

To My Daughter

Poonam Ahluwalia

Who inspired me to write this short biography of

The Son of India

Dr. M. S. Swaminathan

CONTENTS

Preface	3
Chapter 1 <i>The Yearly Years</i>	6
Chapter 2 <i>The Green Revolution</i>	14
Chapter 3 <i>The First World Food Prize</i>	20
Chapter 4 <i>M.S. Swaminathan Research Foundation</i>	25
Chapter 5 <i>The Ever Green Revolution</i>	30
Chapter 6 <i>Awards and Recognitions</i>	38
Chapter 7 <i>His Family</i>	41
Chapter 8 <i>Tributes</i>	44
Chapter 9 <i>Quotable Quotes of Swaminathan</i>	53
Chronology	59

Preface

When I first met Dr. M.S. Swaminathan, the father of the Green Revolution on the 7th September, 2002 at Alexandria (Egypt) at the time of Youth Employment Summit convened by the Education Development Center, Newton (Boston) USA, my mind traveled back to sixty five years when as a student I had read the poem by the poet Wordsworth:

*The country life is sweet,
In moderate cold and heat,
To walk in the air,
How pleasant and fair,
In every field of wheat,*

On the occasion of his receiving the Nobel Peace Prize in 1970, Dr. N.E. Borlug wrote to Swaminathan: “However, to you Dr. Swaminathan, a great deal of the credit must go for first recognizing 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”.

By the year 1970 India had become self sufficient in food production. On India’s food problem

before 1970 Swaminathan used to say: “Importing food was like importing unemployment, seventy percent of our people were employed in agriculture, we were supporting farmers in other countries”. In 1971, India officially declared itself self-sufficient in food production.

For over 50 years now, Dr. Swaminathan has been waging a relentless struggle against hunger, deprivation and gender inequity. He has always stressed in his lectures that “Where hunger rules, peace cannot prevail”. The Time Magazine in its August 1999 issue included Dr. Swaminathan along with Mahatma Gandhi and Rabindranath Tagore (Nobel Laureate in Literature) as the three most influential Indians among the 20 leading Asians of the 20th Century and wrote about him that “The father of the Green Revolution used his skills in genetic engineering and his powers of persuasion to make famine an unfamiliar word in Asia”.

The life work and achievements of Dr. Swaminathan will inspire every reader of this short biography to be partners in breaking the cycle of hunger and poverty in the world. In the end it may be emphasized that the above mentioned goal is not easy to achieve and for that hard and systematic work is

essential, Dr. Swaminathan has also done very hard work systematically and in a planned manner because:

*“Heights by great men reached and kept,
Were not attained by sudden flight,
But they while their companions slept,
Were toiling upwards day and night.”*

Girish Chandra Mathur

Chapter 1

The Early Years

Monkombu Sambasivam Swaminathan (M.S.Swaminathan) was born on August 7, 1925. His father Monkombu Krishna Sambasivam was a doctor and specialized in surgery. He had set up his practice in the town of Kumbakonam in Tamil Nadu. Swaminathan was brought up in Kumbakonam in the state of Tamil Nadu in India.

At that time, India was being governed by the British crown through its Viceroy in India and, therefore, Indians were fighting for their independence under the leadership of Mohandas Karamchand Gandhi better known as Mahatma Gandhi. Mahatma Gandhi was the leader of the Indian National Congress and his fight against the British was based on ahimsa that is non-violence. Sambasivan was influenced by the non-violent struggle, a struggle launched by the congress party for the independence of India. Motivated by the great leader, Gandhi, Sambasivam actively participated in the struggle for independence.

Swaminathan's grandfather, Krishna Iyer, had six sons and was living in a village called Monkombu in the state of Kerala in India. He owned large agriculture farms growing rice, coconut and mangoes. His grandmother was a very religious lady and used to visit the temple of Bhagavati every day accompanied by her grandchildren. It was she who taught her grandchildren that faith in God requires a strong ethical value system. Swaminathan used to spend his holidays in the ancestral village Monkombu and became interested in agriculture at a very early age. His grandmother also had a great influence on Swaminathan. From her, he learnt a strong ethical value system that helped him to always remain "original" and not imitate or copy others.

Swaminathan had his early education at a High School in Kumbakonam. After completing his middle school, he was admitted to the Little Flower High School in Kumbakonam which was run by Catholic missionaries who emphasized on moral education and strict discipline.

Swaminatham's father, Sambasivan, expired at an early age of 36 when Swaminatham was only 11 years old. Sambasivan and his brother Monkombu

Krishna Narayanaswami resided in the same household in Kumbakonam. After the death of Sambasivan, his widow Thangammal and her four children continued to live in the same house. Narayanaswami, the uncle, brought up and looked after his brother's family along with his two sons and two daughters on his small income.

Swaminathan graduated from the high school in 1940 at the age of fifteen. He left Kumbakonam and went to Trivandrum to live with his other uncle whose name was Monkombu Krishna Neelakantan. He became a member of the civil service in the princely state of Travancore. He joined Maharaja's college Trivandrum that was affiliated to the Travancore University, where he studied for his Bachelor's degree in Zoology. However, from his very childhood, Swaminathan was very much interested in agriculture, as he had seen his grandfather, Krishna Iyer along with his six sons, growing rice, mangoes and coconuts on the family farm.

After doing his B.SC in Zoology, Swaminathan joined the agricultural college in Coimbatore, in Tamil Nadu, which was affiliated to the University of Madras.

Thus, Swaminathan got an additional Bachelor's degree in Science with agriculture as his major subject. In 1947, Swaminathan joined the Indian Agriculture Research Institute (IARI) in New Delhi, as a post-graduate student in Genetics and Plant Breeding. He obtained his post graduate degree (M.SC in Agriculture) in 1949 with a distinction in Cytogenetics, the study of inheritance with reference to the cells. The same year, he was awarded the UNESCO fellowship to study Genetics at the Wageningen Agricultural University in the Netherlands where he conducted his research on potatoes at the University's Department of Genetics.

Swaminatham reached Ede-Wageningen, which is the railway station for the Agricultural University in the month of December 1949 and was received by Professor Dorst, head of the Plant Breeding institute. He was also the Rector- Magnificus of the Agricultural University. When Swaminathan reached the University Campus, he found that the mission statement of the University was: "Wageningen University wishes to develop and disseminate the scientific knowledge needed to [sustainably](#) supply society's demand for sufficient, healthy food and a good environment for humans, animals and plants". The mission statement of

the University became the corner stone of Swaminathan's scientific work in agricultural research in improving India's food stocks for the masses.

It was at Wageningen University that Swaminathan realized that potato had been the main food of the people in Europe, during the period of World War II and in order to produce more potatoes to meet the demand led to the abandonment of traditional crop rotation, which was really responsible for the parasitic worm problem. In order to remove the problem, the golden nematode, Swaminathan found out the way in standardizing procedure for transferring genes from a wide range of wild species of Solanum to the cultivated potato.

During his stay at Wageningen, Swaminatham visited Germany to meet Professor Stelzner, who was also doing research on potato. He found that Germany had been practically devastated and ruined economically by the World War II, but the people of Germany had not lost their spirit. After ten years when Swaminathan again went to Germany, he was surprised to see that a totally ruined country had again transformed itself into a powerful nation. This taught

Swaminathan that if the government of a country utilizes its human resources in a right way, that country would prosper.

From The Netherlands, Swaminathan went to Great Britain in 1950 and joined the Plant Breeding Institute of Cambridge University School of Agriculture, where he got his Ph.D. degree in 1952 for his brilliant thesis entitled “Species Differentiation and the Nature of Polyploidy in certain species of the Genus Solanum – section Tuberarium”. In his thesis he propounded a new concept of the relationship within the tuber-bearing Solanum. At the Plant Breeding Institute, Swaminathan found that there was a good mixture of basic and applied research. But the government of Margaret Thatcher divided the institute into two parts, one part dealing with basic research and the other with applied research and the latter was sold to Unilever in the year 1985. Swaminathan was not happy on this division, as he was of the opinion that actually in the organization dealing with research there should be a good mixture of basic and applied research because research for public good should receive monetary support from public funds i.e. grants from the government.

Swaminathan spent the Christmas of 1951 with a retired member of the Indian Civil Service, F.L. Brayne who had been very active in rural reconstruction and organic farming as a civil servant in Punjab. Brayne's methodology regarding rural development in Punjab was really the foundation for sustainable advance in farm productivity, though he did not use the term "sustainable agriculture", Swaminathan's concept of sustainable agriculture owes a lot to his interaction with Brayne.

At Cambridge, Swaminathan published many scientific papers on agricultural research, which paved the way for him to propound the concept of sustainable agriculture, i.e. "agriculture based on ecological awareness, in which synergy, harmony and economy are the basic principles, and of which recycling is a tool." For the work done by Swaminathan at Cambridge, the University of Wisconsin U.S.A decided to set up a Potato Research Station at Sturgeon Bay and offered him a postdoctoral research associate-ship. Swaminathan went to U.S.A from England and spent 15 months at Madison working in the Genetics Department. There he came into contact with Professor James Crow who was a very eminent human geneticist. The period of his associateship in the University of Wisconsin ended in

December 1953 and he was offered a regular faculty position by the University, which he politely declined as he was preparing himself for serving the cause of agriculture in his mother- land i.e., India. Thus Swaminathan came back to India in January 1954 to use his experience and education received in Holland, UK and USA to change things in his own country.

Chapter 2

The Green Revolution

After coming back to India, Swaminathan found that there was no job for him in his field since agricultural research was not given the recognition it deserved. However with the help of his former professor N. Parthasarthy, Swaminathan was able to secure a temporary job as Assistant Botanist in the Central Rice Research Institute in Cuttack in the state of Orissa. He had already applied for various government jobs and was lucky to be appointed as an Assistant Cytogeneticist at the Botany Division of the Indian Agricultural Research Institute in New Delhi, which was his Alma Matar, as he had done his post graduate research at IARI (New Delhi). Swaminathan was given the task of looking into wheat production, which was only around 7 million tons, that is an average yield of 700 kg per hectare. India's population was growing at a rapid speed with the result that some western economists had predicted that the country would be having famine after famine. Thus the government had either to import food grain at a high price or under the

aid programme of the USA. Swaminathan was of the opinion that food production in the country could be improved if the dwarf varieties of wheat were introduced. Swaminathan's experiment gave good result because the dwarf varieties had been bred to allocate more of their photosynthates to grain, and relatively less of it to their stems and leaves, as was the case with the old wheat varieties, which had tall stalks. The dwarf plants could be planted widely across latitudes and they could be planted more than once per year under suitable climatic conditions.

Dr. Norman Borlaug had developed a crossbred wheat seed in Mexico based on the dwarf genes of the Norin wheat discovered in Hokkaido, Japan, in 1961. On Swaminathan's request Borlaug agreed to supply material, which suited to Indian conditions. Borlaug visited India in March 1963 and traveled extensively with Swaminathan. He later sent a consignment of wide range of the Mexican dwarf plant material to IARI in New Delhi

Swaminathan was able to get a plot of about 5 acres in IARI's experimental field to sow wheat. The dwarf Mexican wheat yielded over five tons per acre,

which was more than about three times of the native varieties. This was a major achievement. In 1964 he was successful in persuading the Ministry of Agriculture to finance his project of demonstrating his experiment to hundreds of small farmers. He was also successful in getting financial help from the Minister of Agriculture to import sufficient Mexican wheat seeds. The dwarf Mexican wheat seeds arrived well in time for sowing and the results were very good. Farmers were happy but they did not like the colour of the new wheat, which was red. Under Swaminathan's guidance scientists working at IARI used gamma rays and ultra-violet light, which changed the wheat colour from red to amber. The new hybrids of wheat were superior to both Mexican and Indian varieties. Swaminathan was successful in getting the new varieties sown in the field of the poor farmers, who were very happy to see the new grains and happily started sowing the new variety of wheat grains. The production of wheat in India went up from 12 million to 17 million tons by 1968 and it was a revolutionary jump. The Government of India also realized this and issued a special stamp on the Wheat Revolution.

The other developing countries followed the example of India and they also adopted the high yielding

variety of wheat with the result that in these countries also life expectancy increased by 10 years in the period of two decades. William Gaud of USA termed this unprecedented quantum jump in food production as Green Revolution in 1968.

In 1966, a TV Crew of BBC London visited India to film famine conditions here. On the last day of their visit the Director of the documentary film unit interviewed Swaminathan and expressed his views that Indians would starve to death in next 10 years period. Swaminathan showed the new varieties of dwarf wheat and requested the Director to take pictures of this new variety of wheat. Swaminathan told them about the imported seeds from Mexico and planting them in the fields of poor farmers. He asserted before the BBC team, that the wheat harvest of 1968 would change India's agricultural destiny in two years time.

In 1970 Norman Borlaug who had developed a crossbred wheat seed in Mexico based on the dwarf genes of Norin wheat discovered in Japan in 1961, was awarded the Nobel Peace Prize in appreciation of his spearheading the Green Revolution, which completely changed food insecurity in the developing world.

Borlaug was very conscious of the contribution made by Swaminathan in this field, and this is very clear from the letter Borlaug wrote to Swaminathan on the eve of his receiving the Nobel Prize. The letter reads as below:

“The Green Revolution has been a team effort and much of the credit for its spectacular development must go to the Indian officials, organization scientists and farmers. However, to you, Dr Swaminathan, a great deal of the credit must go for first recognizing 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”.

Thanks to the efforts of Swaminathan and his team of scientists that in 1971 the Indian Government officially declared that this country was self sufficient in food production. Now the position is that India’s food production is more than enough for its needs but there is the problem of its distribution.

Swaminathan was an excellent Professor and research guide in IARI New Delhi. It may be mentioned that a vast number of agricultural scientists in India passed through Swaminathan’s hands as post-graduate

students. It was due to Swaminathan's efforts that so many agricultural Universities and colleges were started in the Indian states.

Swaminathan is a firm believer that farmers should be educated and must be given the inputs to make their own decisions. Farmers should be given right kind of information and at the same time provided with seeds, fertilizers, implements etc. on cash or credit basis whichever suits them and it is sure that they will produce better results. Swaminathan is also of the view that farmers should also be assured of remunerative prices of their produce and marketing facilities, which will provide major encouragement to small farmers to adopt new technologies for their betterment. His emphasis has always been on the productivity (ie. yield per hectare), pathway of production, sine smaller the farm, the greater is the need for marketable surplus.

Chapter 3

The First World

Food Prize

After bringing the revolution in wheat production, Swaminathan extended it to other crops like rice, whose consumption in India was almost twice as that of wheat. The Rockefeller Foundation and The Ford Foundation of the USA had set up the International Rice Research Institute (IRRI) in Los Banos in the Philippines in 1960 to improve rice production. A new dwarf variety of rice was bred, crossing this with existing rice plant. This was responsible in doubling the yield of the traditional rice plant. Swaminathan was encouraged by the experiment conducted at IRRI at Los Banos. In 1965, he was able to transfer dwarfing genes to a basmati variety of rice from North West India. This breeding program ultimately led to the production of the high yielding and semi-dwarf Pusa Basmati variety.

In 1972, Swaminathan was appointed as the Director-General of the Indian Council of Agricultural Research (ICAR). As the Director-General he introduced

the concept named by him as “technicracy”, i.e.- technical literacy, with the aim of imparting training in the latest technical skills in the field of agriculture entirely through work experience. He was able to establish Krishi Vigyan Kendras all over India for this purpose. Thus he was able to generate opportunities for skilled employment for those members of the society, who had no formal education in schools and colleges.

Swaminathan was appointed in 1979 as the Principal Secretary to the Government of India, Ministry of Agriculture and Irrigation. He was the First Scientist to hold such a high position, which was practically reserved for senior bureaucrats from the Indian Administrative Service (I.A.S). During his tenure as the Principal Secretary there was an unprecedented drought in India. Swaminathan was able to develop a comprehensive climate management strategy through which he was both able to minimize the adverse effects of bad weather and to derive maximum benefits of good monsoons. Thus “crop-weather- watch” groups were established in several districts of the country to combat natural disasters.

In 1980 Swaminathan was appointed as the member of the Planning Commission which post he held for two years. He was able to introduce chapters on Environment and Development and, Women and Development in the Plan document and a sub-chapter on a 'New Deal for the Self-employed' under the chapter on employment.

In 1982 Swaminathan was appointed as the Director General of the International Rice Research institute, Los Banos, Philippines. He was the first Asian to get this prestigious position. He held this position for a period of six years and made substantial contribution to the research, training and technology transfer programs of IRRI. He was able to establish national rice research institutions in various countries like China, Korea, The Philippines, Vietnam, Thailand, Burma (now Myanmar), Cambodia (now Kampuchea), Egypt, Tanzania, Iran, Nigeria, Sri Lanka, Pakistan and Madagascar.

As Director General of IRRI Swaminathan originated a project called Women in Rice Farming Systems, which highlighted the contribution of women to rice production, marketing and consumption. He is of the opinion that the women in fact take the responsibility of

the health and welfare of their families. In recognition to his contribution in the field of women's upliftment, the Association for Women in Development (AWID), USA, gave their first award for "outstanding contributions to the integration of "women in development", to Swaminathan in 1985.

There was a saying in Asia that paddy and poverty go together, as the rice crop did not support any industry other than rice mills. Swaminathan wanted to show that it was not true. He therefore organized training workshops to help rice-farming families to produce value-added products from rice straw, husk and bran and thus converted the saying from "Paddy and Poverty" into " Paddy and Prosperity". Under Swaminathan's guidance rice farmers started using rice straw as manure, as a substrate for oyster mushroom cultivation, as balanced animal feed, as raw material for paper manufacture, and as a source for biogas generation. Rice bran started to be employed to extract edible oil for human use and in manufacturing soaps, de-oiled rice bran cake as poultry feed and fortified to improve animal nutrition. Similarly rice hull or husk started to be used as a source of energy for grain drying and production of charcoal, for hollow cement blocks

from hull ash and for extraction of solar grade silicon for use in photovoltaic cells.

In 1987, Swaminathan was awarded the first World Food Prize, which is considered as equivalent of a Nobel in the field of food and agriculture. One of the purposes of this prize is “ to recognize, encourage and reward outstanding individual achievement in improving and increasing the world food supply”. The World Food Prize carries with it a cash award of \$200,000. Swaminathan started The M.S. Swaminathan Research Foundation at Madras (now Chennai) in 1988 with the cash award of \$200,000 that he received as the first World Food Prize winner.

Chapter 4

M.S. Swaminathan Research Foundation

Swaminathan had been greatly influenced by C.V Raman, a physicist, who won the Nobel Prize for Physics in 1930. In the year 1934 Raman laid the foundation of the Indian Institute of Science in Bangalore. Raman had judged Swaminathan's dedication towards agricultural research and therefore in 1970 he urged Swaminathan to establish an autonomous center devoted to agricultural research. Swaminathan was awarded the first World Food Prize in 1987. In 1988 his tenure at IRRI ended and he returned to India. The same year he founded the M.S. Swaminathan Research Foundation (MSSRF) in Madras (now known as Chennai) which concentrates "on fostering sustainable development, with particular emphasis on protecting the environment and the needs of the poor and of women and youth". Swaminathan describes his Foundation "As an institution "without walls", that reaches out to take in anyone who can contribute to its ideals". The Foundation does not

possess its own experimental farm and its staff members work with farming families in their fields with the result that the rural and tribal men and women are treated as partners and advisors and not as beneficiaries. This a paradigm shift was brought about from patronage to partnership.

The M.S. Swaminathan Foundation operates in five major programme areas-Coastal Systems Research, Biodiversity and Biotechnology, Ecotechnology and Food Security, Gender and Development and Capacity Building, Networking and Informatics. The work culture is distinctive to the Foundation and is very different from that of any department of a government or a corporate. More than 200 persons work in the Foundation in a cordial atmosphere. The way in which young professionals work in the Foundation shows their willingness to achieve MSSRF's goal of serving public good with maximum economy, efficiency, accountability and transparency.

At the World Climate Conference, held at Geneva in the year 1989, Swaminathan proposed “an anticipatory research programme to meet the potential adverse effect of rise in sea level as a result of global

warming”. In 1990 a Genetic Resource Center for adaptation to sea level rise was established by Swaminathan at MSSRF designed to conserve mangrove wetlands in coastal areas, to transfer genes for seawater tolerance to rice, mustard, legumes, etc. It may be mentioned that persons visiting MSSRF can see rice plants with genes for salt tolerance transferred from mangrove tress.

The Convention on Biological Diversity (CBD) adopted in Rio de Janeiro in 1992 has defined biological diversity as the term used to refer to the many and different kinds of living organisms that inhabit land and water. “Biological diversity is a priceless heritage, the wealth of life comprising millions of plants, animals and micro- organisms, the genes they contain, and the intricate ecosystems they help build into the living environment. The diversity of forms has evolved right from the moment life began on earth and has been responsible for sustaining our evolution and continued growth”.

Swaminathan has established a Technical Resource Center at MSSRF, for the implementation of the equity provisions of CBD. This Center looks after

and support MSSRF's community biodiversity programmes that are involved in creating an economic stake in conservation. The tribal men and women are organized into an Agro-biodiversity Conservation Corps. These tribal men and women cultivate plants of commercial value. For fostering genetic and legal literacy among school students and elected members of the panchayats, MSSRF has launched a Genome Club Programme.

MSSRF has set up the bio-village program in Pondicherry. MSSRF has also started projects in various villages in Tamil Nadu. In each Village that is the part of the project, the community has to provide space to house a computer and pay workers who are responsible to run the center. Each center has a web site, which provides information on a wide variety of subjects like women's health issues, advice on growing local crops, protecting them from diseases, daily market prices for these crops, local weather forecasts, details of major government schemes for the poor and pensioners, availability of bank loans etc.

Swaminathan is very keen to give preference to women in order to change gender inequality and the

women volunteers are also trained along with men in MSSRF information centers. The reason given for this preference to women, according to Swaminathan, is as follows: “If the information centers had been managed by men, many women would have hesitated to turn to them. By allowing women to take responsibility for the new technology, we are ensuring that everyone has the same access to information. And at the same time, we are helping to boost women’s self-confidence and promote their place in society. We also know that measures that favor women bring about improvements for the family as a whole”.

These knowledge centers prove the fact that information technology has helped millions of people with the result that farmers have gained more control on their local markets and fishermen now come to know about weather conditions in their area through announcements by the centers on their loudspeakers. Swaminathan and his team at his Foundation are really using innovative, ingenious, imaginative and resourceful methods to change the lives of ordinary rural folks.

Chapter 5

The Ever Green Revolution

There is an old saying “My family before myself, my community before my family, my country before my community and humanity before my country should be the right ordering of our loyalties.” This saying, in true sense, depicts the personality of Dr. M.S Swaminathan, who is a firm believer of the Indian concept of “Vasudhaiv Kutumbkam”, i.e. the whole world is my family .In 1982, he was appointed as the Director General of the International Rice Research Institute and he spent next six years at IRRI. During these six years he not only made scientific additions to the development of rice and his substantial contribution to the research, training and technology transfer programme of IRRI. He also helped in establishing a chain of national rice research institutions in different countries the Philippines, China, Korea, Vietnam, Cambodia (Kampuchea), Thailand, Burma (Myanmar), Egypt, Tanzania, Sri Lanka, Iran, Madagascar, Nigeria and Pakistan.

“Hunger is the extreme manifestation of poverty and hence I have concentrated on working for hunger free India and World” Swaminathan says, He is the believer of the eternal message of Bhagwat Gita. “ Do thy duty, reward is not thy concern”. This eternal truth has been the basis of all his work whether in personal life or in the field of his scientific research. “You have a vision and if you are able to develop the ingredients for the success of that vision. I will consider it a success. If something goes wrong, I am not discouraged”. Swaminathan is of the opinion that food is the basic need of a person and that all over the world and particularly in the developing countries, millions of people go hungry to bed every night. In the words of Roman Philosopher Seneca “A hungry person listens neither to reason, nor to religion, nor is bent by any prayer.” One of the causes of the French Revolution was food shortage, which made the French people restless, and they demanded food from the State. According to Swaminathan hunger leads to social unrest, political instability, massive migrations, rebellions, civil war, crime and violence.

Food insecurity is a very great problem and it is estimated about 40 million persons of all ages die each year from starvation and diseases related to malnutrition. The Food and Agriculture Organization (FAO) of the United Nations has defined food insecurity thus; “Food insecurity exists when all people, at all times, do not have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”

It should also be made clear that availability of food is dependent not only on adequate production but also on the system of its pricing and distribution. Now it has been universally recognized that the problem of food is inextricably intertwined with the problems of employment, political and social stability and peace.

Employment is the key to progress and peace and, therefore, it should be noted that high levels of unemployment would lead to frustration, polarization, instability and violence. Thus, according to Swaminathan, there is urgent need to create millions of new jobs especially in the developing countries. Swaminathan’s Foundation had organized several

international seminars to explore opportunities to stimulate productivity, competitiveness and employment in the developing countries.

Swaminathan is of the opinion that agricultural countries in the developing world should realize that agricultural progress constitutes the best safety net against poverty and deprivation to rural women and men. It should be noted that in India 70 percent of its population lives in the village and therefore, it is important to improve the living conditions in those villages. The biovillage programme of Swaminathan's Foundation (MSSRF) is based on this concept.

Swaminathan believes that, "if we truly seek to help the poorest, we must serve women." In Indian villages poor women actually run the family with virtually nothing by way of resources. These village women use all the means at their command to fight against hunger and poverty. They are hard working and are trying their level best to move up and are willing to make sacrifices, for the good of their children.

The preamble to the 1995 Beijing (China) conference on Women says, "Women's empowerment

and their full participation on the basis of equality, in all spheres of society are fundamental for the advancement of equality, development and peace”. Swaminathan has been impressed by the above-mentioned preamble. In collaboration with the Government of India, Swaminathan’s Foundation has set up a Women’s Biotech Park near Chennai, where women professionals are provided opportunities to convert their academic accomplishments into entrepreneurial excellence.

In Swaminathan’s view female education is a very important tool to fight hunger. It is the wife and mother who have the primary responsibility for feeding the family. It is therefore absolutely necessary that girls be sent to schools. If girls are given proper education they will gain self-confidence and will be in a position to get better deals in getting jobs or start their own enterprises. Further, they will be able to get social justice and they will be in a better position to look after the welfare of their families.

The Green Revolution swept across the developing world in the 1960’s, taking agriculture based on resources like land, water and biodiversity to new heights. By 1968, Indian wheat production went up from

12 million to 17 million tonnes and William Guad of the US coined the term Green Revolution to describe this unprecedented quantum jump in food production. India had become self-sufficient in food production after decades of facing shortages.

Swaminathan had expected all this would happen; in 1968 he had suggested the need to introduce environmentally sustainable strategies like organic nutrient supplies, and integrated pest management with reduced dependence on chemical pesticides, and scientific management of land and water. If we look back from the year 1960 to 2003 we simply wonder at his foresight in the field of agriculture .He has helped India and Vietnam not only to become self-sufficient in food but also to become food exporters. He has laid the foundation for agricultural reconstruction in Cambodia, China, Indonesia, Myanmar, The Philippines, Bangladesh, Sri Lanka, Egypt, Tanzania and Madagascar.

William Gaud of the US had coined the term “Green Revolution.” Swaminathan has coined the term “Ever Green Revolution” to describe the pathway to continuous advancement in productivity, but without

associated ecological harm i.e.; the fundamental basis of sustainable development. Supporting Swaminatha's concept Edward O. Wilson in his book "The Future of Life" writes; "The problem before us is how to feed billions of new mouths over the next several decades and save the rest of life at the same time. The benefits must come from an Ever Green Revolution. The aim of this new thrust is to lift food production well above the level attained by the Green Revolution of the 1960s, using technology and regulatory policy more advanced and even safer than those now in existence".

According to Swaminathan the success of the Ever- Green Revolution would depend on the use of ecotechnology to further its aims. Ecotechnology is "the blending of the ecological prudence and technologies of the past with the best in frontier technologies, particularly biotechnology, information and digital technology, space technology, nuclear technology, renewable energy technology and management technology".

Swaminathan believes in sustainable development, which according to him does not only mean reconciling economic resources with

environmental ones and building social safety nets for those who are marginalized; it also means recognition of and commitment to the basic values of compassion, sharing and uniqueness of human purpose.

The first World Food Prize was presented to Swaminathan in 1987. Javier Perez de Cuellar, Secretary General, United Nations described Swaminathan at that occasion in these words; “Dr. M.S. Swaminathan is a living legend. His contributions to agriculture Science have made an indelible mark on food production in India and elsewhere in the developing world. By any standards, he will go into the annals of history as a world scientist of rare distinction.

Chapter 6

Awards and Recognition

Dr. M.S.Swaminathan is probably the only scientist who has been honoured so much. TIME MAGAZINE in its August 23-30, 1999 has written about him as follows; “M.S. Swaminathan ;.The father of the Green Revolution used his skills in genetic engineering and his power of persuasion to make famine an unfamiliar word in Asia.”

- Swaminathan got the under mentioned awards from 1967 to 2000.
- Padam Shri in 1967.
- The Ramon Magsaysay Award for Community Leadership in 1971
- Padam Bhushan in 1972.
- The Borlaug Award in 1979 for his contribution to agriculture and food security
- Bennett Commonwealth Prize of the Royal Society of Arts in 1984
- Award instituted by the Association for Women in Development Washington DC,USA in 1985
- Krishi Ratna Award in 1986

- The first World Food Prize in 1987 describing Dr. M.S. Swaminathan as a living legend
- The Golden Heart Presidential Award of the Philippines in 1987 for bringing advances in Science and technology to Asian rice farmers
- Padam Vibhushan in 1989
- Commander of the Order of the Golden Ark of the Netherlands in 1990
- Tyler Prize for Environment Achievement in 1991
- The Honda Prize of Tokyo in 1991
- UNEP- Sasakawa Environment Prize in 1994
- Global Environmental Leadership Award conferred by the Climate Institute Washington D.C, USA in 1995
- China's Award for International Co-operation on Environment and Development in 1997
- Henry Shaw Medal awarded by the Board of Trustees of the Missouri Botanical Garden in 1998
- UNESCO Gandhi Gold Medal for Culture and Peace in 1999.
- The Volvo Environment Prize in 1999 because of his achievements as a plant breeder and administrator which led to the dramatic increases in crop yields

- Indira Gandhi Prize for Peace, Disarmament and Development in 2000
- The Franklin D. Roosevelt Four Freedoms Medal in 2000 because the Trustees believed that Swaminathan exemplified “those objectives, which President Roosevelt described in urging Freedom from want as an essential condition of human liberty”.
- The Planet and Humanity Medal of the International Geographical Union in 2000

Chapter 7

His Family

Swaminathan's family belongs to village Monkombu in the State of Kerala in Southwestern India .His family was among the most important in the village and it came to be called as the Kottaram family meaning thereby the palace family as Kottaram means palace. Swaminathan's grandfather's name was Krishna Iyer and he had six sons. Monkombu Krishna Sambasivan was the name of Swaminathan 's father and he was a doctor. His father started his practice in the town of Kumbakonam in Tamil Nadu in South India

Swaminathan was born on 7th August 1925 and brought up in the temple town of Kumbakonam. His father Sambasivan was a follower of Mahatma Gandhi and was a selfless worker in the cause of India's struggle for freedom. His father Sambasivan died when Swaminathan was only eleven years old. Sambasivan's younger brother Narayanaswami, who was a radiologist, had joined his brother as an expert in X-rays. After the death of Sambasivan, his younger brother looked after

his family. Narayanaswami did not differentiate between his own and his brother's family

After completing his education both in India and foreign countries, Swaminathan joined the Indian Agricultural Research Institute of which he became the Director after twelve years of service. Swaminathan was married to Mina Swaminathan on 11th April 1995. Mina is the daughter of a very well known ICS official, Mr. S. Boothlingam. Mina qualified with a degree in economics and mathematics at Cambridge. As she was having a Master's degree in Economics from the University of Cambridge, she got a job in the Planning Commission, which she gave up in 1956 to take to a teaching career. She specialized in pre-primary education as she felt that there was a need to awaken the thinking of the masses about themselves, their attitudes and their lives. About his wife, Mina, Swaminathan says, "She is a person with unique combination of qualities". Her sense of values and her conviction that the future of India depends upon the education and nutrition of children have provided much of the stimulus for my work. Her humanism and dislike of material values strengthen my personal convictions and goals". Mina Swaminathan has been actively involved in promoting the pre school education

movement in the country. She was the principal author of the Integrated Child Development Service (ICDS) programme.

Swaminathan has three daughters Soumya, Madhura and Nitya. Soumya is a doctor - a pediatrician, Madura holds a D. Phil in Economics from Oxford University, and Nitya got her Ph.D degree from the University of East Anglia, UK in the area of gender and development. Swaminathan says that his daughters want to excel in different fields and that they have helped him to remain young in his thinking and helped him bridge the generation gap in terms of values and aspirations.

Chapter 8

Tributes

“He brings to bear on his work a missionary and zeal which is infectious and a sense of dedication which is inspiring. It is said, knowledge is proud that it knows so much, wisdom is humble that it knows no more. Dr. Swaminathan typifies that type of wisdom of the ancient without fanfare or trumpets. He radiates cheer, hope and self-confidence.”

National Investment and Finance, which chose Swaminathan as “Man of the Week” in February 1971.

“The green revolution has been a team effort and much of the credit for its spectacular development must go to Indian Officials, Organizations, Scientists and farmers. However, to you, Swaminathan, great deal of the credit must go for first recognizing the potential value of the first recognizing 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”.

Dr. Norman E. Borlang wrote to Swaminathan on the occasion of his receiving the Nobel Peace Prize in 1970.

“Dr. Swaminathan is a living legend. His contributions to agricultural Sciences have made an inedible mark on food production in India and elsewhere in the developing world. By any standards he will go into the annals of history as a world scientist of rare distinction”.

Mr. Javier Perez de Cuellar. The Secretary General of the United Nations wrote to Dr. Swaminathan on the Occasion of the presentation of the First World Food prize in October 1987.

This award recognizes what many in the global food and agricultural community have known for a long time – that your efforts have made a dramatic and lasting impact on improving world food supply. I also applaud your outstanding work in India, where you earned the well-deserved title of “Father of the Green Revolution”, and your continued efforts to pioneer the field of agricultural research at the International Research Institute in the Philippines. You can be proud

of all these accomplishments as well as the dignity and self-reliance, you have helped, to bring to the people you have served. Again congratulations and best wishes for continued success in you work”

Letter dated September 11, 1987, written by Mr. Ronald Reagan, President of the United States of America to Dr. M.S. Swaminathan on the occasion of his receiving The General Foods First World Food Prize in 1987.

“Rosalyn and I want to add our congratulations to those you are receiving from your friends and colleagues through out the world. The General Foods World Food Prize is an outstanding way to recognize your achievements in improving the world food supply. You can take pride in knowing that many generations of people will benefit from your contributions. Your accomplishment will be of great advantage to scientists and agronomists of the future efforts to meet the needs of our expanding population.”

Letter dated October 6, 1987, written by Mr. Jimmy Carter (President of the U.S.A., and recipient of the Nobel Peace Prize, 2002) to Dr. M.S. Swaminathan

on the occasion of his receiving The General Foods First World Food Prize in 1987.

“I was so pleased to hear the news of your award. There could not have been a more appropriate choice. The central focus of application of plant genetics technology has moved a long way since our association at the University of Wisconsin Genetics Department almost 40 years ago. I think of no one who has combined the insights of the cutting edge of biological science, with attention to the most urgent of human needs, with the competence, devotion and energy that you have given. The world is and will be a better place on account of your contributions to its welfare. With my very best personal wishes and congratulations”

Letter dated September 25, 1987 written by Joshua Lederberg, who got a Nobel Prize and was with the Rockefeller University to Dr. M.S. Swaminathan on the occasion of his receiving the First World Food Prize in 1987.

“Of all the problems which the people of our world must tackle, none is more fundamental than insuring adequate food supplies. Food is basic to good

health, child development and learning, productivity, and the ability to live a life free from want and physical deprivation.

To make a difference in the world's capacity to feed itself is indeed an awesome accomplishment, and so I congratulate you most sincerely and warmly on the honor given you as recipient of the 1987 World Food Prize. Your accomplishments as a scientist and a scientific leader should give you great personal satisfaction. More importantly, however, they have had an impact on the lives of millions of people in Asia and other parts of the developing world.

I am especially glad that this recognition comes when you are still actively at work on the new knowledge and applications of knowledge that will be needed to sustain future food supplies in the face of increasing world population and dwindling resources of land and water. May your efforts continue to be as productive and vital as they have to the present time?"

Letter dated September 29, 1987, written by Mr. Frank Press, President of National Academy of Sciences, Washington D.C. USA to Dr. Swaminathan on

the occasion of his receiving The First World Food Prize in 1987.

“You certainly merit this award (The First World Food Prize) because of your great enthusiasm and engagement for the cause of improving the situation of the poor.”

Letter written by Dieter Bommer, Chairman, German Council on Tropical and subtropical Agricultural Research to Dr. Swaminathan on the occasion of his receiving The First World Food Prize in 1987.

Swaminathan got the Golden Heart Presidential Award of the Philippines in 1987 “in recognition of his contributions in revolving a wide range of problems in basic and applied genetics and letters received by him on the occasion speak of the regard he has been held in for decades agricultural research and development in the Philippines, for his accomplishments in the area of agricultural science and research highly beneficial to Pilipino farmers, and for having expanded considerably the International Rice Research Institute’s capacity for upstream research to bring the fruits of recent advances in science and technology to Asian rice farmers.”

Swaminathan got the Volvo Environment Prize in 1999 “ because of his achievements as a plant breeder and administrator which have led to dramatic increases in crop yields, his international leadership in agriculture and resource conservation, his deep concern for the poor and disadvantaged, and his continuing research and leadership to ensure that they get the opportunities they need to develop in ways that enhance the natural environment on which they depend.”

Swaminathan received the Indira Gandhi Prize for Peace, Disarmament and Development in 2000” for his outstanding contribution in the domain of plant genetics and ensuring food security to hundreds of millions of citizens in the developing world.”

Swaminathan received the Franklin D. Roosevelt Four Freedom Medal in 2000 because he exemplified “those objectives which President Roosevelt described in urging Freedom from Want as an essential condition of human liberty. You have taught nations how to be self-sufficient in their need for food just as you have taught farmers how to develop and enhance the productivity of their land. Your brilliant leadership that

has established a goal for the new millennium – a hunger free world, an international structure of co-operation among nations, a determination to use the miraculous technology of our times to help those in need, for dynamism and compassion that have given new meaning to Franklin D. Roosevelt’s commitment to a better world where all nations will understand and strive for freedom from Want.”

Swaminathan got The Planet an Humanity Medal in 2000 describing him as “ a great scientist, a responsible and thoughtful caretaker of nature, and an outstanding humanist, in recognition of his unique success in outstanding scientific research and its application, leading to Asia’s Green Revolution. His endeavors to combat hunger and food shortages by promoting new seed varieties and applying those with ecologically sound principles and sustainable agriculture are all part of his profound humanitarian ethos, which reminds scientists and politicians worldwide of their responsibilities for stewardship of nature and humanity on our common planet Earth.”

Swaminathan got the UNESCO Gandhi Gold Medal for culture and peace in 1999for “outstanding

work in extending the benefits of biotechnology to marginalized and poverty-stricken populations in developing countries and in securing a sound basis for sustainable agricultural, environmental, and rural development.”

Chapter 9

Quotable Quotes of Swaminathan

“Importing food was like importing unemployment. Seventy percent of our people were employed in agriculture. We were supporting farmers in other countries.”

*Swaminathan on India's food
Problem before 1970*

“Hunger is the extreme manifestation of poverty and hence I have concentrated on working for a hunger-free India and world.”

Message from Swaminathan.

“Whether in plants or animals or human beings, it is collective excellence that leads to revolutionary progress and not just individual brilliance.”

Message from Swaminathan

“If technology was a key factor in enlarging gender and economic inequality from the days of the Industrial Revolution in Europe, we now have an uncommon opportunity to enlist technology as an ally in the struggle for gender and social equity.”

Message from Swaminathan

“If you are committed and excited by what you are doing, tiredness never sets in.”

Message from Swaminathan

“Where there is enormous power there is also enormous responsibility”

Message from Swaminathan

“Choose a problem that is relevant to the needs of the country and put in excellent and thorough efforts to get meaningful results.”

Message from Swaminathan

“Within each of us dwells a captive spirit struggling to find fulfillment, and each has the need to succeed by his own efforts. Therefore, we should work with, rather than work for, others. The latter situation

produces an expectation of gratitude on the one hand and resentment at having to be obliged on the other.”

Message from Swaminathan

“It is the farmer who toils in the Sun and the rain so that the rest of us can exist.”

Message from Swaminathan

“The poor are poor because they have no productive assets – no land or livestock, no education and no technical skills.”

Message from Swaminathan

“If we can make the jump from the pre-literate to the post-literate world, without passing through the intermediate phase, we can save enormous resources and time.”

Message from Swaminathan

“In no other area of human need and endeavor is there so much global interdependence as in agriculture.

Yet, the urban public seldom recognizes that we live in this world as guests of green plants and of the farmers who cultivate them,”

Message from Swaminathan

“The prospect for a world without hunger is a glorious legacy given to our contemporary world. Until such a wholly attainable world becomes a reality, our task remains unfinished.”

Message from Swaminathan

“To your own self be true, you will then not be false to others.”

Message from Swaminathan

“If we truly seek to protect the forest, we must serve women.”

Message from Swaminathan

“You have a vision and if you are able to develop the ingredients for the success of that vision, I will

consider it a success. If something goes wrong, I am not discouraged.”

Message from Swaminathan

“We have reached a stage in our agricultural evolution when our production will increase only if we can improve consumption.”

Message from Swaminathan

Swaminathan defines ecotechnology as “the blending of the ecological prudence and technologies of the past with the best in frontier technologies particularly biotechnology, information and digital technology, space technology, nuclear technology and management technology.”

Message from Swaminathan

“Where hunger rules, peace cannot prevail.”

Message from Swaminathan

“Do not worship a technology because it is new,
nor discard it because it is old. Wisdom lies in combining
the best in both.

Message from Swaminathan

Chapter 10

Chronology

1925 Monkombu Sambasivan Swaminathan was born on the 7th August, 1925.

Swaminathan's father Dr. Monkombu Krishna Sambasivan died on the 12th October at the age of 36 when Swaminathan was a child of 11 years.

Swaminathan passed his high school examination when he was only 15 years old.

Swaminathan got his B.Sc degree in Zoology from Travancose University. He joined the well known Agricultural College in Coimbatore in the state of Tamil Nadu.

Swaminathan got his B.Sc degree in Agriculture from Coimbatore Agricultural College, Madras University. He joined the Indian Agricultural Research Institute, New Delhi as a post graduate student in genetics and plant breeding.

Swaminathan obtained his postgraduate degree (M.Sc) in from the India Agricultural Institute and was awarded a UNESCO Fellowship to study in Holland

Swaminathan completed his research on potato at the Wageningen Agricultural University from the Netherlands. Swaminathan went to Great Britain and joined the Plant Breeding Institute of Cambridge University.

Swaminathan got Ph.D from the School of Agriculture University of Cambridge U.K. He was offered a postdoctoral research associateship by the University of Wisconsin U.S.A. to set up a potato Research Station at Sturgeon Bay in Lake Michigan.

Swaminathan's period of associateship in the University of Wisconsin ended in the month of December 1953.

Swaminathan came back to India in the month of January 1954 and was appointed as the Assistant Botanist in the Central Rice Research Institute in Cutlack in the state of Orissa. In the same year Swaminathan was selected for the post of Assistant

Cytogeneticist at the Botany Division of the Indian Agricultural Research Institute (IARI) in New Delhi and he remained with IARI upto 1972. He was an excellent teacher and researcher.

Swaminathan was married to Mina Swaminathan on 11th April, 1955. Mina is the daughter of Ms. Boothlingum I.C.S. and she has a Master's degree in Economics from the University of Cambridge.

Swaminthan was appointed as the Fellow of the Indian Academy of Sciences.

1958 Swaminathan delivered a keynote address at the Second Peaceful Uses of Atomic Energy Conference in Geneva.

1960 Swaminathan initiated the dwarf wheat breeding programme

Swaminathan was awarded Padma Shri by the President of India.

In this year Indian wheat production went up from 12 million to 17 million tones. Thus Swaminathan

was successful in bringing about wheat revolution known as “Green Revolution” and the Government of India issued a special stamp in 1968 to mark the beginning of the “Wheat Revolution”.

Norman Borlaug gave credit to Swaminathan for recognizing the value of Mexican dwarfs which brought about “Green Revolution” in India.

Because of Swaminathan’s research and efforts, India officially declared herself self- sufficient in food production. Swaminathan got “The Raman Magsaysay Award” for Community Leadership.

Swaminathan was appointed as the Director General of the Indian Council of Agricultural research (ICAR) New Delhi and he introduced the concept named by him as “technicracy”, i.e. technical literacy. He was awarded Padam Bhushan by the President of India.

1975 Swaminathan initiated the Agricultural Research Service (ARS) in ICAR.

1979 Swaminathan was appointed the Principal Secretary to the Government of India, Ministry of Agriculture and Irrigation. He received the Borlaug Award for his contribution to agriculture and food security.

1980 Swaminathan was appointed the Acting Deputy Chairman, Planning Commission, Government of India (April-June 1980). In June 1980 he was appointed as the member (Agriculture, Rural Development, Science and Education) Planning Commission, Government of India (June 1980 – April 1982).

1981 Swaminathan was appointed as Chairman of the Science Advisory Committee to the Cabinet of India.

Swaminathan was appointed the Director General, International Rice Institute (IRRI) Los Banos, Philippines (April 1982 – January 1988). In this capacity he was helpful in establishing a chain of natural rice research institutions in fourteen developing countries.

Swaminathan received the Bennett Commonwealth Prize of the Royal Society of Arts for contributions to household nutrition security.

Swaminathan got the first Award for serving the cause of women in development.

Swaminathan was awarded “Krishi Ratna” Award for serving the farming community by the Bharat Krishak Samaj/ World agriculture Fair Memorial Trust society. He also received the Albert Einstein World Science Award.

On October 6, 1987, Dr. Swaminathan received the First World Food Prize, which is considered as the “equivalent of a Nobel Prize in the field of food and agriculture”.

Swaminathan founded the M.S. Swaminathan Research Foundation at Chennai the prize money he received on getting the First World Food Prize.

Swaminathan was awarded Padam Vibushan by the President of India.

Swaminathan was awarded the Commandeur of the order of the Golden Ark of the Netherlands to honour his special services to the conservation of the flora and fauna in the world.

Swaminathan got the Tyler Prize for Environmental Achievement in recognition of his life-long contribution to increasing biological diversity. He was also awarded the Honda Prize of the Honda Foundation, Tokyo, Japan for outstanding services to the development of eco-technologies in the field of agriculture.

Swaminathan was awarded UNEP-Sasakawa Environment Prize 1994 for outstanding global contribution to the management and protection of the environment and to conservation and sustainable development.

Swaminathan was awarded Global Environmental Leadership Award 1995 by the Climate Institute, Washington D.C. USA for encouraging village level responses to environmental issues.

Swaminathan was awarded the Highest Award for International Cooperation on Environment and Development by China. He received the Order du Merite Agricola of France, which was created in 1883.

Swaminathan was awarded the Henry Show Medal by the Board of Trustees of the Missouri Botanical Garden, USA in consideration of important service to humanity through emphasis on Sustainability in Agriculture.

Swaminathan received the VOLVO Environment Prize 1999 of Sweden/USA for his achievement of Sweden / USA for his achievements as a plant breeder and administrator. He also got the 1999 UNESCO Gandhi Gold Medal for his outstanding work in extending the benefits of biotechnology to marginalized and poverty stricken populations in developing countries.

Swaminathan got the Indira Gandhi Prize for Peace, Disarmament and Development. He also got the prestigious Franklin D. Roosevelt Four Freedoms Award for 2000 by the Franklin and Eleanor Roosevelt Institute

"for brilliant leadership that has established a goal for the new millennium - a hunger free world."

2002 Swaminathan was elected President of the Pugwash Conferences on Science and World Affairs, an organization devoted to the cause of promoting peace and human security.

Suggested readings for those who want to learn more about the life, achievements and personality of Dr. M. S. Swaminathan.

- M.S. Swaminathan - Biography by Gita Gopal Krishnan.
- M.S. Swaminathan - Article published in A Touch of Greatness - pages 160 to 172.
- Citation read by Dr. Jose V. Abuva, Trustee. Roman Magsay Award Foundation, at the time of Award ceremony held in september, 1971 at Manila "THE 1971 RAMON MAGSAYSAY AWARD FOR COMMUNITY LEADERSHIP."
- Biographical Sketch of M.S. Swaminathan by Ramanujam S, Siddiq EA, Chopra V.L., Sinha SK.eds (1980) Science and Agriculture.

Commercial Printers, New Delhi - India, pages 1 to 16.

- Prof. M.S. Swaminathan, Father of Economic Ecology and Sustainable Food Security: Biography by Dr. R.D. Iyer.
- Personal Perspectives - " A Better Harvest", M.S. Swaminathan in Conversation with Tushar Shah. Pages 96 to 105 in Management Review, December 2000.
- M.S. Swaminathan: Transforming India From Begging Bowl To Bread basket - by Ajoy Sen published under Technopreneur in Asian Entrepreneur - January 2001. Pages 64-65.
- M.S. Swaminathan, The father of The Green Revolution, Time, August 23 - August 30, 1999.
- Scientist and Humanist – R.D. Iyer.