

FOREWORD

Deficient monsoon posed various challenges on the front of food security. Responding to the situation, Indian Council of Agricultural Research (ICAR) formulated a technology- driven contingency crop plan to mitigate the drought effect in *kharif* and to compensate the *kharif* crop losses during *rabi* season. The country-wide network of 97 ICAR research institutes, 44 state agricultural universities and 569 Krishi Vigyan Kendras (KVKs) was geared up to deliver the appropriate technologies at farms, and mass media was effectively used for dissemination of proven production and protection technology.

On the research front, in the national herbarium of cultivated plants, 294 specimens were added, whereas in the national repository, 109 red onion, 57 white onion and 46 garlic collections were included. A new mite christened *Mangalaus* with a new species, yet to be named, was discovered. This eriophyid is one of the smallest of the arthropods of the size of 200 microns.

The *Pseudomonas* strain *putida* 'GAP-P 45' induced synthesis of novel proteins in the plants conferring tolerance to drought stress. The Council has released/ identified over 130 varieties/hybrids of major field and horticultural crops suitable for different agro-climatic regions of the country. A total of 7,340 tonnes of breeder seed and 63,415 tonnes of quality seed of field crops were produced. The participatory seed production programme at farmers' field resulted in production of 31,900 tonnes of quality seed.

Advanced hand guided cloning technique in buffalo was standardized for the first time in the world. The calf "Garima" produced through this technique is developing normally with good health status. As an effort to manage the Foot-and-Mouth disease in South Asia, an international Foot-and-Mouth Disease Reference Laboratory was established in Bhubaneshwar.

Bagasse was proved to be a successful bio-stimulator for the removal of ammonia and nitrate in shrimp aquaculture. Shrimps produced using organic components showed improvement in size with better food conversion ratio. Biosecured zero-water exchange system is ready for on-farm demonstration. Micro-feed for nursery technologies is ready for commercial scale production. *Puntius pulchellus*, a threatened shrimp species, was induced bred for the first time.

The KVKs have assessed and refined appropriate technologies by conducting 26,028 trials across the country. For empowerment of rural women, KVKs have assessed 105 technologies pertaining to drudgery reduction, health and nutrition. A total of 86,285 frontline demonstrations in an area of 51,101 ha were conducted. A total number of 56,819 training programmes were organized with the participation of 15.40 lakh farmers including rural youth, and in-service extension personnel. As many as 12,978 skill-oriented training programmes were organized for 3.10 lakh rural youths. A total of 1.58 lakh samples of soil, water, plant material, manure and others were analyzed from 1.40 lakh farmers belonging to 30,330 villages.

To upgrade and maintain the standards and quality of higher agricultural education in the country, the two-year post graduate diploma programme on management (Agriculture) has been started and 31 state agricultural universities were accredited. For the promotion of Excellence under the ICAR National Professor Scheme, a "Norman Borlaug Chair in Agricultural Biotechnology for crop

improvement” has been instituted. The National Agricultural Innovation Project (NAIP) has approved and grounded 75 sub-projects on the cutting-edge agricultural and allied technologies. IT-enabled information and communication, expert systems and database management developed by the Council are being operationalised by the various institutes. Fifty-five personnel including farmers and journalists were honoured for their outstanding services in accelerating agricultural growth and development.

I compliment the Indian Council of Agricultural Research for the commitment and dedicated efforts to develop the strategy and suitable technological interventions to meet the emerging challenges. I believe that *DARE / ICAR Annual Report 2009-2010* will prove a knowledge resource for various stakeholders of Indian agriculture.



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