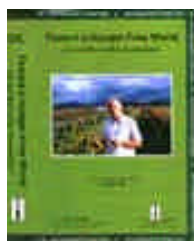
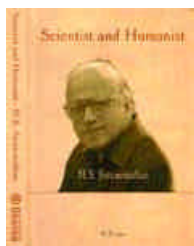


Book review:



Scientist and Humanist: M. S. Swaminathan. R. D. Iyer. Bharatiya Vidya Bhavan, Kulapati K. M. Munshi Marg, Mumbai 400 007. 2002. 245 pp. Price: Rs 300.

The Man Who Harvests Sunshine – The Modern Gandhi: M. S. Swaminathan. Andréi Erdélyi. Tertia Kiadó, H-1158, Budapest, Kubelsberg Kunóú36. 2002. 167 pp. Price not mentioned.

Toward a Hunger-Free World: Life and Work of M. S. Swaminathan. Anwar Dil (ed.). Intercultural Forum, Dar-ul-Afia, 13756 Via Tres Vistas, San Diego, California 92129-2755, USA. 2004. 640 pp. Price not mentioned.

Science and Agriculture: M. S. Swaminathan and the Movement for Self-Reliance. S. Ramanujam *et al.* (eds). Venus Printers and Publishers, B-62/8 Naraina Industrial Estate, Phase II, New Delhi 110 028. 2002. 402 pp. Price: Rs 100.

For well over five decades, the ceaseless contributions of one of India's rare jewels of the scientific world, M. S. Swaminathan, whose inimitable capacity to anticipate problems mostly related to food and environmental security, eradication of hunger and poverty, and whose crusades for mobilizing science and technology (S&T) for ending economic, social and gender inequities, have made him an unusual combination of a scientist, administrator, social worker, visionary and humanist, respected worldwide as a modern Gandhi, with his name having become inseparable from one of the greatest scientific achievements of the twentieth century, the Green Revolution, which stands as the touchstone in international agricultural development. Every one of these aspects is reflected in a superb fashion through the above publications which form a valiant attempt to capture the multidimensional achievements of Swaminathan.

Vividly recapturing the diverse facets of Swaminathan's contributions, R. D. Iyer in a typically Boswellian style, highlights his early years of research at Wageningen, Cambridge and Wisconsin and at IARI, New Delhi on potatoes, prior to getting

involved with wheat and rice research, calling for the setting up a National Commission for genetic modification of food and healthy security. Details pertaining to the multipronged strategy of Swaminathan to breed non-lodging, fertilizer-responsive wheat cultivars, notably the use of Mexican short-strawed wheat resistant to rusts, resulting in 200–400% increase in crop, are emphasized, pinpointing the performance of 'Pusa Wheat' – a breakthrough in the Green Revolution, which led Swaminathan to believe that wheat revolution is an index of the power of synergy between technology and public policy. Iyer further highlights Swaminathan's contributions while at IRRI, Manila, where he helped establish a chain of national research institutes in different countries and entered into agreement with 30 universities for strengthening human resources development programmes. Establishment of rice gene banks, increasing rice production under biotic and abiotic stresses, research in allele mining, and exploiting DNA sequences to isolate genes from a wide range of cultivars, led to hybrid rice technology at a time when production was stagnating.

Iyer further goes on to emphasize Swaminathan's role as a committed conservationist, who stressed the need to conserve existing genetic diversity of mangrove species and designed a methodology for coastal systems research on the model of farming systems research. As President of the IUCN, he alerted the global community on the implications of destruction of mangrove forests and took the initiative in establishing a mangrove genetic resource conservation centre. The institutionalization of 'ecotechnology', integrating the best in biotechnology, space, information, renewable energy and management techniques, with traditional practices and technology was a notable landmark. Initiation of a biosystematics network – a global network, besides the International Plant Genetic Resources Institute and Genetic Resources Conservation committees at the national and local levels are highlighted.

Revealing Swaminathan's role as a humanist and institution-builder and his belief in the Antyodaya approach of Mahatma Gandhi, Iyer adds that the concept of community food banks, besides launching of a global movement for community-managed nutrition security system and setting up of an 'international bank for nutrition for all' form important assets, besides the establishment of a research centre at MSSRF, Chennai, for farmers' rights to assist in the setting up of field-

level gene banks by tribal and rural agricultural families. With his passionate belief in peace, Swaminathan's role as head of the Pugwash Conference on Science and World affairs has been a laudable one. Says Iyer, 'His genius for organization has found its richest realization in his own M. S. Swaminathan Research Foundation'. 'To my mind', Iyer further concludes, that 'Swaminathan combines in himself the genius and courage of C. V. Raman, the charisma and dynamism of Jawaharlal Nehru, the deep compassion and non-violence of Mahatma Gandhi, and the egoless state of Bhagavan Ramana – a rare combination indeed'.

In a journalistic *tour de force* of Swaminathan's life and work, Andréi Erdélyi highlights the fact that Swaminathan's importance is derived from the connection he made between scientific purpose and socio-economic betterment of millions of people in India and elsewhere. This was achieved through conceiving the Green Revolution and making it a reality under the most challenging circumstances. His own personality, Andréi opines, reflects Gandhian values and a penchant for simplicity, concern for the poor and the underprivileged, emphasis on non-violence, peace and an incurable optimism about India's mankind. Following brief discussions with Swaminathan about the events which led to the Green Revolution and his association with Borlaug, Andréi mentions of the experimental information network Swaminathan had launched called the 'knowledge systems', connecting twenty villages by internet to the Information Centre at MSSRF. He further highlights his visits to ornamental fish farms and local projects on integrated interfarming systems, besides visits to the freshwater prawn aquaculture – an open-air exhibition to demonstrate environment-friendly techniques. He also witnessed the flexible, dynamic traditional system of community fishing at the Vellar–Pitchavaram–Coleroon estuary.

Quoting Swaminathan, 'Look, ecology teaches us above all humility. It teaches us to understand that we humans are just one component of the web of life. We should be aware that every action will lead to several reactions – some expected and desired, some unexpected and harmful', Andréi further refers to one of the most important projects, entitled 'Reaching the unreached', whereby changes must be initiated with the poorest, because the benefit of it will spread to the whole society. Talking of 'blossoming in the dust' Swaminathan remarks, 'One day when

adopted children are not abandoned any longer, you can see the brilliance of personalities to whom you are giving opportunities'. His intention was to give the MSSRF a personal message, reflecting its own personality, viz. complexity, and harmony of the ecological system.

Following a biographic profile and exquisite summary of the early life, family history and work of Swaminathan, Anwar Dil exposes the reader to critically assessed, forward-looking articles, including acceptance speeches following international and national awards, besides world conferences, which reflect the purpose-oriented mission in the life of Swaminathan, notably towards a hunger-free India and a hunger-free world. Of special significance, he mentions the acceptance speech of Swaminathan following the award of the World Food Prize – 'we live in an age of unparalleled opportunity for promoting sustainable and nutritional security. The prospect of a world without hunger is a glorious legacy given to our contemporary world by scientists and technologists, communicators and social scientists, administrators and industrialists and workers in factories, fields, forests, pastures, rivers and ocean. As we depart for dinner this evening, what could be a more satisfactory and joyful feeling knowing every other human family will also go to bed after nourishing meal? Until such a wholly attainable world becomes a reality, our task remains unfinished'.

In unravelling new approaches to improving productivity, participatory research with farmers to take advantage of the new opportunities opened up by science is a must. Dil further highlights Swaminathan's ecotechnological approach, based on traditional wisdom, technologies with frontier knowledge such as bioinformatics, space and renewable energy techniques, through which we can attain suitable advances in improving productivity, profitability, stability and sustainability of our major farming system. The culture of eternally talking poor and living rich characteristic of many national and international organizations, will only lead to the perpetuation of poverty and not its eradication.

Dil further highlights Swaminathan's views of food security balance sheets based on strategies and weaknesses and to identify 'hot-spots', with reference to endemic and transient hunger or open and hidden hungers, caused by poverty and deficiency of micronutrients. In solving these problems, three-dimension technologies—immediate, medium term and long-term can be achieved, by tailoring the

tools of S&T. Advocating an international strategy to harness the best in frontier science and traditional wisdom for enhancing the productivity, profitability and sustainability of major farming systems, organizing local level communities or a coalition of government, non-government community, research, education and mass media and donor institutes, have been his forward-looking, progressive ideals. Adding a horizontal dimension to numerous vertically structured programmes by promoting a coalition of all concerned with ending hunger and deprivation, it is now possible to provide opportunities for a healthy and productive life for all. 'The transition from the fatigue of the Green Revolution to Evergreen Revolution involves a shift from a crop-centred to a system-based approach to technology development'.

Dil emphasizes the fact that more than any other leader in India, Swaminathan has helped improve the status of Indian women. All MSSRF programmes give great prominence to providing new skills and training in new technologies to help women. Swaminathan believes that women are the best resources for preserving biodiversity in nature and launched a high priority working programme to fight against maternal and foetal undernutrition. 'Shedding single-discipline oriented and one-sided thinking and developing a problem-solving and integrated approach' says Swaminathan, 'besides launching a "techniracy" programme aimed at imparting technical skills to illiterate peasantry, besides shunning the "bandwagon" aping approach and generating a "do" rather than a "don't" atmosphere'. His work during the last forty years relating to a hunger-free India and world has been greatly influenced by the concept, 'the test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have little'.

In the book on *Science and Agriculture: M. S. Swaminathan and the Movement for Self-Reliance*, the editors highlight his principal research contributions and thoughts on agricultural development and extension education. Highlighting his untiring efforts towards expansion and establishment of research institutes and agricultural universities, the book essentially deals with Swaminathan's research contributions in the areas of genetic and cytogenetic researches, studies on problems of producing hybrid rice, exploitation of the potentialities of dwarf wheat, induced mutagenesis and polyploidy. Regarding

the countrywide demonstration of the potential of dwarf wheats, Swaminathan says 'we shall give our farmers windows that will look out into the world of plenty and the world of prosperity that awaits them through the use of science'. The book further highlights breeding methodologies, hybridization between Indian and foreign wheats and disease-resistant varieties. Says Swaminathan, 'the history of recent wheat research and development in India is an eloquent testimony of the power of cooperative and coordinated work among national and international agencies on the one hand, and farmers, scientists, extension workers, development administrators, input supply and mass media agencies and political leaders on the other'. Research in combating malnutrition and undernutrition is also highlighted involving the effect of environment on protein content, genetic studies and location of genes for protein content.

Lectures on agricultural transformation and opportunities for a learning revolution, science and integrated rural development, major ingredients for new pathways of agricultural development, strengthening agricultural assets and reducing agricultural liability, global aspects of food production; to mention some of the more important aspects, find a place in this book. Swaminathan's call for a highly cooperative interaction between those who serve science and those who move society, as well as assuring both scientists belonging to different disciplines and social leaders belonging to different ideologies has been emphasized.

It would not be an overstatement to observe that the above four volumes have brought to light diverse facets of a committed genius, the most decorated scientist, respected by Royalties, Presidents, Prime Ministers, statesmen and world scientists. No tribute can be greater than that of the Secretary General of the United Nations, during the award of the World Food Prize, 'Dr Swaminathan is a living legend. His contributions to agricultural science have made an indelible mark on food production in India and elsewhere in the developing world. By any standards, he will go down into the annals of history as a world scientist of rare distinction'.

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