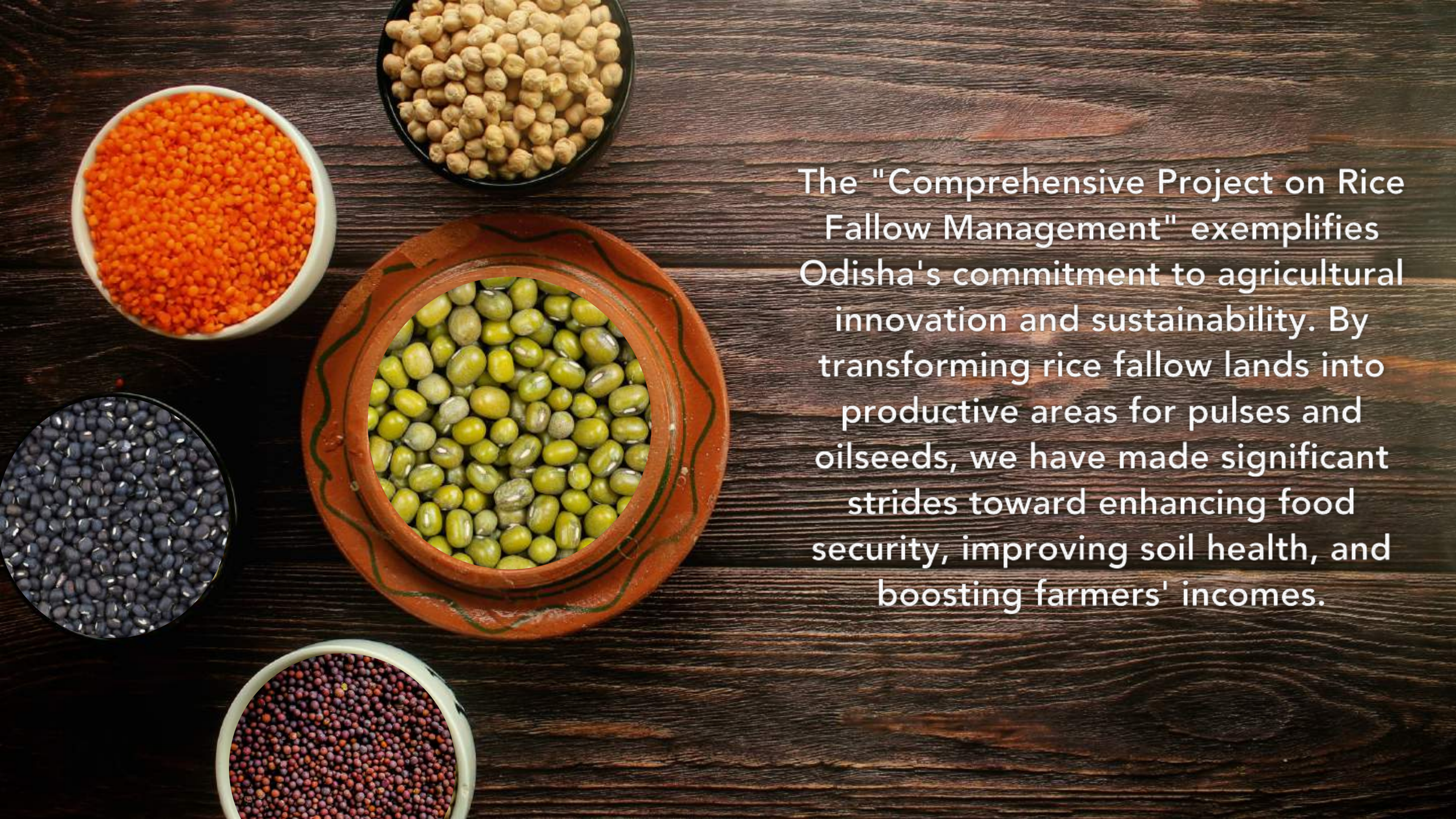
Comprehensive Project on Rice Fallow Management Program
Rabi 2023-24

In collaboration with Department of Agriculture and Farmers' Empowerment, Govt. of Odisha

Implementing Partner: AFC India Ltd

Field Execution & Technical Partner: OSVSWA



The "Comprehensive Project on Rice Fallow Management" exemplifies Odisha's commitment to agricultural innovation and sustainability. By transforming rice fallow lands into productive areas for pulses and oilseeds, we have made significant strides toward enhancing food security, improving soil health, and boosting farmers' incomes.

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Introduction

The Comprehensive Rice Fallow Management Project (CRFMP) is an ambitious initiative designed to optimize agricultural productivity and enhance the livelihoods of farmers in Odisha. This project targets several key objectives, including the exploitation of residual soil moisture, increasing cropping intensity by targeting crop demonstration in four lakh hectares during Rabi 2023-24 and successive years, upscaling the cultivation of pulses and oilseeds in rice fallow areas, and producing more food with less water. Additionally, it aims to restore soil health by increasing soil biomass and organic carbon content, establish a community-managed seed system, and improve farmers' income and nutritional security.The scheme is being implemented across all 314 blocks in 30 districts over a period of three years, from 2023-24 to 2025-26.

AFC India Limited, in collaboration with OSVSWA as the field executing agency, is leading the program across three districts of Odisha, covering 32,400 hectares. The geographical coverage includes Sundargarh, Angul, and Gajapati districts, focusing on cultivating various Rabi crops in rice fallow areas, such as Green gram, Black gram, Bengal gram, Lentil, Field pea, and Mustard.

By implementing these strategies, the CRFMP seeks to not only increase agricultural output and efficiency but also promote sustainable farming practices that will benefit the environment and local communities. The project's comprehensive approach ensures that all aspects of agricultural development, from input distribution and capacity building to stakeholder engagement and expert monitoring, are meticulously planned and executed to achieve the desired outcomes.

Implementing Partner

AFC India Ltd. (formerly Agricultural Finance Corporation Ltd.) is a development organization providing consulting, advisory, and implementation support for agriculture, rural development, and socio-economic sectors in India.

Established in 1968, AFC is owned by Commercial Banks, NABARD, and EXIM Bank. It is a Deemed Government Company under the Companies Act, 2013, audited by the Comptroller & Auditor General of India (CAG), and ISO 9001-2015 accredited.

With over 6000 assignments, AFC has served clients like the Government of India, State Governments, NABARD, Commercial Banks, PSUs, Corporates, NGOs, and agencies like World Bank, IFAD, ADB, FAO, and UNDP.

AFC's services include project identification, feasibility studies, project appraisal, monitoring, and impact assessment.

Recently, AFC has expanded into organic farming, agriculture extension, watershed development, forestry, climate change, rural livelihoods, education, health & nutrition, training, skilling, and financial literacy.

AFC covers the entire value chain of agriculture and rural development, from policy advocacy to project management and skill development.

Field Execution and Technical Partner

The Orissa State Volunteers and Social Workers Association (OSVSWA) was founded in 1980 and registered as a non-profit society in 1981. Established by freedom fighters, social reformers, and activists, OSVSWA promotes volunteerism and people-centered development with the principles of "Development through Participation" and "Development through Sustainability." Inspired by Gandhian philosophy,

The organization focuses on empowering the underprivileged, marginalized, and tribal populations through social, economic, environmental, educational, and infrastructure development programs. OSVSWA also addresses critical youth issues and engages in public policy and networking with various partners.

The organization operates in the majority of districts in the state, focusing on Agriculture
and Farmers' Empowerment.

Objectives

- Exploitation of residual soil moisture
- Restoration of soil health by increasing the soil biomass and organic carbon content
- Production of more food with less water
- To upscale cultivation of Pulses and Oilseeds in Rice fallow area
- Increasing cropping intensity by targeting crop demonstration in four lakh ha during Rabi 2023-24 and in successive years
- Establishment of Community Managed Seed System
- Improving the livelihood of farmers through enhancement of income and nutritional security

The Comprehensive Project on Rice Fallow Management Program, Rabi 2023-24 project aligns with several Sustainable Development Goals (SDGs)

SDG 1: No Poverty - The project aims to improve the livelihood of farmers through increased income, food and nutritional security by enhancing crop production in rice fallow areas.

SDG 2: Zero Hunger - By targeting the production of pulses and oilseeds, the project seeks to boost food security and nutritional diversity, addressing hunger and malnutrition.

SDG 6: Clean Water and Sanitation - The objective to produce more food with less water highlights the efficient use of water resources, contributing to sustainable water management.

SDG 8: Decent Work and Economic Growth - The project creates employment opportunities through agricultural activities, implementing agencies, and community-managed seed systems, fostering economic growth.

SDG 12: Responsible Consumption and Production - The promotion of regenerative agricultural practices, such as the use of bio-fertilizers and IPM devices, supports sustainable farming practices and soil health restoration.

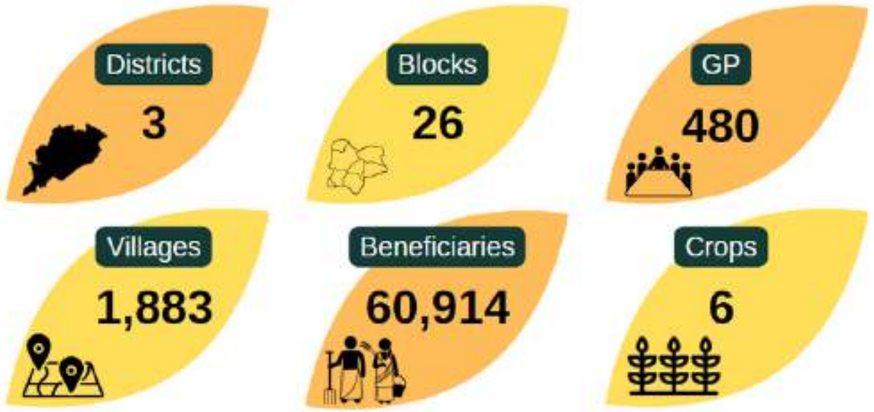
SDG 13: Climate Action - The project's focus is on reducing soil erosion and exposing the soil to different environmental threats by covering through crop canopy in rice fallow areas and check evaporation loss of soil moisture.

SDG 15: Life on Land - By enhancing soil health and promoting sustainable agricultural practices, the project supports the conservation and sustainable use of terrestrial ecosystems.

SDG 17: Partnerships for the Goals - The collaboration with various stakeholders, including governmental departments, CGIAR institutions, and local organizations, exemplifies partnerships to achieve the SDGs.

THE GLOBAL GOALS

Geographical coverage



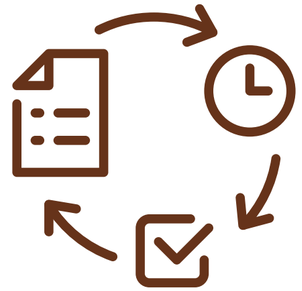
AFC Comprehensive Rice Fallow Management Programme (CRFMP) - 2023-24								
Sn.	Dist.	Block	Greengram	Blackgram	Chickpea	Lentil	Fieldpea	Mustard	Total
			Area (Ha)	Area (Ha)	Area (Ha)	Area (Ha)	Area (Ha)	Area (Ha)	Area (Ha)
1	Angul	Angul	900	450	50	50	50	100	1600
2		Banarpal	900	400	50	0	0	100	1450
3		Chhendipada	900	550	100	0	50	100	1700
4		Talcher	600	300	0	50	0	100	1050
5		Kaniha	1000	400	50	0	50	100	1600
6		Athamallik	900	450	50	0	0	100	1500
7		Kishorenagar	900	400	50	0	50	100	1500
8		Pallahara	900	450	50	50	50	100	1600
		Total	**7000**	**3400**	**400**	**150**	**250**	**800**	**12000**
9	Sundargarh	Bargaon	600	200	300	50	0	300	1450
10		Kutra	600	200	300	50	0	300	1450
11		Rajgangpur	500	100	300	100	0	400	1400
12		Bisra	350	200	400	100	0	400	1450
13		Kuanrmunda	400	200	600	100	0	500	1800
14		Nuagaon	400	100	600	100	0	500	1700
15		Lathikata	600	300	300	100	0	500	1800
16		Bonai	800	400	300	100	0	200	1800
17		Gurundia	600	200	600	50	0	300	1750
18		Lahunipada	600	300	600	50	0	300	1850
19		Koida	450	300	300	100	0	300	1450
		Total	**5900**	**2500**	**4600**	**900**	**0**	**4000**	**17900**
20	Gajapti	Gosani	300	450	0	0	0	0	750
21		Kasinagar	300	450	0	0	0	0	750
22		Gumma	100	100	50	0	0	0	250
23		Rayagada	50	50	0	0	0	0	100
24		Nuagada	50	50	50	0	0	0	150
25		R. Udaygiri	50	100	50	0	0	0	200
26		Mohana	50	200	50	0	0	0	300
		Total	**900**	**1400**	**200**	**0**	**0**	**0**	**2500**
		Gr. Total	**13800**	**7300**	**5200**	**1050**	**250**	**4800**	**32400**

Timeline

Q1

July-September 2023

- Initiation and allocation of the project
- Detailed discussion with State/District/Block level Govt meetings
- Awareness generation campaigns at GP level



Q2

October-December 2023

- Selection and training of beneficiaries
- Collection and analysis of soil samples
- Procurement and distribution of seeds and inputs
- Commencement of crop demonstrations and acid soil management

Q3

January-March 2024

- Ongoing crop demonstrations and monitoring
- Awareness campaigns and organization of field days
- Documentation and uploading data on the Adapt portal
- Mid-term evaluation and feedback collection

Q4

April-June 2024

- Harvesting and collection of yield data
- Compilation and submission of demonstration results
- Post-harvest evaluation and analysis
- Report preparation and documentation

Traditional Agriculture Practices

Traditional agriculture practices in Odisha are deeply rooted in the region's unique climatic and soil conditions, which favor a diverse crop pattern. Historically, rice has been the predominant crop, occupying the majority of the agricultural land during the Kharif season. However, with the state now being surplus in rice production, there is a strategic shift towards utilizing the extensive rice fallow areas for cultivating pulses and oilseeds during the Rabi season.

This initiative, part of the "Comprehensive Project on Rice Fallow Management," aims to enhance cropping intensity and boost the income and nutritional security of the farming community. Farmers are provided with quality seeds, bio-fertilizers, and other necessary inputs to optimize the residual soil moisture and improve productivity. Additionally, soil amelioration practices, particularly in acid soils, are being promoted to ensure sustainable and regenerative agriculture. This shift not only addresses the deficit in pulses and oilseeds but also supports the diversification of the agricultural landscape in Odisha.

Major Crops cultivated

Blackgram

(PU-1, IPU-11-02, LGB-787, PU-10, Indira-1)

Fieldpea

(IPFD-12-02, Pant peat)

Greengram

(Virat, Sikha)

Lentil

(RKL14-20)

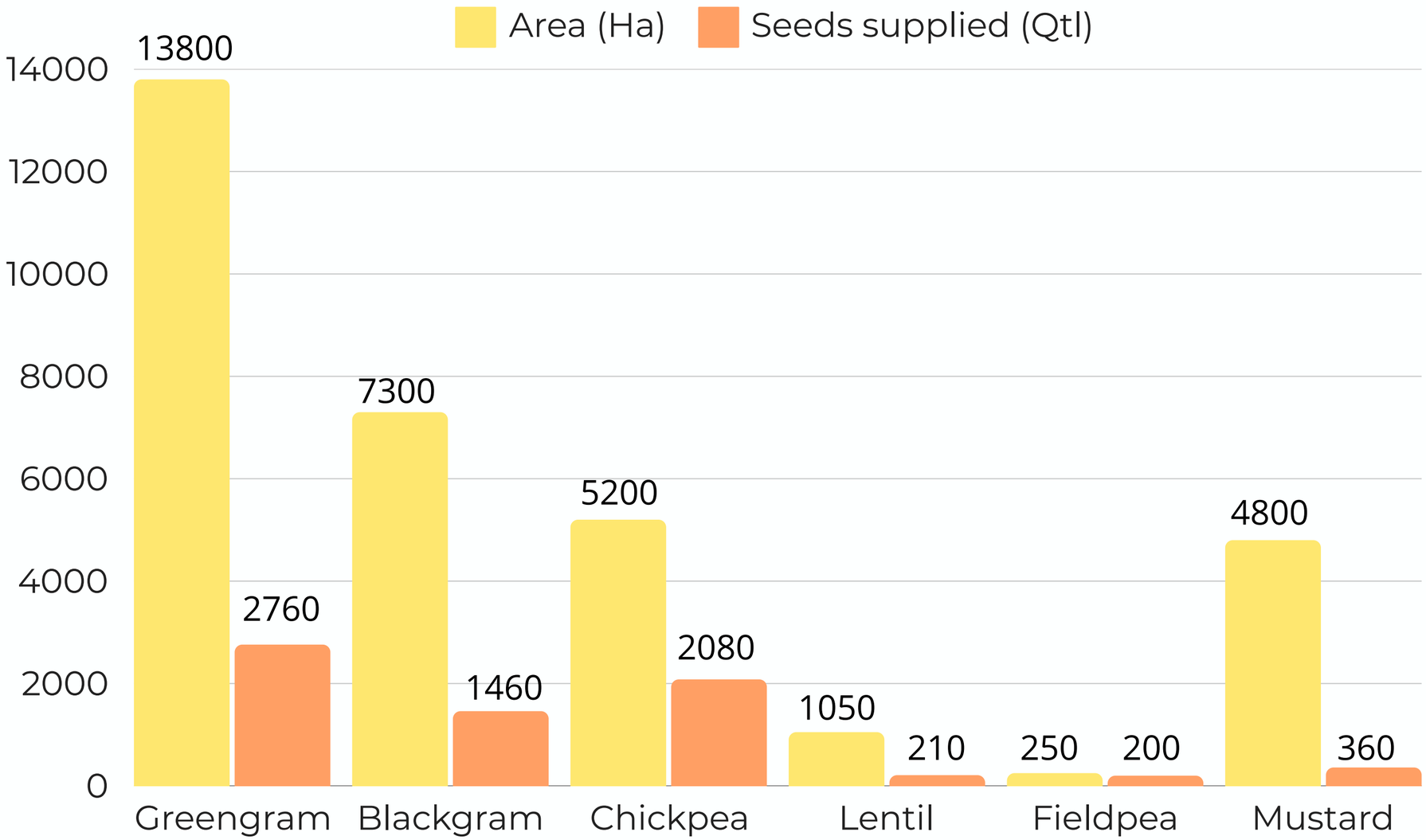
Chickpea

(Phule Vikram, NBeG-49,NBeG-3, RVG-202, NBeG-47)

Mustard

(Sushree, Tapeswari)

Seeds supplied and Cultivated Area for various crops



Major Interventions

Awareness meeting:

Before the scheme's implementation, awareness camps were organized to discuss in detail the importance and benefits of the scheme. These meetings highlighted how the scheme could enhance the farmers' economy, improve soil health, and maintain soil status. The focus was on utilizing the residual moisture in lands left fallow after the harvest of Kharif paddy to grow short duration pulses and oilseeds, enhancing farmers' income with limited investment.

District/Block coordination meeting:

Under the chairmanship of the Chief District Agriculture Officer (CADO), coordination meetings were held at the district level. These meetings envisaged to discuss the scheme's aims, objectives, and the responsibilities of different stakeholders to ensure its successful implementation. CADO, as the district head of Agriculture, sought advice and ensured participation and coordination among field staff at all levels.

Patch selection:

Following the awareness meetings, patch selection was conducted with the assistance of PRI members, local women SHG members, and tentative beneficiaries. The patches were selected based on sufficient soil moisture, keeping in mind the stray cattle menace, as the scheme mandates growing crops in residual moisture areas.

Beneficiary identification:

During patch selection, beneficiaries were identified through village meetings. Resolutions were prepared in the presence of departmental staff and PRI members to finalize the beneficiaries.

Soil sample collection:

Soil samples were collected on a cluster basis by the block coordinator and beneficiaries. These samples were sent for laboratory analysis to assess soil health and nutrient status.

Seed & input distribution:

Seeds were distributed to farmers according to their land area and the required seed dose. Distribution was conducted at a common location for smooth collection by all beneficiaries. Farmers were informed in advance about the distribution schedule to ensure timely pickup. The quality of seeds was verified before distribution for good germination. Additionally, other necessary agricultural inputs such as fertilizer were distributed to ensure comprehensive support for the farmers.

Land preparation:

Farmers were instructed to prepare the land using tractor tillage with a rotavator for fine tillage or a bullock plow. This ensured the soil was adequately prepared for sowing.

Seed Treatment:

Farmers treat seeds with liquid Rhizobium culture by measuring out 200ml per hectare of seeds. They mix the liquid culture thoroughly with the seeds to ensure ev w the treated seeds to dry bef f not immediately sowed , the t ely to maintain the viability of the rmers proceed with sowing as usu proper techniques to maxim effectiveness of the inocula

This process promotes bett fixation in the soil, leading to improved crop growth and yield.

Soil treatment:

Farmers performed soil treatment by incorporating liquid PSB culture and Trichoderma viride into the soil during the final tillage stage. Alongside these beneficial microorganisms, compost was added to enhance soil fertility and microbial activity. Additionally, dolomite was applied as part of an acid soil reclamation scheme, aimed at correcting soil pH imbalances. This dolomite application was integrated into the tillage process at a rate of 2.5 quintals per hectare, contributing to soil health and promoting optimal conditions for crop growth. Overall, this comprehensive soil treatment approach addresses multiple aspects of soil quality, fostering a favorable environment for plant development and productivity.

Sowing:

Mustard and Lentil were sown in lines to take advantage of incentives provided under the scheme. Greengram, Blackgram, Fieldpea, Bengal gram were also encouraged for sowing in line, as it was previously taken as broadcasted crops

Weedicide & fertilizer application:

Pendimethalin, supplied under the scheme, was applied to the soil mixed with sand within 48 hours post sowing as a pre-emergence weed control. Where there is insufficient soil moisture in the field, the weedicides may be applied by spraying method.

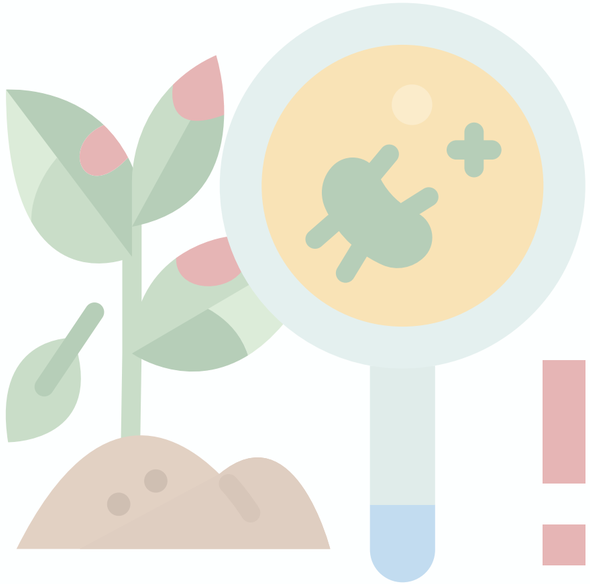
The supplied micronutrient was also applied at the time of final land preparation.

Pest management:

Pest management is a vital component of crop production. The major pests affecting pulses include aphids, jassids, whiteflies, leafeating caterpillars, and pod borers. To control pest infestations, farmers were provided with the following pesticides: Chlorpyrifos 50% + Cypermethrin 5% , Profenophos 50%, Chlorothalonil 75% Imidacloprid 17.8% SL as need based for green gram , black gram and other crops. To monitor and control pest incidence yellow sticky traps, blue sticky traps , Light traps and Pheromone traps with lures were fixed in the field.

Disease management:

Similar to pests, fungal and bacterial diseases commonly affect pulses and oilseeds. To control seed-borne diseases, Trichoderma viride 1% WP was provided to farmers for green gram, black gram, chickpea, and lentil crops, which were used for soil treatment. It proved highly effective in the field, controlling leaf spot and root rotting. In the case of mustard, propiconazole/chlorothalonil 75% was provided to manage fungal infections.



Drone demonstration:

Drone spraying technology has been implemented for safer and more effective pest control. A recent demonstration showcased the use of drones to sprinkle insecticides in the field. This approach improves precision and efficiency, reducing the amount of chemicals needed and lowering costs. It also enhances safety by keeping operators away from harmful chemicals and ensures even distribution, leading to better pest management and healthier crops.

Field day & involvement of WSHG:

During crop harvest, a field day was organized with beneficiaries and other local farmers to promote awareness of crop yield using different technologies and it encourages the neighbouring farmers to adapt the crops prodcution program for the coming year. Local Women Self Help Group (WSHG) members were actively involved from training to harvest, ensuring the scheme's successful implementation.

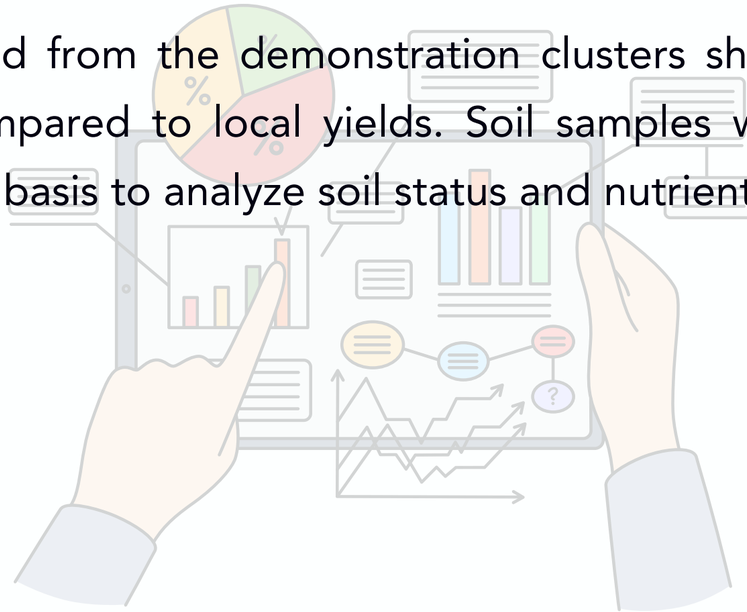
Crop cutting and harvest:

Crop cutting was conducted on a cluster basis (5m*5m) to assess dry weight and calculate yield per hectare. Postharvest techniques were discussed with farmers, who were advised to dry the produce for 2 to 3 days under the sun to save seeds for the next season and sell the excess in the market, where there is high demand for pulses and oilseeds.

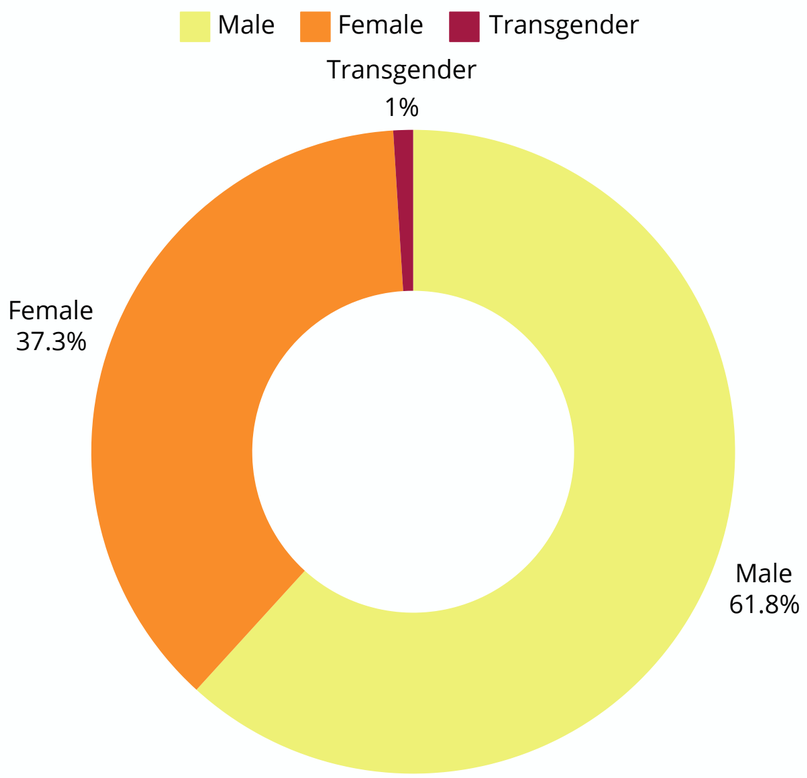
Data digitization & yield analysis

The Comprehensive Rice Fallow Program has implemented digitized data management processes in the ADAPAT portal to enhance accuracy and efficiency. Beneficiary information is verified using the KO registry, and weekly scheme-specific crop coverage data is gathered to confirm agency reports. Department officials perform active, digitized verifications of RFM farm plots, and crop cutting data is systematically recorded within the portal.

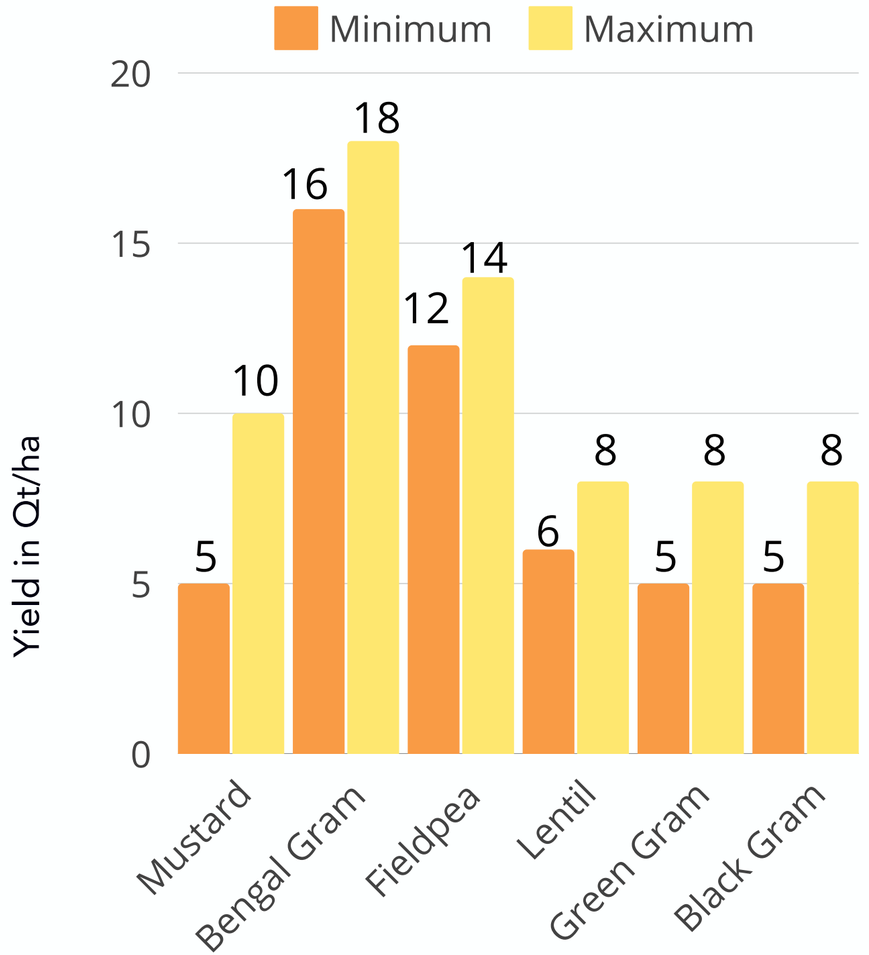
The yield obtained from the demonstration clusters showed a 15 to 20% increase compared to local yields. Soil samples were collected again on a cluster basis to analyze soil status and nutrient improvement post-intervention.



Data collected



Gender distribution of beneficiaries



Yield by crop type

Project outcomes

Environmental impact

Social impact

Economical impact

Environmental Impact

Sustainable Agriculture: Encouraging the use of bio-fertilizers, bio-pesticides, and other organic inputs supports environmentally friendly farming practices, reducing reliance on chemical inputs and minimizing pollution. The introduction of Integrated Pest Management (IPM) devices, such as light traps and pheromone traps, helps in controlling pest populations naturally.

Soil Health Improvement: CRFM Programme targeting soil health by improving soil pH and increasing organic carbon content, leading to better crop productivity and sustainable land use. Crop rotations involving pulses and oilseeds enhance soil fertility by fixing atmospheric nitrogen and improving soil structure and organic matter content.

Water Conservation: Promoting the cultivation of pulses and oilseeds, which require less water compared to paddy, contributes to water conservation, an essential factor in regions with limited water resources. Efficient use of residual soil moisture ensures optimal water utilization, preventing wastage and promoting sustainable water management practices.

Regenerative Agriculture: Practices such as using bio-fertilizers, IPM devices, and other eco-friendly inputs contribute to regenerative agriculture, promoting long-term environmental sustainability.

Biodiversity Enhancement: Diversifying crops beyond rice helps maintain and enhance biodiversity in agricultural landscapes, contributing to a healthier ecosystem.

Social Impact

Improved Livelihoods: The project increased farmers' income by introducing and upscaling the cultivation of pulses and oilseeds in rice fallow areas, benefiting small and marginal farmers. Establishing Community Managed Seed Systems (CMSS) empowered local farmers and communities, fostering ownership and self-reliance.

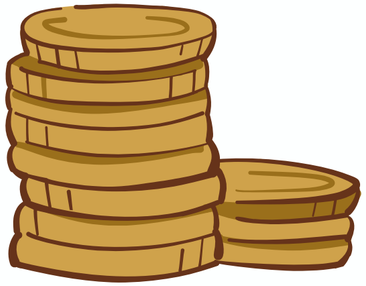
Nutritional Security: By diversifying crops to include pulses and oilseeds, the project enhanced the nutritional intake of the local population, ensuring a more balanced diet and better health outcomes.

Community Empowerment: Involving Farmer's Producers Organizations (FPOs), Community-Based Organizations (CBOs), and Women Self Help Groups (WSHGs) promoted social cohesion and community engagement. Focusing on women (at least 30% of beneficiaries) contributed to gender equality and women's empowerment in agriculture.
Self Help Groups (SHGs) in Odisha empowered women and improved agricultural practices by pooling resources, engaging in income-generating activities, accessing larger markets, and negotiating better prices. SHGs also provide social support, networking, and mutual assistance.

Awareness and Capacity Building:
Awareness campaigns and capacity-building initiatives enhanced farmers' knowledge and skills, leading to better farming practices and more sustainable agriculture.

Economical Impact

Increased Agricultural Productivity and Income:
Utilizing residual soil moisture for crop production during the Rabi season increases cropping intensity, leading to higher yields and improved farm incomes. The project is expected to cover 4 lakh hectares, significantly boosting the production of pulses and oilseeds, thereby reducing dependency on imports.



Cost Savings: Focusing on crops that require less water (like pulses and oilseeds) promotes cost-effective agricultural practices, reducing the financial burden on farmers. Improved soil health and productivity due to the use of bio-fertilizers, soil ameliorants, and other inputs will enhance long-term agricultural profitability.

Market Linkages: The project aims to ensure market linkages and procurement of produce at Minimum Support Prices (MSP), providing farmers with assured income and reducing market risks.

Job Creation: Implementation and management of the project generate employment opportunities in agriculture and related sectors, benefiting local communities economically

Success Stories

Empowering Farmers: Maa Saraswati WSHG Reaps Success in Green Gram Cultivation Under Odisha's Rice Fallow Management Program

In 2023-2024 Rabi session, Government of Odisha has started a flagship Programme “For Extension of Comprehensive project on Rice fallow Management Programme”, to promote Pulses and Oilseeds. The main aim of this Programme is Utilization Moisture available in soil after paddy harvesting. Being implemented in 8 Blocks in Angul district, Chhendipada one of them. With the help of Agricultural Finance Corporation Ltd. (AFC) and Odisha State Volunteers and Social Workers Association (OSVSWA) Comprehensive project on Rice fallow Management Programme Started in Chhendipada. In 2023, Comprehensive project on Rice fallow Management Programme running successfully in Chhendipada Block of Angul district. There are many persons contribution for successfully running this program in the block of Chhendipada. People of kasidiha Village, One of them. In this village one WSHG also involve in our Rice fallow Management Programme and Name of the WSHG is Maa Saraswati SHG. Now we discuss about the Maa Saraswati WSHG & its Involvement with Comprehensive project on Rice fallow Management Programme & Odisha State Volunteers and Social Workers Association (OSVSWA).

Maa Saraswati WSHGwhich is situated in kasidiha village of Badakanthakul GP. The village was 10 km far from the block headquarters of Chhendipada. Mostly People of this village belongs to General and few people Scheduled Tribe (ST) and Scheduled Castes (ST) Community. The Livelihood of this Village Mostly depending upon Agriculture, Forest and Livestock Yield Products. Maa Saraswati WSHG had total 12 members. All 12 members involve in Rice fallow Management Programme and cultivate Green gram crop. Out of 12 members 5 members General, 4 members ST and 3 members SC.

In the 1st Year of Operation in Chhendipada Block, Odisha State Volunteers and Social Workers Association (OSVSWA). Approached this village for Comprehensive project on Rice fallow Management Programme. In the First Village Awareness Meeting Nearly 67 Farmers Joined & Getting to Know about Green Gram Cultivation & Its Benefits. In this Village Awareness Meeting this 12 WSHG members also present. After the Village Awareness Meeting end this12 members discuss with each other and interested to Green Gram Cultivation. Again 2nd Awareness and Capacity Building meeting 67 no of Farmers interested in Green Gram Cultivation in 55 ha area on cluster Demostation. In this 67 farmer 12 WSHG members also involved. This WSHG 12 members cultivate 3 ha of land for Green gram cultivation after 2days of seed distribution. Before sowing the Green gram seed he will be apply Boarx in soil application, seed treatment with R.culture and PSB Liquid and also apply Pre emergence Weedcides for control weed growth . This seed and Input supplied by Govt. of Odisha, AFC and OSVSWA collaboration. Also After Plant growth PP chemical, YST. BST, Solar Light Traps. Pheromone traps supplied Govt. of Odisha, AFC and OSVSWA collaboration for Pest and disease control. Our Staffs visits regular Basis & Guiding them for Green gram Cultivation. We Guide them to How apply the input in their fileds and also give training. How control Weed, Pest, Disease. We Guide them to How to prepare Jeevamruta & Handi Khata & its Application in their Fields.

At the time of Harvesting that WSHG members Harvested 15.6 Quintals of Green Gram from their Fields. Out of Harvested 15.6 Quintals of Green Gram 9.6 Qtl sold to local market and 6 qtl store for consumption purpose and they divide the this 6 qtl in among the 12 members i.e per members 50 kg.

Maa Saraswati WSHGsays: “Thanks Govt. of Odisha, Agricultural Finance Corporation Ltd. (AFC) and Odisha State Volunteers and Social Workers Association (OSVSWA) to giving me opportunity to serving & helping my people of my village. I am very much happy being a part of the Comprehensive project on Rice fallow Management Programme for a noble cause for promoting of cultivation of Pulses in our Block. A big Thanks to all the Comprehensive project on Rice fallow Management Programme staffs, whose are working for development of our Block & life of our people. I am eagerly ready whenever RFM needs me for helping our people.”

Agricultural Innovation and Value Addition: The Mustard Oil Success Story of Nuagaon Village

The Comprehensive Rice Fallow Management (CRFM) project in Nuagaon village, Chhendipada block, Anugul district, Odisha, has significantly transformed local agriculture and economic stability. Traditionally, farmers faced challenges with fallow land after rice cultivation, leading to limited income and underutilized resources. To tackle these issues, the CRFM project focused on promoting crop diversification and value addition.

During this season, the project enabled the conversion of 85 acres of fallow land into productive mustard fields. With the support of the CRFM initiative, 45 farmers adopted Cluster Cultivation techniques, benefiting from hands-on training in soil application, micronutrients, bio-fertilizers, and line sowing methods. This comprehensive training, provided by the ground staff, notably improved soil health and increased crop yields.

The total mustard production from this harvest was 212 quintals, equivalent to 21,200 kilograms. Of this total, 70% or 14,840 kilograms was sold at ₹80 per kilogram, resulting in a revenue of ₹1,187,200. The remaining 30% of the mustard was reserved for domestic use, including both seeds and oil for year-round cooking. This strategy ensured that farmers maintained a steady supply of high-quality mustard oil for household needs while benefiting financially from the sale of the surplus.

The farmers' commitment to the CRFM project's agricultural transformation was evident in their embrace of oilseed cultivation and their efforts to encourage other villagers to join. Their success inspired neighbouring farmers, fostering a sense of community and expanding the project’s impact. The value addition process significantly increased farmers' income, which enhanced their financial stability and enabled investment in education, healthcare, and improved living standards.

The project also contributed to community development promoting economic growth. Overall, the CRFM project's focus on mustard oil production has optimized the use of fallow land and demonstrated how innovative agricultural practices can drive sustainable development and prosperity in rural areas.

Empowering Farmers Through Crop Diversification: How Narad Dila Transformed His Income and Family's Future with Black Gram Cultivation"

In the Sundargarh district of Odisha, Narad Dila, a farmer from Sankaraposh village, GP- Sahajbahal, Block- Baragaon, struggled with insufficient income from single-season cropping to satisfy the basic needs of his family of four. He used to grow rice on his 0.8 ha area using local seeds and traditional methods, leading to low productivity and less income. Because he couldn't afford to hire labor due to his low earnings, he had to involve his children in cropping, which negatively impacted their education.

This year, things turned out well for Narad as he attended the farmer awareness program for the CRFM Project, organized by the government and AFC field staff in his area. There, he learned how to use the soil's leftover moisture from the monsoon to grow crops during the winter, which motivated him to pursue another crop in addition to rice cultivation. After joining the program, he learned about improved methods of cropping, the benefits of crop rotation, the use of seed inoculants, soil additives like Trichoderma, boron, and zinc, and Integrated Pest Management (IPM).

During the meeting, he cleared all his doubts about the project and, after satisfaction, requested an inspection of his field to suggest the best crop according to market demand and soil conditions. The field staff suggested black gram and advised him to prepare his field. After 10-15 days, he received 16 kg of black gram seeds and necessary inputs like boron (4 kg), PSB (2.8 liters), Rhizobium culture (160 ml), Trichoderma viride (2 kg), plant protection chemicals like Imidacloprid (112 ml) and Chlorpyrifos-Cypermethrin (0.6 liters), and traps like YST, BST, pheromone traps, and light traps.

He ploughed the land twice with FYM and boron and broadcasted the seeds after treating them with seed inoculants like PSB and Rhizobium culture. This year, he cultivated 0.8 hectares of land with 16 kg of seeds. Initially, he faced problems such as insect attacks and fungal infections during the emergence of seedlings, resulting in low germination rates, high mortality rates of seedlings, and less growth and development of the crop, which ultimately led to low productivity and income. However, after using plant protection chemicals, these problems were minimized. By utilizing the land twice in a single year, Narad was able to increase his income, and the soil's productivity also improved.

Narad harvested around 552 kg of black gram from his field, out of which he sold 90%, or 497 kg, and kept the remaining 10%, or 55 kg, for his own consumption due to the high market price of around ₹80 per kg in the local market. Thus, he earned an additional income of almost ₹40,000 from his field.

Before and Present Comparison:

- Land Use: Before the intervention, Narad cultivated his land only once a year, growing rice. Now, he cultivates the land twice, growing rice in the first season and black gram in the second season.
- Yield: Previously, he obtained 1700 kg of rice from his land. This year, he harvested 552 kg of black gram in addition to the rice.
- Income: The income from rice was ₹21 per kg, totaling ₹35,700 annually. With the introduction of black gram, he earned ₹80 per kg, resulting in an additional income of ₹39,744 along with the ₹35,700 from rice.
- Labor and Education: Due to his low income, Narad couldn't afford to hire labor, so his children were involved in various field activities, affecting their education. Now, with the increased income, he can afford labor costs, which has positively impacted his children's education and the family's financial growth.
- Challenges: Before the intervention, Narad faced issues such as purchasing low-quality seeds, weed problems, insect and fungal attacks, high seedling mortality rates, and unhealthy plant growth, all of which contributed to his poor financial condition. Now, thanks to the CRFM Project, he has achieved an improved financial status and can afford a better education for his children.

Aknowledgements

AFC extends heartfelt appreciation to all collaborating agencies whose collective efforts were instrumental in the successful implementation of the Comprehensive Project on Rice Fallow Management System for Rabi 2023-24 in Odisha.

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