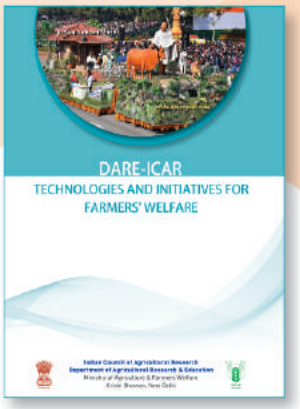
DARE-ICAR

TECHNOLOGIES AND INITIATIVES FOR FARMERS' WELFARE

Indian Council of Agricultural Research
Department of Agricultural Research & Education
Ministry of Agriculture & Farmers Welfare
Krishi Bhawan, New Delhi



Best Republic Day Tableau Prize winning
Kisan Gandhi on the cover page

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FOREWORD

The Indian Council of Agricultural Research under the governance regime of the Department of Agricultural Research and Education, Govt. of India has been pioneering in the science-led growth and development of Indian agriculture. Taking this endeavor forward, the organization was able to achieve rapid strides in the development of new varieties of field and horticultural crops including 52 biofortified varieties to impart food and nutritional security. Our new varieties, particularly in pulses enabled higher varietal replacement; availability of high-quality seeds of such varieties contributed significantly to the pulses revolution during 2016-19. Further, rising to the national commitment for conservation and improvement of indigenous animal breeds, 41 animal breeds including poultry were registered We focused on development of new vaccines and diagnosis kits for efficient management of animal diseases and increasing animal productivity. Towards Blue Revolution, induced breeding technologies were standardized with a focus on ornamental fishes; promoted open-sea cage farming by providing technology backstopping, and developed as well as commercialized several nutraceutical/health products from sea-weeds. Minilab for soil testing at affordable price - its development and deployment, was a milestone in the area of soil health assessment. New integrated and organic farming system models were developed. Upscaling of our IFS models by state governments of Tamil Nadu and Kerala in thousands of farmers fields was noteworthy. We strengthened the process of accreditation of agricultural universities/ colleges to ensure high-quality higher agricultural education and took measures to attract talented students to agricultural education and research. Implementation of the Fifth Deans' Committee Report and National Higher Education Project brought greater emphasis on skill and entrepreneurship

development in our students. We intensified our efforts in development and use of ICTs to reach as many farmers as possible particularly through the energized KVK system. Our KVKs strived for the in-situ management of rice residues in the villages of Haryana, Punjab and western UP through mass awareness, technology transfer and demonstration of mechanization solutions. We could register over 40% reduction in the residue burning events in 2018 as evident over 2016 from remote sensing imageries. This is a milestone in the area of farm mechanization and its implementation through the financial support of the Central Government. ICAR worked with greater emphasis in difficult and remote areas such as Leh-Ladakh, high hills in the north-eastern region and also in Andaman and Nicobar Island.

ICAR inked MoUs with Science Departments/organizations in the country, namely DBT, CSIR, ICMR and ICFRE, and other reputed institutions like IIT (D) and IMD to harness the synergy to excel in challenging areas and address farmers problems. During these five years, our coordination and collaboration with international research centres and organizations was also improved very significantly bringing visible impacts.

ICAR was rewarded with Global Gene Stewardship Award 2018 by the Borlaug Global Rust Initiative for the work on systematic gene deployment to manage rust diseases in wheat. It was a matter of pride that for the first time, ICAR Tableau on 26th January 2019 with the theme 'Kisan Gandhi' won the Best Tableau Prize.

Several reforms and new initiatives were brought about to enhance the much-needed efficiency and chart new courses to meet the current as well as the future challenges.

In this document, we have compiled the significant achievements of DARE/ ICAR during 2014-19 and compared with the previous five years for the benefit of the stakeholders. I trust that it will provide a glimpse of our wholistic and sustained efforts in agricultural R&D for the benefit of the country. It would be our pleasure to receive feedbacks and suggestions to strengthen our activities in future.

(T. Mohapatra)

Secretary, DARE & Director General, ICAR

CONTENT

President of India interacting with a young woman entrepreneur commercializing ICAR technology on Bioencapsulation for smart delivery of agriculturally important microbes, in the Innovation Exhibition at Rashtrapati Bhawan on 19 March 2018

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

THE Indian National Agricultural Research and Education Systems (NARES) is one of the largest scientific communities in the world with respect to human resource, infrastructure, research, education and frontline extension network. The Indian Council of Agricultural Research (ICAR) is the apex body of this National Agricultural Research and Education System and was established on 16 July 1929 as Imperial Council of Agricultural Research. ICAR is an autonomous organization under the administrative control of the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers' Welfare, Government of India. With its headquarters at New Delhi, ICAR coordinates, guides and manages research, education and extension in agriculture and allied sectors. It has a vast network of 102 research institutes including 4 Deemed to be Universities, 11 zonal coordination centres of Krishi Vigyan Kendras (KVKs) named as Agricultural Technology Applications Research Institutes (ATARIs), 70 agricultural universities or universities with agriculture faculty and 721 KVKs spread across states and union territories of the country.

भाकृअनुप
ICAR

VISION

Ensure food and income security for all, through technological innovations and sustainable agricultural production

MISSION

Harness power of science and education with a human touch for higher and sustainable agricultural production

ICAR Today

- Leads one of the largest national agricultural research systems with distinction
- Custodian of a huge collection of germplasms of plants, animals, fishes, insects and microbes for their conservation and sustainable use
- Provides science-based agro-technology advisory services to farming community
- Carries out entrepreneurship development to strengthen largely post production process
- Supports agricultural education in the country through its deemed to be Universities and State Agricultural Universities on the pattern of University Grants Commission (UGC)
- Provides evidence-based techno-economic recommendations to the Government of India for policy formulation for agricultural sector
- Provides techno-economic and educational support to developing countries for increasing international cooperation

ICAR 2050: Focus Areas of Research & Development

- Genetic potential enhancement and development of value chains of agricultural commodities
- Agricultural productivity, input-use efficiency and profitability
- Resilience to climate change and abiotic and biotic stresses
- Food and nutrition security
- Sustainability of natural resource base of agriculture
- Valuation and promotion of ecosystem services
- Agricultural markets, policies and institutions

Rich diversity of Chrysanthemum varieties at ICAR-DFR, Pune

- Bio-security, especially emerging from cross-border vector-borne diseases
- New products and uses (e.g. bio-energy, new crops, synthetic foods, special foods)
- Agricultural mechanization, automation, and use of sensors for precision agriculture
- Secondary and commercial agriculture
- Minimizing post-harvest losses through new technologies and value addition
- Use of ICTs and digital platforms in technology transfer
- Technology commercialization and agri-entrepreneurship development
- New educational and learning system, and environments
- National and international collaboration for partnership in agricultural research and education
- Global agri-trade research

Impacts of ICAR Technologies: Some Recent Examples

- Pusa Basmati 1121 developed in 2003 is grown on about 70% of basmati area in the country. The export earnings from PB-1121 is estimated at Rs. 19939 crores in 2018-19
- Wheat variety HD 2967 developed in 2011 covers about 40% of wheat area. The variety generated Rs. 12,889 crores of economic surplus in TE 2018-19
- Co 0238 sugarcane variety developed in 2009 provides the highest sugar recovery of ~ 12%. It covered over 80% area under sugarcane in UP and northern States, and generated an economic surplus of Rs. 10,064.3 crores in 2017-18
- Pusa Mustard 25 released in 2010 occupied about 20 % of total mustard area. The estimated economic surplus from this variety is Rs. 14,323 crores (at 2018 prices) during 2010-2018
- Potato variety Kufri Pukhraj, released in 1998, covers about 33% of the total potato area in the country. The economic surplus generated by Kufri Pukhraj in 2017-18 was Rs. 4,729.0 crores

- With Arka Rakshak and Arka Samrat, the triple (leaf curl virus, bacterial wilt and early blight) disease-resistant tomato hybrids developed in 2010, the total economic surplus accrued since their release is Rs. 237.82 crores (2018 prices)
- Attenuated PPR Vaccine: Peste-des-Petits Ruminants (PPR), an acute contagious disease in sheep and goats, is a major health constraint in small ruminants. The live-attenuated vaccine developed in 2001 resulted into significant economic surplus of Rs. 9,826 crores in 2017-18
- Jayanti Rohu developed by ICAR is an improved strain of Rohu. The annual market value of Jayanti Rohu is Rs. 1313 crores and the economic surplus generated during 1992-2018 is Rs. 2547 crores
- Drum Seeder is now emerged as an alternate method to transplanting of paddy seedlings. Adoption of this machine generated economic surplus of Rs. 3,020 crores during TE 2018-19

TECHNOLOGIES AND INITIATIVES FOR FARMERS' WELFARE

(2014-19)

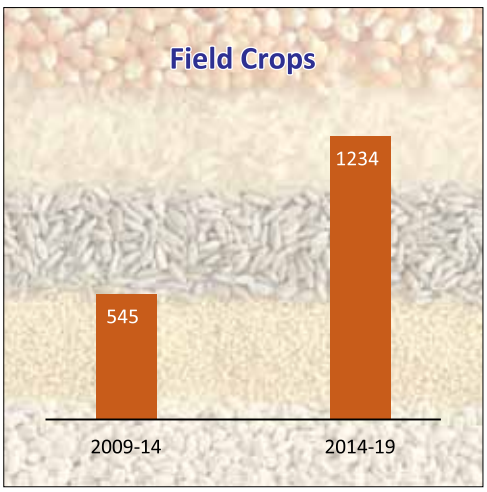
"...the country is very well familiar with the green revolution and white revolution. Time has come to bring about the changes in the lives of our fishermen brothers through blue revolution and to supplement the income of our farmers through honey-bee keeping and honey production. We have been working to bring blue revolution, sweet revolution along with green revolution and white revolution."

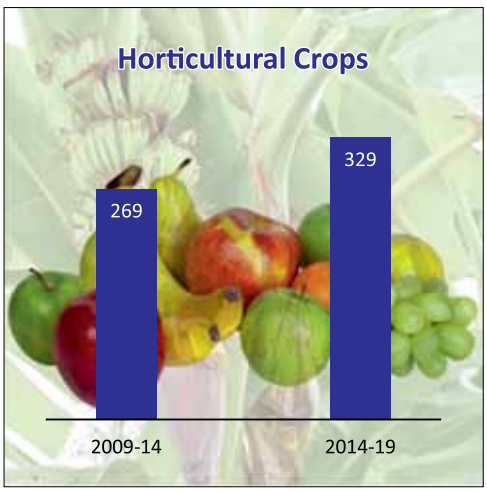
Prime Minister of India at the Golden Jubilee Celebration of BAIF at Pune on 24 Aug 2017

A. Food and Nutritional Security

The Hallmark of the Indian Council of Agricultural Research has been its improved high yielding varieties and hybrids, which have enabled food security in the country and are currently helping to address the emerging challenges of climate change. The Nation has committed for Sustainable Development Goal-2 (SDG-2) i.e. Zero Hunger by 2030. Hence, nutritional security and climate resilience have assumed greater significance as core objectives of agricultural R&D.

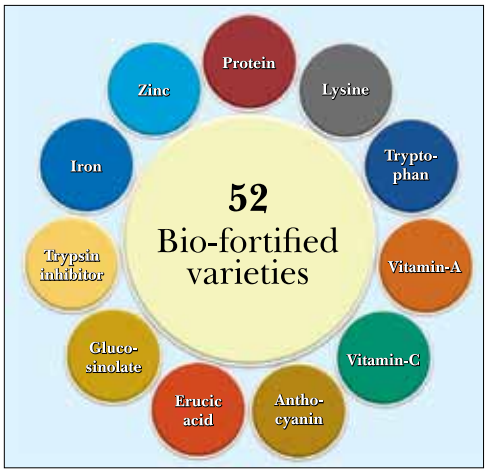
- A total of 1234 high yielding varieties including 1020 climate resilient and stress tolerant varieties of field crops were released during 2014-19 against 545 during 2009-14. All these varieties were gazette notified for income augmentation of the farmers. The striking feature is that 30 new varieties with multiple stress tolerance were developed by use of new tools of molecular breeding that imparted higher precision to the variety selection process. In horticultural crops, 329 varieties were developed and notified during 2014-19 against 269 during 2009-14 to supplement nutrition and income security





Number of Varieties released

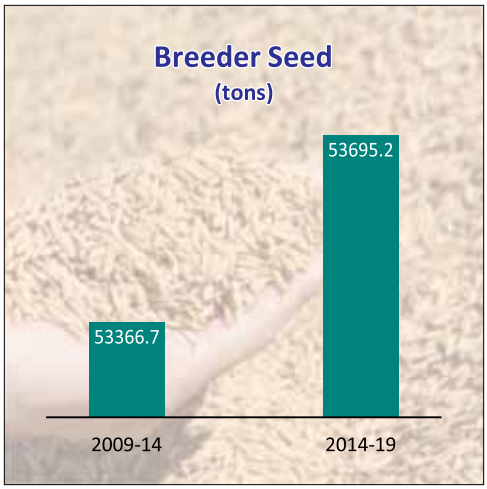
- 52 crop varieties either bio-fortified with higher levels of Fe, Zn, protein, provitamin A etc. in the edible parts or with reduced level of antinutritional factors were developed during 2014-19 against only one variety during 2009-14. These varieties have been brought under seed chain to make the nutritious food available to the consumers. A total of 3483.8 quintals of breeder seed of 16 such varieties have been produced during 2016-17 to 2018-19



Traits targeted for Biofortfication

- Quality planting material for horticultural crops are the critical input for horticultural expansion. ICAR institutes enhanced the production of quality planting materials by 62.4% in cuttings (from 57.2 lakh to 93.4 lakh); 71.5% in bulbs (from 963.153 lakh to 1653.131 lakh) and 89.1 % in saplings (2710.10 to 5125.0 lakh) during 2014-19 as compared to 2009-14

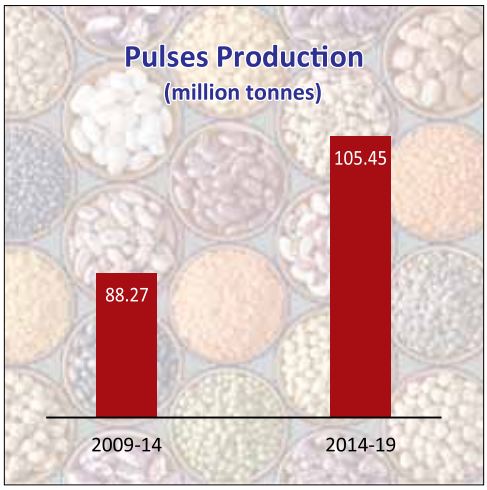
- ICAR is the nodal agency for coordination of Breeder Seed production in the country. The breeder seed production increased by 10% during 2014-19 as compared to the previous five years. The seed replacement rate in pulses, oilseeds and cereals increased substantially over time



- As per the indents raised by different States and other agencies, ICAR produces and supplies the Breeder seeds
- The Krishi Vigyan Kendras (KVKs) also produced quality seeds and planting materials, those were provided to the farmers. The seed production in KVKs increased by about 40% from 10.1 lakh quintals to 14.16 lakh quintals and the planting materials by 184% from 853.15 lakh to 2425.45 lakh during 2014-19 as compared to 2009-14

B. Pulses Revolution

India registered a significant jump in pulses production through productivity increase by 24% over 2015-16 resulting in a net production of 25.42 million tonnes in 2018-19. Varietal replacement through enhanced breeder seed supply of new varieties contributed to this scenario. Besides, area expansions under new varieties happened due to government policies of creating 2 million tons of buffer stock, ensuring minimum government support price and enhanced government procurement.



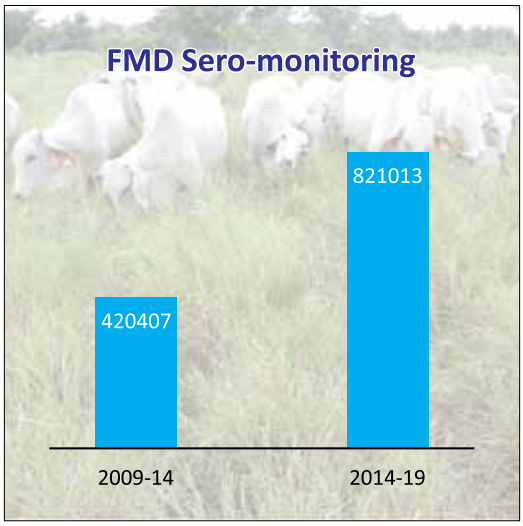
Establishment of 150 seed hubs ensured availability of quality seeds and the KVKs led large-scale frontline demonstrations enabled an ecosystem for productivity increase as well as area expansion.

C. Indigenous Breeds and Health Management for Enhanced Productivity of Animals

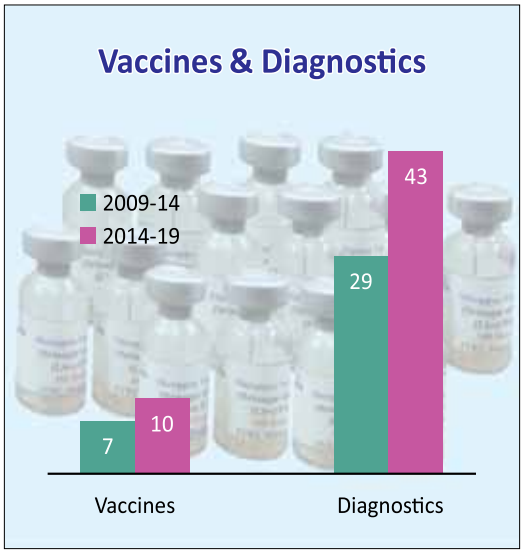
- Thirteen improved varieties of pigs and poultry, and a prolific cross-bred sheep, `Avishaan' were developed during 2014-19 as compared to 3 during 2009-14
- Developed 7 animal clones of superior buffalo germplasm during 2014-19 as compared to 3 during 2009-14

Apurva - The Cloned Buffalo Calf

- Registered/accessioned 41 new breeds of livestock and poultry. In comparison, 15 breeds were registered during 2009-14
- Sero-monitoring was stepped up for FMD surveillance in different states with 95% increase in testing during 2014-19 over 2009-14
- For better health management, ten new vaccines/vaccine candidates for animal diseases were developed during 2014-19 against 7 during 2009-14
- The major vaccines/ vaccine candidates developed are:
  - H5N2DIVA marker vaccine against avian influenza virus
  - Sheep pox vaccine (Srinagar strain)
  - Gumboro vaccine (VLP based) for infectious bursal disease (IBD) in Poultry
  - Classical Swine Fever live attenuated vaccine
  - Heat tolerant type 'O' FMD vaccine candidate



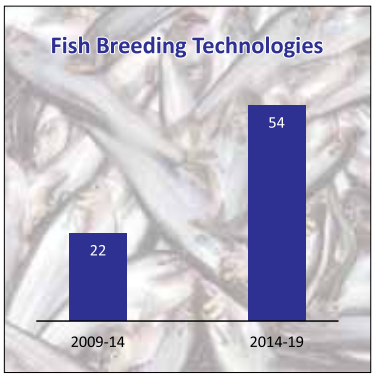
Number of samples tested using ICAR designed kit



- Forty-three diagnostic kits for animal diseases and animal products were developed during 2014-19 against 29 during 2009-14

- The major kits among these are
  - Indirect ELISA kit for Porcine Reproductive and Respiratory Syndrome (PRRS) virus antibody detection
  - Indirect ELISA kit for avian influenza antibody detection
  - Monoclonal antibody-based ELISA kit for *Brucella* infection in bovines
  - Japanese encephalitis (JE) IgM ELISA kit for the detection of JE antibodies in pigs
  - Bluetongue Sandwich ELISA kit for BTV antigen detection
  - NS1 antigen-based indirect IgG ELISA kit for sero-diagnosis of Japanese encephalitis (JE) in pigs
  - Lateral flow assay for sero-diagnosis of brucellosis in livestock

D. Fishery Technologies for Blue Revolution



- Twenty-two new finfish/shellfish species were identified during 2014-19 against the 17 during 2009-14
- Developed 5 improved strains/varieties of aquaculture species that has only 2 during 2009-14
- Tech. for breeding and seed production for 18 cultivable finfishes and shellfish species were developed during 2014-19 against 14 species during 2009-14
- With a focus to promote ornamental fish, breeding tech. was developed for 36 ornamental fish during 2014-19 against 8 during 2009-14
- With emphasis on system diversification, 12 improved/new aquaculture systems were designed for finfish/shellfish culture during 2014-19 against 2 such systems during 2009-14
- Expanded marine cage culture with cobia (*Rachicentron canadum*), silver pompano (*Trichinotus blochi*) and seabass (*Lates calcarifer*) all along the coast in over 1500 cages during 2014-19 compared to only 476 cages during 2009-14
- Developed 22 indigenous fish feed formulations for various life stages of diversified aquaculture species during 2014-19 (*Vannamei*plus, Seabassplus, Polyplus, Varna, Varsha, CIFRI CageGrow) as against 9 during 2009-14
- Twenty-five diagnostic/analysis kits were designed for disease diagnosis, water quality analysis and adulterants/contaminants in fishes during 2014-19 against 12 kits during 2009-14
- Identified 30 high-value compounds and nutraceuticals from seaweeds fish waste during 2014-19 compared to only 7 in 2009-14
- Nineteen fishing crafts/equipment/gadgets were designed for fisheries and aquaculture management during 2014-19 as compared to 14 in the previous five years
- Developed 22 value-added fish products during 2014-19 in comparison to 15 during 2009-14. In addition, 6 commercial products from fish waste were developed during 2014-19

E. Natural Resources Management & Climate Resilient Agriculture

- A portable and low-cost soil test kit/mini lab (*Mridaparikshak*) was developed for rapid analysis, and distribution of soil health cards to farmers. More than 11300 units were sold which facilitated soil testing service at farmers' door step
- A multipurpose rubber dam was designed for watershed to reduce soil erosion, create water storage facility, and enhance ground water recharge and quick and safe disposal of sediments. Forty-three rubber dams were installed in the states of Odisha, Uttarakhand, Madhya Pradesh, Maharashtra, Gujarat and Jharkhand
- ICAR updated and provided technical backstopping to implement 650 District Agricultural Contingency Plans
- Thirty-one multi - enterprise integrated farming system (IFS) models developed to enhance farm productivity and income of small and marginal farmers to the tune of Rs. 1.5 - 3.6 lakhs per annum per hectare. For frontline extension purposes, the IFS demonstration units were also established in additional 100 KVKs covering 29 states (2014-19), enhancing the total number to 287
- Developed during 2016-19 against 14 during 2009-14 organic farming package of practices for 33 crops/cropping

Mridaparikshak: A minilab for soil health assessment and fertiliser advisory

Rubber Dam

systems which are being promoted through various schemes (PKVY/ MOVCD/NHM) of the Department of Agriculture, Cooperation & Farmers' Welfare, GoI

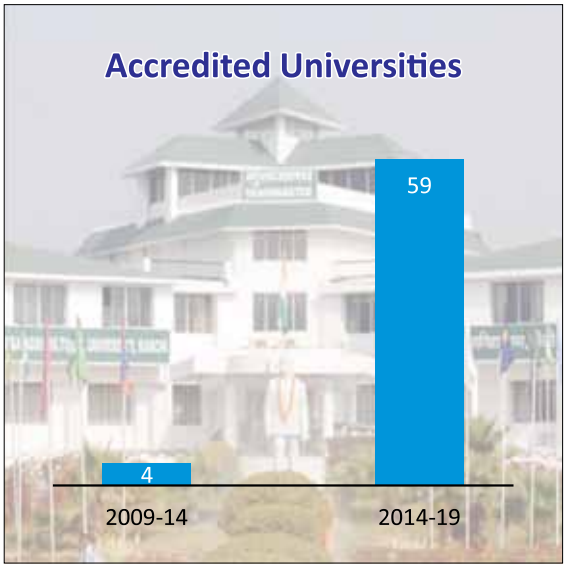
- Optimum irrigation schedules were defined for 32 crops and cropping systems during 2014-19 against 18 during 2019-14 for efficient use of irrigation water
- Standardized designs and structures for rainwater harvesting in varying rainfall situations in 21 states
- Groundwater recharge structures and filters for alluvial and hard rock regions were designed

F. Mechanization of Field and Post-Harvest Operations

- Prototype development of farm machines increased by 19% from 19499 during 2009-14 to 23197 during 2014-19
- Establishment of agro-processing centres almost doubled from 121 during 2009-14 to 217 during 2014-19; these centres were technically backstopped by ICAR
- For the very first time, ICAR backstopped establishment of 30 food testing labs during 2014-19
- Developed the popular Makhana popping machine that eliminated drudgery to negligible level
- Provided mechanization solutions to combat burning of crop residues in the northern India. Over 56150 machines including Happy Seeder designed by ICAR-AICRP Centre at PAU, Ludhiana were distributed through a central government scheme to the farmers that enabled 40.86% reduction in straw burning events in 2018 as compared to 2016

G. Strengthening Higher Agricultural Education

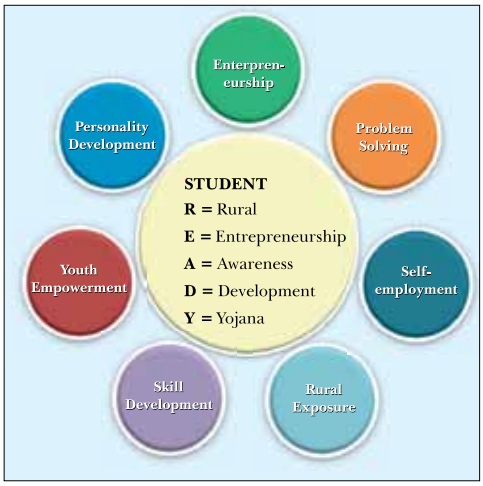
- Introduced a Ranking Framework of Agricultural Universities
- Guidelines for Accreditation of Higher Agricultural Education Institutions in India were formulated
- The accreditation of SAUs begun to enhance the quality standards in agricultural education in the Agricultural Universities. During 2009-14 only 4 SAUs were accredited which increased about 15 times to 59 during 2014-19
- To celebrate the birth-day of Bharat Ratna Dr. Rajendra Prasad, who was the first Indian Union Agriculture Minister and the first President of Independent India, 3rd December was declared as the National Agriculture Education Day
- Established 14 Centres of Excellence in State Agricultural Universities (SAUs) and Deemed Universities of ICAR to promote agricultural research and education



- Implemented National Agriculture Higher Education Project (NAHEP) in the year 2017 enabling 238 students and 63 faculty members from agricultural sciences getting trained abroad in cutting edge technologies and emerging areas of agricultural sciences
- 452 experiential learning units were established in the SAUs benefitting 69621 students; 22 new experiential learning modules specially designed and introduced
- Emeritus Professor Scheme (100 numbers) initiated in 2016-17 to harness the potentials of experienced teachers in the State Agricultural Universities
- Netaji Subhash International Fellowship for overseas doctoral degree programme enhanced from 25 to 50 slots

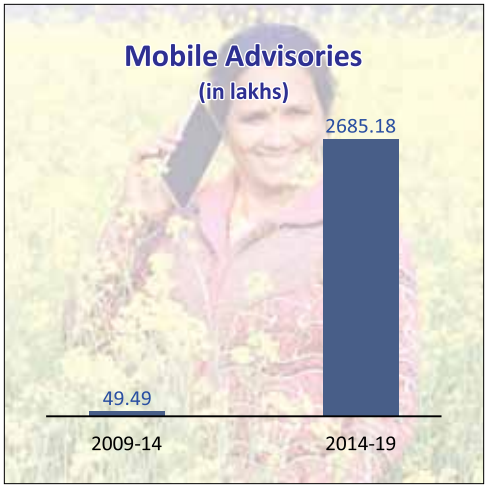
- Student-READY programme was launched in 2015 and implemented across agricultural universities during 2016-17 exposing more than 12,000 undergraduate students every year to various facets of agri-entrepreneurship. The student stipend under this programme was also enhanced from Rs. 750 per month to Rs. 3000 per month
- Introduced 65 new pilot courses on communication skills, entrepreneurial skills, creative and innovative thinking, and leadership skills

Student READY programme: Major outcomes



H. Lab to Land and Farmers Outreach

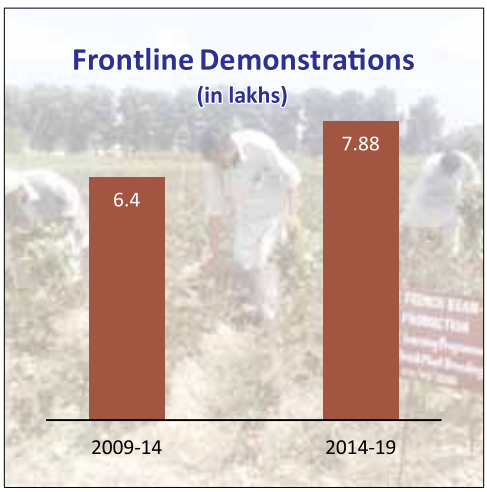
- Established District Agro-Met Units (DAMUs) in 199 KVKs to provide weather-based agro-advisories
- Established 1952 units of agro-enterprises benefitting 4964 rural youth under the newly launched program, `Attracting and Retaining Youth in Agriculture' (ARYA)
- To catch up with digital revolution, focused efforts by ICAR led to development of 171 mobiles *apps* on different farm and farmers related services during 2014-19, against 9 apps during 2009-14
- Moving towards the digital connectivity and capitalizing upon the penetration of mobile handsets and services in the rural areas, the KVKs provided 26.85 crore mobile agro-advisories during 2014-19 against 0.41 crore agro-advisories during 2009-14
- KVKs trained 78.52 lakh farmers and 6.83 lakh extension personnel during 2014-19 as compared 74.76 and 5.91 lakh respectively during 2009-14
- For the first time, exclusive climate resilient technology packages of crops and livestock production systems were demonstrated in 151 villages of 121 vulnerable districts of the country covering 4.25 lakh farmers under the Technology Demonstration Component of NICRA
- 13500 villages were adopted under a new initiative called *Mera Gaon - Mera Gaurav* to promote the lab to land process benefitting over 6 lakhs farmers



- For the first time, ICAR provided skill development training aligned with the National Skill Qualification Framework to 19076 rural youth by organizing 945 training courses through KVKs/ICAR Institutes/ Agricultural Universities in collaboration with Agricultural Skills Council of India and RKVY

- The Farmer FIRST (Farm, Innovations, Resources, Science and Technology) initiative was launched during this period by ICAR with enhanced farmers-scientists interface to move beyond production and productivity; the programme is under implementation at 51 centers under ICAR and SAUs spread over 20 states of the country benefitting 155265 farm families

- Organized 7.88 lakh frontline demonstrations (FLDs) enabling capacity building of 78.52 lakh farmers including farm women and rural youth; this included 3.17 lakh exclusive FLDs for pulses and 2.23 lakh for oilseeds



- KVKs played a key role in Krishi Kalyan Abhiyan (KKA) of Govt. of India to intensify development work in 112 aspirational districts; trained 11.05 lakh farmers of 5716 villages by organizing 27000 training programmes

- The KVKs organized strategic Information, Education and Communication (IEC) campaign for in situ management of crop residues in ~700 villages in the northern India that was participated by 2 lakh farmers

- 15th October celebrated globally as the International Day for Rural Women was declared as the *Mahila Kisan Diwas* in India to recognize the role of rural women in agricultural development. Now, the day is being observed every year across the National Agricultural Research and Education System in the country

I. Interfacing and Coordination with States

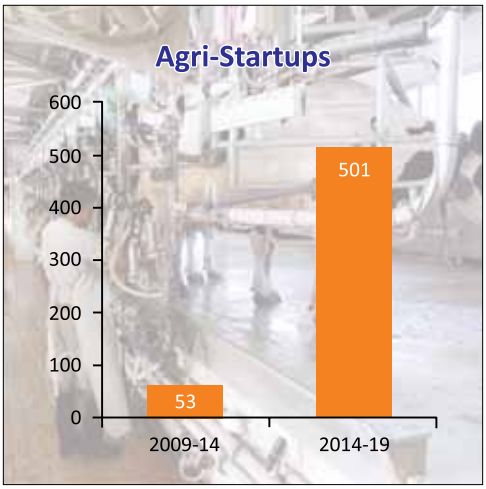
- Strategic Action Plan for Doubling of Farmers' Income was prepared for all the States of the country through the duly constituted State Level Coordination Committees, which were provided to the States for implementation
- Functioning of the eight Regional Committees strengthened; the action points along with timelines were clearly defined for each state based on their needs and actions taken according to the timeline
- The number of ATARIs increased from 8 to 11 to intensify the State linkages for extension services
- Provided technical inputs for the Kharif and Rabi campaigns organized by Department of Agriculture, Cooperation and Farmers' Welfare, Govt. of India; documented technological information disseminated particularly about the newly released varieties to be immediately promoted by the States

J. Technology Commercialization and Agri-Startups

- Established 50 Abri-business Incubators (ABIs) in 2016 to address the much-needed requirements of business incubation to convert the agriculture technologies into an attractive commercial proposition

ICAR-CIFT designed green fishing vessel Sagar Harita

- ICAR incubated 1353 promising incubates so far; 611 during 2009-14 and 742 during 2014-19
- 53 successful start-ups initiated their business during 2009-14; the number soared up to 501 during 2014-19
- The commercialization of technology has been vigorously sharpened during 2014-19. The number of technologies licensed increased from 332 during 2009-14 to 538 during 2014-19



K. Collaboration with National and International Agencies

- ICAR hosted the 4th ASEAN-India Ministerial Meeting on Agriculture and Forestry on 11-12 January, 2018
- For the first time, Umbrella MoUs were signed between ICAR and 34 Agricultural Universities/CAUs

- The significant partnership was with DD-Kisan; MoU signed on 26th May, 2015 to enable mass media outreach
- ICAR signed MoU with prominent scientific organizations of the country such as CSIR, ICMR, ICFRE, DBT and IIT(D) to break *silos* in frontline research; joint working groups and steering committees were formed; new joint research projects initiated
- Established a new section for International Relations in the Council to act as single-window and facilitate international cooperation
- Introduced the first ever online processing platform for foreign deputation (https://fvms.icar.gov.in)
- 36 new MoUs signed, and 22 Work Plans finalized since mid-2014 to enhance the global reach of ICAR. These include 15 Foreign Universities, 12 CGIAR Centres, 3 Academies, and 8 International Organizations

MoU between DBT & ICAR

Work Plan signed between ICAR & IRRI

L. Reforms Introduced in DARE/ICAR

- Agricultural Scientists Recruitment Board (ASRB) restructured and made functional; it was detached from ICAR and placed directly under DARE
- Rationalization of ICAR sponsored All India Coordinated Research Projects was carried out for rightsizing in human resources and funding leading to saving of over Rs. 100 crores annually
- Cadre Review of scientists in ICAR was done and the entry level scientific positions expanded adding to a flexi pool of scientific strength to address the emerging research needs
- Implementation of e-office with over 95% e-file works in ICAR
- Increased use of digital methods to bring transparency: Finance Management System and Online Transfer Systems, Digital Foreign Visit Management System and Online Examination for UG/PG admissions were introduced

State-of-art multipurpose ICAR Convention Center was commissioned for national service on 20th February, 2019

Prime Minister at the Nanaji Desmukh National Phenomics Facility, IARI, New Delhi

M. New Institutions, Facilities and Awards

- PM dedicated the Nanaji Deshmukh National Phenomics Facility at IARI New Delhi to the Nation to foster understanding of climate change impacts on crops
- PM laid the foundation stone for establishment of Indian Agricultural Research Institute (IARI), Jharkhand and IARI-Assam.
- Established Rani Laxmibai Central Agricultural University in Jhansi, Uttar Pradesh with three colleges
- Upgraded the Rajendra Agricultural University, Pusa, Bihar to a Central University and renamed it to Dr Rajendra Prasad Central Agricultural University with four colleges
- Established 6 new colleges under the Central Agricultural University, Imphal, raising the total number of colleges to 13
- Mahatma Gandhi Integrated Farming System Research Institute was established at Motihari, Bihar to provide holistic solution for the farming systems in flood prone areas
- Instituted two new awards for the farmers: (i) Haldar Organic Farmer Award and (ii) Pandit Deen Dayal Upadhyay Antyodaya Krishi Puruskar. Another award initiated to recogniz the contribution of the farm science centres (KVKs) - Pandit Deen Dayal Upadhyay Krishi Vigyan Rashtriya Protshahan Puraskar

N. Recognitions to ICAR

- Global Gene Stewardship Award 2018 of the Borlaug Global Rust Initiative
- Prime Minister's Award for Excellence in Public Administration for Crop Pest Surveillance and Advisory Project in 2015
- Best Pavilion Award in Indian Science Congress and National Agricultural Science Congress, 2015
- ICAR Pavilion adjudged 2nd best in the India International Trade Fair - 2015, New Delhi
- ICAR commended by Department of Administrative Reforms and Public Grievances, GoI for significant progress in e-Governance in 2017-18
- ICAR *Tableau* rolled in Raj Path on 26 January for the first time in 2018 and again in 2019; the *tableau* with the theme `Kisan Gandhi' won the Best Tableau prize in 2019 (Photo on Cover page)

मिश्रित खेती खुशियों की खेती (2018)

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Agricultural Universities

63 State Agricultural Universities (SAUs) 3 Central Agricultural Universities 5 Deemed Universities
4 Central Universities having Faculty of Agriculture

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Institutes, Bureaux, National Research Centres and Directorates

* Map not to the scale

• 72 Research Institutes • 6 Bureaux • 12 Directorates • 14 National Research Centres

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