Research and scientific innovations must aim at benefiting the farmers: Vice President
Delivers 19th Convocational address at Chandra Shekhar Azad University of Agriculture and Technology

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The Vice President of India, Shri M. Venkaiah Naidu has said that the research and scientific innovations must aim at benefiting the farmers. He was delivering the 19th Convocational address at Chandra Shekhar Azad University of Agriculture and Technology, in Kanpur today. The Governor of Uttar Pradesh, Shri Ram Naik, the Minister for Agriculture, Uttar Pradesh, Shri Surya Pratap Shahi and other dignitaries were present on the occasion.

The Vice President said that Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, which started its journey as School of Agriculture in 1893 has been playing a pioneering role in agricultural education. This institution has maintained a rich tradition of quality education and research ever since its inception, he added.

The Vice President said that high-yielding varieties of food crops developed here have made a significant contribution to the Green Revolution, building a vibrant agricultural sector in our country. Agriculture is the basic culture of Indians and the Green Revolution has enabled us to be self-sufficient and feed the growing population.

The Vice President said that there has to be a multi-pronged approach in making agriculture profitable and sustainable. He further said that apart from encouraging crop diversification, impetus has to be given to infrastructure in terms of rural roads, electricity, cold storage facilities, rural godowns and refrigerated vans. Also, there is a need to ensure timely credit to farmers and increase in public spending on agriculture, he added.

The Vice President said that the need of the hour is to make our agricultural systems sustainable since there will not be any increase in agricultural land, while the number of farming families and their needs are increasing. He further said that a number of agricultural and farmers' welfare schemes such as the Prime Minister's Crop Insurance Scheme, Agricultural Irrigation Scheme, Farm Mechanization Mission, National Agricultural Marketing Scheme, Rural Storage Scheme and Soil Health Card Scheme have been initiated to strengthen livelihood security and promote food production. Farmers must be made aware of the benefits of new and innovative technologies in a simple and understandable language, he added.

The Vice President congratulated and conveyed his blessings to all the new graduates. He advised them to follow the philosophy of Gautam Buddha "Appo Dippo Bhava", which means: 'Be a light unto yourself' as the light of intellect, in both the real and literal sense, can help you follow the path of success, peace and prosperity, both for yourselves and for all of humanity.

Following is the text of Vice President's address:

"I express my gratitude to the authorities of this esteemed university for having invited me to deliver the 19thConvocation Address at this century-old institution, globally known for its contribution to agricultural education and research.

At the outset, I congratulate the students on having earned degrees, especially those who have won medals and awards for their academic excellence. I am confident that these bright, new graduates will use the knowledge and skills acquired by them to serve society in the best possible manner.

We are aware that Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, which started its journey as School of Agriculture in 1893 has been playing a pioneering role in agricultural education. This institution continued its journey in independent India and attained its present status of university after several stages of metamorphosis. Starting as School of Agriculture in 1893, it became Cawnpore AgriculturalCollege in 1906. Subsequently, 1930 saw its emergence as Government Agricultural College. In 1969, it was renamed as UP Institute of Agricultural Sciences and finally received the status of a uuniversity in 1975.

This institution has maintained a rich tradition of quality education and research ever since its inception. Several members from this alma mater have held key positions in the area of agricultural research and education, both in India and abroad. Thanks to this university, there has been continuous agricultural development, not only in Uttar Pradesh and adjoining states, but even in neighbouring countries. High-yielding

varieties of food crops developed here have made a significant contribution to the Green Revolution, building a vibrant agricultural sector in our country. I applaud this university for its dedicated service to the nation, from the very beginning. The Vice-Chancellors, past and present, the dedicated faculty members and the committed staff deserve appreciation for this university's evolution as a great centre of learning.

Friends, as you all know agriculture is the basic culture of Indians. Although, the country faced famines and food shortages in the past, the Green Revolution has enabled us to be self-sufficient and feed the growing population. However, we cannot remain complacent on food front as food security based on imports can never replace home-grown food security. This should remain the top priority of policy-makers, agricultural scientists and experts on food matters.

Agriculture in India is facing many challenges and over the years the population dependent on agriculture has declined from 70 per cent to 60 per cent. There has to be a multi-pronged approach in making agriculture profitable and sustainable. Apart from encouraging crop diversification, impetus has to be given to infrastructure in terms of rural roads, electricity, cold storage facilities, rural godowns and refrigerated vans. Also, there is a need to ensure timely credit to farmers and increase in public spending on agriculture.

As regards marketing, the Government of India's e-NAM is a wonderful initiative but the scheme has to be extended all across the country to prevent exploitation of the producers by middlemen. The abundant potential in food processing has to be fully tapped so that the income of the farmers is increased manifold. In addressing all these issues, universities, research institutions, ICAR and Krishi Vignan Kendras must step up their efforts.

Research and scientific innovations must aim at benefiting the farmers. In fact, ratings of the universities must be based on new innovations that will benefit the society.

Humanity is facing numerous challenges and most of them are linked to food security of the exploding population, which is projected to reach 9 billion by 2050. The extraordinary progress in food productionduring the past six decades has also been accompanied by unsustainable levels of consumption in some countries and hunger and malnutrition in others, notably in South Asia and Africa. Factors like reduction in the area of arable land, receding natural resources and the phenomena of climate change compel us to not only rethink on how food is cultivated, processed, shared and consumed, but also to come out with out-of-the-box solutions.

There's a growing quest for development that ensures human happiness, as embedded in the United Nation's Millennium Development Goals (MDGs). '*Human beings are at the centre of concern for sustainable development*' is the first principle of the 1992 Rio declaration. Food security and sustainable development are on top of the global development agenda of the UN. In pursuit of the MDGs that had to be achieved by 2015, India laboured hard and met only five of the eight targets. It also fell short in meeting the foremost target of*halving the incidences of hunger and poverty*. Out of 17 Sustainable Development Goals (SDGs) set out for 2030 by the United Nations in 2016, '*freeing the world of hunger and poverty*' remains the most important.

Let us consider the fact that India is home to almost one-fourth of nearly 800 million hungry people in the developing world. Let's also consider that almost 50 per cent of the nearly 80 million farm families, whowork to feed us, are the poorest in the nation. India must strive doubly hard not to miss this importantSustainable Development Goal.

If our farmer is able to feed the masses, but not earn enough to fulfill his own family's necessities, the conditions will not change as per our vision. The need of the hour is to make our agricultural systems sustainable since there will not be any increase in agricultural land, while the number of farming families and their needs are increasing.

As we know, despite the Green Revolution, the fight against hunger and poverty continues. It's gratifying to know that the Government of India has intensified agriculturally-led efforts to alleviate hunger and poverty in the country. A number of agricultural and farmers' welfare schemes such as the Prime Minister's Crop Insurance Scheme, Agricultural Irrigation Scheme, Farm Mechanization Mission, National Agricultural Marketing Scheme, Rural Storage Scheme and Soil Health Card Scheme have been initiated to strengthen livelihood security and promote food production.

*Sankalp se Siddhi (*Attainment Through Resolve) is the new agenda of the Government of India. It entails a commitment to the holistic development of agriculture and to double the income of farmers within five years, by providing better irrigation facilities, ensuring high-quality planting material, enhancing availability of organic inputs, practicing soil testing-based fertiliser applications and minimising post-harvest losses. Value addition and enhanced market facilities also form critical components of the quest to achieve the target of doubling farmers' income by 2022.

Farmers must be made aware of the benefits of new and innovative technologies in a simple and understandable language. We are all aware that Indian agricultural practices are generally passed on from generation to generation and very few farmers prefer to move away from the traditional method. Unless the farmer is convinced and re-assured that adoption of new technology will prove beneficial, he will not acceptit.

The past year has been very conducive to the all-round growth of agriculture. As per the economic survey released by the Government of India, the sector registered a growth rate of 4.1%. Because of a good monsoon and policy initiatives by the government, there's a record production of food-grains this year (271.98 million tonnes) which is higher by 20.41 million tonnes as compared to previous year.

Agricultural credit is an important input to improve agricultural output and productivity. In order to improve agricultural credit flow, the credit target for 2016-17 has been fixed at 9 *lakh crore* against 8.5 *lakh crore* last year.

The Green and White revolutions are proud moments in Indian agricultural research. But even today, our country is facing an acute shortage of pulses and edible oils. Ours is an agriculture-based economy, yet we are still importing edible oil. It's painful that nearly 230 million people go to bed hungry in our country. Sustainable agriculture is central to development and agriculture must liberate India from the twin scourgesof hunger and poverty, while ensuring food and nutritional security.

We all know that the world population is projected to touch the 1.6 billion mark by 2050. India adds around 16 million to its population every year. Therefore, the continuous challenge before us is to produce enough nutritious food to ensure both food and nutritional security at grass-roots level. Our agriculture is currently ata cross roads. With business as usual approach, only 59% of India's total demand for food and agricultural products will be met by 2030. The veritable production revolutions notwithstanding, serious yield and productivity gaps exist in our food and agriculture systems. Stagnation of production in most of the crops, the unpredictable nature of our climate, higher input cost, lower farm income, degradation of natural resources, shortage of quality seeds and diminishing land holdings are some of the serious challenges which require our urgent attention.

In this context, I may mention some major areas that need urgent attention to accelerate agricultural growth. Top priority needs to be given to protect our crops, animals and farm produce from emerging biotic and abiotic stresses like diseases, pests, droughts and climate change. We also need to harness the huge potential of biotechnology to achieve food, nutritional and livelihood security and to enhance our farmers' income. A wide range of techniques such as tissue culture and gene cloning should be judiciously used to augment tolerance to biotic and abiotic stresses. Herbicide tolerance, improved nutritional quality, photosynthetic efficiency, bio-control agents and bio-fertilisers hold tremendous potential. Recent developments in genome sequencing of cattle and buffaloes have far reaching implications for future livestock development, particularly for our rich genetic resources and indigenous breeds.

A major area of concern is the burning of crop residue, particularly paddy straw in the fields, which is leading to conflict between farmers and state governments. In the interests of the environment and the population's health, this matter needs to be amicably resolved. Crop residue burning must cease in order to maintain the health of the soil and also to protect the health of people, plants and animals.

I am told that there are machines which can collect the residue from the fields and convert it mechanically into bundles for various profitable uses, such as BioCNG, biomass pellet fuel for thermal plants and even bio-composting at industrial level. Technology to convert this residue into valuable manure is also available. It has been reported that a group of farmers in the Karnal district of Haryana have collectively started making compost from crop residue, with the help of scientists. This is not only saving the environment, but enriching the soil. I appeal to the scientific community to examine the nature of crop residue found in their region and suggest appropriate composting techniques to the farmers.

Prevention of post-harvest losses, processing and product development deserve priority in our agriculturalpolicy framework. On an average, post-harvest losses in the range of 4-6% in food grains and 12-15% in fruits and vegetables have been reported. Post production losses of perishable and semi-perishable items are high and are estimated at Rs 50,000 crore. Cost- effective processing, value addition, packaging, cold chain, product quality and prolonged shelf-life are required. Agro-processing is the sunrise sector of the Indian economy in view of its huge potential for both employment generation and income generation.

In developed countries, up to 14% of the total workforce is engaged in the agro-processing sector but in India, only 3% of the workforce finds employment in this sector, revealing vast potential for employment.

Drought is among the most serious factors affecting agriculture production in the country. As many as 13 States in India face drought and other abiotic stresses during one part of the year or another. In India, irrigation is available for only 40% of the cultivated area and the remaining 60% depends on scanty rains.

Besides drought, other abiotic stresses like temperature extremes, floods, salinity, mineral toxicity and nutrient deficiency threaten agricultural production, posing challenges to sustain even the current productivity levels, let alone further enhancement. The climate change is likely to aggravate the adverse impact further.

Farm power availability and mechanization are the main drivers for agricultural growth and have a direct relationship with food grain yield. Although, India is one of the top countries in agricultural production, the current level of farm mechanization, which varies across different states, averages around 25% against more

than 90% in developed countries. The farm power availability and mechanization technology, especially for small and marginal farmers, needs priority attention from research institutions as well as from the industry.

With water remaining the most critical resource, our approach must be based on *per drop more crop* concept in regard to modernizing irrigation and drainage, rain water harvesting, tank rehabilitation and breeding water-use efficient crop varieties with shorter life cycles.

The agricultural extension system played a vital role during the green revolution and the success was due to an alliance between researchers, extension specialists and farmers. At the same time, the technology dissemination approach remained “top-down”, focusing on individual farmers. The current situation is quite different as there are multiple challenges. In view of the diverse demands for new innovation, new products, new information and new extension services, the need is to shift from a “top-down” to a “bottom-up” approach, involving farmers’ participation at grass-root level.

Krishi Vigyan Kendras or KVKs are the front-line extension systems of the country. The very genesis of KVK was with the background of skill building by inculcating the philosophy of 'learning by doing'. KVKshave great responsibility to implement *the Mera Gaon Mera Gaurav* and *Sankalp se Siddhi* programmes of the Government of India, which entail a commitment to the holistic development of agriculture and the target of doubling farmers’ income by 2022.

The University’s agricultural education system is required to keep pace with the rapid technological, economic and social developments taking place both nationally and globally. Recently, ICAR has launched the National Agricultural Higher Education Project, to enable the Agricultural Education System to catch up nationally and globally, with a focus on improving and sustaining the quality of higher agricultural education. It would be good if this university takes the opportunity to benefit from the NAHEP.

The change in agricultural education must produce graduates with entrepreneurial skills, who can generate employment and not exclusively depend on public-sector jobs. Emphasis should be placed on supporting theneeds of self-employment schemes in Agribusiness and Agri-clinics, which are envisaged to bring extension services to the farmer’s door. In addition to entrepreneurship, courses need to be introduced to meet thedemands of diversified agriculture and emerging global markets.

Those who have been conferred with degrees today must explore the problems of the farmers and help in generating solutions and innovative ways to improve agriculture. Agriculture has the potential to bring all-round socio-economic development to the country.

I once again congratulate and convey my blessings to all the new graduates. You are about to start a new life and you will surely be opting for diverse careers. I advise you to follow the philosophy of Gautam Buddha*“Appo Dippo Bhava”* ,which means: ‘Be a light unto yourself’ as the light of intellect, in both the real and literal sense, can help you follow the path of success, peace and prosperity, both for yourselves and for all ofhumanity. I wish you all the best in your future endeavors.

JAI HIND!"

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