. Parmar. 2004. Land surface processes and hydrological cycle over Sabarmati river catchment area. *J. Appl. Hydrology*. Vol.XVII (4), Oct./Dec., 36-51.

(7) Chaudhari, G. B., A.M. Shekh, K.I. Patel and Manoj Kumar.2004. Relationship Between pigeonpea leaf area index and actual evapotranspiration. *J.Agrometeorol*. Vol.6:(Sp.Vol.), 33-37.

PLANT BREEDING, AGRICULTURAL BOTANY & BIO-TECHNOLOGY

(1) D.B. Patel, D.M. Barve and A.R. Mehta (2004). *In vitro* screening of somatic embryo for disease resistance in *Cajanus canan*. Crop Research, **27**(3).

(2) Dilip B. Patel; M. M. Bhatt; D. A. Patel; G. C. Jadeja and A. R. Pathak (2004).Variability for salinity tolerance in rice genotypes at germination stage. Research on Crops 5 (2&3) 168-175.

(3) D. A. Patel; G. C. Jadeja, D. B. Patel and J.S.Patel (2004). Heterosis for forage yield and its components in maize x teosinte hybrids. Forage Research 30(3) 145-148.

(4) Pathak, A. R. and Mehta, Atul M. (2004). "Contribution of Gujarat Agricultural University to the Rice Grain Revolution" Rice India (Journal of All India Rice Exporters Association) Vol. 14, No.7, Page : 28-30, July, 2004 (International Year of Rice).

(5) M.A.Patel, U.G.Fatteh, J.S.Patel, D.H.Patel and S.Sriram (2005). Hererosis in seasmum (*Sesamum indicum* L.) Crop Res. 29(2) : 259-264.

BIO-CHEMISTRY

(1) D.A. Dodia, Y.M. Shukla, L.D. Parmar, SBS Tikka and **J.C. Patel** (2004). Role of antinutritional factors on biology of *H. armigera* on Indian bean [*Lablab purpurous* (L.) Sweet]. *J. Arid Legumes*, **1**(1) : 38-40.

(2) M. V. Sreerekha, K. V. Patel, R. Bhatnagar and S. Sriram (2004). Distrubution of total withanolides in various plant parts of Ashwagandha (*W. somnifera*) accessions as influenced by light and dark reaction cycle. JMAPS 26(2004) 681-683.

AGRICULTURAL ENTOMOLOGY

(1) Jhala RC and Sisodiya DB (2004). Occurrence of a weevil, *Acythopeus* sp. (Coleoptera: Cucurlionidae) on little gourd, *Coccinia indica* in Gujarat. *Insect Environment*, 9 (4):156.

(2) Jhala RC and Sisodiya DB (2004). Outbreak of grasshopper, *Hieroglyphus nigrorepletus* Bolivar in Gujarat. *Insect Environment*, 9 (4):162.

(3) Jhala RC, Bharpoda TM, Chavda AJ and Sisodiya DB (2004). Record of *Leptoglossus australis* (Fabricius) [Heteroptera: Coreidae] on bitter gourd in Gujarat. *Insect Environment*, 9 (4):177-178.

(4) Jhala RC, Borad PK and Bharpoda TM (2004). Incidence of *Thrips Hawaiiensis* (Morgan) on Banana in Gujarat. *Insect Environment*, 10 (2):55.

(5) Patel MG, Sisodiya DB and Jhala RC (2004). Shalaparni, *Desmodium gangeticum* var. *maculatum* (L.) DC. A host of lemon butterfly, *Papilio demoles* Linnaeus. *Insect Environment*, 10 (2):87.

(6) Jhala RC, Sisodiya DB and Chavda AJ (2005). An unusual oviposition site of *Hieroglyphus nigrorepletus* Bolivar (Orthoptera: Acrididae). *Insect Environment*, 10 (3): 106.

(7) Jhala RC, Patel YC, Dabhi MC and Patel HM (2005). Upsurge of pumpkin caterpillar, *Margaronia indica* (Saunders) in cucurbits in Anand district of Gujarat. *Insect Environment*, 10 (3): 122.

(8) Yadav, D.N. and Anand Jha, 2003. Encouraging trichogramma spp. (Hymenoptera : Trichogrammatiae) by providing alternate host and aits impact on population of Earias vittella (Fabr.) in cotton. Pest Management and Economic Zoology, 11 (2) : 193-197.

PLANT PATHOLOGY

(1) Shih, S. L.; Tsai, W. S.; Green, S. K.; Hanson, P. M; Valand, G. B.; Kaloo, G.; Shrestha, S. K. and Joshi, S. (2003) Molecular characterization of a new tomato Begomo Virus from India. *Plant Disease* 87 (5) pp. 598

(2) Gohil, V.P; and Vala, D . G. (2003). Fungicides against sugarcane wilt (*Fusarium monliformae* Sheld) under pot conditions. *J. Phytology Res*. 16(2); 141-143.

(3) Patel, H. R.; Shekh, A. M. ; Patel, J. G. ; Mishra, A.; Valand, G. B. ; Patel, G. C. ; Pandey, R. N. and D. S. Mistry (2004). Early blight management and its effects on tuber yield of two potato cultivars under field environmental condition. *J. Agrometeorology* 6 (2) pp 229 – 233.

(4) Prajapati, K.S., R.C.Patel and A. R. Pathak (2004). Field Evaluation of new fungicides against blast of rice. Pesticide Research Journal vol. 16(2) : 26-28.

NEMATOLOGY

(1) Ansari, M.A., B.A. Patel, N.L. Mhase, D.J. Patel, A. Douaik and S.B. Sharma. 2004. Tolerance of chickpea (*Cicer arietinum* L.) lines to root-knot nematode, *Meloidogyne javanica* (Treub) Chitwood. 2004. Genetic Resources and Crop Evolution. 51:449-53.

(2) Patel, R.R., B.A. Patel and N.A. Thakar. 2004. Role of reniform nematode, *Rotylenchulus reniformis* in the incidence of root-rot, *Rhizoctonia bataticola* on cotton. Indian J. Nematol. 34(1):19-21.

(3) Patel, R.R., B.A. Patel and N.A. Thakar. 2004. Effect of granular nematicides on penetration of reniform nematode, *Rotylenchulus reniformis* in cotton. Indian J. Nematol. 34(1):104-105.

(4) Patel, R.R., B.A. Patel and N.A. Thakar. 2004. Pathogenicity of reniform nematode, *Rotylenchulus reniformis* on cotton. Indian J. Nematol. 34(1):106-107.

(5) Patel, R.G., B.A. Patel, H.R. Patel, R.V. Vyas and D.J. Patel. 2004. Distribution of Plant Parasitic Nematodes in banana growing areas of Central Gujarat. Indian J. Nematol. 34(2): 231-32.

(6) Pharindera Yadav, A. B. Maghodia and R. V. Vyas. (2004). Persistence Of Biopesticides On Chickpea. *International Chickpea and Pigeonpea Newsletter*, 11:41-43.

(7) J. B. Mathasoliya; A. B. Maghodia and R. V. Vyas. (2004). Efficacy of *Steinernema riobrave* against *Agrotis ipsilon* Hufnagel (Lepidoptera: Noctuidae) on potato. *Indian Journal of Nematology*,34(2):177-79

(8) R. V. Vyas; A. B. Maghodia; B. A. Patel and D. J. Patel. (2004). Interaction between root–knot nematodes and entomopathogenic nematode, *Steinernema riobrave*, on okra, *Abelmoschus esculentus* L. *International Journal of Nematology*,14(2):186-190.

EXTENSION EDUCATION

(1) Patel, K.P., N.B. Chauhan, Patel, K.C. and Patel, Nimesh (2005). Impact of use of effluent water in agriculture on various factors as perceived by the farmers. Eco. Env. & Cons. 11 (2) : 49-54.

(2) Dr. N.B. Chauhan, Patel, K.P. and Patel, Nimesh (2005). Consequences of use of effluent water in agriculture. Rural India, January-February, 2005 Vol. 68 : 8-12 & 18.

(3) Dr. A.S. Saiyad, B.S. Patel and Dr. V.B. Mayani (2004). Correlates of role perception and role performance of women sarpanchs in Panchayati Raj Institutions. *Rural India* February-March-2004 : 46-48.

B. FACULTIES OF DAIRY SCIENCE

DAIRY CHEMISTRY

1. A.G. Bhadania, N. S. Gojiya and V. R. Boghra (2004). Chemical composition and storage behaviour of khoa prepared in continuous scrapped surface heat exchanger. *J. Dairying, Foods and Home Sciences*. 23: 106-111.
2. A.G. Bhadania, V. R. Boghra and N. S. Gojiya (2004). Dudhmathi mavo banavana yantro Krushigovidhya, 57 (1) : 26-27.
3. Boghra, V. R. and Borkhatriya, V.N. (2004). Dudh ane Ghee man thati Bhelsel and teni rasaynic kasoti. Krushigovidya 56 (II) : 24-29
4. Boghra, V. R. and Borkhatriya, V.N. and Raj, M.M. (2004) Vaignanik Drastiye Dudh (in Gujarati). Godarshan, 14(4): 39-50.
5. Borkhatriya, V.N., Raj, M.M. anmd Boghra, V. R. (2004) Synthetic (Krutrim, Banavati) Dudh. (in Gujarati). Godarshan, 14 (4): 109-112.
6. Lata, R, S. Singh and Rathour A. K. (2004) Preparation of *Kulfis* from admixtures of partially deoiled groundnut meal and milk/milk powders and their chemical, microbiological and sensory qualities. J. Dairying Foods & H. S. 23(2): 87-93
7. B. M. Mehta,; V. N. Borkhatriya, and V. R. Boghra (2005). Enhancing the oxidative stability of ghee by Ragi (Eleusine coracana L). *Beverages & Food World*. 32: 48-50.
8. Lata, R, S. Singh and Rathour A. K. (2005) Preparation of *Kulfis* from admixtures of partially deoiled groundnut meal and milk/milk products. Natural Product Radiance 4(2): pp90-96.
9. M. M. Raj; V. N. Borkhatriya and V. R. Boghra (2005). Khadya Rango-Khorak ma Upayogita, Bhelsel ane Dharadhorano. *Krushigovidya*. 56: 33-36.

10. M. M. Raj; V. R. Boghra and V. N. Borkhatriya (2005). Organic Dudh: Swasthya suraksha ni Disha ma Aek Kadam. *Krushigovidya*. 56: 29-31.

DAIRY TECHNOLOGY

1. Pinto, Suneeta, Jana, A.H. and Upadhyay, K.G. (2004). Cholesterol removal from animal fats – a review. Beverage and Food World, 31(2): 68-72.

2. J S Patel, A G Bhadania, M J Solanky (2004). Equipments for Manufacture of Traditional Indian Dairy Products – A Review. Beverage & Food World 31(10): 58-61.

3. Pandya, A.J., Acharya, M.R., Goel, B.K. and Upadhyay, K.G. (2004). Heat Stability of Buffalo Milk - A review. Indian Journal of Dairy Science. 57, (3), 153–162.

4. Pinto, S.V.; Jana, A.H. and Solanky, M.J. (2004). Ginger juice based herbal ice cream and its physico-chemical and sensory characteristics. Indian J. Dairy Sci. **57**(5): 315-319.

5. H.G.Patel and K.G. Upadhyay (2004). Standardization of Processing Parameters for the Manufacture of Basundi – Pre-heating of Milk. Indian J Dairy Sci., **57**(2): 89-93.

6. H.G.Patel and K.G. Upadhyay (2004). Effect of Sequence of Homogenization on the Quality of Basundi. Indian J Dairy Sci., **57**(3): 163-166.

7. H.G.Patel and K.G. Upadhyay (2004). Substitution of Milk Solids By Sweet Cream Butter Milk Solids in The Manufacture of Basundi. Indian J Dairy Sci., **57**(4): 272-275.

8. H.G. Patel and K.G. Upadhyay (2004). Influence of Application of Post Production Heat Treatment (PPHT) on the Shelf-life of Basundi. Beverage & Food World, **31**(11): 64-70.

9. Gokhale, A.J., Pandya, A.J. and Upadhyay,K.G. (2004) Economics of Processed Cheese Spreads Manufactured Using Different Forms of Buttermilk Solids. Indian Journal of Dairy Science. 57, (3), 209-212.

10. Prajapati, J.P.; Patel, H.G.; Prajapati, P.S. and Solanky, M.J. (2004). Dairy Industry – an entrepreneur for employment. International Agri. Tech-Souvenir of Gujarat Agricultural University, Anand, India. 191-193.

11. Prajapati, J.P., Jana, A.H. and K.G. Upadhyay (2004). Microfluidization – a novel approach for homogenization. Indian Dairyman, **56** (3): 39-48.

12. Prajapati, J.P.; Patel, H.G. and Thakar, P.N. (2004). Active Packaging – A new approach for food preservation. Beverage and Food World, **31**(10) 48-52.

13. H.G.Patel, K.G. Upadhyay and J.P. Prajapati (2005). Influence of Methods of Milk Concentration on Physico-Chemical and Sensory Properties of Basundi. Indian J Dairy Sci., **58**(2): 85-89.

14. Jana, A.H. (2005). Safety measures for High-risk foods. Beverage and Food World, **32**(1) 28-30.

15. H. G. Patel (2005). Functionality of Cheeses. Indian Dairyman, **57**(2): 65-72.

16. H.G.Patel, J.P. Prajapati and K.G. Upadhyay (2005). Suitability of Different Packaging Materials for extension of Shelf-life of Basundi. Indian Food Packer, **59**(1): 58-66.

17. Ghodke, K.M. and Pandya, A.J. (2005). Impact of WTO on Indian Food Industry. Processed Food Industry 8, (6) 15 - 20.

18. Jana A.H. (2005). Dairy education at S.M.C. College of Dairy Science, Anand. **Indian Dairy Industry.** Annual Dairy Resource Book: Vol.1, 1st Edn., Chakraborty, G.C. (Editor), November, 2005, New Delhi, Dr. Chawla Dairy Information Centre Pvt. Ltd., pp.198-202.

19. Jana A.H. and Solanky, M.J. (2005). Standard for Mozzarella cheese. **Indian Dairy Industry**. Annual Dairy Resource Book: Vol.1, 1st Edn., Chakraborty, G.C. (Editor), November, 2005, New Delhi, Dr. Chawla Dairy Information Centre Pvt. Ltd., pp.198-202.

DAIRY ENGINEERING

1. Patel, J. S. and Bhadania, A. G. (2004). Heat Transfer Behaviour of Scraped Surface heat Exchanger during Manufacture of Sandesh. Processed Food Industry, September 2004.pp. 41-50.

2. Bhadania, A. G., Sunil Patel, Shah, B. P. and U. S. Shah (2004). Determination of Film Heat Transfer Co-efficient of Scraped Surface Heat Exchanger during Manufacture of Khoa. Indian Food Industry, *23* (3): 44-48.

3. Bhadania, A.G., Patel, S.M., Shah, B. P. and U. S. Shah (2004). Effect of Steam Pressure on Over All Heat Transfer Co-efficient of Scraped Surface Heat Exchanger during Manufacture of Khoa. Beverage and Food World. March-2004. Pp. 33-35.

4. Macwana, A. K. and Shah, B. P. (2004) Need of a Day for Learner/ students in the new millennium College Magazine- SMC College of Dairy Science, Anand., pp-22.

5. Goel. B.K.; Shah, U.S. and Shah, B.P. (2004). A New Approach for Cleaning Air for Process Industries. Indian Dairyman, **56** (9):43-46.

6. Patel, J. S. and Bhadania, A. G. (2005). Application of SSHE in Mechanization of Sandesh Making Process. Beverage and Food World, **32** (3): 46-47 and 50.

7. Rajashekhar, T.; Upadhyay, J. B. and Shah, B. P. (2005). 'Role of biosensors in Dairy and food processing industry' in Beverage and food world,33 (4): 21-24.

8. Goel, B.K., Shah B.P., Shah U.S., Sannabhadti, S.S. and Desai, H.K. (2005). Clean Air Production: Factors and Their Control, *Beverage and Food World*. April-2005. Pp. 24-26.

9. Shah, B.P., Sinil Patel, Bhadania, A.G. And Solanki, M.J. (2005). AAU Sweetens the Deal with Mechanized Basundi Machine. The Indian Express, Ahmedabad News Line, February 02, 2005.

10. Bhadania, A.G., Shah, B.P. and Shah, U.S. (2005). Energy Requirement in Scraped Surface Heat Exchanger (SSHE) during manufacture of Khoa. Institution of Engineers (I) Journal – Ag, **86** (6): 13-17.

11. Goel, B.K., Shah B.P., Shah U.S., Sannabhadti, S.S. and Desai, H.K. (2005). Air washing treatment to reduce Arial Microbial Load. *Indian Journal of Dairy Science*, **57** (5): 390-393.

C. FACULTIES OF VETERINARY SCIENCE

1. Shah, R.G., Dhami, A.J., Kharadi, V.B., Desai, P.M. and Kavani, F.S. (2004). Hormonal Profile in fertile and infertile postpartum Surti buffaloes. *Buffalo J.*, **20**(1): 29-42.

2. Rana, C.M. and Dhami, A.J. (2004). Physical attributes, intact acrosome, HOS test and freezability of semen of Gir and Jafarabadi bulls. *Indian Vet. J.*, **81**(4): 406-410.

3. Rana, C.M., Dhami, A.J. and Kavani, F.S. (2004). Post-thaw filtration of bovine semen through sephadex gel columns: Effect on the quality and HOS resistance of spermatozoa. *Indian J. Dairy Sci.*, **57**(2): 96-103.

4. Khasatiya, C.T., Desai, P.M. Dhami, A.J., Y.G. Dugwekar, Panchal, M.T. and Kavani, F.S. (2004). Effect of GnRH and PGF_2 alpha on reproductive performance and progesterone profile in postpartum true anoestrus and suboestrus Surti buffaloes. *Indian J. Dairy Sci.*, **57**(4): 334-339.

5. Pandya P.R., Gupta R.S., Talpada P.M., Patel G.R. and Desai M.C. (2005). Effect of complete feeds based on wheat straw and *Prosopis juliflora* pods on growth and reproductive performance of growing cross-bred heifers. *Indian J. Anim. Sci*. 75(1): 56-59

6. Pal M. (2004). Mycotic abortion in dairy animals. *Indian Dairyman* 56: 43-46.

7. Pal M. (2004) Etiology, diagnosis and management of avian aspergillosis. *Poultry Planner* 15-16.

8. Mahato V.; Pal M.; Makkar M.S.; Tripathi R.M.; Naurial D.S. and Mody S.K. (2004). *In-vitro* evaluation of aqueous extract of garlic and neem leaf against some pathogenic fungi. *Indian Journal of Animal Sciences* 74: 1126-1127.
9. Gobu,B. and Pal,M.(2005).Etiology and control of bovine mastitis. Dairy Planner. 3:11-13

10. Mahato V.; Pal M.; Makkar M.S.; Naurial D.S. and Mody S.K. (2005).Evaluation of some antifungal drugs against medically important fungi by broth dilution method. Journal of Veterinary Pharmacology and Toxicology 4:26-30.

11. Pal M. (2005). Importance of Zoonoses in public health. Indian Journal of Animal Science 75:586-591

12. Patil P.V., Tank P.H. Bhayani, D.M., Patil, D.B., Kelawala, N.H. and Parikh, P.V.(2004). Studies on the healing of unsutured urethrotomy wounds with and without the use of oxidized regenerated cellulose in dogs. Indian Vet. Med., J., 28(1): 45-48.

13. Ingnole, S.M., Barvalia, D.R., Patil, D.B., Kelawala, N.H. Parikh, P.V. and Tank, P.G.(2004). Intravenous regional anaesthesia of fore limb using bupivacaine, pentazocine, ketamine and buprinorphine alone or in combination in calves. Indian J. Vet. Surg. 25(1): 15-17.

14. Tank, P.H., (2004) Some observations on traumatic emergencies and their management in monkeys. Indian Vet. J., 28(2):, 187.

15. Patil P.V., Tank P.H. Patil, D.B., Parikh, P.V. and Kelawala, N.H.. (2004). Studies on the healing of sutured and unsutured prescrotal urethrotomy wounds in dogs. Indian J. Vet. Surg. 25(1): 34-35.
16. Tank, P.H., Vadodaria, V.P., and Jani, B.M. (2004) Equine jaundice-A report of three clinical cases. Indian Vet. Med. J., 28(3):288-290.

17. Shukla, B.P., D.B. patil, N.H. Kelawala, P.V. parikj and K.S. Prajapati (2004). Evaluation of antiadhesive agents for preventing intraabdominal adhesions in experimental cow calves. Indian J. Vet. Surg. 25(1): 21-25.

18. D.L. Pipalia, C.G. Joshi, D.N. Rank and J.V. Solanki (2004) PCR_SSCP Typing of MHC in Cattle and Buffaloes. Indian J. Anim. Sci. 74(6): 637-39.

19. G.M. Pandya, Satinder Singh, C.G. Joshi, D.N. Rank, Kuldeep Khanna, V.N. Barot and J.V. Solanki (2005). Association of LET-146 and MCW-43 Microsatellites With Body Weights in Bantam, Bantamised White Leghorn and White Leghorn Chicken. Indian J. Poult.Sci. 40 (1) : 9-15.

20. S.S. Shanaz, C.G. Joshi, M.K. Jhala, D.N. Rank, K. Khanna, V.N. Barot, B.P. Brahmkshtri, J.V. Solanki (2005) Molecular characterization of B-LB II family (class

II MHC) alleles in three strains of poultry and its association with immune response. Indian J. Poult. Sci. 40 (1) :1-8.

21. D.N.Rank, C.G. Joshi, V. Thiagarajan, P. Kanakraj and A.R. Krishnan (2004). Development of Somatic cell hybrids using buffalo Leucocytes and mouse cell line., Ind. Vet. J. 81: 156-159.

22. H.V. Goriya, Anil Kalia, S.K. Bhavsar, C.G. Joshi, D.N. Rank and A.M. Thakar(2005). Comparative evaluation of Phenobarbital-induced CYP3A and CYP2H1 gene expression by quantitative RT-PCR in Bantam, Bantamised White Leghorn and White Leghorn chicks. Journal of Veterinary Science 6 (4): 279-285.

23. Patel H.B.; Bhavsar S.K.; Thaker A.M.; N.Suresh Babu and Wadhwani K.N. (2004) Pharmacokinetics of ciprofloxacin following intravenous and intramuscular administration in Sheep. Journal of Veterinary Pharmacology and Toxicology. 3(1 & 2), 35-38.

24. Bhavsar S.K.; Verma M.P. and Thaker A.M. (2004) Pharmacokinetics, tissue concentration, and safety of multiple dose Intravenous administration of ciprofloxacin in cow calves. Journal of Veterinary Pharmacology and Toxicology. 3(1 & 2), 27-34.

25. R. G. Jani (2004) A Case study of pneumo enteritis in an African grey parrot. Indian Vet. J. 81(8): 1170.

26. R.G. Jani (2004). Epidemiological study of diarrhoeas in dogs of Gujarat State Indian Vet.J. 81(7): 800-802.

27. D.B.Patil, N.JH. Kelawala, C.N. Bhuva, R.G. jani, R.H. Hirapara and R. Katara (2004) Ventral hemioplasty in a lion (Panthera leo)- A clinical report. Zoo''s Print Journal Vol. 20(5): 1878.

28. R.G. Jani and P.R. Patel (2005) Efficacy of Fenbendazole Against Ascariasis in Rural Buffalo Calves of Gujarat State. The Blue Cross Book (Intervet) 23: 15.

29. Mandli G.C., Patel P.R., Dhami A.J. and Raval S.K. (2004) Epidemiological Surveillance on effect of housing, hygiene and nutritional status on periparturient disorders in buffaloes. Indian Journal of Dairy Science 57(2): 132-136.

30. G.C. Mandli, P.R.Patel, R.S. Joshi, A.J. Dhami and S.K. Raval(2004) Technoeconomics of periparturient disorders in dairy buffaloes of rural Gujarat Indian Journal of Veterinary Medicine 24(2): 84-89

31. Dugwekar, Y.G., Patel, D.M., Sarvaiya, N.P. and Patel, A.V. (2004). Induction and synchronization of estrus in cows treated with PGf2 alpha By two different routes. Ind. J. of Anim. Reprod., 24(2)163-64.

32. Sarvaiya, N.P. and Pathak M.M. (2003). Effect of Cryopreservation on caprine embryo morphology. Indian J. of Veterinary Anatomy. 15(1-2):7-12.

33. Pathak, M.M., Sarvaiya N.P. and Tiwari, S.R. (2004) Blood biochemical parameters during early post-partum period of Surti buffaloes in relation to placental expulsion time, Indian J. of Animal Reprod., Accepted for publication.

34. Trivedi, M.M., Parnerkar, S. and Patel, A.M. (2005). Effect of feeding non-conventional creep mixtures on growth performance of pre-weaned lambs. *International J. Agric. Biol.*, **7**(2):175-179.

35. Trivedi, M.M. and Patel, J.M. (2004). Age and weight at first conception and calving in inter-se Jersey x Kankrej heifers. *Indian J. Anim. Reprod*., **25**(1): 50-51.

36. Pal M. (2004). Blastomycosis : A fungal zoonosis. Veterinary World 2: 15-16.

37. Pal M. (2004). Chlamydiosis: An anthropozoonosis. Veterinary World 3: 5-7.

38. Pal M. (2004). Histoplasmosis: A fungal zoonosis. Veterinary World 2: 13-15.

39. Pal M.; Simaria M.B.; Thomas L. and Menezes R. (2004). Isolation of *Cryptococcus neoformans* from the faecal matter of psittacine birds on Pal's medium. Procedings of European Association of Zoo and Wildlife Veterinarian, Switzerland.

40. Pal M. (2004). Anthrax: An animal disease lethal to man. Veterinary World 3: 17-18.

41. Pal M. (2004) *Aspergillus fumigatus* isolated from ornamental plants in India. Revista Iberoamericana De Micologia 21: 218

42. Pal M. (2005). Diagnosis of dermatophytosis. Veterinary World 3: 304-305.

43. Pal M. (2005).Newcastle disease: A viral anthropozoonosis. Veterinary World 3: 323-325.

44. Pal M. (2005).Coccidiomycosis: A mycotic zoonosis. Veterinary World 3: 10-13.

45. Pal M. (2005). Diagnosis of cryptococcosis. Veterinary World 3: 368-370.

46. Pal, M .and Purohit, S.K.(2005).Echinococcosis: A helminthc zoonosis. Veterinary World 3: 21-24.

47. Pal M. (2005). Prvalance of *Cryptococcus neoformans* in faecal matter of caged parrots.Verh.ber.Erkrg.Zootier 42:

48. Pal, M.and Singh, M.P (2005). Dermatophytosis. A common fungal zoonosis Veterinary World 3: 5-8.

49. Pal M. (2005). Role of *Geotrichum candidum* in canine oral ulcers. Revista Iberoamericana De Micologia 22: 183.

50. Pal M. and Dave P. (2005).Tinea faciei in agoat handler due to *Microsporum canis*. Revista Iberoamericana De Micologia 22: 181-182.

51. Pal,M;Vyas,Y.L;Panchal,K.M;Bhayani,D.M and Dubal,S.C. (2005). Actinomycosis in man and animals. Veterinary World 3: 13-15.

Annexure-II

A. FACULTIES OF AGRICULTURE

AGRONOMY AND WEED SCIENCE

(1) Patel, R. H., Soumyadeep Dutta and Usadadia, V. P. (2004). Effect of irrigation schedule and N on growth and grain yield of amaranthus. *National Symposium* – 22-25th Nov., 2004 at Ludhiana.

(2) Patel, R. B.; Patel, B. D. and Meisuriya, M. I. (2004).Persistence of dinitroaniline herbicides in sandy loam soil under onion-pearlmillet cropping system. Paper presented in National seminar on development in soil science-2004 held at N. G. RAU, Hyderabad during Oct. 27-28, 2004.

(3) Patel, R. B.; Patel, B. D. and Meisuriya, M. I. (2004). Effect of fluchloralin and metribuzin applied with and without Farm Yard Manure on soil properties under potato crop. Paper presented in National seminar on development in soil science-2004 held at N. G. RAU, Hyderabad during Oct. 27-28, 2004.

(4) D.H.Patel, K.V.Patel, S.Sriram and P.N.Upadhyay (2004). Economics of aswagandha (*Withania somnifera*) crop as influenced by method of sowing, harvesting time and nitrogen levels. Presented in National Seminar on Diversification of Agriculture through Horticultural crop. Organized by IARI & NHRDF, Karnal. Held during February 21-22.

(5) D.B.Panchal, D. H. Patel and K.V.Patel (2004). Performance of *Chlorophytum boriviliamum* under different organic manures and spacing on yield. Paper presented in XXXVIth Annual Convention and Symposium on Soil Science at Anand.

(6) S.Sriram and N. V. Upadhyay (2005). Development of medicinal plants in Gujarat State an overview. Presented the first meting of the working group for the development of Medicinal Plants in Gujarat State held at Gujarat Ayurved University, Jamnagar.

AGRICULTURAL METEOROLOGY

(1) Vyas Pandey, R. P. Vadodaria, B. K. Bhatt, V.S. Kumpavat and A.M. Shekh. 2004. Evaluation of CROPGRO-peanut model for two genotypes under different management practices in Gujarat, India. Paper accepted for presentation in ASAE 2005, in session 302a to be held during 17-20 July 2005 at Tampa, Florida, USA.

(2) Alessandro Dell'Acqua, Manoj Kumar and Anni Määttänen**.** 2004**.** Aerosol properties, motion, Standards and Aerosol sampling. Intensive Course on Measurement of atmospheric Aerosols: *Aerosol physics, sampling and measurement techniques* at University of Helsinki, Hyytiälä, Finland from May 22- 27, 2004.

(3) Shekh, A.M., H.R. Patel, K.I. Patel, Manjusha Kulshrestha, R.S. Parmar and Manoj Kumar. 2005. Rainfall prediction and its impact. National Seminar on "Monsoon-

2005: Ancient & Modern Techniques" organized by AAU, Anand & Govt. of Gujarat held at MGLI, Ahmedabad on June 20-21, 2005.

AGRICULTURAL BOTANY & BIO-TECHNOLOGY

(1) H. G. Vyas (2005). Use of Biopesticides for Insect Control and Sustainable Agriculture. The proceedings of Regional symposium on Microbial Technology held on 22-23, January, 2005 at Gujarat University, Ahmedabad.

(2) R.K.Solanki, Roshni Samarth, R. S. Fougat & G.C.Jadeja (2004). The analysis on pollen mother cell meiosis in *Chlorophytum borivilianum*. A paper presented in UGC sponsored seminar on Plant Morphogenesis, organized by P. G. Centre in Botany, Smt. S. M. Panchal Science College, Talod on 26-27th September, 2004

PLANT BREEDING AND CYTOGENETICS

(1) K. K. Patel, R. R. Acharya, Sasidharan N., A. D. Patel, B. R. Patel and M. R. Saiyad (2005). Genetic architecture of yield and it's components in castor (*Ricinus Communis* L.) over environment 19th Gujarat Science Congress an Recent Advances in Science and Technology on 19-2-05 at V. V. Nagar, Anand.

(2) K. K. Patel, R. R. Acharya, Sasidharan N., A. D. Patel, B. R. Patel and M. R. Saiyad (2005). Genetic analysis of oil content plant stature and earliness over environments (In) 19th Gujarat Science Congress and Recent Advances in Science and Technology on 19-2-05 at V. V. Nagar, Anand.

(3) Sasidharan N., Patel B.R., Patel, A.D., Saiyad M.R. And Patel K.K. (2004). Yield maximization in Groundnut through frontline demonstrations. National symposium on Enhancing productivity of Groundnut for sustaining food and nutritional security Oct. 11-13,2004.

(4) Sasidharan N. (2005). Genetic analysis for yield and quality in castor (*R. communis*) under diverse environment. Unpublished Ph.D. thesis, Anand Agricultural University, Anand.

(5) Saiyad M.R., A. D. Patel, B.C. Patel, K.K. Patel and Shashidharan, N (2005). Stability analysis for seed yield and pod yield in some newly developed cowpea lines (In) 19th Gujarat Science Congress on Recent Advances in Science and Technology held at V. V. Nagar organized by S. P. University and Gujarat Science Academy local chapter V. V. Nagar on 19th February-2005.

(6) Saiyad M.R., A. D. Patel, B. C. Patel, R. M. Patel and D. J. Parmar (2005). Correlation studies on seed yield and other quantitative characters in cowpea (*Vigna ungiculata*). (In) 19th Gujarat Science Congress on Recent Advances in Science and Technology held at V.V. Nagar organized by S.P. University and Gujarat Science Academy local chapter V. V. Nagar on 19th February-2005.

(7) Patel D.R. (2004). Role of plant tissue culture in value addition and export promotion of horticultural crops. Paper presented at national seminar on "Advances in value addition of horticultural crops" at N.A.U. Navsari (17-18, Sep. 2004) PP 19-20.

(8) Mehta, Atul M., R.G. Patil, A. R. Pathak,S. G. Patel and J. G. Patel (2004). "Release of a salinity tolerant culture Dandi for coastal saline environment of the Gujarat State". Abstract 054 Crop Improvement: Vol. I, in International Symposium on Rice: From Green Revolution to Gene Revolution held at DRR, Hyderabad during October $4^{th} – 6^{th}$, 2004 Page : 92.

(9) Pathak, A. R., A. M. Mehta, V. P. Patel, J. Witcombe and J. P. Yadvendra (2004) "Genetic Evaluation of Rainfed Upland Rice Genotyes through participatory approaches in the Gujarat State". Abstract in International symposium Rainfed Rice Ecosystems: Perspective and Potential held at IGAU, Raipur (Chhattisgadh) during 11-13 October, 2004, Page : 256-257.

(10) Mehta, Atul M., A. R. Pathak, D. B. Parmar and Z. Dhimmer, 2004. "Genetic Improvement of Rice varieties for Rainfed Upland Ecosystem of the Guajrat State: Abstract in International symposium Rainfed Rice Ecosystems: Perspective and Poential held at IGAU, Raipur (Chhattisgadh) during 11-13 October, 2004. Page: 62.

(11) Pathak, A. R., A. M. Mehta, H. D. Mehta, R. D. Vashi, S. G. Patel and J. G. Patel (2004). "Genetic Improvement of Rice Varieties with inbuilt biotic stress tolerance for irrigated environment of the Gujarat State". Abstract 009 Crop Improvement: Vol. I, in International Symposium on Rice: From Rice Green Revolution to Gene Revolution held at DRR, Hyderanad during October 4-6, 2004, Page : 17-18.

(12) Pathak, A. R., A. M. Mehta, D. B. Parmar, S. G. Patel and J. G. Patel (2004). "Genetic Evaluation of promising Rice cultures of the Gujarat State under water limited environments" Abstract in National Conference on Increasing Rice Production under water limited environment held at Birsa Agricultural University, Ranchi, Jharkhand during December 3-4, 2004, Page: 31.

(13) Mehta, Atul M., R. N. Misra, S. K. Nadaf, R. Parmeshwarappa, M.S.K.Shetty, M. V.C.Gowda and J. V. Goud (2004). "Chhromosomal Location of Genes for Awning and awn Colour through Primary Trisomics of *Indica* Rice [*Oryza Sativa* L.]. Abstract : 055Crop Improvement Vol. I, in International Symposium on Rice From Green Revolution to Gene Revolution held at DRR, Hyderabad during October 4-6, 2004, Page: 93.

(14) Pathak, A. R., A. M. Mehta, J. G. Patel and S. G. Patel (2004): "Evaluation of test crosses for isolation of maintainers, restorers and heterotic hybrids in rice" Abstract 059 Crop Improvement : Vol. I, in International Symposium on Rice: From Green Revolution to Gene Revolution held at DRR, Hyderabad during October 4-6, 2004, Page : 99-100.

(15) Pathak, A. R., Autl M. Mehta, P.P.Chaudhary, S. G. Patel and J. G. Patel (2004). "Rice Varietal Improvement for Rainfed Transplanted Ecosystem in the Gujarat State" in National Symposium on "Recent Advances in Rice-based Farming Systems" held at CRRI, Cuttack during 17-19 November, 2004, Page : 14.

BIO-CHEMISTRY

(1) Dodia, D.A., Prajapati, B.G., Shukla, Y.M., Patel, J.C., Parmar, L.D. and Tikka, S.B.S. Correlation of plant nutritional factors on biology of *Heliocoverpa armigera* (hard wick) on Indian bean (National symposium on Arid Legumes for sustainable Agriculture and Trade - 5-7 Nov., 2004).

(2) Patel, J.C. and Hari, T.K. Influence of P solubilizing microorganisms, levels of P and FYM on soil nutrients availability and performance of fodder sorghum (National seminar on Development in soil science : 2004, 69th Annual Convention (27-30 Nov., 2004) held at ANGRAU, Hyderabad.

(3) V.P. Suthar, N.J. Patel and R. Bhatnagar. Influence of salt stress on protein profile of rice genotypes. Paper presented in the National Symposium on Stress management in arid and semi arid ecosystems for productivity enhancement in agriculture on sustainable basis organized by Sardarkrushinagar Dantiwada Agril. Univ., Sardarkrushinagar on April 11-13, 2005, p.52.

(4) H.E. Patil, M.K. Mahatma, V.P. Suthar, N.J. Patel, J.C. Jadeja and R. Bhatnagar. Differential antioxidant enzyme activity and proline content of pearlmillet (*Pennisetum ammericanum* (L.) hybrids under terminal water stress condition, p.53.

(5) D.A. Dodia, J.R. Patel, Y.M. Shukla, S.B.S. Tikka and L.D. Parmar. Correlation studies of biochemical parameters involved for resistance against pod borer helicoverpa armigera in pigeonpea, p.107.

(6) J.G. Talati, Y.M. Shukla, N.J. Patel and J.C. Patel. Changes in oxido-reducatase enzymes activities during root knot nematode (*Meloidogyne javanica* Pt. 2) infection in root tissues of fennel seedlings, p.110.

(7) Y.M. Shukla, J.G. Talati, N.J. Patel and JC. Patel, Biochemical alterations during root knot nematode (*Meloidogyne javanica* Pt. 2) infection in root tissues of fenugreek seedlings, p.110.

AGRICULTURAL ENTOMOLOGY

(1) Jhala RC (2004). Some observations on sex pheromones used for pest control in Gujarat. Paper presented at the UK, DFID, Sponsored Workshop on *Enabling SME's to promote pheromone-based pest control strategies in South Asia* held at Silver Oak Resort, Bangalore on May 25-26, 2004. Abstract, p. 55-56.

(2) Jhala RC, Patel MG, Patel YC and Chavda AJ (2005). Extent of parasitism by *Trathala flavo-orbitalis* (Cameron) to *Leucinodes orbonalis* Guenee in middle Gujarat. National Symposium on *Biodiversity and Insect Pest Management,* February 3-4, 2005, Entomology Research Institute, Loyola College, Chennai – 600 035. *Abstract:* G6, p. 45.

(3) Jhala RC and Rai AB (2005). Biotic potential and life-table studies of *Helicoverpa armigera* infesting important crops of agricultural significance. *Souvenir: National Symposium on Helicoverpa management – A National Challenge,* February 27-28, 2005, Indian Institute of Pulses Research, Kanpur-208 024 (Uttar Pradesh). Pp. 28-26.

(4) Cork A, Alam SN, Talekar NS and Jhala RC (2005). Development and commercialization of mass trapping for control of brinjal borer in South Asia. *Fourth International Conference on Bio-pesticides: Phytochemicals and natural products for the progress of mankind*. February 13 – 18, 2005, Chiang Mai, Thiland. (Abstract).

(5) Dabhi MV, Patel CC and Patel YC (2005). Seasonal abundance of lucerne pod borer, *Helicoverpa armigera* (Hubner) Hardwick. National Symposium on "Biodiversity and Insect Pest Management" February 3-4, 2005; Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034, Abstract No. G3, p. 43-44.

(6) Patel DB, Borad PK and Vaishnav PR (2005). Population abundance of *Orthaga eudrusalis* Walker in Mango. National Symposium on "Biodiversity and Insect Pest Management" February 3-4, 2005; Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034, Abstract No., G-2, p.43.

(7) Patel MJ, Borad PK and Vaishnav PR (2005). Population abundance of *Thrips tabaci* Lind. in cabbage. National Symposium on "Biodiversity and Insect Pest Management" February 3-4, 2005; Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034, Abstract No., G-10, p.47-48.

(8) Patel HM, Borad PK and Korat DM (2005). Natural enemies of *Aphis gossypii* Glover infesting isabgol. National Symposium on "Biodiversity and Insect Pest Management" February 3-4, 2005; Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034, Abstract No., G-13, p.50

(9) Pitlera Suresh, Borad PK and Korat DM. (2005). Host range of *Liriomyza trifolii* (Burgess) in middle Gujarat region. National Symposium on "Biodiversity and Insect Pest Management" February 3-4, 2005; Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034, Abstract No., G-14, p.51.

(10) Dr. R. C. Jhala attended workshop on *Enabling Small and Medium Enterprises to promote Pheromone-based Pest Control Technologies in South Asia* sponsored by DFID, UK and organized by University of Greenwich, UK; Bio-control Laboratories Ltd., Bangalore and Asthagiri Herbal Research Foundation, Chennai, India at Silver Oak Resort, Bangalore on May 25-26, 2004.

(11) Dr. M. G. Patel attended training programme on "Emerging trends in Biological Control" from 02-08-2004 at Project Directorate of Biological Control, Bangalore.

(12) Dr. R. C. Jhala attended a seminar on *Current status of Vultures in Gujarat sponsored* by Bird Conservation Society, Gujarat held at B. A. College of Agriculture, AAU, Anand on September 19, 2004.

(13) Dr. R. C. Jhala attended a Annual Review Meeting of Agro-Advisory Services & First Meeting of Economic Impact Assessments of Agro-Advisory Service, Sponsored by ICAR, New Delhi, held at AAU, Anand on October 25-27, 2004.

(14) Dr. R. C. Jhala, Dr. M. G. Patel and Shri A. J. Chavda attended Mid Term Review Workshop of the project on "Implementation *and Promotion of IPM strategy for the control of eggplant fruit and shoot borer (Leucinodes orbonalis) in Indo-Gangetic Plains of South Asia***"** sponsored by DFID (UK), organized by IIVR, Varanasi & AVRDC, Taiwan at IIVR, Varanasi on November 01-03, 2004.

(15) Dr. R. C. Jhala and Mr. D. B. Sisodiya attended review Workshop of the project "Integrated Management of Fruit Flies (Diptera: Tephritidae) in India (IMFFI)" held during January 10-12, 2005 at CAB International, Pusa, New Delhi.

(16) Dr. R. C. Jhala, Dr. P. K. Borad, Dr. M. G. Patel and Prof. T. M. Bharpoda attended a Seminar (*Parisanvad)* on *Sankalit Rog-Jivat Niyantran* organized by Plant Protection Association of Gujarat on February 19, 2005 at Sardar Krushinagar, SKDAU, Dantiwada, District Banaskantha, Gujarat.

(17) Dr. P. K. Borad and Shri M. V. Dabhi attended a National Symposium on "Biodiversity and Insect Pest Management" organized by Entomology Research Institute, Loyola College, Nungambakkam, Chennai- 600 034 during February 3-4, 2005.

NEMATOLOGY

(1) Patel, B.A., S.K. Patel, N.B. Patel, N.S. Patel and D.J. Patel. 2004. Integrated management of *Meloidogyne javanica* pathotype 2 in pigeonpea. National Symposium on Paradigms in Nematological Research for Biodynamic Farming, organized by Nematological Society of India and University of Agricultural Sciences at Bangalore on Nov. 17-19, 2004. pp. 78-79 (abstr.).

(2) Patel, B.A., R.V. Vyas and J.G. Patel. 2004. Non-chemical management of root knot nematodes in turmeric. National Symposium on Commercialization of Spices, Medicinal and Aromatic Crops, organized by Indian Society for Spices at Indian Institute of Spices Research, Calicut on Nov. 1-2, 2004. pp. 21-22 (abstr.).

PLANT PATHOLOGY

(1) Patil, R.K.; Goyal, S.N. Vora, M.S. and Patel, H.M. (2004). Efficacy of combined inoculation of *Azosprillum* and Phospo culture on growth and yield of kharif maize. Paper presented in ISMPP Symposium held at Goa University, Goa. October 7-9, 2004.

(2) Upadhyay, P.D. and Gohil, V.P. (2003). Utilization of Agricultural wastes for cultivation of Oyster mushroom. Paper presented in ISMPP Symposium held at Goa University, Goa. October 7-9, 2004.

B. FACULTIES OF DAIRY SCIENCE

DAIRY CHEMISTRY

1. Borkhatriya V.N. and Singh S. (2004). Peanut Butter: A potential value added product from groundnut. In souvenir Seminar on Post Harvest Technology at 8th January, 2004, APPE, International Agritech-Fair 2004, GAU, Anand.
2. Komal Upadhyay, Borkhatriya, V.N., Lata R., Gojiya, N.S. and Singh S. (2004) Chemical and Sensory quality of different types of Sev (noodles) prepared by microwave oven method poster presentation certificate (December9-10, 2004) 16th Indian Convention of Food Scientist and Technologist 2004, AFST India, Mysore.
3. P. H. Rathod, M. M. Raj and V. R. Boghra (2004). Khadhyapadarthoma thati bhelsel ane teni parakh. In Souvenir, International Agricultural Fair held at Anand. pp:194-196.
4. Singh, S. (2004) Potential applications of groundnut ingredients and proteins in food and current status of their functional properties. Technical paper presentation at 32nd Meeting of AGRESCO Sub-Committee on Dairy Science, AAU, Anand.
5. Borkhatriya, V.N., Zinzala, V,J,, Singh S., and Boghra, V. R. (2005). Legal and safety aspects of veterinary drug residues in milk and milk products. In National seminar on Food Safety, Food Laws and Standards relevant to Dairy Industry - A Souvenir (April 23-24, 2005) S.M.C. College of Dairy Science, AAU, Anand (Gujarat) pp 89-95.

DAIRY TECHNOLOGY

1. Patel, H.G.; Prajapati, J.P.; Pandya, A.J. and Solanky, M.J.(2004). *Dudh ni sari gunvattawali pedasho banavava ni gargatthu rit*. (Methods of preparation of good quality milk products at home). In Souvenir brought out on the occasion of International Agri. Tech-Souvenir of Gujarat Agricultural University, Anand, India. 5-9 January, 2004, pp:188-190.

2. H. G. Patel (2004). Cheddar Cheese Making. Course Material for Training programme on "Dairy Technology for Non-Dairy Technologists" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.p.66-67.

3. H. G. Patel (2004). Processed Cheese Making. Course Material for Training programme on "Dairy Technology for Non-Dairy Technologists" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.p.75-80.

4. H. G. Patel (2004). Basics of Ice Cream Manufacturing. Course Material for Training programme on "Dairy Technology for Non-Dairy Technologists" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.p.75-80.

5. Atanu Jana (2004). Basics of Ghee, Butteroil and Fat Spread. In Course material for Training Programme on "Dairy Technology for Non-Dairy Technologists" organized jointly by Vidya Dairy, A.A.U., Anand and S.M.C. College of Dairy Science, A.A.U., Anand on 21st September. pp. 44-49.

6. Atanu Jana (2004). Safety measures for High-risk foods. In "Food Safety" compendium published on the occasion of Regional Training-cum-workshop on Food Safety on 24th September organized by the Dept. of Foods and Nutrition and WHO Collaborating Centre, Faculty of Home Science, M.S. University of Baroda, Vadodara, pp. 16-24.

7. Atanu Jana (2004). Comparative appraisal of analogue and natural Mozzarella cheeses as a topping on pizza and for cost. Presented at Synergism-2004: New Horizons in Food Technology organized by University College of Technology, Osmania University, Hyderabad on 5th March.

8. Atanu Jana (2004). Safety measures for High-risk Foods. Invited lecture at the Food Safety Training-cum-workshop at C.C. Mehta Auditorium, University Campus, Vadodara on 24th September, organized by Dept. of Foods and Nutrition and WHO Collaborating Centre, Faculty of Home Science, M.S. University of Baroda.

9. Solanky, M.J. (2005). New Trends in Packaging. Workshop on "Food Product Development and Capacity Building Towards Entrepreneurship" organized by DSA programme of Deptt. Of Foods & Nutrition & WHO Collaborating Centre, faculty of Home Science, Maharaja Sayajirao University, Vadodara.

10. Prajapati P.S. (2005). Essentials of Ice Cream Making. Course Material for Training programme on "Dairy Technology for Non-Dairy Technologists" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.p.69-74.

11. Solanky, M.J. (2005). Recent Trends in Dairy Technology on Process Innovation. Lecture delivered at Amul Dairy during National Technology Day celebration, organized by Amul Research & Development Association, Amul Dairy, Anand.

12. V.N. Borkatriya, V.J.Zizala and M.J. Solanky (2005). Safety and regulatory aspects of chemical migrants from packaging materials to foods. In Souvenir of National seminar on "Food Safety, Food Laws and Standards Relevant to Dairy Industry" organized by SMC College of Dairy Science, AAU, Anand on April 23, pp 81-87.

13. B. M. Mehta and M.J. Solanky (2005). Food safety and regulations for dairy industry. In Souvenir of National seminar on "Food Safety, Food Laws and Standards Relevant to Dairy Industry" organized by SMC College of Dairy Science, AAU, Anand on April 23, pp 101-107.

14. H. G. Patel (2005). Testing of Packaging materials used for packaging Milk and Milk Products. Compendium for the training programme on "Chemical & Microbiological Analysis of Milk Products" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.

15. Prajapati PS (2005). Sensory Evaluation of Milk and Dairy Products Compendium for the training programme on "Chemical & Microbiological Analysis of Milk Products" conducted by Faculty of Dairy Science & Vidya Dairy for Dairy Plant Personnel.

16. Solanki M.J. and Prajapati P.S. (2005). Whey management in Dairy Industry. Paper presented at 30th Annual Convention of Indian Agricultural Universities Association held by S D Agricultural University, S K Nagar on Effective Agricultural Waste Management during 27-28 Dec.PP:23-28.

17. Pandya A.J. and Patel H.G. (2005). Certain aspects of Dahi – a fermented traditional milk product of India. In Fermented Foods, Health Status and Social Well-being. Second International Conference by Swedish South Asian Network on Fermented Foods, pp:151-157, held during Dec. 17-18, 2005 at AAU, Anand.

18. J.P. Prajapati, M.J. Solanky and H.G. Patel (2005). Dairying – A Tool for Entrepreneurship. In National Workshop on Entrepreneurship Development in Dairy and Food Industry, pp: 80-83, held on Dec. 23,2005 at NDRI, Karnal.

DAIRY ENGINEERING

1. Patel Sunil and Shah, B. P. (2004). Microwave Processing-An emerging trends in dairy and food industry. Paper presented in National seminar on "New Horizons in Food Technology". A Souvenir on National seminar on "New Horizons in Food Technology", organized by University College of Technology, Osmania University, Hyderabad.5th March 5, 2004.Pg:7.

2. Patel Sunil and Bhadania, A. G. (2004). Microfluidization: A New Concept in Dairy and Food Industry. National seminar on "New Horizons in Food Technology". A Souvenir on National seminar on "New Horizons in Food Technology", organized by University College of Technology, Osmania University, Hyderabad.5th March 5, 2004.Pg:37.

3. Shah, B.P., Patel Sunil M., Bhadania, A. G. and Solanki, M.J. (2004) Development in Mechanization of Basundi Making. Research work during the year 2004 under ICAR Network Project was presented in ICAR research work review committee held at Banglore on Augest 10, 2004.

4. Patel, J. S.; Bhadania, A. G.; Shah, B. P and M. J. Solanky (2005). Scraped Surface Heat Exchanger for Mechanization of Sandesh Making. Souvenir, 39th Annual convention and Symposium of Indian Society of Agricultural Engineers. March 9-11, organized at Acharya N. G. Ranga Agicultural University, Rajendranagar, Hyderabad-500 030.

5. Shah, B.P., Rajasekhar, T. Upadhyay, J.B. and Patel, H.R. (2005). Design of Vacuum Operated Bottle Filling Machine. XIXth Gujarat Science Congress held at Vallabh Vidyanagar on February 19, 2005.

6. Rajasekhar, T., Shah, B.P. and Shah, R.R. (2005). Design and Performance Evaluation of Hydraulic Ram having simple non return valve. XIXth Gujarat Science Congress held at Vallabh Vidyanagar on February 19, 2005.

7. Patel, J.S., Bhadania, A.G., Shah, B.P. and Solanki, M.J. (2005). Scraped Surface Heat Exchanger for Mechanization of Sandesh Makin. 39th Annual Convention and Symposium of Indian Society of Agricultural Engineers held at Hyderabad, on March 9-11, 2005.

8. Deulgaonkar, N.M., Shah, B.P. and Shah, R.R. (2005). Energy Conservation in Dairy Industry Cogeneration. 19th Gujarat Science Congress held on February 19, 2005 at Vallabh Vidyanagar.

9. Dhotre, A.V., Shah, B.P. and Shah, R.R. (2005). Design Considerations for milk silo. 19th Gujarat Science Congress held on February 19, 2005 at Vallabh Vidyanagar.

DAIRY MICROBIOLOGY

Sr. No.	Author(s) Name	Title of Publication	Details of the Seminar/Conference
1.	Behare PV and Prajapati JB	Studies on enhancing the shelf-life of fermented milk.	45th Annual Conference of AMI, November 23-25, 2004 at NDRI, Karnal, pp. 50, 2004.
2.	Pandey A and Prajapati JB	Microbiological quality of fruit juices in Anand city	45th Annual Conference of AMI, November 23-25, 2004 at NDRI, Karnal, pp. 65, 2004.
3.	Prajapati JB and BM Nair	Fermented foods for health promotion and social well-being	45th Annual Conference of AMI, November 23-25, 2004 at NDRI, Karnal, pp.51, 2004.
4.	Prajapati JB and Lata R	Fermented milk foods and nutritional status of rural people	16th Indian Convention of Food Scientists & Technologists, December 9-10, 2004 at CFTRI & DFRL, Mysore, pp. 41-42, 2004.
5.	Prajapati JB and Gokulakrishnan SS	Quality-emerging prerequisite for Indian Dairy Industry. Invited talk presented at National seminar on Food Safety and Quality Control in India	Acharya NG Ranga Agricultural University and ICAR, March 2-4, 2005, Hyderabad, 2005.

6.	Shah R. K.	Biotechnology of milk-plant based functional foods containing probiotic cultures (oral presentation) in Applications of Biotechnology in Food Processing	National Seminar on " Biotechnology: A tool for sustainable agricultural production" organized by Gujarat Agricultural University, Anand, January 5-6, 2004, Souvenir, pp. 26-27, 2004.
7.	Shah R. K.	New Avenues in Food Biotechnology	One day Symposium on " Investment Opportunities in Biotechnology" organized at Pharmaceutical Education and Research Development (PERD) Centre, Gandhinagar on 29th December 2004, pp. 1-23, 2004.
8.	Shah R. K.	Role of Synbiotics & Their Impact on Modulation of Micro flora.	Regional Symposium on Microbial Biotechnology, organized by Department of Microbiology, Gujarat University, Amdavad, 22-23 January, 2005, pp11-13, 2005.

C. FACULTIES OF VETERINARY SCIENCE

1. Joshi R.S., Barod, V.N., Patel, A.B., Savaliya, F.P., Mishra, R.K., Paleja, H.I. and Khanna, K. (2005) A Genetic study on eff production traits of White Leghorn.XXIII Annual Conference of India Poultry Science Association and National Symposium on "Indian Poultry Production in Changed Global Scenario: Challenges and Opportunities" at Hyderabad from 2nd – 4th February, 2005, page:13.

2. Joshi R.S., Barod, V.N., Patel, A.B., Savaliya, F.P., Mishra, R.K., Hirani N.D. and Khanna, K. (2005). Study on genetic aspects on feed efficiency traits in two strains of White Leghorn reared under different feeding regimen. XXIII Annual Conference of Indian Poultry Science Association and National Symposium on "Indian Poultry Production in Changed Global Scenario: Challenges and Opportunities" at Hyderabad from 2nd-4th February, 2005. Page: 14.

3. Patel, A.B., Khanna K., Savaliya, F.P., Joshi C.G and Joshi R.S.(2005). Genetics study of income minus feed cost (IMFC) in a White Leghorn strain. XXIII Annual Conference of Indian Poultry Science Association and national Symposium on "Indian Poultry Production in changed Global Scenario: Challenges and Opportunities" at Hyderabad from 2nd-4th February, 2005. Page:15.

4. Mishra, R.K., Khanna, K. Savaliya, F.P., Joshi R.S., Barod, V.N., and Patel, A.B., (2005).Phenotypic production Analysis of two strains of White Leghorn under reciprocal recurrent selection in White Leghorn. XXIII Annual Conference of Indian Poultry Science Association and national Symposium on "Indian Poultry Production in changed Global Scenario: Challenges and Opportunities" at Hyderabad from 2nd-4th February, 2005. page:14.

5. Joshi R.S., Barod, V.N., Patel, A.B., Savaliya, F.P., Mishra, R.K., and Khanna, K. (2005).Study on genetic parameters for various production traits in two strains of White Leghorn. National Seminar on "Recent Advances in Conservation of Biodiversity and Augmentation of Reproduction and Production in Farm Animal" at Sardar Krushinagar from 5th – 7th March, 2005, Page: 244.

6. Mishra, R.K., Khanna, K. Joshi R.S., Savaliya, F.P., Barod, V.N., and Patel, A.B., and Patel M.M. (2005). Response to slelection for egg production under reciprocal recurrent selection in White Leghorn. National Seminar on "Recent Advances in Conservation of Biodiversity and Augmentation of Reproduction and Production in Farm Animal" at Sardar Krushinagar from 5th – 7th March, 2005, Page: 246.

7. Mishra, R.K., Khanna, K. Joshi R.S., Savaliya, F.P., Barod, V.N., and Patel, A.B., and Patel M.M. (2005).Effect of reciprocal recurrent selection procedure on inbreeding. National Seminar on "Recent Advances in Conservation of Biodiversity and Augmentation of Reproduction and Production in Farm Animal" at Sardar Krushinagar from 5th – 7th March, 2005, Page: 246.

8. Goriya H.V.; Bhavsar S.K.; Thaker A.M. and Vadodaria V.P. (2004) Tools to optimize antibacterial drug therapy: The PK-PD Clinical markers**.** Compendium: National seminar on emerging biotechnological frontiers in animal health and production held at Veterinary College, GAU, SKnagar

9. S.K.Bhavsar and A.M.Thaker (2004) Cytochrome P450 polymorphism in Dogs: Pharmacological & Clinical importance. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

10. S.K.Bhavsar, and A.M.Thaker (2004) Doping in Animals: An Overview. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

11. Bhavsar S.K.; Verma M.P. and Thaker, A.M. (2004) Ciprofloxacin (CIP) pharmacokinetics following multiple intravenous doses in cow calves. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

12. Reddy, C.N.; Barot D.K.;Bhavsar S.K.; Joshi R.S.; Thaker A.M. and Verma M.P.(2004) Pharmacokinetics of single dose intravenous and oral ciprofloxacin administration in WLH hens. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

13. Sudhir Kumar Tiwari, Swati, S.K. Bhavsar and A.M. Thaker (2004) Pharmacokinetic of ceftriaxone in Surti female goats following single dose intramuscular administration Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

14. Mardiya J.J., Gohil P.V., Goriya H.V., Bhavsar S.K., and Thaker A.M. (2004) Ceftriaxone pharmacokinetics following single dose intravenous administration in crossbred cow calves. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

15. H.V.Goriya, Anil Kalia, S.K. Bhavsar, C.G. Joshi, D.N.Rank and A.M. Thaker (2004) Status of CYP3A and CYP2H1 genes in metabolic process of chicks Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

16. H. V. Goriya, S. M. Patel, P. V. Gohil, D.P. Gohel, J. G. Sarvaiya, S. K. Bhavsar and A. M. Thaker (2004) Studies on wound healing of *Prosopis juliflora* (PJ) cream in experimental wounds in Surati buffalo calves. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

17. M. Amir Siddiqui, S.K. Bhavsar, I. H. Kalyani, Madhu Choudhary and A.M. Thaker (2004) Studies on immunological effects of short-term administration of quinalphos and imidacloprid in wlh cockerels. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

18. M. Amir Siddiqui, S.K. Bhavsar, R. S. Joshi, V. N. Barot and A.M. Thaker (2004) Toxicological studies in chicks following short-term exposure to quinalphos and imidacloprid. Compendium of Annual conference of Indian Society of Veterinary Pharmacology and Toxicology held at College of Veterinary Science, Indira Gandhi Agriculture University, Anjora-Durg.

19. R.G. Jani, (2004).Experience on rescue of wild large cats in Sasan Gir at Asian Congress of Zoo & Wildlife Veterinarians & Workshopon Quarantine, Restraint and Translocation of Wild Animals at Lucknow, 4^{th}-5^{th} February, 2004.

Chapter – 5

Extension Education :Bearing Beacon of Technology Transfer

Directorate of Extension Education

The Directorate Extension Education has been established according to the provision of the Gujarat Agricultural Universities Act-5 of 2004 for dissemination of the findings of research and technical information through extension education programs. The main function of the Directorate is 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 other Development Departments, Voluntary and Private Organizations. Dr K.F. Patel has been appointed as Director of Extension Education, and supervised and guided the extension education activities during the year.

Extension Education Council

The Extension Education Council has been constituted according to the provisions of the Gujarat Agricultural Universities Act-5 of 2004 to consider and recommend the extension education programs/activities of the University. Accordingly, Extension Education Council has reviewed, planned and guided to carryout extension education activities during the year.

The constitution of extension education council is as under:

1	Vice-Chancellor	Chairman
2	Director of Extension Education	Secretary
3	Director of Research	Member
4	Director of Agriculture or concerned Joint Director	Member
5	Director of Animal Husbandry or concerned Joint Director	Member
6	Director of Horticulture or concerned Joint Director	Member
7	Dean, Faculty of Agriculture	Member
8	Dean, Faculty of Dairy Technology	Member
9	Dean, Faculty of Veterinary Science	Member
10	Dean, Faculty of Food Processing	Member
11	Principal, Extension Education Institute	Member
12	Professor of Extension Education	Member
13	Extension Educationist, EEI	Member
14	Training Organizer, Krushi Vigyan Kendra, Dahod	Member
15	Professor & Head, Poultry Training Centre	Member
16	Associate Extension Educationist, Krushi-Go-Vidya	Member
17	Assistant Extension Educationist, Sardar Smruti Kendra	Member
18	Assistant Extension Educationist, Agricultural School, Anand	Member
19	Assistant Extension Educationist, Home Science School, Anand	Member
20	Farm Manager, TRTC, Dahod	Member

During the year under report, no meeting of the council was held.

Centers of Extension Education

Under the umbrella of Directorate of Extension Education, following centers/ activities are functioning:

Sr. No.	Type	Name of center	Location
1	Diploma/ Certificate Course	Agricultural School	Anand, Chharodi, Vadodara, Dahod
		Home Science School	Anand
		Bakery School	Anand
		Poultry Training Centre	Anand
		Mali Training Centre	Anand
2	Training Centers for Extension Workers	Extension Education Institute	Anand
		Training and Visit Training Centre	Anand, Vadodara
3	Training Centers for Farmers/ Farm women/ Rural Youth	Sardar Smruti Kendra	Anand
		Krushi Vigyan Kendra	Devataj, Dahod, Arnej
		Tribal Training Center	Dahod
		Tribal Training cum Research Center	D'baria
4	Advisory Services	Extension Wing	Anand
		Farm Advisory Service Scheme	Anand
		Agro-Advisory Services	Anand
		Krushi-Go-Vidya Publication Unit	Anand

Extension Education and Training Programs

1. Diploma and Certificate Courses for Farm Youth

Anand Agricultural University conducts various Diploma/Certificate courses as per the details given below:

Sr. No.	Name of Diploma/ Certificate Course	Duration	Centre	No. of students completed the course
1.	Agricultural Diploma	Two years	Anand Chharodi Vadodara Dahod	112
2.	Home Science Training	Two years	Anand	20
3.	Bakery Training (Two batches in a year)	Twenty weeks	Anand	60
4.	Poultry Training (Three batches in a year)	Ten weeks	Anand	23
5.	Mali Training (One batch in a year)	Six months	Anand	14

2. Training Programs for Extension Workers

(a) Extension Education Institute

The Extension Education Institute, Anand caters to the extension training needs of middle level functionaries of various line departments of western zone states namely Gujarat, Rajasthan, Madhya Pradesh, Chhatisgarh, Maharasta, Goa and UTs of Diu, Daman and Dadara Nagar Haveli. The aim is to improve upon their job performance whenever they are working in different capacities.

There is a Management Committee of EEI that approves action plan and review the progress of EEI activities. The constitution of the Management Committee is as under:

1.	The Vice-Chancellor, AAU, Anand	Chairman
2.	The Director of Extension (Trg.), Govt. of India, New Delhi.	Member
3.	The Director of Administration, Govt. of India, New Delhi.	Member
4.	The Additional Commissioner (Extn. Trg.), GOI, New Delhi.	Member
5.	The Director General, National Institute of Agril. Extension Management (MANAGE), Rajendranagar, Hyderabad.	Member
6.	The Director, Institute of Rural Management (IRMA), Anand.	Member
7.	The Director of Agriculture, Govt. of Gujarat, Gandhinagar.	Member
8.	The Director of Horticulture, Govt. of Madhya Pradesh, Bhopal.	Member
9.	The Director of Fisheries, Govt. of Chhatisgarh, Raipur.	Member
10.	The Director of Agriculture, Govt. of Maharastra Pune.	Member
11.	The Director of Extension Education, A.A.U., Anand.	Member
12.	Shri Kanubhai K. Patel, Progressive Farmer, Boria.	Member
13.	Shri Vishnubhai.Patel, MLA, At & Po. Umreth, Ta.Umreth.	Member
14.	Brother Galicya, Mogar Farm, N.H.No.8, Post.Mogar, Anand.	Member
15.	Principal, B.A.College of Agri. Anand	Member
16.	The Comptroller, A.A.U. Anand	Member
17.	The Principal, EEI, Anand	Member Secretary

The Management Committee meeting was held on 27/08/2004.

The details of the training courses conducted by the EEI, Anand during the year 2004-2005 are as follows:

Sr. No.	Type of Training Course	No. of Courses	No. of participants
1.	Scheduled Training Courses 1. On Campus 2. Off Campus	 17 06	 320 145
2.	Additional Training Courses	03	65
	Total	**26**	**530**

In addition, one follow up study was undertaken during 2004-2005.

(b) T&V Training Center

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 Training Centers at Anand and Vadodara. The details about bi-monthly workshops, pre-seasonal training workshops and short-term training programs organized for the extension personnel of the Department of Agriculture, and the number of SMSs/ AEOs attended the programs are as under:

Sr. No.	Type of programme	No.	No. of Participants
1.	Bimonthly workshop	7	123
2.	Pre-seasonal training programme	2	89
3.	Special Training	3	87
4.	Special Training	1	27
	Total	**13**	**326**

3. Training / Extension Education Programs for Farmers / Farm Women / Farm Youths

(a) Training Programs

Training is essential to increase the efficiency of the farmers, farm women and rural youths. 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) Centers, 114 on-campus and 135 off-campus training programs were organized. The details are depicted in Table-1:

Table-1: Training Programs organized by the Front Line Transfer of Technology Centers

Sr. No.	TOT Centre & Location	No. of Programs	No. of Participants				
			Farmers	Farm Women	Rural Youth	Extension Workers / others	Total
1.	KVK Devataj	A 18	234	17	90	59	400
		B 25	463	15	143	-	621
2.	KVK D'baria	A 27	537	31	111	67	746
		B 40	949	291	169	0	1409
3.	KVK Arnej	A 03	161	0	0	03	164
		B -	-	-	-	-	-
4.	SSK, Anand	A 46	238	68	905	198	1407
		B -	-	-	-	-	-
5.	TTC, Dahod	A 04	74	11	0	24	109
		B 18	834	129	0	42	1005
6.	TRTC, D'baria	A 16	234	111	164	31	540
		B 52	842	207	539	54	1642
	Total (1 to 6)	A 114	1478	238	1270	380	3366
		B 135	3088	642	851	96	4677
	Grand Total (A+B)	**249**	**4566**	**880**	**2121**	**476**	**8043**

Note: A: On Campus B: Off Campus

(b) Extension Education Activities

The TOT centers have also planned and organized extension education activities like seminar/ workshop / symposium, field / farmers' day, agricultural fair, exhibition, film / slide / video show, field visit, cattle camp, farmers' meeting, demonstration meeting, etc. The details of activities organized and number of beneficiaries are given in Table - 2, 3 & 4.

Table – 2. Extension Education activities carried out by TOT centers

Sr. No.	Activity	Centre					
		KVK			SSK	TRTC	TTC
		Devataj	Dahod	Arnej	Anand	D'baria	Dahod
1.	Farmers' / field Day	6 (237)	2 (867)	- -	3 (-)	-	1 (117)
2.	Khedut /women shibir / meeting	-	-	-	-	3 (309)	-
3.	Seminar/workshop/ Kisan Gosthi	4 (49)	-	1 (586)	9 (129)	17 (1303)	-
4.	Cattle camp	1 (55)	-	-	-	-	-
5.	Exposure/ field visit	48 (861)	50 (392)	-	46 (1407)	43 (406)	-
6.	Film/slide/video cassette show / radio talk / TV programme	9 91340	-	-	45 (1599)	-	1 (52)
7.	Celebration of women in Agril. day/ world food day/ van mahotsav	1 (17)	2 (273)	-	-	2 (354)	-
8.	Guidance through letters / personal contact	-	-	-	- (94)	-	-
9.	Publication of farm literature	3 (300)	-	-	4 (9315)	5 (8245)	22 (1114)
10.	Press Notes released	31	26	-	4	14	2
11.	Krishi-Go-Vidya subscriber registered	5	11	-	124	12	-
12.	Escorting the visitors	- (176)	23 (751)	-	- (21241)	- (1113)	4 (109)
13.	Telephone helpline services	- (115)	- (57)	-	-	- (511)	-
14.	Participated in other agencies programme	16 (1169)	-	-	-	17	-
15.	Crop diagnostic services	4 (73)	59 (428)	-	-	-	-
16.	Farmer-Scientists interaction	14 (48)	22 (149)	-	-	60 (1123)	

Note : 1. Figures in brackets indicates number of participants
2. Figures in brackets at Sr. No. 4 indicates number of animals

Table-3 Extension Education activities carried out by different centers of Diploma and Certificate courses

Sr. No.	Activity	Centre						
		Agricultural School				School of Baking	Home Science School	Poultry training center
		Anand	Vadodara	Chharodi	Dahod	Anand	Anand	Anand
1	Farmers / field Day	1 (33)	-	-	-	2 (50)	1 (61)	-
2	Agril. fair / exhibition	-	-	1 (54)	-	3 (527)	2 (426)	-
3	Khedut /women shibir / meeting	1 (33)	-	2 (559)	-	-	1 (61)	-
4	Seminar/ workshop/ Kisan gosthi	-	-	-	-	-	-	1 (211)
5	Cattle camp	-	-	2 (575)	-	-	-	-
6	Agril. tour / field visit	3 (66)	1 (31)	3 (84)	1 (24)	5 (104)	4 (69)	-
7	Film/slide/video cassette show / radio talk / TV programme	2 (79)		3	1	-	1 (49)	-
8	Celebration of women in Agril. day/world food day/van mahotsav	1 (66)	-	2 (64)	2 (45)	1 (35)	-	-
9	Guidance through letters / personal contact	-	-	2	-	- 1	-	10
10	Publication of farm literature	-	-	-	-	8	-	4
11	Press Note released	1	2	2	-	77	14	1
12	Krishi-Go-Vidya subscriber registered	33	-	35	-	25	-	-
13	Escorting the visitors	-	15	46	-	-	-	16 (315)
14	Crop diagnostic services	-	-	4 (37)	4	-	-	-
15	Farmer-Scientists interaction	-	-	1 (32)	4 (63)	-	-	-
16	Training	-	-	1 (32)	-	9 (302)	1 (10)	2 (24)

Note : 1. Figures in parentheses indicates number of beneficiaries
2. Figure in parenthesis at Sr. No. 5 indicates number of animals

Table-4 : Extension Education activities carried out by T&V Training Centers

Sr. No.	Activity	Center	
		Anand	Baroda
1.	Film/ slide/ video cassette show/ radio talk/ TV programme	1	7
2.	Guidance through letters/ personal contact	9	17
3.	Publication of farm literature	-	4
4.	Press Notes released	-	3
5.	Krishi-Go-Vidya subscriber registered	-	102
6.	Escorting the visitors	10	54
7.	Crop diagnostic services	-	23
8.	Field visit	-	10 (32)
9.	Lectures in Crop Seminar	7	1
10.	Technical guidance provided in farmers meet/ shibir/ field day	27 (about 4500)	-
11.	Farm Visit	9	-

Note: Figures in parentheses indicates number of beneficiaries

(c) Agricultural Fair

To communicate the agricultural technology to many farmers at a time, AAU has participated in different agricultural fairs.

The profile of AAU and the latest technologies developed by the Institution were displayed. Interactions between scientists and the farmers were also organized. Literature on the latest technology was distributed during such fairs.

Sr. No.	Agril. Fair / Exhibition	Place	Period	Approximate beneficiaries
1.	Mahila Krushi Mela	Dahod	8-11, April, 05	1,50,000
2.	West Zone Agril. fair	Udaipur	24-27 Feb.,05	2,00,000
3.	Agril. Fair	Dhaba Dungri	16-22 Feb., 05	588
4.	Agril. Exhibition	12 villages of D'baria taluka	6-13 Dec., 04	1,525

(d) Front Line Demonstrations

The Front Line Demonstrations aim to demonstrate the production potentialities of newly released and pre-released production technologies on farmers' fields.

The KVKs have organized 163 Front Line Demonstrations on various crops such as castor, sesamum, gram, groundnut, maize and wheat in 56.00 ha. during kharif, rabi and summer seasons. The details of these FLDs are as under:

Table-E: Front Line Demonstrations conducted

Sr. No.	Crop/Variety	No. of FLDs	Area (Ha)	Yield (Q./Ha)		Increase in yield (per cent)
				Demonstration	Local	
I	**KVK, Devataj**					
1.	Castor GCH-5	40	20	30.39	25.80	17.79
2.	Mustard GM-2	40	20	19.77	17.26	14.54
3.	Sesamum GT-2	40	20	3.74	3.25	15.00
II	**KVK, Dahod**					
1.	Gram GG-2	11	2.15	9.50	7.66	24.04
2.	Groundnut (Summer) GG-2	25	5	25.36	21.67	17.03
3.	Maize					
	GM-3	9	2.0	25.00	21.21	17.42
	GM-4	11	2.40	25.45	21.30	17.50
	GM-6	7	1.60	23.86	21.25	17.46
4.	Wheat GW 273	20	4	25.07	22.58	14.00

4. ADVISORY SERVICES

(a) Extension Wing

The Extension Wing is to provide theoretical and practical field training to undergraduate and postgraduate students for offering knowledge and experience of extension principles, techniques and education psychology.

The 20 weeks program for one semester (i.e., seventh semester) is being run by the department with a view to producing well trained graduates in the field of agriculture having broad-based knowledge and technical know-how to meet the emerging challenges in agriculture. The students are exposed to research stations, high-tech cells, farmers' fields in villages, NGOs, agro-based industries, cooperative sectors and agriculture related organizations/institutions of the state and the nation.

(b) Farm advisory Services Scheme

The Farm Advisory Service Centre, Anand provides guidance and information to farmers on scientific farming. The farmers are advised on their farm problems through correspondence and field visit. This center acts as a link among research scientists, extension workers and farmers. During the year under report, various extension activities carried out by the scheme are as under:

Table-F: Farm Advisory Service Scheme

Sr. No.	Activity	No. of activity	Beneficiaries
1.	Farmers / field Day	12	3995
2.	Khedut/women shibir /group meeting / crop seminar	3	425
3.	Agril. tour / field visit	15	475
4.	Celebration of women in Agril. day/world food day/van mahotsav	3	605
5.	Spot Guidance / guidance through letters	-	110
6.	Press Notes released	30	-

7.	Subscribers registered for Krishi-Go-Vidya farm magazine	-	25
8.	Distribution of Farm literature	-	400
9.	Escorting the visitors	20	1300
10.	Farmer-Scientists interaction	2	109
11.	Film/slide/video cassette show	1	155

(c) Agro-Advisory Services

The weather based agro-advisory services unit at Anand received a total of 74 three day weather forecast on each Tuesday and Friday. Based on weather forecast and with consultation of Agro-Advisory Committee, detailed Agro-Advisory Bulletine have been prepared and sent to mass media (Gujarat Samachar & Naya Padkar Daily News Papers and ETV TV Channel). In all 55 weather based Agro-Advisory Bulletins were published in News Papers.

(d) Mass Media

i) Radio Talks

The scientists of the University deliver Radio talks on agriculture and allied topics from All India Radio, Vadodara. During the year, 35 scientists have delivered talks on different topics related to agriculture, horticulture, agricultural engineering, animal husbandry, etc.

ii) TV Talks

In all, 45 television programs on different aspects covering agriculture, animal science, agricultural engineering, horticulture, home science, etc. were telecast through Doordarshan Kendra, Ahmedabad in "Gram Jagat" program for the benefit of farming community.

iii) Press Meet

Two press meets were organized during the year to convey the issues of Bio-diesal Process streamlined by the AAU and regarding activities of APPE unit.

(e) Publications

i) Farm Magazine

The publication unit publishes the monthly farm magazine "Krushi-Go-Vidya" regularly. There were 10,324 subscribers registered for this magazine during 2004-2005.

Further 8 special issues on different subjects namely Milk Products, Plant Protection, Floriculture, Animal Food and Nutrition, Vermi compost, Nematodes control, Micro Nutrients, and Weed Control have been published. A zero-budget revolving fund has been created to make this magazine self-sufficient.

ii) Research Recommendations for Framers

The AAU is publishing a booklet on "Khedutopayogi Sansodhan Bhalamano" in local language containing latest research findings. This booklet is published regularly for the use of extension functionaries and progressive farmers of the state.

iii) Publication of AAU News Letter

The quarterly "Anand Agricultural University News Letter" is being published by the University. The AAU News Letter brings forth research highlights, technical events/news, extension activities, noteworthy work done by any agricultural educationist, research scientist, and extension educationist, etc. Two issues (Vol. I No.1 September 2004 & No.2 December 2004) of this News Letter have been published.

iv) Publication of Krushi Darshan Samachar

The Directorate of Extension Education publishes a quarterly "Krushi Darshan Samachar" in local language, covering recent developments in and key aspects of research, education and extension activities of the University.

v) Publication of Agricultural Literature

Various folders/leaflets/books on several subjects were published by different extension education centers of AAU during the period under report.

5. Coordination with Development Departments

- The Anand Agricultural University 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 system by way of constituting technical committees at district, zonal and state levels.

- The functional linkages also exist under T&V System through bi-monthly workshops, pre-seasonal trainings, fortnightly trainings, diagnostic team, and state level crop seminars/workshops etc. The coordination does exist in follow-up programs 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 organized at state as well as at campus level.

- The agricultural programs of All India Radio as well as Doordarshan are finalized by such coordinated efforts.

- For transfer of technologies to the farmers at large, Farmers' Day, Krushi Mela, farmer-scientist interactions, group discussions etc. are organized by collaborative efforts.

6. Capacity Building of AAU Staff

During the year under report, 12 scientists/teachers of Anand Agricultural University were deputed outside the Gujarat state for updating their knowledge and up gradation of skills in their respective disciplines.

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Chapter – 6

Students' Welfare : Tapping Talent and Skill Bank

Directorate of Students' Welfare

Directorate of Students' Welfare was established for overall development of personality, character and high human values in under-graduate and post-graduate students of the University. The University provides facilities like hostels, health care, training, scholarship and placement guidance to the students. It organises various extra curricular activities like sports, adventure, cultural programs etc.

During the year of report, Dr A. M. Thaker was holding the charge of Director of Students' Welfare and Program Coordinator (N.S.S.) from 21.7.2004.

Students' Representative Council

(a) In the colleges associated with this University, the Students' representative Council (S.R.C.) is formed by nominating the staff advisory committee including the students' representative as per University rules. The Council is formed with a view that the students can represent their problems through their representatives, and can be helpful for their extracurricular activities. The Students' Representative Councils of all the colleges were very active during the year, and various extracurricular activities like planning forum, sports, debate and elocution, college magazine, cultural programs, N.S.S., N.C.C., etc. were organized.

(b) Apart from this, Alumni Associations in all the three colleges were functional under which the conferences and workshops are being organized for development of professional unity, and to create an atmosphere of oneness.

Student Amenities

A) Hostels

Hostel environment plays an important role in the development of personality and social behavior of a student. As a residential University, good hostel facilities are provided to all the under graduate and postgraduate students at all the colleges of the University. While the hostels have their own respective messes, in the campus also, student messes, canteen for breakfast and snacks, store and other essential facilities are available. In some of the hostels, self-managed messes are governed by the students themselves, while some are under contract basis under the supervision of the Rector/Assistant Rector. Library facility is available, and the other amenities for day-to-day requirements like laundry, tailor, cycle store, provisional store, bus for transportation, telephones in the hostels as well as STD booths with ISD facility, Bank, ATM centers, etc. are also available in the premises of the University. The Rector and Assistant Rector are appointed in each college for maintenance of student facilities and solving the residential problems of the students. The facility for solar water heater and water coolers are also available in the hostels.

(B) Health Facilities

The authority of this University looks after the maintenance of the health of the students studying in various colleges of the Institution. For this purpose, the University governs the Primary

health Center with the appointment of the staff like doctors, nurses, compounders, laboratory technicians and other administrative staff. Free service of the Health Center is available to all the employees, their families, and students residing in the campus. Ambulance van also is available for emergency services as well as shifting of the patients to other hospitals. This Health Center provides allopathic and ayurvedic treatment, and also provides guidance for diagnosis and treatment. For Ayurvedic treatment, Ayurvedic doctor is available. The facility for blood grouping and thalesimia testing of newly admitted students is introduced. Approximately, 8,000 cases of University employees, their family members and students have been given treatment in the current year.

Activities:

(A) Student Counseling Scheme

The student counseling cells are established at the college level for helping the students for guidance, solving their problems, and corresponding with various companies and organizations for job opportunities. It is planned to sanction the budget for this scheme in this University, as it was sanctioned previously under GAU.

(B) Placement activities:

During the year of report the following number of students of each faculty were selected for employment by various organizations which came for placement.

Placement of students of B.A. College of Agriculture, AAU, during the Year 2004-05

Sr. No.	Name of Institute	No. of Selected candidates
1.	Mahyco seeds ltd. Ahmedabad	5
2.	Vidya Dairy, Anand	1
3.	Gujarat State Export Corporation Ltd.	2
4.	Vadilal Industries Ltd.	4
5.	Reliance Industries Ltd.	9
6.	Pestcone India Ltd.	5
7.	Dena Bank	5
8.	Godrej Agrovet Ltd.	8

Placement of students of Veterinary College, AAU, during the Year 2004-05

Sr. No.	Name of Institute	No. of Selected candidates
1	Amul Dairy, Anand	4
2	Panchamrut dairy, Godhara	4
3	Sabar Dairy	4
4	Alembic Veterinary Division, Mumbai	3
5	Jai Research Foundation, Vapi	3
6	Glaxo Smithkline, Ahmedabad	3
7	Dudh Sagar Dairy, Mehsana	3
8	Cadila Zydus, Ahmedabad	3

Placement of students of Sheth M.C. College of Dairy Science, AAU, during the Year 2004-05

Sr. No.	Name of Institute	No. of Selected candidates
1.	Amul Dairy, Anand	5
2.	Dudhsagar Dairy, Mehsana	6
3.	Mother Dairy, Gandhinagar	5
4.	Sumul Dairy, Surat	6
5.	Vidya Dairy, Anand	4
6.	Gagar foods, Wamaj	1
7.	Almarai Dairy Co., Riyadh, Saudi Arabia	6

(C) Physical Education Program

The Physical Education and Sports play vital role for development and maintenance of personality, physical fitness, health and stamina, besides body-building of the students. Along with development of the academic career of the students, this University also puts in every effort to bring

out the hidden qualities of the students by involving them in physical education, sports, cultural, adventurous activities etc. at college and university levels. Two Physical Instructors organize these types of activities at college level under the direct guidance and supervision of Director of Students' Welfare.

(D) Adventurous Activities

Swami Vivekananda State Mountaineering Academy, Mount Abu was contacted for organizing basic workshop in rock climbing with the aim to develop adventurous virtues and prepare them to face adverse conditions. Two students from AAU participated in the tracking program organized by Youth Hostel Association of India during 1st to 31st May 2004 at Kasal (Himachal Pradesh). Three students from our University participated in basic mountaineering workshop organized by Swami Vivekananda State Mountaineering Academy at Mount Abu from 11th to 20th May 2004.

(E) Sports Activities

Along with the academic curriculum, the students are also trained for the development of skills and excellence in various sports activities. For this reason, Inter-Collegiate competitions for several games like Chess, Table-Tennis, Badminton, Kabbadi, Volley Ball, Basket ball, Kho-Kho, Cricket, Weight-Lifting, Athletics, Cultural activities, Essay, Debate and Elocution competitions etc. are regularly arranged at various colleges under the direct guidance of the DSW. The selected students from Inter-Collegiate competitions are nominated for Inter-University participation.

During the year under report, several inter-collegiate competitions were arranged at different colleges as under:

Sr. No.	Game	Place
1	Cheese	SMC College of Dairy Science, Anand
2	Table Tennis	College of Veterinary Science & A.H., Anand
3	Badminton	College of Veterinary Science & A.H., Anand
4	Kabaddi	SMC College of Dairy Science, Anand
5	Volleyball	SMC College of Dairy Science, Anand
6	Basketball	B. A. College of Agriculture, Anand
7	Cricket	B. A. College of Agriculture, Anand
8	Kho-Kho	College of Veterinary Science & A.H., Anand
9	Weight-lifting	Could not organized

Inter-college essay, debate, elocution competitions, and cultural programs and athletics tournaments could not be organized due to unavoidable circumstances.

During the year under report, the following university teams participated in inter-university competition in various games :

Sr. No.	Game	Place of Competition	Place	Performance of Team
1	Table Tennis	All India Veterinary Colleges Games, Veterinary University from 4.2.2005 to 5.2.2005	Pantnagar	Semi Final
2	Badminton			---
3	Professional Quiz			---
4	Youth Festival	NDRI, From 8.3.2005 to 10.3.2005	Karnal	First
5	Basketball	Kerala Agricultural	Trivendram	Third

6	Volley ball	University From 16.3.2005 to 19.3.2005		---

In addition, the students of Dairy Science participated in Gujarat sardar Cricket team at Ahmedabad. Fifty students participated in Kanzam Gozo Karate Do Academy, India at B.A. College of Agriculture, during 14th to 23rd February 2005.

(F) National Service Scheme (N.S.S.)

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 is operated in all the Colleges of Anand Agricultural University. During the year under report, two units of 50 students and one unit of 100 students were allotted to different colleges. Details of the college-wise registered volunteers are as under :

Sr. No.	Name of College	No. of registered Volunteers
1	B. A. College of Agriculture, Anand	100
2	College of Veterinary Science & A.H., Anand	50
3	SMC College of Dairy Science, Anand	50
	Total	200

During their spare time in their academic schedule, the students actively involve themselves with the activities related to the problems and requirements of the society and its development and welfare through various fields of N.S.S. activities, working in close coordination with Environment, Health, Family Welfare, Hospitals and other organizations during natural calamities.

The social activities carried out by the N.S.S. are divided into two categories :

i) Regular Activities

The regular activities carried out by the Colleges of AAU during the year includes tree plantation program, poster competitions, wasteland development, blood donation camp, literacy program, sanitation of colleges, hostels, campus etc., and other related social works.

ii) Special Camp Activities

Under special camp activities, all the three colleges of AAU have organized special camps in which student volunteers have participated. During these camps, various programs like modern agricultural techniques, scientific preservation of fruits and grains etc. were arranged. Besides these, during these days, blood donation camps as well as Blood Grouping and Thalesimia testing program and animal treatment camps were also organized.

(F) National Cadet Corps (N.C.C.)

The N.C.C. Unit of B.A. College of Agriculture of AAU organizes various training programs for the development of quality leadership, patriotism, brotherhood, sportsmanship and adventurous attitude and unity among the students joining this unit willingly. In the N.C.C. parade, training was given with and without arms. Students of this University have also participated in Army Attachment camp, Basic Leadership camp, Tree Plantation and Blood Donation camps during this year.

In the current year, 55 cadets of AAU participated in CATC camp organized by IV Gujarat Battalion, Vallbh Vidyanagar arranged at Vadtal and Ashi. In addition, 14 cadets passed 'B'

Examination, and 16 cadets had cleared 'C' Examination. National Integration camp organized by Director General (N.C.C.) at Chakabma, Nagaland during 1st to 12th October 2004 was attended by 9 cadets, and Shri Yogendra Barad had taken the leadership of Gujarat. In the same way, 5 cadets participated in the National Level Training camp at Shontali (Kolhapur) during 21st November to 4th December 2004, organized by the Director General (N.C.C.).

(G) College Magazine

The college magazine is published by each college of AAU with the aim to bring out the potential of thinking in writing and expression of students. The teachers, staff members and Post-Graduate students of the College contribute for the overall development of the students through inspirational articles, poems, drama, agricultural information useful to farmers and scientific community and other columns. The Director of Student Welfare provides the needed financial assistance. Detail reports of sports and cultural activities are also included in the magazine.

(H) Educational Tour :

Educational tour is considered as a part of the academic syllabus of the degree courses of Anand Agricultural University. The duration of educational tour is of three weeks, which comprises of visits to reputed Institutes of Gujarat and other states of India.

The basic purpose of this tour is to gain knowledge and information regarding their study by personal visit of the related institutes and research centers. From the educational tour during the year, various colleges of AAU have gained important and interesting information regarding the developments in agriculture, veterinary and industrial growth by visiting the research centers of AAU and other places.

During the year under report, all the colleges have arranged their tour in the University vehicles, thereby reducing University expenditure to a large extent.

Sr. No.	Name of College	No. of Students	Duration of Tour
1	B.A.College of Agriculture	89	Dt.1.12.2004 to 21.12.2004
2	College of Veterinary Science	36	Dt. 2.3.2004 to 20.3.2004
3	M.C.College of Dairy Science	33	Dt. 4.3.2005 to 24.3.2005

(I) Other Activities :

(i) Nature Club
(ii) Rotary Club
(iii) Elevet Forum
(iv) Extension Club
(v) Quest
(vi) Alumni Association

(J) Financial Assistance to the Students

Anand Agricultural University provides scholarship and financial assistance on merit basis to the students admitted to various colleges affiliated to it. The details of assistance are as follows :

(i) By Anand Agricultural University

1) Merit scholarship of Rs.75/- for Veterinary Science faculty.

2) Scholarship of Rs.250/- per month for under-graduate girl students.

(ii) By ICAR, New Delhi

I.C.A.R. Merit cum Means scholarship of Rs.170/- per month from I.C.A.R..Merit scholarship Rs.60/- and poor merit scholarship of Rs.60/- per month. Free scholarships of Rs.250/- per semester except Veterinary faculty.

(iii) By Other Agencies:

Student Discipline

The quality of discipline is being developed in students through sports, N.C.C. and N.S.S. etc., leading to a congenial atmosphere between teachers, students and staff members of Anand Agricultural University, and no serious cases of misbehavior by the students was observed during the year of report.

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Chapter – 7

Estate Management : Breathing life into Bricks and Stones

Office of the Executive Engineer

All the work related to construction and maintenance of Anand Agricultural University campus falls under the purview of the Executive Engineer, who effectuates the work with the assistance of the Deputy Engineer and the Junior Engineer.

Er. B.N. Bhalia is acting as the Executive Engineer of the university. The Office of Executive Engineer is responsible for the management of estates including construction and maintenance. Further, this Office also looks after transport, communication and security services. The University Guest Houses and Housing facilities are also maintained by this office.

Building-cum-Construction Committee

The Building-cum Construction Committee of Anand Agricultural University is formulated to take policy-decisions. The Committee prepares the plan and estimate for major works and approves the related tenders, to set down regulations to check irregularities, and to give guidance in implementation of the work undertaken.

Construction Committee

1.	Prof. M. C. Varshneya	Vice-Chancellor	Chairman
2.	Dr. P. H. Bhatt (upto 31-12-2004) Dr. A.R. Pathak	Director of Research	Member
3.	Dr. K. F. Patel	Director of Ext. Education	Member
4.	Dr. M. C. Desai	Principal, Vety. Sci. College	Member
5.	Shri V. P. Macwan	Registrar	Member
6.	Shri P. S. Vyas	Accounts Officer-cum-Comptroller	Member
7.	Dr. B. N. Patel	Research Scientist (Tobacco)	Member
8.	Dr. J. G. Survaiya	Director (I.T.)	Member
9.	Er. B. N. Bhalia	Executive Engineer	Member Secretary

Construction Committee Meeting:

Sr. No.	Meeting	Date
1	1st Meeting	28.3.2005

This year, the Department of Agriculture and Animal Husbandry has accorded generous fund towards the development and maintenance of Research, Education and Extension Education sectors, while ICAR, New Delhi also has released significant amount to be utilized for various related activities of the institution. Accordingly, new construction work was taken up wherever needed, and quite a few old constructions were repaired or renovated as per requirement. Since various sub-centers and research stations of the University also are in need of new constructions for furtherance of their research activities, an Annual Development Program was prepared and submitted to the Government through the University Planning Officer as regards the new construction work to be taken up, and the pending repairing work from last year to be completed. The Plan and Estimate for new constructions

are duly approved, and the grant for the approved work with specifications was released through the Comptroller-cum- Accounts Officer to the Engineer. Thereafter, the physical progress of the construction and total utility of the grant were reviewed, and it was resolved that the scheduled work for the year under question should be rounded up within the stipulated period.

During the year 2004-05, as per the release of the grants, details of the Major Works, MOW, farm-related classified works under the Government Plan Scheme, maintenance and repairing activity under non-plan scheme, constructions vide ICAR development grant and grants from other agencies are as follows :

Sr. No	Plan Scheme	Expenditure
1.	a) Major Works	Rs.29,80,421=00
	b) MOW	Rs. 3,58,000=00
	c) Classified works	Rs.3,82,319=00
2.	Repairing and Maintenance under non-plan scheme	Rs.7,78,028=00
3.	Work under ICAR Development Grant	Rs.8,34,768=00
4.	Work under grant from Other Agencies	Rs.30,46,218=00
	Total Expenditure	**Rs.83,79,754-00**

During the year, as per the availability of the grant, administrative sanction was accorded to 86 such projects which are to be completed within the stipulation of time and amount of the grant. The plan and estimate of these projects were assigned to the supervision of officers who are delegated such powers under Statute-28 of the Act.

This year, in Veterinary Science College, the repairing work of class rooms, examination halls and laboratories are completed, in addition to renovation and repair works at other places such as overhead water tank in the campus, LRS bore well, pump room, pipe lines, Dahod hostel, BTRS godown, BTRS office and store, Nematology sprinkler system, EEI bore well with pump, Dabhoi bore well and pump, water proofing in Dairy Chemistry, and painting in BACA, Veterinary and Dairy Science Colleges.

Building & Allotment Committee

1.	Dr. M. C. Desai Dt. 16.7.04 to 31.3.05	Principal, Vety. Sci. College	Chairman
2.	Dr. A. M. Shekh	Principal, B. A. College of Agriculture	Member
3.	Dr. D. J. Koshiya	Asso. Director of Research	Member
4.	Dr. K. F. Patel	Director of Ext. Education	Member
5.		Principal, EEI	Invitee Member
6.	Dr. B. N. Patel	Research Scientist (Tobacco)	Invitee Member
7.	Er. B. N. Bhalia	Executive Engineer	Member Secretary

No. of Meetings of Quarters Allotment

Meetings	Date
1.	27.7.04
2.	15.9.04
3.	12.1.05

Chapter – 8

Finance & Accounts

The Comptroller

Considering the colossal responsibility and answerability that lie with the Comptroller, Item-13 in the Chapter-2 of the first Statutes of Anand Agricultural University is devoted to the office and duties of the Comptroller, as reiterated in the Gujarat Agricultural University Act, Section No.5, which ordains the Officer in charge of this office to follow the directives mentioned there under.

Shri P.S. Vyas was appointed as the Comptroller by the Government of Gujarat vide Office Order No.GKV/102004/1661/K.2, dated 11.5.2004.

1. Annual Income/Expenditure Grant Statement

Anand Agricultural University has received State Plan & Non-Plan grants from Government of Gujarat. The research, extension & development grants were received from I.C.A.R., New Delhi, whereas for Plan and Non-Plan grants for Extension Education Institutes were received from Government of India. The University also received grants from other related departments of State & Central Government including private industries and NGOs.

Grant Received / Expenditure Incurred / Income Generated

Sr. No.	PARTICULARS	GRANT RECEIVED Rs. Ps.	EXPENDITURE INCURRED Rs. Ps.	INCOME GENERATED Rs. Ps.
1	2	3	4	5
(A)	**REVENUE ACC OUNT**			
	GOVT.GRANT			
1	Plan Scheme	5,76,56,000.00	5,93,49,105.04	29,46,696.38
2	Non-Plan Scheme	25,55,45,000.00	27,85,08,434.91	2,04,94,511.37
	TOTAL (i)	**31,32,01,000.00**	**33,78,57,539.95**	**2,34,41,207.75**
1	ICAR Coordinated Scheme	3,76,62,282.00	3,67,13,572.28	36,57,584.34
2	ICAR Development	63,25,000.00	58,75,298.76	NIL
3	Other Agency & NSS	2,79,84,119.00	3,23,98,678.75	61,66,596.12
4	Krushi Vigyan Kendras	61,70,000.00	61,70,000.00	NIL
5	N.A.T.P.	32,77,242.00	31,22,587.72	1,19,390.20
	TOTAL (ii)	**8,14,18,643.00**	**8,42,80,137.51**	**99,43,570.66**
	TOTAL REVENUE A/C.	**39,46,19,643.00**	**42,21,37,677.46**	**3,33,84,778.41**

2. Resources of Income and Financial Estimates

The Revenue generated by the University during 2004-05 is mainly through sale of farm produces, milk & milk products, animal, bakery products, transport & 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 2004-05, as approved by the State Government.

Sr. No.	Details of Head	Estimates for 2004-2005 (In Rs. lakhs)	
		Original	Revised
1	2	3	4
1.	**Non Plan**		
	Non-Plan (Normal)	2450.44	2507.85
	Non-Plan (Tribal)	47.40	47.60
	TOTAL (NON-PLAN)	**2497.84**	**2555.45**
2.	**Plan**		
	Education	74.44	74.44
	Extension Education	14.75	14.75
	Research	408.62	483.62
	I.T.	3.75	3.75
	TOTAL (PLAN)	**501.56**	**576.56**

3. (a) Audit

The University Accounts are to be audited as per the following arrangements.

(1) Internal Audit
(2) Examiner Local Fund Audit
(3) A.G. Audit

During the year, the pay admission cases of pay fixation under CAS scheme were scrutinized & finalized and two special audits were taken up. The university received 70 audit paras for the year 2001-02 from the Office of the Comptroller, Sardarkrushinagar-Dantiwada Agricultural University, Sardarkrushinagar. The compliance / justification were collected complied & submitted to S.D.A.U. Audited by A.G. is yet to be taken up.

(b) Physical Store Verification

In erstwhile Gujarat Agricultural University, the physical store verification used to be done by one technical person, one agriculture officer, one agricultural supervisor and one administrative staff. The staff set up for this activity is under active consideration.

4 (a) Pension

Details of Pension cases		No. of cases finalized
(1)	Final pension cases	85
(2)	Revised pension cases	05
(3)	Restoration pension cases	15

Fifty one (51) pension proposals were received from GAU & were finalized alongwith service records.

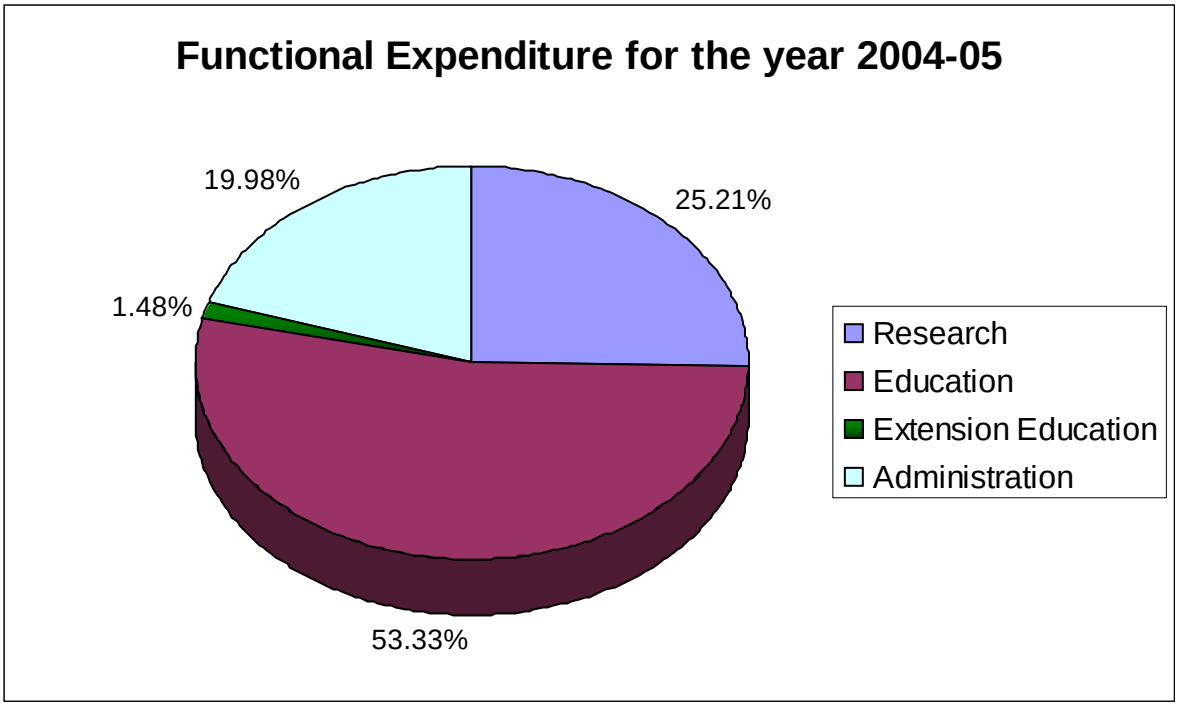
(b) P.F.

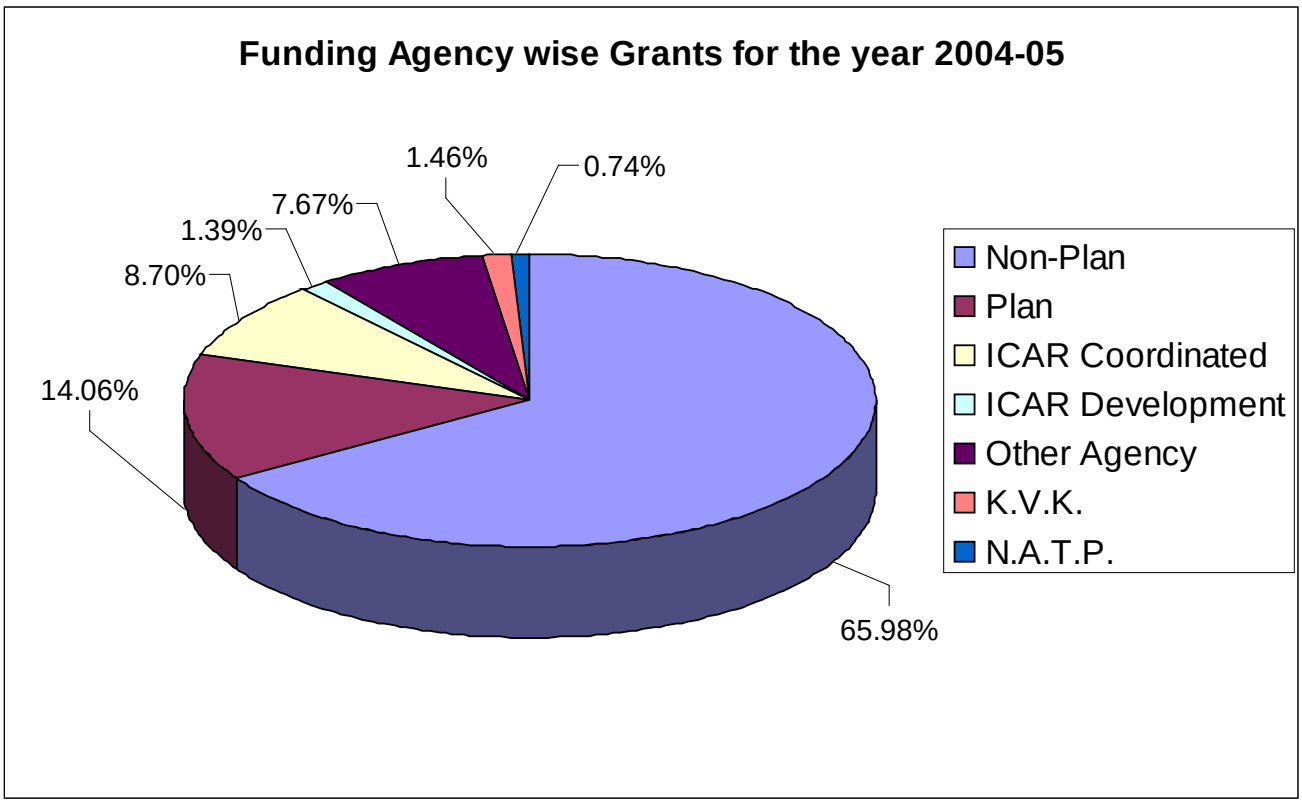
The details of P.F. cases disposed during the year.

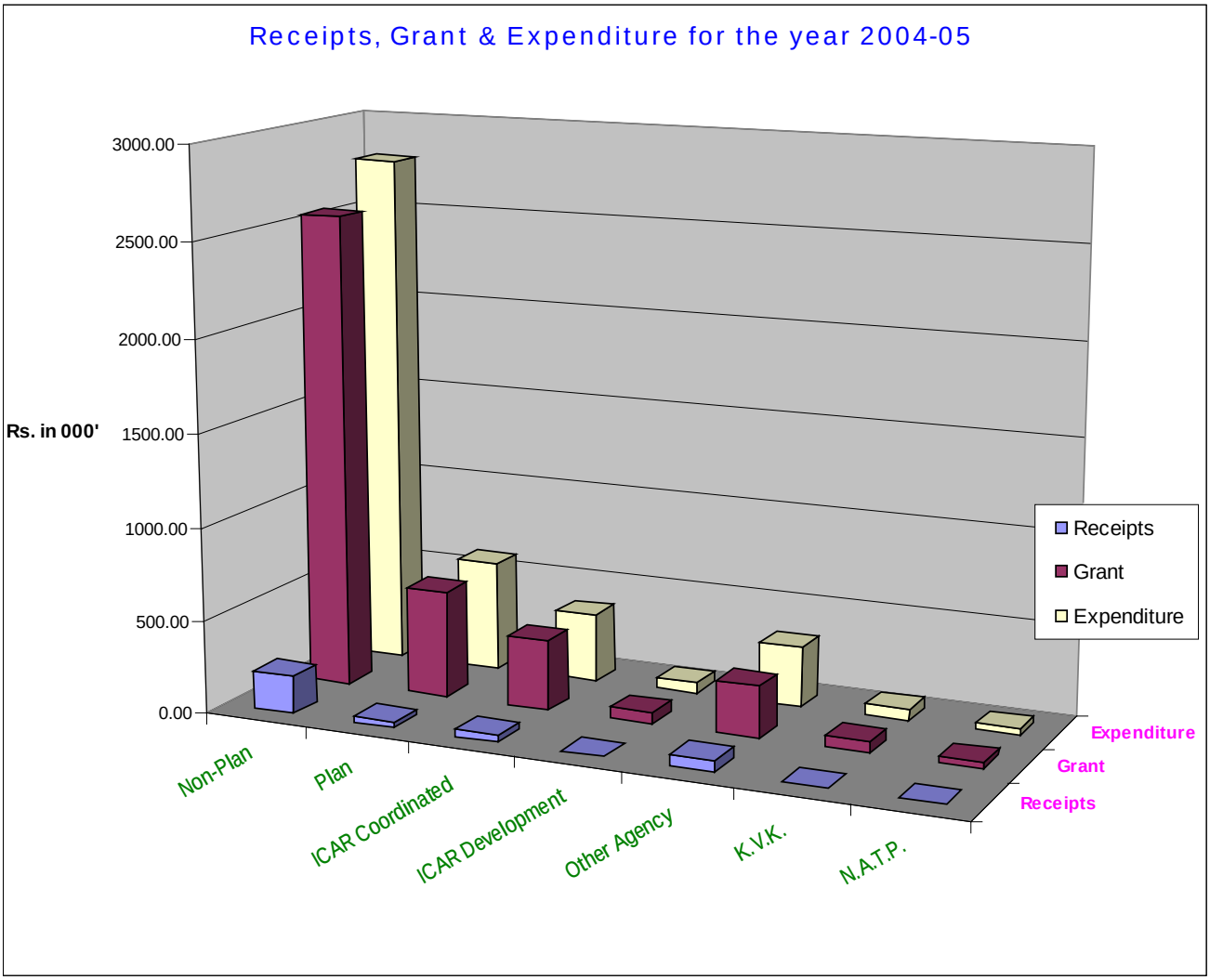
No. of Final withdrawal cases	40
No. of Partfinal withdrawal cases	240

In addition the monthly PF 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. The reconciliation work with S.D.A.U. is in progress.

The work of computerization of the system has been taken up and run on trial basis.




Funding Agency wise Grants for the year 2004-05
1.46%
0.74%
7.67%
1.39%
8.70%
14.06%
65.98%
Non-Plan
Plan
ICAR Coordinated
ICAR Development
Other Agency
K.V.K.
N.A.T.P.


Receipts, Grant & Expenditure for the year 2004-05
Rs. in 000'
3000.00
2500.00
2000.00
1500.00
1000.00
500.00
0.00
Non-Plan
Plan
ICAR Coordinated
ICAR Development
Other Agency
K.V.K.
N.A.T.P.
Receipts
Grant
Expenditure
Expenditure
Grant
Receipts

Chapter – 9

Information Technology: IT Boom at AAU

The Directorate of Information Technology at Anand Agricultural University caters the need of the use of Information Technology in the Field of Agriculture for the Universities of Gujarat State and also for the Dept. of Agri. & Co-operation of State Government.

9.1 NETWORK SERVICES

Internet, E-mail, CAB Database and File/Printer sharing services at Anand Agricultural University have been provided and maintained through Local area network (LAN) having GSWAN and ERNET connectivity.

9.2 BENEFICIARIES

More than 2700 persons including the university staff, Undergraduate, Post-graduate students and the officials from various departments of the State have taken benefit of ITC facilities like network services, internet, E-mail, scanning of photographs, CAB abstract service, printing, CD writing etc. these service are especially very useful to the students in their educational and research activities.

9.3 TRAINING

The Short-Term Training Courses were conducted at Directorate Of Information Technology, Anand during the period of this report for the officers of the Agricultural Universities and State Government.

1. Soil Health Card System
2. Website Updating
3. Database Management
4. Windows 2003
5. IIS Server
6. Microsoft Office FrontPage 2003
7. MS Office

9.4 NETWORK INSTALLATION & MAINTENANCE

Directorate of Information Technology looks after installation and maintenance services of the Network at the University level. A sizeable amount of money has been saved by using a free Network Operation System i.e. Linux. The network is continuously monitored and the problem, if any, is attended and rectified. The Network Operating System is up-graded regularly adding the useful features.

9.5 PRESENTATIONS/ MODELS

Directorate of Information Technology has prepared following Multimedia presentations covering various areas of University activities, which were updated during the year. These presentations have been shown or displayed during the visits of the Guests, Board of Management Meetings, Krushi Fairs or at Government level Meeting.

1. University activity (in English & Gujarati)
2. Information Technology at AAU
3. Soil Health Card System
4. IT Action Plan
5. Krushi Mahostsav

9.6 REFERENCE SERVICES

CAB Abstract Service has been installed which has been put on LAN. This enables the end users to get quick information through computer on any reference related to Agricultural research published from 1972 to 2006 through Network. This is unique kind of service not found anywhere in India which is provided free of cost to the scientists and the student of the University. This has made the reference services very fast and has saved a lot of time of the scientists and the students.

9.7 SPECIAL CONTRIBUTION/ACHIEVEMENTS

9.7.1 Soil Health Card Program

Government of Gujarat has assigned to the Anand Agricultural University an ambitious program of development and implementation of the Web-based Soil Health Card Program for the Gujarat State. Under this programme, the Directorate has developed the web-base application software, which generates and provides the fertilizer recommendations on the basis of soil analysis and the nutrient requirements of the crop for each field. This will increase the efficiency of the fertilizer and saving in consumption of the fertilizer.

On the basis of Moisture Availability Index and other soil and meteorological parameters, Soil health card programme also advice the individual farmer for the selection of crop and cropping system for his field with economic data of the crop. It also provides cultivation practices for all the crops.

The action plan for the agricultural production at Taluka and village level will also be available under this programme to coordinate the efforts of all the functionaries.

The web-sites for agricultural universities, Department of Agril, Department of Animal Husbandry, Department of Horticultural and other board/corporation engaged with agricultural has been establish under this program which provide information regarding different schemes, statistics, working system etc.

To implement this program efficiently and effectively the empowerment committee was appointed. The constitution of the committee is as under:

SR.NO	NAME OF MEMBER	Designation
1	Prof. M.C.Varshneya	Vice Chancellor
2	Dr.A.R.Pathak	Director of Research
3	Dr.K.F.Patel	Director of Extension Education
4	Dr.J.G.Sarvaiya	Director of Information Technology
5	Dr.A.M.Shekh	Principal, BACA,
6	Dr.N.K.Kalyansundram	Prof. & Head , Dept. of Soil Science, BACA
7	Dr.S.K.Dixit	Prof. & Head ,Dept of Statistic ,BACA
8	Dr,I.R.Rathod	Associate Professor Extension Education
9	Dr.R.H.Patel	Associate Professor, Dept. of Agronomy
10	Dr.Vyas Pandey	Professor, Department of Meteorology, BACA
11	Shri.R.S.Parmer	I/c Assistant Professor, Information Technology

Meetings of the committee

Sr. No.	Meeting	Date
1	1st	09-04-2004
2	2nd	17-04-2004
.	.	.
.	.	.
.	.	.
35	35th	28-29-30/03/2005

The Committee finalized the agency M/s CES Technology Pvt. Ltd. New Delhi for supply of layer Software, Computers, Computer tables and chairs, Networking components and development of web-based application software and installation of computer and network points in all the 25 districts, 25 talukas and all KVKs of Gujarat, in addition to state head quarter Gandhinagar and four state Agricultural Universities. The State head quarter, Gandhinagar and Anand Agricultural University were the two nodal centers with mirror servers.

9.7.2 Web Site for AAU

Directorate of Information Technology has prepared a Web-Site for Anand Agricultural University; the domain name is www.aau.in. This Web Site includes various aspects and activities of Anand Agricultural University like administration, faculties, colleges, education, and extension, e-library, tender, right to information act. etc. Further, a Web Mail Service has been incorporated in the Web Site enabling the users to read and reply their e-mail from any computer of LAN. There are about more than 4000 E-mail users. The Web Site has been maintained and updated during the year.

9.8 TECHNICAL SUPPORT

On inclusion in various committees of the University, the Director, IT took the measure 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.

Because of the on-hand training given to various employees on computer applications, administrative and account activities have been improved. Further, theoretical and practical knowledge about IT and its related equipments are made available to other line department of the state, which help the other organization also to strengthen their IT activities.

Most importantly the Directorate of Information Technology was given state level responsibilities regarding IT work of Krushi Mahotsav and Soil Health Card Program by the Government of Gujarat. The required activities were carried out effectively during the period under report.

Chapter-10

Dr M.D. Patel Regional e-Library: Blooming in to e-era

The history of Dr M.D. Patel Library dates back even prior to our Independence. In 1942, this Library was an accessory to the then SMC School of Dairy Science. After the inception of the B.A. College of Agriculture in 1947, it grew as the Central Library, merging the collections of BACA and SMC College of Dairy Science. In 1983, it was named after Dr Maganbhai Dahyabhai Patel, and since then, the Library was managed by illustrious people like Dr P.D. Mistry.

Launching of NATP:

Looking to the striking advances made by the Information Technology Center at Anand campus in the erstwhile Gujarat Agricultural University for the development of Agricultural Education as per SAU model under ARIS and ISD, ICAR had taken Dr M.D. Patel Library to be an integral part of its 18-Regional Library Consortium project and selected Dr M.D. Patel Library as the Regional Library in the western zone.

The launching of National Agriculture Technology Project by ICAR, New Delhi, on Library Improvement and Networking (LIS O&M) drastically altered not only the fiscal statistics, but also the Library's status as well, as the Library became an inextricable part of a nation-wide consortium, utilizing a total sum of Rs. 230 lakhs towards digitization, automation and establishment of modern Cyberary with 100 mbps LAN connectivity and 2 mbps Internet and 27 work-stations, thereby obtaining the esteemed position of **Regional e-Library.**

Library Council:

The Library Council was formed vide Registrar's Office order No. AAU/Adm/Aca(Meeting)/(A-101)/1309-57/05, dated 3.2.2005, consisting of following Members:

Sl. No.	Members	Status
1.	Vice-Chancellor, AAU, Anand	Chairman
2.	Director of Research & Dean P.G. Studies	Member
3.	Dean (Agriculture), AAU, Anand	Member
4.	Dean (Dairy Science), AAU, Anand	Member
5.	Dean (Veterinary Science), AAU, Anand	Member
6.	Dean (Agril. Information Technology), AAU, Anand.	Member
7.	Dean (Food Processing Technology) AAU, Anand.	Member
8.	Registrar, AAU, Anand.	Member
9.	Director of Extension Education.	Member
10.	Director of Student Welfare, AAU, Anand.	Member
11.	Dr. M.J. Solanki, Prof. & Head, Dept. of Dairy Tech., S.M.C. College of Dairy Sciecne, AAU, Anand.	Member
12.	Dr. N.B. Chauhan, Prof. & Head, Dept. of Extension Education, B.A.C.A.,AAU, Anand.	Member
13.	Dr. M.S. Vora, Res. Scientist, Dept. of Biofertilizers, AAU, Anand.	Member
14.	Rajshekhar Palobatti, (Ph.D.), Dairy Engineering Dept., S.M.C. College of Dairy Science, AAU, Anand.	Member
15.	Hadiya, K.K.(Ph.D.) Vet. Microbiology Dept., Veterinary College, AAU, Anand.	Member
16.	University Librarian, Dr.M.D.Patel Regional e-Library, AAU, Anand.	Member Secretary

Collection:

Presently, the Library is in possession of 260 Foreign and Indian Journals, and Eleven CD Rom database (AGRIS, AGRICOLA, J-GATE, J-CCC, BIOSIS, CURRENT CONTENTS, INDIAN HARVEST, AgECON, PROVIS, WINSPIRES/WEBSPIRES, CAB), while Science Citation Index is accessible to all the ICAR Institutes through Intranet on the IP address http://acess.isiproducts.com/IARI.

The e-Domain:

With the Installation of the LibSys Software, the process of automation was complete, and the old manual process of circulation through library cards is totally replaced by e-cards and e-circulation, which enables the users to preview the entire information of circulatory material as well as their own e-account status.

Altogether, 68,283 entries consisting of books, back volumes and reports are electronically catalogued. 2170 PG and Ph.D. theses abstracts, and 132 rare books are digitized and installed along with the online services of Database on the LINUX Server, and monitored by the Director, Information Technology Centre, AAU, Anand. A **Union Catalogue** of 173 journals was prepared and deposited with NATP, ICAR, New Delhi

The Cyberary with its 27 work-stations was inaugurated by the National Director, Dr S.L. Mehta, NATP, New Delhi on April 21, 2003. Altogether, 11 CD ROM Database are being monitored online on LINUX Server with the help of 512 kbps/100 mbps connectivity in the Cyberary, whereas Science Citation Index is available to the users on the ICAR web. This facility is being extensively

utilized by both faculty and students on an average of daily 100-125 users for 14 hours per day (approx. 3000 users per month). Online database access is available to other Agricultural Universities of Gujarat State through www.aau.in web page.

Services:

The Library renders its services to the users from 08 00 hrs. to 22 00 hrs. The e-Circulation Counter, Reprography Service, and the Cyberary are open to the readers through the working hours and also on regular Institutional holidays like second and fourth Saturdays. In addition, the Library extends ILL (Inter Library Loan) service.

Impact Assessment :

The Internet access through ERNET and GSWAN and existing Database facilities and other IT enabled services have helped aspirant students to update their General Knowledge along with latest information in their respective disciplines, besides providing the much-needed impetus to the on-going research programs of the University as well as in formulating and executing newer projects. It also boosted the competitive spirit in the scientist community, alerting them to the day to day technological progress, while the e-mail has almost zeroed the global distances, making rapid and effective interaction possible. In the Education field, several course curricula are being restructured, due to which it would be possible to transmit latest knowledge to the students, making them via media to reach grass root levels.

PLEDGE

We, the scientists, students, and
The employees of Anand Agricultural University,
unitedly
Stand to make the solemn pledge
That we enrich and glorify
The grandeur of our country
And make it agriculturally prosperous;
And will devote ourselves with heart and soul to
Realize the objectives of our Institution.