SPEECH BY THE PRESIDENT OF INDIA, SHRI PRANAB MUKHERJEE AT THE FIFTY-FOURTH CONVOCATION OF THE INDIAN AGRICULTURAL RESEARCH INSTITUTE (IARI)

Pusa, New Delhi: Feb 5, 2016

1. I am indeed happy to be here amidst you today for the fifty-fourth convocation of Indian Agricultural Research Institute, a leading institution in our country for agricultural research, education and extension. I congratulate the students who are being awarded degrees today. On this occasion, I also take the opportunity to compliment the members of the faculty for shaping the minds and skills of these students.

2. The IARI, set up in 1905, has played a key role in providing human resource to the national agricultural research system. Over eight thousand students of IARI have been awarded post-graduate or PhD degrees so far. Several alumni of IARI have held key positions driving agricultural research and education in important institutions in India and abroad.

Ladies and Gentlemen:

3. India has only 3 percent of the world's land resources and 5 percent of water resources. Yet, Indian agriculture system supports 18 percent of the world population. The transformation from a state of "*ship-to-mouth*" to a leading exporter of food grains has been made possible largely due to the scientific developments in premier institutes like IARI. This Institute has made significant contributions in ushering the green revolution and building a vibrant agriculture sector in our country. I applaud IARI for its dedicated service to the nation.

4. IARI has recently developed several breakthrough technologies bringing prosperity to farmers. India's basmati rice export has been revolutionized because of IARI's short-duration high-yielding basmati rice varieties. Pusa basmati varieties accounted for more than 90 percent of the 30,000 crore rupees of export earnings this year. It gave profit in excess of two lakh rupees per hectare to the farmers. Likewise, IARI wheat varieties have resulted in an additional production of 3 million tonnes of wheat in the previous year.

5. Resource management, farm machinery and plant protection technologies of IARI are widely used by farmers. They have resulted in enhanced input use efficiency, farm profit and environmental sustainability. The diagnostic techniques developed by IARI such as "micro-array chip" and "ELISA kits" for plant virus detection, and nanotechnology-based chemical formulations for management of nematodes and insect pests are expected to reduce the input cost of plant protection chemicals. IARI's climate change and mitigation research on methane emission from rice paddies are significant from the point of view of developing appropriate strategies and protecting India's interests in climate change negotiations.

Friends:

6. Degrading soil health and dwindling fresh water availability are posing major concerns for agricultural sustainability. Low soil organic matter and imbalanced use of fertilizers are affecting crop productivity. The "Soil Health Card Scheme" aims at providing farm-wise and crop-wise fertilizer recommendations to enhance fertilizer use efficiency. To my mind, IARI technologies like "Pusa Soil Testing and Fertilizer Recommendation meter", remote sensing-based crop and natural resource monitoring, and decision-support systems can contribute significantly towards this mission. Crops use 23 percent of the applied fertilizer with the balance 77 percent lost to environment. To further increase the efficiency of fertilizer use, easy methods based on plant tissue analysis for sensing nutrient status and making fertilizer recommendations are needed.

7. Enhancing water use efficiency in agriculture can hardly be over-emphasized. In this context, the "per drop, more crop" is a mission statement aimed at improving water productivity. We need technology solutions for smart water usage. It is heartening to note that several water-wise technologies like precision irrigation, Pusa Hydrogel, zero tillage wheat system, direct seeded rice system, and short duration crop varieties have been developed by IARI. Scientists here must continue with their efforts to develop water-efficient and drought-tolerant varieties.

8. Inappropriate treatment and unplanned use of raw sewage water is impacting agricultural sustainability while posing a risk to consumer and environmental health. IARI's eco-friendly waste-water treatment technology should be able to provide safe irrigation water for peri-urban agriculture and also mitigate the problem of sewage water disposal.

Friends:

9. The production of pulses and edible oil in India has remained insufficient making us dependent on imports. The demand for these food commodities is expected to increase in future substantially. IARI has developed mustard varieties suitable for unconventional areas that can boost oil seed production. The Institute has also initiated the development of synchronous-maturity pigeon-pea hybrids and varieties, apart from chickpea. I am confident these technologies will enhance the productivity of pulses and edible oils to meet our domestic requirements fully.

10. Forty-five percent of children below the age of three years are under-nourished in India. A large number also suffer from Vitamin-A deficiency. To address malnutrition in children, food grains must be bio-fortified with quality protein and micronutrients. I am happy that IARI has developed quality protein maize, and iron and zinc rich wheat, pearl millet and lentil varieties through molecular breeding, and genetically modified "Golden rice" enriched with pro-vitamin A. These technologies should reach the farmers immediately for alleviating malnourishment in women and children.

Friends:

11. Despite the advancements made, Indian agriculture is yet to be completely out of the clutches of weather. After a record food grains production of 265 million tonne in 2013-14, a year of normal monsoon, the production level came down to 253 million tonne in 2014-15, when a 12 percent rainfall deficit was registered. Nature has not been kind to us this year as well. A deficient monsoon followed by a further dry spell is likely to affect agricultural production for the second year in a row. This is an area of grave concern.

12. The time is ripe for some serious efforts as eighty percent of the area under cultivation in India is in the grip of severe climatic conditions like drought, floods and cyclones. Global climate change could aggravate these problems. Institutes like IARI must leverage opportunities from frontier sciences such as bio-technology, synthetic biology, nano-technology, computational biology, sensor technology and geo-spatial technology to develop climate-resilient technology solutions. Innovation in agricultural techniques and practices must be supported through infusion of funds, mentoring of ideas, and technical assistance. The risk-taking ability of farmers must be boosted. The newly-launched crop insurance scheme will leverage technology to provide risk cover to the farmers.

Friends:

13. Agriculture is the source of livelihood for more than fifty percent of our population. Mahatma Gandhi had said once and I quote: "*To forget how to dig the earth and tend the soil is to forget ourselves*" (unquote). Not many youth, however, are coming forward today to take up farming. To attract youth to agriculture, we need technologies that can make the farm sector profitable. Research in agricultural institutes should focus on minimizing production cost, enhancing profitability in the entire "*field-to-plate*" food chain, and introducing greater automation to reduce drudgery.

14. Globalization of agriculture has increased the prospects for processed food commodities manifold. Our farmers and agri-preneurs must make full use of this opportunity. Increase in investment for agriculture technology development, rural agri-infrastructure, on-farm processing and value addition, and storage facilities are needed. Agriculturists must be trained to transform their farms into production-cum-processing centres. Research in our institutes must address the critical issues that hinder the development of rural agri-businesses. Proliferation of the recently-launched "Start-up India" to the rural sector could provide fillip to the setting up of agro-based enterprises. The "*Mera Gaon Mera Gaurav*" programme of IARI, under which each scientist will adopt a village, should aim at changing agriculture from subsistence farming to commercial farm industry.

Friends:

15. Agricultural education in our country must conform to global standards. For that, we need to create a large pool of competent faculty empowered with state-of-the-art research infrastructure. A strong network of teachers, learners and practitioners will facilitate lab-to-field dissemination of good agricultural practices. It will also provide feedback about farmers' problems to trigger research and technology development in our institutions.

16. Agricultural institutes are the foci on which the success of our farm sector and welfare of people depends. The barometer of performance is the quality of their products. Able, committed and industrious professionals from these institutions are required to spearhead the next farm revolution. Students and alumni of this reputed institution must seize the opportunity and contribute to the transformation in agriculture. I wish the graduating students the very best in life and career. I also wish IARI Godspeed for its future endeavours.

Thank you.

Jai Hind.

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