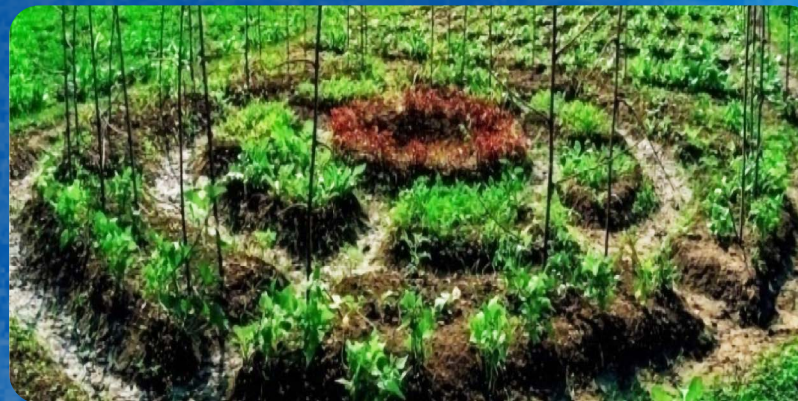




COALITION
Food & Nutrition
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Compendium of Nutri-Garden Interventions in India



COMPENDIUM OF NUTRI-GARDEN INTERVENTIONS IN INDIA



The Coalition for Food and Nutrition Security (CFNS)

We wish to thank all those who worked together to create this knowledge compendium on nutri-garden interventions in India including all featured organizations, CFNS and CTARA team members who are responsible for conceptualizing, collating information, designing and preparation of the document without which this would not have been possible. Rigorous efforts have been made to include as many organizations as much as possible in a considerate time frame.

This is a sincere effort of compilation of nutri-garden interventions through the information provided by the respective organizations.

February 2021

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Photo: Ekjut

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FOREWORD



Dr. Sujeet Ranjan
Executive Director
**The Coalition for Food
and Nutrition Security**

सहीपोषण - देशरोशन

The United Nations has proclaimed 2021 the International Year of Fruits and Vegetables. It creates a unique opportunity to highlight the vital role of fruits and vegetables in human nutrition and food security, as well as food safety.

The Coalition for Food and Nutrition Security (CFNS) is the multi-stakeholder platform to facilitate cross group dialogues between subject matter experts, policy and program leaders and agencies for good governance & good policy to achieve sustainable food and nutrition security.

We are happy to share Nutri-garden compendium, which is the outcome of collective efforts to bring evidences and learnings. Many people have taken part in this extensive journey, in visible and less visible ways, and it is impossible to mention them all.

The major theme of National Nutrition Mission - 'POSHAN Abhiyaan' is convergence, and this compendium tries to show convergence between agriculture, nutrition, livelihood and health. Through this compendium, we are trying to develop the understanding and capacity of all the stakeholders about various nutri-garden models that are available in different parts of the country.

The MoWCD has initiated the PoshanVatika which can meet the important dietary diversity gap by providing different fruits, nuts, herbs and vegetables round the year. I am sure that this compendium will support the awareness program of PoshanVatika and outreach on nutrition, micro-nutri-environments.

We are grateful and would like to thank all those who have shared the programmatic information and every piece of evidences on it. It is valuable, and we have tried to make the best possible use of the information received. If you have any suggestions for improvement for future, please send us a line and we will be glad to hear from you.



Photo: APPI

CHAPTER 1: OVERVIEW

1.1 BACKGROUND

The Sustainable Development Goals (SDGs) replace the Millennium Development Goals (MDGs), which started a global effort in 2000 to tackle the indignity of poverty. Goal 2 of the 2030 Sustainable Development agenda seeks to end hunger and all forms of malnutrition, and double agricultural productivity in the next 15 years. Ensuring this sustainable access to nutritious food universally will require sustainable food production and agricultural practices. As per FAO estimates, year 2017 saw the third consecutive rise in world hunger, with the absolute number of undernourished people i.e. those facing chronic food deprivation increasing to 821 million. One in every 9 people in the world is undernourished. Asia's decreasing trend in undernourishment seems to be slowing down significantly, with 515 million deemed undernourished in 2017¹.

India has addressed the issue of food access to a large extent, however, undernourishment remains a challenge, indicated by the high prevalence of stunting and wasting amongst children under the age of five. Such

undernourishment is on account of complex interactions of several factors like sanitation, genetics, environment and food intake. The Government of India has prioritized strengthening agriculture through measures in irrigation, crop insurance, and improved varieties. The government has also taken critical steps to enhance food security, including through an India-wide targeted public distribution system, a National Nutrition Mission and the National Food Security Act. The Rashtriya Krishi Vikas Yojana, the National Mission on Sustainable Agriculture and many national schemes on horticulture, agricultural technology and livestock are leading the way in improving India's agriculture¹.

Nutrition is the base of human development. It is one of the principal progress indicator of the Sustainable Development Goals (SDGs). Around 35 % of disability-adjusted life-years (DALYs) are lost in children under 5 years of age due to undernutrition. These makes undernutrition the single largest contributor to the global disease burden².

The contribution of undernutrition to the global disease burden is approximately

two to four times that of pneumonia, HIV/AIDS, malaria and tuberculosis in the general population³. One third of the deaths among children are attributed to malnutrition making it an important parameter to gauge the future health of a country. Undernutrition is responsible for the 22 % of disease burden in India⁴. It affects physical and cognitive development of children thereby impacting the demographic dividend of the country. Health impacts due to undernutrition has devastating consequences on the social and economic outcomes of a nation. As per the World Bank report, India losses 2-3 percent of its Gross Domestic Product (GDP) every year due to undernutrition among children in the age group of up to 2 years⁵. The prevalence of stunting, underweight and wasting among the under-5 children in India is 38.4%, 35.8% and 21% respectively (NFHS-2015-16). Around 53.1% women aged 15-49 years and 58.6% children aged 6-59 months

are anaemic in the country. It is a matter of concern that adult obesity and overweight is also increasing in India. 20.6% women and 18.9% men are obese (NFHS-2015-16).

An appropriate diet is critical in the growth and development of children especially in the first two years of life⁶. Nutritional status of an individual is closely related to its food consumption pattern, and the World Health Organization suggested that one of the main strategies to improve nutrition is increased dietary diversity at the household level⁷. Dietary diversity is associated with household or individual food availability and intake of nutrients from different food groups and is an important component of nutritional outcome. Greater emphasis has been given by the scientific community on a balanced diet, laying down dietary guidelines to ensure adequate nutrient intake by individuals. In developing countries dietary diversity is given greater importance specially

¹ <https://in.one.un.org/page/sustainable-development-goals/sdg-2/>, last accessed 13/11/2020

² Black, R. E., Allen, L. H., Caulfeild, L. E., De Onis, M., Ezzati, M., Mathers, C., & Rivera, J. (2008). Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet*, 371:243-60

³ Lopez, A. D., Mathers, C. D., Ezzati, M., Jamison, D. T., & Murray, C. J. (2006). Global and regional burden of disease and risk factors, 2001: Systematic analysis of population health data. *Lancet*, 367:1747-57

⁴ IFPRI. (2017). National policies and strategic plans tackle undernutrition india - review. IFPRI

⁵ Gragnolati, M., Bredenkamp, C., Shekar, M., Gupta, M. D., & Lee, Y. K. (2006). India's Undernourished Children. *The World Bank*

⁶ Aggarwal A, Verma S, Faridi MMA, Dayachand. Complementary feeding reasons for inappropriateness in timing, quantity and consistency. *Indian J Pediatr*. 2008; 75:49-53

⁷ WHO (2006) Adolescent Nutrition: A Review of the Situation in Selected South-East Asian Countries. SEA-NUT-163. Regional Office for South East Asia, New Delhi

⁸ WHO/FAO (1996) Preparation and Use of Food-Based Dietary Guidelines. WHO/NUT/96.6. Nutrition Programme, World Health Organization, Geneva

to address nutritional deficiencies⁸ and there is widespread recognition that low dietary diversity is associated with chronic nutritional deficiencies⁹. Studies have proved that low dietary diversity has negative consequences for health, immunity, mental health and reproductive and social capacities¹⁰. For the Indian context, Menon et al. (2015) used nationally representative data (National Family Health Survey 3, 2005–06) to show that dietary diversity of children aged 6–23 months is “strongly and significantly associated with stunting and underweight¹¹. As per NFHS -4 data in case of India, with regards to the seven food groups in children in the age group of 6-59 months, the consumption was the highest for grain, roots, and tubers (74%), followed by dairy products (55%), other fruits and vegetables (37%), Vitamin A rich fruits and vegetables (29%), and the lowest for eggs (14%), legumes and nuts (13%), and flesh foods (10%) in the last 24 hours¹².

The primary aim of the Nutri-garden compendium is to generate an awareness and knowledge on various modalities of nutri-garden and its role in improving food security at various levels (community/ household) by highlighting the extensive works done on this field by some of the organizations/ institutions across the country and highlight individual case stories. Ministry of Rural Development (MoRD) in its directive dated 4th May 2020 has already issued guidelines for promoting Nutri-garden for individual beneficiaries and community in convergence with state schemes and National Rural Livelihood Mission (NRLM)¹³.

Key points from the directives includes permissible works listed for individual and community nutri-garden under Mahatma Gandhi NREGS that will help establish nutri-garden for individuals and communities, prioritizing beneficiaries of the ICDS Programme of the Department of Women and Child Development for

⁸ Ruel, M. T. (2003) Operationalizing dietary diversity: a review of measurement issues and research priorities. *Journal of Nutrition* 133, 3911S–3925S

¹⁰ Underwood, B. A. (1998) From research to global reality: the micronutrient story. *Journal of Nutrition* 128, 145–151

¹¹ Menon, P., A. Bamezai, A. Subandoro, M. A. Ayoya, and V. Aguayo (2015). Age-Appropriate Infant and Young Child Feeding Practices are Associated with Child Nutrition in India: Insights from Nationally Representative Data. *Maternal and Child Nutrition* 11, 73–87

¹² Agrawal, S., Kim, R., Gausman, J., Sharma, S., Sankar, R., Joe, W., & Subramanian, S. V. (2019). Socio-economic patterning of food consumption and dietary diversity among Indian children: evidence from NFHS-4. *European journal of clinical nutrition*, 1

¹³ https://www.nrega.nic.in/netnrega/WriteReaddata/Circulars/2417Nutri_garden.pdf

nutri-garden related activities, necessary dovetailing with related departments for assured supply of vegetables seeds, poultry etc., ensuring necessary convergent planning for effective implementation of nutritional gardens, right selection of perennial plant species under horticulture plantations providing high nutrition and medicinal value for eradicating malnutrition, supporting nutrition garden by leveraging SHGs, community nutri gardens in government run schools including residential schools, anganwadi centres, Gram Panchayat land etc. Also, Ministry of women and Child Development has issued guidelines for leveraging nutrition garden at the anganwadi center during the POSHAN Maah 2020¹⁴.

The nutri-garden compendium is the third initiative by the Coalition for Food and Nutrition Security in generating awareness and knowledge on various

aspects of nutri-garden in the country. On 11th August¹⁵ and 5th September 2020, the Coalition for Food and Nutrition Security organized two webinars pertaining to nutri-garden in collaboration with the Centre for Technology Alternatives in Rural Areas (CTARA), IIT Bombay and Asia - Pacific Association of Agricultural Research Institutions (APAARI). The webinars were found to be a beginning in scaling up of the ideas of the Nutri-garden in convergence with the MGNREGA. The need of having a menu of designs and its availability to the larger population was also emphasized in the webinars. The webinars iterated the idea of the nutri-garden compendium, so that it can be shared with several key stakeholders e.g. relevant ministries, various state governments, CSOs etc. so that there is no need to reinvent the wheel and the ideas can be adapted easily.

¹⁴ WCD Secretary letter to All chief Secretaries, dated – 28th august 2020

¹⁵ <http://www.nutritioncoalition.org.in/webinar-nutri-garden/>

1.2 NUTRI-GARDEN

Nutri-garden is a multidimensional effort to reduce malnutrition. In nutrition context, a nutri-garden is a habitat from which we get nutritionally rich fruits, vegetables and food from livestock sources. Nutri-garden is the growing of nutrient rich crops in residential houses or in their vicinity or in community areas to meet the dietary requirements of the family all year round. Nutri-garden is also known as nutrition garden, kitchen garden, community nutrition garden etc. Vegetables are grown according to seasons by utilizing the locally available wastes and optimized utilization of household backyard/ front yard or community spaces. Once prepared the primary objective of a well laid out nutri-garden is to fulfil the nutritional requirement of the family in form of carbohydrate, protein, fibre or roughage, fats, vitamins and minerals. Nutri-garden is based on diversity in terms of vegetable, fruit, spices cultivation and livestock rearing (mixed farming approach), and focuses more on soil fertility enhancement in a sustainable organic approach. The efficacy of a nutri-garden can be enhanced via retro-fitting with poultry, goat rearing, dairy, fish etc. The main aim of the retro-fitting of nutri-garden is to provide the households with

nutrients from fish, meat, egg and dairy products in addition to the nutrients from vegetables. It is always the planning and designing of a nutri-garden which is crucial and not the cultivation practices and maintenance as farmers are already familiar with it and knows it better than anyone. Nutrition garden is an indigenous and sustainable solution to malnutrition and can demonstrate desired changes in the nutrition scenario in the country if integrated with the existing government system such as ICDS. It is a low-cost sustainable approach for reducing malnutrition, increasing awareness of vegetable production, increasing working hours and achieving food, nutrition and economic security.

Nutri-garden can be classified into various types depending on the area, location, production etc. Depending on the location, it can be classified into household/ home and community nutri-garden. A household nutri-garden caters primarily to a family and is a planned space located either in household's front yard or backyard space to be utilized either for cultivation. The community nutri-garden is leveraged by a group of peoples like Self Help Groups (SHGs) etc. via utilization of a community

owned land like panchayat lands etc. for cultivation. Nutri-garden can also be classified on the basis of the types of produce, whether it is vegetarian or non-vegetarian. Classification can also be based on the utilization of the produce of the nutri-garden e.g. self-consumption, selling, value addition etc.

Some of the critical components/ elements of a nutri-garden are as follows:

- Permanent green fence/Temporary brushwood, net fence etc.
- Water source (may be waste water of bathing, cooking etc.)
- Focus on Indigenous seeds (If not available, then Improved varieties) (No Hybrid seed)

- Soil amending inputs like compost and other solid/liquid well decomposed/fermented materials
- Cultivation techniques like raised bed, circle bed, big circle bed, containers for vegetable cultivation
- Horticultural Seedlings
- Small area for vegetable seedling production
- Different organic inputs/solution/extract for disease and pest control
- Phaurah, Spade, Weeder, Rose cane, straw, different containers etc.
- Mulching materials
- Livestock like goat, poultry etc.

1.3 SUMMARY OF THE INTERVENTIONS

Around 21 nutri-garden compendiums were received from 15 organizations across India. It was observed from the nutri-garden compendiums collated

from the organizations across India, that most of the nutri-gardens are used for only vegetables along with self-consumption and surplus selling.

Table: 1 - Distribution of number of model types intervened by the organizations across India

	1 Fruit/Seeds/ Vegetable	2 Vegetarian + Poultry	3 Vegetarian + Poultry + Other
A - Only Consumption	6	0	1
B - Selling Surplus	10	2	1
C - Selling Surplus with value addition	1	0	1

Key highlights from the collated nutri-garden interventions received are as follows:

1. Consensus and awareness generation

Consensus and awareness generation among the households/ families of the villages is the first and most important step in a nutri-garden initiative. The initial discussion with the households/ families will cater to their knowledge/ issues relating to nutrition and dietary diversity, land holding, water challenges etc. The Gram Panchayat, Mahila Mandal, POSHAN Panchayat, Self Help Groups, and other influential platforms/ federations can be leveraged in mapping of the interested households along with

consensus and awareness generation in the village. During the initial phase, it is also important to cultivate the sense of ownership among the households/ families engaged, towards the nutri-garden. The awareness generation and engagement with adolescents & their families together with inputs on the need for improving nutrition at a younger age, especially for girls is strategic. It is also required to separately engage the adolescents on health risks & benefits of nutrition to explain the 'whys & how's' of poor health & nutrition.

2. Input Management

Input management of the key stakeholders is a critical component of the nutri-garden initiative. The input

management needs proper study and survey of the region concerned for providing the appropriate support to the households/ families related to water scarcity/ flood, bio-fertilizers, seed kits, gardening tools, technical training from institutions like Krishi Vigyan Kendra (KVK), compost material & seeds, pest management etc. Also, the households/ families need be trained on the Why, Where and How of the nutri-garden along with the planning and designing of the nutri-garden as per the annual household dietary diversity need and space availability. It is also important to provide timely monitoring/ advisory support to the households/ families. The knowledge on retro-fitting and sustainability also needs to be imparted to the households/ families along with education on the need, importance of balanced nutritional diet & should be encouraged to set up their own nutri gardens.

3. Sustainability of nutri-garden

For sustaining and to get the real benefit of the nutri-garden, a strategy for the year-round availability of the vegetables and fruits is critical. The nutri-garden should also include fruit trees for enhancing the dietary diversity and

year-round availability of the nutrient rich foods. Also, for sustainability it is necessary to promote group discussion & demonstrations in the community with implementers of the kitchen garden along with peer-to-peer learning between the beneficiaries. Other safe & sustainable agricultural practices promoted includes intercropping, crop rotation, mulching or direct sowing to improve soil fertility & increase yield, multi-layer cropping. For cost effectiveness and sustainability of the nutri-garden, retro-fitting with poultry, goat rearing, dairy, fish etc. can be leveraged. The nutri-garden plot needs to be divided into several sub beds for growing different vegetables and fruits. Each sub beds can provide vegetables for a day to the family and the family can again sow the seeds in the same bed. This process ensures the year-round availability of vegetables to the families. For the self-consumption of the produce from the kitchen garden there can be innovations like "Tiranga Thali" to promote consumption of a balanced diet through a simple message to households to include foods of three colours- saffron, white and green - in their diet, where white represent mostly carbohydrates (rice/wheat - the flat bread roti/ dairy -

milk or curd), green to represent vitamins and minerals (leafy vegetables) and saffron to represent proteins (e.g. pulses, eggs, meat etc.).

For the sustainable availability, variety and quality of the seeds in the nutri-garden initiative at the household and community level, the exchange of seeds, graft & saplings are encouraged among participants/ beneficiaries. Also, a seed bank can be established at the village or a gram panchayat level housing both traditional and hybrid seeds. The villagers can collaboratively run the seed bank through collection of wide variety of germplasm. The seed bank should house varied and region-specific seeds. The germination testing & physical purity testing can be carried out at the seed bank level.

4. Post-harvest support for sale of surplus generating revenue

For revenue generation and sustainability of household and community nutri-garden, the families can sell the raw or value-added surplus (e.g. Kodo/Kutki bars) in the market. The intervening organization should provide advice on the sale of surplus post-harvest in local markets for additional income. There needs to be crop diversification,

especially for the surplus, so that there is no surplus of only one type of vegetable in the market leading to lower sale price. There can be collaboration with the women & child development and education departments for sale of the surplus to the anganwadi centers and schools for hot cooked meals and mid-day meals respectively. Resource persons or community organizations can also be leveraged for the procurement and training related to the selling of the surplus.

5. Leveraging MGNREGA

MGNREGA can be leveraged for the kitchen garden related activities as it supports the components of the nutri-garden. Farmer can buy the necessary materials for the nutri-garden construction from his MGNREGA daily wage, if he/ she works in self land. Bamboos for construction can be sourced under the MGNREGA fund. The goat shed can be constructed with the help of MGNREGA daily wages in a household along with repair and preparation of concrete floor for proper collection of cow dung and urine. A concrete floor will also help in curbing foot and mouth disease in cows. Goat shed and cow shed can be created from the individual household asset creation under MGNREGA.

6. Urban nutri-garden

Undernutrition is not only a prevalent problem in rural areas but also impacts the urban areas in the country. To deal with the prevailing undernutrition in the urban areas, nutri-garden in urban spaces can be promoted, which can be economical and healthy option. The methods used in developing the rooftop or balcony-based nutri-garden are being shared with many people through WhatsApp, Telegram and Facebook platform which help thousands of families across 30+ countries to start their own garden.



Photo: Welthungerhilfe

CHAPTER 2: NUTRI-GARDEN INTERVENTIONS IN INDIA

2.1 GUIDELINES AND INSTRUCTIONS

Each organisation was requested to provide their region-specific information on their flagship/ best interventions on nutri-garden in a particular format. The format was accompanied with detail notes to guide filling of section wise information. The format for submission was in a single A4 size and divided into different parts which are explained below:

Part 1: Objectives and Funding support

1. The nature of support to the Nutri-Garden related project/ intervention e.g. nutrition security, livelihood etc is mentioned
2. Optional: Funding/supporting organization for Nutri-garden project

Part 2: Standard for Nutri-Garden model

1. For standardising the different types of Nutri-garden category, following categories based on its scope and level are proposed:
 - a. Three types of categories:
 - *Category A- Nutri-garden catering to consumption only no sale.*
 - *Category B -Individual consumption and selling the surplus produce*
 - *Category C-Selling the surplus with value addition through processing*
 - b. Three of activities are envisaged as follows:
 - *Level 1 – Only fruits / seeds / vegetables.*
 - *Level 2 – Nutri-Garden along with the Backyard Poultry,*
 - *Level 3 – Nutri-Garden poultry and other addition e.g. fishery.*

The above table was referred by organisations for determining the standardisation code of the nutri-garden. For example, as shown in the above table if the intervention of nutri-Garden is not supported with any of poultry and other nutrition supplying source and the purpose is self-consumption then the model will be of type A1.

Table 2: Reference table to select an intervention type standard

Standardizing Model Type		Activity		
		1.0 (Fruit/seeds/vegetable)	2.0 (Vegetarian +Poultry)	3.0 (Vegetarian + Poultry + Other)
Category	A (Only Consumption)	A1	A2	A3
	B (Selling Surplus)	B1	B2	B3
	C (Selling Surplus with value addition)	C1	C2	C3

Part 3: Brief description of the nature of intervention

1. Duration of the project (Start and end date or ongoing date is mentioned)
2. Targeted Population/Beneficiaries & Geographies covered (Number of Districts, blocks, gram panchayat, households etc.)
3. Implementation modalities/structure (carried out independently or in partnership, convergence with Government schemes and Departments)
4. Nature of support/ intervention (Advocacy support/Technical Inputs etc.)
5. Preparatory activities and planning
6. Dietary diversity (Food groups) before and after the intervention
7. Agro-Ecology zone of the area of intervention
8. Malnutrition status of the intervention area
9. Intervention type – (Individual level/ community level/ school level)
10. Reference link for any other detailed information

Part 4: Description on Nutri-Garden design, operations and maintenance

1. Description of intervention carried out are mentioned (Key components, Type of nutri-garden referred from standard table from above, procedures of setting up-plantation, particulars of suggested food items, irrigation, manure preparation, scheduling, maintenance etc, costing of nutri garden)
2. Other qualitative/quantitative design specification, training ppt/videos if any
3. Reference link for any other detailed information

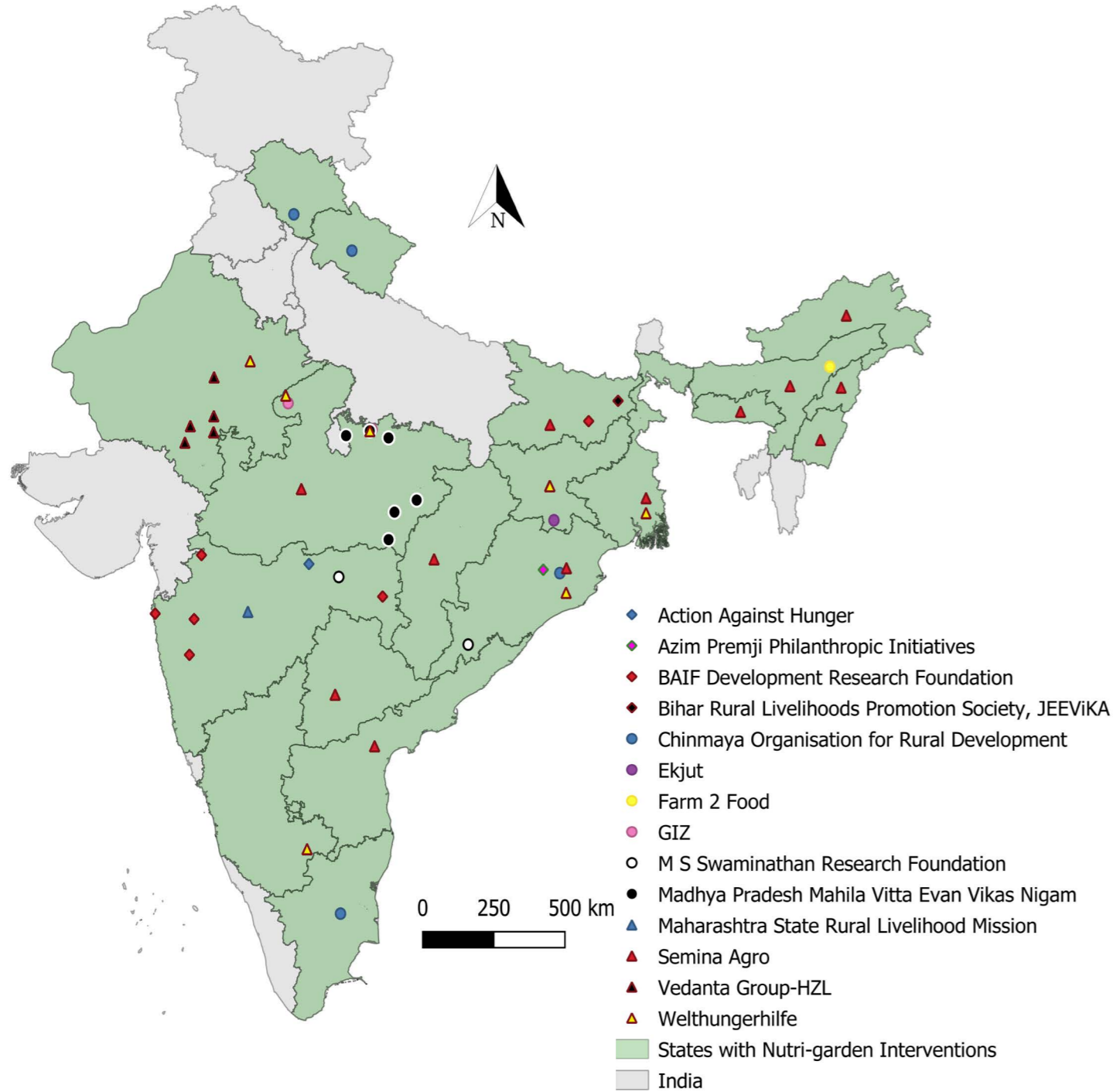
Part 5: Images

1. Combination of images are selected (Maximum 4 images or 2 or 1) based on design of the Nutri-Garden, Images of Nutri-Garden at different time frame

Part 6: Outcomes and Impact of Intervention

1. Key findings and learnings from the project/ intervention
2. Key challenges faced during design, operations, management, safety and sustainability of Nutri-garden.
3. Results of Impact analysis (qualitative/ quantitative analysis on indicators before and after intervention)
4. If there is a plan for scale-up or mainstream implementation, convergence with Government schemes and Departments and details of the same
5. Reward and Recognition (Awards/ Peer Reviews/ News Articles)

2.2 Mapping Nutri-garden Interventions in India



Action Against Hunger, 2012

Objective/ Vision/ Mission: A nation without malnutrition, innovate and implement sustainable solutions and influence systems to eradicate malnutrition.

Work Areas: Nutrition, Food Security, Livelihood and WASH

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Jeevan Dhara – Jeevan Amrut

Nature of support : Implementation

Source of Fund/Funding support : NAOS Bioderma through CSR funding

Model Type
B2

Brief description of the nature of intervention

Jeevan Dhara – Jeevan Amrut is an ongoing project implemented in 2018 in the Dharni block of Melghat region in Amravati district, Maharashtra with a total beneficiary reach of 45,000. Malnourished children between 0-5 years, pregnant women, lactating mothers & their family members are the direct beneficiaries. The project has an integrated approach to tackle malnutrition in children by taking into account the 3 contributing factors to malnutrition- Nutrition, WASH & FSL (Food Security Livelihood). The project includes initiatives such as kitchen gardens & poultry rearing, which has provided micronutrient rich foods to vulnerable families along with an extra source of income for self-sustaining these activities. Additionally, farmers have been trained on nutrient rich & locally suitable cropping & farming techniques. The project has provided sustainable livelihood & nutrition security to households in the project area through enhanced sustainable production, consumption & sale of micronutrient rich foods.



Description on Nutri-garden design, operations and maintenance

Healthy home kitchen garden (KG) component focuses on the cultivation of higher nutrition valuable crops. Our KG implementation is based on a zero-model which includes organic & inexpensive pest management, creating organic fertilizers through composting & liquid manure. For the kitchen gardens, a standard model of a round shaped design area of 706 sq. ft. is divided into 7 parts. Each part is then divided in measures of 13.4 ft. to plant seasonal crops. In case of lack of space, a smaller design is employed. Inputs via voucher (seeds chosen according to beneficiaries' interest & nutritional value, agronomic characteristics & the prevalence of micronutrient deficiencies, gardening tools, organic fertilizers, bio-pesticides) & practical trainings on improved & nutrition sensitive agricultural, post-harvest & marketing practices are provided to beneficiaries. We provide a 12 seeds kit, vermicompost beds, vermiculture & yellow & blue sticky traps for pest protection. A typical seed kit consists of seeds of tomato, green chilli, brinjal, ladyfinger, cucumber, ridge gourd, bottle gourd, long beans, beetroot, carrot, spinach & fenugreek. Activities involves trainings (on plot managements & use of inputs), distribution of tools, compost material & seeds, pest management, monitoring/advisory of the plots' members & timely support, guidance & follow up. Technical trainings offered by the project covers sustainable nutrition-sensitive horticultural methods to boost agricultural production; post-harvest handling/food processing to preserve nutrient content of food; & advice on marketing surplus for sale in local markets for additional income. Crop diversification is promoted to improve crop security, HH food security & dietary intake. Other safe & sustainable agricultural practices promoted includes intercropping, crop rotation, mulching or direct sowing to improve soil fertility & increase yield. The project promotes group discussion & demonstrations in the community with implementers of the kitchen garden along with peer-to-peer learning between the beneficiaries.

Outcome and impact of intervention

The project has received the 2019 Indo-French CSR Award. The project has empowered women to sustainably achieve better family nutrition (especially for improving nutritional status of pregnant women and children up to the age of 5 years), food security and livelihood and WASH outcomes.

Impact through this intervention are as follows:

- 100 families have received livestock (goat/poultry)
- 216 families have established nutrition garden
- Crop diversification and integrated pest management demonstrated in 12 plots
- 269 community members trained on nutrition sensitive agriculture and livelihood activities.

The major learnings through the intervention are as follows:

- Family level kitchen garden works better as compared to community level ones due to the sense of direct ownership and responsibility.
- Nutrition diversity and health seeking behaviour plays a big role in ensuring good nutrition and health.
- Seasonal migration (a cause of malnutrition) for income can be countered by providing vegetable gardens and poultry units. They serve as an additional source of income and contribute to in-house nutrition diversity and are self-sustainable.



Azim Premji Philanthropic Initiative (APPI), 2014

Objective/ Vision/ Mission: To ensure nutritional security, reduce drudgery and promote sustainable of farming community through quality service and partnership.

Work areas: Nutrition, Livelihood & Digital Supported Farming

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BAIF Institute for Sustainable Livelihood & Development, 1967

Objective/ Vision/ Mission: Building a self-reliant rural society assured of food security, safe drinking water, good health, gender equity, low child mortality, literacy, high moral values and clean environment.

Work areas: Livestock, WASH, Resilient Agriculture, Women Empowerment & Health

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Mo Upakari Bagicha, a step towards achieving eradication of malnutrition in Odisha

Nature of support: To address deficits in/issue of dietary diversity among women and children through Nutrition Garden **Source of Fund/Funding support:** Azim Premji Philanthropic Initiative (The Philanthropy)

Model Type A3

Brief description of the nature of intervention

Odisha Livelihood Mission (OLM) under Panchayati Raj and Drinking Water Department, Government of Odisha, in collaboration with Azim Premji Philanthropic Initiative (The Philanthropy) initiated a Nutrition Sensitive Program (later renamed and launched as Mo Upakari Bagicha) across Odisha to ensure dietary diversity among women and children. This special initiative is likely to mobilize 7.5 lakh household across Odisha through promotion of Backyard Nutri garden, Back yard Poultry and Goat rearing. These gardens are to be created by each households themselves in 1-2 decimal (1 Decimal = 436 sq. ft.) of land for producing round the year vegetables & fruits, for self-consumption especially by children, adolescent girls, pregnant women & lactating mothers. These gardens are designed to focus on providing dietary diversity by production of 13 different types of vegetables, 4 different types of fruits, essential for women & children. Back yard poultry and goat rearing are additional steps being taken to enrich nutri-garden and provide dietary diversity to households. It is expected that 2.5 Lakh or more households will practice nutri-garden, consume fruits, vegetables, eggs and meat, through a massive awareness building program to be executed by 9-13,000 community cadres associated with Gram Panchayat level federations organized by OLM.



Outcome and impact of intervention

The Philanthropy supported the NGO Living Farms who developed and demonstrated a proof of concept related to nutri-garden & PLA-LANN which can be scaled up by the government. SHGs, which are considered as a primary Institutions then scales it up with 2 resource NGOs (RNGOs). There are three major components of MUB program e.g. PLA-LANN, nutri-garden and livestock (back yard poultry and goat rearing). RNGOs has developed 14 weekly modules which will be delivered in 14 weekly SHG meetings spread across the year. The main objective of PLA-LANN modules are to build knowledge, awareness & practice among SHG members. The 14 weekly modules are to be delivered to 7.5 lakh households through 75,000 SHGs & 2.5 lakh nutri-gardens to be developed with inclusion of vulnerable groups. After planning & building the organization structure, Government of Odisha successfully installed 3 lakh nutri-garden with the help of 33000 SHGs. This year (2020) GoO has included nutri-garden as one of the activities under MGNREGS and allocated additional resources to establish 5 lakh nutri-gardens all across the state.

Major Learnings from MUB program:

- Self Help Groups (SHGs) played a major role in implementation process
- Cascading method of knowledge transfer found to be a good strategy for scaling up of the initiative
- Block Level Resource Person (BLRPS) placed by the RNGOs in 45 blocks really helped in program roll out in the field and ensured quality of work.
- Three models of nutrition garden cater to all types of households as per their land availability and ensures dietary diversity.
- Maintaining proper Management Information system (MIS) and measuring Minimum Dietary Diversity (MDD) scores helps in making improvements in program in a desired direction

Description on Nutri-garden design, operations and maintenance

Nutri-Gardens Models		
Rectangular	Circular	Retro-fitted
Total Area is 872 sq. feet (2 decimal) which gives 1500 to 1800 gram of vegetables each day to a household.	Total area is 706 square feet (1.6 decimil) which gives 1000 to 1200 gram of vegetables every day to a household.	Poultry model includes 5 hens + 1 cock and need a proper night shelter, day time confined grazing area and clean drinking water, supplementary poultry feed for the birds and regular deworming and vaccination.
It includes 7 rectangular beds 20ft. x 3.5ft. each with 4 circular pits at 4 corners to serve as compost pit as well as to grow some vegetables around it with staking.	It include one compost pit at the center with 7 bigger beds and 7 smaller beds.	In the goats model 5 does + 1 buck are reared with raised platform along with timely deworming and vaccination.
Also 2 lemon, 3 banana, 3 drumstick and 2 papaya plant to be planted around the Nutri garden	Also 2 lemon, 3 banana, 3 drumstick and 2 papaya plant to be planted around the Nutri garden	

For the landless households, vegetables to be grown in gunny bags. Out of 52 weekly meetings of SHG in a year 14 weeks are dedicated for PLA LANN (Participatory Learning & Action, Linking Agriculture & Natural Resources with Nutrition) meeting. These meetings are designed to self-motivate the SHG members to go for nutri garden even without financial support from government.

Kitchen Garden Intervention – TARINA (Bihar)

Nature of support: TARINA (Technical Assistance & Research for Indian Nutrition & Agriculture) is a project dedicated on nutritional security with an objective to provide technical assistance to make agriculture project nutrition sensitive **Source of Fund/Funding support:** Tata- Cornell Institute

Model Type B1

Brief description of the nature of intervention

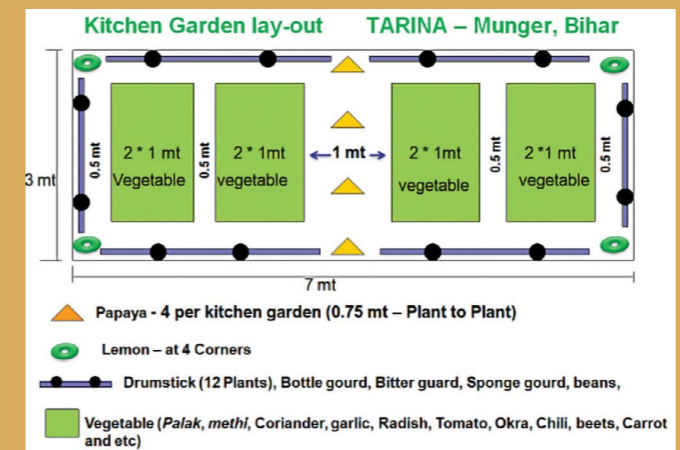
The duration of the kitchen garden project was from Dec 2015 to Nov 2019 covering 4,000 HHs. The project was implemented in Munger district, Block-Dharahara, Panchayat- Amari, Azimganj, Bangalwa, Itwa, Matadih & Sarobag. The project was implemented through convergence with NHRDF & other agencies like OXFAM. BAIF provided support on layout training, seeds for kitchen garden, Cello Jet Pump etc. The process of implementation involved:

- Selection of farmer based on land availability & interest
- Training on Kitchen garden - Why? Where? & How? (Layout of kitchen garden)
- Seed procurement and distribution through Prerak Didi (Community Resource Person) & active SHG leaders.

The Prerak Didi is supporting the intervention via farmers on layout preparation training, distribution of kitchen garden seed packets, seed and pest management monitoring, kitchen garden rally on awareness on nutrition, value addition in kitchen garden produce & reporting production data. The dietary diversity among the farmers improved with increased consumption of food groups from 3-4 to 7-8 food groups. The intervention was at individual level & agro-ecology zone targeted for the intervention was hot and eco-region with alluvium derived soil.



Description on Nutri-garden design, operations and maintenance



The picture above well explains the model of kitchen garden. BAIF is doing kitchen garden in 200 square meter in which Papaya (4 per kitchen garden), Lemon (4 plants at all corners), drum stick (12 plants) and creepers and other vegetable plants like palak, methi, radish, tomato, okra, chilli, beets, carrot are given in a kitchen garden. To ensure the availability of nutrition in seasonal deficit days during the year, TARINA families were provided support thrice a year by BAIF.

Outcome and impact of intervention

Key findings and learnings

- Kitchen garden ensures the availability of nutrition throughout the year.
- It reduces the expenditure on household expenses.
- It uses the waste land available around the house
- It uses the waste water
- Ensures variety of vegetables available at one time.

Key challenges

- Land availability near house.
- Threat of open animals like cow, buffalo, goat etc.

Impact of the Initiative

- Average number of vegetable available before were 5 (mainly bottle gourd, sponge gourd, bitter gourd, chilli & Spinach) & after the intervention additional 8 types of vegetables were added, making it 13.
- Average annual expenditure on purchase of vegetable reduced from Rs. 5,213 to Rs. 2,116.

Convergence with OXFAM was done post project period for 1000 families. OXFAM and an NGO in Bhagalpur supported project families towards kitchen garden initiative after completion of project. The MRP of the kit was Rs. 230 & OXFAM provided it at subsidized rate of Rs. 55 to the farmers. There is also convergence with KVK Munger for training related to kitchen garden.



BAIF Institute for Sustainable Livelihood & Development, 1967

Objective/ Vision/ Mission: Building a self-reliant rural society assured of food security, safe drinking water, good health, gender equity, low child mortality, literacy, high moral values and clean environment.

Work areas: Livestock, WASH, Resilient Agriculture, Women Empowerment & Health

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BAIF Institute for Sustainable Livelihood & Development, 1967

Objective/ Vision/ Mission: Building a self-reliant rural society assured of food security, safe drinking water, good health, gender equity, low child mortality, literacy, high moral values and clean environment.

Work areas: Livestock, WASH, Resilient Agriculture, Women Empowerment & Health

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Kitchen Garden Intervention - Maharashtra Gene Bank Project

Nature of support: Establishing nutri-gardens for nutritional security & livelihood of tribal communities in 5 tribal blocks of Maharashtra.

Source of Fund/Funding support: Maharashtra Gene Bank Project for Conservation, management & sustainable use of Bio resources supported by Rajiv Gandhi Science & Technology Commission (RGSTC), Govt. of Maharashtra

Model Type B1

Brief description of the nature of intervention

Project Maharashtra Gene Bank Project started in 2014 & continued through seed saver groups & community level seed saver organizations. The beneficiaries of the intervention are from the remote rural areas of Nandurbar (Dhadgaon), Palghar (Jawhar), Pune (Junner), Ahmednagar (Akole) & Gadchiroli (Etapalli). The communities targeted in this area were - Pawara, Warli & Kokana, Mahadeo Koli, Mahadeo Koli, Gond & Madiya respectively. Nutri-garden kits of 12-15 crops were prepared & distributed among the 8,538 beneficiaries through women groups. Region specific variety of fruits & vegetables can be targeted to promote diet diversity. As this is community managed program, there is involvement of Individual families, community organizations & schools. Also there was promotion of nutrition garden seeds through urban gardens /terrace gardens by supply of indigenous seeds as indirect support for nutritional security along with income generation to tribal women/ farmer organizations/seed saver groups.



Description on Nutri-garden design, operations & maintenance

In the project, initially location specific indigenous vegetables, tubers & wild edible plants diversity were documented followed by collection of germplasm & establishment of cluster/ village level seed bank. The crops selection are based on their year round availability & nutrition content. The selected worthy crop species seed production is carried out at the community level. Field level training was also imparted on organic input for production along with the usage of mulching, seed selection & proper storage. The germination testing & physical purity testing is carried out at the seed bank level. The packaging & marketing of the seeds is performed through the community organization/ women seed saver groups.

Outcome and impact of intervention

Key findings & learnings from

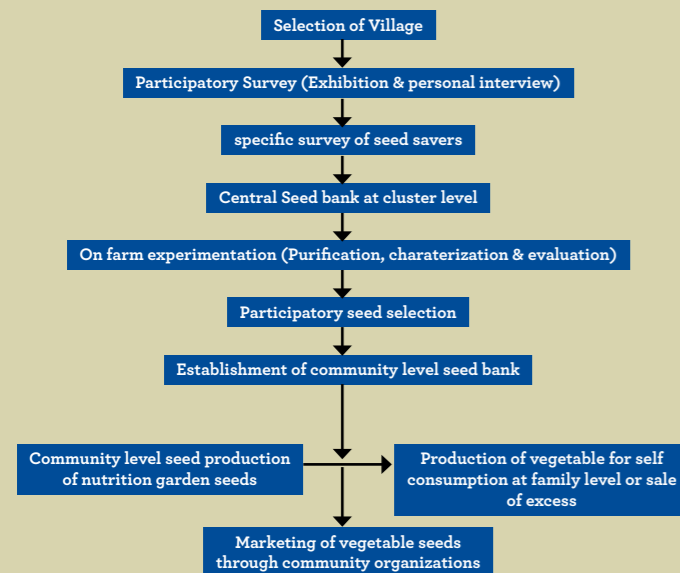
Introduction of region specific, seasonal, annual & perennial crops is critical; Input production for soil health & pest management should be simple for ease of implementation; School level awareness & hands on training to students is critical for intergenerational knowledge transfer & promotion/ sustainability of nutri garden initiative.

Key challenges

Varying family wise landholding created restrictions on growing same set of crops at all locations; Production & storage of quality seeds needs continuous technical support; Water availability after February is an issue in some of the locations.

Impact of the Initiative

Families started saving seeds for next season along with income generation from seeds sale; Availability of 10 months produce for consumption; Increase in nutri garden crop diversity by 40 %; During covid-19 lockdown period, women seeds saver groups supplied 4,730 nutri garden seeds to needy families generating Rs. 5.5 lakhs. Women-led enterprise was developed for production & sale of produce from kitchen gardens (10,000 packets prepared of 12 vegetable crops each). Scale up plan & convergence Capacity building of women resource persons cadre (POSHAN SAKHI) for village level training & implementation; Promotion of production of quality seeds of nutritive vegetables through women seed saver groups; Increasing the region specific crop diversity of nutri gardens; Solar drying of surplus produce for consumption during scarcity period. Also the initiative will explore convergence with ITDP, KVK's & Department of Agriculture, Maharashtra.



Activity structure of the Initiative

Tribal Development Project for hunger alleviation - Akole

Nature of support: With the key objective of hunger alleviation in the Akole district of Ahmednagar, support has been provided to project participant families towards nutrition security and livelihood

Source of Fund/Funding support: General Mills sponsored Tribal Development Project

Model Type B2

Brief description of the nature of intervention

The Project started in 2009 (ongoing) in Akole block of Ahmednagar district with targeted beneficiaries as over 3,500 tribal families covering 35 villages. The project is implemented both independently & in convergence with government schemes & departments. The Akole block is a tribal dominated hilly region with heavy rainfall. The initiative included backyard kitchen garden (KG) along with retrofitting like poultry for both home consumption & marketing purpose. Critical project activities are as follows:

- Preliminary discussion & sharing of approach with the beneficiaries.
- Support towards preparatory activities e.g. training, exposure visits, layout demonstration, input supply, plantation, harvesting etc.
- Execution is carried out in a campaign mode, which included nutrition demonstration session by nutrition experts, seeds & saplings support, exchange of seeds, grafts, saplings among beneficiaries etc.
- Seeds management is carried out via purposeful savings, linkages, project support, local seeds banks etc. along with promotion of traditional seeds
- Awareness generation towards minimum dietary diversity in daily meals



Description on Nutri-garden design, operations and maintenance

The preliminary activity of discussion & sharing of the approach aims at generating awareness & consensus among the participants/ beneficiaries towards the importance of nutri-garden & to ensure collective action towards implementation of it. The exchange of seeds, graft & saplings are encouraged among participants/ beneficiaries to ensure the sustainability of seeds availability at the household & community level. In the project, the input supply activities include seeds supply & management, pest & disease control with organic approaches, fertilizer management through vermicompost & bio fertilizer use etc. One of the critical activities of the project is to ensure that the produce from the kitchen garden in the households are regularly consumed by the respective families.

In the perennial kitchen garden following are cultivated: Drum Sticks, Papaya, Lemon, Lemon grass, Sesbania, Custard apple, Mango, Guava, Fig, Ivy gourd, Curry leaves etc. are cultivated.

In the seasonal kitchen garden following are cultivated: Tomato, Brinjal, Potato, Lady Finger, Chili, & Capsicum.

Creepers: Bottle Gourd, Red Pumpkin, Bitter Gourd, Bean seeds, Smooth Gourd, Ridge Gourd, Snake Gourd, Cucumber, Musk Melon etc.

Leguminous vegetables: Cowpea, Bean, Cluster Bean, Green Pea, Black Pea, Deliculous Bean.

Root & tubers crops: Onion, Garlic, Beet-Root, Tapioca, Yam, Radish, Carrot.

Leafy vegetables: Coriander, Spinach, Fenugreek, Lettuce, Dill Soya etc.

Outcome and impact of intervention

Key findings & learnings from the project/ intervention:

Food security of tribal families/ participants throughout year is ensured via income generated from backyard poultry & fresh vegetables selling. Around 500 to 600 kg of fresh vegetables & fruits are harvested annually per kitchen garden with current value of production at Rs. 13,000 to 15,000.

Key challenges:

Water problem in the summer season; free grazing of animals; pest disease attack etc.

Impact of the initiative:

Production of fresh vegetables increased from 50 to 500 kg with increase in cultivation of vegetables types from 5 to 20 - 25 along with addition of eggs and chicken. Income enhanced of each household amounting to around Rs. 10,000-15,000 per year through savings on vegetables purchase from market for home consumption. The Also the income generated through poultry is around Rs. 15,000 -20,000 per year.

Scale up plan:

For sustaining & scaling up the initiative and to ensure the supply of quality seeds to other areas farmers and participants, seed bank is started by participants. Annually 80,000-90,000 kitchen garden seeds kits are sold out through this groups. Here the quality seed production and its packing, grading and supply is planned with community participation. Also, a plan for perennial kitchen garden development is also envisaged in this area.



JEEViKA, 2006

Objective/ Vision/ Mission: To enhance the social and economic empowerment of the rural poor in Bihar.

Work areas: Livelihood, Child Development & Nutrition, WASH, Behavior Change Communication, Health & Education

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International Centre for Agricultural Research in Dry Areas, 1977

Objective/ Vision/ Mission: To reduce poverty and enhance food, water, & nutritional security & environmental health in the face of global challenges, including climate change.

Work areas: Biodiversity & Crop Improvement; Resilient Agriculture Livelihood System; Water, Land & Ecosystem

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Nutrition Sensitive Integrated Farming System (NSIFS) helping “nutritional at risk” to enhance Diet Diversity

Nature of support: The pilot Project Swabhimaan, tests the delivery of an integrated package of essential nutrition (specific & sensitive) interventions through JEEViKA in Bihar
Source of Fund/Funding support: Implemented by SRLM/ JEEViKA, with financial & technical support from UNICEF. Technical support also provided by Abhiviyakti Foundation

Model Type C3

Brief description of the nature of intervention

The pilot project is implemented in 2 blocks of Purnea district of Bihar. The timeline of the pilot was of 4 years from 2016 to 2020. The target group of the project were pregnant women, adolescent girls in the age group of 10-19 years, newlyweds & mothers of under 2 years child. In the present compendium, story of Sushma Devi, a beneficiary of the NSIFS from Kachnahar, Purnea district is shared. NSIFS is a model that promotes and ensure nutri-livelihood options to the farmers.



Aquaculture



Bio-pesticides



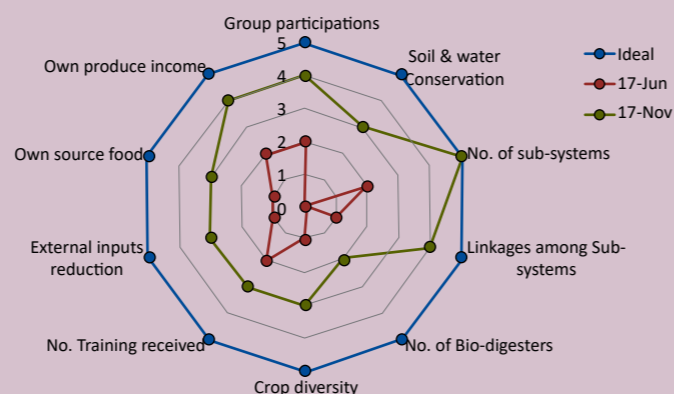
Nutri-garden

Description on Nutri-garden design, operations & maintenance

After training under NSIFS, Sushma understood about under-nutrition & its remedy. Initially she had a 70'x70' pond which was seldom used to produce fish. The family had production of crops like paddy, maize, mulberry & jute from their main fields apart from some vegetable production in post rainy season & some pigeons at home. Mostly the production sources were from four of the sub-systems viz. crops, trees, pond & birds. The NSIFS approach helped her to add 2 more sub-systems - animals & bio-digesters apart from expanding the diversity of birds. She has also planted some banana, planktons & guava at home. After setting up all these 6 sub-systems at home, she is getting sufficient nutrients from different sources at home in form of eggs, meat, fruits & milk on regular basis now. She constructed a duck & hen house over the pond & rearing now 15 hens, & 13 ducks from which is she is getting 14 eggs every day. The duck & hen excreta directly dropped into the pond has saved her feeding cost of the fish, which she has reared in the pond. The women in the house do not consume hens or eggs so she decided to add 10 more pigeons at home. She also bought a cow, apart from milk production the cow dung & urine are also now efficiently used in making compost & liquid manure for instant use in her fields. The increased income from cow & birds has helped her to invest & conserve in her fields & develop the nutri-garden more efficiently. Sushma has carefully developed her kitchen garden with green leafy vegetables, other vegetables, vitamin A rich fruits & herbs for regular supply to her kitchen. With composting, liquid manure techniques, use of bio-mass & recycle she has reduced the input cost of farming by one third.

Outcome and impact of intervention

A study conducted to see the changes of the intervention over a period of 6 months (June - Nov. 2017) revealed a 3 to 4-fold increase in all the indicators. The result of the study is shown in the figure below with green line showing the change & red line showing the baseline indicators. The crop diversity increased with introduction of new varieties, such as broccoli, oyster, mushroom, french bean & different variety of spinach. Now convinced with the NSIFS approach, Sushma & her husband are helping other small farmers in their neighborhood to follow similar practices for diet diversity.



Urban Rooftop Kitchen Garden

Nature of support: To address the nutritional and ecological security of the urban landscapes through gardening
Source of Fund/Funding support: Initiative by Dr. Chandrashekhar Biradar

Model Type A1

Brief description of the nature of intervention

This intervention majorly focuses on the terrace gardening and greening the cities landscapes where one can grow as many as 50 different varieties of vegetables. The fresh green harvest from 8-12 sq. ft. can feed a typical urban family of 4-5 members along several ecosystem services. The use of multi-layer biodiversity farming is implemented to get the maximum output from the limited space and resources. The methods used in developing the rooftop or balcony-based nutri-garden are being shared with many people through WhatsApp, telegram and Facebook platform which help thousands of families across 30+ countries to start their own garden. The taste of vegetables from multi-layer farming is different due to symbiotic interaction of companion vegetables. Other novel methods is clay-pot diffusion irrigation, companion planting, and providing habitat for birds, and bees which can help in preventing the pest attack and increase the soil fertility based on symbiotic relationship. The primary aim of the intervention is to fulfil the household nutrition, reducing the carbon and environmental footprint and reduce heat-island effect.



Multi-layer biodiversity farming

- Layer 5** Tall canopy vegetables, such as Drumsticks- Moringa, Susbenia, Curry leaf, flowering and fruit trees, etc
- Layer 4** Canopycover vegetables such as Creepers and Vines such as all types of Gourds- Bottle gourds, snake gourd, ridge gourds, bitter gourds, sponge gourds, Tinda, Tonde, Parval, Kakri, Cucumber, Wax beans, Avare, etc.
- Layer 3** Midcover Fruit bearing vegetables such as Brinjal, Chilli, Cluster beans, Okra-Bindi, Tomato, Broccoli, Brussel sprouts, cauliflower, kohlrabi, sweet peas, snap peas, etc.
- Layer 2** Groundcover vegetables such as all types leafy of vegetables like Methi, Coriander, Dill, Amaranth, Purslane, Spinach, Arugula, Lettuce, All kinds of Salad Greens, etc.
- Layer 1** Underground vegetables such as carrots, beetroot, onion, garlic, sweet potatoes, potatoes, turnip, radish, zinger, turmeric, yam, etc



Description on Nutri-garden design, operations & maintenance

This model of the nutri-garden (at the terrace or balcony) is for nutritional security of urban household

Design: Large pots with organic soil and diffusion irrigation with mixed seeds balls. It is advised to the beginners to start with few pots but large enough to support multi-layer planting. The topmost layer has tall trees like moringa, followed by creepers like cucumber, ridge and bottle gourds. The third layer consists of fruit-bearing plants like tomatoes and eggplants. We can cover the ground with leafy vegetables like spinach, fenugreek, lettuce, and arugula and finally, the last layer has underground plants like radish, ginger, and carrots.

Watering: Automated drip and diffusion irrigation take care of watering needs based on the plant-water needs in response to weather and plant combinations.

Manure preparations: Home-made organic compost and bio-enzymes and crop mulches can be used. The pipe and pot composting techniques can be used for recycling kitchen waste and garden crop residue. Bio-enzymes prepared from the fruits and vegetables scraps with jaggery for 90-days incubation is used as liquid-nutrient supplements.

Outcome and impact of intervention

General outcomes of the urban nutri-garden includes - vital nutrient rich fresh food to boost immune system and stay healthy, and stress and disease free. If every family starts growing even a kilo of food, we can reduce our carbon footprints, frequent travels to shops and hospitals. The most important aspects of gardening is it enhances nature, reduces stress, and improves city landscape along with reduction of heat-island effect. The outputs coming from the Dr. Biradar's experimentation in nutri-garden is endless with possibilities of incorporating the nature with urban space that provide food, health and wellness. Companion planting such as tomatoes next to basil, improve flavor and repellent pests. Likewise, putting legumes that produce nitrogen nodules from the air, next to leafy veggies like lettuce or spinach. Such plant diversity increases the healthy biota in the soil while providing rich nutrients to plants and then intern to humans.

Helping the individual households to grow Nutri-gardens through Mahila Mandal

Nature of support: To make nutri garden an integral part of Mahila Mandals (& SHGs within it) through important activity of CORD's comprehensive integrated rural development programs
Source of Fund/Funding support: Organization's own funding & women and SHGs are encouraged to contribute

**Model Type
A1**

Brief description of the nature of intervention

More than a decade ago CORD started the interventions of kitchen / nutri-gardens. CORD supports and encourages the rural women to grow nutri-gardens in their backyard. The organization is working in the 4 states namely Himachal Pradesh, Odisha, Tamil Nadu, and Uttarakhand. In these 4 states, organization reaches to 904 villages of 7 districts. Around 43,476 households have benefited from the kitchen garden intervention of the CORD. To reduce malnutrition, the intervention of kitchen garden is implemented by encouraging the women to use their own funds for growing nutri-garden. The organization helps them with seeds and saplings needed for the nutri-garden. When help comes for the initiative through the funding agencies, it is ensured that the beneficiaries contribute at least 10-15% from their side. Mahila Mandal's are found effective in implementing & sustaining the nutri-gardens through this intervention. Till now CORD have reached 1146 Mahila Mandals.



Description on Nutri-garden design, operations and maintenance

The targeted beneficiaries for the initiative are pregnant women, lactating mothers, adolescent girls, widow, poorest of poor and person with disability, selected through ward level core community group namely Mahila Mandal. Also seasonal discussion for plantation as per forthcoming session in Mahila Mandal is encouraged. The beneficiaries are educated about need, importance of balanced nutritional diet & encouraged to set up their own nutri gardens. Beneficiaries are supported in planning & designing as per annual household nutrition need. In rain fed areas, beneficiaries are partially supported for setting up irrigation facilities e.g. low cost poly tanks, rain water harvesting units, water lifting pumps & treadle pumps. Farmers are also encouraged to use bamboo, bushes & waste wood to make fencing for nutri garden. Beneficiaries are also provided training and demonstration on organic manures i.e. beejamrit, jeevamrit, matka khad, vermin wash, dasparni, vermincompost etc. Environment friendly and cost effective methods like organic manure, inter cropping, weed control & crop spacing practices. Also regular follow up, farmer experiencing sharing sessions & exposure visit to model nutri garden are conducted. Retro-fitting of kitchen garden with poultry, goatry and diary is promoted.

Outcome and impact of intervention

Key Findings:

Ignorance on food diversity & nutrition requirement among the vulnerable groups; Nutrition education is important along with constant follow-up; Availability of resources is a concern for vulnerable groups.

Key challenges:

Household space for nutri garden especially in Tamil Nadu is less as compared to other 3 states.

Impact of the initiative

Increased household accessibility to nutritional & diversified food; Improved knowledge on nutrition, health & food security; Quality vegetable/fruit availability during pandemic; Enhanced intake of protein, calcium, iron, vitamins & other micro nutrients through backyard poultry, dairy, goat rearing, mushroom production activities; Saving of money, efforts and time; Additional income through surplus produce & improved economic & social status. CORD's comprehensive integrated project has received - Global Development Award from Japan - Morocco, The Guardian International Development Achievement Award & Padma Shree Award to the National Director.

Engaging with adolescents of rural underserved communities by introducing the concept of nutri-garden to address undernutrition & improve dietary diversity through livelihood promotion

Nature of support: Livelihood promotion activities with adolescents & their families to develop practical skills on farming & environmental management to improve food security livelihood options by providing technical inputs.
Source of Fund/Funding support: Children's Investment Fund Foundation

**Model Type
B1**

Brief description of the nature of intervention

Research (CARING trial*) pertaining to growth improvement of young children had shown that by engaging women to discuss about food groups and their diet during pregnancy and lactation through an empowering participatory process had significantly improved dietary diversity among mothers and children. Ekjut has been working on nutrition gardens through their adolescent health and wellbeing intervention since April 2016 (ongoing) in Khuntpani block of West Singhbhum district of Jharkhand covering a population of ~40,000 with around 8,839 families across 12 Panchayats. A research study in the area also showed that less than a quarter of adolescent girls (15-19 years) reported having minimum dietary diversity along with 44.8 and 40.8 % of them with stunting and BMI <18.5 respectively. The inclusion of livelihood promotion along with health & nutrition inputs was to create an interest among young people on local agricultural and livelihood practices that could be both profitable & also cater to their health and nutritional needs along with reducing migration. Linkages were established with the agriculture departments & Krishi Mitras for revival of 'Kissan Samiti' (farmers' group) for procuring entitlements of seeds, saplings, equipment and preparation of strategies using available resources. It is emphasized to solve the problem in a concerted and holistic way.



Description on Nutri-garden design, operations and maintenance

Discussions in farmer's groups: Encouraging them to continue with their traditional methods with inclusion of vegetables/fruits that are nutritionally rich. Process of land preparation: - Tilling of soil using a spade or other equipment locally used; Mixing of organic manure/dried cow dung to enrich the soil; Allowing the cultivated soil to sit for a couple of days before planting; Creating borders in the field to enable moisture to penetrate for maintaining water balance.

Crop Management: - Selecting crops that the family prefers; planting for harvesting at different times; Changing of crops in the same plot; Feeding the soil with organic manure; Use of organic pesticides

Multilayer cropping: - Climbers / creepers; Planting at different heights for adequate sunlight; live fencing using climbers. It was critical have a nutri-garden growing a variety of vegetables for consumption round the year. So it's important to choose crops, plants which adapt favorably to local conditions, easy to cultivate & the produce is a part of their local food habit. Nutri-garden can include amaranths, dark-green leaves, fruit trees etc. The fruits trees can be banana, mango, papaya, moringa & other citrus fruits.

Outcome and impact of intervention

The **challenges associated** are water scarcity; land shortage; scanty rainfall, lack of continuous engagement; developing & sustaining the nutri-garden. To overcome the challenges the farmers leveraged growing in containers or pots along with the usage of local water bodies or riverside beds for catering to water scarcity. Also places outside the school boundary was used for kitchen garden. The farmers also leveraged organic farming, thereby reducing the usage of chemical fertilizers & pesticides. Also success stories & demonstration plots helped in reinforcing the importance of nutri-garden among the farmers.

Lessons:

Engagement with adolescents & their families together with inputs on the need for improving nutrition at a younger age, especially for girls was strategic; Separately engaging the adolescents on issues of health risks & benefits of nutrition to explain the 'whys & how's' of poor health & nutrition is critical; Farmers who were linked to government agricultural entitlements & services including training on mushroom cultivation & procuring seeds for vegetables cultivation benefitted greatly.

Impact

At the start of the initiative, farmers were apprehensive about establishing nutri garden, but the numbers increased exponentially in 2019; Majority of them developed nutri varieties for domestic consumption & the surplus was sold; The backyard was used to grow seasonal fruits & vegetables, leading to increased participation by women, & improvement in the economic conditions from the sale of excess produce; Many farmers adopted organic farming practices, prepared their own manure & pesticides; Towards the end of this intervention, more and more families were getting a balanced nutritional diet; Anecdotal evidence of adolescents consuming different varieties of food contributing towards improved dietary diversity.



Farm 2 Food Foundation, 2011

Objective/ Vision/ Mission: To provide the training & tools which will enable local communities to take control of their own production & development processes in order to build a productive, change-oriented, & self-reliant society.
Work areas: Organic Farming, Nutrition & Education

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GIZ, 1958

Securing Nutrition, Enhancing Resilience

Objective/Vision/Mission: We work to shape a future worth living around the world.
Work areas: Nutrition Security, Resilience, Livelihood, Women & Economic Empowerment

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Farm 2 Food: Farmpreneur – School Nutrition Gardens

Community Nutrition Garden (CNG)

Nature of support: To reduce the child malnutrition through the route of School Nutrition Gardens & Education
Source of Fund/Funding support: Tata Trust (The India Nutrition Initiative), National Foundation for India, Ashoka - India

Model Type A1

Nature of support: To improve food and nutrition situation of women (15-49 years) & small children (6-23 months)
Source of Fund/Funding support: German Federal Ministry for Economic Cooperation & Development (BMZ)

Model Type B1

Brief description of the nature of intervention

The system level knowledge, skills and attitudinal interventions can solve the problem of malnutrition among the school going children. Farm 2 Food organization have trained teachers, anganwadi workers to establish school nutrition-gardens in various anganwadi centers and schools of Assam which helped in improving mid-day-meal served to over 80000 children. The major outcome of the intervention is the behavioral change in the diet pattern. Through this project, children from marginalized communities grow local vegetables in school premises which are served in Mid-Day-Meals. Students from school work in the nutrition-garden which helps them in gaining the skills like - leadership, cooperation and planning. These nutri-gardens becomes science laboratory for the students. Student learn about the science, mathematics and economics involved in agriculture. The scientific lessons from the nutri-garden helps the student to develop scientific temper and inculcate the habits of curiosity and experimentation. This brings the confidence in children and help create prosperous North-East.



Description on Nutri-garden design, operations & maintenance

Three components of the School Nutrition Gardens are as follows

Nutrition: It includes health surveys (pre- and post-intervention), nutrition toolkit for students, teachers & parents (mothers), training on health improving behaviours, identification of local nutritious vegetables and fruits etc.

Academic: Farmpreneur activity mapped with school curriculum, garden becomes open science laboratory, activity-based learning, science exhibition, life skills and leadership etc.

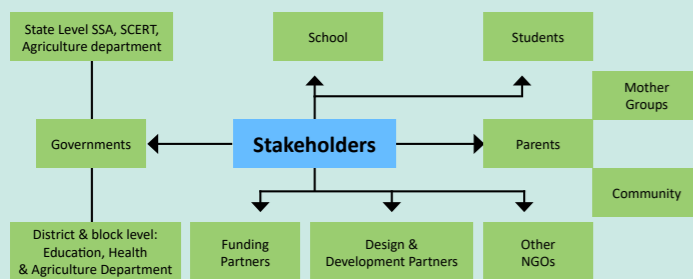
Entrepreneurship: Basic organic farming training including compost preparation & bio-pesticides, project management, profit & loss, mentoring by successful agri-entrepreneurs, exposure visits etc. The program starts with partnership with the state and district authorities followed by an orientation program. The activities include a baseline health survey, science mela & project monitoring & evaluation.

Outcome and impact of intervention

The initiative has established more than 500 school nutrition gardens along with training of several hundred Anganwadi workers, Community Development Project Officers (CDPOs), teachers across Assam & Delhi. Some of the achievement of the intervention are as follows

- Implementation agency were invited to do a presentation to ministry of Human Resource Development at a Chintan Shivir (2017) held at New Delhi on Farmpreneur project under experimental learning.
- Our school Nutrition Garden has been awarded the Special Jury award at Outlook POSHAN award by Hon'ble Vice President Shri Venkaiah Naidu on August 2019.
- Founder of the Farm 2 Food has also been awarded the prestigious Ashoka Fellowship.

Project monitoring & recording is done at various platforms including by farm 2 food foundation and the government officials. Students maintain a school nutrition garden record book along with the monitoring & recording of the production from the garden as well as vermicompost unit. They also keep a note of all other activities conducted as well. The record on meals in the school is maintained at the block level mid-day meal office. Farm 2 food foundation also maintains the records weekly & monthly data.



Brief description of the nature of intervention

- Community Nutrition Garden (CNG) pilot intervention began in April 2019 (Upscaling 2021-2025)
- Target group is 240 women of reproductive age, organized in self-help groups. Indirect beneficiaries are families of SHGs, women, community members & Anganwadi Centers
- Coverage includes 20 pilot CNGs in two districts of Madhya Pradesh: Sheopur & Chhatarpur (10 each)
- GIZ FaNS project implements CNGs in partnership with Parmarth Samaj Sevi Sansthan NGO & in convergence with MGNREGA, Ministry of Rural Development, State Rural Livelihood Mission, Krishi Vigyan Kendras (KVKs), District Tribal development, Horticulture & Forestry departments
- In rural Sheopur district of Madhya Pradesh 50.1 % of children under 5 years are stunted & 27.3 % are wasted. In Chhatarpur district 44.4% of children under 5 years are stunted & 17.8% are wasted according to NFHS-4 data.



Description on Nutri-garden design, operations & maintenance

Key components: Community mobilization, women & economic empowerment, convergence with line departments, dietary diversity, year-round availability

Operations and maintenance:

- Joint identification of Community Nutrition Gardens site (1-4 hectares, government land, partly encroached) with Gram Panchayat, community, agricultural engineer following certain guidelines e.g. water availability near site, type of soil
- Identification and mobilization of women Self-Help Groups (SHGs) to develop and maintain the Community Nutrition Gardens
- Formation of POSHAN Panchayat (Community Nutrition Committees) that are helping to plan production of vegetables and orchards
- Selection of POSHAN Saheli: These are Female resource person for capacity building of SHGs on gardening (organic practices) and healthy nutrition along with involvement of anganwadi workers.
- Procurement of fruit seedlings, vegetable seeds from horticulture department or other line departments
- Distribution of surplus produce to anganwadi centers and schools, sell in the markets

Outcome and impact of intervention

- Year-round availability and access for women SHG members and their families to diverse nutritious vegetables
- Amidst covid-19 pandemic, 20 community nutrition gardens could increase resilience in ensuring food security and providing fresh vegetables not only to the families of women SHG members but also to other villagers, especially pregnant women, children and elderly along with quarantined migrants staying in village quarantine centers. The SHG members informed that they distributed tons of ladyfingers, bottle gourd, pumpkin, tomatoes, chilies, to the villagers during the pandemic.
- Community Nutrition Garden model is planned for up-scaling in four districts of Madhya Pradesh and two districts in Maharashtra until 2025 (up to 500 gardens)
- An Impact Assessment study is planned in the future

Community Nutri-Garden

Nature of support : Community nutrition gardens were promoted as part of a Farming System for Nutrition (FSN) study to improve household dietary diversity. The FSN study was conducted under a research programme consortium on 'Leveraging Agriculture for Nutrition in South Asia' - (LANSA)
Source of Fund/Funding support : UK Aid from the UK government.

Model Type B1

Brief description of the nature of intervention

The project duration is from 2013-18 with the target population as the HHs having no backyard area from 5 villages in Wardha district of Maharashtra. Here women from HHs having no land or very less backyard land area were encouraged to come together & set up community nutrition garden (CNG) on Panchayat land, or on land taken on lease, with provision for watering the gardens. The gardens are maintained by a group of 7-12 women in each village. Seeds of both fruits and seasonal vegetables were provided from the project along with information on their nutrient content & what deficiencies they can help address. Fencing of the garden was also facilitated. For better access to seeds and planting materials & to minimize the cost of seed purchase, community seed banks were promoted in the villages in 2017; the seed banks serve to ensure availability of vegetable seeds & thereby promote sustainability. Land for CNG was finalized in discussion involving the Panchayat, village community, women who had come forward to manage the CNG, & project staff. The selected land was cleaned and fenced. Seeds of seasonal vegetables were purchased from the local market & saplings of fruit plants were purchased from the nursery of the College of Agriculture in Nagpur & government nurseries. Planting material of orange flesh sweet potato was sourced from the Regional Centre of the Central Tuber Crops Research Institute (CTCRI) in Bhubaneswar. Each community nutrition garden was provided with one drum for water storage, two water cans and pipe for irrigation purpose. From the endline survey of households conducted in 2018 it was observed that there was increased consumption and frequency of consumption of vegetables and fruits. The study location is a semi-arid rain-fed farming areas.



Description on Nutri-garden design, operations & maintenance

The garden is designed in such a manner that all three types of vegetables viz., green leafy vegetables, root & tuber & other vegetables are available round the year as per the season. The fruit plants are grown on the boundaries / bunds in between the vegetable beds. The women working in CNG work for about half an hour everyday - undertake cleaning, weeding, sowing, watering, monitor plant status & keep record of inputs (seeds etc.), costs incurred, harvest of vegetables & fruits & record & share the produce.

Outcome and impact of intervention

The following are the outcomes of intervention based on the endline survey conducted on 2018;

- Community nutrition garden ensures greater availability of fresh, nutritious vegetables to households having no land or very less backyard area.
- The produce was not only shared by the members managing the garden, surplus produce was given to midday meal programme in village schools & some produce was sold in the villages.
- It helps generate greater awareness on the importance of consuming fruits and vegetables
- The District Collector, Wardha suggested that every Gram Panchayat should have a model CNG:

<http://59.160.153.187/content/wardha-district-collector-meets-mssrflansa-researchers>

- Research paper:** Nagarajan, S., Bhavani, R. V., & Swaminathan, M. S. (2014). Operationalizing the concept of farming system for nutrition through the promotion of nutrition-sensitive agriculture. *Current Science*, 959-964.

Malnutrition status of the intervention area (Wardha district)

Indicator (NFHS - 4, 2015 - 16)	%
Stunting	30.5
Wasting	26.2
Underweight	36.1
Anaemia in Children 6-59 months	48.5
Anaemia in women 15-49 years	42.4
Anaemia in pregnant women 15-49 years	43.4

Links

<http://59.160.153.187/sites/default/files/Community%20Nutrition%20Garden%20-%20Case%20study%20final.pdf>
<http://59.160.153.187/content/community-nutrition-garden-maharashtra-india>
<http://59.160.153.187/content/benefit-fruit-plants-under-nutrition-garden>
<http://59.160.153.187/sites/default/files/NG%20Leaflet-2018-final.pdf>

Household Nutri-Garden

Nature of support: Household nutri-gardens were promoted as part of a Farming System for Nutrition (FSN) study to improve household dietary diversity. The FSN study was conducted under a research programme consortium on 'Leveraging Agriculture for Nutrition in South Asia' - (LANSA)
Source of Fund/Funding support: UK Aid from the UK government.

Model Type B1

Brief description of the nature of intervention

The project duration was from 2013-18 with the target population as the HHs having backyard area from 7 villages (658 HHs/ 2845 population) in Koraput district, Odisha & 5 villages (556 HHs/ 2254 population) in Wardha district, Maharashtra. Technical support was provided on the design & layout of the garden. Seed kits & saplings were distributed to the HHs during the initial phase of the study. A seasonal calendar of locally available vegetables was prepared & seed kits comprising seeds of location specific seasonal vegetables from all the 3 vegetable group viz., green leafy vegetables, roots & tubers & other vegetables along with seeds of some spices & pulses were prepared & distributed to HHs with backyard area. Kits were also supplied to other families who were willing to raise nutrition gardens. Saplings of naturally fortified fruits & tree species (e.g. moringa, lemon, amla, papaya, guava, & mango) were also given to the selected families. Orange Flesh Sweet Potato (OFSP) planting materials obtained from the Regional Centre of Central Tuber Crops Research Institute (CTCRI), Bhubaneswar, Odisha was introduced & promoted in order to address Vitamin A deficiency, particularly in children. HH dietary diversity score (HDDS) was calculated by number of food groups consumed per day. Endline survey conducted during 2018 showed that in Koraput, average HDDS increased significantly from 6.92 to 7.69. In Wardha, the change was very slight from 7.53 to 7.74, but significant. Both the study locations are rain-fed farming areas; Koraput is characterized by subsistence farming with paddy as main crop & Wardha is dominated by commercial crop cultivation mainly cotton.



Description on Nutri-garden design, operations & maintenance

From the baseline survey, the area of backyard land ranged from 80 to 600 sq. m in Koraput and 6.3 to 15.9 sq. m in Wardha. Since backyard area was less in Wardha and a large part of the time was spent in the fields, many households used to grow vegetables on a patch in the field itself.

Outcome and impact of intervention

Following are the outcomes of intervention based on the end line survey conducted in the year 2018:

- Promotion of nutrition gardens has led to increased consumption of different groups of fresh vegetables; most of which are being consumed by the households
- Significant increase in the quantity & frequency of consumption of fruits & vegetables & huge demand generation from HHs suggests a positive trend as well as acceptance of the approach in the study area.
- Provision of seeds & technical advice & nutrition awareness increased the production & consumption of both traditional & non-traditional micronutrient rich vegetables.
- The combination of agricultural training with nutrition awareness programmes provided knowledge on the importance of food and nutrition, as well as practical guidance on how to grow & prepare nutritious foods.
- Nutri-gardens are proving to be a cost effective approach to make micronutrient rich foods accessible to the entire HHs & contribute to improve the quality of diets.
- Further, HH nutrition garden was promoted to 1575 households from 47 villages in Koraput district, Odisha under the project "Strengthening Livelihoods & Enhancing Food & Nutrition Security of Small & Marginal Farmers in Koraput District of Odisha through a Farming System Model" supported by Govt. of Odisha under Rashtriya Krishi Vikas Yojana, July 2018-June 2021.
- Paper: Pradhan A, Sathanandhan R, Panda AK, Wagh R. Improving Household Diet Diversity Through Promotion of Nutrition Gardens in India. *American Journal of Food Science and Nutrition*. 2018 May 9;5(2):43-51.

Malnutrition status of the intervention area

Indicator (NFHS - 4, 2015 - 16)	Wardha %	Koraput %
Stunting	30.5	40.3
Wasting	26.2	28.5
Underweight	36.1	44.4
Anaemia in Children 6-59 months	48.5	71.4
Anaemia in non - pregnant women 15-49 years	42.4	63.4
Anaemia in pregnant women 15-49 years	43.4	60.5

Links

<http://59.160.153.187/content/household-nutrition-garden>
<http://59.160.153.187/sites/default/files/NG%20Leaflet-2018-final.pdf>
<http://59.160.153.187/content/addressing-household-micronutrient-intake-through-nutrition-garden-intervention-rural-india>
<http://59.160.153.187/content/household-nutrition-garden-o>



M S Swaminathan Research Foundation, 1988

Objective vision and mission : Aims to accelerate use of modern science and technology for agricultural and rural development to improve lives and livelihoods of communities.

Work areas : Biodiversity, Food Security, Ecotechnology, Climate change, Coastal System Research, Biotechnology & Information Education & Communication

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Madhya Pradesh Mahila Vitta Evan Vikas Nigam (MPPV), 1988

Objective/Vision/Mission: Works for socio economic empowerment of women in Madhya Pradesh

Work areas: Agriculture, Education, Employment, Tribal, Health, Food & Nutrition, WASH

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School Nutri-Garden

Nature of support: School nutri-gardens were promoted as part of a Farming System for Nutrition (FSN) study to create awareness among school children about the nutrient content in different fruits and vegetables and the importance of consuming them. The FSN study was conducted under a research programme consortium on 'Leveraging Agriculture for Nutrition in South Asia' - (LANSA)
Source of Fund/Funding support: UK Aid from the UK government.

Brief description of the nature of intervention

The project duration is from 2013-18 with the target population as the school children across 7 villages (658 households/ 2845 population) in Koraput district of Odisha & 5 villages (556 households / 2254 population) in Wardha district of Maharashtra state in India.

All the study villages had a primary school, few had middle school and one village in Koraput had a residential school. Interaction with the teachers, the midday meal cook and basic nutrition awareness programmes for the school children led to initiation of school nutrition gardens in the study villages. The produce was used in the midday meal cooked for students. MSSRF facilitated the setting up of the gardens by providing the seeds/seedlings of vegetables and fruits; planning the layout and initial sowing/planting. For some schools, help was extended for fencing the garden for protecting the plants from stray animals. Calendars were printed with paintings by the children and messages on nutrition and sanitation and distributed to all households and schools. Based on the land availability with the school, the size of the garden ranged from 7 to 24 sq. m in the Wardha villages and 100 sq. m to 190 sq. m in Koraput villages. Produce of greens from the school nutri-garden was added into the midday meal in all the schools. From the FGD conducted at endline survey in 2018, it was reported that there is increased frequency and consumption of vegetables and fruits by the households. Agro-Ecology zone of the area of intervention: Both the study locations are rain-fed farming areas; Koraput is characterized by subsistence farming with paddy as main crop and Wardha is dominated by commercial crop cultivation mainly cotton.



Description on Nutri-garden design, operations & maintenance

The cook who makes the midday meal for children maintains the garden; the older students also get involved in watering the plants. On holidays, the gardens were maintained by school management committee or the village project volunteers.

Outcome and impact of intervention

The following are the outcomes of intervention based on the endline assessment in 2018;

- Vegetables are generally purchased by the cook on weekly basis on the village market day, to prepare the midday meal for children. Having a nutrition garden on the school premises ensured a regular supply of fresh vegetables for inclusion in the noon meal.
- Presence of a nutrition garden on school campus serves the educational purpose of making school children aware of the nutrient content of different vegetables and the importance of consuming them.
- The knowledge carried by children to their homes will have positive spill over effect. The involvement of the teachers is another plus that can further the nutrition awareness drive.
- The successful demonstration of the initiative provided a basis for advocacy with the district administration & the state government for promoting nutrition gardens, with the CEO ZP Wardha expressing her support:

<http://59.160.153.187/content/lansa-workshop-nutrition-gardensand-nutrition-awareness-address-malnutrition>

Malnutrition status of the intervention area

Indicator (NFHS - 4, 2015 - 16)	Wardha %	Koraput %
Stunting	30.5	40.3
Wasting	26.2	28.5
Underweight	36.1	44.4
Anaemia in Children 6-59 months	48.5	71.4
Anaemia in non - pregnant women 15-49 years	42.4	63.4
Anaemia in pregnant women 15-49 years	43.4	60.5

Links

- <http://59.160.153.187/blog/sprouting-school-nutrition-gardens-fsn-studyvillages>
- <http://59.160.153.187/content/nutrition-gardens-and-literacy-schools>
- <http://59.160.153.187/sites/default/files/LANSA%20Impact%20Story%201%20final.pdf>
- <http://59.160.153.187/sites/default/files/NG%20Leaflet-2018-final.pdf>

Kodo Kutki Initiative – Mainstreaming minor millets into diets of women & children

Nature of support: Implementation, technical and financial support for nutrition security
Source of Fund/Funding support: An initiative under Tejaswini Rural Women Empowerment Project in Madhya Pradesh supported by International Fund for Agricultural Development (IFAD)

Model Type C1

Brief description of the nature of intervention

Kodo (Dutch Millet) & Kutki (Little Millet) are climate resilient hardy millets adapted to the dry lands. They have been traditionally grown in the semiarid regions of MP by local tribal communities (Baigas & Gond) but over the years their productivity & value declined & were thus abandoned. In 2013, the federation and SHG members in Mehdwani block of Dindori district worked with the Tejaswini project staff to revive the cultivation of kodo & kutki as a climate resilient & nutri dense crop. Federation was made responsible for technical, financial & marketing support to the farmers, while the identified farmers ensured that at least 0.5 acres of their lands would be used for millet production and contribute 20 kg of their produce to federations post-harvest. In 2017 the federation members felt that the nutritious kodo would be useful to fight malnourishment among children. An agreement was done with the DWCD initially in Dindori district for providing nutritious kodo bars for breakfast at AWCs. Initially 1 federation began the production of Kodo bars, & grown to 4 federations with plan to expand to all 9 Federations of Dindori & start supplying Kodo bars to 57,025 children across 1,913 AWCs in the state. This initiative was part of the IFAD supported Tejaswini Project in MP implemented by MPPV between 2008-19 in 6 districts- Balaghat, Mandla, Dindori, Panna, Chattarpur, & Tikamgarh.



Nutri-garden design, operations and maintenance

Consensus building was the key for beneficiary identification as many HHs were reluctant to sow these millets due to low productivity & market value. Master trainers were identified from 40 villages & sent to JNKVV, Jabalpur for training. Farmers were trained on land/bed preparation, seed processing, sowing, transplanting, cropping etc. There were also regular visits from KVKs experts. And a demonstration plots was managed by federation to educate farmers on good sowing practices. Govt. also provided storage space & Agri Dept. helped set up a small processing unit. Village-level collection centers were set up to eliminate intermediaries, and helped farmers realize better prices. Sale of kodo and kutki as processed rice was done at canopies in fairs, sample display in shops, MP tourism hotels, to wholesale buyers and via direct marketing through Brand Bharti which got FSSAI registration. In 2017 DWCD signed agreement with federation to supply Kodo bars as breakfast to anganwadi centers to absorb the surplus production. The federations procure most of the inputs such as soyabean, jaggery, peanuts and sesame locally. Federations supplies kodo bars for one week to each anganwadi in containers. Each bar can last up to 1 month and is sold for Rs. 3 to the ICDS with a total demand for 5126 children in 226 AWC each day.

Outcome and impact of intervention

Outcomes and impact

- Farmers engaged increased from 1500 to 7500 in all 9 Federations of Dindori district.
- The area under cultivation per farmer expanded from 0.5 acre to at least 1 acre.
- Being a climate resilient crop the production is not severely impacted due to the vagaries of the monsoons.
- Net income per farmer increased from approx. Rs. 1800 in 2013-14 to Rs. 9,200 in 2016-17
- Due to good quality of inputs and improved production techniques, productivity went up 1.5 to 2 times of normal produce and farmers readily contributed 20kg of produce to the federations.
- Improved agricultural practices have helped to reduce the drudgery for Baiga women involved in millet production.

Key lessons:

- Profitability for women can go hand in hand with better nutrition for children and revival of a climate resilient crop.
- A better market will lead to greater production of nutri dense and/or climate resilient crops.
- The biggest challenge in reviving the production of these crops was to build consensus among households to still grow these crops as the return was very low at Rs. 4-5 per Kg

Awards

- Received prestigious Late "Shri Sitaram Rao Livelihood Asia Award 2014".
- Received "Skoch Award 2014"



Madhya Pradesh Mahila Vitta Evan Vikas Nigam (MNVN), 1988

Objective/Vision/Mission: Works for socio-economic empowerment of women in Madhya Pradesh

Work areas: Agriculture, Education, Employment, Tribal, Health, Food & Nutrition, WASH

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Madhya Pradesh Mahila Vitta Evan Vikas Nigam (MNVN), 1988

Objective/Vision/Mission: Works for socio economic empowerment of women in Madhya Pradesh

Work areas: Agriculture, Education, Employment, Tribal, Health, Food & Nutrition, WASH

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Saat Din Saat Ghar (or Saat Din Saat Kyari)

Nature of support: Implementation, technical and financial support for nutrition security

Source of Fund/Funding support: An initiative under Tejaswini Rural Women Empowerment Project in Madhya Pradesh supported by International Fund for Agricultural Development (IFAD)

Model Type B1

Brief description of the nature of intervention

'7-Din 7-Ghar' is an innovative initiative whereby HHs are encouraged to grow variety of vegetables for home consumption in a structured manner on a land area close to their homes. The targeted HHs are provided high quality seeds & training to grow 7 different types of vegetables e.g., coriander, eggplant, fenugreek, chickpea, spinach, red amaranth, tomatoes etc. on 7 different vegetable beds (kyaris). They are also trained to harvest vegetables from one bed each day so that at the end of the week the first bed is ready for harvest again. This ensures constant supply of greens to the households. The key components of the project were grass-root institution building; micro finance; women empowerment & social equity; livelihood & micro-enterprise. Overall, approx. 17,000 SHGs & 60 federations were formed as the grassroots institution for the delivery of the programme activities. The concept of 7 din 7 Ghar was first introduced in 2016 to tackle the overall poor nutrition indicators in the state. It was piloted in 259 villages of 9 federations in Dindori district. The idea found consensus among women SHG members who had been trained on health & nutrition issues earlier. Overall, 9892 SHG members benefitted from the pilot. The initiative was scaled up to 67,617 HHs in all the 6 project districts with many non-target villages also adopting the methodology.



Description on Nutri-garden design, operations and maintenance

Consensus building process involved SHGs' village level meetings involving discussions on frequent illnesses, malnutrition, low consumption of vegetables etc. for reaching a consensus to grow vegetables for their own consumption followed by a discussion with anganwadi staff for seeking their support. Initially federation members were trained by master trainers in convergence with ICDS for further training SHGs' members. The land plot shapes were square, circle, l-shaped etc. 7 different beds were prepared to ensure space for growing 7 types of vegetables. A min. area of 3mx3m was recommended to ensure enough produce for the HHs, however HHs with smaller plots were also supported. Boundary walls using sticks etc. were encouraged, to help creepers like gourd, pumpkin etc. In dry seasons when produce was low, HHs were substituted with forest produce like amla, moringa, karonda etc. HHs were provided 7 seeds pre packed seed pack. Cropping patterns promoted includes raised beds, intercropping of tall and low-density crops with short and high-density crops. To manage weeds, flowers such as marigold, jasmine, fruits shrubs etc. were grown. Regular monitoring was done by Tejaswini District teams & Federation CRPs to ensure adoption of practices by HHs.

Outcome and impact of intervention

Key lessons

- The implementation costs were reduced through convergence with various government schemes & departments. These includes Department of Agriculture/ Horticulture & leveraging MGNREGS
- Input management is critical for overall sustainability. Input like seeds, water, fertilizers, pesticides & land needs to be managed appropriately depending on factors like wasteland availability, water source, incentivisation via seed packs, usage of locally available materials for organic fertilizers (healthy & cost effective).
- There needs to be planning for surplus production to tackle wastage, drop in market price of vegetables etc. Vegetable production in excess of consumption by 20-30% would require advanced planning including sale in local markets, drying and preservation, institutional markets etc.

Outcomes: - Diet diversity and additional incomes from sale of surplus

Sustainability aspects

- HHs need to be trained to produce own seeds for next season & village seed banks.
- Convergence with Horticulture/ Agriculture for seeds & training.
- Use of organic, homemade pesticide/ fertilizers.
- Water Management can be done through use of waste water by channeling run off from HH waste water e.g. washing utensils, cooking, spoilt drinking water, bathing etc. Use of Traditional sources such as bore well, wells & canals and water conservation & harvesting techniques such as drip irrigation, farm ponds & small check dams can also be encouraged.

From Nutri-gardens to family diets: The Tiranga Thali approach

Nature of support: Implementation, technical and financial support for nutrition security

Source of Fund/Funding support: An initiative under Tejaswini Rural Women Empowerment Project in Madhya Pradesh supported by International Fund for Agricultural Development (IFAD)

Model Type B1

Brief description of the nature of intervention

The Tiranga Thali is an initiative to promote consumption of a balanced diet through a simple message to households to include foods of three colors- saffron, white and green - in their diet. The term Tiranga means the Indian tricolor flag and is easy to remember. Women were taught to prepare meals which included the three colors i.e. white to primarily represent carbohydrates (rice/ wheat - the flat bread roti/ dairy - milk or curd), green to represent vitamins and minerals (leafy vegetables) and saffron to represent proteins (e.g. pulses, eggs, meat etc.). The key components of the project were grass-root institution building; micro finance; women empowerment & social equity; livelihood and micro-enterprise. The concept of Tiranga Thali was complementary to the nutri garden activity of 7 din 7 ghar as a way to include the available vegetables and other food into everyday meals. This was in response to concerns raised by women in Federation meetings over malnourishment, frequent illness of their children and rising medical expenses. It was initially piloted in Dindori district in 2016 and expanded to all 6 project districts covering 113,913 households. Further hands-on training on how to get maximum nutrition from available local resources was also conducted covering 43,856 women in 1652 villages. This initiative was part of the IFAD supported Tejaswini Project in MP implemented MNVN between 2008-2019 in 6 districts- Balaghat, Mandla, Dindori, Panna, Chattarpur, and Tikamgarh



Description on Nutri-garden design, operations & maintenance

Simple messaging coupled with awareness through demonstration of nutritious recipes; rallies; peer to peer learning; discussing at federation, village level committees and SHG level; regular monitoring by the community resource persons helped in promoting the adoption of Tiranga Thali. The concept of Tiranga Thali was introduced during federation level discussions led by prominent people such as elected village head, teachers, ASHA and anganwadi workers etc. Since the messaging was to include three types of food on a plate, it required availability of fresh vegetables on a regular basis and as most villages are rain fed with limited or no irrigation, the project promoted use of forest produce such as 'moringa', 'amla', 'karonda' etc. during dry season. The project team also came up with calendars for use by households allocating seasonal and locally available vegetables. Habit formation among households was done through regular monitoring by village level CPR, discussions at village, cluster and federation levels on impact of Tiranga Thali.

Outcome and impact of intervention

Lessons

- **Avoid complicated medical terms:** Previous health camps which were conducted at the village level had limited impact, since, follow-up was expensive & messaging on vitamins, minerals, proteins etc. was complicated for people to understand.
- Simple Messaging is the key: The project became a success due to its simple messaging and linkage to a popular household imagery- the Indian flag. Instead of focusing on technical aspects such as proteins, minerals & vitamins etc. The project introduced nutritional messaging through the use of colors which were part of the Indian flag that everyone was familiar with. Further through health and nutrition training, common diseases were linked to lack of nutritious food. Malnourishment among children and anaemia among women were also discussed regularly to ensure higher uptake.
- **Promotion of local foods:** Consumption of locally grown vegetables, pulses etc. which were readily available & known to people was promoted.

Sustainability aspects:

- Tiranga Thali is linked to the availability of food and vegetables. Thus it becomes an easy accompaniment to nutri gardens.
- Initial monitoring helps in habit formation.

Outcome

Households reported less incidents of illness among children. However the impact could not be documented as the implementation period was not adequately long.

Semina Agro Trading Pvt Limited, 2015

Objective vision and mission : To ensure nutritional security, reduce drudgery and promote sustainable of farming community through quality service and partnership.

Work Areas : Nutrition, Livelihood & Digital Supported Farming

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Building Chemical Free, Organic & Resilient Kitchen Garden

Nature of support : Semina Agro is a technical partner as well as provider of quality input to organization/CSO/VSO/NGO who supports the community in implementing the program
Source of Fund/Funding support: Supported by various partners

Model Type A1, B1

Brief description of the nature of intervention

The kitchen gardening concept was initiated by the Semina Agro, a social business enterprise since 2015 partnering with VO, CSO and NGOs like Plan International, Child Fund India, World Vision India, PRADAN etc. with the goal of promoting and protecting peoples' health and reducing their food expenditures. The funds invested by partners are largely on operational works such as the procurement and training of KG seed kits. The prepared seed kits contained ten different seeds of popular vegetables and moringa as per the following table.

Season 1: Ridge Gourd, Bottle Gourd, Bitter Gourd, Sponge Gourd, Brinjal, Red Amaranthus, Spinach, Cucumber, Lobia, Okra

Season 2: Bottle Gourd, Bitter Gourd, Basella, Sem, Sponge Gourd, Spinach, Okra, Tomato, Chilly, Cow Pea

Season 3: Cabbage, Beet Root, Radish, Pea, Fenugreek, Spinach, Tomato, French Beans, Coriander, Brinjal.



Description on Nutri-garden design, operations and maintenance

Seminas' Kitchen Garden is a judicious mix of different vegetables in different season, and raises them in quantities to meet the requirement of family of five people. It is also spaced properly so that the crop matures in stages and not all at once.

Crops are prudently divided into three seasons as rotating these crops as per the season gives them a spurt in growth and productivity. The first requirement for the garden is space. Semina Agro promotes it in a small piece of land of 20' x 20' in the backyard. In this free space they orient the farmer to make small 10 manageable beds of sizes 10' x 3' to rotate the crops and plan how to water the plants and on use of compost, organic pesticides etc.

They also give orientation for bed preparation, and orient the beneficiary on the need of plants mineral nutrients and make use of the gifts of nature as necessary organic manure, and emphasize on the use of kitchen waste and grey water for composting and irrigation in the right balanced quantities.

Outcome and impact of intervention

Most of the surveyed beneficiary used their production for home consumption. Most growers have grown the vegetables for their own daily household for improvement of livelihood, food and nutrition security through homestead vegetables production. It is also reported that production of vegetables in kitchen garden provides the household with direct access to important nutrients. The majority of the growers were rural residents except in Ranchi, where the beneficiary lives in the peri-urban area. The advantages of kitchen gardening, particularly in the context of low-income households, are manifold and support the growers in achieving better health and nutrition, increased income, employment opportunities and food security of household and community social life. The vegetables produced in kitchen gardening saves money and improves taste as compared to the vegetables bought from the market. When beneficiaries were asked about project effectiveness and main benefits, growers said that the project is a useful initiative in reducing their daily kitchen expenditures and a source of an uninterrupted supply of fresh and safe nutritious vegetables. In addition, they had obtained variety of benefits from this project as growers responded that they got improved quality seeds (in terms of seed germination and growth of plant) and economical vegetables, they also considered this activity as sufficiency in vegetables production and nutritious food from their kitchen gardens.

UMED-MSRLM (Maharashtra State Rural Livelihood Mission), 2011

Objective vision and mission : An equitable, prosperous, gender-just & vibrant Maharashtra where all people live with dignity and security.

Work Areas : Livelihood, Convergence, Social Mobilization & Institutional Building, Capacity Building, Financial Inclusion and Job Placement & Skill Development

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Agri – Nutri Garden development under MSRLM

Nature of support : To ensure food & nutrition security in rural poor households by improving the access of nutritious homestead food to rural households & to support/ empower the identified vulnerable/ marginalized households with poor health

Model Type B1

Brief description of the nature of intervention

UMED-MSRLM was established in the year 2011 under Rural Development Department, with the objective of reducing poverty through sustainable livelihoods, enhancing agricultural productivity, augmenting ancillary activities through animal husbandry, imparting skills through various capacity building measures & training of youth through DDUGKY are some of the activities undertaken by the mission. MSRLM is also working towards meeting human development goals for the rural poor HHs in the SHGs. Keeping the 6th principle of Dashsutri at the center, MSRLM is rigorously working on the issues of Food, Nutrition, Health & WASH in rural Maharashtra for last 3 financial year as poor HHs are most vulnerable to 'health shocks' which often push them in poverty. While working on the same, the need for immediate access to residue free, nutrient rich fresh vegetables for nutrition security was felt at the village level & came the concept of Umed – Nutri Garden. While conducting study on the income generated by the HHs, it was observed that quite a portion of their income was being spent on healthcare facilities. If managed appropriately then this amount could have been saved and used for better purposes.



Description on Nutri-garden design, operations and maintenance

Umed Nutri-gardens are small kitchen gardens (KG) spread across 1 Guntha of land in the vicinity of the house, individual farm land or in common space belonging to the community. Umed Nutri-gardens is essential to meet daily nutritional needs of the members of HHs for better health. It is circular in shape & constitutes of 14 raised/sunken soil beds (which type of soil bed to be developed depends on the topography of the region & the volume of rainfall it receives) & 7 pathways. Objective of having 7 pathways in KG is to be able to have access to variety of fresh & residue free vegetable throughout 7 days of the week. The central pit in the KG can be utilized either as compost pit or as Azola pit, production in which serves good fodder for milking animals. An immediate circular shaped raised/sunken soil bed serves place for plantation of herbs & medicinal plants. Rest 14 soil beds are for the production of vegetables as per the need & preference of the family however there should be fine balance between leafy vegetables and fruity vegetables. The circular shaped KG serves better nutritional security if plants such as papaya, moringa, lemon, banana etc. are planted around the KG. Climbing vegetables plants can be planted along the pathways in nutri garden. Umed's KG is a model layout that can be replicated by an individual HH to meet their daily nutritional requirements or the model could be establish by the community as their collective efforts in case there is no space for individual KG. The beneficiaries of the project are members of rural communities who are part of important first 1000 days of human life i.e. pregnant women, lactating mother, children below 5 years of age & adolescent girls. The project activities includes training of field cadres – implementation – monitoring – evaluation at block level. The project intervention is at Individual level, community level and demonstration at block level.

Outcome and impact of intervention

Based on the findings of the end line study, it was identified that developing a homestead vegetable garden would be a sustainable effort to reduce malnutrition cases. The circular design of nutri-garden created with 14 raised &/or sunken beds accommodating 14 types of fruits & vegetables has had many direct & indirect outcomes that has created an impact on quality of life of the beneficiaries. One of the direct outcomes has been increased level of haemoglobin in the body from an average of 4 grams/deciliter to around 14 grams/deciliter now. Low haemoglobin levels amongst beneficiaries recorded large number of anaemia cases in the project areas & with the intervention of nutri-garden leading to intake of nutritious fruits & vegetable in daily dietary intake the cases of anaemia registered in the project area has reduced. Also, there are convergence activities with MGNREGA, WCD, Tribal Development Department, etc.

Khushi Anganwadi Project- HZL (Rajasthan)

Nature of support: Strengthening the efficacy of government's Integrated Child Development Services (ICDS) Program, so as to improve the health and well-being of children below 6 years of age
Source of Fund/Funding support: Khushi Project is one of the flagship CSR Project for HZL, Vedanta.

Model Type A1

Brief description of the nature of intervention

To improve the nutrition of children, pregnant & lactating women & to make nutritious local delicacies available at Anganwadi Centers (AWCs), efforts were made to develop Kitchen Gardens (KGs) at the AWCs from the 1st year of Khushi project in 2017 (ongoing). Intervention included a standard technical document on determining the feasibility of an AWC for developing the KG & the AWCs chosen were termed as "Feasible Centers". Feasibility criteria included availability of security such as boundary wall, water etc. & based on the assessment, seeds & other inputs were provided. 786 out of 3089 AWCs were selected as feasible centers. The intervention span across 1100 HHs involving 15 blocks of 5 districts of Rajasthan-Udaipur, Rajsamand, Chittorgarh, Bhilwara & Ajmer. Initially the intervention was carried out independently with implementation partners & in the 2nd phase MGNREGA is leveraged. Intervention involved seeds support, training & capacity building of the anganwadi staff on technical inputs, recipe trainings to mothers & anganwadi staff, development of kitchen garden (twice or thrice a year), usage tracking in AWC's hot meal, tracking of overall production, survival tracking of KGs etc.



Description on Nutri-garden design, operations and maintenance

Initially in FY'17, these nutrition gardens were set up at AWCs having availability of water only. In FY'18, with learning from last years' experience, new concept of providing seeds on seasonal basis to AWCs & community with availability of adequate space, water & safety was introduced. Also, fruit trees e.g. mango, guava & drumsticks are planted at AWCs to add more nutritive value. In FY'19, detailed training for development of KG with anganwadi workers & mothers was conducted along with imparting theoretical knowledge on variety of plants, their sowing season, soil & climate varieties. Practical sessions on landscape design, area, sowing, irrigation, fencing, use of vermicompost effectively etc. were also conducted. The average cost of setting up a KG is Rs.500. In FY'20, the focus was on the survival of the KGs & following measure were taken:

- Preparation of soil bed well before time.
- Dumping of additional soil where the quantity of soil was inadequate.
- Mixing of vermicompost manure with the soil.
- **Scheduling** - Seeds were given twice a year. (July-Aug & Nov-Dec)
- **Maintenance** - Focusing on the long-term sustainability of KG, capacity building of AWWs & AWHs was done through trainings, as they are responsible for the maintenance of KGs.

Outcome and impact of intervention

Findings – KG developed at the AWCs are more effective as compared to community; Nutritional food in daily dietary intake has increased; AWWs have used the vegetables in hot cooked meal at AWCs, which gave good source of nutrition to children.

Key Challenges - Safety issues for KG after AWCs working hours; Lack of feasible spaces & water at AWCs; Uncertainty of survival of fruit plants.

Results and Impact - Nutritious meal at Anganwadi centers; Improvement in dietary diversity; 78% of SAM children moved out of SAM category with additional interventions on health; Survival rate of 67% of KG was achieved throughout the year; Practice of KG appreciated by state & replicated

Plan to Scale Up - In FY'21, there will be convergence with the government to develop KGs through MGNREGA & social forestry department. The project will also establish KGs at AWCs & HHs at feasible locations based on feasibility study. Project may also leverage other corporates/ agencies for the same initiative & motivate community to take the ownership.

Rewards & Recognition: Awarded by Government of Rajasthan for best CSR project; Golden Peacock Award for best CSR project by Institute of Directors; Order of Merit to Khushi anganwadi program by Skoch CSR Awards; CSR Health ImCouncpactil Awards in Women & Child Category IHW (India Health & Wellness).

Regional program for promoting a multisectoral approach for Nutrition Smart Villages in India, Bangladesh & Nepal

Nature of support : The intervention mainly includes 5 "good practices", namely, Nutrition Camps, Integrated farming and Nutrition garden, Nutrition sensitive Gram Sabha planning, LANN+ PLA & Institution building.
Source of Fund/Funding support : BMZ

Model Type B3

Brief description of the nature of intervention

Ensuring year-long dietary diversity for the family, especially women in reproductive age & children, is one of the many challenges faced by the socio-economically backward sections of India. Recently, MoRD, GoI has issued a guideline (4th May, 2020) for the MGNREGS - individual benefits scheme for promoting Nutrition Gardens (NGs) with the goal to enhance dietary diversity at HH level as well as to support income & employment for the family. A well planned NGs can produce enough to sell excess after consumption. It has been found that there is good demand for these vegetables & fruits within the villages as the neighbors are aware that they are 100% organic. Welthungerhilfe has demonstrated NGs using the agro-ecological approach of Sustainable Integrated Farming Systems (SIFS) that have the potential to survive throughout the year, low cost & require very little space. As the idea of the NG is to provide the necessary dietary diversity for the HH, so it is important to incorporate poultry & livestock, trees, composting units & relevant management practices. Welthungerhilfe NGs initiative can be replicated under the MGNREGS scheme through labor provided by the NG owner. In India, in collaboration with the ICDS & the block administration, 50 pilot Nutrition Smart Villages have been demonstrated in each of the Chhatrapur and Sheopur districts. Around 1509 undernourished children & their family have been supported directly on nutrition gardens.



Description on Nutri-garden design, operations and maintenance

The intervention mainly includes 5 "good Practices", namely, Nutrition Camps, Integrated farming and Nutrition garden, Nutrition sensitive Gram Sabha planning, LANN+ PLA & Institution building. Families of the malnourished child and interested farmers from the village are trained on Sustainable Integrated Farming System (SIFS) as demonstration farmers under the Farmer Field School (FFS) concept on homestead land or any space adjacent to the house. These farmers demonstrate on their own farms and train any other person/farmer interested in replicating the farm design. Besides training, project provides minimum support for seeds, some model structures for animal rearing- cow urine collection, Pheromone traps, model poultry sheds, low cost fencing, etc. the project also provides a one-time lump sum of Rs. 1500 along with community monitoring for tracking progress.

Some Simple Models

Key-hole garden - Wastewater/ kitchen waste are thrown in the middle of a circular garden - composted nutrient flows down to the crops by gravitation; **Mixed cropping** - Plants are arranged, shortest towards east and tallest towards western end, to optimally use sunlight. Crops of different families are grown together through intercrops, relay crops, mixed crops for optimum utilization of space time & nutrient. **Living fence**- Often trees & creepers are introduced in the fence to get more output & protection. Nitrogen

Outcome and impact of intervention

In India & Bangladesh, MDDW (≥5 food groups) increased from 3 & 5% (2019) to 52 & 85% (2020) respectively. Among those consuming ≥5 food groups 75 & 80% is consuming from own production in India and Bangladesh respectively. Welthungerhilfe has promoted over 7,000 nutrition gardens through FHFI, SIFS and Green College programme in West Bengal, Jharkhand, Madhya Pradesh, Odisha, Rajasthan and Karnataka. Average garden sizes are 60 to 70 m2 per HH & average yield per week varies between 12-14 kg per week during peak period & 7-8 kg during lean period. Dietary diversity has increased from 3 to 6 food groups through consumption of Vit. A rich, Iron rich, Vitamin C rich food, plant proteins etc. Families take excess vegetables to the local market and generates around Rs.250-500 from which they regularly save in the group fund. At present, families store & exchange seeds of 25-30 vegetables, herbs etc. among themselves, which in turn has reduced their dependence on the non-replicable hybrid seeds sold in the markets.

fixing trees are used for green manuring with leaves; **Integrating trees** - Fruit trees can be integrated e.g. Papaya, moringa & banana as it gives food throughout the year, even if in stress period. **Bio pest repellent**- Gardener can produce own pest repellent with locally available materials like ginger, chili, wood ash, neem leaves etc. Producing own manure-Manure can be produced through vermicomposting, liquid manure with locally available weeds, chicken shit, goat shit to improve soil health, reduce cost of production and getting poison free food. Biogas can also be integrated. Water management Storing rainwater & improving irrigation through pitcher irrigation and improving moisture retention through mulching are very important for gardens in dry area. Integrating livestock-For improving nutrition, income enhancement and getting manure integrating duck, hen, goat with the garden is very important. Azolla can be cultivated as fodder.



Photo: MSSRF

CHAPTER 3: INDIVIDUAL BENEFICIARY CASE STORIES

Individual beneficiary case story

1

3.1 A step towards self-sufficiency

This story is about a farmer who with his own efforts attained self-sufficiency in growing diversified vegetables for his family. He resides in Khidki village, situated 25 km away from Dharni (Amravati district, Maharashtra) on a hill of 150 ft. steep alleviation. The village faces severe drinking water scarcity and as it is surrounded by a forest, villagers also face the menace of wild animals in their farms.

Shankhlal Chimote a resident of this vulnerable village, has 3 children, all identified with moderate acute malnutrition during the

Location: Khidki village,
Dharni (Amravati district,
Maharashtra)

Action Against Hunger India's screening cycle. During one of the routine discussions on food security and livelihood and its relation with preventing malnutrition, he expressed his willingness to undertake the essential steps required for ensuring good health for his kids.

Subsequently, he was educated and trained on implementing kitchen garden following which he enthusiastically agreed to lay out and setup kitchen garden on his field. He was provided a seed kit and set up with the layout for kitchen garden. He completed his kitchen garden sowing in July (2018). In August, the village experienced a dry spell for 15-20 days due to which he had to fetch water from a long distance to irrigate the kitchen garden.



He was advised to invest in an electric motor pump that would reduce his drudgery, but could not do so due to financial constraints. However, a month later, with enough produce in hand, he purchased an electric pump by selling some of his farm produce after ensuring enough quantity for his family. With adequate resources in place, he is now able to grow and harvest the vegetables in adequate quantity. He has even actively shared his experience with other villagers and encouraged them to establish their kitchen garden. Even these villagers are now enthusiastic to establish their kitchen garden and are looking forward to growing their own vegetables.

Individual beneficiary case story

2

3.2 Chemical Free and Resilient Kitchen Garden

Mon district in Nagaland is among the country's 250 most backward districts. Most of the population depend on agriculture or agri allied activity and are involved in Jhum.

Nutritious food is difficult to find in poorer rural areas where most people are dependent on staple foods with little diversity (Krishna, 2004; Johns and Sthapit, 2004; Talukder et al., 2004). It is especially a challenge in the far Northern most district of Nagaland, where geographic remoteness, education levels and poor economic conditions are the main obstacles that limit access to green vegetables more so, during rainy season as most of the green vegetables are accessed from Assam.

To disseminate the benefits of kitchen garden and augment the use of organic green vegetables Mon Area Development Programme of World Vision India, in technical association with Semina Agro

Location: Mon District,
Northern most district of
Nagaland

selected individuals for TOT to orient the importance of kitchen garden in the area.

Kitchen Garden promoted by Semina Agro is a judicious mix of different vegetables in different season, and raises them in quantities upto 250 kgs. per season to meet a requirement of family of five people. Crops is divided into three seasons as rotating these crops as per the season gives a spurt in growth and productivity. The selected beneficiaries were oriented for bed preparation and on the need of plants mineral nutrients. The kitchen garden is a small piece of land of 20' x 20' in the backyard with 10 manageable beds of sizes 10' x 3'. This garden demands the odd 30 minutes or an hour in a day to monitor the general health, progress, and of course the mundane job of irrigation.



Semina conducted sessions on scientific and organic farming techniques and now most of the beneficiaries have flourishing gardens and have access to a range of vegetables like French bean, cow pea, peas, amaranthus, sponge gourd, bottlegourd, spinach, basella, cucumber, cabbage, bhindi etc.

Toikam, a beneficiary of World Vision India kitchen garden initiative and a resident of Lamcong Sheanghah village in Mon says,

“Apart from an increase in income, the kitchen garden initiative also helped me to ensure food security and improve the nutrition status of my child & family. Moreover, my family members are now proud of my initiative”



With the guidance I received, I know the value of kitchen garden and at this time of COVID-19 the realization was more as I did not have to buy vegetables from the market and saved money instead, admits Toikam. The gardens improved our social status as well as our awareness with regard to the importance of a healthy diet for our children. For some of us women, we also sold some of our garden products in the local markets, it is also a good source of income.

Individual beneficiary case story

3

3.3 Nutrition sensitive Integrating Farming System (NSIFS) to enhance diet diversity

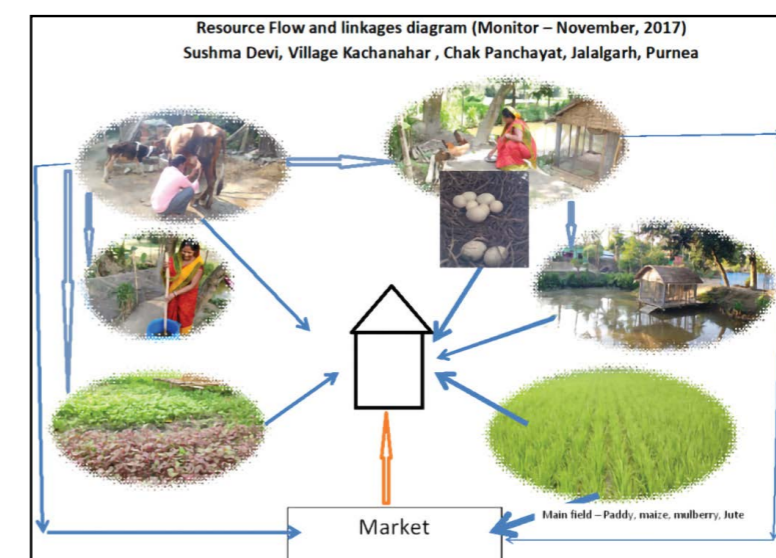
Agriculture over the ages has evolved from subsistence to surplus and thus the nature of farming has also changed from ecological perspective to mono-crop practice with high reliance of farmers on external inputs for production. The blind following of external input-based agriculture has made farming less viable and less rewarding enough to compensate the household dietary requirements in terms of diversity and seasonality.

The NSIFS approach introduced by JEEViKA with technical inputs from Abhivyakti Foundation and UNICEF has raised her (Sushma Devi from Kachnahar) hopes to become an independent farmer.

After the training, she understood about

Location: Kachnahar Village, Chak Panchayat, Jalalgarh, Purnea district, Bihar

under-nutrition and its remedy. The remedy was to focus on increasing household palate with different variety of food and recipe thereby increasing the diet diversity. She had a 70'x70' pond which was seldom used to produce fish. The family had production of crops like paddy, maize, mulberry and jute from their main fields apart from some vegetable production in post rainy season and some pigeons at home. Mostly the production sources were from four of the sub-systems viz. crops, trees, pond and birds.



The NSIFS approach helped her to add two more sub-systems animals and bio-digesters apart from expanding the diversity of birds.

She has also planted some banana, planktons and guava at home. After setting up all these six sub-systems at home, she is getting sufficient nutrients from different sources at home in the form of eggs, meat, fruits and milk on regular basis now.

She constructed a duck and hen house over the pond and now rearing 15 hens, and 13 ducks from which she is getting 14 eggs every day. The duck and hen excreta directly dropped into the pond has saved her feeding cost of the fish that she has reared in the pond. She has also added 10 more pigeons at home.

She also bought a cow, apart from milk production the cow dung and cow urine are also now efficiently used in making compost and liquid manure for instant use in her fields.

The increased income from cow and birds has helped her to invest in developing the nutri-garden more efficiently. Sushma has carefully developed her kitchen garden with green leafy vegetables, other vegetables, vitamin A rich fruits and herbs for regular supply to her kitchen. With composting, liquid manure techniques, use of bio-mass and recycle she has reduced the input cost of farming by one third.

Now convinced with the NSIFS approach Sushma and her husband are helping other small farmers also in their neighbourhood to follow the practice for diet diversity that are available at source i.e. at home.

Individual beneficiary case story

4

3.4 Jillobai's nutrition garden - a boon for many in her village in Sheopur, Madhya Pradesh during the coronavirus crisis

Jillobai's family of five includes her husband, two teenage children and her mother-in-law. Their main source of livelihood is from traditional farming. During the year, they cultivated maize and peanuts in Kharif (monsoon season), and wheat and gram in Rabi season (winter season). Due to lack of knowledge in mix cropping, they had to migrate to nearby towns and cities from March to June, every year.

Jillobai's village is among the villages where Welthungerhilfe in collaboration with Mahatma Gandhi Seva Ashram (MGSA) is working create nutrition smart villages with an aim to develop informed village where communities understand 'nutrition' & are aware of linkages between agriculture, natural resources, WASH, income & nutrition education.

MGSA under the project, supported Jillobai with learnings of mix cropping and sustainable agriculture. On nearly 0.5 bigha of land which she set aside for a nutrition garden, she now grows a variety of vegetables, fruits and spices such as ridge gourd, pumpkin, tomato, bottle gourd, turmeric and watermelons. This year (2020), produce from the nutrition garden helped Jillobai earn around INR 500 – INR 750 per week. She also had around 50kgs of turmeric production. Jillobai and her family consumes the fresh vegetables and fruits and sells it locally. The produce

Location:

Nayaganv Village,
Sheopur District,
Madhya Pradesh

proved to be vital not only for Jillobai who did not have to migrate during covid-19, but was also beneficial for the locals. She distributed nearly 45kgs of vegetables to her neighbours in pandemic.

Jillobai, a resident of Nayaganv village Sheopur district, Madhya Pradesh says,

“Earlier, I did not know anything about mix cropping. But with the help of the team, I set aside a small section of our land and started growing a variety of fruits and vegetables. This year, I am happy that I have enough produce during this time of the year. Otherwise, we would have migrated looking for work”.



Individual beneficiary case story

5

3.5 Beneficiaries of Khushi Project-Plants for Nutrition

1. This story is from Dadiya Anganwadi center of Suwana block which is 24 kilometres far from district headquarter. The anganwadi worker Kesar Vaishnav is very active and dedicated towards her work. She established kitchen garden (with the support of Khushi team; Khushi is a flagship project of HZL) in the available space of AWC and provided vegetables to the community members. When the rainy season started Kesar decided to sow new seeds with the help of the community.



Community members provided support in the form of seeds, some of them helped in preparing field, sowing seeds. Seeds of Bottle gourd, Pumpkin, Brinjal, Coriander and Tomato along with climber and clipper were sown in the kitchen garden. In the month of September 2020, Pumpkin were produced in good quantity from kitchen garden which was distributed to

Location:
Bhilwara District,
Rajasthan

the needy people of the community during Nutrition month and as well as during events celebrated at Dadiya center.

2. In another case study of Khushi Project, Kitchen garden was attempted in the house of a pregnant mother who is also a mother of a malnourished child. She initially refused to establish a kitchen garden in her home premises due to small space and threat of animals. She was advised to build a decent enough structure like a boundary wall with old clothes and planks of trees. She now takes care of the kitchen garden and grows her vegetables.



3. This story is from Muhla anganwadi centre which is in Bacchkheda sector of Shahpura block. Muhla village is 22 kilometres' far from block head quarter Shahpura and 72 kilometres' far from district headquarter Bhilwara. Ms. Sarita Sharma is an inspiring lady working at anganwadi center from last 10 years. Most of the families are farmers and do animal husbandry in this village. Under Khushi Project when consumption of local home-grown vegetables was promoted, anganwadi worker Ms. Sarita was inspired and decided to grow one such kitchen garden at her anganwadi center. She planted the vegetable at her anganwadi but due to lack of security, kitchen garden was destroyed.

Her efforts for the first time were in vain. Ms. Sarita found that people threw the waste around the anganwadi center. She realized that without ensuring safety, there was no meaning to establish kitchen garden. She decided to solve the problem and with help of Khushi cluster coordinator Mr. Sohan Bairwa she organized community meeting at anganwadi centre. In the meeting Ms. Sarita shared the problem before community members.



In this meeting, community members decided to ensure safety though fencing round the anganwadi centre with community contribution. With support of community people, fencing was done around the AWC. Now the kitchen garden is safer than earlier.



Now, Ms. Sarita is growing vegetables in her kitchen garden and distributing it to pregnant, lactating mothers in the community.

During the COVID-19 pandemic, Ms. Sarita distributed vegetables to the community. Before starting the kitchen garden, a feasibility survey is done to ensure its yearlong survival. The prerequisites for choosing an AWC for establishing kitchen garden are mainly availability of enough water, open and the fertile area and boundary wall for the protection against animal along with Consent of AWW for the sustainability and maintenance of the garden. Seeds of Bottle gourd, Brinjal, Reddish, Coriander, Spinach and Tomato along with climbers and creepers are sown in these gardens.

Individual beneficiary case story

6

3.6 Efforts of Yuvasathi Suresh Purty towards enhancing diet diversity of Ambrai village in West Singhbhum district, Jharkhand

Suresh Purty is a Yuvasathi who facilitates monthly adolescents' group meetings in his village Ambrai for the last three years. His interest in agriculture and knowledge about indigenous trees, floras and faunas helped him to be included in the trainings on organic farming practices and improved farming techniques.

He used to grow paddy in the traditional broadcasting method, but in 2017 he started System of Rice Intensification (SRI) method of paddy cultivation in 20 decimals of land where he got four quintals of paddy and Rs.5,200/- as income. The next he did this in 35 decimal* of land and with an investment of Rs.2,000/- and he got 7.5 quintals yield with a profit of Rs.9,000/-.

As a keen member of the Kisan Samiti, he not only encouraged and motivated other

Location:
Ambrai village, khuntpani Block, West Singhbhum District, Jharkhand

farmers for adopting SRI methods, but also engaged with adolescents for kitchen garden and vegetable cultivation as a part of the nutrition cycle in the participatory learning and action (PLA) meetings where one of the strategies was to develop their own kitchen gardens. Suresh says, now in Ambrai village almost every family has a kitchen garden and the adolescents are consuming their own grown organic vegetables



*Note :- 1 decimal equals to 436 sq. ft. or 40.5057 m². It is approximately equal to 1/100 acre.

Individual beneficiary case story

7

3.7 Success Story during COVID-19: Chameli Devi from Barguwan village in Sheopur district appreciating Community Nutrition Garden initiative

Chameli Devi informed that, had there been no garden they would just have eaten chilly, onion with chapatti due to lack of income during lockdown. Not only her, other selfhelp group (SHG) members of the Community Nutrition Garden are also getting fresh vegetables. Chameli appeals to stay healthy by keeping their family meals nutritious and balanced.

She is part of the Community Nutrition Garden initiative by GIZ FaNS project for the last 10 months. She belongs to scheduled tribe and has a minimal source

Location:
Barguwan village, Sheopur District, Madhya Pradesh

of income. During this difficult COVID-19 pandemic time, where many community members in her village feel helpless and stressed about the situation, she remains confident and does her bit in spreading awareness on COVID-19 in her hamlet with the knowledge gained during SHG workshops conducted by a Poshan Saheli.

“

I am glad that during this lockdown period I could add nutrition value to my family's meal with the help of the community nutrition garden. I have worked hard in taking care of the plants and now I do not have to worry about the fresh vegetables as it is right here

”



Contact: nadine.bader@giz.de

Individual beneficiary case story

8

3.8 Kitchen Garden has changed the Nutrition-intake of Rubi Devi and her Family

Background. Rubi Devi is a member of Seema Self Help Group (SHG) in Dasrathi village of Dharhara block in Munger district of Bihar. She has 4 children and her husband has migrated to Delhi for job. In 2017 she became member of BAIF and started working as a Prerak Didi in the organization.

She has completed her training with BAIF on kitchen garden and started her kitchen

Location:
Dasrathi Village,
Dharhara Block,
Munger District, Bihar

garden in her own 2 kattha* land as per the guidance received from BAIF under TARINA project. After the training, she is now helping her village group members in issues related to kitchen gardening.



She says that-

“

Being illiterate has not bothered me to earn money and support from BAIF gives me more way of possibilities.

”

She also said that earlier she was only growing potatoes and onions from her land with occasionally purchase of vegetables. Since it was too expensive to purchase vegetables from markets, so most of the time she use to feed potatoes to her family. After intervention by BAIF under TARINA project she was encouraged

to develop her garden properly. Now she has a range of vegetables and fruits in her kitchen garden namely bottle gourd, sponge gourd, beetroot, carrot, bitter gourd, green chilis, radish, cucumber, lady’s finger, spinach, fenugreek (Methi), beans, coriander, lemon, drumstick etc. As she says that “with the vegetables, which I

*Note: - 1 Kattha is generally equal to 1361 ft²

now get from my kitchen garden, I am able to take care of health of my family”. She also tries her best to ensure that everyone in village maintain a nutritious diet. She usually sells vegetables to her neighbors and to the Haat (hatia) which is a local market in the village.

Challenges

Rubi Devi mentions that the main challenge was of irrigation water. After having the solar and Tullu pump in her village from BAIF, she is able to irrigate her kitchen garden on regular basis. Still, there are challenges related to irrigation of the crops on the villages as the water tables is gradually reducing.

Impact

Rubi Devi earned Rs.4000 from 2 Kattha of land in a season and used it as an

asset creation i.e., she bought jewelry for herself. She also mentions that she could have earned more but at that time her father expired, which kept her engaged. She informs that earlier she used to have mostly potatoes in her plate but now they have at least 2 vegetable in plates of her family on daily basis. She has also cleared her due savings in SHG from Rs.400 earned through selling of saag (green leafy vegetables) from her kitchen garden. She has also started saving and spending her earning towards her children education.

The initiative of generating awareness and providing training related to kitchen garden has not only helped the poor to address their nutritional needs but has also helped them to make some money from the surplus produce sale.

Individual beneficiary case story

9

3.9 SEED Mother Rahibai gets Padma Shri

Rahibai Soma Popere is a 52-year-old tribal farmer from Mahadeo Koli Tribal community from Kombhalne village of Akole tribal block in Ahmednagar district of Maharashtra. She could not attend school due to poverty and started supporting her family in agricultural work in agri labor and cow rearing since she was 10 years old. She got married with Soma Popere, who was also uneducated, at the age of 17 years. The whole family was dependent on agriculture. Although she had not attended school, she learnt about agro-biodiversity, wild food resources, and traditional culture through practice and experience.

Through her experiences, she realized that the conservation of agro-biodiversity and wild food resources is the need of the hour to achieve seed sovereignty and nutritional security. She started a nursery of Blackberry and distributed them as a gift to members of the Self-Help Group (SHG).

She then established a nursery of hyacinth bean seedlings, rice, vegetables, beans landraces and shared them with 210 farmers in 7 villages of Akole Block. She also conserved and multiplied about 43 landraces of 17 different crops (Paddy, hyacinth bean, millets, pulses, oilseeds, etc.) by establishing an in-situ germplasm

Location:

Kombhalne village,
Akole tribal block,
Ahmednagar district,
Maharashtra

conservation center. She has also established a perennial kitchen garden for house-hold consumption and year-round use. Popere is an active member of Kalsubai Parisar Biyanee Savardhan Samiti, Akole, and has established a community seed bank in her small house for conservation and revival of crop diversity and wild food resources.

At present, about 122 landraces of 32 crops are under conservation. She has the zeal to learn new agronomic techniques. She developed expertise in the SRI method of paddy cultivation, improved cultivation practices for tomato and hyacinth bean, introduced participatory seed selection, organic farming techniques (vermicomposting, vermiwash and natural pest repellents), nursery establishment and trained about 3500 farmers across Ahmednagar district. She leads 5 Self Help groups in Kombhalne village and is creating awareness among women for participation in the Self-Help

group movement, village sanitation, clean kitchen, seed conservation, and wild food exhibitions. Her work has drawn a lot of visitors-agriculture officers, scientists,

Science & Technology (DST), has been conferred fourth highest civilian national award **Padma Shree** for her contribution in the field of agriculture.



farmers, students from different parts of Maharashtra who came to see her in-situ conservation center, hyacinth bean diversity center, kitchen garden, etc.

Rahibai Soma Popere, now popularly known as SEED Mother for conserving indigenous seeds and associated with BAIF Development Research Foundation, a Core Support Group of Department of

She has worked for conserving hundreds of native varieties and encouraging farmers to grow traditional crops. She has also made it a motto of her life to spreading awareness about organic farming, agro-biodiversity, and wild food resources.



Photo: MSSRF

ANNEXURE

ADDITIONAL SUPPLEMENTS

A. Azim Premji Philanthropic Initiative (APPI)

Different Model of Nutrition Garden as per Family Size:

- **1 Cent model** (435.6 Sq. ft. area): For a family of 2 adults and 1 child (*3 family members*)
- **2 Cent model** (871.2 Sq. ft. area): For a family of 3 adults and 2 children (*5 Family members*)
- **3 Cent model** (1,306.8 Sq. ft. area): For a family of 4 adults and 3 children (*7 Family members*)
- **4 Cent model** (1,742.4 Sq. ft. area): For a family of 5 adults and 4 children (*9 Family members*)
- **5 Cent model** (2,178.0 Sq. ft. area): For a family of 6 adults and 5 children (*11 Family members*)

N.B.: From 1 Sq. ft. area, 2-2.5 gm of green vegetables can be collected per day. Average vegetable cultivation area is 60 - 65% of total garden area. Rest 35 - 40% area is utilized for horticultural plantation, walking path and organic manure preparation.

Example: If family members are 5 (3 adults and 2 children), then 2 cent area is sufficient to get optimum amount of green vegetables per day during the growing period. Suppose he/she cultivates vegetables in 5 cent area, then he/she can distribute the surplus to his/her neighbours after fulfilling the family needs or can sale the surplus or use for other purpose.

Container Vegetable Nutrition Gardening

Container gardening is the process of growing plants in containers instead of planting on the ground. Vegetables can be grown in different containers like jute sack, plastic sack, plastic bucket, partially broken or old earthen pot/vessel, wooden box etc. As containers are portable, they can be transported to other places. Container gardening is ideal for those families who are landless or with limited land. At least 2-3 sacks are required for a person to get required amount of vegetables per day. For a 5 member's family, 10- 15 sacks will be required to get optimum amount of vegetables per day.

Container Vegetable Nutrition Gardening

In rural areas, no cost technology of preparing the growing medium for container gardening is the mixture of soil, rice bran and FYM or Compost in 3:1:2 ratio. After mixing, the mixture is dried under partially shade condition for 3-4 days. Then the container is filled with the mixture. There has to be at least 3-5 nos. of small holes under the container for proper drainage of water.

Advantages of Container Nutrition Gardening

It is a hope for the landless families who have either very less or no backyard / front yard area adjacent to their houses. Extent of risk is very less in comparison to cultivation on ground. Use of seeds is very economic unlike sowing on the ground in large patch. It either requires very less space on the ground where we keep the container or no space for hanging containers. Less risk of diseases, mostly soil-borne disease is not seen. Suppose a plant in a container garden gets infested with disease, then it is less likely to spread to all other plants in the garden. Also weed problem is not seen and if seen, then it can be controlled manually by uprooting the entire weed. Water management in a container garden is not a problem like vegetables grown on the ground.

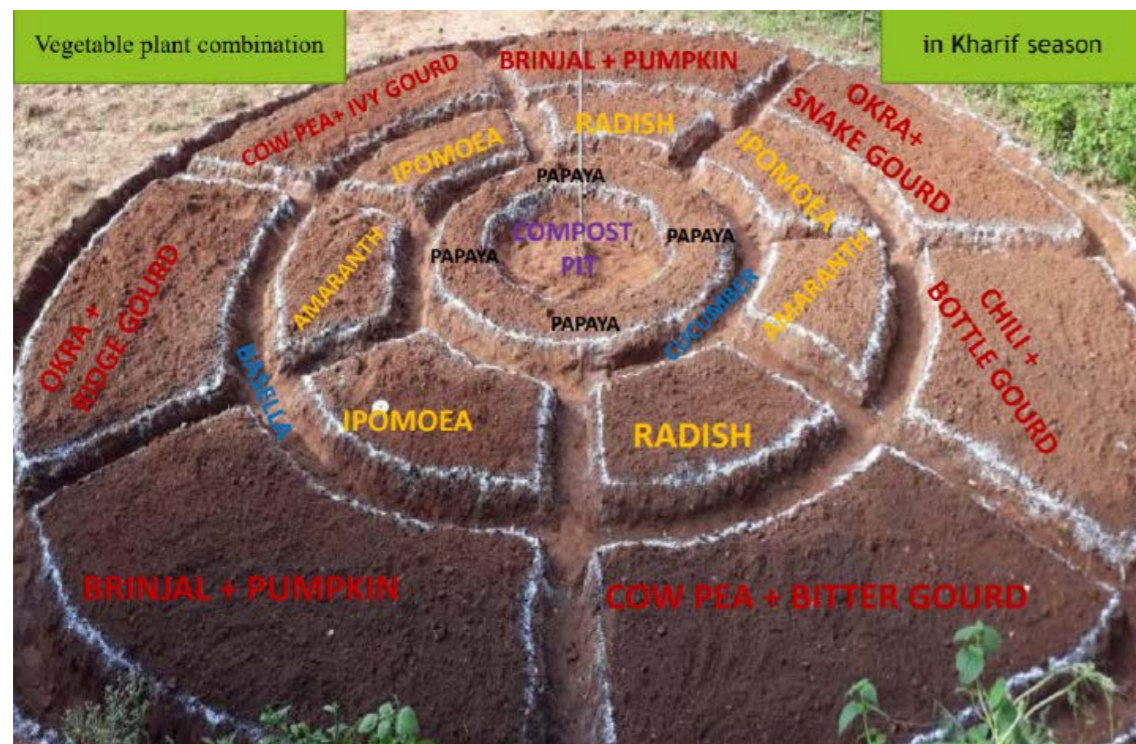
Disadvantages of Container Nutrition Gardening

Container vegetable gardening can fulfill the requirement of vegetables to some extent but may not fulfill the requirement in macro-level. Jute sack used is prone to tearing, mostly during rainy season. Similarly, hailstorm or throwing stones to earthen vessel may be a threat. Small containers may not encourage the growth of plants like gourds properly, as the root system may be arrested due to space constrain. There may be risk of theft as the containers are light & portable.

Circle Bed Nutrition Garden

It is one of the no cost techniques of vegetable production system. It requires at least 1-2 days to prepare a big circle bed with compost pit at the center, surrounded by 14 nos. of small plots for raising different vegetable & herb plants. Kitchen scraps, leaves & weeds without seeds & roots can be placed in the center. An occasional layer of cow dung will help to keep the compost forming (accelerates composting process) & a layer of straw on top will keep it moist. Usually heavy water duty vegetable plants are sown towards the center. Low water duty vegetables are sown towards the plots nearer to periphery region. From 1 big circular bed of area 706 sq. ft., 900-1200 gram of vegetables can be collected per day. At least 10-12 types of vegetables can be grown in a big circle bed.

Circle Bed Nutrition Garden



Concept and evolution of the Mo Upakari Bagicha (MUB) program:

Malnutrition is a very serious issue in Odisha. Despite progress in malnutrition reduction in the State, 34% of children under 5 years of age remain underweight and 34.1% remain stunted (NFHS-4, 2015-16). With growing understanding of the complexity of malnutrition and its multifactorial causes, there is a compelling need to move towards adopting and promoting a multisectoral approach in order to achieve better nutrition outcomes. Honourable Chief Minister envisaged to eradicate this problem and Azim Premji Philanthropic Initiatives (APPI) along with ten departments working closely to achieve the goal in coming 8- 10 years. Odisha Nutrition Action Plan (ONAP) is prepared and nutrition Secretariat is also established. Through ONAP (Odisha Nutrition Action Plan), it will strengthen Institutions (like ICDS) using the route of community mobilization, empowerment and data management for service delivery of nutrition services and strengthening service delivery of care to the mother and child by leveraging existing state government schemes.

While it will promote technical interventions and innovative approaches, it will also create proofs of concept of new interventions and enhance areas of downward accountability and quality of services through credible partnerships. Odisha Livelihood Mission under Panchayati Raj and Drinking Water Department, Government of Odisha, in collaboration with Azim Premji Philanthropic Initiative (The Philanthropy) has initiated a Nutrition Sensitive Program (later renamed and launched as Mo Upakari Bagicha) across Odisha to address dietary diversity among women and children. This special initiative is likely to mobilize 7.5 lakh household across Odisha through promotion of Backyard Nutri garden, Back yard Poultry and Goat rearing. These gardens to be created by each house hold themselves in 1-2 decimal of land for producing round the year vegetables and fruits, for selfconsumption especially by children, adolescent girls, pregnant women and lactating mothers.

These gardens are designed to focus on providing dietary diversity, by production of 13 different types of vegetables, 4 different types of fruits, essential for women and children based on the food groups. Back yard poultry and goat rearing are additional steps being taken to enrich nutri-garden and provide dietary diversity to households. It is expected that 2.5 Lakh or more households will practice nutri-garden, consume fruits, vegetables, eggs and meat, through a massive awareness building program to be executed by 9-13,000 community cadres associated with Gram Panchayat level federations organized by Odisha Livelihood Mission. Implementation Structure and Progress so far:

- The Philanthropy supported the NGO Living Farms who developed and demonstrated a proof of concept related to nutri-garden and PLA-LANN (Participatory learning and action-linking agriculture to natural resources and nutrition) which can be scaled up the government.
- The Philanthropy and Odisha Livelihoods Mission agreed to work together to tackle the health and nutrition issues as mentioned in “DASA SUTRA” and replicate the nutri-garden and PLA_LANN with SHG as the primary Institution.
- Two more resource NGOs (RNGOs), Harsha Trust and PRADAN identified who were having similar experience in Odisha.
- The Philanthropy facilitated all three RNGOs to develop a common understanding and propose a simple and scalable model that can be implemented through OLM’s SHG systems.
- There are three major components of MUB program e.g. PLA-LANN, nutri-garden and livestock (back yard poultry and goat rearing). RNGOs has developed 14 weekly modules which will be delivered in 14 weekly SHG meetings spread across year. These modules are related to various nutrition specific and sensitive thematic issues. The main objective of PLA-LANN modules are to build knowledge, awareness and practice among SHG members.
- The 14 weekly modules will be delivered to 7.5 Lakh households through 75000 SHG. And at least 2.5 Lakh Nutri gardens (Mo Upakari Bagicha) to be developed covering all the designated vulnerable groups.
- The 14 weekly modules will be delivered to 7.5 Lakh households through 75000 SHG. And at least 2.5 Lakh Nutri gardens (Mo Upakari Bagicha) to be developed covering all the designated vulnerable groups.
- Philanthropy along with OLM and three RNGOs visited BRLPS, Bihar and other areas to understand the concept better and further strengthen the model for OLM.
- Four proposals were prepared one for OLM as primary implementer and one for each RNGOs with a common result framework. Clear role of OLM, RNGOs and The Philanthropy was finalized and written.
- MoU between The Philanthropy and OLM signed in June, 2018 and the Philanthropy agreed to provide both funding and other support to OLM and three RNGOs for three years.
- Dedicated nutrition vertical with 7 state level staffs and 90 district level staffs was planned. All the state level staffs joined in Oct, 2018 and all of them oriented about the program.

- For building the capacity of community cadres, 240 Master trainers have been identified and trained on specific modules of Back yard Nutrition garden, Livestock (poultry and goat) by three resource NGOs.
- The Programme is going on in all 30 districts of Odisha and initially in 107 blocks. There are two types of implementation strategy. In 47 blocks RNGOs have placed their dedicated resource person to OLM called Block Level Resource Person (BLRP). In rest 60 blocks RNGOs are supported as per the need of OLM district and block teams.
- Field implementation of Nutri garden started in kharif, 2019(May/Jun) with 33,000 SHG members.
- This year Govt. of Odisha has included nutri-garden as one of the activities under MGNREGS and allocated additional resources to establish 5 lakh nutri-garden all across the state. Here extra features of one water storage pit, a separate compost pit and fencing with an entrance gate was provisioned in addition to earlier features of both the circular and rectangular model being done earlier. So, 33-man days is provisioned from MGNREGS.
- In this current kharif season (2020), OLM has already established more than 2 lakh nutrigarden.
- All SOPs and guidelines issued to all the districts for establishing nutri-garden, livestock, PLA-LANN and MGNREGS.

Different components of Mo Upakari Bagicha are as follows:

1. Nutri-Garden (3 models)-No chemical, only indigenous seeds and focus on consumption are the three nonnegotiable.

a. Rectangular Model:

- 7 rectangular beds 20ft X 3.5 ft. each
- 4 circular pits at 4 corners to serve as compost pit as well as to grow some vegetables around it with staking
- 2 lemon, 3 banana, 3 drumstick and 2 papaya plants to be planted around the Nutri garden.
- Total Area of Nutri garden is 872 sq. feet (2 cent) which gives 1500 to 1800 gram of vegetables each day to a household



b. Circular Model:

- One compost pit at the center
- 7 bigger beds and 7 smaller beds
- 2 lemon, 3 banana, 3 drumstick and 2 papaya plants to be planted around the Nutri garden.
- Total area of Nutri garden is 706 square feet (1.6decimil) which gives 1000 to 1200 gram of vegetables every day to a household



c. Land Less model

- Vegetables to be grown in Gunny Bags
- Suitable for Land less people



2. Back Yard Poultry and Goat Rearing:

- To work with existing desi birds. 5 hens + 1 cock model
- A proper night shelter and day time confined grazing area
- Clean drinking water and supplementary poultry feed for the birds
- Regular deworming and vaccination
- Goats(5does+1buck) are reared with raised platform
- Timely deworming and vaccination are ensured

Back Yard Poultry and Goat Rearing:



3. PLA LANN (Participatory Learning and Action, Linking Agriculture & Natural Resources with Nutrition)

- Out of 52 weekly meetings of SHG in a year 14 weeks are dedicated for PLA LANN Meeting
- Meetings are so designed to self-motivate the SHG members to go for Nutri garden even without financial support from government.



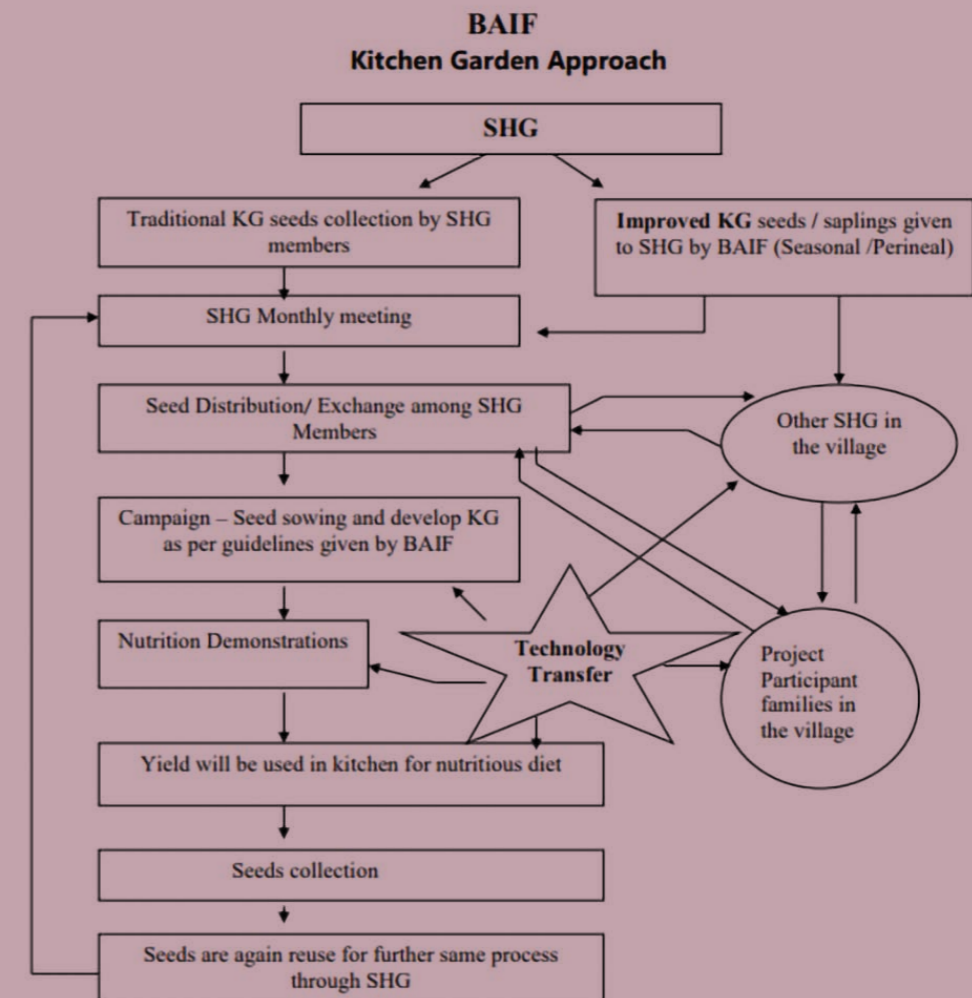
Earning from the MUB Program: -

- SHG is a right vehicle for implementation of the program as envisaged.
- Cascading mode of knowledge transfer and building people to build people seems to be a good strategy for sustainable program implementation.
- Dedicated nutrition team within OLM is observed to be a proper strategy for program roll out.
- RNGOs role to work closely with nutrition team is very much fruitful.
- The Philanthropy's role to ensure coordination among RNGOs and OLM is very much helpful, because of continuous interaction.
- BLRPS placed by the RNGOs in 45 blocks really helped in program roll out in the field and ensure quality of work.
- Three models of nutrition garden cater to all types of households as per their land availability for the dietary diversity Completing PLA LANN Meeting, initial 4 modules, before starting doing Nutri garden is quintessential for self-motivation of SHG members for Nutri Garden. This will lead towards sustainability of the programme.
- Maintaining proper MIS and measuring MDD scores helps making improvement of the program in desired direction



B. BAIF Institute for Sustainable Livelihood & Development

The illustration below shows the activity structure of the BAIF Kitchen Garden approach.



Support to the TARINA Families

A three-time support was given to TARINA families to ensure the availability of nutrition in seasonal deficit days during the year.

- The seed for Kitchen gardens in TARINA project were supported through convergence with NHRDF (National Horticulture Research & Development Foundation).

- The first year 1,202 households (against target of 1000 HH) were supported in first quarter of Dec'2016 to Nov'2017. Training support was provided by Care India the other implementing partner of TARINA project. There are 3 implementing partners across India into the project. GDS (Grameen Development Services) in U.P, CARE India in Odisha, and BAIF in Bihar.
- In year Dec'2017 to Nov 2018 another 2000 new households were supported through kitchen garden and the households supported in previous year were retained.
- In year Dec'2018 to Nov'2019, 1000 new households were added along with retaining the previous year 3000 households. The total 4000 households support was extended. The illustration below shows the activity structure of the BAIF Kitchen Garden approach.

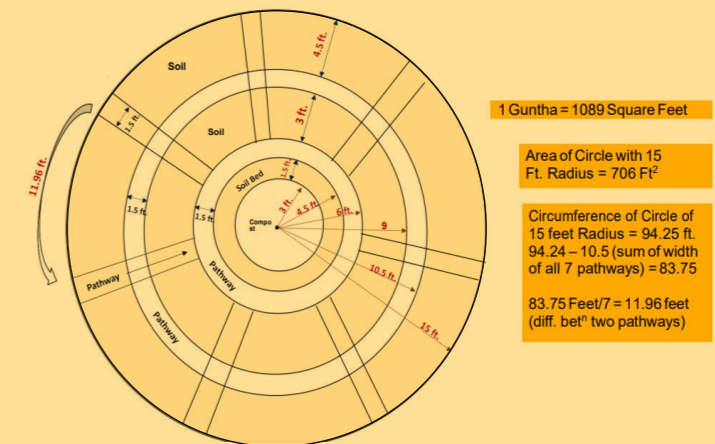
Convergence in the BAIF TARINA Project

- Training in Krishi Vigyan Kendra (KVK) is done on regular basis on various aspects as kitchen garden is one of them. There is good tie-up with KVK Munger with BAIF in Munger district.
- On 17th September 2020 BAIF was invited to send participants in "Poshan Maah" events organized in KVK, Munger. Around 22 participant farmers participated in the training. (Distribution of seeds like Spinach, Fenugreek, Radish, Carrot, and coriander was done among women farmers)
- On 19th September 50 women farmers were given kitchen garden kit in Goraiya village with support of KVK, Munger.
- Convergence with OXFAM was also done post project period for 1,000 families.
- OXFAM and an NGO in Bhagalpur was converged for supporting project families for kitchen garden after completion of project. The OXFAM provided the Kitchen garden seed at subsidized rates. The MRP of the kit was Rs.230 and it was subsidized to Rs.55 for the farmers. Here around 1,000 farmers were covered through this convergence.

C. UMED-MSRLM (Maharashtra State Rural Livelihood Mission)

UMED nutri-gardens is small kitchen garden spreads across 1 guntha of land in the vicinity of the house, individual farm land or in common space belonging to the community. UMED Nutrigardens is essential to meet daily nutritional needs of the members of households for better health of its member. It is circular in shape and consists of 14 raised/sunken soil beds (the type of soil bed to be developed, depends on the topography of the region and the volume of rainfall it receives) and 7 pathways. Objective of having 7 pathways in nutri garden is to be able to have access to variety of fresh and residue free vegetable throughout the 7 days of the week. The central pit in the nutri garden can be utilized either as compost pit or as Azolla pit, production in which serves good fodder for milking animals. An immediate circular shaped raised/sunken soil bed serves place for plantation of herbs and medicinal plants. Rest 14 soil beds are for the production of vegetables as per the need and preference of the family, however there should be fine balance between leafy vegetables and fruity vegetables. The circular shaped nutri garden serves better nutritional security if plants such as

papaya, moringa, lemon, banana etc. are planted around the nutri garden. Climbing vegetables plants can be planted along the pathways in nutri garden. UMED's nutri-garden is a model layout that can be replicated by an individual household to meet their daily nutritional requirements or the model could be established by the community as their collective efforts in case there is no space for individual nutri-gardens.



D. Madhya Pradesh Mahila Vitta Evan Vikas Nigam (MVVN)

Preparation of Kodo/ Kutki bar

Millets can be tough as they can survive drought, need less than 90 days from sowing to harvest & grow on poor soils. Federations had access to 30,000 Kg of Kodo millets in the first year. An appropriate nutritious recipe was developed for the bars under the supervision of ICDS with right nutritional balance including 33.4% Kodo/Kutki Millet, 16.7 Soybean, 11.6% Ghee, 25% Jaggery, 5% Peanuts and 8.3% sesame. The federations procure most of the inputs such as soybean, jaggery, peanuts and sesame locally, providing markets to local producers. Once the recipes were finalized, several rounds of trial runs were done to ensure, taste and quality met the requirements of the ICDS department. Quality and Nutritional content testing was done at NABL certified labs in Hyderabad with support from Tejaswini project.

E. Welthungerhilfe

Participatory Learning & Action – Linking Agriculture & Natural Resources with Nutrition (PLA-LANN)

Linking Agriculture, Natural Resources and Nutrition (PLA-LANN) is a nutrition-sensitive approach for management and planning of agriculture and natural resources by the community in a way that helps them achieve sustainable food and nutrition security. This ‘planning and management’ requires sensitization, knowledge and skills regarding nutrition, child care, agriculture, water and other resource management, WASH and entitlements. Under Welthungerhilfe’s Fight Hunger First Initiative, the sensitization and knowledge enhancement of the community on LANN is done using a participatory methodology called PLA – Participatory Learning for Action. The PLA is done through subsequent meetings in the community. Our PLA manual on LANN uses 17 meeting cycles in 4 phases:

- Assessment – Taking stock of the problems and understand its immediate and underlying causes
- Decision – Arriving at a consensual decision for doable actions on improving the nutrition status
- Action – Drawing an action plan with duly allocated roles and responsibilities

- Evaluation – Social Auditing by the participants of outcomes and impact of the Linking Agriculture to Natural Resource Management & Nutrition (LANN) process

The perceptible outcomes of the PLA -LANN process are:

- Increased savings and improved health
- Reduced migration of men to other states in hunger periods
- Increased food availability for the whole family throughout the year
- Complete freedom from moneylenders
- Malnutrition reduced considerably

For more details: -<https://welthungerhilfeindia.org/linking-agriculture-to-nrm-nutrition-for-behaviourchange/#:~:text=The%20LANN%20%E2%80%93%20PLA%20process%20takes,achieve%20food%20and%20nutrition%20security.>

GLOSSARY

APAARI	Asia-Pacific Association of Agricultural Research Institutions
APPI	Azim Premji Philanthropic Initiatives
AWCs	Anganwadi Centres
AWH	Anganwadi Helpers
AWWs	Anganwadi Workers
BLRP	Block Level Resource Person
CFNS	Coalition for Food and Nutrition Security
CGIAR	Consortium of International Agricultural Research Centers
CNG	Community Nutrition Garden
CORD	Chinmaya Organization of Rural Development
CRP	Community Resource Person
CSOs	Civil Society Organizations
CSR	Corporate social responsibility
CTARA	Centre for Technology Alternatives for Rural Areas
CTCRI	Central Tuber Crops Research Institute
DALYs	Disability-adjusted life years
DDUGKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
DWCD	Department of Women & Child Development
FaNS	Food & Nutrition Security, Enhanced Resilience
FAO	The Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
FGD	Focused Group Discussion
FHFI	Fight Hunger First Initiative
FSL	Food Security Livelihood
FSN	Farming System for Nutrition
GDP	Gross Domestic Product
GDS	Grameen Development Services
GoI	Government of India
GoO	Government of Odisha
HZL	Hindustan Zinc Limited
ICARDA	International Center for Agricultural Research in the Dry Areas
ICDS	Integrated Child Development Services
ICMR	Indian Council of Medical Research
IFAD	International Fund for Agricultural Development
ITDP	Integrated Tribal Development Project

JNKVV	Jawaharlal Nehru Krishi Vishwa Vidyalaya
KG	Kitchen Garden
KVK	Krishi Vigyan Kendra
LANSAs	Leveraging Agriculture for Nutrition in South Asia
MDD	Minimum Dietary Diversity
MDDW	Minimum Dietary Diversity for Women
MDGs	Millennium Development Goals
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	Management Information System
MoRD	Ministry of Rural Development
MSRLM	Maharashtra State Rural Livelihood Mission
MSSRF	M S Swaminathan Research Foundation
MUB	Mo Upakari Bagicha
MVVN	Madhya Pradesh Mahila Vitta Evan Vikas Nigam
NFHS	National Family Health Survey
NGs	Nutrition Gardens
NHRDF	National Horticulture Research & Development Foundation
NIN	National Institute of Nutrition
NRLM	National Rural Livelihood Mission
NSIFS	Nutrition Sensitive Integrated Farming System
OLM	Odisha Livelihood Mission
ONAP	Odisha Nutrition Action Plan
OXFAM	Oxford Committee for Famine Relief
PLA LANN	Participatory Learning and Action, Linking Agriculture & Natural Resources with Nutrition
RGSTC	Rajiv Gandhi Science & Technology Commission
RGOs	Resource NGOs
SDGs	Sustainable Development Goals
SIFS	Sustainable Integrated Farming Systems
SHG	Self-Help Group
SRLM	State Rural Livelihood Mission
TARINA	Technical Assistance and Research for Indian Nutrition and Agriculture
UNICEF	United Nations Children's Fund
VOs	Village Organizations
WHH	Welthungerhilfe
ZP	Zilla Panchayat



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