"Conserve agrobiodiversity to ensure sustainable food, health and economic security in an era of climate change"

Professor M. S. Swaminathan

Known as the father of the Green Revolution in India, Professor M. S. Swaminathan is a strong proponent of the effective use of agrobiodiversity for food, nutrition and environmental security. In conversation with Sonal Dsouza of Bioversity International, he shared his views and concerns on issues related to agrobiodiversity.

Q In your view, is climate change a real threat to agrobiodiversity?

Climate change presents a huge threat to biodiversity. Already this is evident from the damage occurring to coral reefs and rainforest. But agrobiodiversity too is at risk from many threats, including higher temperatures, more frequent drought and a rise in sea level.

Q What is the expected impact of climate change on global agrobiodiversity and its consequence on global food security?

Climate change is likely to affect the production of crops like wheat and rice adversely in South Asia mainly due to reduction in crop duration. Sub-Saharan Africa will also be affected. Northern latitudes like Canada and Siberia may however benefit from a rise in mean temperature because of an increase in the duration of the crop. There will be considerable price volatility due to gaps between demand and supply and this will affect global food security.

Q How long have you worked on issues related to agrobiodiversity?

I have been working in the area of agrobiodiversity since 1947, beginning with tuber bearing and non-tuber bearing crops. Over the years, I have seen a growth in interest in the conservation of agrobiodiversity through national and global genebanks including the more recent Svalbald Global Seed Vault. There is now a growing recognition that agrobiodiversity is the feedstock for sustainable food security as well as meaningful biotechnology.

Q Do you think that governments should consider the use of agrobiodiversity as an important strategy for climate change adaptation and mitigation?

I believe that governments and scientific institutions should make use of agrobiodiversity for both adaptation and mitigation in relation to climate change. A rise in sea levels can be managed provided mangroves and other halophytes are conserved along the coast. Mangroves serve as bioshields against coastal storms.

Q Which regions in India are at the highest risk for biodiversity loss due to climate change?

The areas of India that are threatened the most from the point of view of biodiversity loss are the Eastern Himalayan region as well as Western and Eastern Ghats. These areas are both agrobiodiversity rich and wild biodiversity hotspots. Much of the loss is occurring because of habitat destruction, changes in cropping patterns and invasive alien species like Lantana and Parthenium.

Q What could be the integrated approach to conserve agrobiodiversity and what role can women play in this regard?

We should have an integrated approach to the conservation of agrobiodiversity that includes in situ and on-farm conservation as well as ex situ conservation in genebanks. Women do play a key role in agrobiodiversity conservation particularly at the farm level. There are now over 15,000 varieties of rice available in the world and seeds of over 100,000 accessions are preserved in the genebank of IRRI. Such an amount of diversity is largely due to efforts of women who conserve genetic variability based on culinary, cultural and curative diversity.

Q Is traditional knowledge important for agrobiodiversity conservation? If so, what actions can be taken to document and use it?

Traditional knowledge is key to agrobiodiversity conservation. It is traditional knowledge that provides guidance in the choice of parental material when breeding new crop varieties. We should document traditional knowledge and also ensure that efforts of local people are recognised and rewarded. India has taken the first step in this direction by establishing a Protection of Plant Variety and Farmers' Rights Authority, thereby giving equal recognition to both breeders and farmers. It is time that the International Union for the Protection of New Varieties of Crops (UPOV) becomes the union for the protection of both breeders' and farmers' rights.

Q Who could be the major stakeholders in agrobiodiversity conservation at the farm level? How can communities be helped to sustain such initiations?

The stakeholders in the area of agrobiodiversity conservation are largely farmers and consumers as well as those practising different forms of traditional medicine like Ayurveda, Siddha and Unani. Scientists are also important stakeholders since their ability to make new combinations of characters will depend upon the availability of agrobiodiversity. Also, genetic homogeneity enhances genetic vulnerability to pests and diseases. Therefore, diversity is the basis of production stability. Communities should become agrobiodiversity literate. Women and men in villages should be trained as agrobiodiversity conservers as is being done by the M S Swaminathan Research Foundation.

Q What practical approaches should we adopt to involve farmers in agrobiodiversity conservation?

Farmers require recognition of their efforts for in situ conservation. They should also be provided with the necessary facilities like seed storage, cold storage etc.

Q What role do you foresee for the Government and NGOs for on-farm conservation of our genetic resources?

Government and NGOs can play a very important role by spreading agrobiodiversity literacy and recognising conservation efforts through genome saviour awards.

Q How can different countries come together to help conserve useful agrobiodiversity?

International cooperation will help to conserve a representative sample of existing genetic variability for future generations.

Q Finally, what would be your one line message to the participants of this Congress?

My message is **"Conserve agrobiodiversity to ensure sustainable food, health and economic security in an era of climate change".**