Leveraging Agriculture for Nutrition through Nutrition Gardens

A large percentage of the population in South Asia is malnourished. The population in the region is largely dependent on agriculture and allied activities. This provides the scope for harnessing the potential of agriculture as a strong driver of nutrition in the region. The M S Swaminathan Research Foundation (MSSRF) undertook a study to examine feasibility of a Farming System for Nutrition (FSN) approach to address malnutrition. The FSN design integrates crop and animal husbandry and **nutrition garden** interventions to mainstream the nutrition dimension in the farming system, to address the nutrition needs of rural families.

A **nutrition garden** may be defined as a home /kitchen garden of natural and bio-fortified fruits and vegetables of high nutritive value. The selection of fruit species and vegetables for nutrition garden is inclusive of the three vegetable groups: green leafy, roots and tubers and other vegetables, with particular attention to addressing micronutrient deficiencies, particularly anaemia and vitamin A. Creating awareness on importance of consuming fruits and vegetables to address micronutrient deficiencies is a related component.

The objective of promoting nutrition garden is to increase availability and access to nutrient dense vegetables and fruits in the household food basket.

Study Locations

The FSN study was undertaken in a core set of seven villages (658 households with population of 2,845) in Koraput district of Odisha and five villages (556 households with population of 2,254) in Wardha district in the Vidarbha region of Maharashtra (see Fig 1).

Fig.1: FSN study locations

The two study intervention locations are agro-ecologically different, but both are characterized by rain-fed farming and high burden of malnutrition.

Baseline survey in both the locations in 2014 revealed high levels of undernutrition and micronutrient deficiency: more than 40 per cent of children under age five were underweight (low weight for age), 35 per cent stunted (low height for age) and 27 per cent wasted (low weight for height); about 33 per cent suffered from vitamin A deficiency; 39 per cent adult men and 47 per cent women were undernourished; high levels of anaemia (>60%) prevailed among children under five, adolescent girls and women (18-45 years). The diet of people in both areas was cereal dominated with consumption of all other food groups being less than the recommended levels (Bhaskar et al. 2017).

Based on the baseline information, crop and nutrition garden interventions were designed in discussion with the community. Three models of nutrition garden were developed: a) Household nutrition garden, b) Community nutrition garden, and c) School nutrition garden.

A seasonal calendar of locally available vegetables was prepared and seed kits/saplings were distributed accordingly (See **Box 1**). Technical support was provided on the design and layout of the garden.

Nutrition awareness programmes focused on highlighting the importance of consuming vegetables and the nutritional deficiencies specific vegetables can help address; recipe demonstrations were also conducted.

Box 1. Seasonal calendar for growing different groups of vegetables in nutrition garden

Fruit / tree species: amla, banana, custard apple, papaya, sapota, mango, moringa (drumstick), lemon, curry leaves, jackfruit, agati, pomegranate

Kharif season:

Leafy vegetables: *amaranthus, *sepu, green sorrel, coriander

Roots and tubers: orange flesh sweet potato (OFSP), yam

Other vegetables: cowpea, cluster bean, ladies finger, bitter gourd, brinjal, bottle gourd, cucumber, ridge gourd, *pumpkin

Rabi season:

Leafy vegetables: *amaranthus, *sepu, green sorrel, coriander, spinach, fenugreek, onion spring, cauliflower, ridge gourd

Roots and tubers: carrot, radish, beet root

Other vegetables: chilly, tomato

*specially promoted in anaemic households

Household Nutrition Garden

a) Household Nutrition Garden

Households with backyard area and with members having incidence of anaemia and vitamin A deficiency were particularly targeted for cultivating nutrient-rich vegetables and fruits. The average area of backyard land ranges from 6.3 to 15.9 sq m in Wardha and 80 to 600 sq m in Koraput. Since a large part of the time is spent in the fields in Wardha, many households preferred to cultivate vegetables on a patch in the field itself and were encouraged to do so. In 2017, 578 of the 658 households across the seven core villages in Koraput had nutrition gardens of fruits and seasonal vegetables using their own seeds saved from the previous cropping season. In Wardha, 219 of the 556 households across five villages had nutrition gardens. Endline survey in late 2017 revealed that both diversity and average intake of all three groups of vegetables by households had increased.

"I am actively involved in backyard nutrition garden where I am growing papaya, moringa as well as other seasonal vegetables and climbers in addition to newly introduced OFSP. My children especially, love to eat OFSP due to the colour; I am also aware that eating vegetables having orange colour flesh is good for eyesight. Earlier, I did not have any idea about importance of consuming carrot and coriander. Now after nutrition awareness programs, we all have started consuming carrot and coriander"

Ghenu Khillo,
Farmer, Atalguda village, Koraput
- Shared at Block level consultation on FSN, Boipariguda, Koraput, 27 April 2017

b) Community Nutrition Garden

Community nutrition gardens (CNG) on common or leased land have been operating in three villages (Saheli, Heti, and Borgoan Gondi) in Wardha since late 2013 and a fourth came up in Susund in 2017. They are maintained by groups of 7-10 women in each village and they share the produce. Surplus produce is given to neighbours, relatives or to the village school for inclusion in the midday meal (MDM).

"From CNG, we harvest the produce two to three times in a week and share it equally. Sometimes we give the surplus after sharing to the local school for their Midday Meal. We all are now getting most of the vegetables from the CNG and are no longer dependent on market. We have also planted some fruit trees *viz*., lemon, sapota, mango, guava, moringa etc. which will provide fruits in coming days. Also during awareness activities, we have learnt some recipes to be prepared from newly introduced leafy and root vegetables such as OFSP and also bottle squash and coriander. My pregnant daughter in law is including and consuming a lot of vegetables in the diet. During the past eight months she has not been troubled by any kind of illness".

Ushatai Kourati,
a CNG member, Borgaon Gondi village, Wardha
-Shared at District level consultation on nutrition garden and nutrition awareness to address malnutrition, Wardha, 23 May 2017

Community Nutrition Garden and sharing of produce

c) School Nutrition Garden

In 2017, there were nutrition gardens on land within the premises of the village school in two villages in Koraput and four villages in Wardha. The gardens help ensure a regular supply of fresh vegetables for inclusion in the midday meal. The gardens are maintained primarily by the MDM cook and village volunteer.

The Nutrition Garden approach and particularly the school and community nutrition gardens are being appreciated. Government officials at block and district level consultations conducted in Wardha and Koraput expressed interest to promote the model in more government schools and ICDS Centres, with technical support from MSSRF.

School children participating in nutrition garden activities

They also serve the educational purpose of making children aware of the nutrient content of different vegetables and the importance of consuming them. This knowledge carried by them to their homes will have positive spill over effect. The involvement of the teachers is another plus and the overall response has been encouraging. ICDS centres in two of the villages in Koraput have also started maintaining nutrition gardens.

Community seed banks were initiated in all five study villages in Wardha in early 2017, to ensure availability of vegetable seeds for the next season. These are managed by groups of women in each village. The women were given training to maintain registers to record the seed collection and distribution. In Koraput, retaining vegetable seeds for next season is a part of the local culture. Exposure visits and trainings on seed collection and safe seed storage were conducted at both the study sites.

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Reference: Bhaskar, A.V.V., Nithya D.J., Raju, S and Bhavani, R.V. 2017 *Establishing integrated agriculture-nutrition programmes to diversify household food and diets in rural India*. Food Security 9: pp 981–999.

Links:

http://lansasouthasia.org/blog/sprouting-school-nutrition-gardens-fsn-study-villages
http://lansasouthasia.org/content/school-children-take-baby-steps-toward-nutrition-awareness
http://lansasouthasia.org/search/node/Block%20Level
http://lansasouthasia.org/content/lansa-workshop-nutrition-gardens-and-nutrition-awareness-address-malnutrition
http://lansasouthasia.org/sites/default/files/FSN%20Booklet-2018-final.pdf

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