



INDIAN COUNCIL OF AGRICULTURAL RESEARCH  
(Department of Agricultural Research & Education)

SALIENT ACHIEVEMENTS- 2015

**1. Productivity Enhancement**

- Released 80 Improved varieties/hybrids of Food, Fibre and Fodder Crops
- ~98,000 quintals of breeder seeds produced and distributed
- Technologies of *in vitro* propagation of pomegranate cv. Bhagwa including bio-hardening and Arecanut tissue culture commercialized
- Registered seven new breeds of indigenous livestock taking the total number of registered indigenous breeds in the country to 151
- Developed 'Narmadanidhi', an improved location-specific breed of chicken
- Induced breeding of *Rita chrysea*, catfish endemic to Mahanadi river, in hatchery conditions
- Developed Taqman probe based OMP-31 gene real-time PCR assay for the diagnosis of *Brucella melitensis*, common abortion causing agent in small ruminants
- Developed *Brucellosis* detection method and Sheep pox vaccine
- Achieved breakthrough in artificial breeding of milkfish (*Chanos chanos*), in captivity for the first time in the country

**2. Cutting Edge Science**

- Cloned a female calf, *Deepasha*, of endangered wild buffalo of Chhattisgarh through hand-guided cloning technique
- Deciphered complete Mitochondrial Genome Sequence of Phytophagous Ladybird Beetle, *Henosepilachna pusillanima* (Mulsant) and the whole genome sequence of 'Aseel', an indigenous chicken-breed
- Sequenced and annotated the first complete genome of the genus *Virgibacillus* sp. MSP4-1, an obligate halophile
- Developed first high-resolution SNP -based genetic map of Jute with seven linkage groups

**3. Natural Resource Management**

- Updated ~600 district level contingency plans and soil fertility maps for 65 districts for climate resilience and soil health, respectively
- Initiated Land Resource inventorization at 1:10,000 scale for micro-level agricultural land use planning
- Revised the bio-climatic map of India
- Developed an electronic atlas of water resources for Odisha and Himachal Pradesh
- Developed portable digital soil test kit-cum-mini lab (*Mrida Parikshak*) to facilitate soil testing and soil test based fertilizer recommendations
- Prepared and distributed about 2.5 lakh Soil Health Cards to farmers

#### 4. Mechanization and Post-Harvest Management

- “Machinery-cum-Technology Demonstration Mela” simultaneously at 22 locations, covering over two lakh farmers across the country
- Designed tractor-drawn unique bed former-cum-seeder for onion and a tractor-operated, trailing type potato combine harvester (0.21 ha/hr)
- Developed ‘coco-sap chiller’, for collection of fresh hygienic coconut inflorescence sap
- Nanocellulose Pilot Plant, a unique facility in line with the *Make in India* efforts
- Developed Cadalmin™, antidiabetic extract (ADe), a product with potential activity against type-II diabetes, from a blend of marine macro algae

#### 5. Technology Assessment, Refinement and Transfer

- Organized 98,624 FLDs over 52,326 ha; 90,974 (92%) demonstrations covering of 47,001 ha on crops
- 1.96 lakh q seeds of improved varieties and hybrids of different crops provided to 3.28 lakh farmers
- 12,070 demonstrations on NRM technologies and 1,814 on fodder and feed production by KVKs
- 27 smart technologies for mainstreaming and up-scaling under National Mission for Sustainable Agriculture
- Assessed 2,652 technology interventions across 4,003 locations through 27,008 trials on the farmers’ fields
- Assessed 439 technology interventions in case of livestock at 622 locations covering 4,994 trials on animals under the thematic areas
- Refinement of 265 technological interventions at 306 locations through 1,593 trials in the farmers’ fields

#### 6. IP Portfolio Management

- Dairy Technologies - Indigenous probiotic strains of *Lactobacillus plantarum* Lp91 and *Lactobacillus fermentum* Lf1, commercialized
- Commercialized 4G nano-based nutritional agri-inputs (phosphorus, magnesium, zinc, and iron) as Nano-nutrients for crops
- Developed and commercialized Kunitz trypsin inhibitor free soybean-NRC101 and NRC102 and Soybean IC210 with double the content of oleic acid than in existing varieties
- Licensed Cassava pappad-making licensed process technology for production of dough for pappad making machine

#### 7. HRD and Capacity Building

- Six new colleges under Central Agricultural University, Imphal for N-E States, thus raising the total number of colleges from 7 to 13
- Introduced Bill in the Parliament to upgrade Rajendra Agricultural University, Pusa, Bihar into a Central Agricultural University
- Increased the number of International Fellowships for pursuing Ph.D. in overseas Universities for Indian students and in Indian Universities for students from overseas to 30
- Four Regional Centres to strengthen National Agricultural Education Accreditation Board

## 8. New Institutions

- IARI, Jharkhand launched by Hon'ble Prime Minister of India
- Foundation stone for Indian Institute of Agricultural Biotechnology at Ranchi, Jharkhand laid by Hon'ble Union Minister of Agriculture & Farmers' Welfare
- Foundation stone for NRC Integrated Farming Systems, Motihari laid by Hon'ble Union Minister of Agriculture & Farmers' Welfare
- Post Graduate Institute of Horticulture in Amritsar
- Foundation Stone Andhra Pradesh Agricultural University laid by Hon'ble Union Minister of Agriculture & Farmers' Welfare
- Established National Institute of High Security Animal Diseases at Bhopal to address the emergence of exotic and trans-boundary animal and zoonotic diseases
- National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru to study the changing pattern of emerging and re-emerging animal diseases
- Centre for Zoonoses established at Nagpur in collaboration with Indian Council of Medical Research (ICMR) to strengthen surveillance on prevalence of zoonotic diseases

## 9. Partnership and Linkages

- MoU with Seychelles Agricultural Agency, Seychelles for co-operation in agricultural research and education
- Hosted the 23<sup>rd</sup> International Grassland Congress wherein over 500 scientists from 47 countries participated
- International Consultation Meeting on Fish Genomics for developing a roadmap for future fish genomic research in India
- MoU as Knowledge Partner with DD-Kisan, a national TV channel for agriculture
- ICAR and National Institute of Advanced Studies (NIAS), Bengaluru jointly conducted a workshop on 'Human–Wildlife Conflict in Agro-Pastoral Context'
- Initiated over 100 projects under ICAR-Extra-Mural Funding for enhanced research networking

## 10. Information, Communication and Publicity Services

- Developed countrywide digital agricultural research database - Knowledge based Resource Information Systems Hub for Innovations (KRISHI) in Agriculture
- Developed First whole genome putative microsatellite DNA marker database (<http://webapp.cabgrid.res.in/sbmdb>) of sugar beet for bioenergy and industrial applications
- Sent 93,949 short text messages on agro-advisories, 14,788 voice messages and 1,180 both SMS and voice messages to 223.94 lakh farmers

## **11. Organization & Management Reforms**

- Implemented Management Information System (MIS) and Financial Management System (FMS) (<http://icarerp.iasri.res.in>) in 108 ICAR institutions
- Revised Score Card for direct selection to senior scientific positions in the ICAR System to make it inclusive and purposeful
- Adopted ICAR Guidelines for Research Papers in Scientific journals and Data Management; ICAR Rules and Guidelines for Professional service Functions (Training, Consultancy, Contract research and Contract service)
- Revised nomenclature of several ICAR Institutes
- Revised Mandate of ICAR and Research Institutes
- Vision 2050 documents of ICAR and Research Institutes

## **12. Honours**

- DARE and ICAR awarded the Indira Gandhi Rajbhasha Puraskar for work in Rajbhasha
- DARE/ICAR's RFD Performance registered a composite score of 92.43%
- ICAR-NCIPM Project Bags Prime Minister's Award for Excellence in Public Administration for Crop Pest Surveillance and Advisory Project (CROPSAP) for pest management in major crops in Maharashtra
- ICAR bagged Best Pavilion Award in Indian Science Congress and National Agricultural Science Congress, 2015
- ICAR Pavilion adjudged 2<sup>nd</sup> best in IITF-2015, New Delhi