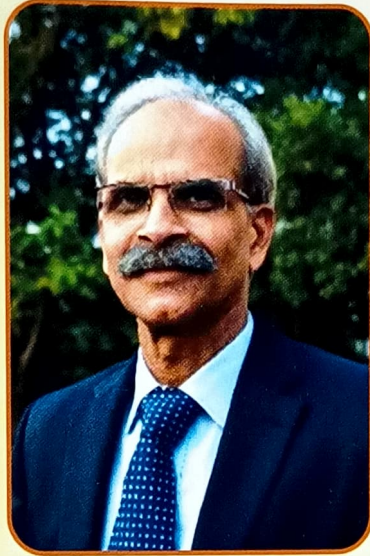


SEVENTEENTH ANNUAL CONVOCATION

January 08, 2022

CONVOCATION ADDRESS BY



Chief Guest
Prof. (Dr.) Virendra Kumar Tewari
Director
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CONVOCATION ADDRESS


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Director, IIT Kharagpur



Hon'ble Governor of Gujarat & the Chancellor of Junagadh Agricultural University, **Shri Acharya Devvratji**; Hon'ble Minister of Agriculture, Animal Husbandry, Cow-Breeding **Shri Raghavjibhai Patelji**; distinguished Vice-Chancellor of Junagadh Agricultural University **Prof. (Dr.) Narendra Kumar Gontia**; Registrar, **Dr. R. K. Mathukia**; Hon'ble Vice-Chancellors of SAUs of Gujarat; Members of the Board of Management and Academic Council, invited guests, learned faculty members, dear degree recipient students, representatives of press & media, ladies and gentlemen!

I am grateful to his Excellency, the Chancellor and Vice Chancellor of State Five Star rated Junagadh Agricultural University for inviting me to this auspicious occasion and to deliver the Seventeenth Convocation address of the university. It is my privilege and pleasure to be in the land of the Father of Nation, Mahatma Gandhi whose contribution and character continue to inspire every young nationally and globally. I pay my deep homage to that benevolent soul.

The regenerative land of Gujarat has produced several eminent leaders like Sardar Vallabhbhai Patel-Iron Man and Unifier of India, Shri K. M. Munshi - a real visionary educationist, Shri Dayanand Saraswati - spiritual leader as well real social reformer, Shri Vikram Sarabhai, space scientist and father of space research, World class political leader and reformer of modern India; our present Hon'ble PM Shri Narendrabhai Modi, the father of white revolution – Dr. V. Kurean, the founders of internationally famous corporotae sectors like Tata, Reliance & Adani.. All of these personalities are the pride of Gujarat and India.




The AMUL model of cooperative movement for milk production is already well established and recognized. The successful execution mechanisms of GGRC model for MIS and GSWMA for watershed development is well sung in India and have been adopted by many states of India in same pattern.

During his tenure as a Chief Minister, Hon'ble Prime Minister of India Shri Narendra Modi created **Vibrant Gujarat**, government's flagship programme which led to the state's Agrarian Transformation. Under his leadership, the state started first of its kind canal-based 1-MW solar power project on a portion of Narmada dam's main canal near Kadi in Mehsana district which was covered by solar panels. This innovative idea added many benefits including prevention of water evaporation, limited damage to canals and cuts down on the requirement of land for laying solar panels. Along with Krishi Mahotsav, a unique innovation pioneered by the Prime Minister was 'Krishi Rath', which would visit every tehsil of the state with a mobile team of experts, scientists and government officials from every agriculture-related department who would visit each area and educate the farmers about latest farming techniques, technology adoption, and offer assistance to them. Soil health cards was another of his forerunner initiative led to a rise of production yields of agricultural crops and MSPs hiked multiple times along with procurements at MSP. In his tenure which flared for almost 12 years, irrigation and insurance have both seen huge improvement as direct income support was ensured for farmers through historic PMKISAN scheme, where money now directly reaches the bank accounts of the farmers. He transformed the lives of farmers of a semi-arid state and made them self-reliant with **Aatmanirbhar Farmer for Aatmanirbhar Bharat** for which cold chains, mega food parks and agro-processing infrastructure have been set up on a big scale. These reforms give farmers the freedom to sell anywhere and to anyone and also strengthen farmers with a protective legal framework when dealing with buyers, ensuring assured income for their produce.

Gujarat is one of our agriculturally important states. It is a leading producer of cotton, castor, groundnut, milk and marine fish. From nearly 25 percent share in area of cotton cultivation, Gujarat produces about 30 percent of the total cotton produced in the country. Similarly, about 30 percent of the groundnut production comes from Gujarat, though the productivity in the state is below the national average. With a contribution of 67 percent castor seed and 36 percent cumin seed, Gujarat ranks the first in the world production of these items. Moreover, Gujarat has the highest productivity in fennel seed, Isabgul and banana. Besides these, mango, sapota, groundnut, mustard, sesame, tobacco and herbs are the potential from processing point of view. About 7.5 million tons of milk is produced in the state. Gujarat produces about 7 lakh tones of marine fish that is highest among the coastal states of the country.

The mechanization of Indian farms is imperative to enhance input use efficiency, reduce human drudgery, increase production and productivity of food-grains, reduce cost of production and to address issues of labour scarcity and timeliness of farm operations. The total farm power availability in Indian agriculture was 2.761 kW/ha in 2020-21. It had a share of 1.64 kW from tractors, 0.03 kW from power tillers, 0.039 kW from diesel engines, 0.54 kW from electric motors, 0.084 kW from animals and 0.080 kW from humans. The overall mechanization levels is 63 % in rice, 45% in wheat, 40% in maize, 26% in sorghum, 34% in pulses & oilseeds, 26% in cotton and 24% in sugarcane crops. The increasing trend in establishment of custom hiring centre and hi-tech hubs along with farm machinery banks at village level has ensured availability of modern agricultural machinery for different field operations to small and marginal farmers. The quality of farm equipment is ensured by testing involving laboratory and field performance evaluation and followed by certification at designated testing centres. There is a need to innovate custom service or a rental model by institutionalization for high cost farm machinery to reduce the cost of operation.



Our Hon'ble P.M. highly desires to double the farmers' income by 2022. This can be achieved by increasing the yield and reducing the cost of cultivation. Normally, there are good chances to reduce the cost of cultivation if farm operations are mechanized as it saves labor, both human and bullock. In the absence of mechanization, the ever-increasing wage rate of human labor and cost of upkeep of draught animals could have increased the cost of production much higher. Further, large scale production means less per unit cost on the farms. Moreover, it reduces the weather risk and risk of non-availability of labor and thus wastage is minimized. Timely marketing is also made possible by quick mechanical transportation, cleaning and handling. Further, the area under fodder and feed for draught animals could be reduced due to decline in their use. The land thus released can be brought under commercial crops. The quality and precision of the operations are equally significant for realizing higher yields. The various operations such as land leveling, irrigation, sowing and planting, use of fertilizers, plant protection, harvesting and threshing need a high degree of precision to increase the efficiency of the inputs and reduce the losses.


The farmers' income can also be increased by increasing the water resources and their judicious and efficient utilization through modern technologies. The micro irrigation technology can increase the crop yield, save water, improve crop quality, enhance the fertilizer application efficiency, conserve energy, reduce labour cost, improve pest management, increase feasibility of irrigating difficult terrains, etc. In Gujarat state, till 2020-21, a total number of 12.5 lakh beneficiary farmers have adopted. Micro Irrigation Systems (MIS) in a total area of 20 lakh ha. Out of these total area, 17 lakh ha has been covered under agricultural crops and 3.0 lakh ha under horticulture. The MIS adoptions of 20 lakh ha save water of 6000 MCM/year. Due to this water saving, additional 12 lakh ha could be brought under irrigation in Gujarat. The water harvesting works in Gujarat has enhanced the surface and groundwater resources



which could bring additional 12 lakh ha.

Another way of increasing farmers' income is to reduce post-harvest losses by technology adoptions in the chain of field-storage-market-mouth and value addition of agricultural products. After large production from the farm field, storage is the major problems. Storage structures at rural area is a dire need. Government scheme for subsidy for godown construction at farm level helped to many farmers. This will reduce the handling and storage losses at some level. But cold storage for particular product is also necessary to store each product separately according to their requirement. Processing machinery are developed by the researchers and industries. To test each processing machinery, there are IS codes. To test the processing machinery there is need to establish testing centre for the processing machineries. Agro-processing including value addition is now regarded as the sunrise sector of the Indian economy in view of its large potential for growth and likely socioeconomic impact, specifically on employment and income generation. Properly developed, agro-processing sector can make Indian a major player at the global level for marketing and supply of processed food, feed and a wide range of other plant and animal products. In order to assure remunerative price to the growers and processed products to consumers at an affordable price; development and application of appropriate post-harvest technology in production catchments leading to establishment of rural agro-processing centre owned and operated by target beneficiaries, individually or collectively, is a must. A large number of unemployed youth in the rural areas could be induced to take up these simple, low cost yet profitable agro-processing activities. The rural youth could be gainfully employed and constant migration of rural youth to the urban areas could significantly curtailed.


The farmers can earn additional income from generation of energy from renewable sources like



agricultural wastes, solar, wind etc. The Government of India and Gujarat have already started the efforts for this. The primary objective for deploying renewable energy in India is to advance economic development, improve energy security, improve access to energy, and mitigate climate change. Sustainable development is possible by use of sustainable energy and by ensuring access to affordable, reliable, sustainable, and modern energy for citizens. Strong government support and the increasingly opportune economic situation have pushed India to be one of the top leaders in the world's most attractive renewable energy markets. The government has designed policies, programs, and a liberal environment to attract foreign investments to ramp up the country in the renewable energy market at a rapid rate. It is anticipated that the renewable energy sector can create a large number of domestic jobs over the following years.

The Government of India has launched the "Make in India" program and Hon'ble Prime Minister Shree Narendra Modi is striving to fascinate the foreign industries to manufacture their products in India. In this context, the emerging farm Implements & Machinery and Irrigation Technology industries in Gujarat and particularly in Saurashtra may collaborate with foreign manufactures to produce the quality products in our country. This will provide an opportunity for export of farm Implements & Machinery and Irrigation Technology from the state and our own farmers will also be benefited.


Entrepreneurship development in service sector in agriculture and allied sector has immense potential through engineering interventions. One such approach is skill development training in manufacture, repair, maintenance and related service support in farm machinery, irrigation, processing, energy equipment repair, maintenance and for primary processing of food grains, fruits and vegetables, etc. This is the key approach targeted at ensuring hand and mind engagement security to get productive output. Training



programs are organized regularly to empower unemployed youth, farmers, farmwomen and upcoming entrepreneurs. Some of the technologies identified are production agriculture, agribusiness in improved farm implements, setting up of household/cottage and small scale food processing unit.

Despite its declining relative share in GDP, several innovative steps and measures are being undertaken and the sector has done reasonably in the last few years. The share of agriculture and allied sector in GDP increased to 20.2 per cent in 2020-21 from 18.4 per cent in 2019-20. However, one of the major bottlenecks that has emerged and can become an insurmountable problem in the foreseeable future is the issue of shortage of agricultural labour. As per the World Bank record, the labour availability in Agriculture Sector which was 40% in year 2000 is reduced to 28.2% in year 2019. However, the total number of labours increased but they have diverted in other sectors like Industries, Infrastructure, real estate and service sector. The use of precision technology such as drones, robotics, sensors, remote sensing and GIS coupled with Artificial intelligence will play a vital role in Agriculture to overcome the problem of Animal and human labor and timeliness of operations and application of inputs in time, place, required quantity and quality. Remote sensing can be used in different fields such as land surveying, geography, agriculture, flood, water resources management and other earth sciences as well as in the internet of things (IoT). Remote sensing based inventory of irrigated crops is useful for timely estimation of the crop areas: to find water demand over space and time, to monitor crop condition during the irrigation season, to forecast crop yields before the end of the season and for evaluating overall performance of irrigation projects.

I am happy to know that under National Agricultural Higher Education (NAHEP) – The Institutional Development Plan (IDP) with total outlay of 30 crore funded




by World Bank has been sanctioned to JAU. I would like to share few achievements by JAU under NAHEP-IDP. I came to know that JAU has developed low cost IoT based Automated MIS controller, Agrivoltaic system, Bio pesticides, Nano-fertilizers, etc. Twenty Four took trainings in various renowned universities in world under this programme.

JAU has released high yielding and nutritive varieties of Groundnut, chickpeas, Pearl millet, Sesame, Pigeon pea, Wheat, Soybean, Coconut, Castor etc which are scalable and adopted at large scale in Gujarat as well as many states of India too. This year, JAU in collaboration with ICRISAT developed a **Marker Assisted Variety of Pearl Millet (Maru Sona)**.

The ICAR has operationalized Guidelines for IPR portfolio management and commercialization of technologies. The initiative has created IPR awareness and literacy, enhanced the work environment for higher innovativeness, ensured that the scientists/innovators are duly rewarded with their share of benefits accrued, and guide the manner of technology transfer which would be competitive and better serve the interests of agriculture and farmers. A win-win situation for all partners/players/stakeholders/beneficiaries would indeed be helpful. In today's context it has become necessary to do so, for unprotected research results in the public domain to arrest unacknowledged use/exploitation of such research for commercial gains by other agencies both within the country and abroad. Moreover, protection of IP creates incentive for more knowledge and technology generation as scientists/innovators are recognized and rewarded.

PPP will play an increasing role in the advancement of agricultural research under the IPR regime. The transfer of IPR enabled agricultural technologies through commercial route will gain greater importance in the future. In addition to IPR and technology management, research partnership between the public and private sector is also essential to achieve faster progress and dissemination



of technology to the end-users, thus, there is a need to know as to how best to link these two sectors to have their activities complemented in “Public Private Partnership” mode for better research and development.


I am happy to inform you that on the eve of 75th Independence Day, Prime Minister Narendra Modi announced from the Red Fort that the government will launch 'PM *Gati Shakti* Master Plan', an INR 100 lakh-crore project, for building 'holistic infrastructure' in India. The Gujarat state has already started planning in this line and leading in the India. Now, our responsibilities are how to interwoven agriculture sector in it for the betterment of farmers.

The PM *GatiShakti* will ensure that India of the 21st century does not waste money or time due to lack of coordination in infrastructure projects. Under the PM *GatiShakti* National Master Plan, everything, from roads to railways, from aviation to agriculture, various ministries and departments would be linked.

The idea behind '*Gati Shakti*' scheme is that the government is aiming to create a digital platform promising the “integrated planning and coordinated execution” by sixteen ministries. Each ministry and government department will be able to access information about the ongoing and upcoming projects for a balanced and synchronized approach. It will bring together under one ambit the government departments like railways, roads and highways and many more. In this era of Geo-Satellite imagery, Big Data, land and logistics plans would be realized in an efficient manner on the ground.

The multi-modal connectivity will provide integrated and seamless connectivity for movement of people, goods and services from one mode of transport to another. It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people.

In order to appropriately address the issues and challenges for agricultural growth and development, we need to have state of the art institutions manned by highly




competent scientists and science managers. Agricultural universities are our main centers for human resource development. The new education policy will definitely facilitate in shaping modern India.

There is a tremendous scope for entrepreneurship in agriculture. Experiential learning is a new initiative with the primary aim of removing weakness in the present educational system and to develop a cadre of highly skilled professionals who can create their own enterprise. It is aimed at competence development through knowledge not only in new and cutting edge technologies; but also in all aspects of enterprise management so that the graduates have complete understanding of field problems, project development and education with the end- to-end approach. Emphasis has been laid on developing skills for carrier in agri-business and Agri-clinic.


The role of extension services especially in the technology transfer is most crucial for the farmer to realize the gains from technological innovations. From scientists' point of view, it is important to see that the technology reaches the end user in right manner. The feedback receiver through extension mechanism also provides an opportunity for the researchers to assess and refine the technologies. Extension has been put to serve production oriented programmes, area development initiatives, target group based service schemes, and largely, as a technology delivery mechanism. In the process, simple purpose for which it is designed, namely "helping people to help themselves" by relating technologies to the needs and opportunities of the farmers have not been emphasized much.

We have a good network of agricultural research institutions in the country, which is facing serious resource crunch to meet the existing and emerging challenges. The National Agricultural Research System (NARS) has although significantly contributed to the agricultural progress since



independence, but the situation has changed and challenges foreseen in future are complex and the system has to prioritize and focus itself to the jobs for which it has a mandate as also competitive advantage. A clear-cut delineation of roles at the Central and State level is to be ensured. Similarly, the technology delivery system requires an immediate re-look; technology development and delivery need to be in a continuum and should be interactive. The research system has to forge linkages with the public extension system at all levels, particularly at the district and below levels where the actual uptake and impact happens.

Extension workers are the most important source in transmitting technology to users. Agriculture extension workers do not reach every farmer and every farmer cannot visit agricultural research station. Hence, there is limited flow of information about the latest agri-technologies. For speedy dissemination of technology, extension workers require media effective media support. No doubt, print media, interpersonal communication and traditional media have been playing important role in transfer of technology, but in today's information era quick transfer of technology can only be possible through electronic media. There are many new electronic technologies appearing daily that go well beyond the computer. These new electronic information and communication technologies are beginning to assume a more important role in our society. Radio, television, tele-conferencing and Internet technology have all been used to accomplish this. Cyber extension includes effective use of information and communication technology, national and international information networks, internet, expert systems, multimedia learning systems, and computer based training systems to improve information access to the farmers, extension workers, research scientists, and extension managers. The villages of Gujarat state are now being connected with **e-gram** and **e-dhara** to facilitate farmers for their documentary requirements in farming and



allied fields. Similarly, all the villages can be linked for e-transfer of technology ultimately to boost the agricultural production.

I am happy to learn that under the challenges of Covid-19 pandemics, JAU had planned strategically to implement online education. The Universities have to adopt hybrid educational models blending of traditional and online teaching and evaluation systems during Post-COVID. At present, government of India, has introduced the National Education Policy – 2020 (NEP-2020). Being an Agricultural University, JAU should also take this challenge to implement the NEP in the system. In the light of this, interdisciplinary approach should be followed and the model of multi-disciplinary university is advisable for integrated and sustainable development of the farmers and agriculture education.

India has the largest number of youth and the young ones are the treasure of the nation. The educational institutions mold these young minds through education; training and strategically direct their energy and skills into productive channels. Then we are able to ride over the challenges and continue steadily on the path of progress. Dear students, from today onwards you have stepped into a new phase of life that is full of opportunities. You would be choosing different careers. The path is strewn with many kinds of obstacles, attractions and distractions. Remember that you have to remain steadfast on your objectives and goals. Build a strong moral character which is the true asset of man. A meaningful life is always better than a mere successful life. My best wishes to all degree recipients and their proud parents.

Namaskar!

Jai Hindi!