

## GENETIC RESEARCH AND EDUCATION : CURRENT TRENDS AND THE NEXT FIFTY YEARS

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The Indian Society of Genetics and Plant breeding, the premier society in the country in the discipline of Genetics and Plant Breeding, has completed 50 years of its existence. On the occasion of its Golden Jubilee Celebration, an International Symposium on 'Genetic Research and Education: Current trends and the next fifty years' was organised at New Delhi from 12th to 15th February 1991. The venue of the symposium was Hotel Ashok, New Delhi. The Symposium was inaugurated by Hon'ble Prime Minister Shri Chandra Sekhar. The inaugural function was chaired by Shri Devi Lal, Hon'ble Deputy Prime Minister. In his inaugural address the Prime Minister emphasised the importance of genetic engineering and biotechnology for bringing in newer concepts and their conceptualisation in crops. He also stressed the relevance of conservation of natural biological resources for keeping environmental balance. In conclusion, he advocated that the benefit of science should reach the common man. Shri Devi Lal in his remarks emphasised that the scientists should pay maximum attention to programmes of lab-to-land.

Dr. M.S. Swaminathan, our most distinguished agricultural scientist, in his key note address touched

upon the prominent land marks in the history of genetics, which is just ninety years old. Within such a short period, this discipline of science has made tremendous contributions with far reaching consequences in all walks of human life. He contemplated that the contribution of the present era of molecular genetics and biotechnology is going to provide unlimited power for manipulating the genetic architecture of plants and animals. He also emphasised the importance of genetic conservation for posterity. He suggested that our country should formulate a National Commission on Genetics for strengthening teaching and research in this area. He expressed his firm belief that genetics is a unifying science and its propagation will have far reaching effects on our cultural, social and ethnic issues.

### SPECIAL STAMP AND COVER

During the inaugural session Dr. Sanjay Singh, Hon'ble Minister of State for Communication, released the First Day Cover to commemorate the Golden Jubilee function. The cover depicts some of the organisms which have been extensively used in the researches on genetics and in harvesting the benefits of genetics for the improvement of plants and animals as well as in human health. A stamp was also released on the occasion.

### INDIAN SOCIETY OF GENETICS AND PLANT BREEDING

The Society was founded by Dr. B.P. Pal at the time of the Indian Science Congress at Banaras Hindu University in January, 1941. Shri T.S. Venkatraman, the renowned sugarcane breeder was the first president of the Society and Dr. B.P. Pal, the Secretary, as well as Editor of the Journal of Genetics and Plant Breeding. The objectives of the society have been to advance the cause of genetics and plant breeding in India, to encourage and promote study and research to disseminate knowledge in these subjects, to provide facilities for associations and conferences among students of heredity and for encouragement of close relationship between workers in genetics and plant breeding and those in related disciplines.

The society has been active in organizing symposia on various subjects, periodically. Five international and fourteen national symposia on basic and applied genetics were held under the aegis of the society in the fifty years of its existence. It had the honour to host the XV International Genetic Congress (1983) held in India for the first time. The society is a member of the International Genetics Federation.

During the Golden Jubilee year, the Society organized six



Dr. M.S. Swaminathan, delivering his key-note address.

symposia in collaboration with the Indian Council of Agricultural Research. The symposia in genetics of various field crops included one each on Maize (April 1990 at Coimbatore) Pennisetums (May 1990 at Hyderabad), Cotton (April 1990 at New Delhi), Sorghum (May 1990 at Raturi), Brassicas (August 1990 at Jaipur) and Pulses (February 1991 at New Delhi). Besides this, a symposium on "Biotechnology in Agriculture" was held at Coimbatore and "Genetics and Biotechnology for crop improvement" at Hyderabad. The society also organized Golden Jubilee lectures by its past presidents and eminent scientists. To commemorate the contributions of Dr. B.P. Pal, the society had instituted an annual B.P. Pal Memorial lecture. The

first lecture was delivered by Dr. M.S. Swaminathan and the second by Dr. N.G. Rao. As part of its Golden Jubilee Celebrations the society honoured all its past Presidents and 15 eminent scientists associated with the society.

The symposium was felicitated by 16 eminent dignitaries which include his excellency R. Venkataraman, President of India; S.D. Sharma, Vice-President, Mohan Dharia, Deputy Chairman, Planning Commission, Dr. M.S. Swaminathan, President of the International Union for the conservation of Nature and Natural Resources and of the World Wide Fund for Nature India and the President of the National Academy of Sciences of India, and Dr. A.P. Mitra, Director General, CSIR. The President of the Society Dr. V.P. Gupta traced

the history of Indian Society of Genetics and Plant Breeding and Dr. Balram Sharma, the Organizing Secretary of the Society proposed a vote of thanks. The organizing committee of the Symposia received a number of goodwill messages from several organisations and eminent individuals from India and abroad including Dr. N. Borlaug, nobel laureate. About 1400 delegates from 16 countries participated.

#### SCIENTIFIC PROGRAMME

The scientific programme touched upon topics like biological diversity, stress resistance, biotechnology, non-conventional approaches in plant and animal improvement, genetics and human health, genetics and society, and genetics education. Parallel scientific sessions were run in four venues on three days. There



were a total of 110 invited papers and 920 contributed papers. All the contributed papers were poster presentations and from among them a few papers were selected for incorporation in the proceedings. Among the contributed papers the crops covered along with the number of papers are given below :

#### PAPERS ON CROP RESEARCH PRESENTED

Crops	No. of Papers
1. Cereals	181
2. Millets	114
3. Triticale	6
4. Pulses	180
5. Oilseeds	58
6. Vegetables	75
7. Tuber Crops	9
8. Medicinal and aromatic plants	10
9. Ornamentals	13
10. Fibre crops	80
11. Tree crops: Fruit trees	5
Forest trees	16
Rubber	1
Coconut	1
12. Other crops	32

The paper presented on rubber was "Comparative cytomorphological studies on spontaneous and synthesized triploids of *Hevea brasiliensis* (Willd. ex A. de Juss.) Muell. Arg". The paper was well received by scientists from various other Research Institutes.

In his talk on biological diversity Dr. M.S. Swaminathan highlighted various biological activities and bioconservation. The extent of species diversity existing in our planet is not completely known. About 1.5 million species have been

described by biosystematists so far. A global convention for saving and sharing biological diversity is currently being negotiated under the auspices of the United Nations Environment Programme. In the session on stress resistance both biotic and abiotic factors were discussed in crop improvement programme. Breeding strategies for future improvement of vegetatively propagated crops and biochemical aspects of improvement in field crops and effective use of chemical mutagenesis in plant breeding in USSR were also discussed. Impact of biotechnology in crop and animal improvement programmes was also covered in the discussion. Role of biotechnology in conservation of biodiversity and in shortening the breeding cycle in long generation tree species also came within the purview of discussion. Institutional requirements for teaching in genetics and plant breeding, course curricula with developing needs for teaching in genetics and intellectual property rights in plants-pros and cons, genetics and human health, genetics and society etc. were also discussed.

The plenary session was held on the evening of 15th February 1991. The chief guest of the session was Shri Mohan Dharia, Deputy Chairman of Planning Commission. Dr. M.S. Swaminathan chaired the session and Dr. V.P. Gupta presented a brief account of the scientific sessions. Reviewing the deliberations in the scientific sessions, the following conclusions were drawn:

Importance and relevance of basic research should be duly recognised and stressed by eminent scientists in their respective fields. Genetics will still be the most important tool for achieving optimal crop productivity with reduced cost. New methods to enhance the plant breeding process through breeding for resistance to insect pests and plant diseases have already paid dividends and the new tools of genetic engineering will further enhance the levels of resistance and reduce plant protection costs. Tolerance to stresses like cold and drought can be incorporated. The biochemistry of plant traits, and recombinant DNA technology will become important tools in enhancing the genetic potentials for crop productivity at low costs. Analysis of the germplasm accessions and strategies for assembling genes into optimal combinations using various tools and methods will eventually result in functionally transferred traits. Identification of physiological and biochemical determinants of metabolism, growth and development will further enhance opportunities for genetic manipulations. Progress in molecular genetics will provide powerful tools to plant breeders.

The symposium enabled the scientists in the various fields to share their experiences and achievements. It also provided an opportunity for the Indian participants to have an insight into the advances in the field of genetics and breeding research abroad.