TRIBUTE

My Memories of Professor M. S. Swaminathan

Gurdev S. Khush*

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My association with Professor M. S. Swaminathan goes back more than six decades. I first met him at the 11th International Congress of Genetics in The Hague in September 1963. I was a post-doctoral fellow at the University of California, Davis. He was the Head of the Division of Genetics at the Indian Agricultural Research Institute, New Delhi, and already a well-known scientist. I approached him hesitantly, but he put me at ease with his welcoming demeanour. I had read his papers on Solanum species, which include cultivated potato. I asked him a few questions about polyploidy in genus Solanum and we had a nice conversation.

A Revered Geneticist

I joined the International Rice Research Institute (IRRI) in 1967 as a plant breeder and met him at several international conferences. It was when he joined the IRRI as Director General in 1982 that our close association began. Since we were both trained as geneticists, we had many discussions about the status of rice genetics, which was much behind other important food crops such as wheat, maize, and tomatoes. He asked me to organise an International Rice Genetics Symposium to coincide with the 25th anniversary of the IRRI in 1985.

I organised the First International Rice Genetics Symposium at the IRRI from May 27 to 31, 1985. It was attended by 200 rice scientists from 32 countries. Swaminathan led the discussions among participants and emphasised the need to enhance international collaboration in rice genetics. He also proposed the establishment of a formal organisation for this purpose. The International Rice Genetics Cooperative (IRGC) was established with Swaminathan as president. I was nominated secretary. The main purpose of the IRGC was to promote collaboration among rice geneticists internationally. Genetic linkage maps of rice were poor and there was lack of agreement on the numbering of rice chromosomes. After a lot of research

* Agronomist, geneticist, and winner of the World Food Prize in 1996, gurdev@khush.org

and correspondence between rice geneticists, the genetic linkage maps were improved and an agreed chromosome numbering system was evolved. This gave an impetus to research on molecular and cellular biology of rice. Since then, international rice genetics symposia have been held every five years. Whereas most of the papers during the first rice genetics symposium were on Mendelian genetics, during the subsequent symposia most of the papers have been on molecular genetics.

A Champion of Rice and Wheat Improvement

Swaminathan requested Dr. Norman E. Borlaug to send seeds of many early-generation experimental breeding lines of wheat, which he distributed to several research institutes and agricultural universities in the country. These introduced materials were used by breeders to develop numerous improved wheat varieties that suited local conditions – which made India self-sufficient in food grain.

Similarly, he facilitated the import of seeds of IR8 and many early generation rice-breeding lines from IRRI, which were used by Indian rice breeders to develop locally adapted varieties. Later, seeds of IR36 and IR64 were imported. As a result, India achieved a major jump in rice production. He encouraged his students at IARI to initiate a basmati rice improvement programme. Upon joining IRRI, he asked me to collaborate with Dr E. A. Siddiq and Dr V. P. Singh in the ongoing basmati breeding programme. I invited Dr Singh to come to IRRI as a postdoctoral fellow to work with me. V. P. Singh played a major role in the development of Basmati 1121, which is now the most widely grown variety in the country and the most sought-after basmati rice in international trade.

At IRRI, Swaminathan would visit experimental rice plots early in the morning before any of us scientists came to the office. He used to have discussions with scientists in the field, and I often invited him to look at my breeding material. Six varieties, namely, IR60, IR62, IR64, IR65, IR66, and IR68, were released by IRRI during his tenure as the Director General. IR64 became the most widely grown variety of rice in the world. It has been grown on more than 10 million hectares of rice land in the world annually.

His Concern for Women Rice Farmers

Most of the rice in Asia is grown by women farmers. They raise their families, and they do the backbreaking work of transplanting, harvesting, and threshing rice, and they are paid low wages. To discuss the role of women-farmers in rice agriculture, Swaminathan organised the first-ever symposium on "Women in Rice Farming" at the IRRI. Problems faced by women rice farmers were highlighted by the participants and recommendations for their empowerment were put forward.[1]

[1] This issue is dealt with further by the contribution of Thelma Paris in this Tribute.

His Love for Farmers

On numerous occasions during conferences and symposia, Swaminathan would highlight the role of farmers and fishermen in putting food on tables. His initiative called the "Lab to Land" programme sought to transfer agricultural technologies for farmers to benefit from the latest research breakthroughs. His every effort was to promote policies beneficial to farming communities. His recommendation as the Chairman of the Farmers' Commission that the Government ensure that the Minimum Support Price of a commodity be fixed at a level 50 per cent above the full opportunity cost of production (Cost C2) was revolutionary. He paid particular tribute to the farmers of Punjab and Haryana for their role in ushering in the Green Revolution.

My last interaction with Swaminathan was in 2019. In 2018 I wrote my autobiography, *A Rice Breeder's Odyssey*. I requested him to write a Foreword for my book and he readily agreed. I sent him a copy of the book and he congratulated me for having done a fine job. He also invited me to come to Chennai and give a seminar about the book at the M. S. Swaminathan Research Foundation. I felt honoured by his invitation and planned a visit to Chennai in the last week of March 2020. Unfortunately, due to the outbreak of Covid-19, all international flights were cancelled on March 22. I was able to get a seat on the last flight out of Delhi. I was thus deprived of the opportunity to visit him. It was my loss.

I shall cherish my memories of the inspiring and visionary leadership of M. S. Swaminathan and of the support he gave me throughout my scientific career.

M. S. Swaminathan and G. S. Khush at IRRI