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**GOVERNMENT OF INDIA**  
**MINISTRY OF AGRICULTURE**  
**DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION**  
**KRISHI BHAVAN: NEW DELHI-110001**

**Dated:** 20-12-2019

The undersigned is directed to circulate herewith a copy of the Monthly Summary of the Department of Agricultural Research & Education for the month of November, 2019.

  
**(Shiv Prasad Kimothi)**  
**Assistant Director General (Coord.)**

**To**

All Members of Council of Ministers.  
Principal Information Officer, Ministry of Information & Broadcasting, Shastri Bhawan, N. Delhi.

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4. Secretaries to Government of India, All Ministries/Departments
5. Chairman, Union Public Service Commission, Shahjahan Road, N. Delhi
6. Chairman, NITI Aayog, NITI Bhawan, N. Delh
7. PSO to Secretary (DARE) & DG (ICAR)
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**DEPARTMENT OF AGRICULTURAL RESEARCH AND EDUCATION  
MONTHLY SUMMARY - NOVEMBER 2019**

**MAJOR RESEARCH ACHIEVEMENTS**

**International Cooperation:**

- (i) Secretary, DARE & DG, ICAR, official member from India in the CGIAR System Council and Deputy Secretary, DARE participated in the 9<sup>th</sup> CGIAR System council Meeting in Chengdu, China 13-14 November, 2019.
- (ii) The Eighth International Training Course on *In Vitro* and Cryopreservation Approaches for Conservation of Plant Genetic Resources was jointly organized by ICAR-National Bureau of Plant Genetic Resources (NBPGR) and Bioversity International, India Office, New Delhi in collaboration with the Asia-Pacific Association for Agricultural Research Institutes (APAARI) Bangkok, Thailand under its program Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources (APCoAB). The 15-day long course was held from Nov 5-19, 2019 at the Tissue Culture and Cryopreservation Unit (TCCU) of ICAR-NBPGR, New Delhi. and was attended by 22 trainees from 13 countries including Pacific Region (Fiji, PNG, Samoa), South and East Asia (Bangladesh, Chinese Taipei, India, Philippines), Central Asia (Uzbekistan, Kazakhstan, Ukraine) and Africa (Algeria, Madagascar, Senegal). The training was structured to cover all the aspects of *in vitro* conservation and cryopreservation of germplasm, through 21 lectures and 14 practical sessions.
- (iii) A delegation of DARE participated in the 1<sup>st</sup> meeting of India-Vietnam Joint Working Group (JWG) Agriculture. The said delegation visited Hanoi, Vietnam from 18-21 November, 2019 and participated in the JWG meeting on Agriculture.
- (iv) The Eighth Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) as well as regional and Inter-regional consultations was attended by Dr. Kuldeep Singh, Director, NBPGR, New Delhi and Dr. Sunil Archak, National Fellow from 9-16 November, 2019 at FAO, Rome, Italy.
- (v) A Memorandum of Understanding (MoU) was signed between India Council of Agricultural Research New Delhi, India and the World Vegetable Center (AVRDC), Taiwan for Cooperation in Agricultural Research and Education on 30<sup>th</sup> October, 2019.

**Varietal Improvement:**

- (i) gRNA against tomato leaf curl virus (ToLCV) for genome editing was cloned in a vector
- (ii) The sweet corn hybrid VL Sweet Corn 2 of (FSCH 75) developed has been recommended for notification.
- (iii) Seven rice varieties developed and filed for registration under extant variety category in PPVFRA, New Delh.
- (iv) gRNA against tomato leaf curl virus (ToLCV) for genome editing was cloned in a vector.
- (v) cry1AC gene was mobilized through Agrobacterium mediated *in planta* transformation in 1,800 okra seedlings.
- (vi) Two polymorphic SSR markers for fingerprinting in black pepper were validated for varietal identification and phylogenetic studies.

**Agricultural Biotechnology:**