

Engaging with Community for Restoration of Traditional Agriculture for Food Security



WOMEN'S ORGANISATION FOR RURAL DEVELOPMENT (WORD)

T Trócaire has, since 2012, supported the Women's Organisation for Rural Development (WORD) in a traditional agriculture and food security programme for small¹ and marginal farmers² in Laxmipur Block of Koraput District. Koraput district of Odisha has a rich heritage of diversity and was a contender for a world biodiversity site. However, with more lands coming under commercial farming systems, changing agriculture practices with hybrid seeds, and heavy use of chemical fertilisers, bio-diversity is fast declining. Traditional agriculture is pushed to the back seat, leading to shortages of cereals and pulses in the food baskets of the rural communities. Production and income from agriculture has declined substantially, aggravating food insecurity, poverty and rural indebtedness. Rural youth prefer to migrate out than to engage in farming.

The WORD programme includes a specific component on "revival of traditional agriculture systems to ensure food security". A Participatory Rural Appraisal (PRA) exercise was conducted in 20 villages of Laxmipur Block to understand the real causes and perceptions of community regarding the core problem of food insecurity in the villages. During the process, discussions were conducted with individual farmers at village level and with community leaders and landlords in the area. The study revealed that food scarcity and nutritional deficiencies persist for almost six months in a year. This is



▲ Resource Map of Kurumuli Village through PRA exercise

mainly due to the loss of traditional farming systems including crop diversity; low yield due to depletion of resources; use of hybrid seeds and chemical fertilisers and above all, due to the adverse impacts of climate change. It was agreed that systematic revival of traditional agriculture systems could enhance the food basket of the tribal community and restore the eco-system on which to sustain the livelihoods of small and marginal farmers.

¹ Small farmers: 'Small Farmer' means a farmer cultivating (as owner or tenant or share cropper) agricultural land of more than 1 hectare and up to 2 hectares (5 acres).

² Marginal Farmers: 'Marginal Farmer' means a farmer cultivating (as owner or tenant or share cropper) agricultural land up to 1 hectare (2.5 acres)

Methods adopted for reviving traditional agriculture

The methods involved systematic interventions that included

1. Farm planning including mixed cropping systems, System of Rice Intensification (SRI) and home gardens, organic farming and Integrated Pest Management
2. Soil testing and soil health management
3. Seed conservation, seed banks and exchange,
4. Improved low-input technologies and
5. Farmer institution building.

1. Farm plan for sustained household food and income

Koraput is a tribal-dominated district and agriculture is the primary occupation. Farmers have very small land holdings and landless people carry out slash and burn agriculture. There is no systematic plan for agriculture. Farming is mostly rain-fed. WORD supported small farmers to make household agriculture plans for diversifying their cropping system depending on the type of land, soil and availability of water. Detailed cost benefit analyses were made to assist the farmers to choose crops for home consumption and also

▼ Mixed cultivation in Gusaraguda Village



³ Panchayat - a village-level statutory democratic institution of local self-government that has been given constitutional status under 73rd and 74th Amendments of the Indian Constitution.

⁴ Krishi Vigyan Kendra: KVK is a government institution where a special emphasis on training and education of farmers, entrepreneurs, farm women, rural youth, financial institutions extension functionaries as well as voluntary organizations

crops for earning cash income. For example, millets and rice etc. are grown for consumption and surplus for sale. Ginger, garlic, turmeric and vegetables etc. were chosen for cash income. Farmers and landless people were facilitated to engage in livestock rearing and oil seeds production. Off-farm and nonfarm livelihood options including value addition of farm produce and non-timber forest produce (NTFP) were also supported. Interested farmers were supported to make their agriculture plans and to trial them in their fields.

2. Soil testing and soil health management

Fifty women from two villages, Sanakellar and Phuljodi, started with soil testing for cultivation of Orange Flesh Sweet Potato (OFSP). The women planted 25,000 cuttings of sweet potato on three acres of land and got a harvest of 7 tons. This was followed by 150 farmers in 20 villages from two Gram Panchayats³ (Kusumguda and Champi). Soil samples were collected, soil health cards were issued. Based on the findings, farmers were advised to adopt soil health management practices and to apply appropriate amounts of organic manure. Farmers from nearby villages are now interested in getting soil tests done at the Krishi Vigyan Kendra⁴.

3. Mix Cropping System – reviving tradition

Farmers were encouraged to re-establish their old practice of mixed cropping to bring in diversity (pulses, millets, cereal and vegetable) and ensure continuous harvest of food crops

round the year (primarily to meet the family food needs). Under the technical guidance of staff of WORD and the local tribal elders, the young farmers have realized that mixed cropping works in the local climatic conditions and can withstand the drought-like conditions. 200 farmers trained on mixed cropping and intercropping have demonstrated the practices in their farmlands, thereby assuring a wholesome food basket and buffer crop.

4. Seed Conservation, Seed Mother and Traditional Seed banks



▲ Seed conservation in Gusaraguda village by Iachma Miniyaka

Farmers participated in training on seed selection, collection and grading methods in order to collect quality seeds. They also revisited natural seed conservation methods, for example by using mixture of dried leaves of wild plants Margosa, Pongamia and Vitex with turmeric to control pests during storage. The seeds were stored in bamboo baskets or polythene bags.

The concept of ‘Seed Mothers’ was introduced, giving women volunteers the responsibility of conservation and propagation of traditional seeds which are under threat of extinction. Each Seed Mother, depending on her interest, chooses 2-3 varieties of same plant species or different plant species and collected the seeds from her own village. She grew the plants in her backyard or in the field, collected the seeds and shared them

▼ Traditional Seeds



with her fellow farmers. This could save the traditional seeds from extinction.

Also, 12 community **Traditional Seed Banks** were established to conserve seeds. 16 local land races and 16 improved varieties of millets, 15 varieties of pulses and vegetables have been made available in seed banks. Farmers are encouraged to cultivate the landraces by borrowing seeds from the seed banks which can be returned with a nominal interest, fixed by the community, after harvesting of the crop.

Seed Exchange Process: Traditional seeds are collected, stored and regenerated during the next agriculture season. Therefore local varieties of seeds are conserved and multiplied. Every year a **Krusi Mela (Farmers Fair)** is organised to encourage the farmers of Laxmipur Block to exchange quality/ indigenous seeds. The main aim of the programme is to see that the farmers develop a habit of sharing with each other and that there is regeneration of the varieties in different villages and to preserve the traditional seeds from extinction. 47 varieties of paddy rice, Ragi, Suan, pulses are exchanged by 300 farmers. Apart from that, four varieties of paddy rice and one variety of finger millet were brought from Malkangiri seed fair and introduced to farmers for replication.

5. System of Rice Intensification (SRI)



▲ SRI training in Talachampi village

WORD promoted the System of Rice Intensification (SRI) method of paddy cultivation which is cost effective and gives more yield than conventional broadcasting of seed. 202 farmers partook in training, field support and guidance to adopt SRI in 82 acres of land. Action research was conducted with the farmers which found that plant height, number of productive tillers, grain per panicle, root weight and harvest index was better in the SRI method than in other transplanting methods. Farmers who adopted the practice got almost the double yield compared to the traditional method. Thus additional food and income for less inputs.

6. Home gardens and vegetable cultivation

Five structured home gardens and 198 unstructured home gardens were demonstrated to improve food diversity at



▲ Gupta Miniyaka of Jamrijhola with kitchen garden produce

household level. Vegetable seeds were distributed to both individuals and groups in 20 villages. Vegetables like French bean, ladies finger (okra), cauliflower, carrot, off season potato, sweet potato, tubers, radish and cabbage were introduced along with existing traditional varieties to enhance household nutrition. Seasonal vegetable cultivation was taken up by utilizing the existing water resources. 13,000 custard apple, lemon, guava, drumstick, papaya, banana, coconut, cashew seedlings and 1,000 mango grafts were distributed.

7. Promotion of Organic farming

Koraput villages are not entirely under the clutches of chemical fertilizers, hybrid seeds and clones. However with increase of contractual farming, cloned eucalyptus plantations, subsidized hybrid paddy seeds the farmers are fast adopting chemical farming. To counter these forces, WORD encouraged farmers to take up low cost vermi⁵-culture, composting, NADEP tanks, dung compost, organic insecticides and pesticides. To promote organic farming practices, 23 roofed vermi-compost pits and 500 units of low cost vermi-compost have been provided to farmers with support from the horticulture department.

8. Integrated pest management (IPM)

Farmers shared traditional knowledge and by mixing it with 'demystified' scientific knowledge systems for controlling diseases and pests were devised and promoted for use in approach which combined crop-management techniques with natural pesticides. Mechanical control like summer ploughing, placing pheromone traps, light traps and bird perches were in combinations with locally available materials such as Neem oil, Panchagabya (a bio-pesticide). This has led to better plants growth and higher quality harvest thus contributing to greater food security.

9. Farmers' Institutions

Micro-level Farmer Groups were formed including men and women and a Farmer Council was formed at the regional level

⁵ An earthworm is a tube-shaped, segmented worm found in the phylum Annelida. They are commonly found living in soil, feeding on live and dead organic matter.

for strengthening the operations of 20 farmers groups. Linkages were made with different government institutions and schemes including Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), horticulture and agriculture departments etc.

10. Trainings and exposures

WORD organised practical field trainings and exposures with institutions like Swaminathan foundation, Orissa University of Agriculture and Technology (OUAT), model farming units in the district and others This gave farmers the knowledge and skills to take up similar practices in their own fields. Due to this, the production of rice, millet, vegetables and tubers increased and the people are getting more output with limited resources.



▲ Women learning mushroom cultivation in Phuljodi village

Impact on households and Community

Reduction in the hunger gap:

A survey on the impact of crop diversification was carried out in 50 households of five villages under Kusumguda and Champi gram panchayat. The survey revealed that after WORD's intervention the hunger gap of 80% households was reduced from 6 months to 2 months. The survey also found that migration rates had stopped increasing. The variety of food available has improved.

Adoption of improved practices:



▲ Chichoda Jani & Kurunji disari in SRI paddy field of Jholaguda

Table 1: No of farmers adopted off season vegetables cultivation and selling surplus in target villages

Name of the village	Number of farm families cultivate vegetables				Selling surplus in INR			
	2011	2012	2013	2014	2011	2012	2013	2014
Raulipadar	5	20	9	11	4800	7000	10000	13500
Timajhola			4	7			3000	6200
Titijhola			28	28			55000	57000
Jholaguda			11	17			21300	25200
Champi			7	12			19000	20800
Bilansil	11	97	7	12	3200	11240	12000	14800
Chhelibeda	10	10	15	15	2800	12000	4000	4700
Kurmuli		8	20	20		4000	6000	6200
Talachampi			7	7			10000	10700
Jamirijhola			10	10			20000	21000
Phuljodi			20	20			70000	75000
Kuchpar			40	40			6000	8000
Gadikhal	5	20	20	20	5000	14000	43000	43000
Sanakelar			10	12			2000	5000
Birijodi	2	5	7	7	2400	5000	12400	12800
Total	33	160	215	238	18200	53240	293700	323900

(List of vegetables cultivated: Bush bean, Brinjal, Onion, Radish, Barbate, Tomato, Bitter guard and Cabbage)

Table 2: Year wise Data of Area, Farm families, Production and up scaling of SRI paddy cultivation

	Area of operation (20 Villages)			
	2011	2012	2013	2014
No of farm families (Small and Marginal farmers)	48	66	87	119
Area under cultivation (in Acre)	15	25	42	86
Average production (quintal/cultivated area)	180	375	630	1080
Earned Amount in INR	234000	478500	819000	1404000

Improved practices like SRI paddy cultivation and millet line sowing has resulted in increased yield in comparison to former methods. Farmers are getting more production from the same piece of land with less investment, there by addressing food security. People have their own seed and also an opportunity to collect from other farmers in villages at less or no cost.

Enhancement of Income:

In terms of economic aspect, a beneficiary farmer approximately earns 40,000 to 60,000 INR per annum (Table 3: illustrate an example of enhancement of income). The major sources of income are from selling of paddy, millet, maize,

vegetables, tubers, fruits, ginger, turmeric etc., as cash crops, sale/use of organic manure (reducing cost of cultivation) and use of own seeds which reduce cost of cultivation.

Impact on Women:

Women are the backbone of agriculture but their efforts are often invisible and unappreciated. WORD through its interventions made the community aware of the significant contributions that women make in agriculture - right from preparing the land to conservation of seeds. WORD took special attention to ensure that the voice of women was heard while

Table 3: Yield production/Average income increased by a farmers in a year: Data of 2014
Farmer Name: Basudev Jani, Roulipadar Village

Particulars	Production in Quintals	Price per quintal	Amount in INR
Paddy	10	1300	13000
Ragi	4	1500	6000
Sua	2	2000	4000
Niger	1/2	5000	2500
Turmeric	5	800	4000
Zinger	1/2	7000	3500
Vegetable	2	4000	8000
Pulses	1/4	4000	1000
Root/tubers			1000
Vermin compost	3 tractor	1300	3900
Livestock			4000
Fruit bearing trees			2000
Total			52900

preparing the agriculture sector plan at village level. Women have at least equal or more knowledge in agriculture and nearly



▲ Sundei Miniya of Patakakudi village

74% of rural women do 80% of all the farming in rural India⁶. The women have acquired knowledge on improved practices and technologies through participation in trainings, demonstrations and exposures. They have started sharing their success in the field with other farmers informally and during workshops and meetings.

The concept of Seed Mothers has revived women’s traditional role in seed conservation. They are taking the lead in organising seed fairs where they themselves bring seeds from their field and distribute to other farmers.

Organic farming practices are more adaptable to the women farmers as they have come to realise the adverse effects of chemical farming. Women are now more aware of nutritional food intake at household level. Women farmers are now getting more organised for collective marketing of their produces.

Challenges:

Subsidised schemes of Government

The government, in its attempt to increase production, has devised several agricultural subsidy schemes like hybrid maize, hybrid paddy and Bt Cotton with subsidized chemical fertiliser. Therefore, people tend to go for freebies and subsidies without considering the after effects they may have on their lands or long-term farm balance sheet. While one school of thought is on sustainability another is on how to make more yield for the growing population. Even within the NGO sector there are different approaches of working, while some NGOs promote traditional farming, some are promoting subsidized hybrid farming. As a result the farmers are confused. WORD has been working to address these challenges by awareness generation on the adverse effects of chemical farming and also promoting conservation and multiplication of traditional varieties of seeds. However it is difficult to compete with the attraction of free inputs.

⁶ Article “100,000 women, 10 years, one demand: let us own our farmland” by Sabita Parida & Savvy Soumya Misra@catchnews on 2 October 2015. (www.catchnews.com/india-news/100-000-women-10-years-one-demand-let-us-own-our-farmland-1443781029.html)

Welfare schemes

The welfare schemes of government have made people lethargic and diverted the attention from agriculture. Efforts are made to mobilise the communities for creation of assets under job schemes of the government like land development and irrigation infrastructures which will complement the agriculture-based livelihoods and also combat the effects of climate change. Demonstration models and action research helped in evidence-building in the community and help counter the lethargy.

Climate change and natural disasters

Natural disasters which are due to climate change are now becoming recurrent and the small farmers cannot deal with them alone. The government does not have a coordinated localised disaster mitigation plan for the area. Although individual farmers have adopted more resilient methods for food production and nutritional security, wider efforts including all sectors need to be made to support communities in landscape and ecosystem-based approaches to planning for sustainable futures.

Distress Sale and exploitation by middlemen in the market

As the farmers are not yet strongly organised, they lack bargaining power and hence are vulnerable to exploitation by middlemen in the market chain. Steps are in place for organising and strengthening farmers' collectives to overcome this persistent challenge.

Lessons learnt



Farm planning makes for better land use, more diverse food, and more income:

Systematic planning at household level by farmers can lead to more productive and ecologically sound utilisation of land, genetic materials and water resources and ease adoption of cheaper and better agronomic practices. It can also result in more production, of more diverse nutrients for a longer period of the year, thus improving nutritional security of the family. With less purchased inputs, surpluses can be produced which provide the opportunity to sell for cash income.

Practical demonstrations in fields have best learning impact:

Since farmers have very limited access to information from mass media or government

extension services, practical demonstrations proved to be most beneficial for introducing new technologies.

Low cost and local technologies are easily adopted:

Low cost innovative approaches like SRI, line sowing, inter cropping, mixed cropping and integrated farming were cheap to demonstrate and to adopt. These technologies have played a large part in helping to reduce the hunger gap in the families from six months to two months.

Revival of traditional seed conservation gives farmers more diverse and independent options:

Revival of traditional practices of seed conservation, seed exchange and the concept of Seed Mothers has created community consciousness for conservation and multiplication of traditional varieties. It has also widened the available range of varietal characteristics of a large number of crops and so made the farming system more robust in countering the impacts of climate change. Farmers have greater independence in their seed choices and have less seed costs. They also realise that short duration crops and mixed crops can contribute to quick returns which help to counter the threats of climate variations.

Focus on women in agriculture gains them more visibility and respect:

Women have become more successful in their farming and have achieved increased confidence. Their adoption of important roles in seed care and exchange has given them increased responsibility, respect and visibility. Full recognition of women as the main food producers and full attention to their equipment and knowledge needs will take time, but a great start has been made.

"Bihana mata chasiku hita; ama chasare ame jagata jita" means seed mother is salutary for farmer; we will win to the world through use of traditional seed. Says by Pini koleka of Champi Village.

Traditional varieties are better for combating climate change

Farmers who have chosen traditional seeds for paddy, millet and pulses crop assert that they are better able to withstand adverse agro-climatic conditions such as erratic monsoon, decreased precipitation, and biotic stresses. It was apparent during the recent HUD HUD cyclone that traditional varieties were much resistant than the hybrid varieties.

Ms. Tulsa Muduli from Sanakellar village shared her experience of 2014 cyclone (HUD HUD) "The heavy winds didn't damage our indigenous varieties millet, since the plants have low height, less tillers and panicle and have stronger root systems. On the other hand the entire hybrid varieties of paddy and maize were destroyed in the cyclone as the plants were taller and stems were thin to sustain the heavy winds and rain."

Conclusion

The deliberate mixing of indigenous⁷ and 'new' farming systems in this programme offers a promising chemical-free, low-carbon model for promoting biodiversity and conserving natural resources while improving the yield of a diverse range of nutritional crops. The economic improvements in the participating households are very encouraging as are the testimonies of reduced risk of crop losses during extremes of

climate. Women have taken lead roles in seed collection and conservation (mothering) and have made both social and economic progress through their active involvement in bettering their agriculture.

The initiative of WORD has produced visible impacts, the interventions are sustainable, replication is possible and scaling up is also happening. These very promising results still need the strong support of government and donors to bestow high level affirmation and further scale up for a greater impact. There is no doubt that humanity needs an alternative agricultural development paradigm, one that encourages more ecologically, bio-diverse, resilient, sustainable and socially just forms of agriculture. The Brazilian and French governments have already adopted national agroecological policies, why not India?

"Bihono amoro mati amoro, jaibiko chasa ate amoro" means our seeds, our land, we take up organic farming. Says by Ghase Hikoka of Phuljodi village

⁷ The national agricultural policy supports the integration of indigenous knowledge and traditional systems. Agriculture Policy: Vision 2020 Indian Agricultural Research Institute, New Delhi.

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