

GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION

**LOK SABHA**  
**UNSTARRED QUESTION NO. 4163**  
TO BE ANSWERED ON 28/03/2017

**SHORTAGE OF AGRICULTURAL SCIENTISTS**

4163. SHRI ASHOK MAHADEORAO NETE:

Will the Minister of AGRICULTURE AND FARMERS WELFARE  
कृषि एवं किसान कल्याण मंत्री be pleased to state:

- (a) the various steps taken by the Government for expediting the agricultural research work in the country;
- (b) the various tasks undertaken by the Government under the agricultural research during the last three years and the current year;
- (c) whether there is any shortage of agriculture scientists in the country;
- (d) if so, the details thereof and the reasons therefor; and
- (e) the remedial action proposed to be taken by the Government in this regard?

**A N S W E R**

MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE AND FARMERS WELFARE  
कृषि एवं किसान कल्याण मंत्रालय में राज्य मंत्री  
**(SHRI SUDARSHAN BHAGAT)**

**(a) & (b):** The details are given in the enclosed **Annexure**.

(c) There is no shortage of agricultural scientists in the Indian Council of Agricultural Research.

**(d) & (e):** Question does not arise.

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**THE STEPS/ TASKS TAKEN/ UNDERTAKEN FOR EXPEDITING AGRICULTURAL  
RESEARCH DURING the LAST THREE YEARS (2014-15- 2016-17)**

The National Agricultural Research System (NARS), which serves the agricultural technology and information needs the country, has created a research network of 102 ICAR Research Institutes, 11 Agricultural Technology Application Research Institutes (ATARIs) and 69 Agricultural Universities (including 3 Central Agricultural Universities and 5 Universities with Agriculture Faculty) spread across the country. DARE/ICAR has also established a network of 668 Krishi Vigyan Kendras (KVKs) district-wise in the country aiming at assessment and demonstration of technologies/ products developed under NARS and their dissemination among the farmers and line departments through their district level front line demonstration and training programmes. The system has developed excellence in several frontier areas of agricultural sciences in terms of technology generation and dissemination, and human resource development that have contributed very significantly towards the growth of Indian agriculture. The research programmes under the umbrella of the DARE/ICAR are designed and undertaken with a view to ensuring food and nutritional security to all our fellow citizens and to ensure livelihood security among the farming community. By adopting a path of science and technology led growth of its agriculture, India has reaped dividends in the form of a strong, self-reliant and resilient food security situation and the productivity of these crops has also increased positively over the years.

Keeping in tune with the priorities for the agriculture sector development, set by the Government, the DARE/ICAR has given focused attention towards developing technologies for 'more crop per drop', safeguard soil-health, promotion of mechanization of small farms and increase pulses and oilseeds production, for a strong 'Lab-to-Land' programme with Community Radio and ICT linkages. The Council is addressing these aspects through research integration, need-based education and inclusive frontline extension programmes. The efforts with National Innovations on Climate Resilient Agriculture (NICRA) have set an example with over 623 Contingency Plans, duly addressing the monsoon concerns in agriculture at district level. These district level contingency plans, which are updated from time to time with the involvement of all the stakeholders, have helped us in withstanding the impact of the unprecedented floods, draughts and the cyclones. During these events, the institutes and scientists of the Indian Council of Agricultural Research (ICAR) stood by the farmers with technological backstopping and advisories.

During past 3 years (2014-16), the efforts of NARS under the aegis of ICAR have led to the release of 463 high yielding crop varieties/ hybrids including 251 cereal crops, 74 of oilseeds, 63 of pulses, 36 of fibre crops, 27 of forage crops and 12 of sugarcane. Draft sequence of bread wheat genome has also been deciphered by our scientists.

In the area of horticulture 314 improved varieties, 136 hybrids, 337 vegetable production technologies, 211 Integrated Pest Management and 167 seed production technologies have been developed by ICAR during past 3years. The improved varieties/ hybrids of vegetables developed are not only able to give 20-25 per cent higher yield but are also resistant to important pests & diseases.

In animal sciences, 3 strains of the poultry viz. *Kamrupa* a multi-coloured bird suitable for rural poultry production in assam; *Narmadanidhi* an improved variety of chicken for Vindhya region and *Jharsim* a dual purpose variety of chicken to be reared in Jharkhand area were developed and distributed among the farmers. Major breakthroughs were also achieved in buffalo cloning with the production of cloned calves Lalima and Rajat by Hand Guided Cloning Technique. Three classical swine fever vaccine strains; *peste des petits ruminants virus* (PPRV) and Sungri/96 strain of Newcastle disease virus (NDV) were also developed by ICAR. In fisheries technologies, a major breakthrough was achieved in breeding and seed production of the milkfish (*Chanos chanos*), in captivity, for the first time in country. The fish species is highly suited for culture in different salinity in brackish water and inland saline ponds. Round the year, seed availability of Indian major carps was achieved through multiple breeding.

Under Natural Resources Management, following key technologies were developed by ICAR during past 3 years:

- Bioengineering measures of soil & water conservation to check water erosion and enhance productivity and profitability of degraded lands.
- Reclamation technology and salt tolerant varieties of rice, wheat and mustard for rehabilitation of lands affected by salinity and sodicity.
- Subsurface Drainage for Management of Waterlogged Saline Soils
- Resource conservation technologies (RCTs) to conserve natural resources and save expenditure on inputs (fertilizers, water), labour, and energy besides mitigating adverse impact of climate change.
- Biofertilizers to supplement costly chemical fertilizers.
- Developed digital soil test kit (Mini Lab/Mridaparikshak).
- Technological backstopping to promote organic farming in the country.
- Integrated Farming System(IFS) models
- Multipurpose Rubber Dam for Water Harvesting in Watersheds

In farm mechanization, facilities in the advanced areas of sensor based precision agriculture, real-time input management, decision support systems, computerized databases, web-based applications, non-destructive quality evaluation, machine vision applications in agriculture, renewable energy applications, protected cultivation, storage, post-harvest processing and value addition of agricultural commodities etc. have been developed and also established around 45 agro processing centres (APCs) in production catchment, for processing and value addition to farm produce. The details of the key technologies in agricultural engineering developed and commercialized during last three years are given below:

- Cryogenic spice grinding system
- Ginger processing technology (Dried ginger flakes, sweetened flakes, Powder, and Ginger Paste)
- Technology for minimal processing of vegetables
- Pearl millet based composite extrudates and pasta
- Groundnut flavoured beverage, curd and paneer
- Process of manufacturing mix for ready to constitute Makhana kheer
- Knowhow for construction of ICAR-CIPHET Evaporative Cooled Storage Structure (5-7 tonne capacity)
- A process of separating a compound containing allylisothiocynate from mustard seed
- Process for making beetroot shreds and powder

- Low fat meat emulsion and process for making the same
- Processing of Aonla for manufacturing of value added products
- Dried onion flakes and powder
- Process for making green chili puree & powder

In the area of front line extension of various Agricultural Technologies amongst farming community and the state line departments, Krishi Vigyan Kendras (KVKs) are playing a pioneering role. Thirty one (31) new KVKs were established by the ICAR during past 3 years taking the total number of KVKs in the country upto 668. In addition, three new ATARIs were also created taking the numbers of ATARIs to 11. Due to the training programmes conducted by KVKs on improved technologies related to agriculture and allied fields, have benefited the farmers all over the country, both in terms of increased crop production and improved farm income. The training programmes also resulted in entrepreneurship development through agriculture related enterprises among the rural youth and farmers, viz. nursery management, protected cultivation of flowers and vegetables, dairying, goat and poultry farming, sericulture, production of vermicompost etc. The successful technological interventions identified by KVKs through on-farm testing and frontline demonstrations are being up-scaled for the spread of the technologies to large number of farmers in the district by the respective KVK and also organizing the extension activities like technology week in the demonstration farm of KVK for exposure of farmers to the improved technologies of agriculture.

To promote digital agriculture, dedicated mobile app for rice (riceXpert) and a web-based application, pulse Expert were developed. A dedicated KVK Portal has been launched with user interface to enable monitoring and management of KVKs.

During past 3 years, ICAR has launched various innovative schemes Farmers FIRST, Student READY (Rural Entrepreneurship Development Yojana), ARYA (Attracting and Retaining Youth in Agriculture), and Mera Gaon Mera Gaurav, unique initiatives of ICAR towards entrepreneurship development of agricultural graduates and improving technology dissemination.

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