



Promoting Homestead Agri-nutri Gardens to Improve Nutrition Outcomes in India

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Abstract: India is committed to end hunger and all forms of malnutrition. To achieve Sustainable Development Goals (SDGs) well in time, India has taken significant steps for providing nutritional support and food security through large-scale programs and schemes such as National Food Security Act, National Rural Livelihoods Mission (NRLM)'s Deendayal Antyodaya Yojna (DAY), Integrated Child Development Services (ICDS), POSHAN Abhiyaan, Public Distribution System (PDS), Mid-Day Meal (MDM) scheme etc. It has been realized that increasing food production alone without adequate access to nutritionally diverse food by poor populations living in rural areas will not eradicate malnutrition. Evidence suggests that establishment of nutrition gardens and rearing small ruminants/livestock at household level must be coupled with targeted behaviour change interventions to promote consumption for improved nutrition outcomes. With guidance from DAY-NRLM, state missions are making substantial strides in developing agri-nutri gardens at SHG households. Presently there are 10.01 million nutri-gardens against 85 million SHG households (11.7%) indicating a large gap in geographical saturation. Besides, quality and sustainability are the prominent issues. To mitigate these issues, certain strategies need immediate efforts such as convergence with key ministries/departments, strengthening human resource capacity as well as farmers, better utilization of funds, timely access and availability of inputs, improved food value chain management systems, use of technology for intensive and more productive farming in smaller spaces, adapting more productive models for landless households and focused nutrition and health education of families for improving the household diet.

I. THE SCOURAGE OF MALNUTRITION

India is signatory to achieving the targets of the World Health Assembly for Nutrition (by 2025) (Global Nutrition Targets, 2019) and the Sustainable Development Goals (SDGs) to end hunger and all forms of malnutrition (by 2030) (SDGs, 2019). Undernutrition leads to long-term and inter-generational effects, particularly cognitive and growth deficits, and reduced immunity to infections. It is the underlying cause of nearly half of all deaths amongst children under five years of age in India (UNICEF, 2017). Household food security is deeply connected to malnutrition in children (Maitra, 2018; Pérez-Escamilla, 2017) and continues to be a matter of grave concern for India. Despite being the second largest producer of foodgrain, India is home to the world's second largest undernourished population (195.9 million children and adults) (Global Hunger Index, 2022). With a Global Hunger Index score considered serious at 29.1 (Global Hunger Index, 2022) and National Family Health Survey (NFHS)-5, India has the world's highest child wasting rate, at 19.3%; and particularly pronounced intra-country disparities in child stunting rate at 35.5% (2019-21). In a rapidly changing nutrition scenario, India carries the triple burden of malnutrition (undernutrition, micro-nutrient deficiencies, and over-nutrition) (NFHS-5, 2019-21). Moreover, culturally most Indian diets are deficient in protein and micro-nutrients as per Comprehensive National Nutrition Survey (CNNS, 2018) conducted on Indian population. To add to the problem, globalization has led to adoption of fast food not just in urban but also in rural, remote and tribal areas (Kaur et al. 2022), which in turn has led to dietary changes and associated consequences on health.

II. EFFORTS FOR IMPROVING FOOD AND NUTRITION SECURITY IN INDIA

In order to achieve the Sustainable Development Goals well in time, India has taken significant steps for providing nutritional support and food security through large-scale programs and schemes. The National Food Security Act (2013) was adopted to ensure access to adequate quantity of quality food through government food security programs. The National Food Security Mission (launched in 2007), was an overwhelming success, achieving the targeted additional production of rice, wheat and pulses. India declared 2018 as National Year for Millets and launched NFSM-Nutri Cereals, a sub scheme under NFSM. Millets viz. Jowar, Bajra and Ragi are also being promoted through PDS across the country to improve nutritional content in the diet. In 2021, India had proposed to United Nations for declaring 2023 as the International Year of Millets (IYOM). Supported by 72 countries, United Nation's General Assembly (UNGA) declared 2023 as International Year of Millets on 5th March, 2021. Through the Integrated Child Development Services (ICDS, 1975), supplementary food and take-home rations is provided to children, pregnant and lactating women; Mid-Day Meal (2007) scheme to provide one meal to school children each day; and the Public Distribution System (PDS, 1997) to provide ration at subsidized rate to the eligible families. Food fortification with

micronutrients within PDS is another step towards strengthening nutrient intake. POSHAN Abhiyaan, 2018, strengthened multi-ministerial convergence to ensure attainment of a malnutrition-free India by 2022.

On the other hand, agricultural policies and interventions in India mainly aim at improving total production and income productivity of farmers. More than 80 per cent farmers are small or marginal farmers. Thus, the increase in overall production and overall income may not be sufficient to deal with the nutritional vulnerabilities in the rural India. It has been realized that increasing food production alone while ignoring nutritional issues; particularly dietary diversity, is not sufficient to eradicate malnutrition in India unless large number of poor populations living in rural areas has adequate access to nutritious and diverse food. The major share of the net income of these poor farmers is spent on meeting family demands for food and clothing. Low income and less purchasing power associated with ignorance leads to low intake of protective, micro-nutrient rich foods (such as fruits, nuts, dairy products) in the diet, increasing vulnerability to diseases and ill health.

III. AGRI-NUTRI GARDENS: MISSING PIECE IN THE PUZZLE?

Research has proven that micronutrient deficiencies can be reduced at low cost by even landless families by adopting nutrition gardens and rearing and consumption of small ruminants/livestock at household level (Ruela et al. 2018; Buckingham 2005). A well-developed 365-days agri-nutri-garden model (coupling crop and livestock rearing) can ensure a daily variety of sufficient, safe, nutritious and diversified food items to fulfil the family's macro- and micro-nutrient requirements throughout the year while providing income when needed (Compendium of Key Advisories on Farm Livelihood Interventions under DAY-NRLM, 2020). Anecdotal evidence suggests that families with a nutrition garden were more food secure than others when food supply chains were disrupted during the COVID-19 lockdowns. Climatic shocks, fear of pandemics, disruption of supply chains due to political conflicts, food price volatility etc. have renewed the global interest in investing in encouraging local food sufficiency, bringing renewed attention towards home garden as a strategy to enhance household food and nutrition security (Sinha, 2018).

IV. ACHIEVING NUTRITION SECURITY THROUGH AGRI-NUTRI GARDENS: THE ROLE OF DAY-NRLM

The Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) (2011) under Ministry of Rural Development (MoRD) aims to uplift people from poverty by focusing on enhancing and expanding the existing livelihood opportunities of the rural poor through multi-faceted strategies viz farm and non-farm livelihood intervention, financial inclusion, institution building and social development etc. Within the DAY-NRLM ecosystem, the thrust area of farm livelihood interventions is on strengthening existing livelihoods while diversifying household livelihoods portfolio, addressing household's food security through sustainable agriculture, livestock rearing and non-timber forest produce (NTFP). Various programs have been launched in this regard, such as the Mahila Kisan Sashaktikaran Pariyojana (MKSP), launched in 2010-11, with a stated objective of securing health and nutrition at the household level for women and children. The program targets women farmers for the promotion of agri-nutri gardens. Other notable mentions are formation of Organic Village Clusters and Integrated Farming Clusters (Ajeevika.gov.in 2022).

To promote agri-nutri gardens, DAY-NRLM's livelihoods team released an advisory/guideline in 2019 describing different models that can be adopted by small/marginal farmers and landless SHG population. The advisory also addresses seasonal cropping patterns, various agronomic practices, livestock rearing models etc. The work involved in preparing a nutri-garden is also included in the MGNREGS guidelines since May 2020 (Compendium of Key Advisories on Farm Livelihood Interventions under DAY-NRLM, 2020). However, the benefits are not being utilized to full potential. Also, sustaining the nutri-gardens round the year in different terrains, to provide sufficient quantity of produce to meet the needs of a family remains a challenge. Evidence also suggests that merely planting a nutrition garden does not lead to improved nutrition. It has an effect only when planting a nutrition garden is associated with health and nutrition education to the family (UN-ESCAP 2009; Marsh 1998; Musotsi et al. 2008). Hence, nutri-garden establishment must be coupled with targeted behaviour change interventions to produce an impact in nutrition behaviours. With the inclusion of the mandate of Food security, Nutrition, Health and WASH (FNHW) through the adoption of the *Dashasutra* strategy (2016), DAY-NRLM has also started focusing on improving health and nutritional status of the SHG families.

Under DAY-NRLM, several initiatives are operational across states for improving household food security in poor households. Odisha's 'Mo Upkari Bagicha' (my beneficial garden), Maharashtra's Reliance Nutrition Garden model, MS Swaminathan Research Foundation (MSSRF) model in Uttar Pradesh, Maharashtra, Tamil Nadu and Odisha, Jharkhand's 'Didi Badi' (home garden) Yojna, Chhattisgarh's CHIRAG Badi and Bihar's Nutri Sensitive Integrated Farming System (NSIFS) are some of the proven models. Using learnings and experiences from these models, along with DAY-NRLM's overarching guidance, state missions are making substantial strides in developing agri-nutri gardens at SHG households.

V. PERFORMANCE OF AGRI-NUTRI GARDENS: CHALLENGES AND PROBABLE SOLUTIONS

However, presently there are 10.01 million agri-nutri gardens against 8 million SHGs and 85 million SHG households (11.7%) were available across country (Farm Livelihoods Monthly Report 2022), indicating a large gap in geographical saturation. Other challenges too plague the nutri-garden initiative, such as, inadequate means and methods to ensure quality of the garden (variety of the produce and sufficiency for family size) and 365-day sustainability of the garden. Besides, there are operational hurdles, such as poor capacities of human resource involved in implementation, inadequate use of technology and weak convergence with line departments.

There is a need to look at multiple strategies to combat these challenges, such as better alignment between key ministries/departments- Agriculture, Horticulture, Animal Husbandry, Rural Development, Women and Child Development, Health, MGNREGS and others, strengthening human resource capacity deployed across levels in concerned ministries/departments to implement policies, better utilization of funds earmarked to reduce food and nutrition related vulnerabilities, investment in building skills and capacities of farmers and providing them hand-holding support especially during the formative period of the garden, ensuring timely access and availability of good quality native seeds and saplings

Box 1

An agri-nutri-garden (interchangeably called nutrition garden/kitchen garden/homestead garden) is a habitat from where families can get seasonal fresh fruits, vegetables and grains. It is usually grown in the back or front yard of a house or a community space (such as school or Anganwadi) with the aim to fulfil the family's requirements of micronutrients such as vitamins and minerals. Wherever acceptable, rearing of poultry and small ruminants is encouraged to provide a protein-rich diet of milk, egg, poultry, fish etc.

on a regular basis, access to climate resilient varieties of seeds, promotion of organic farming, improved food value chain management systems, use of technology for intensive and more productive farming in smaller spaces, adapting more productive models for landless households such as rooftop garden model (Walters & Midden 2018; Safayet et al. 2017), integration of agri-nutri garden concept in the architecture of the houses being built under Pradhan Mantri Awas Yojna, and last but not the least, focussed nutrition and health education of families for improving the household diet. There is a need to suggest strategies to avert climatic shocks in geographies which are prone to natural calamities. Also the guidance for establishing agri-nutri gardens in difficult terrain such as hilly areas would be helpful. Of further assistance to make families food secure would be to promote simple home-based techniques to preserve food while maintaining/enhancing their nutritional quality – such as sprouting, malting, parboiling, canning, drying etc. and encouraging entrepreneurship among youth and women in this area. Development of entrepreneurship among youth by producing nutri-products is an opportunistic area.

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