Issue 2: September 2011

India, Results from IFAD’s Country Programme

Foreword

I have the pleasure of sharing with you the second edition of our Newsletter. Our last issue focussed on Innovations; this time we present a sample of results from across the IFAD assisted projects in India.

The Results and Impact Monitoring System (RIMS), globally applicable to all IFAD programs, is at the core of our Results Based Project Management System and has been developed with a view to manage projects and programs for achieving development outcomes. Data is regularly collected by project staff, NGOs and communities and reported through half-yearly and annual reports generated from the Management Information System. Project impacts on income, food and nutrition security, health, sanitation, and education are monitored three times over the project life cycle with the help of baseline, mid-term and end-of-project surveys.

We understand that numbers are important for demonstrating results; but we never forget that the experiences of the communities are vital to the assessment of the impact of programs on the lives of people. Thus, quantitative results data are complemented by qualitative data collected through key informant interviews and focused groups.

The articles in this Newsletter are written with the support of analysed data from annual RIMS reports, annual outcome survey reports, and qualitatively analysed impact case studies. We hope you will find them interesting and useful.

We welcome your suggestions on both the form and content of the newsletter. Please send your comments and feedback to me (m.mishra@ifad.org) or Judith D’Souza (j.dsouza@ifad.org) who will now be co-ordinating the newsletter.

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US$1 = INR45.12
INR10 lakh = INR1 Million
INR10 Million = INR1 Crore

Shaping Lands and Lives: Farmer’s Views from Land and Water Management in IFAD assisted Tribal Development Programmes in India

Many parts of the tribal development programme areas of Jharkhand, Chhattisgarh and Orissa have been grappling with the challenges of land development along with conservation of its soil and water for a long time. Although these states are typically characterized by fairly good rainfall, rich soil and good forest cover, many parts of the tribal regions of the states remain poverty-ridden. The low population density of the tribal inhabited regions together with low level of natural resource degradation offers considerable scope for livelihood resource enhancement based on the concept of integrated Natural Resource Management.
Optimization of Land and Water use through appropriate measures, based on watershed management principles form the core of tribal development strategy of the three states. Selected project areas are: five districts of Jharkhand (Ranchi, East Singhbhum, West Singhbhum, Khunti and Sarakela – Kharsawan); three districts of Chhattisgarh (Jashpur, Raigarh and Sarguja) and seven districts of Orissa (Kalahandi, Koraput, Gajpati, Raygada, Kendhamal, Malkangiri and Nawrangpur). Main programme components are:

1. Beneficiary Empowerment and Capacity Building
2. Livelihood System Enhancement,
3. Production Systems Enhancement and

Land and Water Management Initiative of the programme formed the core of the livelihood resource enhancement in all the three states. The programme benefited nearly 75,000 households under the Jharkhand-Chhattisgarh Tribal Development Programme or JTDP/CTDP (the Chhattisgarh part of the programme or CTDP has been closed since 2010) and 40,000 under the Orissa Tribal Empowerment and Livelihoods Programme (OTELP).

Land and Water Management (LWM) under the programme included land development for enhancing land utility and productivity, checking land erosion, harvesting rain water, equitable distribution and use of water, improving irrigation system and potable water supply. All land and water activities are planned and implemented on sub/micro watershed basis by Watershed Development Committees, Gram Sabha Programme Executive Committee (GSPEC) in Jharkhand and Chhattisgarh and Village Development Committees (VDC) in Orissa. Wage earning for the rural poor and simultaneously creating rural infrastructure assets with the support of WFP food rice grains as ‘Food for Work’ has been an attractive feature of the programme.

Assets created under the programme included construction of new and repairs of existing water harvesting structures (WHs). These, LWM activities significantly changed the entire water regime of the treated lands and brought large areas of hitherto uncultivated agricultural land under irrigated agriculture and already irrigated areas under double/triple cropping. This benefitted several thousand households (hhds) who expanded their livelihood sources. The programme also created a Village Development Fund (VDF) to support the repair and maintenance of the assets formed. The overall goal of LWM interventions is to address food and nutrition security of the target groups through enhanced agricultural productivity and efficient water management. Studies conducted at the village and watershed level confirm the higher level of appreciation and awareness of the programme benefits among the communities and their strong resolution to continue the activities beyond the project life.

Key Results and Outcomes

Land and Water Management interventions in the programmes have been significant. Changes in the acreage under crops as also under irrigation, production and productivity, availability of food for longer period, enhanced income, in addition to overall improvement in the local environment are the obvious outcome of the programme.

### Jharkhand

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area under cultivation prior to LWM activities (hectare)</th>
<th>Area under cultivation after LWM activities (hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>5456</td>
<td>8186</td>
</tr>
<tr>
<td>Pigeon Pea</td>
<td>546</td>
<td>1364</td>
</tr>
<tr>
<td>Groundnut</td>
<td>272</td>
<td>682</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1091</td>
<td>4093</td>
</tr>
</tbody>
</table>

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**Recent publications**

**Agriculture-Pathways to Prosperity in Asia and the Pacific**


**Events and missions**

1. **Mid-term Review of the Post-Tsunami Sustainable Livelihoods Programme (PTSLP), 1-19 September, 2011**

2. **Joint Review Mission of Tejaswini Rural Women’s Empowerment Programme, (TRWEP) Madhya Pradesh, 4-14 September 2011**

3. **Project Completion Validation Mission of Chhattisgarh Tribal Development Project 4-10 September, 2011.**
Chhattisgarh

<table>
<thead>
<tr>
<th>Crop</th>
<th>Cropped area (hectare)</th>
<th>Cropped area (hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>191533</td>
<td>210886</td>
</tr>
<tr>
<td>Chick-Pea</td>
<td>3055</td>
<td>3207</td>
</tr>
<tr>
<td>Groundnut</td>
<td>5750</td>
<td>6037</td>
</tr>
<tr>
<td>Vegetables</td>
<td>8920</td>
<td>13380</td>
</tr>
</tbody>
</table>

Productivity increases (per ha) in Jharkhand and Chhattisgarh varies from 20 quintals to 47 quintals in Paddy; by 8 quintals in Pigeon Pea and by 5 quintals in Chick-Pea, from 9 quintals to 18 quintals in Groundnut and from 40 quintals to 125 quintals in vegetables.

Orissa (Koraput)

<table>
<thead>
<tr>
<th>Area under cultivation prior to LWM activities (hectare)</th>
<th>Area under cultivation after LWM activities (hectare)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td>428</td>
</tr>
<tr>
<td>Pulses</td>
<td>106</td>
</tr>
<tr>
<td>Oil seeds</td>
<td>272</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1027</td>
</tr>
</tbody>
</table>

Apart from overall increases in cultivated acres and crop productivity, significant impacts in terms of livelihood resource enhancement have been noted at the village and household level (as depicted under the case study and household survey). In Jharkhand, HH average income increased from INR 3,500 – INR 8,100 (US$ 78-180) from Agriculture; and from INR 4,300 to INR 5,400 (US$ 96 – 120) through wage labour. In addition, fisheries and livestock provided INR 3,000 (US$ 67) and INR 1,000 (US$ 22.2) respectively, which were ‘nil’ during the pre-project situation. The availability of food has gone up from 4-5 months to the whole year round.

In Chhattisgarh, the project impact has been more impressive as average agricultural income rose from about INR 4,000 (US$ 89) to a high of about INR. 60,000, (US$ 1333), mainly from leguminous and oil seed crops. Wage labour income showed a reduction from an average of INR 9,450 (US$ 210) to INR 5,145 (US$ 144) as the agricultural operations absorbed the bulk of time hitherto employed to wage labour. Availability of food period increased from 3-4 months to the whole year under the project. Safe and sufficient drinking water availability is an important benefit of the programme. Apart from production and income increases from food crops, Non Timber Forest Produce (NTFP) has also proved to be an important source of livelihood especially in Jharkhand and Orissa programme areas whereas in Chhattisgarh litchi and pears showed promise as horticultural crops. Medicinal plants and Agro-forestry models based NTFP development offer substantial scope for exploitation in all the three states.

Based on the results of the achievements under the Land and Water Management, as well as keeping in view the current needs and future opportunities, the orientations of interventions in the programmes are gradually focusing towards the followings:

1. **Community based mechanisms for repairs and maintenance of LWM structures:** through an institutional mechanism at the Gram Sabha/Palli Sabha under the aegis of Gram Panchayat at the watershed level with active participation of women in all processes of decision making and activities.

2. **Convergence and linkage with the line departments:** particularly with the activities of key national flagship programmes, to ensure the sustenance of the programme activities. Communities are re-orientated towards formalizing and/or strengthening such arrangements as part of the overall exit cum sustainability strategies of the tribal development programmes.

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5. M&E and RIMS training of Women’s Empowerment and Livelihoods Programme in the Mid Gangetic Plains (WELP MGP) October, 2011

6. Supervision Mission of Agriculture, Marketing and Enterprise Promotion Project (AMEPP) and Market Access and Growth Intensification Project (MAGIP) in Bhutan, 23 October -Nov 12, 2011

7. Inception Mission of JTDP Phase II (15 Nov to 5 Dec, 2011)

8. Joint Review Mission of Mitigating Poverty in Western Rajasthan (MPOWER) 3-22 October 2011
3. **Improved Agriculture through LWM, NTFP and other subsidiary occupation:** offering significant livelihood support is being addressed through technological in growing, harvesting, primary processing and facilitating access to remunerative market. As most high value crops like vegetables, fruits and fish are perishable and require efficient transport, storage and/or marketing system, the programmes are making efforts to address these issues.

4. **Successful technological or engineering approaches to LWM:** adopted under the project are being strengthened further with more biological measures of treatment and development of NTFP (including medicinal and aromatic plants) on Agro-forestry models. Agro-forestry helps carbon sequestration as well, besides contributing to many other environmental values.

5. **Contributing to energy security:** the programmes are also focusing towards energy security at the village/watershed level. The starting initiative would be to promote biogas development at the community level along with solar energy. Successful CBOs present in the programme areas are being assisted in this venture. While solar lights have been introduced in many OTELP programme areas, successful demonstrations of biogas have been done in Chhattisgarh.

6. **Holistic tribal development programmes:** Social interventions particularly health, sanitation and education are also increasingly becoming core components of IFAD-assisted programme interventions in the tribal villages.

**Conclusion**

Land and Water Management activities within the broad domain of watershed development are changing rapidly. Watershed development has now metamorphosed from being a mere soil and water conservation programme, into a multi-dimensional complex discipline, encompassing human and institutional domains, touching and shaping the lives of people in diverse ways.

** Compiled by Vincent Darlong (v.darlong@ifad.org) IFAD ICO, New Delhi **

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**Impact of Training and Interventions in Crop Production and Land and Water Management in the Tribal Areas of Jharkhand and Orissa**

The IFAD assisted Jharkhand Tribal Development Programme (JTDP) and the Orissa Tribal Empowerment and Livelihoods Programme (OTELP) focus on improvement of agricultural productivity crops and livestock to support poor tribal community to be food secure. Both the projects have one common intervention—to establish sustainable agriculture in line with the tribal farming system. There are landless tribal communities in both project areas, whom comprise about 15 % of the rural population. The projects use the watershed approach for development of land and manage water resources and livelihoods in areas where a large chunk of activities are related to land and water management (LWM). The projects train farmers and households in agricultural practices and technologies associated with crop production, forest management and livestock management. This article depicts the impact of training and technologies in crop production practices and, land and water management training and activities on tribal small holder farmers.

**Table 1: First and Second Level Results of JTDP: Crop Production Training, Technology Adoption, and Yield Increase Cumulative in 7 years**

<table>
<thead>
<tr>
<th>Results Indicators</th>
<th>Level</th>
<th>Multiplier</th>
<th>Cum.Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons trained in crop production practices and technologies.</td>
<td>1st</td>
<td>Men</td>
<td>4525</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Women</td>
<td>3716</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>8241</td>
</tr>
<tr>
<td>Persons trained in NRM (land and water management)</td>
<td>1st</td>
<td>Men</td>
<td>1891</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Women</td>
<td>1160</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>3051</td>
</tr>
<tr>
<td>Number of farmers adopting recommended technologies</td>
<td>2nd</td>
<td>Household</td>
<td>5679</td>
</tr>
<tr>
<td>Number of farmers reporting production/yield increase</td>
<td>2nd</td>
<td>Household</td>
<td>3,967</td>
</tr>
</tbody>
</table>
Trainings in Crop Production and Land and Water Management

With sensitivity to existing tribal farming practices and indigenous knowledge, farmers were trained in the use of locally available biomass resources, crop rotation, mixed cropping, organic fertilisers and pesticides, biological control by introducing integrated pest management practices. Trainings, demonstrations and exposure visits were conducted on improved varieties, changes were made in cropping sequences, rotation, and conversion of podu (shifting) cultivation to settled cultivation. Demonstrations were conducted and information was disseminated through IEC materials and by holding field days. Technical assistance was provided to NGOs and grass roots implementing agencies like the Integrated Tribal Development Agencies (ITDAs) in Orissa on agronomy and horticulture. Specific field level trainings were conducted through farmer’s field school with field based crop production training along with study tours.

LWM trainings were conducted to equip community level institutions such as the Watershed Committees to plan, implement and monitor quality and quantity of work. Technically qualified NGO personal were involved in the training process with supervision from the District Programme Implementation Unit. Under OTELP, a LWM fund was constituted to finance the watershed development work selected by the communities. Training for holistic planning was provided wherein both physical structures and agronomic solutions were planned to develop financially viable interventions aimed at increasing productivity and income of farmers. Specific training programmes on various aspects in watershed management were conducted.

Results and Impact of Trainings and Interventions in Crop Production and Land and Water Management

Figure 2 shows the first level results of training inputs and activities where the number of persons trained in NRM declined over the years while the number of persons trained in crop production peaked around the eighth and ninth year of project implementation in JTDP. The number of people reporting adopting recommended technologies and those reporting increase in
production/yield overshot the targets set during appraisal (see Figure 2). It was also found that there was a strong positive correlation between people trained in agriculture production practices and people reporting increase in production/yield and also a similar correlation between people adopting recommended technologies and increase in production/yield.

94% households in the project area reported having cultivable land and 68% farmers started using irrigation system and of these 10% were farmers growing high value crop. The cropping pattern in both the project areas had been changing over the years and after JTDP intervention, farmers have adopted new agriculture techniques learnt during the trainings. 54% households have reported increase in crop productivity due to project activities and 85% reported improvement in crop production area due to LWM activities (see Figure 3). Better LWM has encouraged 24% of the farmers to adopt Systematic Rice Intensification (SRI) techniques and try new paddy seed varieties. Water harvesting structures have been created in private and community land by the project, and irrigation systems have been adopted by farmers. 37% households reported that the size of irrigated area has increased and out of these 33% household have attributed the increase in size of irrigated area to project activities in LWM.

It was towards the end of 2004 that OTELP was launched covering 50 odd villages from 3 gram panchayats. Series of meetings/sensitisation camps were organized at the community level sharing the participatory process of program implementation. The main source of livelihoods in these villages is agriculture and wage labour. Most of these tribal families are totally dependent on farming in their own land, or as share croppers and their income is directly dependent on the productivity of their agricultural crops. The project intervened by providing training in crop production and technology and also trained and facilitated the implementation of LWM activities. A number of men and women have been trained since 2006 in crop production practices and technologies in agriculture crop production and practices, which has exceeded the target set during project appraisal.

The annual outcome survey conducted towards the end of 2010 showed that 55% of the families have reported an increase in productivity of agricultural crops during the past year. 82% of these families have also acknowledged this increase in productivity due to program interventions related to agricultural productivity. There is a small correlation between increase in crop productivity and increase in irrigation area. The inherent productivity of the land is very low and is of poor quality, and crop yield on an average is lower than the coastal areas of the state. OTELP intervened by reclaiming the non-cultivated lands as these lands are normally owned by the poor tribal communities. The project has created water bodies, irrigation canals and micro irrigation systems to increase the potential of irrigation in the project villages. These activities have provided ‘life-saving’ irrigation during the kharif season when these areas go through a dry spell of 10-15 days while the rest of the country receives rain. With availability of water, the farmers are doing a second crop in the winter season. 47% farmers reported an increase in crop production area of which 74% attributed this to program activities. The survey also found that 90% of farmers reported increase in irrigated area.
**Sustainability of Land and Water Management Interventions Related to Production**

In order to manage land and water for cultivation, watershed management groups were formed in JTDP and a relatively large number of user groups were formed in OTELP. The watershed management groups are apex bodies involved in the overall management of watershed activities covering more than one village. The watershed group ensures that all LWM activities are undertaken and completed and supports beneficiaries to manage funds and work during the cultivation season. On the other hand, user groups are linked to one asset related to soil and water management from which they benefit during production activities; and these groups are responsible for maintenance of the asset, so they collect user fees for maintenance to manage and maintain the asset. These institutional arrangements have also ensured that production activities can go on unhampered in the watersheds.

**Conclusion**

The provision of training in crop production practices and technologies and training in LWM along with LWM activities have had the following impact:

- With the increase in irrigated land the crop area increased. The training in crop production and practices supported the farmers to adopt recommended technologies and transformed mono cropped areas to double cropped areas.
- There has been an increase in production and yield in both food crops such as irrigated paddy in Jharkhand and cash crops and food crops in OTELP.
- The best practice gathered from the above results shows that in areas where poor reside with low crop yield due to unproductive soil and lack of irrigation water, LWM training and activities coupled with training on crop production practices and technologies would bring about increase crop production/productivity, which has a direct impact on food security and well-being, considering that climate and socio-political conditions remain favourable.

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**Restoring Degraded Jhumland through Community Biodiversity Conservation: Encouraging Results from NERCORMP in Northeast India**

**Introduction**

In a typical upland tribal community of Northeast India, maintenance of village or community reserve forests are part of the traditional practices. However, in recent years, many of these good traditional practices have been influenced by other overriding development initiatives and challenges. Privatization of community forests along with expansion between horticulture and cash crops became part of the development initiatives. In such a scenario, the IFAD-assisted, The North Eastern Region Community Resource Management Project for Upland Areas (NERCORMP), a joint project IFAD and Government of India demonstrated with encouraging results, the way to restore, and rejuvenate new initiatives in community forest and biodiversity conservation in the region.

NERCORMP was implemented during 1999-2008 in 3 of North Eastern, viz. Assam, Manipur and Meghalaya covering 2 districts in each state. A total of 860 villages were covered under the project which benefited almost 40,000 tribal households. The overall objective of the project was “To improve the livelihood of vulnerable groups in a sustainable manner through improved management of their resource base in a way that contributes to protecting and restoring the environment.” To achieve the objective, the project interventions included strengthening of community institutions, rural infrastructure, rural microfinance, natural resource management and economic activities for income generation. NGOs participated as partners in the programme implementation in all the districts.

While the importance of community involvement in forest management has gained widespread acceptance in the forest sector nationally and globally, it is critical in the Northeast where rural villages and communities legally own the vast majority of upland forests. By empowering and enabling the communities in conjunction with the traditional institutions and building modern management capacities within them, it is possible to propose new conservation initiatives, particularly to restore degraded jhumland (shifting cultivation land) and forest landscapes.
Community Biodiversity Conservation

One of the key achievements in natural resource management has been in community based biodiversity conservation. The communities in the programme areas were largely dependent on shifting cultivation, locally known as jhum, for their livelihoods. Decreasing jhum cycle from more than 10 years to about 4-5 years in operational areas resulted in high degradation of natural resource base, particularly the forests under community management. Through a series of social mobilization processes using participatory rural appraisal (PRA) tools and techniques along with organizing and capacitating the communities, have formed them into Natural Resource Management Groups (NaRMGs). With active support from local village authorities and traditional village institutions, the NaRMGs prepared their own Village Resource Management Plan. These are actions plans for a mix of social and economic interventions including income generating activities, village infrastructures and natural resource management for protection and improvement of local forests, water resources and biodiversity.

These initiatives resulted in the restoration of degraded jhum fallows and creation of a wide range of community conserved areas. Many of the degraded forest patches, fallow regrowths and degraded jhum areas with forest recovery in critical locations, such as water catchments, have been declared as community forests or community biodiversity conservation areas.

The network of forest and community biodiversity conservation areas or community conserved areas (CCA) in all the six project districts rose to estimated 1835.00 sq km. More than half of these reserves were jhumland, which communities decided to declare as community conservation areas.

Encouraging Results from West Garo Hills

Prior to the project, most households have had no income from such sources. In West Garo Hills District of Meghalaya, notably in the buffer zone areas of Nokrek Biosphere Reserve, the project has been able to create a network of community conserved areas (CCA) over 33 villages. This network of forests formed about 5567.28 ha of community conserved areas. The communities have started appreciating the benefits of these CCAs as these efforts have considerably improved the local environment, besides ensuring better availability of NTFPs, particularly edible vegetables, mushrooms, small timbers, bamboo shoots, leaves for packaging, honey, etc. The communities have also reported marked reduction in the frequency of elephant depredation due to better forest cover thereby ensuring better availability of food plants for the elephants. Furthermore, a number of communities have reported increased additional income through the sales of forest products particularly NTFPs. Case studies at the time of project closure in 2008 showed that sizable households in these villages have started earning average of Rs. 100-120 per week from sale of wild edible plants and other NTFPs in the weekly market.

The communities have also reported overall reduction in jhum areas under their respective villages due to increased awareness and benefits of forest conservation, as well as availability of alternative sources of income. Convergence of the project with NREGA and other schemes of the Government of India and Government of Meghalaya indirectly contributed to the causes of forest and biodiversity conservation in many of the programme villages in Garo Hills.

Initial impact studies done by the project at the time of project closure in 2008 showed encouraging results. Some of the key impacts reported by the communities included:

- A widespread grassroots movement for conservation of natural resources including biodiversity among the communities emerged. It was seen that non-project villages have appreciated such efforts and many of them have joined hands with neighbouring project villages, particularly in Garo Hills, to initiate such community conservation areas.
- Enhanced water retention and discharge with improvement in drinking water supply and irrigation purposes have been reported.
- Quality of green coverage has improved, thereby ensuring re-establishment of native wildlife, including birds and fish in streams/rivers.
• Reduction in incidence of man-animal conflicts (elephant depredation) in certain pockets of Garo Hills where elephant corridors have been created.
• Through better availability of construction materials, firewood, NTFPs, wild edible plants have been ensured.
• Increased awareness and better appreciation by the people on the tangible and intangible benefits of biodiversity conservation and forest reserves by the communities.

In addition, the project has taken up the following initiatives:

1. Registration of Community Biodiversity Conservation areas with the Autonomous District Council in West Garo Hills, according ‘legal rights’ of the communities over the natural resources or forest products, mainly NTFPs and effectively prevent ‘mahal system’ of NTFP collections from such community conserved areas by the District Council. Under the District Council forest laws, the ‘customary rights’ are insufficient to protect the interests of the communities over the forest products.

2. Establishment of strong linkages of the community forest reserves or biodiversity reserves with the Joint Forest Management programme of the government in North Cachar Hills. The programme provides additional fund to such communities for forest management and livelihood enhancement activities.

Concluding Remarks

With NERCORMP II under implementation, it is expected that the initiatives undertaken for community biodiversity conservation particularly in restoring degraded jhumland would be taken up by the project more vigorously. The project is also expecting to explore the possibility of community forest reserves being linked with the carbon credit mechanism focusing on the contribution of such community forests in carbon sequestration and climate change. Besides, NERCORMP may also take up initiation of establishing Biodiversity Heritage Sites under the Biological Diversity Act, 2002 in areas where there are important and unique biodiversity assets. Which could also be linked up with eco-tourism in the region.

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Impact of Systematic Rice Intensification on Area Under Production:
Building the Confidence Level of Communities in the Meghalaya Livelihoods Improvement Project for the Himalayas

Napak Songma is a hamlet in East Garo Hills. The village consists of 93 poor households (HHs). These HHs are largely dependent on subsistence agriculture and livestock rearing for meeting their day to day needs. The main crops grown in their fields are paddy, maize, ginger and mustard. Other crops such as millet, pulses, potatoes, sesame, chillies, turmeric, tobacco, tapioca and sweet potato are also grown. A small percentage of crop surpluses are sold at nearby markets. Seasonal vegetables are mostly grown on the jhum fields surrounding the village largely for household consumption.

The average land holding size of each HH is approximately 5.25 acres. Although almost every HH is involved in agriculture, the low return from the fields makes unskilled labour the main source of cash income. This can be largely attributed to the fact that the production level of both cereal and farm crops are still in the subsistence level. The scope for attaining self sufficiency in cereal, is a dream for most of the HHs. This is reflected in 50% of HHs that access credit regularly to meet their day to day consumption needs.

Table 1. Results of Demonstrations and Trainings Conducted by the Project

<table>
<thead>
<tr>
<th>Results Indicator</th>
<th>Level</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture: Nb. of demonstrations designed &amp; implemented</td>
<td>1st</td>
<td>134</td>
</tr>
<tr>
<td>Agriculture: Nb. of demonstrations adopted</td>
<td>2nd</td>
<td>325</td>
</tr>
<tr>
<td>People trained in crop production practices and technologies (by gender)</td>
<td>1st</td>
<td>5558</td>
</tr>
</tbody>
</table>
Against this backdrop, an effort to demonstrate the System of Rice Intensification (SRI) was first undertaken by the Meghalaya Livelihoods Improvement Project for the Himalayas (MLIPH) in 2007. The objective of this initiative was to improve the cereal security of HHs primarily within Napak Songma with a long term aim of encouraging farmers from other nearby villages to replicate the same. In 2007, 11 farmers came forward to take part in the demonstration facilitated by the Project in close partnership with the Agriculture Extension Wing of the Government of Meghalaya. The farmers agreed to facilitate the demonstration in their respective farms because of a series of sensitisation programmes. These demonstration highlighted the technique and management of the SRI method of paddy cultivation as well as the perceived benefits that could accrue from a well manage SRI farm plot. The demonstration had a strong component of the Farmer Field School concept introduced with the purpose of creating a learning environment in which farmers can master and apply specific management skills based on their existing knowledge of paddy cultivation. The emphasis was on empowering farmers to implement their own decisions in their own fields.

The case study of a farmer from Napak Songma, Mr. Helsingh Marak, is narrated below to exemplify the results of introducing SRI.

The demonstration was introduced in a 200 sq. mts. plot of land against a plot of similar size place under the normal system of paddy cultivation. This new system of rice cultivation has brought about a three-fold increase in the yield. The rice grains are found to be healthier and fuller as compared to rice from the traditional system of cultivation.

Through SRI, Mr. Marak can now expect a two-fold increase in profit from every bigha of land cultivated. Introduction of SRI has also changed the cropping pattern. The encouraging results of this demonstration encouraged Mr. Marak and fellow farmers from nearby villages to replicate and expand the area under SRI. Farmers are now engaged in double cropping using the SRI technique. Rice is now grown between February to June and between July to November as against the practice of one crop in a year. This innovation is a direct result of the discussions between the FFS interactions, leading to a marked improvement in the cereal security of the HHs.

The rate of replication of this technique has been increasing steadily. The area under SRI has now crossed over 25 acres of land as against 2 acres of land initially cultivated, involving over 90 individual farmers. An adoption rate of over 51% in a span of 3 years has been recorded.

Introduction of techniques like SRI, water and fallow management, orchard management etc., have encouraged farmers to increase areas under cultivation. HHs have reported to have increased their area under cultivation from 21% in 2009 to 62% in 2010. This increase in area under cultivation is a result of fielding Master Trainers to handhold the beneficiaries, propagation in use of high value crops and building the confidence of farmers in management of the various technologies propagated by the Project. The positive impact of the various demonstrations in the agricultural sector has encouraged villagers to revert back to agriculture. The percentage of HHs reporting to be involved in agriculture has increased from 72% in 2009 to 85% in 2010. (Annual Outcome Survey 2010)

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Showing Results: Women’s Cooperatives Take Lead in Marketing in Rural Uttarakhand

The Government of Uttarakhand is implementing the IFAD assisted Uttarakhand Livelihoods Improvement Project for the Himalayas (ULIPH), locally known as “Aajeevika” (meaning Livelihoods in Hindi), from October 2004. The project is managed by the Uttarakhand Gramya Vikas Samiti (UGVS), and is supported by a Social Venture Capital Company (SVCC)-UPASaC that provides business development services.

The purpose of the project is to improve the quality of life and incomes of disadvantaged households in a sustainable manner through the promotion of improved livelihood opportunities and strengthening of local institutions that relate to livelihood and social development. The project intends to provide opportunities to create or enhance the livelihoods to the poor households by utilizing the self-help groups (SHG) and developing community institutions, investing in their capacity to take livelihood decisions, by providing a range of support services and linkages.

Results and Impact of Training, Exposure and Facilitation in the Dairy Sub-sector

The project had identified dairy as a potential sub-sector in the livestock sector. The number of persons trained in the livestock sector increased, with men and women reporting adopting technologies recommended by the Project. In 2010/11 there were 38 trainings conducted for 710 participants in the dairy sub-sector to promote collective marketing of milk through the formation of Self-Reliant Cooperatives, incurring an expenditure of INR 9,50,000 (USD 20652.20). Additionally, 17 exposure visits were conducted for the cooperative members within and outside the state, where 300 dairy farmers were sent for exposure visits incurring an expenditure of INR 6, 27,000 (USD 13630.4).

Table 1: Results of Training Activities and Adoption of Technologies in Livestock from 2006-2010

<table>
<thead>
<tr>
<th>Results Indicators</th>
<th>Level</th>
<th>Multiplier</th>
<th>Cum. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons trained in livestock production</td>
<td>1st</td>
<td>Men</td>
<td>14314</td>
</tr>
<tr>
<td></td>
<td>1st</td>
<td>Women</td>
<td>4,304</td>
</tr>
<tr>
<td>Farmers adopting recommended technologies in livestock</td>
<td>2nd</td>
<td>Total</td>
<td>22,456</td>
</tr>
<tr>
<td>production</td>
<td>2nd</td>
<td>Men</td>
<td>20395</td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td>Women</td>
<td>4,109</td>
</tr>
</tbody>
</table>

Impact case I: Marketing of Milk in Nearby Towns Through Cooperative Efforts

In the remote district of Chamoli, a women’s cooperative was organised by the project to enhance women’s role in decision making. This cooperative was established by the efforts of SHGs comprising of 371 women SHG members of six villages. The women members prepared a detailed plan for starting milk procurement from its members. This dairy started working two years ago with 35 litres of milk per day but gradually the quantity of milk increased and now it stands at about 250 litres per day. The federation procures the milk from its members at the rate of INR.20 (USD 0.43) per litre and sells it at INR 24 (USD 0.52) per litre in the market. This amounts to 75,000 litres of milk per year worth INR.1.5 (USD 0.03) million annually.
Overall Impact of Milk Sales in Monetary Terms in ULIPH

In 2010 annual outcome survey, 27% respondents reported increase in herd size due to project interventions. The average annual production increased at the rate of 2.5 liters per day leading to an average annual income increase of INR 20 (USD 0.43)/litre, which is INR 1500 (USD 32.1) per month in the entire project area. The total turnover of milk sales through the cooperatives in ULIPH is around INR 10 lakhs (USD 21,739.11).

Results and Impact of Training, Exposure and Facilitation in Horticulture

Creating Marketing Surplus

The main source of primary income in the project area is agriculture. The annual outcome survey in 2010 showed that 59% are depended on agriculture as a primary source. Initially the project provided training in horticulture, primarily in the area of production practices and technology for off-season vegetables as well as in the collection and harvesting of medicinal and aromatic plants. Table 2 shows that about 14,829 men and women were trained in horticulture. The project also intervened by facilitating market access and linkage. The training and market linkage facilitation increased marketing surplus in the villages and improved market access respectively.

Table 2: People Trained in Horticulture and Farmers Reporting Adopting Technologies in Horticulture

<table>
<thead>
<tr>
<th>Results Indicators</th>
<th>Level</th>
<th>Multiplier</th>
<th>Cum.Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>People trained in Horticulture</td>
<td>1st</td>
<td>Total</td>
<td>14,829</td>
</tr>
<tr>
<td></td>
<td>1st</td>
<td>Men</td>
<td>35265</td>
</tr>
<tr>
<td></td>
<td>1st</td>
<td>Women</td>
<td>3,339</td>
</tr>
<tr>
<td>Farmers reporting adopting technologies in horticulture</td>
<td>2nd</td>
<td>Total</td>
<td>31,926</td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td>Men</td>
<td>3713</td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td>Women</td>
<td>3,713</td>
</tr>
</tbody>
</table>

The annual outcome survey indicated that a total of 97.2% of project households cultivate land for production of which 74.3% households cultivate land for consumption only and 22.8% households for consumption and sale or both. 44% of surveyed households use irrigation system, 91% rear livestock and 46% grow high value crops. 31.1% households reported increase in crop productivity mainly due to project interventions technology and introduction of improved good quality seeds. Out of the total respondents, 45% households reported increase in crop productivity, 69% in crop production area, and 83% in size of irrigated area. Similarly, 65.1% households reported adoption of one or more technology promoted by project.

Organising Small Holder Farmers Through Women’s’ Cooperative for Marketing Agriculture Produce

A women’s cooperative promoted by the project, known as Saptarshi Swayatt Sahakarita is operational in 27 villages of District Uttarkashi. The farmers of this cooperative were cultivating peas but during interactions it was found that they were receiving lesser rates due to lack of access markets where the price offered was higher. In order to mitigate the marketing challenges, the project discussed a plan aimed at capacity building and problem resolution of farmers through the cooperative. As most of the farmers were engaged in pea cultivation, the project provided technical expertise in cultivation and scientific transportation of the produce to maintain quality of produce and reduce transportation loss. The project also supported the federation to set up five collection centres in their clusters. Each centre was provided with a weighing machine which helped the farmers to weigh their produce before transporting it to the market. Tie ups were facilitated by the project with wholesalers in the market. The entire process of collection of the produce and payment schedule (through bank transfer) for an amount of INR 4.49 lakhs (USD 9760.91) was worked beforehand. The cooperative was able to dispatch 11 trucks to the market in this manner. Linkages with aggregators in the value chain have started developing which has led to better returns. The aggregators are also happy to get the produce together and a series of dialogue and discussions evolve in the marketplace to benefit the benefit of the small farmers. This was the first time that women in the region were themselves engaging in marketing of farm produce and the cooperative is confident of sustaining their activities in the future.
Impact of training and organizing farmers for marketing

Trainings imparted to farmers resulted in about 31,926 people adopting recommended horticultural technologies (mainly off-season vegetables) in the project villages. The review of project interventions carried out as part of the Annual Outcome Survey showed that agricultural production and access to markets due to project interventions including training and organisation of farmers was showing an increasingly positive trend.

34% of project beneficiary households reported increase in income from sales of agricultural production as opposed to 27% in non project areas. Of the total project respondents 50.8% reported increased income as compared to 46% in non-project areas, which is evident from the fact that there is ample potential for increasing agricultural income in the hills of Uttarakhand. During the survey there were no formal or organized contracts for selling of agricultural produce and only 22.1% households reported contracts for selling production through informal means like middleman or through federations promoted by the project. 20.1% households reported that physical access to market improved due to project interventions, which were informal linkages initiated in each project district.

Impact case II: Market Linkage of Local Crops to Processing Unit

Farmers of Pragati Cooperative in Tehri district have been producing Amaranth but despite many efforts they could not get better prices for their produce. It was decided by the cooperative members to establish one collection centre in a central location where all the Amaranth could be collected, cleaned, graded and marketed. During the last harvest season in 2010 about 56 quintals of Amaranth was brought and graded from 103 farmers by the cooperative. Meanwhile an agreement was reached between the cooperative members and a large processing unit named Patanjali Gramodyog Ltd. (PAL) for marketing of the produce. After negotiations, both parties agreed to a price of INR 30 (USD 0.71)/kg. The Amaranth was sold to PAL and this effort fetched a net profit of INR 27,800 (USD 604.31) to the cooperative. Encouraged by this initial success in the transaction, the cooperative has also entered into another agreement with PAL for carrying out retail business of their products.

In Summary

The above results and impacts show that experiences of the women cooperatives in marketing of milk, vegetables and MAP products are steadily changing the market dynamics in favour of the poor and marginalised in the project villages. Even though the impact of collectivisation will take some time to mature, the women from small holder agriculture households have become confidence and are gaining experience to deal with agriculture markets.

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SCAMPIS (Scaling up Micro Irrigation System) in OTELP, Orissa: Promising Technologies for Agricultural Productivity and Efficient water Use in Rural India

Introduction

“There are alternative forms of energy; but there are no alternatives to water”. With this overall philosophy, SCAMPIS (Scaling up Micro Irrigation System) was initiated as a project funded by COOPERNIC to IFAD. COOPERNIC is a European sourcing alliance of independent retailers – COLRUYT (Belgium), CONAD (Italy), COOP (Switzerland), E.LECLERC (France) and REWE Group (Germany) – that contributes to sustainable social development since its creation in 2006. The goal of the scaling up micro-irrigation systems project in India, Madagascar and Guatemala (SCAMPIS) is to improve the livelihoods and food security of 30,000 smallholder farmer households, especially women in these countries. To achieve this, the project is using Micro-Irrigation Systems (MIS) and where appropriate, uses Liquid Organic Fertilizer systems (LOF) to address the following challenges of (a) water scarcity and low soil fertility which negatively impact productivity; and (b) providing organic fertilizers to smallholder farmers.

IFAD partnered with International Development Enterprise – India (IDEI) to implement SCAMPIS since 1st April, 2009. IDEI in turns collaborates with IFAD assisted Orissa Tribal Empowerment and Livelihoods Project (OTELP) to implement in two pilot districts namely Koraput and Gajapati in 265 villages covering 10,000 households. Agriculture is one of the major sources of livelihoods in these areas as more than half of their income comes from settled and shifting (podu) cultivation. Climatic condition of these hilly regions put high demands on farm water management. Water is the limiting factor for agriculture production and erratic distribution of rainfall consequent to climate change is often stated as one of the major reasons for food insecurity. Tribal farmers mostly practice traditional varieties of seeds and crop husbandry. Most of them do not apply chemical fertilisers and pesticides and rely on organic farming. On this background, both the low cost products like MIS and LOF are introduced to the tribal farmers having small holdings for adoption and increase of productivity of crops and the income of the tribal farmers.

Major Interventions

Over 2,000 Liquid Organic Fertilisers (LOF) units have been established at farmers’ level. LOF includes vermin wash, pot manure and magic tonic. Products are ready for use in the crop field within 10-15 days after installation of these units. Vermi wash is a liquid plant growth regulator that contains high amount of micro nutrients, enzymes, vitamins and hormones and is used towards boosting farm productivity without incurring additional expenses on chemical fertilizers/pesticides. It is prepared at farmer’s field from the extraction of earthworms in 30 days. The ingredients are cow dung, coarse sand, kitchen waste, two earthen pots and 300-400 earth worms (Eisenia foetida). The Vermi-wash is diluted with water before use. Cow dung and cow urine is used in developing organics

Drum Kit in field operation
like pot manure and magic tonic. Magic tonic is made from cow dung, cow urine, jaggery, curd etc and gets ready in a month. Then it is diluted and sprayed on the crops.

**Results and Impacts**

Micro Irrigation Systems (Bucket kit and drum kit) utilises less water and increases productivity of crops. Drum kits are used in bigger areas of 100 square metre as compared to bucket kit. Marginal farmers are taking the help of these drum kits for irrigating their vegetable crops for increase in productivity. Foot operated surface treadle pump pumps water from surface water bodies (Dug well) from a maximum depth of 8 meters and has an average water discharge of 4000 litres per hour, irrigating more than one-acre area of vegetable and other crops. The pumps are comfortably used by people with a body weight of 35-40 kg. Farmers are able to irrigate their crops at a very low cost. Kharif (July-October or rainy season) crops get 1-2 life saving irrigation in drought situation and get on an average 20% higher productivity than earlier years. In addition, the farmers are able to grow vegetables during winter season. The fruiting time of the vegetables irrigated through bucket kit and drum kit are prolonged as a result of which farmers are getting on an average extra 10% profit as compared to their previous cropping. Besides quality of the vegetables become better and fetches more value from the market.

Now, many families are consuming vegetables regularly and enhancing their diets with the surplus vegetables being sold in the weekly market giving an income of about INR 100 (US$ 2.2) per week. They are able to purchase grocery articles from the weekly market from the income from vegetables. In this process of low cost technological intervention, the nutritional security has also been ensured in the project area.

**Farmers’ Views and their Stories**

New irrigation techniques - treadle pump, drum kit, bucket kits along with LOF are helping farmers attain higher income through increased productivity of vegetable crops. Farmers felt that MIS saves input cost, time and labour towards weeding as this technology pours water in root zone only. Farmers were earlier cultivating only a part of their plot due to paucity of water. They were irrigating land using manual labour resulting in high fatigue with only a small area irrigated. Thus there was
high wastage of water due to conventional irrigation practices unlike MIS. Farmers are observing better growth of plants in case of crops grown through support of MIS. Kausalya Nayak, a woman farmer, is very excited for the preparation of LOF as the manure gives her increased productivity; she calls it a fertiliser plant.

The demonstration of surface treadle pump conducted through the project helped Dulabha to see the ease of using the technology. The project staff explained to him the subsidised rate and other aspects of the technology. Dulabha decided to buy the technology at his field and after brief period of saving money he finally installed one unit.

With high hopes and determination Sukuman Muduli from Khamara village of Nandpur block of Koraput district has installed a drum kit in his field, after getting good return from his field crops using surface treadle pump. The treadle pump has solved his long standing problems like irrigation of vegetables during post rainy season, requiring labour-intensive water collection system by engaging everyone in the family.

Sukuman, aged 60 is still laborious and has covered 0.40 acre for vegetables out of his total area of 3 acres during rainy season. He has a dug well on his field which had a low water table during summer. He decided to grow vegetables in an area of 0.05 acre during rabi season (period October to March) drawing water from his dug well manually. After attending a demonstration programme on use of MIS and treadle pump, he decided to purchase one Surface Treadle Pump and installed it in his well. He doubled the area of cultivation with onion, tomato and chilly. He also purchased a drum kit at subsidised rate and installed it in his field after seeing demonstration and results. Now vegetables form a part of their regular diet. Sukumar is also able to sell his surplus vegetables in the weekly market and gets an income of about INR 100-150 (US$ 2.2 – 3.4) per week. He purchases his grocery articles from the weekly market out of the income from vegetables. After the installation of surface treadle pump the village level mechanic of the project would visit his village regularly and guide him in the maintenance of the equipment. Sukuman is completely satisfied with the outcome of MIS. His son Surendra is also excited and has purchased a drum kit and is getting good results from vegetable cultivation.

Conclusion

Water scarcity and low soil fertility curb the productivity of land cultivated by poor small holder farmers around the world, including in Orissa, and climate change is worsening the situation. Inorganic fertilizers are in limited supply and most poor small holder farmers cannot afford them. SCAMPIS aims to promote technologies that enable farmers and especially women to take advantage of limited water and fertilizer supplies at affordable prices, to boost crop productivity, improve food security and increase income. Needless to say that the SCAMPIS programme demonstrated promising results aiming to bring socio-economic development in the lives of the small holder farmers by giving sustainable solutions. Considering the success of various low cost interventions in the programme areas, OTELP has already started planning to up scale the same to other programme areas through appropriate strategy.

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