

Foreword



The scientific and technological contributions of the Indian Council of Agricultural Research successfully countered the perilous drought of 2002–2003, the severest in last hundred years. Advance GDP estimate for 2003–2004 pegs growth in agriculture sector at 9.1% while it was negative during the previous year, and it may go higher, as the experts feel that *rabi* production may be greater than what has been estimated.

The multi-faceted integrated research efforts of the Indian Council of Agricultural Research are aimed at developing—area-specific quality, high-yielding seeds; suitable techniques of water management; methods for protecting the crop in sustainable manner without affecting the micro fibres of environment; equipment that are energy efficient, low cost; techniques of value addition to compete in international market; and studying the agriculture economics so that not only farmers get their dues but the budget provided for agricultural research is also spent on the rightful elements.

During the year, some salient achievements include development of more than fifty-seven varieties/hybrids in different crops. A national test guide for distinctness, uniformity and stability testing for all major crops was also developed. The council received the first report of occurrence of a new sub-race of sorghum having unique characteristic gaping glumes. Pest management information system on mustard was developed. The dreaded Karnal bunt disease could be controlled effectively. A new species of begomo virus causing leaf curl in tomato was discovered. The technology of making ginger and vanilla flavoured chips of coconut was transferred to coconut entrepreneurs. Mass propagation of rare and high valued medicinal plant species was done in north-eastern India using tissue culture technology. Agro-aquaculture was developed for marshy lands of this area. A protocol in rice to develop transgenic plants with economically important genes, was standardized.

Under the NATP programmes standard descriptors for fruit and medicinal and aromatic plants were prepared. Models were evolved for optimal allocation of water and watertable management in existing irrigation projects. Recharging of freshwater in saline groundwater regions and reclamation of Vertisols under rainfed conditions were attempted. Tolerance of sorghum to biotic stress could be enhanced through genetic manipulation

Embryo culture system for production of embryos of turkey was developed for the first time in the world and it could be used for transgenesis, production of chimeric birds, production of pharmaceutical proteins with egg gene promoters and in conserving rare and endangered poultry species. The National Animal Disease Referral Expert System was developed for monitoring and forecasting the animal diseases. Molecular techniques could be developed to unravel mysteries of disease outbreak in natural conditions. Nutrient requirement of poultry was updated to make poultry feed more economical. Methods were developed to evaluate the reproductive status of buffalo to have timely remedy for reproductive disorders. Shelter management and thermoadaptability were given special attention so that natural resources and inherited strength of the animal could be utilized to increase



the productivity of animals. Techniques were developed for value addition of animal products with energy efficient methods. A prototype was developed to arrest dust in dal mills. Coir and jute were blended successfully and beneficially. Zero-till seed-cum fertilizer drill for wheat, semi-automatic potato planter etc were developed for the benefits of farmers.

A natural lake was developed as conservation site for threatened mahaseer species. Eyed ova of rainbow trout were developed under warmer conditions for the first time. Maturation period of exotic carps was shortened at high altitudes by using polyhouse insulation. Special attention is being given to the strengthening of agricultural education that could help developing and promoting environmentally sustainable, socially equitable and ethically acceptable agricultural development. Krishi Vigyan Kendras identified 330 technologies for on-farm testing to assess their impact on location specific basis. Extension needs more funds and more culturally acceptable ideas to disseminate the agricultural technologies because the returns are million-fold. Considering the importance of women agricultural work force extension programmes were initiated keeping her in the centre and simultaneously these programmes were assessed.

Many among the farming community, the eternal host of humanity, exist on a single meal a day, this hard fact leaves me aghast. We cannot rest before finishing the hard task before us. The dairy enterprise is pumping in more than 10,000 crore rupees in agriculture sector, and is the largest employment provider in this sector. Professional management of agriculture by rural managers, and emergence and application of appropriate technologies should help us in providing employment to our unemployed youth through agriculture because my feeling is when agriculture can feed more than one billion then it can certainly provide jobs to a few more million. Sustainable and scientific approach with sufficient finance will help in full utilization of potential of unorganized agriculture sector.

A handwritten signature in blue ink, which appears to read 'Rajnath Singh', is positioned above the printed name.

(Rajnath Singh)

President, ICAR Society