Nutri-gardens: Nurturing Wellness and Livelihoods in Eastern India

भाकृअनुप - कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान कोलकाता

ICAR- Agricultural Technology Application Research Institute Kolkata

Bhumi Vihar Complex, Sector – III, Salt Lake, Kolkata -700097

Nutri-gardens: Nurturing Wellness and Livelihoods in Eastern India

Editors

S.K. Mondal

S. Nandi

R. Bhattacharya

K.S. Das

P. Dey

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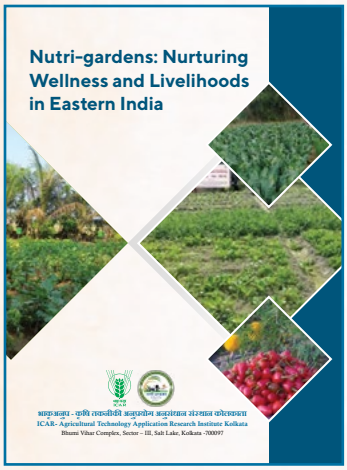

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Compiled and Edited by:

S.K. Mondal, S. Nandi, R. Bhattacharya, K.S. Das and P. Dey

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Contents

List of Contributors

1	KVK Sundargarh-II, Odisha
2	KVK Sonepur, Odisha
3	KVK Sambalpur, Odisha
4	KVK Rayagada, Odisha
5	KVK Puri, Odisha
6	KVK Nayagarh, Odisha
7	KVK Nabarangpur, Odisha
8	KVK Mayurbhanj-I, Odisha
9	KVK Koraput, Odisha
10	KVK Khordha, Odisha
11	KVK Jharsuguda, Odisha
12	KVK Jajpur, Odisha
13	KVK Jagatsinghpur, Odisha
14	KVK Ganjam-I, Odisha
15	KVK Dhankanal, Odisha
16	KVK Cuttack, Odisha
17	KVK Boudh, Odisha
18	KVK Bhadrak, Odisha
19	KVK Uttar Dinajpur, West Bengal
20	KVK South 24 Parganas-I (Nimpith), West Bengal
21	KVK South 24 Parganas-II (Narendrapur), West Bengal
22	KVK Purulia, West Bengal
23	KVK North 24 Parganas-I (Ashokenagar), West Bengal
24	KVK Murshidabad-II (Dhanyaganga), West Bengal
25	KVK Malda-I (Ratua), West Bengal
26	KVK Kalimpong, West Bengal
27	KVK Howrah, West Bengal
28	KVK Hooghly, West Bengal
29	KVK Dakshin Dinajpur, West Bengal
30	KVK Burdwan, West Bengal
31	KVK Nicobar, Andaman & Nicobar Islands

PREFACE

Nutrition is the cornerstone of Sustainable Development Goal 2 (SDG2)—Zero Hunger—but true food security goes beyond just filling plates; it ensures access to essential nutrients for a healthy life. A well-nourished society thrives, while malnutrition remains a formidable challenge, hindering progress, especially in developing nations like India. The rural-urban nutrient gap further exacerbates disparities, with 690 million people undernourished globally, as per the United Nations (2019). Alarmingly, 2 billion people lack regular access to safe, nutritious food, and childhood malnutrition persists, with 144 million stunted and 47 million wasted children under five.

To address this pressing issue, the Indian Council of Agricultural Research (ICAR) launched Nutri-sensitive Agricultural Resources and Innovations (NARI) through KrishiVigyanKendras (KVKs), fostering Nutri-Smart Villages (NSVs) across India. This initiative integrates Nutrition-Sensitive Agriculture (NSA) by promoting scientific homestead nutrition gardens, bio-fortified crops, value addition, and income-generating activities, empowering communities, particularly women and children. To institutionalize these efforts, nutrition-sensitive agriculture should be integrated into national food security policies, ensuring a multi-sectoral approach that aligns agriculture, health, and rural development programs.

Since 2018-19, ICAR-ATARI Kolkata pioneered NSA interventions, initially engaging six KVKs across Odisha and West Bengal. The vision expanded in 2021-22, with 14 KVKs implementing On-Farm Trials (OFTs), Frontline Demonstrations (FLDs), and capacity-building programs to amplify the impact of nutri-sensitive agriculture. Additionally, financial incentives and technical support should be provided to smallholder farmers for adopting bio-fortified crops and diversified nutrition gardens, ensuring long-term sustainability and wider adoption.

This publication, "Nutri-gardens Nurturing Wellness and Livelihoods in Eastern India," encapsulates success stories from 30 KVKs under ICAR-ATARI Kolkata, serving as a valuable resource to inspire change. The encouragement and guidance from the Agricultural Extension Division, ICAR, New Delhi, and the cooperation of all Host Organizations are gratefully acknowledged. The dedicated efforts of KVKs and ICAR-ATARI Kolkata in advancing nutrition security through agriculture are truly commendable, lighting the path toward a healthier, nourished future.

(Pradip Dey)

INTRODUCTION

Global population increase is severely affecting the world's resources, which is ultimately leading to problems like environmental degradation, risk to health, food security and so on. It is difficult to meet the growing demands of food, clothing and shelter, the basic necessities of life for the growing population even in the developed countries. A number of scientists have argued that the current global population expansion and accompanying increase in resource consumption is threatening the world's ecosystem and straining humanity's ability to feed itself.

The universal endeavour in achieving complete and holistic development is to address some of the most widespread and pressing issues of human development, what has been underlined in sustainable development goals (SDGs) of United Nations (UN). Particular emphasis has been given on the first SDG "End poverty in all its forms everywhere" and second SDG which is "Ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture" by embracing the principles of sustainable agriculture for nutrition security and tackling the root causes of poverty and hunger to leave no one behind. This goal prioritizes not only just ending hunger and achieving food security; but also to ensure nutritional security.

Malnutrition is 'curse' for a nation as it poses numerous challenges to overall societal development. It is a significant hindrance towards development of a skilled and valiant workforce. According to United Nation, 690 million people are undernourished and this number is more in Asia and Africa. About 2 billion people do not have regular access to safe, nutritious and sufficient food while stunted and wasted children of under-five age group were 144 million and 47 million, respectively in 2019.

Malnutrition is the condition that results from eating a diet in which certain nutrients are lacking, are in excess (too high in intake) or in the wrong proportion. The term malnutrition encompasses both over-nutrition and under-nutrition. Although under-nutrition is generally observed amongst the rural and under-developed part of the world, it is a major challenge to human and economic development. It is estimated that almost one billion people globally face hunger and are unable to get enough food to meet their dietary needs. Another one billion people do not get enough vitamins and minerals which, over a period of time, can lead to complications like night blindness.

In order to tackle the problem of malnutrition, the concept of nutri-smart village (NSV) and nutrition sensitive interventions were widely carried out through the Krishi Vigyan Kendras (KVKs) all over India. These interventions were made under the KVKs' aegis of nutrition-sensitive agriculture, crop plan-led nutritional security and traditional recipe based *'Poshan Thali'*, vegetable based Poshan Mala (Garland) and pulse crop based Poshan Rangoli. The NSV as a whole could be considered as a minilab for precisely showcasing agriculture-led pathway for nutritional security. Nutrition specific and nutrition sensitive intervention along with nutrition related policies will ensure nutrition security in India. Dietary diversity, consumption of micronutrient rich food by micro-nutrient supplementation and food fortification, nutrition literacy, is required to combat problem of malnutrition with water, sanitation and hygiene (WASH) to ensure nutrition security.

At the heart of nutrition-sensitive agriculture, lies promotion of nutritionally rich foods, dietary diversity, and food fortification to overcome malnutrition and micronutrient deficiencies. Nutrition-sensitive agricultural approach through homestead nutrition garden aims to make food more available, accessible, diverse and nutritious. Establishment of nutrition gardens had immense role in tackling the problem of malnutrition and micronutrients deficiencies in rural areas. A nutri-garden ensures an

inexpensive, regular and handy supply of fresh vegetables, which are basic to nutrition. Green vegetables contain vitamins and minerals, which protect us against diseases. Rural communities have easy access to all the essential resources like land and water but they lack knowledge about the nutritional value and scientific consumption pattern of the available and easily-cultivable nutritious food products. Hence, nutri-gardens may be regarded as a simple but innovative option to bridge the gap between the available resources and its utilization in a sustainable manner; to address issues like malnutrition; to create additional revenue-generating opportunities for farmer communities, especially women and to introduce healthy eating practices

The concept on nutri-sensitive agriculture was being nurtured by the ICAR since the year 2018-19. Initially, ICAR-ATARI Kolkata identified 6 KVKs (4 from Odisha and 2 from West Bengal) for undertaking the activities related to nutri-garden, bio-fortified crops, value addition etc. under this concept. Later on, a network project on Nutri-Smart Village has been approved by Research Advisory Committee (RAC) during 2021-22. Therefore, the conceptual framework was same but the number of KVKs increased to 14 for taking up On-farm trials (OFT), Frontline demonstrations (FLD), training and extension activities on various aspects of the nutri-sensitive agriculture in this Zone. A total of 445 nutri-gardens were established benefiting 587 farmers and farm women besides conducting 39 OFTs; 588 FLDs; 142 training programmes for 3898 participants; and 146 extension activities covering 5138 farmers and farm women While the success cases on the nutri-gardens established in this Zone were compiled, a total of 31 KVKs' interventions were recorded and included in following sections.

SUCCESSFUL FARMERS/ FARM WOMEN UNDER DIFFERENT KVKS

ODISHA

KVK Sundargarh-II

Name of farm woman	**Smt. Surumati Devi**
Address	Vill- Gundibali, PO- Luakera, Block- Lathikata, Dist- Sundargarh
Contact number	9827954810
Age (years)	34
Education	Class VII (Middle School)
Family size	5
Area under Nutri-garden (acre)	0.5

Agro-ecology and Farming situation

The village's agro-ecology is characterized by high rainfall and black and brown soil while it has irrigated upland farming situation.

Name and description of the Nutri-SMART Village

Since Rourkela has an urban market, the majority of the households in the tribal area of Gundibali village have started growing vegetables.

Name and description of enterprise

The name of the enterprise is 'Nutri-Garden: growing of seasonal vegetables. The garden includes its own irrigation system and has a few papaya and drumstick trees.

Technological Intervention and KVK Support

KVK provided kitchen Garden kit along with small implements viz. Rosecane, Khurpi, Hand sprayers, etc. Training was imparted to the farm woman.

Economic impact

Vegetables now produce an average output of 50 q, generating a gross return of Rs.60000 and a B:C ratio of 2.5.

Social impact

Leadership development among WSHGs was possible.

Environmental impact

Least use of chemical fertilizers and pesticides resulted into low residue in vegetables produces. Use of organic inputs fetched good price due to quality enhancement.

Horizontal/ Vertical spread

The technology of the kitchen gardening was spread across 4 acres of land within 12 farm women.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability						
			Protein(g)	Calorie (Kcal)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Vitamin C (mg)	Calcium (mg)
1	Tomato	*Kharif*	0.9	3.6	48.0	0.4	351.0	0.12	27.0
2	Brinjal	Round the year	1.4	4.0	18.0	0.9	74.0	0.04	12.0
3	Bitter gourd	*Kharif*	1.6	4.2	20.0	1.6	126.0	0.07	88.0
4	Bhindi	*Kharif*	1.9	6.4	66.0	1.5	52.0	0.07	13.0
5	Cowpea	*Kharif*	3.5	8.1	72.0	2.5	564.0	0.07	14.0
6	Pumpkin	*Kharif*	1.4	4.6	10.0	0.7	50.0	0.05	2.0
7	Cauliflower	*Rabi*	2.6	4.0	30.0	1.5	30.0	0.04	56.0
8	French bean	*Rabi*	1.7	4.5	50.0	1.7	132.0	0.08	24.0
9	Cabbage	*Rabi*	1.8	4.6	39.0	1.8	120.0	0.06	124.0
10	Drumstick	Round the year	4.4	6.0	395.0	16.5	2340.0	0.04	52.0

KVK Sonepur

Name of farm woman	**Smt. Kuni Dash**
Address	Village- Sargunamunda, Block- Sonepur, Dist- Subarnapur
Contact number	9337115086
Age (years)	42
Education	Matric
Family size	5
Area under Nutri-garden (acre)	0.02

Agro-ecology and Farming situation

The village, Sargunamunda, has medium land and irrigated farming situation.

Name and description of the Nutri-SMART Village

Sargunamunda village is a nutri-SMART village having 40 nutri-gardens.

Name and description of enterprise

The name of the enterprise is 'Homestead nutritional garden'. Her year-round vegetable production includes a few perennial crops and roughly 12 different vegetable kinds. She raised seedlings in pro-trays and used vermicompost as well.

Technological Intervention and KVK Support

KVK Sonepur has introduced Sustainable Nutri-garden Model under demonstration programme of KVK and supplied season wise hybrid vegetable seedlings, papaya, banana, lime, drumstick saplings and improved vegetable seed kit from KVK.KVK also imparted training on nutri-garden, seedling raising in pro-tray and vermicomposting.

Economic impact

Smt.Dash was able to gain a net profit of Rs.22290 investing as gross costRs.15450. She got gross return of Rs.37740 with a B:C ratio of 2.4.

Social impact

Smt. Kuni Dash is able to meet not just her personal needs for wholesome, fresh veggies throughout the year and high-quality planting material, but also those of the neighbouring villages. She is confident of setting an example of success in the region. She is also sharing her knowledge and skill with other farm women for establishing nutri-garden.

Environmental impact

Nutrition gardens can play an important role in enhancing national food security and dietary diversity to combat malnutrition.

Horizontal/ Vertical spread

Adopting this concept at households improves 56 farm families' access to produce, encourages the adoption of sustainable agricultural methods, encourages the consumption of nutrient-dense foods, and offers extra opportunities for money generating.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Amaranthus, Lady's finger, Chillies, Brinjal, Cow pea, Ridge Gourd, Papaya, Drumstick	Rainy	260
2	Beans, Amaranthus, Cauliflower, Cabbage, Tomato, Radish, Brinjal, Knolkhol, Papaya	Winter	310
3	Amaranthus, Leutia, Lady's finger, Brinjal, Papaya, Cucumber, Bitter gourd, Ridge gourd Drumstick	Summer	210

KVK Sambalpur

Name of farm woman	**Smt. Sankhajini Pradhan**
Address	At- Thakurmal, Po- Ghenupali, Block: Jujomura, Dist: Sambalpur, Pin: 768105, ODISHA
Contact number	7008606730
Age (years)	36
Education	Graduate
Family size	3
Area under Nutri-garden (acre)	0.123 acre

Agro-ecology and Farming situation

Thakurmal village has sandy loam to clay loam soil and the farming situation is irrigated upland.

Name and description of the Nutri-SMART Village

The name of the nutri-smart village is 'Thakurmal'.

Name and description of enterprise

Backyard Kitchen Garden having 25 m length and 20 mbreadth was having trellis structure with plastic rope for raising cucurbits.Protray for raising seedlings in small quantity was used. Vermi compost tank (poly tarpaulin) was also available. Vegetables round the year covering leafy vegetables, solanaceous vegetables were grown along withroots and tubers, cucurbits suiting to consumption pattern as well as papaya plants,lemon, drumstick, banana and floriculture.

Technological Intervention and KVK Support

KVK imparted training, followed by demonstration of technology on nutritional garden and nursery raising. Capacity building of farm woman was undertaken for skill and knowledge up-gradation at KVK regarding exotic,fortified and high yielding variety of different vegetables. Training on mushroom cultivation and value addition was conducted too. KVK helped in enrolment for Distance Education programme of Directorate of Extension Education, OUAT, Bhubaneswar. Smt. Pradhan has been made a beneficiary of "*mobagicha*" programme of state Govt. KVK provided quality seeds and seedlings to her and arranged diagnostic visits by KVK Scientists.

Economic impact

She made a profit of Rs. 12022 every year with an investment of Rs.5500 and she produces 18.54 q of vegetables annually. She bought a quarter-acre parcel of property to expand her enterprise.

Social impact

She got Best Farm Woman award and Trainer for other farm women of the area. She sold seedlingraised by her during *Kharif* and *Rabi* seasons with assistance from OLM and also sold vegetables to Mother Dairy Sambalpur. She became role model for other farm women.

Environmental impact

Adoption of kitchen garden units by 40 farm women of the block as income generation resulted into healthier environment. This also improved nutritional securities of their family members.

Horizontal/ Vertical spread

The technology was spread over 65 villages of the district involving about 1522 farm women covering approximately 31 acres of land.

Nutritional output of Kitchen-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Pointed gourd, Papaya, Drumstick, Pumpkin, Cucumber, Cowpea, Brinjal, okra, Ridge gourd, Bitter gourd, papaya, ivy gourd	*Kharif*	625
2	Spinach, Amaranthus, Coriander, Bio fortified vegetables,Cabbage, Cauliflower, Sweet Potato), Radish, Carrot, Tomato, Peas.	*Rabi*	780

KVK Rayagada

Name of farmer	**Shri Rajendra Kumar Nimalu**
Address	Village- Pradhaniguda, Block- Gunupur, Dist.- Rayagada, PIN- 765022
Contact number	9437263404
Age (years)	44
Education	Graduate
Family size	6
Area under Nutri-garden (acre)	0.4

Agro-ecology and Farming situation

The village Pradhaniguda has an irrigated upland situation. Homestead agriculture is a common practice in the village.

Name and description of the Nutri-SMART Village

Pradhaniguda village has potential of promotion of nutri-garden for eradication of mal-nutrition at village level and achieving nutritional security at family level.

Name and description of enterprise

The name of the enterprise is 'Organic Nutri-Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production along with sweet corn cultivation and mushroom cultivation

Technological Intervention and KVK Support

After analyzing the existing situation, skill training was imparted for proper planning and layout of nutritional garden. Seed kits, planting materials, seedling and garden nets were distributed as inputs. Method demonstration was carried out. Technical awareness was provided for organic nutri-garden by using vermicompost, biofertilizers, neem-based pesticides and other bio-product like *handikhata* etc. for quality production of vegetables and fruits. There was proper planning suggested for supply of fruits and vegetables throughout the year for sustainable income and nutritional security to the family.

Economic impact

After introduction of nutri-garden, the consumption of fresh vegetables, fruits and diversities on varieties were improved in daily diet which contributed towards achieving nutritional security of his family. He got Rs.36000 per annum by selling leftover vegetables and also saved the money spent for purchasing the daily family consumption of vegetables.

Social impact

Nutritional garden enhanced the food security and nutritional status of farm families ensuring the family members healthy and fresh vegetables and fruits round the year hence reducing malnutrition.

Other farmers/ farm women also set up nutri-garden in their homestead since it fulfilled the nutritional security as well as social standard of living.

Environmental impact

It promotes organic cultivation and availability of fresh fruits and vegetables round the year and also the leftover organic fruits and vegetables fetches higher income.

Horizontal/ Vertical spread

The nutritional garden is a source of inspiration for other farm families of his locality and is a point for exposure visit for farmers and farm women of Rayagada district as well as the neighbouring district. Another nutri-garden is established in the primary school of his village with the help of KVK scientist and also his supervision which is providing vegetable requirement for mid-day meal of the school children.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability											
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	vit A (mcg)	vit C (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)	Niacin (mg)
1	Vegetable (from 300g)	Round the year	62	0.4	22	1.9	32	238	32	0.58	476	34	-	-
2	Fruit (from 100g)	Round the year	68	0.2	17	0.7	-	-	-	-	212	0.2	2.6	-
3	Mushroom (from 50g)	*Kharif* and *Rabi*	-	-	9	1.9	2.8	236	9	0.58	0.16	-	-	1.2
4	Sweet corn	*Kharif* and *Rabi*	-	0.2	19	3.2	-	-	-	-	25	15	-	-






KVK Puri

Name of farm woman	**Smt. Anasauya Jena**
Address	At/Po- Mahura, Via- Gabakunda, PH-Balanga, PIN- 752045
Contact number	7735987733
Age (years)	32
Education	BA
Family size	4
Area under Nutri-garden (acre)	0.02

Agro-ecology and Farming situation

The village Mahura in Puri district has an irrigated medium land.

Name and description of the Nutri-SMART Village

There are 25nutri-gardens in village Mahura.

Name and description of enterprise

Smt. Jena has grown about 10 varieties of vegetables along with few perennial crops round the year. She used vermicompost for the cultivation of vegetables. She also has done mushroom cultivation in backyard, honey bee keeping and seedling raising in pro-tray.

Technological Intervention and KVK Support

KVK Puri did introduction of Sustainable Nutri-garden Model under demonstration programme of KVK and supplied vegetable seedlings, papaya and drumstick saplings and seeds from KVK. KVK also conducted training on nutri-garden, seedling raising in pro-tray, vermicomposting and honey bee cultivation.

Economic impact

Smt.Jena invested gross cost of Rs.16000 and got gross return of Rs.38410 with a net profit of Rs.22410 and B:C ratio of 2.4.

Social impact

Smt.Jena has taken initiative for formation of one Farmer Producer Group, named Trinath Multi-producer group with 30 farmwomen. She is Master Book Keeper of Mahura Panchayat Stariya Mahasangha.

Environmental impact

Nutrition gardens can play an important role in enhancing national food security and dietary diversity to combat malnutrition.

Horizontal/ Vertical spread

Adoption of this model at household enhances access to vegetables and fruits, usage of sustainable agricultural practices and utilization of nutri-dense foods and also provides additional income generation activities for 48 farm families of nearby villages.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Amaranthus, Lady's finger, Chillies, Ridge Gourd, Papaya, Drumstick	Rainy	240
2	Beans, Amaranthus, Green pea, Cabbage, Tomato, Brinjal, Cauliflower, Papaya	Winter	290
3	Ridge gourd, Amaranthus, Brinjal, Papaya, Cucumber, Bitter Gourd, Drumstick	Summer	220

KVK Nayagarh

Name of farm woman	**Smt. Mamata Sahoo**
Address	Village: Kosakata, Block: Nuagaon, Dist.: Nayagarh
Contact number	9668811282
Age (years)	43
Education	10th
Family size	4
Area under Nutri-garden (acre)	0.025 (100 Sq. Mt.)

Agro-ecology and Farming situation

Kosakata village of Nayagarh district is situated in Eastern and South-East Coastal Plain Zone. Its farming situation is backyard upland.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated in the village Kosakata under Nuagaonblock in Nayagarh district.

Name and description of enterprise

The name of the enterprise is Nutritional Gardening and Apiculture. Homestead Nutri-gardening with various vegetables by Smt. Sahoo. She cultivated brinjal, ladies finger, tomato, pumpkin, cucumber, lemon etc. during *Kharif* and *Rabi* season.

Technological Intervention and KVK Support

The KVK imparted training on 'Household food security by Kitchen Gardening and Nutritional Gardening' and conducted demonstration on Nutri-Kitchen Garden for Farm Women with input support as well as demonstration on Scientific Apiculture. KVK also carried out awareness programme on Nutritional Gardening.

Economic impact

She earned around Rs.15000 per month from her Nutritional Garden: Apiculture Unit and also works as Krishi Mitra.

Social impact

She is a member of Women Self Help Group.

Environmental impact

She has developed her Nutritional Garden with the use of organic manures (*Handikhata*, *Jibamruta*, etc.) without any use of chemical fertilizers and pesticides. As she has established an apiculture unit at one end of the nutritional garden, it enhances pollination of different crops in her nutritional garden as well as different crops of her locality,hence increasing the production & productivity of those crops.

Horizontal/ Vertical spread

As she is an active Krishi Mitra, her activities have been spread to 17 number of farm families and 5 WSHGs in her locality.

Nutritional output of Nutri-garden

Sl no.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal	*Kharif* & *Rabi*	21
2	Tomato		14
3	Greens		22
4	Ladies finger		16
5	Ridge gourd		12
6	Bottle gourd		8
7	Yard long bean		12
8	Cluster bean		8
9	Snake gourd		18
10	Pumpkin		22
11	Cucumber		18
12	Bitter gourd		17
13	Radish	*Rabi*	21
14	Papaya	*Kharif* & *Rabi*	42
15	Drum stick		12
16	Lemon		3

KVK Nayagarh

Name of farm woman	**Smt. Manjulata Bhuyan**
Address	Village: Kosakata, Block: Nuagaon, Dist.: Nayagarh
Contact number	9178606966
Age (years)	55
Education	3rd
Family size	7
Area under Nutri-garden (acre)	0.025 (100 Sq. Mt.)

Agro-ecology and Farming situation

Village Kosakata of Nayagarh district is situated in Eastern and South-East Coastal Plain Zone. Its farming situation is backyard upland.

Name and description of the Nutri-SMART Village

The Nutri-SMART Village situated in the Kosakata village under Nuagaon block at Nayagarh District.

Name and description of enterprise

The name of the enterprise is Nutritional Gardening and Apiculture. Homestead Nutri-gardening with various vegetables by Smt. Bhuyan. She cultivated brinjal, ladies'finger, tomato, pumpkin, cucumber, lemon etc. during *Kharif* and *Rabi* season.

Technological Intervention and KVK Support

The KVK imparted training on 'Household food security by Kitchen Gardening and Nutritional Gardening' and conducted demonstration on Nutri-Kitchen Garden for Farm Women with input support as well as demonstration on Scientific Apiculture. KVK also carried out awareness programme on Nutritional Gardening.

Economic impact

Smt. Manjulata Bhuyan earned around Rs.15000 per month from her nutritional garden and apiculture unit.

Social impact

She is a member of Women Self Help Group and also works as Krishi Mitra.

Environmental impact

Smt. Manjulata Bhuyan has developed her Nutritional Garden with the use of organic manures (*Handikhata*, *Jibamruta*, etc.) without any use of chemical fertilizers and pesticides. As she has established an apiculture unit at one end of the nutritional garden, it enhances pollination of different crops in

her nutritional garden as well as different crops of her locality, hence increasing the production and productivity of those crops.

Horizontal/ Vertical spread

As she is an active SHG member, her activities have been spread to 8 number of farm families and 3 WSHGs in her locality.

Nutritional output of Nutri-garden

Sl no.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal	*Kharif & Rabi*	20
2	Tomato		15
3	Greens		21
4	Ladies finger		17
5	Ridge gourd		11
6	Bottle gourd		9
7	Yard long bean		11
8	Cluster bean		9
9	Snake gourd		15
10	Pumpkin		20
11	Cucumber		19
12	Bitter gourd		16
13	Radish	*Rabi*	22
14	Papaya	*Kharif & Rabi*	41
15	Drum stick		13
16	Lemon		4

KVK Nabarangpur

Name of farm woman	**Smt. Kusuma Nayak**
Address	W/o. - Biswanath Nayak, Vill-Nayakguda, Block- Umerkote
Contact number	-
Age (years)	30 yrs
Education	9th
Family size	4
Area under Nutri-garden (acre)	0.049 acre

Agro-ecology and Farming situation

Village Nayakguda of Nabarangpur district is situated in Eastern Ghat High land zone and it has rainfed upland farming situation.

Name and description of the Nutri-SMART Village

The Nutri-SMART Village situated in Nayakguda village, GP-Sunabeda, under Umerkote block at Nabarangpur district.

Name and description of enterprise

Homestead nutri-gardening with vegetables with mango and drumstick was established by Smt. Nayak. She cultivated brinjal, cowpea, tomato, okra etc. in 0.003 acre during *kharif*, *rabi* and summer, while papaya, drumstick, banana and mango covered around 0.012 acre.

Technological Intervention and KVK Support

Training has been imparted on 'Nutritional Garden for Nutritional Security' to farmers and farm women by KVK. Banana seedlings and bio-fortified sweet potato (var. *Bhu Sona* and *Bhu Krishna*) have been distributed in free of cost under FLD programme. KVK Scientists undertook regular field visits.

Economic impact

She is able to manage her family round the year without purchasing any vegetables etc. from market.

Social impact

Nearby farmers visited her nutri-garden and got inspiration out of it and made their own nutri-gardens.

Environmental impact

Nutri-garden is an eco-friendly enterprise because the waste materials out of nutri-garden are composted and that compost is utilised in nutri-garden. In such a way, waste is recycled which controls environmental pollution.

Horizontal/ Vertical spread

Horizontal spread occurs by nearby farmers by visiting her nutri-garden.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Greens	Summer	0.003g iron
2	Greens	*Rabi*	0.003g iron
3	Cowpea	*Kharif*	6.98g protein
4	Beans	*Rabi*	15.91g protein
5	Sweet potato	*Kharif*	0.0042g beta carotene

KVK Mayurbhanj-I

Name of farm woman	**Smt. Manjulata Mohanta**
Address	At: Sodium, Shamakhunta, Mayurbhanj
Contact number	8763918061
Age (years)	29
Education	Primary
Family size	4
Area under Nutri-garden (acre)	0.05

Agro-ecology and Farming situation

Sodium village of Mayurbhanj district has low elevation and it is characterized by medium rainfall and backyard farming situation.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is in the Sodium village. Promotion of nutri-garden for the reduction of malnutrition at village Level.

Name and description of enterprise

Smt.ManjulataMohanta has grown about different varieties of vegetables along with few perennial crops round the year. She used vermicompost for the cultivation of vegetables. She also has done mushroom cultivation in backyard.

Technological Intervention and KVK Support

After analysing the existing situation of the backyard garden of Smt.ManjulataMohanta, it was intervened by the KVK scientist to make it scientifically comparable for promotion of nutritional garden model. For the purpose proper layout of the vegetable plants, fruit plants, and other enterprise like mushroom was suggested including substitution of their existing seedling and sapling by improved quality varieties of the crops tomato, chilli, papaya, drumstick. The nutritional garden also enriched by the organic cultivation with the use of vermicompost, biofertilizers, neem-based pesticides and other handmade biofertilizers like *handikhata* etc. for quality production. The crop structure was planned to supply round the year nutritional availability to the whole family members.

Economic impact

By the initial investment of Rs.2550 and subsequent recurring expenditure, she earns Rs.4050 towards the production of fruits and vegetable from her nutritional garden. Above all her daily recommended nutritional supplement has been fulfilled.

Social impact

Due to saving of Rs.1500 from nutritional garden, she is able to provide quality education and tutorial support to her school going children. It has been achieved with her perseverance, determination and hard work.

Environmental impact

It promotes Organic cultivation, availability fresh fruits and vegetables at their door step.

Horizontal/ Vertical spread

The model nutritional garden is a source inspiration to resource poor and socially neglected woman. Two nutritional gardens have been promoted by Smt.ManjulataMohanta in her locality.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability											
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	vit A (mcg)	vit C (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)	Niacin (mg)
1	Vegetable (from 200g)	Round the Year	40	0.4	9	1.9	32	236	32	0.58	472	32	-	-
2	Fruit (from 100g)	Round the Year	58	0.2	15	0.7	-	-	-	-	212	2	2.2	-
3	Mushroom (from 50g)	*Kharif* & *Rabi*	-	0.12	9	1.9	2.8	236	9	0.58	0.16	-	-	1.2

KVK Koraput

Name of farmer	**Sri Khaga Hantal**
Address	Village: Gunthaput, Block: Nandapur, District: Koraput, Pin no. - 764037
Contact number	8917574235
Age (years)	46
Education	9thclass
Family size	5
Area under Nutri-garden (acre)	1

Agro-ecology and Farming situation

Gunthaput village of Koraput district has homestead garden and is featured by irrigated medium land.

Name and description of the Nutri-SMART Village

The Nutri-SMART Village situated in Gunthaput village of Koraput district.

Name and description of enterprise

Sri Khaga Hantal has grown about different varieties of vegetables along with few perennial crops round the year in his homestead garden. He used vermicompost for the cultivation of vegetables. He also has done mushroom cultivation in backyard.

Technological Intervention and KVK Support

KVK Koraput provided the quality planting material viz. triple disease resistant tomato var. *ArkaRakshak* (14 kg/plant) and *Kaushal*, bio-fortified sweet potato var. *Bhu Sona*and *Bhu Krishna* (source of β-carotene and anthocyanin), niger var. *Utkal Niger-150*, finger millet (Ragi) var. *Arjun*, seedlings of onion var. *Bhima Super*, Potato (*Kufri Jyoti*). KVK also provided vegetable seed kit from IIHR including coriander var. *Arka Isha*, All green chilli var. *Guntur Hope* and *Agnirekha*, radish var. *Pusa Chetki*, cabbage var. *Disha*, cauliflower var. *CFL-22*, beans var. *Fiesta*, tomato var.*Arka Rakhyak*, Papaya and Drumstick seedlings. Apart from this, KVK imparted training programme on nutritional gardening, good agriculturalpractices in vegetable crops (cauliflower, ginger), relay cropping in vegetable crops, seedling raising technique in poly tunnel.

Economic impact

For 1 acre of land, he used to get net return of Rs.72600 by incurring expenditure of Rs.51500.

Social impact

Nutritional garden has a positive impact on livelihood as it provides steady incomesand curbs diet-related diseases. Kitchen gardens provide cheap vegetables thereby reducing the daily food cost and also protect the environment. Crops grown in home gardens play an important role in filling the gap

in nutritional needs by providing access to food that is harvested, prepared and consumed by family members. Farmers from nearby villages are also interested for adopting the technologies.

Environmental impact

He used to grow the vegetable crops by exclusion of chemicals and only by involvement of vermicompost and cow dung which is eco-friendly.

Horizontal/ Vertical spread

He is interested to increase area under nutritional garden and suitable biofortified crops, cropping system and cropping pattern as guided by KVK scientist for spread of technologies.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)			
			Protein (g)	Vit A (g)	Calcium (g)	Iron (g)
1	Sweet potato, Chilli, Papaya, Drumsticks, Bean, Amaranthus, Carrot, Beat	Kharif	51	0.54	0.52	0.014
2	Tomato, Radish, Cabbage, Cauliflower, Bean, Fingermillet, Corn, Amaranthus, Carrot, Papaya, Drumsticks, Onion, Sweet potato	Rabi	56	0.56	0.59	0.016
3	Chilli, Cabbage, Cauliflower, Bean, Amaranthus, Papaya, Drumsticks, Corn, Finger millet	Summer	50	0.52	0.55	0.013






KVK Khordha

Name of farm woman	**Smt. Mamata Samal**
Address	Village: Dhanahara, PO: Majhihara, Block: Balipatna, District: Khordha, Pin Code: 752103, State: Odisha
Contact number	9938950755
Age (years)	38 Years
Education	8thclass
Family size	5
Area under Nutri-garden (acre)	200m^2

Agro-ecology and Farming situation

Dhanahara village of Khordha district is characterized by irrigated upland farming situation.

Name and description of the Nutri-SMART Village

Dhanahara village is located in Balipatna tehsil of Khordha district in Odisha. It is situated 5 km away from sub-district headquarter Balipatna and 49 km away from district headquarter Khordha. The total geographical area of village is 99 hectares. The village consists of 289 households. The village has a total population of 1211 peoples, out of which male population is 623 while female population is 588. Literacy rate is 68.37% out of which 75.60% males and 60.71% females are literate (Census-2011). Agriculture is the major livelihood of the village people

Name and description of enterprise

The name of the enterprise is 'Organic Nutri-Garden'. Her year-round vegetable production includes a few perennial crops and different vegetable. She raised seedlings in pro-trays and used vermicompost as well.

Technological Intervention and KVK Support

Women play a key role for family food and nutrition security. Vegetable based Nutri-garden is the richest source of nutrition and can play an active role in eradicating malnutrition. KVK Khordha, ICAR-CIFA, Bhubaneswar imparted skill training to Smt. Samal on organic farming in vegetables under rural youth training programme. She started organic nutri-gardening in her backyard successfully. KVKK hordha supported her activities through providing seedlings for growing in nutri-garden. She was also provided with vermi beds for vermicompost production and application in nutri-garden. Smt. Samal used to prepare *Jivamrut* and *Handikhata* for raising various vegetable crops in her garden.

Economic impact

Prior to organic nutri-garden practice she was spending about Rs.250 per month towards procurement of chemical fertilizer and pesticides. By adopting organic cultivation practices, she was able to save the above money. Besides, consumption of the vegetables produced from the nutri-garden at home, she used to sale about Rs.325 per month to the neighbours. Smt. Samal used to spend the income generated i.e. Rs.575 for her children's education purpose.

Social impact

Her family and the neighbours used to get chemical free vegetables for their nutrition. Smt. Samalused to motivate and impart training to the SHGs members on preparation of organic inputs in her village.

Environmental impact

Organic nutri-garden reduces the human health hazardsand provides a pollution free environment to the family members and neighbours.

Horizontal/ Vertical spread

About 42 farm women in the village are practicing organic nutri-gardening after getting training from Smt. Samal.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Amaranthus	*Kharif*	111.11
2	Okra		33.33
3	Brinjal		42.22
4	Snake gourd		24.44
5	Chilli		7.22
6	Bitter gourd		7.33
7	Cucumber		8.88
8	Pumpkin		108.88
9	Colocasia		53.33
10	Amaranthus	*Rabi*	66.66
11	Spinach		80.00
12	Okra		28.88
13	Brinjal		35.55
14	Tomato		40.00
15	Radish		60.00
16	Beans		35.55
17	Cauliflower		86.67



KVK Khordha

Name of farm woman	**Smt. Nandini Das**
Address	Village: Dhanahara, PO: Majhihara, Block: Balipatna District: Khordha, Pin Code: 752103, State: Odisha
Contact number	6370221686
Age (years)	45 Years
Education	9th class
Family size	5
Area under Nutri-garden (acre)	200 m^2

Agro-ecology and Farming situation

Dhanahara village of Khordha district is characterized by irrigated upland farming situation

Name and description of the Nutri-SMART Village

Dhanahara village is located in Balipatna tehsil of Khordha district in Odisha. It is situated 5 km away from sub-district headquarter Balipatna and 49 km away from district headquarter Khordha. The total geographical area of village is 99 hectares. The village consists of 289 households. The village has a total population of 1,211 peoples, out of which male population is 623 while female population is 588. Literacy rate is 68.37% out of which 75.60% males and 60.71% females are literate (Census-2011). Agriculture is the major livelihood of the village people.

Name and description of enterprise

The name of the enterprise is 'Organic Nutri-Garden'. Her year-round vegetable production includes a few perennial crops and different vegetable. She used vermicompost for cultivation.

Technological Intervention and KVK Support

Farmwomen used inorganic fertilizer and pesticides for growing of vegetables in their nutri-garden which leads to environmental pollution as well as poses health hazards. KVK Khordha, ICAR-CIFA, Bhubaneswar imparted training to the farmwomen of Dhanahara village on organic nutri-garden, vermicompost production, preparation and application of organic plant growth regulators and bio-pesticides in vegetable crops cultivation in their nutri-gardenunder SCSP Programme. Under Front Line Demonstration, KVK Khordha provided necessary critical inputs such as vegetable seeds and seedlings for Nutri-garden for both *kharif* and *rabi* season. Vermi beds (Size 12×4×2 cubic ft. and 6×4×2 cubic ft.) and Earthworm Spp. (*Eisenia foetida*) were supplied for vermicompost production to the farm women. Awareness programmes were organized for the farmwomen about the health benefits of fruits and vegetables and balance diet requirement for the rural women and children.

Economic impact

Nutri-garden provides continuous supply of fresh vegetables for the family round the year. Besides, household consumption the farmwomen sold excess vegetables in the local market and earned money. She saved Rs.600 per month of family expenditure through nutri-garden. This amount has been utilized for purchase of other vegetables, pulses for the family members and also meets the miscellaneous family expenditure.

Social impact

The farmwomen happily distributed some of the vegetables produced from her nutri-garden among with her friends and neighbours. It is a great way to engage the whole family in physical activity by utilizing their leisure time and reduce the stress. Plants grown in nutri-garden provides a peaceful mood and positive thinking ability due to its aesthetic beauty. Common villagers are also motivated by seeing round the year organic vegetable cultivation and have come forward to start the same in their own household area.

Environmental impact

Organic nutri-garden reduces the use of pesticides and agro-chemical need for growing of vegetables. It improves the soil health and protects the environment from pollution. It reduces the human health hazards.

Horizontal/ Vertical spread

Nutri-garden directly contributes to household food security by increasing the availability, accessibility and utilisation of vegetables and perennial fruits. In the same village another 50 households adopted organic nutri-garden in their backyard. The unused land is also utilized on a productive way followed by engagement of farmwomen in nutri-garden. It is a low-cost sustainable approach for mitigating malnutrition especially in rural households.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Amaranthus	*Kharif*	86.67
2	Okra		33.33
3	Brinjal		37.77
4	Snake gourd		20
5	Chilli		6.66
6	Bitter gourd		5.78
7	Cucumber		8
8	Pumpkin		126.67
9	Colocasia		47.77
10	Amaranthus	*Rabi*	66.66
11	Spinach		66.66
12	Okra		26.66
13	Brinjal		43.33
14	Tomato		37.77
15	Radish		60.00
16	Beans		26.66
17	Cauliflower		88.88



KVK Jharsuguda

Name of farmer	**Shri Harendra Naik**
Address	Village- Sialrama, Bandhopali, Jharsuguda
Contact number	9337302741
Age (years)	56
Education	11th
Family size	4 members
Area under Nutri-garden (acre)	0.10

Agro-ecology and Farming situation

Sialrama village of Jharsuguda district is characterized by irrigated upland farming situation.

Name and description of the Nutri-SMART Village

The Nutri-SMART village situated in the village Sialrama, Jharsuguda.

Name and description of enterprise

The name of the enterprise is 'Organic Nutri-Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production. He used vermicompost for cultivation.

Technological Intervention and KVK Support

The farmer of Sialrama village received training from KVK Jharsuguda on how to cultivate organic vegetable crops in their nutri-garden, make vermicompost, and prepare and use biopesticides and organic plant growth regulators. KVK Jharsuguda provided necessary critical inputs such as vegetable seeds and seedlings for Nutri-garden for both *kharif* and *rabi* season. Vermi beds and Earthworm Spp. (*Eisenia foetida*) were supplied for vermicompost production to the farmer. Awareness programmes were organized for the farmers about the nutritional value of fruits and vegetables and need for balance diet for the rural women and children.

Economic impact

The family receives a year-round supply of fresh vegetables from nutri-garden. In addition to domestic use, they made money by selling extra vegetables in the neighbourhood market. This money has been used to pay for incidental family expenses as well as the purchase of more vegetables and pulses for the family.

Social impact

The farmer shared some of the vegetables he had grown in his nutri-garden with his neighbours and friends. By leveraging their free time, it is a terrific opportunity to get the whole family moving and relieve tension. Due to their aesthetic attractiveness, plants growing in nutri-garden promote a calm

state of mind and the capacity for optimistic thought. Common villagers are inspired to undertake organic vegetable farming in their own backyards after watching it being done all year long.

Environmental impact

The waste produced from nutrition garden was utilised to produce vermicompost and used for organic production, which is good for family health.

Horizontal/ Vertical spread

By enhancing the availability, accessibility, and consumption of vegetables and perennial fruits, nutri-garden directly improves household food security. Another 22 farm families established organic nutri-gardens in their backyards. The unused area is also utilised productively, and then farmwomen are employed in nutri-gardening. It is a low-cost, long-term strategy for reducing malnutrition, particularly in rural communities and increased 15% fresh vegetables production.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Tomato, Brinjal, Palak, Radish, Beans, Chilli, Okra, Papaya, Moringa	*Kharif*	210
2	Tomato, Cabbage, Cauliflower, Kosla sag, Palak, Red spinach, Radish, Moringa leaf	*Rabi*	240
3	Tomato, Okra, Kosla sag, Red spinach, Radish, Moringa leaf, cucumber	Summer	180

KVK Jharsuguda

Name of farmer	**Shri Jaskentan Patel**
Address	Village- Gudigao, Keldamal, Jharsuguda
Contact number	9556423941
Age (years)	52
Education	7th
Family size	4
Area under Nutri-garden (acre)	0.5

Agro-ecology and Farming situation

Gudigao village under Keldamal block of Jharsuguda district is characterized by irrigated medium land farming situation

Name and description of the Nutri-SMART Village

The Nutri-SMART village situated in Gudigao under Keldamal block of Jharsuguda.

Name and description of enterprise

'Organic Nutri-Garden' is the name of the enterprise. His year-round vegetable production makes use of a number of perennial crops and numerous vegetable kinds. He planted using vermicompost.

Technological Intervention and KVK Support

KVK Jharsuguda trained the farmers of Gudigao village in the cultivation of organic vegetable crops in their nutri-garden, the creation of vermicompost, the preparation and application of biopesticides, and the use of organic plant growth regulators. For both the *kharif* and *rabi* seasons, KVK Jharsuguda supplied the essential key inputs, such as vegetable seeds and seedlings for nutri-garden. The farmer received vermi beds and Earthworm Sp. (Eisenia foetida) for the production of vermicompost. Farmers were made aware of the importance of a balanced diet for rural women and children as well as the nutritional significance of fruits and vegetables through educational programs.

Economic impact

The family obtains fresh vegetables from nutri-garden all year long. They gained money by selling extra vegetables at the local market in addition to using them for domestic purposes. The family has purchased additional vegetables and pulses with this money, in addition to covering other little household needs.

Social impact

With his neighbours and friends, the farmer shared some of the veggies he had grown in his nutri-garden. By leveraging their free time, it is a terrific opportunity to get the whole family moving and relieve tension. Due to their aesthetic attractiveness, plants growing in nutri-garden promote a calm state of mind and the capacity for optimistic thought. Common villagers are inspired to undertake organic vegetable farming in their own backyards after watching it being done all year long.

Environmental impact

Vermicompost was made from the nutrition garden's waste and used in organic production, which is healthy for family health.

Horizontal/ Vertical spread

Nutri-garden directly enhances household food security by increasing the availability, accessibility, and consumption of vegetables and perennial fruits. In their backyards, 18other farm families installed organic nutri-gardens. Farmwomen are hired in nutri-gardening when the vacant space is used efficiently. It is a low-cost, long-term approach to eliminating malnutrition, especially in rural areas, and it raised the production of fresh veggies by 17%.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Tomato, Brinjal, Palak, Radish, Beans, Red spinach, Chilli, Okra, Papaya, Moringa	*Kharif*	220
2	Tomato, Cabbage, Cauliflower, Kosla sag, Palak, Red spinach, Radish, Moringa	Rabi	270
3	Tomato, Okra, Kosla sag, Red spinach, Radish, Moringa leaf,Cucumber, Beans	Summer	210

KVK Jajpur

Name of farm woman	**Smt. Shantilata Rout**
Address	Village- Dihakuransa, Block- Rasulpur, Dist- Jajpur (Odisha)
Contact number	9938620039
Age (years)	49
Education	Under matric
Family size	5
Area under Nutri-garden (acre)	0.03

Agro-ecology and Farming situation

Dihakuransa village, located in the Rasulpur block of the Jajpur district, is known for its alluvial rainfed, medium, and upland terrain.

Name and description of the Nutri-SMART Village

Dihakuransa village has 292 farm families, agriculture is the primaryoccupation. Many villagers engaged as shopkeeper and mason. Rice, groundnuts, different vegetables are the main crops along with dairy and poultry. The nature of soil is alluvial soil.

Name and description of enterprise

'Nutri rich Nutri-Garden' is the name of the company. Her year-round vegetable production makes use of a number of perennial crops and numerous vegetable kinds. She planted using vermicompost.

Technological Intervention and KVK Support

Training programme on different aspects of nutritional garden i.e. nutritional value of different crops, design, planning, crop production technology, value addition was conducted by KVK Jajpur, Scientists. Regular field visit was conducted by the scientists to solve the problem faced by the farmers.Provided small vegetable kits, fruit saplings & small garden tools to the farmers.

Economic impact

Vegetable requirement of the farm families was fulfilled from nutritional garden. The farm women saved Rs.700 to 800 per month in expenditure on vegetable and fruit from her nutritional garden.

Social impact

After observing it being done all year, common villagers are motivated to start vegetable cultivation in their own backyards.

Environmental impact

Vermicompost was made from the nutrition garden's waste and used in organic production, which is healthy for family health and created pollution free environment to the house.

Horizontal/ Vertical spread

Nutri-garden directly enhances household food security by increasing the availability, accessibility, and consumption of vegetables and perennial fruits. In their backyards, 10 other farm families established nutri-gardens. Farmwomen are hired in nutri-gardening when the vacant space is used efficiently. It is a low-cost, long-term approach to eliminating malnutrition, especially in rural areas.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal, okra, chilli, amaranthus, cucumber, basella, papaya, drumstick, banana	Summer	180
2	Brinjal, okra, colocasia, chilli, ridgegourd, snakegourd, leafy vegetables, papaya, drumstick, banana	*Kharif*	200
3	Cauliflower, cabbage, tomato, radish, brinjal, peas, spinach, carrot, beans, papaya, drumstick banana	*Rabi*	200

KVK Jajpur

Name of farm woman	**Smt. Debaki Rout**
Address	Village- Dihakuransa, Block- Rasulpur, Dist- Jajpur (Odisha)
Contact number	9668158239
Age (years)	44
Education	Under matric
Family size	5
Area under Nutri-garden (acre)	0.025

Agro-ecology and Farming situation

Dihakuransa village, located in the Rasulpur block of the Jajpur district, is known for its alluvial rainfed, medium, and upland terrain.

Name and description of the Nutri-SMART Village

Dihakuransa village has 292 farm families, agriculture is the primary occupation. Many villagers engaged as shopkeeper and mason. Rice, groundnuts, different vegetables are the main crops along with dairy and poultry. The nature of soil is alluvial soil.

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Economic impact

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Social impact

After observing it being done all year, common villagers are motivated to start vegetable cultivation in their own backyards.

Environmental impact

Vermicompost was made from the nutrition garden's waste and used in organic production, which is healthy for family health and created pollution free environment to the house.

Horizontal/ Vertical spread

Nutri-garden directly enhances household food security by increasing the availability, accessibility, and consumption of vegetables and perennial fruits. In their backyards, 10 other farm families established nutri-gardens. Farmwomen are hired in nutri-gardening when the vacant space is used efficiently. It is a low-cost, long-term approach to eliminating malnutrition, especially in rural areas.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Okra, chilli, cucumber, leafy vegetables, papaya, drumstick, banana	Summer	170
2	Okra, amaranthus, chilli, cucumber, snakegourd, ridgegourd, bottlegourd, papaya, drumstick, banana	Kharif	180
3	Cauliflower, cabbage, tomato, potato, onion, carrot, radish, beet, drumstick, leafy vegetables, brinjal, papaya, banana	*Rabi*	180

KVK Jagatsinghpur

Name of farm woman	**Smt. Kalyani Barik**
Address	At- Rasaberua, Po- Garam, Via: Tirtol, Dist: Jagatsinghpur, Pin: 754138, Odisha
Contact number	9938157424
Age (years)	43
Education	Intermediate (+2)
Family size	4
Area under Nutri-garden (acre)	0.05

Agro-ecology and Farming situation

The area is distinguished by alluvial soil and coastal irrigated fields.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated at Rasaberua village under Garam Panchayat, Tirtol block of Jagatsinghpur district. The major soil type is Sandy loam to clay loam. The average rainfall is 1370mm and the cropping intensity is 198%.

Name and description of enterprise

The name of the enterprise is 'Backyard Kitchen Garden' having 20 m lengthand 10 m breadth.

Technological Intervention and KVK Support

The farmer of Rasaberua village received training from KVK Jagatsinghpur on how to cultivate organic vegetable crops in their Nutri-garden, make vermicompost, and prepare and use biopesticides and organic plant growth regulators. KVK Jagarsinghpur provided necessary critical inputs such as vegetable seeds and seedlings for nutri-garden for both *kharif* and *rabi* season. Awareness programmes were organized for the farmers about the nutritional value of fruits and vegetables and need for balanced diet for the rural women and children.

Economic impact

With investment of Rs.4000 per annum, she got a profit of Rs.10800 per annum and production of vegetable is 16.34 q per annum. She purchased 25 cents of land to increase her volume of business, constructed one separate study room for her son.

Social impact

Master trainer for other farm women of the area, plan to raise own polyhouse for seedling raising in *kharif* & *rabi* season with assistance from NHM, has plan to develop her own cool chamber unit.

Environmental impact

22 farm women in the block have adopted a kitchen garden unit to increase their income and the nutritional security of their families.

Horizontal/ Vertical spread

Nutri-garden directly enhances household food security by increasing the availability, accessibility, and consumption of vegetables and perennial fruits. In their backyards, 55 other farm families installed organic nutri-gardens in 38 acres. Farmwomen are hired in nutri-gardening when the vacant space is used efficiently. It is a low-cost, long-term approach to eliminating malnutrition, especially in rural areas, and it raised the production of fresh vegetables.

Nutritional output of Homestead garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Papaya, drumstick, pumpkin, cucumber, cowpea, Brinjal, okra, ridgegourd, bittergourd.	*Kharif*	535
2	Spinach, amaranthus, coriander, cabbage, Cauliflower, radish, carrot, tomato, peas.	*Rabi*	585

KVK Ganjam-I

Name of farm woman	**Smt. Kalia Jena**
Address	W/o- Kartika Jena, Benakunda, Block- Bhanjanagar
Contact number	7855003840
Age (years)	28
Education	8th
Family size	4
Area under Nutri-garden (acre)	0.4

Agro-ecology and Farming situation

The area is distinguished for its backyard and irrigated grounds.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is established for promoting the use of nutri-gardens for supplement vitamins and minerals for family-level nutritional security

Name and description of enterprise

The enterprise is decked up with nutritional and organic garden, herbal garden and bio-fortified vegetables.

Technological Intervention and KVK Support

Smt. Jena was imparted a training for establishmentof nutritional garden. She was also included as beneficiaries in FLD on nutritional gardening. Seed kits,seedlings, and nylon nets for trellis are distributed from KVK. Technical guidance was given by KVK scientists for preparation of vermicompost, neem-based pesticide, *bijamrut*, *jeevamruta* and use of other biofertilizers in her nutritional garden.

Economic impact

Following the creation of a nutri-garden, a variety of fresh fruits and vegetables were consumed more frequently. Her monthly income from selling extra vegetables is Rs.2500.

Social impact

Her social prestige has been increased. Other farmwomen are seeking information from her for developing nutri-garden in backyard.

Environmental impact

Nutritional garden played an important role in enhancing family food security and dietary diversities to combat malnutrition. It boosted physical and mental health of family members. It is a sustainable model for availabilities of fresh vegetables throughout the year.

Horizontal/ Vertical spread

She is now acting as trainer for establishment of nutritional garden in her locality. Few farmwomen of her village and nearby villages have shown interest in developing nutri-garden in their backyard. Out of them seven farm families have developed nutritional garden in her locality.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability											
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	vit A (mcg)	vit C (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)	Niacin (mg)
1	Vegetable (from 350g)	Round the year	60	0.4	15	1.9	32	238	32	0.58	476	34	-	-
2	Fruit (from 100g)	Round the year	64	0.2	16	0.5	-	-	-	-	218	0.25	2.5	-
3	Mushroom (from 50g)	*Kharif* and *Rabi*	-	-	9	1.7	2.8	235	9	0.58	0.16	-	-	1.2

KVK Ganjam-I

Name of farm woman	**Smt. Sudensh Naik**
Address	W/o Bhagaban Naik, Tulasipalli, Block-Bhanjanagar
Contact number	7894364891
Age (years)	45
Education	5th
Family size	5
Area under Nutri-garden (acre)	0.4

Agro-ecology and Farming situation

The area is distinguished for its backyard and irrigated grounds.

Name and description of the Nutri-SMART Village

The purpose of the Nutri-SMART village is to promote the use of nutri-gardens as a source of additional vitamins and minerals for the nutritional security of families.

Name and description of enterprise

The enterprise is decked up with nutritional and organic garden, herbal garden and mushroom production.

Technological Intervention and KVK Support

After analysing the existing situation, a skilled training was imparted for proper layout of nutritional garden. Seed kits, planting materials, portray for raising seedling and garden nets are distributed as inputs. Method demonstration was carried out. Technical awareness is provided for organic nutri-garden by using vermicompost, other organic compost, and bio fertilizers for quality production of vegetables.

Economic impact

After introduction of nutri-garden, the consumption of fresh vegetables and fruits increased in daily diet which contributed towards achieving the nutritional security of her family. She gets Rs.3000 by selling leftover vegetables.

Social impact

She has revealed that nutrition garden is an option to enhance food security and nutritional status of the family members. Other farmwomen are seeking information from her for developing nutri-garden in backyard.

Environmental impact

Nutritional garden can play an important role in enhancing family food security and dietary diversities to combat malnutrition. It is a sustainable model for availabilities of fresh vegetables throughout the year.

Horizontal/ Vertical spread

Smt. Jena's nutritional garden is source of inspiration for other farm families in the locality. With her success in developing nutri-garden,other five farmwomen developed the same in their backyard.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability											
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	vit A (mcg)	vit C (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)	Niacin (mg)
1	Vegetable (from 300g)	Round the year	62	0.4	22	1.9	32	238	32	0.58	476	34	-	-
2	Fruit (from 100g)	Round the year	68	0.2	17	0.7	-	-	-	-	212	0.2	2.6	-
3	Mushroom (from 50g)	*Kharif* and *Rabi*	-	-	9	1.9	2.8	236	9	0.58	0.16	-	-	1.2

KVK Dhenkanal

Name of farm woman	**Smt. Jhunubala Sahu**
Address	At- atrabhaga, GP- Saptasajya pada, Dist: Dhenkanal, Pin: 759015, ODISHA
Contact number	8144779967
Age (years)	45
Education	10th
Family size	4
Area under Nutri-garden (acre)	200 sq. Meter

Agro-ecology and Farming situation

The area is in mid Central Table Land Zone and back yard

Name and description of the Nutri-SMART Village

The Nutri-SMART village situated in Patrabhaga, under Saptasajya pada panchayat, Dhenkanal Sadar block of Dhenkanal district.

Name and description of enterprise

The Backyard Kitchen Garden has 20 m length and 10 m breadth. Nutritional garden enriched with protein, vitamin & iron rich vegetables and fruits with consumers' preference. PP rope is used for trail structure for raising cucurbits. Protrayis used for raising seedlings in small quantity. There are cement ring tank for vermicomposting. Several perennial crops and various vegetable varieties are used in his year-round vegetable production.

Technological Intervention and KVK Support

Afterconducting survey on demographic profile and household consumption pattern, health status, Income & saving from Nutri-garden KVK scientists conducted training, demonstration on backyard nutri-garden. Capacity building programmes were conducted for upgradationof farm woman skill & knowledge. Interested farmers and farm women are enrolled under distance education programme of Directorate of Extension Education, OUAT. Leaflet published by KVK were distributed in local language. KVK Scientist visited their field regularly for proper guidance. Farmer-Scientist interactions were regularly conducted by KVK through telephonic discussions, exhibitions, regular monitoring etc. Quality planting materials, chicks, fish fry/ fingerlings/ yearlings are supplied to farmers as per their need. Promotion of vermicompost units is taken care of by KVK. Honey bee units are established by farmers after taking capacity building training from KVK.

Economic impact

Smt. Jhunubala Sahu has invested Rs.3600 as input cost per annum and got an income of Rs.6240 with net return of Rs.2640. She is able to produce 18.72 qt. of vegetables per annum. From this profit, she has purchased an inverter for her family members.

Social impact

Smt. Jhunubala Sahu has been recognised as a leader in their nearby locality. She is imparting training on nutri-garden, mushroom cultivation and spawn production at SHG level. She is planning to develop a low-cost poly-house for raising quality seedlings/ planting material for income generation. She has developed a mushroom production unit.

Environmental impact

The spent mushroom is used as organic compost in her nutri-garden which reduces environment pollution. It promotes the use of nutri-gardens to increase household consumption of organic vegetables.

Horizontal/ Vertical spread

Around 2000 farm women of 75 villages have adopted nutri-garden in their backyard having an area of 60 acres.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Papaya, Drumstick, Pumpkin, Cucumber, Cowpea, Okra, Brinjal, Ridge gourd, Bitter gourd	*Kharif*	225
2	Spinach, Amaranthus, Coriander, Bio fortified vegetables (Cabbage, Cauliflower, Sweet Potato), Radish, Carrot, Peas,Tomato	*Rabi*	320
3	Cucumber, Bottle gourd, Pumpkin, Amaranthus, Brinjal, Ridge gourd, Bitter gourd, Tomato	Summer	190

KVK Cuttack

Name of farm woman	**Smt. Mamata Jena**
Address	Agrahat, Tangi- Choudwar, Cuttack
Contact number	-
Age (years)	43
Education	Primary
Family size	5
Area under Nutri-garden (acre)	200m^2

Agro-ecology and Farming situation

The area is characterized by rainfed upland and homestead

Name and description of the Nutri-SMART Village

Agrahat village is situated at Tangi-Choudwar block of Cuttack district

Name and description of enterprise

Nutritional Garden under FLD programme was conducted in the village in the area of 200m^2

Technological Intervention and KVK Support

KVK Cuttack organized training programme, advisory services and demonstration on improved and biofortified vegetable varieties (Amaranthus var.*Kiran*, Drumstick var. ODC-3, Tomato var. *Arkasamrat*, Yellow cauliflower var. *Pusabetakesari*, Dolichos bean Var. *Arkaamogh*); neem-based pesticide; organic fertilizer (vermicompost).

Economic impact

Due to KVKs intervention in nutritional garden the farm family is able to cultivate different improved varieties of vegetables and got a very good production with 2.56 B:C ratio. As the family produced the above vegetables in their garden, they need not buy these vegetables from market. In other words, the family got a monetary gain of Rs.19680 from the nutri-garden in that production season.

Social impact

Cultivation of these highly nutritious vegetables and their timely consumption in adequate quantity helped in enhancing the nutrition of the farm families. Addressing of nutritional issues by improving the availability, affordability and consumption of fresh nutri-dense vegetables is one way to combat malnutrition among the rural population.

Environmental impact

Organic fertilizer like FYM, vermicompost and neem-based pesticide are mainly used for the vegetables

produced in nutri-garden. This helps in improving the soil health and production of pesticide and toxin free vegetables which in turn gives a pollution-free environment and disease-free community.

Horizontal/ Vertical spread

The nutritional garden concept was spread over 15 villages of several nearby blocks. After realising its impact, Odisha Livelihood Mission replicated the technology in other areas of the district.

Nutritional output of Homestead garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)		
			Protein	Fibre	Minerals
1	Amaranthus var. *Kiran*	Year round	6.52	8.15	4.33
2	Drumstick Var. ODC-3,	Year round	10.25	13.13	3.93
3	Tomato var. *Arkasamrat*	*Rabi*	1.52	3.16	0.86
4	Yellow cauliflower var. *Pusabetakesari*	*Rabi*	2.88	4.93	1.21
5	Dolichos bean Var. *Arkaamogh*	*Kharif & Rabi*	5.85	13.12	1.60

KVK Boudh

Name of farm woman	**Smt. Rashmita Bhoi**
Address	Village- Gambharipadar, G.P-Mursundi, Block- Boudh, Dist- Boudh, Odisha- 752018
Contact number	9668127072
Age (years)	28
Education	12th
Family size	5
The area under Nutri-garden (acre)	1

Agro-ecology and Farming situation

Gujrat hills, Dandakaranya, and Eastern Ghats are hot moist sub-humid transitional eco-subregion. The rice-vegetable farming system is seen in Gambharipadar village of Boudhblock of Boudhdistrict of Odisha.

Name and description of the Nutri-SMART Village

Gambharipadar village is situated at Boudhblock. KVK, Boudh, and OLM department have initiated the special program to sensitize farm women and other stakeholders on various aspects of nutrition to address malnutrition by bringing change in the food systems through different interventions. The main focus of the program was improving the intake of quality nutrition among the farming community.

Name and description of enterprise

Maa Maheshwari SHG, in 2018 with 10 no. of membersstarted to set up a nutri-garden.

Technological Intervention and KVK Support

Smt. Rashmita Bhoi came in contact with scientists of KVK, Boudh in 2019 and was trained in vegetable cultivation practices, vermicomposting, and nursery raising of vegetables, etc. under the Mission Shakti project. She had got training on nutri-garden and attended an awareness campaign on Poshan Abhiyan activities every year at KVK, Boudh. Different types of vegetables, rich in various micro-nutrients, were grown in nutri-gardens. Promotion of bio-fortified crop varieties for nutritional security among farm women and children has been done by KVK, Boudh.

Economic impact

Maa Maheswari SHG has been availing loans of 2 lakhs with the help of Mission Shakti dept.,Odisha. They also sold vegetables in nearby local markets. In the very first season, she was able to obtain a good yield of vegetables more than sufficient for home consumption. She also avails one kitchen garden with her SHG group from Odisha Livelihood Mission under the Panchayati Raj and Drinking Water department. She earned Rs.7000 per month with a net profit of Rs.5000. She also builds small scale mushroom units.

Social impact

She has worked with the group on their land to achieve nutrition farming and other allied activities. There are many social benefits that have emerged from kitchen gardening practices; betterhealth and nutrition, increased income, employment, food security within the household, and community social life.Developing a model nutri-garden helps in mitigating both nutrition-related issues and creating an avenue for income generation. Diversification of diet not only attracts young people towards household food but also reduces the family expenditure. The unused land is also utilized on a productive way followed by engagement of farm women in nutri-garden.

Environmental impact

She contributes most of her time to improving health outcomes through the production of drivers, safe and nutrient-rich food as well as income generation that can facilitate access to health services, reduce contamination of water sources, and labour-saving technology. Kitchen gardening offers low-cost and sustainable solutions, in harmony with the environment, to problems in the food system; threatened by climate change, mainly through the effects of predicted abiotic stresses.

Horizontal/ Vertical spread

She and her SHG members have motivated many women farmers of their village and mobilized them for the development of nutri-gardens.Fifteen SHGs of neighbouring villages has been started to develop vegetable resource nutri-garden. Apart from this, common villagers are also motivated by seeing the year-round vegetable cultivation and have come forward to start the same in their own setting.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Coriander	*Rabi*	5
2	Laal sag	Pre *kharif*	40
3	Peas	*Rabi*	10
4	Cauliflower	*Rabi*	35
5	Chilli	*Rabi*	5
6	Bitter gourd	Pre *kharif*	15
7	Ridge Gourd	Pre *kharif*	15
8	Raddish	*Rabi*	20
9	Tomato	*Rabi*	35
11	Spinach	*Rabi*	25
12	Okra	Pre *kharif*	30
13	Brinjal	Pre *kharif*	30




KVK Boudh

Name of farm woman	**Smt. Reetanjali Pradhan**
Address	At- Tutusinga, Block-Boudh, Dist-Boudh, Odisha- 762014
Contact number	7205352158
Age (years)	39 years
Education	12thpass
Family size	5
The area under Nutri-garden (acre)	1

Agro-ecology and Farming situation

Gujrat hills, Dandakaranya, and Eastern Ghats are hot moist sub-humid transitional eco-sub region. Rice-vegetable farming system is seen in Tutusinga village of Boudh block of Boudh district of Odisha. The climate of Tutusinga is generally hot and humid from March to June and cold from November to February. The monsoon generally breaks in the month of June.

Name and description of the Nutri-SMART Village

Tutusinga village of Boudh block which has a total sown/agricultural area is 186.96 ha. About 13 ha is an unirrigated area. About 173.96 ha is irrigated by canal water. Here, the promotion of nutritional awareness has been made by involving rural farm women. They are also involved in Poshan Abhiyan activities to achieve the goal of malnutrition-free villages.

Name and description of enterprise

DakhinaKali SHG, on 2017 with 11 members started to establish a nutri-garden.

Technological Intervention and KVK Support

She came in contact with scientists of KVK, Boudh in 2018 and was trained in vegetable cultivation practices, mushroom cultivation, vermicomposting, and vegetable seedling production under protected conditions. She got training on nutri-gardenand attended an awareness campaign on National Nutri Mission at KVK, Boudh. Different types of vegetables rich in various micro-nutrients were grown in nutri-gardens. She took a keen interest in the training and frontline demonstrations of nutri-gardens in her back yard which is enough for meeting the daily nutrient requirement of her family.

Economic impact

Dakhina Kali SHG has availed two loans with the help of Mission Shakti dept.,Odisha.They also sold vegetables in nearby local markets. In the very first season, she was able to obtain a good yield of vegetables more than sufficient for household consumption. She also avails one kitchen garden with her SHG group from Odisha Livelihood Mission under the Panchayati Raj and Drinking Water department. She earned Rs.13000 per month with a net profit of Rs. 4000- Rs. 5000.

Social impact

She has worked with the group on their land to achieve nutrition farming and other allied activities. There are many social benefits that have emerged from kitchen gardening practices, better health and nutrition, increased income, employment, food security within the household, and community social life. Households and small communities take advantage of vacant land and contribute not only to their household food needs but also to the needs of their resident city.

Environmental impact

Kitchen gardening offers low-cost and sustainable solutions, in harmony with the environment, to problems in the food system which is threatened by climate change, mainly through the effects of predicted abiotic stresses. According to Reetanjali, this kitchen garden practices acts as a saviour, protecting people from pesticide exposure, and helping them meet their daily nutrient requirements. Along with this, the vast majority of food waste generated in households is efficiently managed and utilized as compost for the soil, fertilizing it naturally, in kitchen gardens.

Horizontal/ Vertical spread

She and her SHG members have motivated many women farmers of their village and mobilized them for the development of nutri-gardens. Other farmers from nearby villages visited her farm for farmer-to-farmer exchange and learn from her efforts toward food and nutritional security.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Spinach	*Rabi*	45
2	Okra	Pre *kharif*	20
3	Brinjal	*Rabi*	25
4	Ridge Gourd	Pre *kharif*	15
5	Raddish	*Rabi*	15
6	Tomato	*Rabi*	20
7	Coriander	*Rabi*	10
8	Laal sag	Pre *kharif*	60
9	Peas	*Rabi*	10
10	Cauliflower	*Rabi*	25
11	Chilli	*Rabi*	5
12	Bitter gourd	Pre *kharif*	20




KVK Bhadrak

Name of farm woman	**Smt. Malati Basantia**
Address	At/Po- Fatepur, Block- Dhamnagar, Dist- Bhadrak
Contact number	7894667550
Age (years)	55
Education	7th
Family size	5
Area under Nutri-garden (acre)	0.5

Agro-ecology and Farming situation

Nutri-smart village Fatepur of Dhamnagar,block having sandy loam, clay, salinity soil high rainfall with medium elevation. The climate of Fatepur is generally hot and dry from March to June and cold from November to February. The monsoon generally breaks in the second or third week of June, irrigating land and backyard.

Name and description of the Nutri-SMART Village

Promotion of nutri-garden for reduction of micro-nutrient deficiencies at village level and achieving nutritional security at family level.

Name and description of enterprise

She started in 2021 with 0.5 acres area of nutri-garden in organic way and also doing mushroom cultivation.

Technological Intervention and KVK Support

The farmer of the village received training from KVK Bhadrak on how to cultivate organic vegetable crops in their nutri-garden, make vermicompost, and prepare and use biopesticides and organic plant growth regulators. KVK provided necessary critical inputs such as vegetable seeds and seedlings for nutri-garden for both *kharif* and *rabi* seasons. Awareness programmes were organized for the farmers about the nutritional value of fruits and vegetables and need for balance diet for the rural women and children.

Economic impact

After introduction of nutri-garden, consumption of fresh vegetables, fruits and diversities on varieties are improved in daily diet which contributed towards achieving the nutritional security of her family. She gets Rs.5500 by the selling leftover vegetables.

Social impact

Nutritional garden is an option to enhance food security and nutritional status of family members. It is found that nutrition is a solution and an affordable way to ensure healthy food and balanced diet.

Environmental impact

Nutritional garden can play an important role in enhancing family food security and dietary diversities to combat malnutrition. It is a sustainable model for availabilities of fresh vegetables throughout the year.

Horizontal/ Vertical spread

By doing nutritional garden in her backyard,she inspired the neighbouring farm women and another 7 nutritional garden units have been establishedin her locality with her guidance.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability											
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	vit A (mcg)	vit C (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)	Niacin (mg)
1	Vegetable (from 300g)	Round the year	62	0.04	25	1.9	32	238	32	0.58	476	34	-	-
2	Fruit (from 100g)	Round the year	68	0.2	17	0.7	-	-	-	-	212	0.2	2.6	-
3	Mushroom (from 50g)	*Kharif* and *Rabi*	-	-	9	1.9	2.8	236	9	0.58	0.16	-	-	1.2

WEST BENGAL

KVK Uttar Dinajpur

Name of farm woman	**Smt. Rita Das**
Address	Vill. Dhandugach, P.O. Gharugach, Chopra, Uttar Dinajpur
Contact number	9547544159
Age (years)	44
Education	6th pass
Family size	6
Area under Nutri-garden (acre)	0.08

Agro-ecology and Farming situation

The area is characterized by sequential cropping, mixed cropping, intercropping etc. and upland farming situation

Name and description of the Nutri-SMART Village

Dandugach, a Nutri-Smart village having 50 farm families. Main occupation is agriculture and tea Gardening. Located at Chopra block of Uttar Dinajpur District, West Bengal.

Name and description of enterprise

The name of the enterprise is 'Nutritional Kitchen Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production. She used vermicompost for cultivation.

Technological Intervention and KVK Support

Nutri smart interventions like management and planning of Nutritional Kitchen Garden, emphasis was given on green leafy vegetable production as well as fruit trees and common medicinal plants. Agricultural practices like intercropping, sequential cropping and mixed cropping has been taught to farm women who are mainly looking after kitchen gardens. Small composting units has made by most of the respondents and adopted organic practices. Few farm families have also adopted millets in their cropping systems after KVK intervention.

Economic impact

Smt. Rita Das is able to earn an average of Rs.400 per month from kitchen garden produce.

Social impact

Nutri-smart village has made positive deviance in society. Nutritional gardens have provided nutritional security to farm families and less frequency of infectious diseases among children. Knowledge regarding family nutrition is more in women of the smart village.

Environmental impact

Due to better composting practices and eco-friendly management of kitchen garden crops, the surrounding environment isbecoming cleaner and healthier.

Horizontal/ Vertical spread

The concept of nutritional kitchen garden has become popular among the farm women ofadjoining villagesdue to its positive sides like diet diversity, social and economic impacts.Among them, 28 women have started this type of gardening and/or made improvement in their existing practices.

Nutritional output of Kitchen garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Coriander, spinach, amaranthus, methi	*Rabi*	120
2	Sweet potato, Beans, tomato, brinjal, bottle gourd, cabbage	*Rabi*	130
3	Okra, cowpeas, jute sag, pui sag, bitter gourd, sponge gourd cucumber	Summer	120
4	Millets (foxtail and ragi)	Summer and Rainy	40

KVK Uttar Dinajpur

Name of farm woman	**Smt. Shishubala Poddar Sarkar**
Address	Vill. Ramkrishanpur, P.O. Nizampur, Goalpokhar-II, Uttar Dinajpur
Contact number	9635363062
Age (years)	45
Education	Graduate
Family size	4
Area under Nutri-garden (acre)	1

Agro-ecology and Farming situation

The area is characterized by sequential cropping, mixed cropping, intercropping etc and have upland, Irrigated farming situation

Name and description of the Nutri-SMART Village

Ramkrishanpur, a Nutri-Smart village having 45 farm families. Main occupation is agriculture. Located at Goalpokhar-II block of Uttar Dinajpur District, West Bengal. Near about 16 farm families are engaged with nutritional kitchen gardening.

Name and description of enterprise

The name of the enterprise is 'Nutritional Kitchen Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production. She used vermicompost for cultivation.

Technological Intervention and KVK Support

Improved agricultural practices like intercropping, sequential cropping and mixed cropping has been taught to farm women. Small composting units has made by most of the respondents and adopted organic practices. Smt. Shishubala Poddar has adopted millets in her cropping systems after KVK intervention. Stress was given on green leafy vegetable production as well as fruit trees and common medicinal plants. KVK has also helped her in getting new market channels like urban organic *haat* etc.

Economic impact

Smt. Shishubala Poddar is able to earn an average Rs.6200 per month from her kitchen garden produce and sells it in urban organic *haat* at Siliguri.

Social impact

Nutritional garden has provided nutritional security to farm families and less frequency of infectious diseases among children. Kitchen garden which is totally managed on organic inputs is source of good income to farm women and has made excellent social impact.

Environmental impact

Due to better composting practices and eco-friendly management of kitchen garden crops making surrounding environment clean and healthy. Almost no use of chemical fertilizer and pesticides led to better soil health.

Horizontal/ Vertical spread

Nutritional kitchen garden concept has got popular among farm women of adjoining villages also due to its positive sides like diet diversity, social and economic impacts. Near about 45 women (5 SHGs) of other villages has started this type of gardening or made improvement in their existing practices.

Nutritional output of Kitchen garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Broccoli, Cauliflower, Coriander, spinach, amaranthus, methi	*Rabi*	180
2	Sweet potato, Beans, tomato, brinjal, bottle gourd,	*Rabi*	200
3	Okra, cowpeas, jute sag, pui sag, bitter gourd, sponge gourd cucumber	Summer	150
4	Banana, Lemon and Drumsticks	Round the year	150
5	Millets (Foxtail and ragi)	Summer and Rainy	60

KVK Uttar Dinajpur

Name of farm woman	**Smt. Anjali Majumder**
Address	Vill. Tepagaun, P.O. Daspara, Chopra, Uttar Dinajpur
Contact number	7478272721
Age (years)	49
Education	5th pass
Family size	5
Area under Nutri-garden (acre)	0.20

Agro-ecology and Farming situation

The area is characterized by sequential cropping, mixed cropping, intercropping, vermicomposting etc. and have upland farming situation.

Name and description of the Nutri-SMART Village

Tepagaun, a village, situated at Indo-Bangladesh border having 65 farm families. Main occupation is agriculture and tea Gardening. Located at Chopra block of Uttar Dinajpur district, West Bengal.

Name and description of enterprise

The name of the enterprise is 'Nutritional Kitchen Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production. She used vermicompost for cultivation.

Technological Intervention and KVK Support

Interventions like management and planning of Nutritional Kitchen Garden, emphasis was given on green leafy vegetable production as well as fruit trees and common medicinal plants. Vermicompost making was one component of training. Agricultural practices like intercropping, sequential cropping and mixed cropping has been taught to farm women who are mainly looking after kitchen gardens. Small composting units were made by most of the respondents and they adopted organic practices. Few farm families have also adopted millets in their cropping systems after KVK intervention. Farmwomen are encouraged to preserve local seed varieties on their own for better nutrition.

Economic impact

Smt. Anjali Majumder is able to earn an average of Rs.600 per month from kitchen garden produce.

Social impact

Nutritional gardens have provided nutritional security to farm families and less frequency of infectious diseases among children. Smt. Majumder has made her unique identity by preserving at least 12-14 varieties of seeds of desi vegetables and providing them to fellow women as and when required.

Environmental impact

Due to better composting practices and eco-friendly management of kitchen garden crops, it makes surrounding environment cleaner and healthier.

Horizontal/ Vertical spread

Nutritional kitchen garden concept has got popular among farm women of adjoining villages also due to its positive sides like diet diversity, social and economic impacts. Near about 36 women of other villages has started this type of gardening or made improvement in their existing practices.

Nutritional output of Kitchen garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Coriander, spinach, amaranthus, methi	*Rabi*	130
2	Sweet potato, Beans, tomato, brinjal, bottle gourd, cabbage	Rabi	100
3	Okra, cowpeas, jute sag, pui sag, bitter gourd, sponge gourd cucumber	Summer	120
4	Millets (foxtail and ragi)	Summer and rainy	30

KVK South 24 Parganas-I (Nimpith)

Name of farm woman	**Smt. Bamni Mandal**
Address	Vill- Bongheri, PO: Kaikhali Ashram, Block-Kultali, South 24 Parganas, West Bengal-743349
Contact number	6296715040
Age (years)	46
Education	4th
Family size	5
Area under Nutri-garden (acre)	1.4

Agro-ecology and Farming situation

The area is characterized by coastal saline, household based and having partially irrigated land.

Name and description of the Nutri-SMART Village

Bongheri, a small hamlet on the bank of River Matla, was adopted for NICRA programme in 2010 after the village was devasted by super cyclone *Aila* in 2009. During the course of different developmental activities in last 13 years, nutrition garden/kitchen garden was promoted among women farmers for better domestic nutrition security as well as income generation.

Name and description of enterprise

Round the year vegetable cultivation using harvested rain water in land shaping pond. The vegetables are grown as follows

i) Bitter gourd (in *kharif*) in land embankment (*ail*)

ii) Bean & Chilli (in *rabi*) in land embankment (*ail*)

iii) Cucumber (in *kharif & rabi-summer*) in pond embankment

iv) Bottlegourd (in Summer) in pond embankment as aerial cultivation

v) Amaranthus, spinach, Lathyrus (for Greenleaf), red cabbage, broccoli, cowpea, pumpkin & radish in high land during *rabi*& summer season

vi) Fishery

Technological Intervention and KVK Support

Support for construction of land-shaping & rainwater harvesting structure,decision making for crop planning, supply of nutri-rich vegetable seeds for backyard key-hole nutrition garden and land embankment cultivation, timely training and consultation, provision for composting pit making etc.

Economic impact

She used to get annual income of Rs.35060 from crop, livestock & fish. Now, she is getting annual income of Rs.128455 after taking interventions like vegetable garden in the land shaping plot and fish from the rain water harvesting pond. Vegetables like bitter gourd, beans, chilli, cucumber, bottle gourd etc. are cultivated.

Production of nutri-rich vegetable seeds which are used for cultivation at land embankment for higher return (i.e. green cowpea grown earlier and sold at Rs.30per kg. Now the red cowpea production by the technological and other support of KVK help them to sale at Rs.40 to Rs.45 for brunch of mixed green and red cowpea at local market.

Social impact

By practicing nutrition garden, she harvested different types of vegetables round the year for their own use as well as earned by selling the produces without application of any chemicals. Creates self-employment, job opportunity for other family members, job-attainment for the elderly family members. Increased dietary diversity to address hidden hunger through nutrient rich crop planning and extra additional income throughout the year.Reducing migration by creating employment for different cultural practices of crops.

Environmental impact

Better utilization of domestic waste through composting. Very less use of hazardous chemical pesticides & fertilizers. Practice of rainwater harvesting and its use for domestic need.Judicious use of harvested rain water in irrigating vegetable crops.

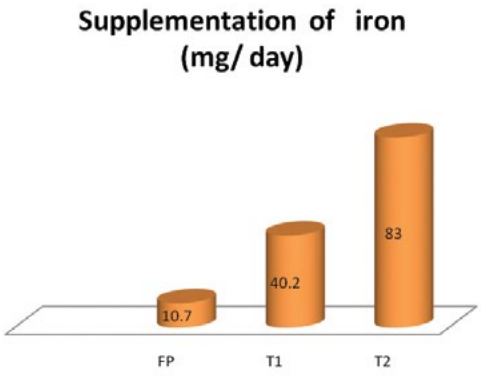
Horizontal/ Vertical spread

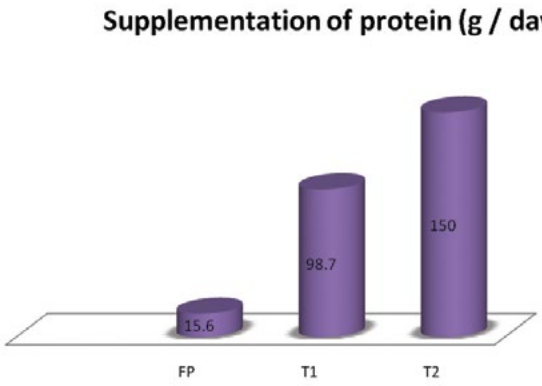
Around 78 women farmers of the same Bongheri village and 37 farmers from the nearby villages have accepted this model of nutrition garden and are growing different vegetables round the year.

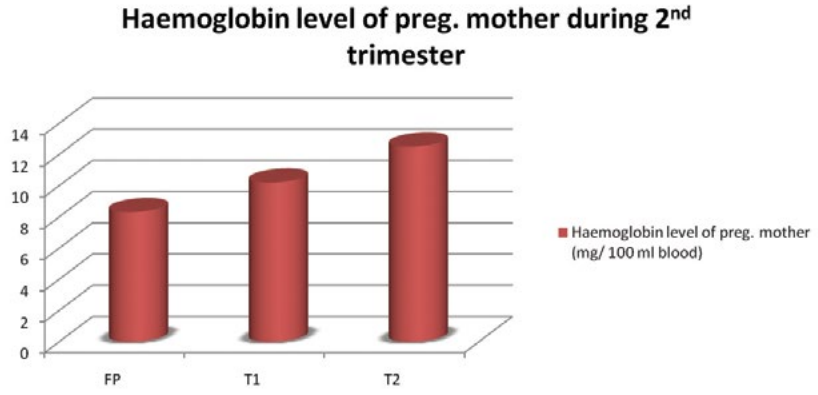
Nutritional output of Kitchen/Nutri-garden

Sl. No.	Crop	Season	Area (Acre)	Production (Q)
1	Bitter gourd	Round the year (mainly *kharif*)	0.05	5.27
2	Bean	*Rabi*	0.05	3.56
3	Brinjal	Summer &*Kharif*	0.05	5.31
4	Chilli	*Rabi*	0.10	4.39
5	Cucumber	Round the year	0.05	3.45
6	Bottlegourd	*Kharif* & *Rabi* (over pond as no land cultivation)	0.06	7.65
7	Cowpea	Round the year	0.05	6.01
8	Leafy vegetables	Round the year	0.05	2.93

Table: Per day per capita nutritional availability







KVK South 24 Parganas-II (Narendrapur)

Name of farmer	**Shri Kamal Mandal**
Address	Village: Moutala, P O: Nabagram, South 24 Parganas, Pin- 743372
Contact number	Mob: 8001216094
Age (years)	38
Education	8th
Family size	5
Area under Nutri-garden (acre)	3.32

Agro-ecology and Farming situation

The area is new alluvial zone and having irrigated medium land.

Name and description of the Nutri-SMART Village

The Nutri-SMART village situated in the village Moutala, Baruipur, South 24 Parganas.

Name and description of enterprise

The name of the enterprise is 'Nutri-Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production.

Technological Intervention and KVK Support

The farmer of the village received training from KVK on how to cultivate organic vegetable crops in their nutri-garden, high value crop, varietal replacement, border netting technology in chilli, IFS, turkey farming, Integrated Broiler farming etc and prepare and use biopesticides and organic plant growth regulators. KVK provided necessary critical inputs such as vegetable seeds and seedlings for nutri-garden for both *kharif* and *rabi* seasons. Awareness programmes were organized for the farmers about the nutritional value of fruits and vegetables and need for balance diet for the rural women and children.

Economic impact

With different scientific interventions like introduction of high value crops, improved cultivars, integrated nutrient and pest management etc., he is getting annual net income of Rs.260100.

Social impact

As a result of increased income Shri Mandal could increase the food quality of the family members, good races and education to his children. He has become a resource person from whom farmers from his and nearby villages take advice for technology adaption in agriculture, horticulture, animal husbandry and fishery sectors.

Environmental impact

Reduction in use of chemical pesticides. Now they use different IPM techniques along with various organic amendments as like Vermicompost, *Jeevamrit*, *Ghana Jeevamrit*, *Panchagavya*, *Sasyagavya* etc.

Horizontal/ Vertical spread

Improved technologies received from the KVK have been adopted in 5 villages surrounding Moutala village.

Nutritional value of vegetables (per 100g)

Season	*Rabi*			*Rabi*, Summer		Spring-Summer
Crop	Broccolli	Capsicum	Knolkhol	Cowpea	Brinjal	Chilli
Energy (kcal)	34	27	16.01	336	25	6
Carbohydrate (g)	6.6	6.3	1.39	60.03	5.88	1.3
Protein (g)	2.8	1	1.58	23.52	0.98	0.3
Fat (g)	0.4	0.2	0.35	1.26	0.18	0.35
Free sugar (g)	1.4	4.2	0.43	-	3.53	0.8
Fibre (g)	2.76	0.9	2.75	10.6	3	0.2
Saturated Fatty Acids (mg)	0.079	0.3	97.4	283	70-90	-
Mono Unsaturated Fatty Acids (mg)	-	-	31.62	60.58	-	-
Poly Unsaturated Fatty Acids (mg)	-	-	130	550	-	-
Calcium (mg)	47	11	35.26	110	9	8.1
Phosphorus (mg)	66	24	40.77	424	24	20.7
Magnesium (mg)	21	12	19.05	184	14	19.05
Sodium (mg)	41	2	27.46	0.12	0.12	3.2
Potassium (mg)	316	212	327	0.14	229	153
Iron (mg)	0.7	0.4	0.24	8.27	0.2	0.5
Copper (mg)	0.05	0.03	0.08	0.85	0.12	0.1
Chromium (µg)	22	-	-	-	-	-
Manganese (mg)	0.2	-	0.13	1.5	0.24	0.13
Zinc (mg)	0.15	-	0.15	0.15	0.16	0.1
Vitamin E (mg)	0.8	-	0.17	0.04	0.03	0.3
Vitamin D2 (µg)	-	-	0.32	-	-	-
Vitamin K1 (µg)	102	-	8.9	-	-	-
Folate (µg)	63	26	14.76	-	22	10.4
Vitamin B1 (mg)	-	-	0.04	0.04	0.07	-
Vitamin B2 (mg)	-	-	0.06	0.06	-	-
Vitamin B3 (mg)	-	-	0.37	-	-	-
Vitamin B5 (mg)	-	-	0.38	-	-	-

Season	*Rabi*			*Rabi*, Summer		Spring-Summer
Crop	Broccolli	Capsicum	Knolkhol	Cowpea	Brinjal	Chilli
Vitamin B6 (mg)	0.2	-	0.19	0.19	0.084	0.1
Vitamin B7 (µg)	-	-	2.46	-	-	-
Vitamin B9	-	-	14.76 µg	-	22 mg	-
Vitamin C	89.2 µg	183 mg	64.7 µg	1.5 mg	2.2 mg	109 µg
Carotenoids (µg)	-	-	28.82	-	-	28.82
Vitamin A (IU)	623	200	-	-	-	530
Vitamin B (mg)	-	6.2	-	-	-	-
Niacin	0.6 mg	0.9 mg	-	0.106 µg	0.663 µg	10.4 mg
Thiamine (mg)	0.1	-	-	-	-	-
Selenium (µg)	2.5	-	-	0.9	-	-
Vitamin K (µg)	-	-	-	0.06	3.5	6.4
Choline	-	-	-	9.65 µg	6.9 mg	5 mg

KVK Purulia

Name of farm woman	**Smt. Shakuntala Bauri**
Address	Deoli, Para, Purulia- 723146
Contact number	-
Age (years)	48
Education	8th
Family size	6
Area under Nutri-garden (acre)	0.03

Agro-ecology and Farming situation

Deoli village has sandy soil and the farming situation is irrigated upland.

Name and description of the Nutri-SMART Village

The Nutri-SMART Village is situated at the village Deuli, Para block, Purulia.

Name and description of enterprise

The name of the enterprise is 'Nutritional Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production.

Technological Intervention and KVK Support

The villagers received training from KVK on how to cultivate vegetable crops in their nutritional garden, prepare and use biopesticides and organic plant growth regulators. KVK provided necessary critical inputs such as vegetable seeds and seedlings for nutritional garden for both *kharif* and *rabi* seasons. Awareness programmes were organized for the farmers about the nutritional value of fruits and vegetables and need for balanced diet for the rural women and children.

Economic impact

The family receives a year-round supply of fresh vegetables from nutritional garden. In addition to domestic use, they made money by selling extra vegetables in the neighbourhood market. This money has been used to pay for incidental family expenses as well as the purchase of more vegetables and pulses for the family. Due to round the year cultivation of different vegetables the family spends lesser amount towards purchasing from local market.

Social impact

Inspired by Smt. Shakuntala Bauri, around 63% of the nearby households are now having their own nutrition garden. Villagers are inspired to undertake organic vegetable farming in their own backyard after watching it being done all year long.

Environmental impact

Use of vermicompost enhanced the soil quality. The waste produced from nutritional garden was utilised for organic production, which is good for family health.

Horizontal/ Vertical spread

Another 20 farm families established organic nutritional garden in their backyard. The unused area isutilised productively, and the farmwomen are employed in nutri-gardening as well. It is a low-cost, long-term strategy for reducing malnutrition, particularly in rural communities and increased fresh vegetables production.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability								
			Calorie (Kcal)	Fat (g)	Carbohydrate (g)	Protein (g)	Calcium (mg)	Iron (mg)	Potassium (mg)	Sodium (mg)	Fibre (g)
1	French Bean	Rabi	31	0.22	7.13	2.1	-	-	-	-	2.7
2	Garden Pea	*Rabi*	81	-	14.4	5.4	-	-	-	-	5.7
3	Radish	Summer	16	0.1	3.4	0.6	25	-	-	-	1.6
4	Carrot	*Rabi*	41	0.1	9.0	0.8	-	-	-	-	2.7
5	Pumpkin	Summer	20	0.1	4.9	0.7	15	0.6	230	1	1.1
6	Bottle gourd	Summer	15	0.02	3.39	0.6	-	-	-	-	-
7	Bitter Gourd	Summer	17	0.2	3.7	1	-	-	-	-	2.8
8	Ridge Gourd	Summer	13.14	0.14	1.72	0.91	-	-	-	-	-
9	Okra	*Kharif*/Rainy	33	-	7	2	-	-	-	-	3
10	Leafy Vegetables	Round the year	45	2.63	4.82	1.69	-	-	169	273	2.7
11	Tomato	Rabi	18	0.2	3.9	-	10	0.3	237	5	1.2
12	Chilli	*Rabi*	101	5.59	7.75	5.3	-	-	247	385	2.4
13	Brinjal	*Kharif*	25	-	5.88	0.98	-	-	-	-	3
14	Cabbage	*Rabi*	23	0.1	5.5	1.3	48	0.2	196	8	1.9
15	Cauliflower	*Rabi*	23	0.5	4.1	1.8	16	0.3	142	15	2.3
16	Broccoli	Rabi	35	0.4	7.2	2.4	40	0.7	293	41	3.3
17	Papaya	Round the year	43	0.3	11	0.5	20	0.3	182	8	1.7




KVK North 24 Parganas-I (Ashokenagar)

Name of farmer	**Shri Sankar Jana**
Address	Babpur, North 24 Parganas, West Bengal
Contact number	9433902046
Age (years)	45
Education	Higher Secondary
Family size	3
Area under Nutri-garden (acre)	0.024 (100m^2)

Agro-ecology and Farming situation

The village is in rainfed upland area.

Name and description of the Nutri-SMART Village

Babpur, North 24 Parganas is located in Barasat-I subdivision of North 24 Parganas district in West Bengal, India. It is situated 8.5km away from district headquarter Barasat. The total geographical area of village is 119.48 ha. Babpur has a total population of 1601 people, out of which male population is 838 while female population is 763. Literacy rate of Babpur village is 78.39% out of which 82.22% males and 74.18% females are literate. There are about 370 houses in Babpur village.

Name and description of enterprise

The name of the enterprise is 'Nutritional Garden'. Several perennial crops and various vegetable varieties are used in his year-round vegetable production.

Technological Intervention and KVK Support

KVK North 24 Parganas (Ashokenagar) organized training cum demonstration on nutri-garden. Seeds of different vegetable crops, improved varieties of fruit crops were also provided to the farmer. Various inputs under natural farming were provided for conducting demonstration.

Economic impact

Shri Jana has been growing different vegetable crops in his nutri-garden organically. His daily requirement of vegetables is approximately 1 kg costing around Rs.30 per day. But due to availability of different vegetables in his own nutritional garden, he could save nearly Rs.900 per month on vegetable purchase from the market.

Social impact

Seeing the progress of Shri Sankar Jana, other farmers of the village are also actively involved in organic vegetable farming.

Environmental impact

Shri Jana is involved in organic/natural vegetable production in his garden. He has been using different organic/natural inputs such as cow dung, vermicompost, bio-pesticides, *Jeevamrit* etc. which do not have any harmful effect on the environment.

Horizontal/ Vertical spread

The practice of nutritional garden/kitchen garden has been adopted by the other farmers of the Babur village as well as other nearby villages such as Beraberia, Bodai etc.

Nutritional output of Nutritional garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Spinach	*Rabi* season (November-February)	100.0
2	French bean		62.5
3	Garden Pea		50.0
4	Carrot		75.0
5	Radish		83.3
6	Brinjal		100.0

KVK Murshidabad-II (Dhanyaganga)

Name of farm woman	**Smt. Riya Mondal**
Address	Nowdapanur, Berahampore Block
Contact number	9932685750
Age (years)	32 years
Education	Madhyamik
Family size	6
Area under Nutri-garden (acre)	0.05 (3 katha)

Agro-ecology and Farming situation

The operational area is eastern part of the river *Bhagirathi* having fertile land, popularly known as *Bagri*. It is under medium land situation with irrigation facility. Soil is mostly loamy to sandy loam with medium fertility. Micro-nutrient deficiencies were recordedin few areasin the field. Wide crop diversity is one of the mentionable agricultural features of this area. Thus, various vegetables adopted under nutri-garden are known or familiar to them.

Name and description of the Nutri-SMART Village

Nowdapanur the village is mostly dominated by the farming community. Agriculture and allied sector activities are the major livelihood. The village is nearest to the district headquarter at about 8-10 km.

Name and description of enterprise

Establishment of nutri-garden by a marginal farm woman for family nutritional security and woman empowerment. Apart from household work, she has keen interest in different agricultural activities and practicing such work in land adjacent to the household. After receiving communication from the Dhaanyaganga KVK, she brought 22 farm women under the umbrella of Nutritional Security Group.

Technological Intervention and KVK Support

Considering socio-economic situation, during implementation, primarily poor and marginal farm woman mostly belonging to schedule caste community, had been targeted and selected by the KVK. A comprehensive training has been organized by the DhaanyagangaKVK. The training was imparted by the Subject Matter Specialist (Horticulture), Lab Technician and Supporting Staff in presence of Secretary, Ramakrishna Mission Ashrama, Sargachhi.The entire work was chalked out in three distinct phases (a) Training along with distribution of vegetable seed kits and other inputs (b) Field visit, monitoring and motivation for adopting technology (c) After harvesting of 1st season crop, interaction and feedback analysis. The vegetable seeds viz. Palak, Carrot, Amaranthus were distributed to each participant. As per the information received from them, it was the first time for them that they had been motivated for establishment of Kitchen and Homestead Garden. A season wise crop planning (crop sequence) was advised and opportunity extended to them for selection of crop as per their food habit. Concepts of seed treatment, compost preparation, intercropping of vegetables, basic ideas of organic

farming, bio-fertilizer were disseminated to them. The seeds of palak, amaranthus, Katwa data were broadcasted. On the other hand, carrot, tomato, brinjal were planted in a specified distance and manner as learned in the training. Two field visits were made by the KVK functionaries. They discussed with other members of the group to perform accordingly.

Economic impact

It does not reflect a lot on family income enhancement at initial stage of operation. But it will produce significant development through continuous practice in long term. At present the cost of vegetables is very high and fluctuating. The farming family belongs to marginal category, even some of them do not have much agricultural land. Under this situation, production of vegetables in their own household ensure their nutritional security and diversification in their daily diet. If this is converted into monetary value, it results in Rs.1200 per month for three months duration. Smt. Riya Mondal took a leading part in this regard.

Social impact

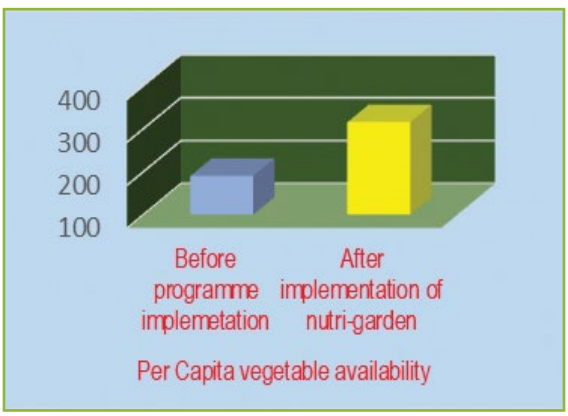
The farmwomen firstly enjoy the production of vegetables by their own. It creates an opportunity for them to receive institutional support and interact with Government officials on different village issues. It is also a step towards successful 'Self Help' and ensuring participation of farm woman in agriculture - woman empowerment.By taking part in the programme, their prestige within their own family is enhanced by making contribution.

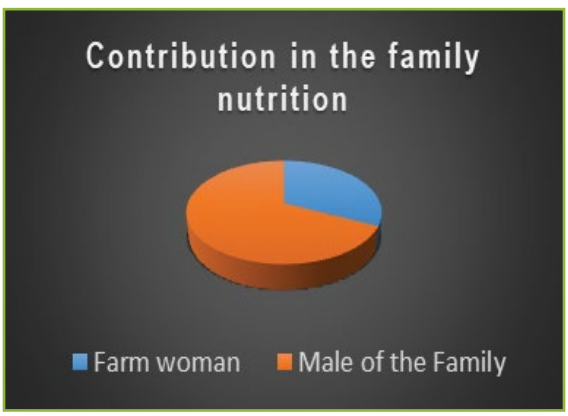
Environmental impact

Optimize farm resource utilization. Encouraging organic production system and enhancing area under organic farming. The pesticide use was restricted, hardly bio-pesticides were used. Thus, a farm family has the opportunity to consume fresh food without pesticides residue.Enhancing greenery in household.

Horizontal/ Vertical spread

Under present situation, shrinkage of agricultural land is the common phenomenon. But in the present study, it extends opportunity of both horizontal spread by cultivation of fallow homestead land for establishment of nutri-garden as well as vertical spread by adopting multiple cropping in single piece of land.





Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Cauliflower	*Rabi* (Winter)	45.7
2	Palak	*Rabi* (Winter)	45.6
3	Tomato	*Rabi* (Winter)	22.8
4	Ladies finger	Pre-*Kharif* (Summer)	22.8
5	Cow pea	Pre-*Kharif* (Summer)	11.4
6	Amaranthus	Pre-*Kharif* (Summer)	25.11
7	Bottle gourd	*Kharif* (Rainy)	27.4
8	Katwa data	*Kharif* (Rainy)	45.6
9	Brinjal	*Kharif* (Rainy)	68.5

The calculation made on 2.5 katha of land under Kitchen Garden as possessed by the Farm Woman. The land was sub-divided variedly for three crops in a season as per choice. Family members are 6.

KVK Malda-I (Ratua)

Name of farmer	**Md. Safikul Islam**
Address	Vill- Makaiya, P.O.- Balupur, P.S.- Ratua, Dist- Malda
Contact number	8906582708
Age (years)	24
Education	Diploma
Family size	8
Area under Nutri-garden (acre)	12 katha

Agro-ecology and Farming situation

Farming situation of the village Makaiya is multi-tier and mixed cropping system.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated in the village Makaiya, Balupur, Malda.

Name and description of enterprise

Md. Safikul Islam is a progressive farmer, he is involvedin cultivating different seasonal vegetables throughout the year in his nutritional garden. He produces different off season and high value vegetables through using modern low-cost technologies. He also cultivates different seasonal vegetables and fruits in his own nutritional garden like brinjal, tomato, okra, chilli, pointed gourd, cauliflower, coriander, garlic, potato pumpkin, summer squash, amaranthus, cabbage, banana, papaya, lemon etc.

Technological Intervention and KVK Support

He was imparted in different training programme like multi-tier horticulture system, nutritional garden preparation, high value vegetable cultivation etc. and technical guidance was given through KVK to implement different modern low-cost technology in his nutritional garden.

Economic impact

From nutritional garden, he and his family members can consume fresh vegetables and fruits for their daily diet. He is getting Rs.3500 per month by selling fresh vegetables and fruits.

Social impact

Other farmers in his village are inspired through his activities and are also motivated to establish nutritional garden after consulting with him. His social image has also increased.

Environmental impact

Nutritional garden plays an important role for providing food security and ensuring access to adequate quantity of quality food. There is a need to look at multiple strategies to combat the issue of food security.

Community and nutrition garden can play an important role in enhancing national food security and dietary diversity to combat malnutrition through availability of fresh vegetables throughout the year.

Horizontal/ Vertical spread

He inspired and motivated different farm families by acting as a master trainer to establish nutritional garden in his village. Total seven farm families have developed nutritional garden in the village with his guidance.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal	Round the year	450
2	Okra	Summer	600
3	Chilli	Summer	100
4	Bitter gourd	Summer and *kharif*	250
5	Pumpkin	*Rabi*	200
6	Palak	Summer	300
7	Coriander leaf	*Rabi*	150
8	Garlic	*Rabi*	90
9	Cabbage	*Rabi*	275
10	Cauliflower	*Rabi*	200
11	Broccoli	*Rabi*	250
12	Potato	*Rabi*	200
13	Onion	*rabi*	250
14	Drumstick	Summer	200
15	Banana	Round the year	250
16	Lemon	Round the year	175
17	Papaya	Round the year	250

KVK Malda-I (Ratua)

Name of farmer	**Dasarath Mandal**
Address	Vill - Gopalpur, P.O. – Samsi, P.S. – Ratua, Block - Ratua-I, Dist – Malda, West Bengal
Contact number	8670870877
Age (years)	33
Education	8th
Family size	4
Area under Nutri-garden (acre)	9 katha

Agro-ecology and Farming situation

Farming situation of the village Makaiya is multi-tier and mixed cropping system.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated in the village Gopalpur, Ratua, Malda.

Name and description of enterprise

Dasarath Mandal is a progressive farmer, he is involvedin cultivating different seasonal vegetables throughout the year in his Nutritional Garden. He produces different off season and high value vegetables using modern low-cost technologies. He also cultivates different seasonal vegetables and fruits in his own nutritional garden like brinjal, tomato, okra, chilli, pointed gourd, pumpkin, summer squash, amaranthus, cabbage cauliflower, coriander, garlic, potato, banana, papaya, lemon etc.

Technological Intervention and KVK Support

He was imparted in different training programme like multi-tier horticulture system, nutritional garden preparation, high value vegetable cultivation etc. and technical guidance was given through KVK to implement different modern low-cost technology in his nutritional garden.

Economic impact

From nutritional garden, he and his family members can consume fresh vegetables and fruits for their daily diet. He is getting Rs. 2000 per month by selling fresh vegetables and fruits.

Social impact

Other farmers in his village are inspired through his activities and are also motivated to establish nutritional garden after consulting with him. His social image has also increased.

Environmental impact

Nutritional garden plays an important rolefor providing food security and ensuring access to adequate quantity of quality food. There is a need to look at multiple strategies to combat the issue of food security.

Community and nutrition gardens can play an important role in enhancing national food security and dietary diversity to combat malnutrition through availability of fresh vegetables throughout the year.

Horizontal/ Vertical spread

He inspired and motivated different farm families by acting as a master trainer to establishnutritional garden in his village. Total five farm families have developed nutritional garden in the village with his guidance.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal	Round the year	300
2	Okra	Summer	500
3	Chilli	Summer	50
4	Bitter gourd	Summer and *kharif*	200
5	Pointed gourd	*Rabi*	200
6	Pumpkin	*Rabi*	200
7	Palak	Summer	250
8	Coriander leaf	*Rabi*	90
9	Garlic	*Rabi*	50
10	Cabbage	*Rabi*	200
11	Cauliflower	*Rabi*	200
12	Broccoli	*Rabi*	200
13	Potato	*Rabi*	150
14	Onion	*rabi*	150
16	Banana	Round the year	200
17	Lemon	Round the year	150
18	Papaya	Round the year	200

KVK Kalimpong

Name of farm woman	**Smt. Tika Chettri**
Address	Upper Ecchey, Daragaow, Kalimpong
Contact number	9832562260
Age (years)	43
Education	12thPass
Family size	4
Area under Nutri-garden (acre)	0.3

Agro-ecology and Farming situation

The region is known for its terrestrial farming style and rain-fed agriculture.

Name and description of the Nutri-SMART Village

The Nutri-SMART Village is situated at Upper Ecchey, Daragaow, Kalimpong.

Name and description of enterprise

The name of the enterprise is 'Poudyal Enterprises'. Smt. Tika Chettri has a small family-owned farm where she cultivates various seasonal vegetable crops and greens, local fruits like guavas, papaya, tree tomatoes. She also has a small mushroom unit, flowers like orchids, agelia, antherium, pines, succulents etc. Majorityof her produce is sold locally and also directly purchased from farm itself.

Technological Intervention and KVK Support

The farmers received instruction from KVK on growing organic vegetable crops in their nutri-garden, making vermicompost, and preparing and employing biopesticides and organic plant growth regulators. For the nutri-garden's *kharif* and *rabi* seasons, KVK scientists provided crucial inputs such vegetable seeds, seedlings, and season-based vegetable crops. Farmers were made aware of the importance of a balanced diet for rural women and children as well as the nutritional significance of fruits and vegetables through educational workshops.

Economic impact

At the individual level, kitchen gardening can lead to significant savings on food expenses. By growing their own produce, individuals can reduce their reliance on expensive store-bought fruits and vegetables, and in turn, save money. Additionally, homegrown produce is typically fresher and of higher quality, which can lead to improved health outcomes.

Social impact

The social impact of kitchen gardening can be significant, promoting community engagement, improving mental health and wellbeing, and promoting sustainable and healthy food systems.

Environmental impact

Kitchen gardening can have environmental benefits by reducing the carbon footprint associated with the transportation and packaging of store-bought produce. By growing their own fruits and vegetables, individuals can also reduce their reliance on harmful pesticides and fertilizers, which can have negative impacts on the environment and human health.

Horizontal/ Vertical spread

At least 10 other women have adopted this homestead gardening in this village. Previously the area under nutri-garden was 0.099 acres now the land size has increased to 0.299 acres.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Peas	*Rabi*	25
2	Broccoli	*Rabi*	100
3	Maize	*Kharif*	150
4	Cucumber	*Kharif*	250
5	Cauliflower	*Rabi*	100
6	Oyster Mushroom	All season	150
7	Lettuce	*Rabi*	100
8	Potato	*Rabi*	150
9	Pumpkin	*Kharif*	100
10	Carrots	*Rabi*	100

KVK Kalimpong

Name of farm woman	**Smt. Sanju Subba**
Address	Lower Dungra Busty, Damaitar, Kalimpong
Contact number	9932506796
Age (years)	48
Education	BA
Family size	3
Area under Nutri-garden (acre)	0.18

Agro-ecology and Farming situation

Terrestrial farming system and rain fed.

Name and description of the Nutri-SMART Village

The 'Nutri-SMART' village is situated at Lower Dungra Busty, Damaitar, Kalimpong.

Name and description of enterprise

Local Organic Vegetable Centre. This local outlet run by SanjuSubba and her group members (*Ekta* SHG) produces many organic vegetables, fruits and spices like turmeric, ginger, garlic etc. Potato, tomato and maize are other crops grown and sold.

Technological Intervention and KVK Support

Distribution of season-based vegetable crops, organic fertilizers, neem oil, technical intervention, along with follow up and counselling at anytime.

Economic impact

At an individual level, kitchen gardening can lead to significant savings on food expenses. By growing their own produce, individuals can reduce their reliance on expensive store-bought fruits and vegetables, and in turn, save money. Additionally, homegrown produce is typically fresher and of higher quality, which can lead to improved health.

Social impact

The social impact of kitchen gardening can be significant, promoting community engagement, improving mental health and wellbeing, promoting sustainable and healthy food systems.

Environmental impact

Kitchen gardening can have environmental benefits by reducing the carbon footprint associated with the transportation and packaging of store-bought produce. By growing their own fruits and vegetables, individuals can also reduce their reliance on harmful pesticides and fertilizers, which can have negative impacts on the environment and human health.

Horizontal/ Vertical spread

At least 15 other women have adopted this homestead gardening in this village.Previously the area under nutri-garden was 0.049 acres now the land size has increased to 0.18 acres.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Peas	*Rabi*	25
2	Broccoli	*Rabi*	100
3	Maize	*Kharif*	150
4	Cucumber	*Kharif*	250
5	Cauliflower	*Rabi*	100
6	Potato	*Rabi*	150
7	Pumpkin	*Kharif*	100
8	Carrots	*Rabi*	100
9	Mustard greens	*Rabi*	250
10	Palak	*Rabi*	250

KVK Howrah

Name of farm woman	**Smt. Gouri Saha**
Address	Jagatballavpur, Howrah, WB-711408
Contact number	8653204534
Age (years)	47
Education	8th
Family size	5
Area under Nutri-garden (acre)	0.14

Agro-ecology and Farming situation

The region's low to medium land status is based on paddy fields with scattered patches of vegetables.

Name and description of the Nutri-SMART Village

Jagatballavpur is a Census Town city in district of Haora, West Bengal. The Jagatballavpur Census Town has population of 7113 of which 3636 are males while 3477 are females as per report released by Census India 2011.

Name and description of enterprise

In the enterprise 'Nutri-garden'farm women are growing crops, mainly vegetables and fruits,in the surrounding of their houses.

Technological Intervention and KVK Support

Good quality seeds and planting materials along with training on nutri-gardening are regularly provided by the KVK.

Economic impact

It gives dwellers a chance to produce their own food-fresher, healthier-and learn in the process about local varieties. It also helps to increase household income by the consumption of the same food items that the families would have otherwise purchased from markets using a significant portion of the family income.

Social impact

Nutri-garden can be grown in the spaces available at backyard of the house or roof or in containers. There are many social benefits that have emerged from kitchen gardening practices, better health and nutrition, increased income, employment, food security with in the household.

Environmental impact

Waste produced from nutri-garden was used for organic production, which is good for family health.

Horizontal/ Vertical spread

By enhancing the availability, accessibility, and consumption of vegetables and perennial fruits, Nutri-Garden directly improves household food security. Another 48 farm families (7.5 acres) established Nutri-gardens in their backyards.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Pui, Amaranthus, chilli, brinjal, ridge gourd, Elephant foot yam, banana	Summer	95
2	Amaranthus, pui, ledies finger, chilli, brinjal, cucumber, papaya, lime,	Rainy	105
3	Cauliflower, Maize, cabbage, palak, corieder, tomato, brinjal, carrot, radish, lettuce, chilli, bottle gourd	Winter	115

KVK Howrah

Name of farm woman	**Smt. Labanya Dutta**
Address	Jagannathpur, Howrah, WB-711408
Contact number	8944947768
Age (years)	45
Education	Secondary (MP)
Family size	5
Area under Nutri-garden (acre)	0.16

Agro-ecology and Farming situation

Paddy-based low to medium land conditions prevail in the region. Vegetables scattered throughout.

Name and description of the Nutri-SMART Village

Jagannathpur village is located in Jagatballavpur subdivision of Howrah district in West Bengal, India, having 183.01 ha area and 280 houses. Literacy rate of Jagannathpur village is 76.90% out of which 78.35% males and 75.30% females are literate.

Name and description of enterprise

Farm women are growing crops,mainly vegetables, in the surrounding of their houses in their 'Kitchen Garden'. Several perennial crops and various vegetable varieties are used in her year-round vegetable production.

Technological Intervention and KVK Support

Good quality seeds and planting materials with proper kitchen gardening concept and training are provided by the KVK regularly.

Economic impact

It allows farm women to be more efficient and productive while using fewer resources. It helps to be self-sufficient for different household nutritious foods with reduced costs.

Social impact

There are many social benefits that have emerged from kitchen gardening practices, better health and nutrition in the household. Common villagers are inspired to undertake organic vegetable farming in their own backyards after watching it being done all year long.

Environmental impact

A nutritional garden was crucial in improving dietary diversity and household food security to fight malnutrition. It improved the family's mental and physical wellbeing. It is a sustainable model for ensuring year-round access to fresh vegetables.

Horizontal/ Vertical spread

She is currently serving as a trainer for creation of nutritional garden in her neighbourhood. Around 57 houses (9 acres) of her village and nearby villages have developed nutri-garden in their backyard.

Nutritional output of Kitchen-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Amaranthus, pui, chilli, brinjal, ridge gourd, colocasia, groundnut	Summer	85
2	Amaranthus, pui, ladies' finger, chilli, brinjal, cucumber, papaya, lime	Rainy	100
3	Cauliflower, palak, corieder, tomato, brinjal, radish, knolkhol, chilli, bottle gourd	Winter	112

KVK Hooghly

Name of farm woman	**Smt. Tapati Maity**
Address	Vill: Gotu, P.O. Sugandha, Block: Polba-dadpur, Dist: Hooghly, West Bengal- 712102
Contact number	9007411810
Age (years)	52
Education	Graduate
Family size	10
Area under Nutri-garden (acre)	0.15

Agro-ecology and Farming situation

The area has clay loam soil and the farming situation ismedium low land.

Name and description of the Nutri-SMART Village

All seasonal vegetables are cultivated in Jadabpur village of Polba-dadpur block in Hooghly district.

Name and description of enterprise

The enterprise is decked up with agricultural crops, horticultural crops, poultry farming and cattle farming.

Technological Intervention and KVK Support

Smt. Tapati Maity was imparted a training for establishment of nutritional garden. She was also included as beneficiaries in FLD on nutritional gardening. Seed kits, seedlings, are distributed from KVK. Technical guidance of proper scientific management practices was given by KVK scientists for preparation of nutritional garden.

Economic impact

After the creation of a nutri-garden, a variety of fresh fruits and vegetables were consumed more frequently. Her income from selling vegetables is Rs.200 per day.

Social impact

It improves health and nutrition, increases income, employment, ensures food security. Her social prestige has increased. Other farmwomen are seeking information from her for developing nutri-garden in backyard.

Environmental impact

Nutri-gardens provide fresh produce, clean air (reduces carbon emission) and create habitat for wildlife. Nutritional garden played an important role in enhancing family food security and dietary diversities to combat malnutrition. It is a sustainable model for availabilities of fresh vegetables throughout the year.

Horizontal/ Vertical spread

Few farmwomen of her village and nearby villages have shown interest in developing nutri-garden in their backyard. Out of them 23 farm families have developed nutritional garden in their locality.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Brinjal	Pre-*Kharif*	200
2	Pointed gourd	Pre-*Kharif*	120
3	Ridge gourd	Pre-*Kharif*	100
4	Cauliflower	*Rabi*	350

KVK Hooghly

Name of farmer	**Shri Biswajit Roy**
Address	Vill: Jadabpur, P.O. Sugandha, Block: Polba-dadpur, Dist: Hooghly, West Bengal-712102
Contact number	9231307132
Age (years)	45
Education	Graduate
Family size	16
Area under Nutri-garden (acre)	0.21

Agro-ecology and Farming situation

The village has clay loam soil and it belongs to medium low land.

Name and description of the Nutri-SMART Village

All seasonal vegetables are cultivated in Jadabpur village of Polba-dadpur block in Hooghly district.

Name and description of enterprise

The main components of the enterprise are agricultural crops, horticultural crops, poultry farming and cattle farming.

Technological Intervention and KVK Support

KVK scientists trained them with proper scientific management practices of crop cultivation and supplied them good quality inputs.

Economic impact

Shri Biswajit Roy earns Rs.170 per day by selling of vegetables from nutri-garden. A variety of fresh fruits and vegetables were consumed more frequently by his family.

Social impact

Other farmers are seeking information from him for developing nutri-garden in backyard. It improves health and nutrition, increased income, employment, ensure food security.

Environmental impact

Nutri-gardens provide us with fresh produce, clean air (reduces carbon emission) and create habitat for wildlife.

Horizontal/ Vertical spread

Twenty-three farm families have developed nutritional garden in their locality.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Papaya	*Kharif*	150
2	Pumpkin	Pre-*kharif*	100
3	Cabbage	*Rabi*	120
4	Cauliflower	*Rabi*	150

KVK Dakshin Dinajpur

Name of farmer	**Shri Moksedul Sarkar**
Address	Muglishpur, Kumarganj, Dakshin Dinajpur
Contact number	7384035585
Age (years)	47
Education	Secondary
Family size	10
Area under Nutri-garden (acre)	15 katha

Agro-ecology and Farming situation

The cultivated land is irrigated and mixed cropping system.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated at Muglishpur village, Kumarganj, Dakshin Dinajpur.

Name and description of enterprise

Progressive farmer Moksedul Sarkar engages in dynamic activities of farm habituated to produce different vegetables throughout the year along with different field crops. He produces off season vegetables using different low-cost structure and faced high benefit cost ratio. In his own garden he cultivates chilli, brinjal, Cucumber, dolichos bean, Palak, coriander, garlic, onion, potato, cabbage, broccoli, banana, lemon, drumstick etc throughout the year.

Technological Intervention and KVK Support

Shri Moksedul Sarkar was imparted a training for establishment of nutritional garden. He was also included as beneficiaries in FLD on nutritional gardening. Seed kits, seedlings, and nylon nets for trellis are distributed from KVK. Scientific advice was provided by KVK personnel.

Economic impact

Shri Moksedul Sarkar earns Rs.3200 per month from 10 katha of land regularly income generation from nutrition garden. The family receives a year-round supply of fresh vegetables from Nutri-garden. This money has been used to pay for incidental family expenses as well as the purchase of more vegetables and pulses for the family.

Social impact

Farmers from neighbourhood are inspired through the activities of Shri Moksedul Sarkar and consults with him for better suggestion related to cultivation techniques.

Environmental impact

Nutrition gardens have a significant impact on improving dietary diversity and national food security to fight malnutrition.

Horizontal/ Vertical spread

The technology of nutri-garden was spread with 12 other farm women.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Chilli	Summer	50
2	Brinjal	All season	300
3	Bitter gourd	Summer and *kharif*	200
4	Dolichos bean	*Rabi*	200
5	Palak	Summer	200
6	Coriander leaf	*Rabi*	75
7	Garlic	*Rabi*	50
8	Onion	*Rabi*	100
9	Potato	*Rabi*	200
10	Cabbage	*Rabi*	200
11	Broccoli	*Rabi*	150
12	Banana	All season	100
13	Lemon	Summer and *kharif*	100
14	Drumstick	Summer	100

KVK Dakshin Dinajpur

Name of farm woman	**Smt. Maleka Bibi**
Address	Muglishpur, Kumarganj, Dakshin Dinajpur
Contact number	7318827568
Age (years)	54
Education	5th
Family size	8
Area under Nutri-garden (acre)	10 katha

Agro-ecology and Farming situation

The cultivated land is irrigated with mixed cropping system.

Name and description of the Nutri-SMART Village

The Nutri-SMART village is situated in Muglishpur village of Kumarganj block in Dakshin Dinajpur district.

Name and description of enterprise

A progressive farm woman Maleka Bibi produces different vegetables throughout the year. She produces off season seedling using different low-cost structure and more benefit to cost ratio. In her own garden she cultivates tomato, brinjal, pointed gourd, dolichos bean, amaranthus, coriander, garlic, potato, cabbage cauliflower, banana, papaya, etc.

Technological Intervention and KVK Support

Smt. Maleka Bibi was imparted a training for establishment of nutritional garden. She was also included as beneficiaries in FLD on nutritional gardening. Seed kits, seedlings, and nylon nets for trellis are distributed from KVK. Scientific advice was provided by KVK personnel.

Economic impact

Smt. Maleka Bibi is able to earn Rs.2500 per month from nutrition garden from 10 katha of land.

Social impact

Other farmers are inspired through the activities of Smt. Maleka Bibi and consults with her for better suggestion related to cultivation techniques.

Environmental impact

Nutrition gardens can play an important role in enhancing national food security and dietary diversity to combat malnutrition.

Horizontal/ Vertical spread

The technology of nutri-garden was spread with other 10 farm women.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Tomato	Summer	100
2	Brinjal	All season	250
3	Pointed gourd	Summer and *kharif*	200
4	Dolichos bean	*Rabi*	150
5	Amaranthus	Summer	150
6	Coriander leaf	*Rabi*	75
8	Garlic	*Rabi*	50
9	Potato	*Rabi*	250
10	Cabbage	*Rabi*	300
11	Cauliflower	*Rabi*	200
12	Banana	All season	100
13	Papaya	Summer and *kharif*	100

KVK Burdwan

Name of farmer	**Shri Bharat Dhali**
Address	Vill- Gopalpara Calony, Post- Ramnogar (N), Block- Ausgram-II, Dist- Purba Bardhaman, Pin No- 713152
Contact number	9933870374
Age (years)	48
Education	Higher secondary
Family size	5
Area under Nutri-garden (acre)	0.3

Agro-ecology and Farming situation

Irrigated medium upland, sandy loam to loam with rice-potato-vegetable or jute-rice-vegetables cropping system.

Name and description of the Nutri-SMART Village

GopalparaCalony, the Nutri-SMART village is situated besides the river Damodarwith very rich soil quality and intensive cropping. There is vast diversification of different agricultural and horticultural crops.

Name and description of enterprise

Cauliflower, tomato, brinjal, onion, cucurbits and other leafy vegetables are cultivated in the kitchen/ nutri-garden.

Technological Intervention and KVK Support

KVK helps in capacity building trough training and demonstrations. Vegetable seeds were also provided for kitchen gardening.

Economic impact

Apart from household consumption of seasonal vegetables regularly, there was a profit of around Rs.15000 per year.

Social impact

It not only provides vegetable production but also provides cheap vegetables to the consumers thus,upholding the nutritional security of rural households.

Environmental impact

Limited use of plant protection chemical was observed in the nutri-garden. Mostly organic compost and organic method was tried in the kitchen garden.

Horizontal/ Vertical spread

Inspired by his success, there are more than 60 farm families who adopted this type of nutritional garden for additional income as well as for nutritional security of their families.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Cauliflower	Winter	100
2	Tomato	Winter	60
3	Brinjal	Winter & summer	30
4	Onion	Winter & summer	50
5	Cucurbits	Winter & summer	70
6	Leafy vegetables	Winter & summer	70

KVK Burdwan

Name of farmer	**Shri Fazle Haque**
Address	Ucchagram, Galsi-I, Purba Bardhaman, West Bengal- 713406
Contact number	8640864056
Age (years)	54
Education	8th
Family size	9
Area under Nutri-garden (acre)	0.4

Agro-ecology and Farming situation

The area is an irrigated low land with clay loam soil and a rice-rice or rice-mustard cropping system.

Name and description of the Nutri-SMART Village

Ucchagram, Galsi-I, the Nutri-SMART village typically practices rice-rice cropping system with very limited diversification of other horticultural crops.

Name and description of enterprise

Banana, brinjal, onion, papaya, citrus and other seasonal leafy vegetables are cultivated in the bund area of a small pond in an integrated manner.

Technological Intervention and KVK Support

KVK helps in capacity building through training and demonstrations. Vegetable seeds were also provided for kitchen gardening.

Economic impact

Apart from household consumption of seasonal vegetables regularly, there was a profit of around Rs.12000 per year.

Social impact

It not only provides vegetable production but also provides cheap vegetables to the consumers thus, upholding the nutritional security of rural households.

Environmental impact

Pond is utilized as water harvesting structure and its water is used for irrigation in nutri-garden during dry periods. Limited use of plant protection chemical was observed in the nutri-garden.

Horizontal/ Vertical spread

Inspired by his success, there are more than 40 farm families who adopted this type of nutritional garden for additional income as well as for nutritional security of their families.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability (g)
1	Banana	*Kharif*	120
2	Brinjal	Winter	50
3	Onion	Winter and summer	100
4	Papaya	Year Round	70
5	Leafy vegetables	Year Round	80

ANDAMAN & NICOBAR ISLANDS

KVK Nicobar

Name of farm woman	**Smt. Esther Reginal**
Address	Big Lapathy village, Car Nicobar, Nicobar, Andaman & Nicobar Islands – 744301
Contact number	9531831824
Age (years)	57
Education	10th pass
Family size	30
Area under Nutri-garden (acre)	0.25

Agro-ecology and Farming situation

Car Nicobar island is characterized by a tropical coastal agro-ecology with high rainfall, sandy loam soil, and a humid climate that supports diverse cropping systems. The area primarily practices mixed cropping, integrating horticultural crops with traditional food crops to maximize land use and maintain soil fertility. The farming situation here is predominantly rainfed with supplementary irrigation facilitated by household water conservation practices.

Name and description of the Nutri-SMART Village

Big Lapathy has been identified as a Nutri-SMART Village due to its innovative approach to integrating nutritional gardening with sustainable agricultural practices. The village is actively engaged in traditionally producing a variety of vegetables and fruits to meet household nutritional needs while promoting community-driven farming models. KVK Nicobar's intervention in this village has significantly contributed to enhancing food security and encouraging the adoption of eco-friendly farming techniques.

Name and description of enterprise

Nutri Garden: A Step Towards Family Nutrition and Self-Sufficiency

Smt. Esther, a progressive woman farmer from Big lapathy village, established a Nutri-garden to address the household nutritional needs while promoting sustainable agricultural practices. With technical support from KVK Nicobar, she transformed a small portion of her land into a diversified nutritional garden cultivating a wide range of vegetables such as brinjal, okra, bottle gourd, coconut, sweet corn and green gram. Each crop was carefully selected to ensure year-round availability of essential vitamins and minerals for the family.

Technological Intervention and KVK Support

Generally, the dietary habits of Nicobarese of Car Nicobar mainly comprise non-vegetarian dishes with very few traditional vegetables available in limited quantity. Thus, to provide necessary additional

nutrient supplements, vegetables in their food habit were felt very much essential for their good health. Keeping in view of the need to meet the nutritional requirements of tribal people, the introduction of vegetables in their gardens and encouraging consumption was considered essential. Therefore, new vegetable crops and varieties were introduced in gardens. The success story is about Smt. Esther, who lives in Big Lapathy village of Car Nicobar and was initially engaged only in household activities. After coming in contact with ICAR-KVK Nicobar, she got motivated to develop her garden into a multi-crop production system. Through various trainings, demonstrations, handholding, and exposure visits provided by ICAR-KVK Nicobar, she gained the confidence, knowledge, and skills necessary for vegetable cultivation.KVK Nicobar provided assistance in setting up the Nutri-garden, from the selection of a suitable site to providing all essential, such provided Power Tiller to clean the field and preparation, which significantly reduced labor requirements, provided high-quality planting materials, seeds of diverse vegetable, sweet corn, and green gram to promote crop diversity and nutritional balance, organic compost, bio-consortia, and other natural soil amendments to enhance soil fertility and plant health. Practical training sessions were conducted to teach proper planting techniques, crop spacing, irrigation methods, and organic pest management strategies. Regular visits by KVK scientists ensured timely monitoring and guidance, addressing any emerging challenges and optimizing garden performance. This end-to-end support resulted in a thriving, sustainable Nutri-garden.

Economic Impact

The Nutri-garden established by Smt. Esther has not only improved her household's nutritional intake but also generated significant economic benefits. By cultivating a variety of crops such as brinjal, okra, bottle gourd, sweet corn, and green gram, she has been able to reduce household expenses on vegetables while creating an additional source of income through surplus production. The table below illustrates the economic impact of the Nutri Garden before and after KVK's intervention:

Table: Economics of farming, spread of technologies and social impact

Enterprise	Gross cost (in Rs.)	Gross return (in Rs.)	Net return (in Rs.)	B:C Ratio
Before intervention				
Okra	7000	18500	11500	1.64
Brinjal	8500	23000	14500	1.71
Plantation	1100	3500	2400	2.18
Total	**16600**	**45000**	**28400**	**1.71**
After intervention				
Okra	10000	47000	37000	3.7
Brinjal	14000	40000	26000	1.86
Bottle gourd	5000	21000	16000	3.20
Plantation	8000	24000	16000	2.00
Sweet Corn	4000	23000	19000	4.75
Green Gram	4000	15000	11000	2.75
Total	**45000**	**170000**	**125000**	**2.78**

Smt. Esther generating a gross return of Rs. 1,70,000 and a net return of Rs. 1,25,000. The Benefit-Cost (B:C) ratio improved significantly from 1.71 before the intervention to 2.78 after the intervention, highlighting the economic viability of the Nutri-garden.

The surplus produce not only met her family's nutritional needs but also provided a steady income stream through local sales. Seasonal crops like sweet corn and green gram fetched premium prices in the market, which further boosted her earnings. Smt. Esther reinvested the additional income to expand her garden and diversify crops, ensuring long-term sustainability and economic growth for her household. This success story underscores the potential of Nutri-gardens to enhance both food security and financial stability for smallholder farmers.

Social Impact

Smt. Esther's success has served as an inspiration for many women in Perka village to start their own Nutri-gardens. Through KVK's hands-on training sessions, she shares her practical knowledge and techniques with other farmer men, women, and women-led Self-Help Groups (SHGs). These interactions have fostered a sense of community and mutual support among the women, encouraging collaborative learning and resource-sharing. The establishment of Nutri-gardens has enhanced household dietary diversity, particularly for children and elderly family members, who now have access to fresh, nutritious food regularly. Mrs. Esther's active participation in community events and agricultural fairs has highlighted the role of women in advancing nutritional security.

Environmental Impact

The Nutri-garden follows eco-friendly practices, such as organic composting, crop rotation, and integrated pest management. The composting pit not only reduces kitchen and garden waste but also enriches the soil with essential nutrients, promoting sustainable farming. The garden's diverse cropping system enhances soil biodiversity, prevents soil degradation, and minimizes pest infestations without relying on synthetic pesticides. This approach aligns with the region's environmental goals of maintaining soil health and promoting chemical-free agricultural practices.

Horizontal/Vertical Spread

The success of Smt. Esther's Nutri-garden has created a ripple effect across the Car Nicobar. Other women from neighbouring villages have visited her garden during exposure visits organized by KVK Nicobar. These visits have sparked enthusiasm and encouraged others to replicate the model on their land. The success of the Nutri-garden also attracted the attention of Deputy Commissioner and Assistant Commissioner of Car Nicobar, who visited the site to witness the positive outcomes firsthand, appreciated the efforts of Smt. Esther and KVK Nicobar in promoting sustainable farming practices and enhancing nutritional security in the region. The story of Smt. Esther demonstrates how adopting modern, sustainable farming practices can significantly enhance family nutrition, generate additional income, and promote environmental stewardship, while empowering women farmers to become self-reliant and active contributors to community development.

Nutritional output of Nutri-garden

Sl. No.	Crop	Season	Per day per capita nutritional availability						
			Protein (g)	Calorie (Kcal)	Iron (mg)	Carotene (mg)	Thiamine (mg)	Vitamin C (mg)	Calcium (mg)
1	Brinjal	Round the year	1.4	4.0	18.0	0.9	74.0	0.04	12.0
2	Bhindi (Okra)	*Kharif*	1.9	6.4	66.0	1.5	52.0	0.07	13.0
3.	Bottle Gourd	*Rabi*	0.6	2.6	0.3	0.72	0.03	8.5	24
4.	Sweet Corn	*Kharif*	3.2	12.8	0.5	0.047	0.155	6.8	2
5.	Green gram	*Kharif*	24	96	6.7	*0.68*	*0.621*	27.01	30.42

FUTURE PERSPECTIVE

- Through nutrition specific and nutrition sensitive agriculture, the most important SDG targeting zero hunger can be achieved.
- The nutrition sensitive sustainable agriculture can nurture the maternal and child health alongwith its positive impact on environment, economy and social life. This would ultimately lead to eradication of malnutrition in child, adolescent girls and women by ensuring nutritional security.
- Establishment of nutri-smart village can be more useful, meaningful, need-based and impactful for addressing malnutrition in children, adolescent girls, farm women.
- Small scale income generation activities are well blended with the practice of nutri-garden in rural background of Eastern India.
- This compilation provides valuable information on the basis of which further policies and strategies for its up-scaling and outscaling can be made effectively.
- Nutrition literacy coupled with involvement of womenfolk in the nutrition sensitive agriculture (as evidenced by the success stories) can have far reaching implications towards achieving a healthy society.
- The success cases have certainly thrown light on the need for a policy intervention thinking beyond the production and productivity aspect of sustainable agriculture.

भाकृअनुप - कृषि तकनीकी अनुप्रयोग अनुसंधान संस्थान कोलकाता
ICAR- Agricultural Technology Application Research Institute Kolkata
Bhumi Vihar Complex, Sector – III, Salt Lake, Kolkata -700097