Multiple states

# Farm Fresh Blueprint

*Improving agricultural practices enhances nutritive value of harvests.*

Ajay Parida and Bhavani R.V.

In India, over a quarter of the rural population still lives below the poverty line.[1] Not even half of India's rural population can afford to spend on adequate nutrition because they are struggling to survive. While the country ranks 130 on the Human Development Index 2015, when it comes to counting the undernourished, India ranks second in the world despite having buffer stocks of foodgrains.[2,3]

Tribal communities are in a worse situation, and tribal farm families in particular are the worst affected. They are not only excluded from the mainstream agricultural systems, but even their land, water, biodiversity and ecosystems have been extensively degraded.

They usually operate small farm holdings in challenging ecosystems. Fragmentation and pressure on land have led to multiplication of even these small holdings. Tribal farm families also have a tradition of shifting cultivation. They cultivate a particular plot of land temporarily before moving on to another. This practice often depletes essential nutrients from the soil. Therefore, it is imperative

to make extra efforts to ensure that agriculture meets their food and nutrition needs.

Cognizant of this challenging situation, the M.S. Swaminathan Research Foundation (MSSRF), an NGO is working with rural and tribal communities in different parts of India to enable them pursue sustainable livelihoods and food security. The NGO focuses on improving agricultural practices to enhance food production and productivity. It also helps build an environment, wherein a community can access nutritious food easily.

Mapping of such large-scale requirements demands clear strategies, which MSSRF has developed over time. Besides improving agricultural practices, it stresses that 'more crop per drop' can be achieved by using water efficiently. Another strategy of the organization includes addressing post-harvest processing and storage.

MSSRF is active in rural and tribal areas of Andhra Pradesh, Maharashtra, Odisha, Puducherry, Tamil Nadu and Kerala. The

Women farmers handling tamarind at Koraput: Enhancing incomes (Source: MSSRF)

sites in Odisha (Koraput), Tamil Nadu (Kolli Hills) and Kerala (Wayanad) are in areas dominated by the tribal community, and are also agro-biodiversity rich and hotspots of eroding genetic resources for food and agriculture. Partnering with tribal communities, MSSRF has been facilitating the development of agro-biodiversity conservation systems and mechanisms to secure the economic interests of the community around them. It also ensures that such efforts are sustained.

MSSRF tries to manage natural resources at farm and landscape levels in such a way that producing food does not end up clashing with how we use our ecosystem or how we conserve it. This approach encourages sustainable farming systems and also bolsters food security.

Another strategy it uses is to promote conservation of biodiversity. This helps to provide the genetic material necessary for crop cultivation, breeding and improvement. A major challenge is to conserve agro-biodiversity even as we draw from it to enhance productivity and profit in the small-scale subsistence agriculture sector.

MSSRF has successfully demonstrated this through its integrated 4C approach of 'Conservation-Cultivation-Consumption-Commerce'. It partners with tribal farm families, who are not just custodians, but actively involved in the value chain.

Conservation includes enhanced and sustainable use of biodiversity, which comprises both on-site conservation on farms, and off-site in gene banks. Cultivation focuses on low external inputs and sustainable agriculture practices.

Consumption covers food security and nutrition. It promotes traditional food habits, including use of underutilized crops, tubers and wild edible foods. Commerce creates an economic stake in conservation by addressing the cause of conservation and livelihood security through Self-Help Groups and producer companies.

Today, multiple sectors compete for access to scarce water resources. Efficient water management in agriculture can help us reduce pressure on water resources. So it is critical to harvest, conserve and recycle all the water available for agriculture. MSSRF

has introduced the concept of bio-industrial watershed to deal with the issues of ecology, economics, employment and equity in an all-inclusive manner. The thrust of bio-industrial watershed is on community rather than physical and natural resources alone.

In an integrated farming system model, production involves many biological and physical processes. Farming practices that maximize production are adopted. The cropping system uses all available resources optimally and in a sustainable way. The approach also incorporates a judicious mix of agricultural enterprises like dairy, poultry, piggery, fishery and sericulture, depending upon what suits the given agro-climatic conditions. All this adds to the prosperity of small farmers.

Besides, MSSRF uses Information and Communication Technologies (ICTs) to provide need-based information to enhance skills and capacity of tribal farm families. Such access to ICTs allows farmers to obtain information on agricultural inputs and technologies, weather, markets and prices, as and when needed. Under the Leveraging Agriculture for Nutrition in South Asia (LANSA) research programme, MSSRF is now demonstrating how feasible it is for poor, rural and tribal communities to adopt integrated farming systems in order to address their nutrition needs.

A Farming System for Nutrition study is in progress in a cluster of villages in Wardha district of Maharashtra and Koraput district of Odisha on these lines. After carefully assessing the nutritional status of the community, it has designed ways to boost food production and provide the community easy access to nutritious food. The blueprint involves promoting naturally growing, bio-fortified crops like drumsticks and orange-fleshed sweet potatoes that are rich in micronutrients, nutrient-rich crops like millets and pulses, and animal source foods. The stress is also on identifying and promoting wild, edible plants, which are rich in micronutrients.

With regard to a farming system for nutrition, the steps include first surveying the area to identify problems like undernutrition and hidden hunger, which is caused by lack of vitamins and minerals in the diet. Second, mainstreaming nutrition criteria in

the design of the farming system; this involves identifying and designing agricultural remedies to address the nutritional maladies. The solutions would include crop-livestock integration; cultivation of nutrient-dense millets and pulses, horticulture and bio-fortified crops; setting up of nutrition gardens of vegetables and fruits; and promotion of poultry, fishery and agro-forestry, based on the existing natural resource base. Third, improving small-farm productivity and profitability to enhance income; and fourth and most important, promoting nutrition awareness to ensure better food intake and nutrition status.

The MSSRF experience shows that pursuing sustainable agriculture with nutrition focus can enhance the nutritive value of harvests in tribal agriculture systems. Improving agricultural practices not only leads to increase in food production and productivity, but also creates an opportunity for the community to access nutritious food locally.

Women farmers in Saheli village, Wardha: Sharing produce from the community nutrition garden (Source: MSSRF)

## Notes

[1] Planning Commission. Press Note on Poverty Estimates, 2011–12, Government of India, Planning Commission July 2013. Press Inf Bur. 2013; 1–10.

[2] United Nations Development Programme (UNDP). Human Development Report 2015 Work for Human Development. 2015.

[3] FAO, IFAD and WFP 2015. The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress. Rome, FAO. Available at: http://www.fao.org/3/a-i4646e.pdf