



**Dr. M. S. Swaminathan** F.R.S. elected.

Foreign Associate of the National Academy of Sciences, USA.

We have great pleasure in recording the election of a member of our Society, Dr. M. S. Swaminathan, as a Foreign Associate by the National Academy of Sciences of the United States, in expression of its profound appreciation of Dr. Swaminathan's services to science. Dr. Swaminathan is the third Indian Scientist to be so honoured by this apex scientific body of the United States of America. As we had recorded in Vol. 33 of our Journal, Dr. Swaminathan had earlier been elected a Fellow of the Royal Society of London and is the only Indian scientist to be honoured by both the Royal Society of England and the National Academy of Science of U.S.A. Dr. Swaminathan is also a Fellow of the Indian National Science Academy and of the Indian Academy of Science and an Honorary Fellow of the Swedish Seed Association, Svalof.

Dr. Swaminathan's contributions to science span a wide range. His own research started more than three decades ago with a series of studies aimed at understanding phylogenetic relationships in the economically-important genus *Solanum*, both tuber-bearing and non-tuber bearing. A particularly important contribution was a clearer understanding of the origin and nature of polyploidy in *Solanum tuberosum* and of the evolutionary interrelationships among the tuber-bearing *Solanum* species. During the course of these studies, many new techniques were developed to overcome incompatibility, to induce tetraploidy in difficult material etc. The material developed during the course of these studies, including some interspecific hybrids which could not be obtained by earlier workers, have proved to be of great value in breeding improved varieties of cultivated potato with special characteristics such as frost resistant 'Alaska Frostless', developed from a cross between *Solanum acaule* and *S. tuberosum* made by Dr. Swaminathan.

After returning to India, Dr. Swaminathan's research interests turned to rice and wheat, the premier food crops of the country. Working at the Central Rice Research Institute at Cuttack, he introduced new selection procedures, based on a cytogenetical analysis, for the exploitation of *indica* × *japonica* rice crosses. In 1961-62, on the basis of a comprehensive review of the genetic engineering required to raise the ceiling on wheat yields in the country, Dr. Swaminathan realized the need to shift to a new plant type. Based on this analysis, he initiated experiments with the photoinsensitive, dwarf types bred by Dr. N. E. Borlaug in Mexico by incorporating the 'Norin' dwarfing genes in suitable genetic background. Dr. Borlaug's subsequent visit to India and the material obtained from him laid the foundation for the Wheat Revolution in India. Under Dr. Swaminathan's leadership, a multipronged drive was initiated by the scientists of the All-India Coordinated Wheat Improvement Project; the result of this are now well known: a doubling of wheat production in less than a decade, a rate of increase in agricultural productivity never before achieved.

Dr. Swaminathan initiated, along with his students, intensive basic studies on mutagenesis, a topic which aroused universal interest after the Atom Bomb and the dawn of the nuclear age. These studies resulted, in addition to a better understanding and control of several basic aspects of the phenomenon of mutagenesis, in several discoveries of great applied value—the discovery of the mutagenic properties of vegetable oils, the identification of several useful mutants in wheat, barley and rice, and of the indirect effect of irradiated food medium on which experimental objects were grown. In particular, the last finding has turned out to be of great applied importance and resulted in the inclusion of genetic criteria in the assessment of the wholesomeness of food material irradiated for preservation purposes.

Other problems successfully tackled by Dr. Swaminathan and his school include the successful crossing for the first time of the two cultivated species, *olitorius* and *capsularis*, of jute made possible by reciprocal grafting, elucidation of differentiation in the hexaploid *Triticum* species through macromutational steps, the origin of the dwarf coconut palm, clarification of the nuclear cytology of yeasts with the demonstration of intranuclear mitosis in them, elucidation of the basic chromosome number in Gramineae and the development of 'Pusa 2-21' and 'Improved Sabarmati', two short duration, and fine quality rice varieties respectively.

Dr. Swaminathan realised the need for establishing a close link between the laboratory and the field. Based on this realization, he developed the concept of National Demonstrations which would afford an opportunity to the scientists to demonstrate, test and evaluate the validity and practicability of their findings and recommendations under actual field condition. These demonstrations had a striking impact on the minds of cultivators and laid the foundation for the phenomenal success of the High Yielding Varieties Programme in cereal crops launched by the Govt. of India in 1966. The "Seed Village Programme" organised by Dr. Swaminathan and designed to convert an entire village, Jounti in Delhi State, into a high-quality seed producing centre was a crucial step in making such programmes possible. Over the years, these concepts have grown and have been refined culminating in the whole village/watershed Operational Research Projects launched by the Indian Council of Agricultural Research in 1975.

In recognition of the seminal role played by him in enhancing India's agricultural capability, Dr. Swaminathan was awarded in 1971 the Ramon Magsaysay Award for Community Leadership for "his contributions as scientist, educator of both students and farmers and administrator, towards generating a new confidence in India's agricultural capability". Earlier, he had received several recognitions of the important role played by him such as the Shanti Swarup Bhatnagar Award, the Mendel Centenary Award, the Birbhal Sahni Medal, the Silver Jubilee Commemoration Medal of the Indian National Science Academy. The President of India decorated him with Padma Shri and Padma Bhushan in recognition of his services to the Nation's agriculture.

Dr. Swaminathan's services have been in great demand, nationally as well as globally, for advising and guiding on several aspects of agricultural research and its implementation. He served as the Vice President of the Technical Advisory Committee to the Consultative Group on International Agricultural Research of the FAO, IBRD and UNDP and of the Protein-Calorie Advisory Group to the U. N. system. He is a member of the Board of Trustees of two International Agricultural Research Centres—CIMMYT, Mexico and ICRISAT, Hyderabad. In 1976, he served as the Chairman of the Quinquennial Review Mission set up by the TAC/CGIAR to assess the quality and value of the scientific programme of another International Agricultural Research Centre, IRRI, Los Banos, in order to assure that operations are being carried out in line with declared policies of the CGIAR and to the full international standard expected. In 1977, he was elected Chairman of the Committee of the whole of the U.N. Conference on Desertification held in Kenya. Dr. Swaminathan was elected General President of the Indian Science Congress in 1976, the highest honour which Indian Scientists can bestow upon a fellow scientist. In this capacity, he helped to restructure the pattern of the annual sessions of the Congress, giving them a greater purpose and coherence by focussing the deliberations on a specific theme of national importance and relevance: the focal theme for the 1976 session over which he presided was "Science and Integrated Rural Development". He served as the Vice President of the International Congress of Genetics which met at the Hague in 1963 and is currently the Organising Secretary of the International Wheat Genetics Symposium which is to meet in New Delhi in 1978.

Dr. Swaminathan's services to this Society, as Secretary and President, are too wellknown to need further emphasis here. He is currently also the Vice President of the Society for the Advancement of Breeding Research in Asia and Occania (SABRAO).

We are confident that Dr. Swaminathan will, both by precept and example, continue to provide leadership of the highest calibre in India's and the World's attempts to realize in full their inherent agricultural capability.

(S. RAMANUJAM)