Introduction to Agriculture

Speech by Honorable President of India, Shri Pranab Mukherjee in Vice Chancellor meet held in 19th January, 2013 at Barmati, mentioned that “the agriculture sector is one of the major success stories of post-independent India. India had inherited an under-developed agricultural system in 1947. We were a net food importer to the tune of an average 3 million tonne per year between 1946 and 1952. Due to the vision of our policy makers, ingenuity of our agricultural scientists and the industry of our farmers, India became self-sufficient in food grains. Today, India is a leading producer of several food commodities - cereals, fruits, vegetables, milk, eggs and fish. We have produced 255 million tons of food grains in 2012-13 after setting a record of 259 million tons in the previous year. Healthy agricultural growth has improved food security along with nutritional security.” (Mukharjee, 2013) ¹

Agriculture remains central to India’s economy. The livelihood security of an incredibly large number of farm families is linked to agriculture. 85 per cent of small and marginal farmers derive their livelihood from this sector. To make farming more remunerative and to transform farmers into agriprenuers, research innovations for low cost technologies, machines and tools are necessary. ICAR is the apex organization for agricultural research and education in our country. It has completed almost eight and half decades of meritorious service. Through technological solutions, it has placed Indian agriculture on a firm footing. It has to now focus on emerging issues like climate change, natural resource degradation, appearance of new host-parasite complex, concerns for bio-safety, restrictive trade regimes, competitiveness of farm produce, improvement in farm income, shift in the consumption pattern towards processed food, and increased demand for food items of animal origin.

Education is the ability to meet life’s situation, it is a character building process, enhancing one’s personality and making him/her rational, capable, responsive and intelligent. Twenty first century is characterized by the emergence of multiculturalism due to industrialization, urbanization, globalization and disintegration in the family system. It is described as the century of stress and strain. Since, education is viewed as an instrument to develop the cognitive qualities, tolerance and understanding of people, it should prepare the younger generation to understand and face the realities of globalization (Kulshretha, 2013)²

Globalization has many meanings depending on the context and on the person who is talking about. “The term globalization refers to the integration of economies of the world through...
uninhibited trade and financial flows, as also through mutual exchange of technology and knowledge (Singh L., 2013).²

Education is as old as the human race. It is a never-ending process of inner growth and development and its period stretchers from the cradle to the grave. Education, in real sense, is to humanize humanity, and to make life progressive, cultured, and civilized. It is very important for the progress of Individual and society. It is through Education that man develops his thinking and reasoning, problem solving and creativity, intelligence and aptitude, positive sentiments and skills and good values and attitudes. It is through Education that the Individual is become a well-balanced personality, aesthetically rich, culturally sound, emotionally stable, mentally alert, morally upright, physically strong and healthy, socially efficient, spiritually enlightened, vocationally self-sufficient and internationally liberal. The entire life is Education as it is continuous and dynamic process forever growing man and society (Singh T. S., 2012).³

India is an agricultural country. Agriculture and its allied activities act as main source of livelihood for more than 80% population of rural India. It provides employment to approximately 52% of labour. Its contribution to Gross Domestic product (GDP) is between 14 to 15%. This growth in itself represents a remarkable achievement in the history of world agriculture. India has achieved significant growth in agriculture, milk, fish, oilseeds and fruits and vegetables owing to green, white, blue and yellow revolutions. All these revolutions have brought prosperity for the farmers. Many factors are responsible for these achievement viz conducive government policies, receptivity of the farmers and also establishment of higher agricultural education institutions. The new breed of skilled human resources were instrumental in generating new technologies, and in its assessment, refinement and finally its dissemination to the farming community through extension methods.

In order to sustain, diversify and realize the potential of agriculture sectors, it is necessary to develop skilled human resources. Agricultural human resource development is a continuous process undertaken by agricultural universities. Agricultural universities impart education in the various disciplines of agriculture viz Agriculture, Agricultural Engineering, Forestry, Horticulture, Veterinary and Animal Husbandry, Dairy Science, Food Technology, Fisheries Science, Agriculture Information Technology, Agri Business Management etc. It imparts education at the level of diploma, degree, masters and doctoral level. At present there are 53 state agricultural universities (SAUs), five deemed to be universities, one central agricultural
university and four central universities with agricultural faculty. All these educational institutions get financial and technical support from Indian Council of Agricultural Research (ICAR), New Delhi (ICAR, 2012).

Table No 1: Landmarks of Agricultural Education

<table>
<thead>
<tr>
<th>Year</th>
<th>Landmark</th>
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<tbody>
<tr>
<td>1952</td>
<td>Indian Council of Agricultural Education (ICAE) set up (worked up to 1964 under ICAR).</td>
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<tr>
<td>1958</td>
<td>First <code>Deemed University</code> status bestowed on Indian Agricultural Research Institute (IARI).</td>
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<td>1959</td>
<td>Chief of Agricultural Education and ex-officio Secretary to ICAE appointed.</td>
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<td>1960</td>
<td>Emergence of SAUs, starting with Pantnagar, based on the recommendations of Joint Indo-American Teams.</td>
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<tr>
<td>1965</td>
<td>Standing Committee on Agricultural Education replaced the Education Panel.</td>
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<tr>
<td>1965</td>
<td>ICAR reorganization with four Divisions including Agricultural Education.</td>
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<tr>
<td>1966</td>
<td>ICAR developed Model Act for Agricultural Universities in India.</td>
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<tr>
<td>1973</td>
<td>Second reorganization of ICAR with the establishment of Department of Agricultural Research and Education (DARE) to provide greater autonomy to ICAR, and Regional Committees to take care of regional needs, and creation of Agricultural Research Services (ARS) and Agricultural Scientists Recruitment Board (ASRB).</td>
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<tr>
<td>1974</td>
<td>Norms and Accreditation Committee (NAC) replaced Standing Committee on Agricultural Education.</td>
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<tr>
<td>1988</td>
<td>G.V.K. Rao Committee recommendations to revamp the functioning of ICAR including its role in Agricultural Education.</td>
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1996 | Accreditation Board established replacing NAC.

2007 | IV Deans Committee revised UG course curricula and syllabi, and norms, standards and academic regulation.

2009 | National Core Group revised PG (Master’s and PhD) course curricula and syllabi and the common academic regulations.

Source: Draft Document of National Agricultural Education Project, ICAR

In India, agricultural universities were established on ‘land grant’ pattern of USA which helped incorporation of a number of diverse subjects in the courses as also provision of hands-on practical exposure to the student. All disciplines of education have witnessed dramatic changes and so is the case of agricultural education also. Agricultural education is now required to evolve in tune with rapidly changing national and international scenario. Present and future agriculture practices are characterized by stagnating/declining productivity and profitability, degradation and depletion of natural resources, increased risks associated with climate changes, unsafe livelihoods for millions of small and marginal farmers, regional imbalances in agricultural productivity, rising input costs, vulnerable markets, unsound profits, changing food habits, increased quality consciousness, higher post-harvest losses, fragmented processing industry, globalization of trade and commerce, inefficient technology transfer system, poorly coordinated natural disaster management system, etc.

Present and future situation necessitate a renewed thrust for better quality and relevance of higher agricultural education which should facilitate and carryout function of human resource development to prepare self-motivated professionals and agro entrepreneurs in the light of changed higher educational scenario in general and higher agricultural education in particular. The higher educational scenario in present times is influenced by forces of globalization, emergences of new areas of specialization such as Intellectual property rights (IPRs), World Trade Organization (WTO) and General Agreement on Trade in Services (GATS) related areas, use of cutting edge new beneficial technologies like biotechnology, nanotechnology etc. Therefore the agricultural graduates on completion of their studies must possess knowledge about all such new techniques. They must be able to handle the new challenges posed by globalized environment. They must also possess required professional capabilities to deal with the concerns of sustainable development of agriculture in all its
aspects. The most important thing is that agricultural education should address the requirement of major stake holder i.e. Indian farmer (Makwana, 2013).

1.1 Agricultural Education & research development in Gujarat

1.1.1 History Institute of Agriculture (1939 to 1971):

The institute of Agriculture, Anand called Krishi Go Vidya Bhavan in Gujarati and more popularly known as “Khetivadi” came into existence in June, 1939 with donations of Rs 9,00,000 from the Sheth Mansukhlal Chhaganlal Trust and Rs 6,00,000 from the Sheth Munglal Goneka Trust of which Sardar Vallabhbhai Patel and Dr. Kanaiyalal Munshi were the trustees. The donations were accepted by the then Government of Bombay, which on its part, acquired 850 acres of land in Anand for the institute and also over the Northcote cattle Farm Chharodi, near Viramgam, along with its 2251 acres of pasture land and 309 heads of Kankarej cattle. Similarly the Athwa Dairy Farm at Surat with its small herd of Kankarej cattle and 40 acres of pasture land was also handed over to the institute.

The main objectives with which the Institute of Agriculture has been are to impart education and carry out research in the agricultural and animal sciences, popularize improved methods of agriculture and animal husbandry and maintain pedigree herds of milch cows and draught cattle for multiplication and distribution with the ultimate view to raise the standard of economy.

The task of developing 850 acres of hitherto uncared for land by bunding, leveling and building up of fertility was stupendous but, it was taken up with courage and confidence by the Director and Secretary Dr. M.D. Patel under incessant inspiration and guidance from the Chairman of the Governing Body, Sardar Vallabhbhai Patel and the Vice Chairman Dr K M Munshi respectively. Simultaneously, on the other hand, Sheth M C School of Agriculture for training farmer’s sons in modern scientific methods of agriculture was started and research in agronomy, agrostology, animal breeding, animal nutrition, animal husbandry and dairying was also taken up. In the year 1947, a long cherish dream was fulfilled with the starting of the B A College of Agriculture as a result of donation of Rs 5,00,000 from Sheth Amritlal Hargovendes of Ahmedabad to perpetuate the memory of his late son Shri Bansilal Amritlal and a contribution of Rs. 15,00,000 from the Government of Bombay.

The process of development was rather slow in the early years on account of innumerable difficulties but, since independence, constant and all-round development has been going on
with the result that to da the Institute has grown into a large sized tree with numerous branches and branch lets throbbing with multifarious activities of education, research and extension in the fields of agricultural and animal sciences. The institute has given higher training leading to M.Sc. and Ph.D. degrees in almost all the branches of agricultural and animal sciences on its own campus.

1.1.1.1 Educational activities:-

The institute’s educational activities have been ever increasing since the starting of Sheth M C School of Agriculture in the year 1941. The various developments were as under.

- Sheth M C School of Agriculture offers a two year diploma course in agriculture for farmers’ sons started in 1941. With a view to impart training to farmers’ sons in modern scientific methods of Agriculture and with a view to turning out practical hands, who will go back to their lands with knowledge of improved methods.

- Sheth Mungalal Goenka Institute of animal genetics and animal nutrition was started with the transfer of the Chharodi Cattle Breeding Farm for Kankarej cattle to Institute in April 1940. As a prerequisite to future research work in animal genetics, it was necessary to analyze the results achieved by the farm from its inception in 1900 to 1940.

- The B A College of Agriculture offers a four years degree course leading to B.Sc. Agriculture Degree of Sardar Patel University stated in 1957, and Post graduate courses leading to M.Sc. Agriculture and Ph.D. degrees in various fields of agricultural and animal sciences, originally started at the institute in 1944. From 1947 to 1950, the college was affiliated to Bombay University and from 1950 to 1957 to Gujarat University. Students, who have passed through the portals of institute, were molded and fashioned to perform a distinct national service & have passed through the cavalcade of years to follow their destiny and to occupy with distinction their chosen place of life.

- Gramsevak Training Centre offers preserve and refresher training courses for Gramsevakas started in 1952. The Gram Sevak Training Centre which was formally known as Training cum development project was started by ICAR in cooperation with Ford Foundation and state government. It was one of the five pilot centers started with a view to impart practical training in extension methods.
Bidi Tobacco Training Course offers eight months training to farmers in the improved technique of growing bidi tobacco started at 1957.

Home Science School offers a two years certificate course to village girls in home science started at 1959. Since the majority of people live in villages, it is most essential to raise the living standards through development programmes in India. One of the basic needs for National Improvement, therefore, is a Home Science training programme for carrying the scientific knowledge of the subject to the doors of each village woman.

Indian Dairy Diploma (Dairy Technology) course offers two years’ training for Indian Dairy Diploma stated in 1960 with provision for training 50 students.

Dairy Science College offers a four year degree course in the science and technology of dairying and milk industry started at 1961. India has an ambitious programme on hand in the field of dairy development. The successful development of various dairy projects depends on several factors. One of the very important factors among these is the availability of sufficient number of adequately trained personnel. The institute had visualized this requirement and had decided to plan for it.

Extension Education Institute offers short term courses as well as post graduate training courses in extension education to the teachers of Gram Sevak Training Centers, and staff of development blocks and Agriculture, Animal husbandry and other departments of the states all over the India started in 1962.

Poultry Training Centre offers six months’ training courses in Poultry management started in 1963. The training centre is meant for theoretical and practical training in Farm Poultry production, poultry nutrition, elementary poultry breeding, poultry diseases, brooding, hatchery management, marketing etc.

Baker’s Training Centre offers a two months basic training course and a five months craftsmanship course in the manufacturing of bakery products started in 1963.

Workshop wing offers one years’ training in fabrication, repair and up keeping of agricultural implements, machinery, tools etc. started in 1966.

1.1.1.2 Research Activities:-

Research activities at the institute are carried out through departmental projects, post graduate study programmes and projects financed by outside agencies like ICAR, ICTC,
Ford Foundation, PL 480 Programme etc. Apart from a number of schemes financed by the ICAR the major research projects like

- Western Region Animal Nutrition Research Station, financed by ICAR
- Bidi Tobacco Research Scheme, financed by the ICTC
- Project for the study of reproductive biology in farm animals, financed by Ford Foundation.
- Central Poultry Research Station financed by Govt. of Gujarat.
- Scheme to develop methods for large scale rearing of parasites under laboratory conditions financed by the USA under the PL 480 programme.
- Project for the comparative study of various fertilizers on the yield and quality of some common crops of Gujarat, financed by the Gujarat State Fertilizer Company Ltd.

1.1.1.3 Extension activities:-

The very fundamental objective behind any research in any field is only one and that is benefit to mankind, may it be in the field of arts, science, medicine, agriculture or any other field. It is also note necessary that the benefits must be material ones; they may be of any nature. So, the research in agricultural fields aims primarily at the benefit to farmers and thereby to the mankind, with benefits in terms of better agricultural production. it is therefore imperative that,

- The research workers and institutions involved in research have a firsthand knowledge of farmers’ problems
- The results of research are disseminated to the farming community
- The farmers are acquainted with the new knowledge and techniques
- They are provided with necessary equipment & material to make use of the new knowledge and techniques.

Agricultural Extension implies in very broad sense and Institute tries to fulfil them by undertaking the activities like contact with farmers, supply of inputs of production of seeds & seedlings, awareness in application of irrigation, insecticides & fungicides, advisory service, exhibitions & shows, short term courses & classes, farmer’s camps in the villages, farmers’ days & demonstrations, talks & lectures etc. (Report A., 1965).
1.2 Gujarat Agricultural University (1972-2003)

In the year 1972, Government of Gujarat has taken major step in the development of new state agricultural university established with specific mandates of promoting productivity of agricultural & allied sector. The main unique features of the Gujarat agricultural University was a multi campus university i.e. campus at Anand, Navsari, Junagadh & Dantiwada. Institute of Agriculture & its research stations were merged into Gujarat Agricultural University. There is a Director of Campus for each campus to coordinate and integrate research, education and extension training programmes of campus.

1.2.1. Educational Activities:-

Gujarat Agricultural University had 12 constituted colleges located in different faculties which impart under graduate and post graduate teaching under semester system. List of colleges were as under.

- B. A. College of Agriculture, Anand
- Sheth M C College of Dairy Science, Anand
- College of Veterinary Science & Animal Husbandry, Anand
- N M College of Agriculture, Navsari (Navinchandra Mafatlal College of Agriculture was established at Navsari on May-1965. The college was affiliated to Gujarat University, Ahmedabad from 1965 to 1968 and from 1968 to 1972 to South Gujarat University, Surat. N. M. College of Agriculture became the constituent college of Gujarat Agricultural University since June, 1972.)
- ASPEE college of Horticulture & Forestry, Navsari (The ASPEE College of Horticulture and Forestry was started in 1988 with a generous donation by ASPEE Foundation for Agricultural Research and Development, Malad, Mumbai with an aim to bring out trained human resource for the development of Horticulture and Forestry sectors in the state.)
- College of Agriculture, Dantiwada, (The Chimanbhai Patel College of Agriculture was established in June, 1982. The formal inauguration of the college was done by Dr. Urmilaben Patel, M.P. and it was named after Late Shri Chimanbhai Patel (Ex. Chief Minister, Gujarat state) on October 29, 1994.)
- College of Veterinary Science and Animal Husbandry, Dantiwada (The college of Veterinary Science and Animal Husbandry was established on January 17, 1981 in the Press Building of Gujarat Agricultural University.)
- ASPEE College of Home science, Dantiwada. (This College was established during the year 1988 with the main objective of raising educational standard of women in general and of rural families in particular through teaching, research and extension activities).

- The College of Agriculture, Junagadh started functioning in the month of June, 1960. This college was the first Government Agricultural College in the Gujarat State. The college was affiliated to Gujarat University, Ahmedabad from its inception till the year 1967. Subsequently, on establishment of Saurashtra University, Rajkot (1968) the affiliation was transferred to it. Later on the college became a constituent College of the Gujarat Agricultural University (1972).

- The College of Agricultural Engineering and Technology is one of the Constituent colleges of the Gujarat Agricultural University started in 1984. Timeliness of farm operation through efficient agricultural implements and machinery as well as appropriate land and water management activities along with efficient post-harvest technology and processing as well as efficient energy utilization are the important areas in which Agricultural Engineering profession has been playing major role.

- College of Fisheries was set up at Veraval on 10/09/1991 under the aegis of the Gujarat Agricultural University by the Government of Gujarat. Immense inland fisheries resources are available in the State. Educated and trained man power is essential for the development and management of these vast fisheries resources.

### 1.2.2 Research Activities:

The research activities continued on problems pertaining to agriculture and allied sciences of animal husbandry and veterinary and also research on cereals and pulses, cotton and other fiber crops, oil seeds, sugarcane, tobacco, horticulture and grasses, besides research activities are also concentrated on subjects of special relevance such as dry farming, agricultural economics, plant protection, soil science and agricultural engineering. The University has also continued to collaborate with the ICAR, coordinate research projects. As a measure to broad research, it was decided to organize future research projects as problem oriented and time bound. With a view to organize and to develop sound and meaningful research in the University an Agricultural Research Council has been made broad based. Research activities on applied research problems pertaining to agriculture and allied sciences with interdisciplinary approach continued receiving attention. it is also necessary to reorganize the research set up by establishing main research stations and testing stations in the zones as per
agro climatic requirements. As there are large numbers of sub stations, farms involving duplication of efforts in some fields, the University has considered to appoint a committee to go into the working of existing research programmes at different stations, to suggest improvement and development of programmes on more rational basis, to suggest norms for physical facilities like land, farm machinery, laboratory, equipment, stores, staffing pattern and housing and other facilities.

1.2.3. Extension activities:

The University is responsible along with teaching and research for the agricultural extension education and training programmes. It is necessary to make useful information based upon the findings of research available to farmers quickly and others to help them solve their problems. So far as extension education is concerned, the existing units are Extension Wings, Extension Education Institute, Gramsevak Training Centres, Agricultural Schools, Home Science School, Bakery School and other extension training programmes at the campuses. In addition to the above extension education and training programmes, farm advisory service was extended to farmers through Farmer’s day, Radio talks, National Demonstrations etc. “Krishi Go Vidhya” a monthly magazine, monthly University News Bulletin and Gujarat Agricultural University Research Journal are published for dissemination of the knowledge. The University was also engaged in coordinating programmes of extension with State Department of Agriculture, Animal Husbandry and Panchayats. To expend the extension education activities and to have meaningful and sound training, an Agricultural Extension Educational Council has been established & efforts for the more smooth & efficient extension programmes (University G. A., 1975). 8

1.3 Dissolution of Gujarat Agricultural University

In May 2004, Dissolution of Gujarat Agricultural University formed four new state agricultural universities on the basis of 8th Agro climatic zone. New university named as under

- Anand Agricultural University
- Navsari Agricultural University
- Junagadh Agricultural University
- Sardar Krushi Nagar Dantiwada Agricultural University
1.3.1 Anand Agricultural University

Anand Agricultural University was carved out from the erstwhile Gujarat Agricultural University to establish and incorporate teaching and imparting education in Agricultural and Allied Sciences in the state of Gujarat by the Gujarat, through enactment of Gujarat Act No.5 of 2004. Farming community is being provided support in all the three facts i.e. education, research and extension activities in agriculture and its allied fields through AAU. The vision and mission of AAU are as under:

Vision

“Agriculturally Prosperous Gujarat and India”

Mission

“ The mission of the Anand Agricultural University is to provide teaching, research and extension education services related to Agriculture, Dairy, Veterinary and Allied Sciences including newer science like Agricultural Information Technology, Agricultural Engineering Technology, Food Processing Technology, Agricultural Business Management etc, and thereby develop excellent human resource and innovative technologies to serve the farming community with the motto of making Gujarat and India agriculturally prosperous.

Goal and Objectives

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

1.3.1.1 Educational Activities:-

- To impart education in agriculture and allied science at undergraduate and post graduate level leading to Bachelor’s, Master’s and Doctorate degree in various colleges of Agriculture, Dairy, Veterinary, Horticulture, Agriculture Engineering,

- To provide integrated agricultural education at different levels to increase efficiency and effectiveness of skills of students.
- To upgrade the technical competence of teachers by redesigning course curriculum as suggested by ICAR/Dean’s Committee and coordinating the teaching with research in the field of agriculture.
- To organize vocational courses to educate rural youth in various disciplines of agriculture and allied sciences with intention to develop self-employment.
- To provide consultancy and advisory services to the industry, government and non-government sectors.
- To architect agribusiness professionals for Agriculture, Agriculture food firms, rural and allied sectors.
- To encourage entrepreneurial spirit and develop qualified entrepreneurs for rural development.
- To cater the needs of enterprises and cooperatives in agribusiness at national and international level.

Constitution Colleges

- B. A. College of Agriculture, Anand
- Sheth M C College of Dairy Science, Anand
- College of Veterinary Science & Animal Husbandry, Anand

New colleges were started in the new edge of technology as well as in existing faculty. List was as under

- College of Food Processing & Bio Energy, Anand
- College of Agricultural Engineering, Godhara
- College of Agricultural Information Technology, Anand
- International Agri Business Management Institute, Anand
- College of Horticulture, Anand
- Two New college in faculty of Agriculture, Vaso, Jabugam
- Polytechnic college faculty of Agriculture, Anand, Vaso,
• Polytechnic college faculty Horticulture, Vadodara
• Polytechnic college faculty Agricultural Engineering, Dahod
• Polytechnic college faculty Food processing, Anand

1.3.1.2. Research Activities:-

• Aimed at evolving new varieties and breeds and developing technologies for increasing agricultural and animal productivity with a view to improve socio economic status of farmers of Gujarat and India.
• Develop package of practices for cultivation of various crops and cropping systems of middle Gujarat.
• Develop integrated farming system, pests & disease management system, organic farming and Biological control.
• Develop cutting edge technologies in field of Nanotechnology pertaining to Agriculture, Animal husbandry and Food sciences.
• Develop specific indigenous and cross breeds suitable to agro climate of middle Gujarat

Varity of experiments & scheme were run of 13 research station. Anand Agricultural University was involved in multi-dimensional research activities which include research on natural resource management, pest and disease management, water management, high quality seed production, post-harvest technology, value addition, plant and animal biotechnology, dairy science etc.

1.3.1.3. Extension Activities:-

• Impart training to the officers and extension workers of line department of Government of Gujarat and India, field functionaries, staff of the university, NGOs, famers, entrepreneurs etc.
• Conduct short and long duration vocational training for farmers, farm women, farm youth and tribal.
• Assess refine and demonstrate latest agricultural technologies of University through front line demonstrations for their wider adaptation.
• Transmit agricultural technologies to the farmers and rural masses of Gujarat through mass media, information technologies and video conferencing. (Annual Report, 2011).  

1.3.2 Navsari Agricultural University

Navsari Agricultural University undertakes fundamental, applied and verification research in agriculture, horticulture, forestry, agricultural engineering and animal sciences through respective faculties, two zonal research stations, three main crop based research stations, three regional research stations and six satellite research stations. NAU has a strong extension network of Krushi Vigyan Kendra (KVK) for transfer of technologies to farmers and agri-entrepreneurs. NAU has initiated single-window-delivery system through Agricultural Technology Information Centre (ATIC).

Vision

Transform Navsari Agricultural University into a Knowledge Power Centre by the year 2020.

Mission

Attain excellence in education, relevance in research and outreach in extension education.

Goal

• Diversification of educational programmes
• Strengthening of Central and College Libraries.
• Counseling and Placement through campus interviews.
• Enhance Total Factor Productivity of mandated crops of South Gujarat
• Reduction in the cost of cultivation to improve profit margin.
• Value addition and by product utilization.
• Evolving Remunerative and Sustainable farming systems.

1.3.2.1 Education Activities:-

• Generate demand and need based qualified, competent and confident scientific manpower in field of agriculture and allied sciences.
• Make agricultural education responsive to the growing and time bound needs of the stakeholders in view of Globalization scenario.
• Impart entrepreneurial and business skills in order to develop professionalism in the graduates and diploma holders.
• Holistic development of student’s personality by nurturing competitive spirit and public service motive.

Constituent Colleges under this university are as under

• N. M. College of Agriculture, Navsari
• ASPEE College of Horticulture and Forestry, Navsari
• ASPEE College of Agribusiness Management, Navsari
• Vanbandhu College of Veterinary Science and Animal Husbandry, Navsari
• College of Agriculture, Waghai
• College of Agriculture, Bharuch
• Gujarat Agricultural Bio Tech Institute, Surat
• College of Agricultural Engineering, Dediapada
• Polytechnic In Agriculture, Bharuch
• Polytechnic In Agriculture, Vyra
• Polytechnic In Agricultural Engineering, Dediapada
• Agriculture Cooperation, Banking & Marketing Polytechnic, Waghai
• Polytechnic In Horticulture, Paria

1.3.2.2 Research Activities:-

NAU has various research centers at different locations including some of them in main campus of Navsari. NAU has very good research set up in terms of two main, two zonal research stations, two regional research stations and nine verifications and testing centres to accomplished area specific need based research activities in south Gujarat. The mandate crops of NAU are Cotton, Rice, Sugarcane, Sorghum, Pulses, Hill Millets and Horticulture crops Mango, Sapota, Banana, Papaya and vegetable crops. Besides, NAU look after conservation and improvement of native animals of south Gujarat like Surti Buffalo and Surti Goat.
• Broaden and strengthen the research base of the University.
• Enhancement of genetic yield potential through conventional and biotechnological tools.
• Evolve need based location specific market oriented, remunerative, productive, sustainable, eco-friendly and scale neutral technologies for different agro-eco-socio economic situations of South Gujarat.
• Develop technologies for rejuvenation, reclamation and conservation of natural resources including bio-diversity.
• Evolving modern agricultural practices, value addition and processing technologies for increasing the Total Factor Productivity of various agriculture occupations like Horticulture, Floriculture, Animal husbandry and Inland fisheries.
• Design and set up viable mechanisms for developing situation specific management models/modules for different production systems based on changing needs and demands.
• Production of Breeders’, Foundations and Certified seeds/graft/seedlings/of the mandate crops to assure higher yield, pest and disease resistance and quality.

1.3.2.3. Extension Activities:-

• Generate middle level technicians in the fields of agriculture, horticulture, livestock management, bakery, gardening and landscaping and other agro related courses.
• Conduct Training and Demonstrations to the Officers of Line Departments/ Corporates/ Cooperatives/ NGOs and other extension functionaries.
• Upscale farmer’s skills in modern agriculture and horticulture for green field employment.
• Fortline extension through FLDs and OFTs.
• Assume greater role in technology dissemination and agriculture development especially in the tribal area of South Gujarat.

NAU is pioneer institute in south Gujarat region for transferring the agricultural technology to the farmers to increase their agricultural production. The Directorate of Extension Education is actively involved in transfer of latest technologies to the farmer’s field and giving its feed back to the research workers. With varied geographical, biophysical and socio economic conditions of the region, the work of validation of newly developed technologies
and transfer of technology has become challenging. The Directorate undertakes extension activities through 5 KVKs, Training Units, ATIC, extension departments at different colleges along with the State Agricultural Management and Training Institute, Gujarat assisting in extension reform programme (University N. , 2012).  

1.3.3 Junagadh Agricultural University

The Junagadh Agricultural University came into existence as a part of process of development of Agricultural Universities in Gujarat. The jurisdiction of this university includes all seven districts of Saurashtra region i.e. Junagadh, Rajkot, Jamnagar, Surendranagar, Bhavnagar, Amreli and Porbandar.

Aim

The aim of Junagadh Agricultural University is to promote agricultural productivity in general and to improve economic condition of rural community in particular through integration of teaching, research and extension education.

1.3.3.1 Education Activities:-

The educational programme in JAU is based on two tier system. The first one covers higher education in Agriculture, Horticulture, Agricultural Engineering & Technology, Fisheries Science and Veterinary Science & Animal husbandry, in which polytechnic diploma, under graduate and Post graduate residential instruction programmes are covered. while the second consists of lower education i.e. diploma and certificate programmes like Agriculture, Bakery Training, Livestock Inspector training, Mali Training and Extension education training.

The constituted colleges of JAU are as under

- College of Agriculture, Junagadh
- College of Agricultural Engineering and Technology, Junagadh
- College of Fisheries Sciences, Veraval
- Post Graduate Institute of Agri Business Management, Junagadh
- College of Veterinary Science & Animal Husbandry, Junagadh
- Polytechnic in Agriculture, Dhari
- Polytechnic in Horticulture, Junagadh
- Polytechnic in Agro-Processing, Junagadh
1.3.3.2 Research Activities:-

JAU has 30 research stations includes multidisciplinary main research stations, sub centres on various crops and testing centers spread over in North Saurshtra Agro climatic zones and South Saurashtra Agro climatic zones. These research stations are working in the field of Agriculture, Agricultural Engineering, Animal Sciences and Fisheries for catering needs of farmers, artisans, livestock holders, fishermen and rural masses for upliftment. At these research stations, scientists are working hard with sincere efforts for development of high yielding varieties, new improved agronomical practices and ecofriendly strategies for pest & diseases management. The research works is also undertaken on natural resource management, improved farm equipment’s, post-harvest processes, protected cultivation and renewable energy. Research efforts are continuing for improvement for cattle breeds, nutritive cattle feeds, fisheries and allied industries.

1.3.3.3 Extension Activities:-

Through extension activities students have competed different certificate/diploma courses viz, Agricultural diploma, Livestock inspector Training, Bakery training, Mali training etc. Training and visit system programme are held for rural community, extension worker etc. Through transfer of technology centres, KVKs are organized extension activities like symposia, workshops, farmers’ days, field trip, cattle campus visit, farmer meeting, FLDs etc. The efforts were made to inform famers/rural people about technological advancement through different media via, TV, radio and publication of agricultural literature (University, Annual Report, 2012).

1.3.4 Sardarkrushinagar Dantiwada Agricultural University

Sardarkrushinagar Dantiwada Agricultural University caters to the mission of Human Resources Development in agriculture and allied field. The university is committed to the overall development of the farming community as a whole. The University has been following its mission with zeal in development of human resource and solving areas specific problems of farmers in jurisdiction entailing six districts viz. Bansakantha, Sabarkantha, Mehsana, Patan, Gandhinagar & Kutch etc. The mandate of the University is teaching, research and extension.
1.3.4.1 Education Activities:

The concept of education is based on two tier system. The first one consists of the higher agricultural education covering Agriculture, Veterinary and Animal husbandry, Home Science, Dairy & food technology, Horticulture, Renewable Energy and Environmental Engineering, Food quality assurance, Nutrition & Dietetics, Basic Science & Humanities and Agribusiness which include graduate and post graduate resident instruction programme. The second part consists of lower education programmes provided at the Agriculture, Horticulture, Home science polytechnic course.

Constituent Colleges

- C. P. College of Agriculture, SK Nagar
- College of Veterinary Science & Animal Husbandry, SK Nagar
- ASPEE College of Home science & Nutrition, SK Nagar
- Shri G N Patel Dairy Science And Food Technology College, SK Nagar
- College of Horticulture, SK Nagar
- College of Renewable Energy and Environmental Engineering, SK Nagar
- College of Agribusiness Management, SK Nagar
- College of Basic Sciences & Humanities, SK Nagar
- College of Polytechnic in Agriculture, Dessa
- College of Polytechnic in Agriculture, Amirgad
- College of Polytechnic in Agriculture, Khedbrahma
- College of Polytechnic in Horticulture, Jagudan
- College of Polytechnic in Home Science, SK Nagar
- College of Polytechnic in Veterinary Science, SK Nagar
- College of Polytechnic in Veterinary Science, Kamdhenu Univesity, SK Nagar

1.3.4.2 Research Activities:

SDAU has 28 research stations includes multidisciplinary main research stations, sub centres on various crops and testing centres spread over in Kutch Agro climatic zones and North Gujarat Agro climatic zones. These research stations are working in the field of Agriculture, Agricultural Engineering, Animal Sciences and Home Science for catering needs of farmers,
artisans, livestock holders, women empowerment and rural masses for upliftment. At these research stations, scientists are working hard with sincere efforts for development of high yielding varieties, new improved agronomical practices and eco-friendly strategies for pest & diseases management. The research works is also undertaken on natural resource management, improved farm equipment’s, post-harvest processes, protected cultivation and renewable energy. Research efforts are continuing for improvement for cattle breeds, nutritive cattle feeds, fisheries and allied industries.

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1.4 Introduction – Organizational Climate

‘Organizational climate’ consist of two things i.e. organization & climate. Organization derived from Greek word - organon, itself derived from the better-known word ergon which means "organ" (Wikipedia, 2013). Organization means two or more people get to gather and form group and through which organization formed for achieving predetermined goal or objectives. Organization is a group of people working together cooperatively under authority towards achieving goals and objectives that mutually benefit the participants and the organization. Kossen state that, “An organization is group of individuals coordinated into different levels of authority and segments of specialization or the purpose of achieving the goals and objectives of the organization.” (Mamoria, 2007) Here, stress was given on the individual to form a group with collaboration of work, necessary distribution of power as well as coordination between member of group which were necessary to perform for the achievement of goals and objectives. The essence of above is that people who work together require a predefine system or structure through which they relate to each other and through which their efforts can be coordinated. Every organization has goals and objectives for its existence. These goals can be achieved more suitability if the behavior of the workforce and
the composition of organization can be predicted and integrated cooperatively (Mamoria, 2007).  

Now, Organizational Climate is defined by Litwin and Stringer, “set of measurable properties of work environment, perceived directly or indirectly by the people who live and work in this environment and assume to influence their motivation and behavior”. Here, importance is given on work environment which used to describe the surrounding conditions in which people operates its task. The measurements of different variable of work environment of organization are physical working facilities, office equipment, work processes & procedure etc. The work environment can involve interaction with peers, subordinates and superior formal, social as well as informal. Attempts are made to know the work environment effect on the productivity, motivational level and behavior within the organization (Ralph M. Roberts, 1992).  

Organizational Climate is one of the domain area of organizational and industrial psychology and very popular subject for the researcher. It is originated from management discipline. Over a period of time various frameworks, concept notes and its function, different sets of dimensions, various methods of measurements and research studies are very much different with each other and somewhat inconsistent. It generated substantial uncertainty in particular field of area. Over period of time, there concept of organizational climate and organizational culture were come to existence, and are considered to be the same (Kundu, 2007).  

Lewin K, Lippit R & White R.K, are publish a paper on “Patterns of Aggressive experimentally created social climate” in 10th Volume of Journal of Social Psychology where, initiation of study is surrounding environment around teenage with reference to social interaction. Here first time word social climate is come for existence but still conceptual outline of organizational climate is not proven by them. Fleishman has published an article “Leadership climate, Human relations training and supervisory behavior” in Personnel Psychology vol.6, where emphasis are given on association between leadership style, attitude and social climate on worker as well as supervisory behavior were studied. Leadership style is considered as one of the parameter for climate studied.

First time the word “Organizational Climate” is used and theorized by Agryis in his article titled “Some problems in conceptualizing organizational climate : a case study of a bank”, Administrative Science Quarterly, well-defined organizational climate in terms of formal organizational policies, employee needs, values and personalities impact on working climate
A Book “The Human side of Enterprise” written by McGregor, is induced new perspective in the field of management science particularly in the area of organizational and industrial psychology. Organizational climate is predominantly characterized by supervisory assumptions and the relationship between the supervisors and their assistants. McGregor fails to describe any method of measurement of Organizational Climate. Forehand and Gilmer, present the organizational climate as a “set of characteristics that describe the organization and distinguish it from other organization, are relatively enduring over time and influence the behavior of people in the organization”.

Organizational climate comprises of mixture of norms, beliefs, anticipations, rules and processes that influence work inspiration, commitment, individual and work unit performance (rubber, 2009). Organizational climate refers to the quality of working environment. If people feel that they are valued and respected within the organization, they are more likely to contribute positively towards the achievements of the goals. Positive climate encourages people to work more efficiently, while negative climate obstructs discretionary efforts. Organizational climate has a major influence on human performance through its impact on individual motivation and job satisfaction (Robbins, 1997).

Organizational climate is a descriptive term and different from concept of job satisfaction. Individuals in an organization have certain expectations and desires. The achievement of these expectations and desires depends upon their perceptions as to how the organizational climate can address them. Thus, organizational climate provides a type of work environment in which individuals feels satisfied or dissatisfied. Organizational climate can be said to be directly related with his performance in the organizational, but satisfaction of individual goes a long way in determining his efficiency. Creating a good organizational climate requires precautions to the factors which influence employee’s perceptions, including the quality of leadership, the decision making procedures and whether the efforts of people are acknowledged and pleased (Robbins, 1997).

Udai Pareek in his book “Organizational Behavior Process” mentions, an organization has a structure i.e. division of work into units and interlink ages between units and develops systems i.e. structured way to managing the major functions of the organization like production, maintenance, information technology, administration relationship with external environment. Each organization has accepted patterns of behavior, norms and values. Culture
of organization is created by the norms, values and traditions of organization (Pareek, 1998).

Organizational climate defined as a psychological state strongly affected by organizational conditions, like systems, structure and managerial behavior. Organizational climate is perception of how things are in the organizational environment, which is composed of variety of elements or dimensions. Although climate has usually been used to describe organizations, the term can also use to describe people’s perceptions of groups, or job assignments in which they work. It can also be used to describe non-work social systems like clubs, family and dyadic relationships (Ali Amjad, 2014) 19

1.4.1 Conceptual Framework :-

James & Jones have done a great job in presenting conceptual framework of Organizational Climate. Article titled “Organizational Climate: Dimensions and relationships of individual and aggregated work environment perceptions” & another titled “Organizational Climate: a review of theory and research” by them, where three conceptual framework are evolved.

- Multiple measurement – organizational attribute approach (MMOAA)
- Perceptual measurement – organizational attribute approach (PMOAA)
- Perceptual measurement – individual attribute approach (PMIAA)

1.4.1.1 Multiple Measurement – Organizational Attribute Approach (MMOAA):-

Glimer and Forehead stated organizational climate as a set of characteristics that distinguish the organization from the other organizations, are relatively enduring over time and influence the behavior of the people in the organization. Here, approach focuses different dimensions of organizational climate like size of organization, organizational structure, system complexity, different leadership style etc. being the behavioral aspect, research design aim at either field studies or experimental studies. Here, individual perception measure and objectivity indices play vital role in the measurement procedure (Glimar, 1964). 20

The approach appears to be more focus towards study the organization and group characteristics would be included in central area of organizational climate. This is approach is widely used in the area of industrial psychology and organizational behavioral study. Researchers using this approach have carried out research in the area of organizational model
and taxonomy with concern to organizational size and member participation, different organizational processes like leadership, conflict, reward system, communication and control mechanism. Experiment on organizational context mainly on organization and environment, construct of organizational structure and industrial organization are found be more suitability for gathering different data. Through this approach, researchers carried out different experiment on organizational structure with concern to properties of organizational structure in relation to job attitudes and job behavior, different dimension of organizational structure etc. Now, it is concluded that multiple measurement – organizational attribute approach is much more generalized conceptual frame work and it is lacking in the degree of precision in the area and objective measurement of organizational climate.

1.4.1.2 Perceptual Measurements – Organizational Attribute Approach (PMOAA):

A book titled as “Managerial Behavior, Performance and Effectiveness” published by McGraw Hill written by J R Campbell, M D Dunnettee, EE Lawler and K E Wcick, defined Organizational Climate as “set of attribute specific to a particular organization that may be induced from the organization, deals with its members and its environment. For the individual member within organization, climate takes the form of a set attitude and expectancies which describe the organization in terms of both static characteristics and behavioural outcome and outcome contingencies”. In this approach researcher focused four different parameters of organizational situation i.e. structural properties, environment characteristics, organizational climate and formal role characteristics. Here, special attention is given on organizational climate in which include dimension like individual autonomy, the degree structure impressed on position, rewards orientation, consideration, warmth and support etc. In case of individual autonomy factors like individual responsibility, agent independence, role orientation and opportunities for exercising individual initiative are included. Organizational structure, managerial structure and closeness of supervision are considered in the area of structure and position. Rewards orientation dimension is consist of reward, general satisfaction promotion, achievement orientation, profit and sale orientation etc. Managerial support and warmth support is included in consideration dimension.

The Perceptual Measurement – organizational attribute approach (PMOAA) model suggested that Organizational climate is individual perception of the organizational and the set of properties governs the individual behavior. Climate itself was perceived as a situational variable or organizational main effect. Researchers are used conceptual framework in the
broad studies area of managerial behavior, performance and effectiveness with concern to identification of the dimensions of original climate based on perceptual measurement. Study on perceptual measurement of job performance and satisfaction as influenced by organizational climate in focus to effect of organizational climate on managerial job like there may be significant difference between actual and perceived situations in terms of behavior and attitude. Sometimes it is difficult to establish a direct relationship between objective factors and perceptual factors. Some scientists are still believed that establishment of perceptually measured organizational climate represents a set of responses to the organizational processes, while the characteristics of the responses are determined by the psychological processes.

1.4.1.3 Perceptual Measurement – Individual Attribute Approach (PMIAA):-

Perceptual Measurement Individual Attribute Approach (PMIAA) is developed a conceptual frame work more concern to used system approach by Schneider and associates. Schineder and Hall on their paper on “Towards specifying the concept of work climate : a study of Roman Catholic Diocesan Priests” published in journal of applied psychology, presented organizational climate as a set of global perceptions held by individuals about their organizational environment. The sets of perceptions are basically the result of interaction between personal and organizational characteristics. Here, individual considered as an information processor and the inputs used are objective events and characteristics of the organization and characteristics of the perceiver. Organizational climate was viewed as summary evaluation of events based upon the interaction between actual events and the perceptual of these events. Organizational climate perception is the results of a process of concept formation, based on macro observations of the organization. This conceptual frame work has taken organizational climate as a sum total of perceptions based on the interaction between the individual perception and organizational environment. Here, more focused on organizational climate as the sum total of the individual attributes neglecting the organizational parts. Different researchers carried out studies by using this model in the area of measurement of organizational climate through individual perception, relationship between situational variables and individual variables of organizational climate.

1.4.2 Organizational Culture

The internal working environment of every organization has certain prescribed psychological characteristics or traits which are collectively called its culture or climate of organization.
These traits are generally varied from organization to organization. They are relatively stable over time and influence the behavior of people in the organization. Thus, every organization has its own unique culture. Even different departments of the same organization may have different cultures depending upon the perceptions of members of the departments. Different personal characteristics such as values, needs, attitudes, experiences etc. determines the manner in which members are likely to perceive the various aspects of internal working of their representative departments.

1.4.2.1 Components of Organizational Culture:-

Different components of organizational culture/climate are as under.

- Individual autonomy: the degree to which employees are free to manage themselves or are not accountable to others.
- Position structure: the extent of formalization, centralization and direct supervision.
- Reward orientation: the extent to which rewards are related to performance and the required system of behavior in the organization.
- Consideration: the extent to which people in the organization offer socio-emotional support to each other and work as a team.
- Conflict: the extent of differences present between individuals and departments and the way in which they are resolved.
- Growth and development: the scope for self-development and growth in the organization.
- Risk taking: the degree of freedom to experiment with new ideas, take risks and commit honest mistakes without fear of punishment.
- Control: the extent to which people are formally controlled.

The determinants of organizational culture/climate are as under

- An organization’s economic condition influences its culture in several ways. The more prosperous an organization is the more it can afford to spend on research and the more it can afford to take risk and be adventurous.
- Organization’s leadership style plays a profound role in determining several aspects of its culture.
- Organizational culture is also influenced by organizational policies. A policy to resort to layoff only as a last remedy during business downturn will foster a cordial and
supportive climate. Likewise, a policy to reward employees for increase in profits will make culture more rewards oriented.

- Managerial assumptions about human nature determine managerial actions which contribute to organizational culture.
- The norms and values system held by managers play vital role in formation of good culture in the organization.
- Employee’s characteristics play determinant role in development of organizational culture.
- Size of organization play significant role in the formation of system and structure of the organization. In small organization with few levels of management are generally more amenable to democratic and participative functioning than big organizations.

1.4.2.2 Human Resource Development Climate and Organizational Climate:

Human Resource Development climate is an integral part of organizational climate. It can be as the employee’s perceptions about the development environment of their organization. Such studies includes dimensions like importance given to human resource, openness of communication, encouragement given to risk taking and experimentation, feedback, trust on employees, faith in employee’s ability, team spirit, cooperative & participative approach in work etc. The essence of human resource climate is the importance which it gives to development of OCTAPACE culture (openness, confrontation, trust, autonomy, proactivity, authenticity, collaboration and experimentation) is an organization (Tripathi, 1999).

1.5. Objective of Study

As my area of research titled as “Study of perception on organizational climate for scientist of state agricultural universities of Gujarat”, introductory notes suggested following objective are taken for the in-depth study:

- To study the organizational climate as perceived by scientists.
- To study the organizational commitment as perceived by scientists.
- To analyze the socio economic, psychological and job related variables of scientists.
- To know the problems encountered by scientists.
1.6 Reference:-


www.citehr.com/103244-project-organizational-climate.html


