



T R I B U T E

A Life Dedicated to the Pursuit of Science and Elimination of Hunger

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When M. S. Swaminathan died at the age of 98 on September 28, 2023, he was mourned in India and internationally. Tributes to MSS poured in from international organizations and scientists connected with the life sciences, biotechnology, agriculture, food security, and rural development, from scholars of eminence, and from many public figures. There was, however, a remarkable aspect to the outpouring of grief on the death of MSS. Unusually for a global scholar and scientist, MSS was mourned across *rural* India by hundreds of thousands of people, most of them men and women farmers. For a scientist who had been inspired by India's freedom struggle in general and M. K. Gandhi in particular, this was especially appropriate and poignant. This response from the peasantry and especially women to the death of a scholar and scientist whose work was mainly in the realms of science and state policy, was without precedent. The more immediate reason for the resonance of his name in the minds of his rural mourners was, of course, the key role played by the powerful recommendation of the National Commission on Farmers (NCF) that he chaired. Swaminathan recommended that the minimum support price (MSP) at which the state must procure agricultural produce from farmers should be 150 per cent of total cultivation cost. The countrywide movement of farmers belonging to more than 500 farmers' organisations and united under the leadership of the Samyukta Kisan Morcha (SKM) made the implementation by the Government of the recommendation of the NCF one of their key demands in their historic and successful struggle for the repeal of the three farm laws passed in the Indian Parliament. In the process, the "Swaminathan formula" entered the consciousness of a large section of the Indian peasantry. The responses to his death, global and Indian, constitute fitting recognition of the remarkable contributions that MSS made over nearly eighty years of sustained and dedicated work as a scientist who served state and society.

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The seven decades and more of the work of MSS have had at least three distinct strands, each of great significance.

The first was the intense engagement of MSS with science, more specifically, agricultural sciences and biotechnology. This engagement played a key role in the green revolution, as Norman Borlaug noted:¹

The Green Revolution has been a team effort and much of the credit for its spectacular development must go to the Indian officials, organisations, scientists, and farmers. However, to you, Dr. Swaminathan, a great deal of the credit must go for first recognising the potential value of the Mexican dwarfs. Had this not occurred, it is quite possible that there would not have been a Green Revolution in Asia.

The second strand, which has been enormously fruitful both on the ground and at the level of policy formulation and implementation, has been the work of MSS in the domains of food and nutrition security and farmers' welfare.

A particular policy insight informing the work of MSS was that self-sufficiency in food was critical for national sovereignty. This is a view he held throughout his working life. A decade ago, he said:

One thing I learnt during the 1960s and early 70s was the importance of food self-sufficiency in enabling Indira Gandhi to take independent foreign policies to uphold national sovereignty. Food grains are indeed a political weapon. Abdul Kalam later said that Pokhran would not have been possible without the green revolution. While I do not support the nuclear bomb, food self-sufficiency helped us support the liberation of Bangladesh and feed the newly united Vietnam. People do not often see this relationship, but these historic decisions would not have been possible without food self-sufficiency.²

The work of MSS on food security evolved over a long period. In the 1950s and 1960s, he paid primary attention to the *availability* dimension of food security, which was also critical to the question of national sovereignty and security. In the 1970s and 1980s, the dimension of *access* to food for all took centre stage, especially with the emergence of a focus in policy on anti-poverty programmes in which food grain played a direct role. By the late 1970s, India was reporting a surplus in the production of food grain at the national level, with government-held food grain stocks growing over time. The Government of India announced, in the context of the emerging grain surplus, a food-for work programme (FWP) in 1977-78. In October 1980, the Government led by Prime Minister Indira Gandhi modified the FWP and renamed it the National Rural Employment Programme (NREP). The availability of food grain stocks with the government, made possible through procurement by the Food Corporation of

¹ Cited in Kesavan and Iyer (2014).

² Rao (2015), p. 45.

India and other agencies of the government, led to similar programmes in the 1980s, such as the rural landless labour employment guarantee scheme.

MSS played a key role as a policy maker in the second half of the 1970s and the first half of the 1980s, holding positions of high responsibility in the Union government and in the Planning Commission. His special focus was on the availability of and access to food, two important dimensions of the evolving concept of food security. MSS also drew attention at this time to the dimension of absorption or biological utilisation of food, a dimension that was critically dependent on the availability of safe drinking water, sanitation, and primary health care – and on primary education (which enables the acquisition of nutritional literacy).

MSS thus played an important role in the evolution of the notion of food security from the single dimension of food availability to a concept that included all different dimensions of food security: the supply of food in the country, critical both for national sovereignty and for ending hunger; access to food for all through appropriate government interventions (such as the public food distribution system, interventions such as food-for-work schemes, and a focus on employment creation); and the absorption of food consumed (by ensuring the availability of safe drinking water, sanitation, and primary health care). While this was the focus from the 1970s to the 1980s, MSS later brought in a clear emphasis on nutrition, arguing that policy had to address not just food security in the sense of adequate food in terms of calorie intake, but also in the sense of combating protein inadequacy and micronutrient deficiency. In an article published in the monthly *Seminar* in 2020, MSS said:³

The question is how to combine agriculture, nutrition, and health, because as long as we do not bring all three together – agricultural production, micro- and macronutrient nutrition, and, above all, the health problem – malnutrition will remain a challenge.

By the time he was working on the reports of the National Commission for Farmers (NCF), MSS had an integrated and comprehensive view of the challenge of food and nutrition security. He then linked this challenge to issues of agriculture and farmers' welfare. This overarching framework becomes clear when one reads all the Reports of the NCF. The emphasis placed by MSS on adequate minimum support prices, open-ended procurement, and a strong public distribution system recognised the fact that most farmers producing and selling grain are also net buyers of food grain.

INSTITUTION BUILDER

The third distinct strand of the work of MSS was his role as an institution builder. The activities MSS undertook in this role were also focused on food and nutrition security for all, nationally and globally. Equally important, his interventions in this domain

³ Swaminathan (2020).

were science-based, consistent with his commitment to science in all his professional endeavours.

The role of MSS as a policy maker in the green revolution has been widely and extensively documented and written about in both scholarly and popular literature, and we shall therefore not pursue this matter further. What needs to be emphasized is the attention he paid, while serving in the leadership of the Indian Council for Agricultural Research (ICAR) and as Secretary of the Government of India, to the process of building up the institutional establishment for agricultural sciences in the country. He paid attention not only to national agricultural research institutions and state universities, but also helped create the institutions that provide the vital link with the farmers, the Krishi Vigyan Kendras (KVKs). His tenure at ICAR also saw several new initiatives, such as the focus on nutrition. His leadership role in the Food and Agriculture Organization (FAO) including as Chair of the High Level Panel of Experts (HLPE) on Food Security and Nutrition, his stewardship of the Consultative Group on International Agricultural Research (CGIAR) institutes, and his work as the Director of the International Rice Research Institute (IRRI) are important instances of the role of MSS as a global institution-builder.

MSS used his enormous experience and knowledge in institution building as well as agricultural sciences and policy making to set up the M. S. Swaminathan Research Foundation (MSSRF) in 1988 in Chennai. Starting modestly, the Foundation has, over the last thirty-five years, established itself as an important institution in the fields of agricultural research and policy, one whose services have been sought both in India and abroad. The role MSS played in the evolution of MSSRF was crucial. He had enunciated certain principles and concerns that he hoped would guide the work of MSSRF. These included commitment to the values of environmental sustainability, gender equality, and poverty reduction.

As early as 1968, MSS drew attention to the need for sustainable progress in agriculture in his speech at the Indian Science Congress:⁴

Exploitive agriculture offers great dangers if carried out with only an immediate profit or production motive. The emerging exploitive farming community in India should become aware of this. Intensive cultivation of land without conservation of soil fertility and soil structure would lead, ultimately, to the springing up of deserts. Irrigation without arrangements for drainage would result in soils getting alkaline or saline. Indiscriminate use of pesticides, fungicides and herbicides could cause adverse changes in biological balance as well as lead to an increase in the incidence of cancer and other diseases, through the toxic residues present in the grains or other edible parts. Unscientific tapping of underground water will lead to the rapid exhaustion of this wonderful capital resource left to us through ages of natural farming. The rapid replacement of numerous locally adapted varieties with one or two high-yielding

⁴ Cited in Swaminathan (2004).

strains in large contiguous areas would result in the spread of serious diseases capable of wiping out entire crops, as happened prior to the Irish potato famine of 1854 and the Bengal rice famine in 1942. Therefore the initiation of exploitive agriculture without a proper understanding of the various consequences of every one of the changes introduced into traditional agriculture, and without first building up a proper scientific and training base to sustain it, may only lead us, in the long run, into an era of agricultural disaster rather than one of agricultural prosperity.

Likewise, MSS has repeatedly voiced the concern that small farmers should be given the power of scale rather than handing over agriculture to big capital in the name of higher productivity and efficiency. Similarly, he has often highlighted the dangers of corporate control of agricultural biotechnology for small farmers and people alike, and hence the need for appropriate regulatory frameworks. The Reports of the NCF seek to address and bring into harmony both the interests of the peasant producers and the imperatives of food and nutrition security for all.

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A final note. I have had the great privilege of observing the personal qualities of M. S. Swaminathan for nearly two decades. It can be said of him, as a 17-year-old Marx wrote in 1835 in his essay on the reflections of a young man on the choice of a career, that “over [his] ashes will be shed the hot tears of noble people.”

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