Developing innovative farming models for Dhalai: A way to secure sustainable rural livelihood

Sustainable rural livelihood improvement is need of the hour for enabling rural innovation amongtribal farmersof Dhalai-one of the seven most disadvantageous districts of Tripura in the north east region. The district's two clusters- Maracherra & Balaram- is one example of how a participatory approach has been used to create entrepreneurial culture among a set of farmers, whose farminghas long been dotted with lower productivity, lack of modern agri-technologies, and poor marketability of crops.In August 2009, the NAIP begun "Sustainable Rural Livelihood Security" (component-III) project,focusing on communicating fresh ideas to increase rice productivity by introducing SRI, and an extra income generation by introducing mushroom cultivationamong the farmers of the two clusters in Dhalai. Following this, 'Naveen'- a high-yielding-rice variety under SRI, gave 3.8t/ha average productivity, anextra increase of 1.7 t/ha, while the mushroom growers produced 2062 kg of fresh oyster mushrooms, and earned Rs. 1, 65,045, annually. Hence, the farmers' benefit-cost ratio (B: C)- which was estimated to be 1.6 before the project interventions- has shot up by 2.06 & 2.61 for 2008-09 & 2009-10 periodsrespectivelyafter the project interventions.

1. Background Information

Agriculture provide livelihood to 70 percent of the people in Dhalai.Rice, being the staple crop (70%),is being grown on 2, 55,247 ha area; engaging around 1100 households, directly.The farmingis impregnated with reduced jhoom cycle, lack of quality seed, water scarcity, and lack of awareness for improved agricultural technologies. However the district has70 per cent literacy rate,the farmers ofMaracherra& Balaram have been suffering declining agricultural productivitydue torampant land degradation, disturbances of natural balance, and top-soil loss in the clusters.

Figure 1 Rice crop under SRI in Dhalai

2. The NAIP Interventions

i. Introducing System of Rice Intensification [SRI] in Dhalai

For rice yield improvement, ICAR introduced system of rice intensification (SRI) to a total 725 nos. of farmers of Maracherra and Balaram clusters under rice improvementprogramme, "Food security through enhancement of Rice productivity scheme". First,the farmers selected

were given the seeds of Pusa-44, Swamba Moosori,and Naveen @ 1kg/kani (0.16 ha).They followed SRI method,right from the nursery raising. Across the villages underBalaram and Maracherra, the average productivity with local variety was 2.1t/ha, whichafter applying SRI with high-yielding variety Naveen has gone up to 3.8t/ha, a 1.7 t/ha more production.Here, the rice yield has increased by more than 70 per cent across several villages, and the inputcost has also reduced to almost half. In the last five years, around 90 per cent farmers adopted SRI. Following is the average performance of SRI in rice in Dhalai.**Table-1[SRI performance in Dhalai]**

Cluster	**Villages**	**Nos. of farmers**	**Productivity(tonnes/ha)**			**Yield advantage (%)**
			Before	**After**	**yield incre./ha**	
Balaram	Daspara	54	2.1	3.7	1.6	76
	Bazartilla	31	2.1	4.4	2.3	109
	Uttarpara	18	2.1	3.4	1.3	61
	Debpara	16	2.1	3.0	1.0	42
	Jamanjoypara	9	2.1	4.2	2.1	100
	Noajoy para	6	2.1	4.0	1.9	90
Total	**Balaram**	**134**	**2.1**	**3.78 (avg.)**	**1.7(avg.)**	**79.6(avg.)**
Maracherra	Kuchainala	136	2.1	3.5	1.4	66
	Shivbari	42	2.1	3.6	1.5	71
	Maracherra	117	2.1	3.0	1.0	42
	Halhuli	93	2.1	3.0	0.9	42
	Chotsurma	203	2.1	4.0	1.9	90
Total	**Maracherra**	**591**	**2.1(avg.)**	**3.4(avg.)**	**1.3(avg.)**	**51(avg.)**

ii. **Introduction of Mushroom cultivation in Dhalai**

Figure 2 Rebika Sangma and her family showing Oyster mushrooms

Mushroom cultivation was started with an aim toboost extra farm income generation at Balaram and Maracherra clusters.In beginning, the oyster mushroom was introduced by giving training and demonstration at farmers' fields. The spawns and other requisite materials were supplied from ICAR Centre to popularise it across the district.The farmers'were kept under technical supervision, providing, input-output management andguidance to combat diseases, pests under adverse

climatic conditions. In this way,considerable number of farmers learned the cultivation techniques and produced mushrooms for the first time in their houses. The efforts brought happiness and hardworking capability in their lives.After which,several steps were taken towards commercialization of mushrooms through constructinga total ninemushroom units in the clusters, while the other nines are inpipeline.Among the progressive farmers, the low cost mushroom sheds were built up.After two years, thefarmers had produced 2062 kg of fresh oyster mushrooms at the expenditure cost of Rs. 46,492; selling Rs. 12 for a poly bag filling. The farmers sold the fresh oyster mushrooms at Rs 80/kg in the local markets and earned Rs. 1, 65,045 annually. After intervention, the farmers' benefit – cost ration (B: C) has increased from 1.6 to 2.06 & 2.61 for 2008-09 and 2009-10 periods respectively after the project.

Table -2 [cluster-wise performance of mushroom cultivation]

Name of the cluster.	**No. of Farmers**	**No. Spawn bag used (150g each)**	**Total expenditure (Rs.)**	**Production of mushroom (Kg)**	**Amount received on selling (Rs.)**	**Profit (Rs.)**
Balaram (April 2008 - March, 2009)	139	750	9000	361.90	28952	19952
Maracherra (April 2008 - March, 2009)	133	370	4440	101.85	8253	3813
Balaram (April 2009 - March, 2010)	107	882	10584	560.30	44824	34396
Maracherra (April 2010 - March, 2011)	77	889	10668	559.00	44720	34052
Balaram (April 2010 - Dec, 2010)	125	600	7200	296.20	23696	16496
Maracherra (April 2009 - Dec, 2010)	75	400	4800	182.50	14600	9800

3. Concerns that emerged

Before the project interventions,Dhalaiwas backward, facing production &delivery constraints. The cultivation practices vary over year to year due to continuous shifting of cultivating area. Also, most of their cultivable lands were not settled .Shrinking status of natural resources put extra pressure on farming communities to either replenish it or forget to make farming a profitable enterprise in the region. Other than this, Dhalaifarmers did not have access to latest agricultural information. In case of riceand mushroominitiatives, following main concerns emerged:

For Rice

- Cultivating indigenous rice varieties with traditional methods
- Lack of knowledge about high-yielding-rice varieties suitably grown in the area
- Seeds, input materials and improved methods were unavailable
- Lacking mixed farming

For Mushroom

- Suitability of mushroom variety for their place
- Lack of mushroom production technique
- Lacking of knowledge about development of mushroom shed

4. Summary

The farmers in Dhalai have succeeded in adopting newendeavoursof agricultural technologies.Farmersalso adopted goatery, fisheries, duckery and piggery as extra ventures.In the last five-years,the farmers' income levels have reached almost double.The mushroom growers of the clusters sold the fresh oyster mushrooms at Rs 80/kg in the local markets, and earned Rs. 1, 65,045, annually. Apart from using rice for domestic purpose, rice growers are selling their extra rice at around Rs. 1000 per quintal (MSP) in the State to earn money, which are investing into their children's education.Surplus income has made their children to go for higher education in the town's English medium schools.After the interventions, the farmers' scientific awareness has increased, due to which they have becomemuch more comfortablenow in selectingqualityseeds, fertilizers and controlling measuresfor the improvement of theircrops.

Source: Mass Media NEH