

## FOCUS

# Sustained efforts to promote traditional crops are yielding fruit

The MS Swaminathan Research Foundation has been engaged in a series of interventions in Kerala aimed at increasing agricultural yield, particularly of native crops, improving the lives of people in rural and tribal areas, and also promoting afforestation and greening programmes with the focus on Rare, Endemic and Threatened species

## Conserving vanishing rice varieties

A report from the MS Swaminathan Research Foundation says MSSRF adopted a three-pronged strategy for the conservation of rice landraces (groups of lineages that originated and evolved in the field over millennia through selective breeding by generations of farmers) and the rice agro-ecosystem – it involved bridging the yield gap of native crop varieties through a participatory approach and technology transfer; promoting innovative farming methods to make rice a profitable crop; and incentivising cultivation and protecting the rights of custodian farmers.

A science-based approach was taken to increase yield through purified seed production, good agricultural practices and enabling access to quality inputs, so that the competitive advantage of these varieties in relation to modern ones improved. Participatory yield enhancement trials and development of an organic package of practices for traditional rice varieties helped farmers increase productivity by up to 20 per cent. Establishment of 30 seed villages, participatory seed purification and seed exchange activities resulted in access to and availability of quality seeds, and more than 11000 farmers received seeds of traditional rice varieties. The interventions proved that rice can be cultivated for a reason-

able profit when technology is adopted properly.

The new momentum spurred local government bodies to incentivise growing more traditional rice varieties. The Kerala State Agriculture Department also introduced a subsidy and financial incentive for cultivation of traditional rice varieties. To secure the rights of tribal farmers over traditional rice varieties, MSSRF facilitated the Genome Saviour Award for custodian farmers who conserved 21 varieties. Now farmers take pride in conserving specialty rice varieties such as Gandhakasala and Jeerakasala. Another outcome of the Foundation's initiative is Seed Care, a recognised network of custodian farmers in Kerala's Malabar Region.

## Promoting tuber crops

The Malabar Region also has marked diversity in tuber crops, specifically yams and taros. These crops are an important source of starch and are rich in minerals. Tribal communities are dependent on these crops during seasonal or acute food scarcity. However, many of the traditional cultivars and wild species/ varieties of these crops are neglected due to changing food preferences.

MSSRF identified exclusive germplasm for wild species of tuber crops for ex-situ conservation. Many of these were planted in backyard gardens. The benefits of growing and eating a variety of food groups were



L-R: The Kattunaikkan Tribe now grow food crops in their backyard gardens; planting rare endemic and threatened plant species; and distributing seedlings to school children.

explained to the families and efforts were made to improve the farming skills of the tribal communities in Wayanad. More than 3000 tribal families now manage backyard gardens with diverse tuber crop varieties. Twenty-three community conservation plots have been set up in different parts of Kerala.

The most significant outcome is that the Kattunaikkan – one of the five primitive tribes in Kerala – now grow food crops in their backyard gardens. This community had no prior experience in farming and were largely dependent on forest produce and wild roots for daily food. This development was particularly significant during the COVID-19 pandemic when lockdowns limited accessibility to markets and halted livelihood activities. Inspired by MSSRF's tuber crop programme, many institutions such as the State Agricultural Department, Kerala Biodiversity Board and various district-level bodies came forward to conserve and promote cultivation of tuber crops.



## Ensuring diet diversity

Wayanad was also the beneficiary of an initiative to provide access to a wider variety of nutritious food to tribal communities. The district has the highest concentration of tribal population in Kerala – 17.4 per cent (Census, 2011). Agrarian tribes like the Kurichiya and Kuruma cultivate traditional varieties of rice, roots and tubers in small landholdings, while the landless tribes (Paniya and Adiyas) gather wild edibles from their surroundings or forest peripheries.

Tribal and rural populations, particularly women and children, face multiple nutrition and health problems due to poverty and limited access to markets. Also, the deteriorating forest environment has led to insufficient diet diversity. The communities tend to eat leafy greens, vegetables, pulses, legumes and fruits in lesser quantities than the recommended dietary intake, which results in poor nutrition.

Availability of different foods at the household level is an essential step towards better nutrition for poor communities. Kerala faces two challenges from the food and nutrition security standpoint: the erosion of biodiversity from homesteads and farmlands, and declining area under food crops. Therefore, MSSRF designed a customised 'nutri-garden' intervention to ensure sufficient supply of the recommended dietary components, as well as eggs and meat with backyard poultry where possible, among rural and tribal communities in Wayanad District.

Since 2005, over 10000 nutri-gardens were set up, with combinations of crops, poultry and fish culture. An impact study showed that because of the home gardens, families regularly eat more nutritious food, including leafy vegetables, fruits, roots and tubers. Many *panchayati raj* institutions in Wayanad came forward to promote such gardens.

The communities now depend less on the local markets for food supply, and their menus have become more varied, since women have begun using different vegetables from their gardens. Women also take decisions on food choices rather than depend on what men purchase from the market. Awareness around better nutrition has encouraged the rural communities to be more conscious about balanced diets for their families too.

## Preserving rare plant species

On another front, the Community Agro-biodiversity Centre has focussed on conserving Rare Endemic and Threatened (RET) plant species of the Western Ghats. A study on the flora of Wayanad recorded 2032 flowering plant species including 32 red-listed and 550 endemic species. Fellowship programmes were created to identify the natural population, collection, multiplication, and conservation of 190 RET plant species.

Many ex-situ conservation strategies for restoration of RET plants, such as promotion of vine-huts, biodiversity parks, herbal gardens, 'zodiac forest', tree groves in plantations and farmlands, greening campuses, augmenting sacred groves and natural forest areas, and mini botanic gardens were adopted in a participatory manner.

The M S Swaminathan Botanical Garden (MSSBG) was established on eight hectares of land as a repository of live plant species. It now has over 1300 Plant Genetic Resources (PGR) of food, nutrition, medicinal, ecological and economic value. It is also home to much faunal diversity, including 126 bird species – the richest avian diversity recorded in the district – 93 species of butterflies, and 23 species of frogs.



Clockwise from bottom left: A farmer with rice seeds; *Vateria macrocarpa*, a critically endangered tree species; *Bauhinia phenicia*, a climbing shrub; the *Knoma attenuata* fruit; and RET plant fruits.

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Other than MSSBG, 15 small ex-SITU conservation gardens such as biodiversity parks were established across Kerala. The augmentation of nine sacred groves with RET and sacred plants has ensured long-term conservation of these species. The interventions were widely recognised not only in Kerala, but also across India. Over 2.75 lakh seedlings of 190 RET species were produced and distributed to individuals and institutions across India.

As part of strengthening the provisions of the Convention on Biological Diversity (CBD) and The Biological Diversity Act, 2002, MSSRF facilitated the preparation of People's Biodiversity Registers (PBR) for four panchayats in Wayanad District in 2001-02 using a simplified version of the format developed

by a pan-India team. This was taken up by the National Biodiversity Authority (NBA) as base material to design the format of PBRs across the country.

Awareness on the conservation of RET plants increased among communities. Several institutions and individuals decided to green campuses and avenues with RET plants. For example, Bangalore International Airport and Infosys started afforestation programmes with RET plant species raised at the MSSRF nursery, and the MSSRF team provided the necessary technical support. It is noted that many species having a very narrow distribution in their natural habitats are expanding to wider geographical areas. ■

*(This article is based on inputs received from MSSRF.)*