



सत्यमेव जयते

डा. मंगला राय

सचिव एवं महानिदेशक

DR. MANGALA RAI

SECRETARY & DIRECTOR-GENERAL

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भारत सरकार

कृषि अनुसंधान और शिक्षा विभाग एवं

भारतीय कृषि अनुसंधान परिषद्

कृषि मंत्रालय, कृषि भवन, नई दिल्ली 110 001

GOVERNMENT OF INDIA

DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION
AND

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

MINISTRY OF AGRICULTURE, KRISHI BHAVAN, NEW DELHI 110 001

TEL. : 23382629; FAX : 91-11-23387293; E-MAIL : mrai@icar.delhi.nic.in

D.O. Secy.(DARE) & DG(ICAR)/2005/

Dated the 5th January, 2005

Dear Colleague,

The year 2005 has arrived signaling us to look back and march ahead. Over the last few days I have tried to take stock of the performance of our organization in the year gone by and have pleasure to share with you some of salient achievements in the field of agricultural research, education, administration and finance(see attachment). Our research efforts also received international recognition in the form of The King Baudouin Award – 2004.

The unstinted support, cooperation, dedication and efficient discharge of assigned responsibilities by each member of DARE/ICAR family made it possible. At the same time I am sure there must have been certain occasions when the results were not up to our expectations. This should not discourage us but should rather serve as a potential opportunity to perform even better.

During the year we witnessed several challenging situations mainly in form of natural vagaries such as late arrival of rains and floods. The regular advisories provided by our scientists to the farmers proved very useful. We have a very very long way to go to normalize the conditions of our people in the coastal areas who were recently hit by the most destructive Tsunami.

Many of our colleagues, in the preceding year demitted their offices. We wish them all many healthy years ahead.

In the New Year – 2005, we all together can make a difference - a difference of the kind to do better than the best and continue to excel in all our endeavours. The year on its first very day has thrown the challenges enshrined in the various stipulations of the WTO. We resolve to convert the challenges into opportunities in the year as we go along. I am sure you will continue to give your best, as in the past, to make a difference with a force to reckon with.

With my best regards.

Yours sincerely,

Mangala Rai
(MANGALA RAI)

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2. All Directors of ICAR Institutes/ All Vice Chancellors of SAUs/VC, CAU/ All PCs/ All ZCs,
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SALIENT ACHIEVEMENTS OF DARE AND ICAR DURING 2004

Organization and Management:

- Institutionalized system of Institution-wise and scientist-wise six monthly target setting, reporting and on-course correction measures.
- Rationalized the guidelines for the National Professor Scheme to serve the very purpose for which it was instituted.
- Rationalized the qualifications in respect of some disciplines for entry of scientists into the ARS; enhanced the number of attempts from three to four for appearing in the ARS examination; rationalized guidelines of availing study leave for doing Ph.D by the scientists; and made effective the reservation orders of GOI for physically handicapped in the ARS.
- Resolved the anomalies in implementation of the revised pay scales and revised Career Advancement Scheme of the scientists of ICAR and teachers of SAUs in consultation with MHRD, MOF, UGC and DOPT.
- Rectified inconsistencies in the existing score-card for the use of the Agricultural Scientists Recruitment Board (ASRB) to screen applications for making direct selections to scientific and Research Management positions with effect from 22.12.2004.
- Developed the Personnel Management Information System Network (PERMISNET) for systematic planning and development of human resources of ICAR.
- Signed a MoU between the Republic of India and the Kingdom of Morocco in the field of Agricultural Research and Education; developed work plan for 2004-05 between ICAR and Russian Academy of Agricultural Sciences, Russia; and deputed 16 scientists abroad under different work plans.
- Deputed 18 scientists from the ICAR Institutes/State Agricultural Universities abroad for developing core competence in Biotechnology; and made concerted efforts for HRD of administrative and finance personnel of ICAR.
- Enhanced the rates of ICAR junior research fellowships at Master's level from Rs. 3,600 to Rs. 5,760 pm for non-veterinarians and Rs. 5,000 pm to Rs. 8,000/pm for veterinarians. Further the institute scholarships for students of IARI, NDRI, IVRI and CIFE raised at Master's level from Rs 3,200/ to Rs. 5,040 pm. For Ph.D the

corresponding increase in scholarship amount is from Rs. 4,400/pm to Rs. 7,000/ pm.

- Institutionalized the Mid-term review of progress in implementation of the recommendations of the Regional Committees.
- Adopted new format of accounts in all the ICAR Institutions for the year 2003-04.
- Settled 929 audit paras out of 1353 as of May, 2004 in respect of all the ICAR Institutes.
- Introduced several Organizational and Management (O&M) reforms such as dispensing with pre-audit requirement on procurement up to a value of Rs.3 lakh ; published procurement manual to simplify procurement processes.
- Generated internal resources amounting to Rs. 25.56 crore during 2003-04 as against Rs. 21.43 crore during the previous year and fixed a target of Rs. 56.95 crore for the year 2004-05
- Settled Advances outstanding with Govt. Departments and employees as on 31.03.2003. Reduced advances worth Rs. 217.36 crores from total of Rs. 265.18 crores and Rs. 41.32 crores from Rs. 42.32 crore respectively, as on November 2004.
- Completed Bank Reconciliation for all the pending items prior to 31.03.2003 by almost all ICAR Institutions.
- Updated Asset Registers in respect of 103 accounting units under ICAR out of 111.
- Enhanced the budget allocation by Rs. 100 crores for developing Centres of Excellence in pre-determined areas in the State Agricultural Universities (SAUs).
- Institutionalized system of institution-wise monthly expenditure reporting and monitoring.

Research, Education & Extension :

- Spread Zero Till Technology to about one million hectares resulting in a net annual resource saving of Rs. 250 crores. It has potential of saving Rs. 2500 crores from 10 mha/annum in the Indo-Gangetic Plains. Zero tillage proved its worth on several winter crops besides wheat after rice. The minimum tillage with crop residue mulch

reduced runoff (14%) and soil loss (35%) substantially. Research conducted under Rice-Wheat Consortium in partnership with the National Agricultural research systems of Nepal, Pakistan and Bangladesh and CG institutions-CIMMYT, ICRISAT, IRRI, CIP and IWMI bagged **King Baudouin Award-2004** for outstanding research contributions.

- Assigned 31 technologies to NRDC for commercialization.
- Added 34,994 accessions to the National Gene Bank and produced a total of 4021.38 tonnes of breeder seeds i.e oilseeds (1811.57 tonnes), cereals (1469.54 tonnes), pulses (674.58 tonnes), forages (38.57 tonnes) and fibre crops (27.12 tonnes). Besides, additional breeder seeds were also produced against the indent of state level varieties.
- Released for cultivation 19 varieties and one hybrid in rice, eleven wheat varieties, one rabi sorghum hybrid and hybrids in maize for different agro-ecologies. In Cotton, two hybrids and two open-pollinated varieties have been notified for commercial cultivation in Maharashtra.
- Identified for various parts of the country a hybrid in castor and 15 promising varieties of sunflower (1), safflower (1), mustard (3), Gobhi sarson (1), groundnut (5), soybean (1) and niger (3); identified for release viz. RZ-223 in cumin, RMT-305 in fenugreek, Hisar-Surabhi in coriander, Guj. fennel-II in fennel; and identified in sugarcane a mid-late maturing variety Sweta for cultivation in North-west agro-climatic zone.
- Established successfully ramie plantation for fibre yield in non-traditional areas of Maharashtra, Goa and Tamil Nadu.
- Characterized varieties of 14 major field crops based on morphological characteristics, chemical tests and electrophoresis for quality seed production and DUS testing programme under PVP & FR legislation. The manuals of majority of these crops have been published and distributed among users and crop breeders.
- Developed and validated Forecasting model for *Helicoverpa* in Central zone of the country; and developed immuno-chromatography and ELISA kits to detect the quality of insecticides and to detect and monitor *Helicoverpa armigera* resistance to insecticides.
- Developed and initially evaluated Transgenics in (i) pigeon pea with synthetic *cry IAc* gene under CaMV355 promoter, (ii) Indian mustard

over expressing osmotin gene, and (iii) tomato over expressing osmotin gene.

- Worked out IPM including bio-agents in mango, banana, citrus and grapes for important insect pests.
- Developed District level soil resource mapping in 24 districts of Madhya Pradesh and Andhra Pradesh for perspective land use planning.
- Developed Sloping Agricultural Land Technology (SALT) - An appropriate technology for restoration of degraded lands of Jhum fallow/degraded lands in eastern Himalayas.
- Standardized the Integrated Plant Nutrient Supply module of soybean-wheat cropping system and saved 25% N-P fertilizer through integrated nutrient management in tomato and brinjal in experimental field.
- Developed Intensive Integrated Farming System (IIFS) in NEH region including multiple use of water.
- Designed and developed prototypes of light weight power tiller, tractor-operated lug wheel puddler, animal drawn raised bed former, self-propelled *biasi* cultivator, tractor operated orchard sprayer, tractor-operated plastic mulch laying machine, tractor drawn mole plough for vertisols, solar tunnel dryer, fruit grader and soy fortified *kodo* biscuit.
- Developed Anti-vibration devices for increasing comfort of power tiller and tractor operators.
- Established agro processing center in rural and remote areas.
- Developed composite for jute and allied fibres using ramie, sisal, sunhemp, banana fibre etc.
- Developed technologies for utilization of agro and industrial residue of jute for making pulp, paper, boards, briquett etc.
- Developed Engine testing and fuel properties determination facilities for evaluating selected vegetable oils as alternate fuel for the CI Engines.
- Produced 466 prototypes of 38 different designs in Prototype production Centre and also produced 3017 prototypes of different

designs through local manufacturers for supply to different centres and organizations.

- Produced 15080 Frieswal cows in collaboration with Military Farms having lactation yield of 3069 kg .
- Distributed Twelve lakh doses of frozen semen and over six lakh doses to various Military Farms, SAUs, State AH Departments, NGOs and farmers.
- Developed seven strains suitable for backyard poultry farming.
- Developed complete feed blocks for feeding of animals during scarcity and draught conditions and developed area specific mineral mixture to compensate the deficiency of minerals.
- Developed Immuno-diagnostic Kit for rapid detection of Gastrointestinal parasitic infection from serum of infected animals.
- Developed and standardized DNA based diagnosis of Animal Diseases.
- Developed a test to diagnose Bovine Immuno-deficiency virus in cattle and buffaloes.
- Carried out molecular epidemiology of FMD to assess the extent of infection and prevalence of virus in the country. The full length cDNA of the second most common serotype of FMD virus Asia 1 in India has been constructed and nucleotide data deduced by sequencing.
- Controlled ingress of exotic diseases as Avian Influenza sub-type H-9 for the first time in the country.
- Commercialized the virus stains of Foot and Mouth disease for increasing vaccine production in the country.
- Produced *In vitro* marine pearls through tissue culture technique in Indian Pearl Oyster *Pinctada fucata* and in the abalone *Haliotis varia*.
- Bred in captivity two species of sand lobster and larval cycle completed in three to four weeks' time
- Realised production of 675 kg/ha within 130 days of prawn and carp in Pen culture in Mathura bheel.
- Induced maturation and spawning of grass carp at high altitude.
- Developed a model for forecasting with good precision sugarcane yields and loss due to weeds.

- Organized seminars on identified areas of research with a view to provide cutting edge advantage to science and technology and human resource development efforts and the valuable recommendations made therein are being followed up. These are also being used in developing institutional perspective plans. During the year pre-determined seminars organized on various issues are as follows:
 - Transgenics in agriculture,
 - Seed
 - Harnessing Heterosis in Crop Plants.
 - Vedic Krishi for Sustainable Production
 - Soil Survey for Land Use Planning
 - Management of Aquatic Resources for Biodiversity Maintenance and Conservation. Aquatic biodiversity maintenance for Environment.
 - Responsible fisheries and aquatic
 - Input Use Efficiency in Agriculture – Issues and Strategies
 - Conservation Agriculture
 - Resource Conserving Technologies for Social Upliftment
 - Management of Organic Wastes for Crop Production
 - Bio-diesel for IC Engine Technologies and Strategies for Rural Applications
 - Biomass Management for Energy Purposes
 - Quality Assurance in Veterinary Education
 - Alternative Farming Systems : Enhanced Income and Employment Generation Option for Small and Marginal Farmers
 - Impact Assessment of Watershed Development: Conceptual and Methodological Issues at Water Technology Centre
 - Resource Conserving and Precision Farming
- Adjudged as highly rewarding, , the performance of National Agricultural Technology Project (NATP) in all its sub-components, by the World Bank Final Review Mission. This is the only Project in Asia to receive such a good rating.
- Established referral labs in the areas of pesticide residue, and cotton textile technology in addition to existing referral labs in meat and fish products for development of standards and certification for exports.
- Set up in major fisheries colleges of the country, most modern fisheries instructional farms to help in skill development among fishermen and women.

- Networked libraries of SAUs, ICAR Institutes and major regional stations in the country to allow access to international information network and also promote e-learning. The library network of ICAR has also been linked to information library network of UGC to enable sharing of information with general universities as well.
- Provided support to all SAUs for modernization of field plot machinery. This will ensure improved quality of research experimentation and also help in development of quality seeds.
- Established 64 KVKs during the year raising their number to 440; made provision of soil and water testing facilities in 210 KVKs; and e-linkage in 200 KVKs.
- Undertook 607 technologies for assessment and refinement through KVKs; 35,676 demonstrations on farmers' fields; 16,662 extension activities covering 14.18 lakh farmers in the areas of Agricultural Extension, Agri-Engineering, Agro-forestry, Live Stock Production and Management, Crop Production, Fisheries, Bio-technology, Horticulture Soil fertility, Women in Agriculture and others.
- Trained 7.49 lakh farmers including 1.39 lakh rural youth by conducting 5952 training programmes in the areas of Agriculture extension, Agri-Engineering, Agro-forestry, Live Stock Production and Management, Crop Production, Fisheries, Bio-technology, Horticulture Soil fertility, and women in agriculture.
- Produced 7490.7 tonnes of seeds and 59.89 lakhs saplings/seedling by KVKs; and Agricultural Technology Information Centres (ATICs) provided 1.31 lakh diagnostic services, 23.23 lakh copies of information material and 3.43 lakh advisory devices.
- Documented 1999 Indigenous Technical knowledge in various Thematic areas.
- Developed a data base on rural farm women representing 53 agro-climatic zone of 9 states.
- Dedicated to the nation a unique facility in the country by His Excellency, The President of India a National Agricultural Science Museum (NASM) depicting origin and evolution of agriculture, at the National Agricultural Science Complex (NASC), New Delhi.
- Directorate of Information and Publication of Agriculture (DIPA) has brought out total of 112 publications, 86 publications in English and 36 publications in Hindi during the 2004-05

- Organized over 200 training programmes for technological empowerment of women for reducing drudgery among farm women.
- Signed for first the time a MoU with private manufacturer for development of sugarcane harvester with sharing of patent rights and profits. The sugarcane harvester is already under field testing.
- Made concerted efforts in taking technology in holistic manner involving crop, livestock improvement, poultry, piggery, horticulture etc. that has led to substantial increase in income in 590 villages covering over 15,500 of the tribal families .
- Filed 52 applications for patents of new technologies
- Initiated formulation of :
 - Network Programme on Insect Bio-systematics (Part of Indian Agricultural Research Institute, Division of Entomology).
 - Network Project on Transgenics (Part of Indian Agricultural Research Institute / National Research Centre on Plan Biotechnology).
 - Project on Seed Production in agricultural crops and fisheries for Rs. 247.54 crores
 - Network Project on Impact, Adaptation and Vulnerability of Indian Agriculture to Climate Change (Integral part of All India Coordinated Research Project-Agro meteorology).
 - Network Project on Organic Farming (this activity will function as an integral part of All India Coordinated Research Project - Cropping System Research).
 - Veterinary Type Culture Project (Part of National Research Centre - Equine).
 - Project on Prospecting, employment and management of agriculturally important microorganisms with an approximate outlay of Rs. 200 crore.
- Revised draft Vision 2020 documents for most of the institutions; and 14 reviewed documents are in the process of finalization.