

Community Agrobiodiversity Conservation in Orissa
Protecting to prosper

M. S. Swaminathan Research Foundation

Conservation of Agrobiodiversity

India is ranked as one of the 12 mega-diversity-rich countries of the world and is a signatory to the Convention on Biological Diversity (CBD)(1994). Public policy for conservation of this immense biodiversity heritage is on-site (*In-situ*) conservation pursued through National Parks, Protected Areas, Biosphere Reserves and World Heritage Sites and off-site (*EX-situ*) conservation pursued through Sacred Groves, Botanical and Zoological Gardens and Gene Bank.

In the domain of *in-situ* conservation, on-farm conservation by rural and tribal women and men has remained largely unrecognized and unrewarded. These communities continue to possess the traditional knowledge to cultivate, use and preserve a large number of landraces and folk varieties of crop plants and animal breeds. These practices, which are of great value of sustainable food and nutrition security, have so far been sustained without any benefit or reward accruing to the community.

The **M. S. Swaminathan Research Foundation (MSSRF)** is a non-profit, autonomous research and development organization working to reinforce the link between ecological security of agro-ecosystems and the livelihood security of rural farm men and women. One of the major thrust areas of MSSRF is conservation and enhancement of biodiversity, with particular focus on agrobiodiversity, which has been selected and conserved by tribal and farming communities over many centuries. The basic mandate of MSSRF is to impart a pro-nature, pro-poor and pro-women orientation to a job-led economic growth strategy in rural areas, through harnessing science and technology for environmentally sustainable and socially equitable development.

In Orissa MSSRF has attempted since 1998 to recognize community conservation and mainstream it into poverty reduction and enhancement of livelihood security. Orissa, located in the eastern part of India, is rich in biodiversity but its people are mostly poor. The Jeypore tract of Orissa, encompassing the undivided Koraput district is regarded as a secondary center of origin of rice with around 1750 varieties once recorded in the region. It is a region known for its ecological wealth coexisting with poverty, which is sometimes referred to as the paradox of economic poverty in the midst of genetic prosperity. This region also has a rich tribal and cultural diversity. Out of the 62 scheduled tribes in the country, 29 are found in this region. *Kandha, Saora, Bhattada, Bonda, Koya* and *Paroja* are predominant among them. Partnerships have been created for conservation of the genetic diversity and traditional knowledge through an innovative approach, which seeks to make commercialization a trigger for conservation, among the tribal communities in the 17 villages where we are working.

The context

2004 has been declared the International Year of Rice (IYR) by the UN General Assembly. The IYR aims to focus attention on improved production and access to this vital food crop, which feeds more than half the world's population, providing income for millions of rice producers, processors and traders. Yet rice farmers are among the poorest, often subject to risk and uncertainty and struggling for a livelihood. Development of sustainable rice-based systems can help reduce hunger and poverty and contribute to environmental conservation and a better life for present and future generations.

In commemorating the International Year of Rice, the UN envisions rice as the focal point through which the interdependent relationships among agriculture, food security, nutrition, agrobiodiversity, the environment, culture, economics, science, gender and employment can be clearly viewed. MSSRF's ongoing work in Orissa assumes increased significance in this context.

MSSRF Community Biodiversity Centre, Jeypore

The foundation of MSSRF's ongoing work in the region is the revitalization of *in-situ* on-farm conservation traditions and livelihoods systems through conservation of agrobiodiversity, in partnership with local communities. Participatory Rural Appraisals (PRAs), village meetings, exhibitions and other extensive interactions have formed the cornerstone of rapport building with the community and working with them.

Two major innovations of the initiative are: establishing a community Gene-Seed-Grain Bank Continuum to ensure both food security and biodiversity conservation and creation of market linkages to integrate livelihood security with ecological security. Partnerships with democratically elected institutions such as Panchayats (i.e. grassroots elected bodies (locally known as Palli Samitis) which include all adult men and women in the hamlet, have been created to ensure sustainability of the interventions.

Interventions

- Documentation of Traditional Knowledge
- Participatory Plant Breeding
- Local institutions for food and seed security
- Linking primary conservers to the market
- Information empowerment
- Community initiatives for the future

Documentation and Conservation of Traditional Knowledge

Community biodiversity Registers were introduced to document public knowledge associated with local biodiversity so that local communities can benefit from

legislation to protect biodiversity with IPR provisions. The exercise resulted in registering traditional knowledge associated with biodiversity, registering domain knowledge among local people, directly from the field, with the help of resource persons, direct involvement of old men/women in the community, by analyzing folk traditions and myths and study of manuscripts. The registers are now maintained by Community Biodiversity Conservation Corps drawn from among the primary conserver community.

Group Discussion of the existing about 150 landraces of rice found in the region, 102 landraces have been collected and conserved by the local communities with MSSRF's technical guidance. The local community also has wide knowledge of medicinal plants in the surrounding forests. Traditional men and women healers hold an important place in tribal communities. But this knowledge base is deteriorating fast, due to loss of species in the surrounding areas and the impact of modern, scientific medicine system. Conservation of medicinal plants in community medicinal plants garden setup in four villages, has enabled the younger generation less familiar with forest wealth understand the value of medicinal plants in their region. Some landless families have taken up selling of certain medicinal plants and forest products in the local market. This initiative also reduces pressure on medicinal plants in the wild and helps preserve and popularize associated traditional healing methods.

Participatory Plant Breeding (PPB)

The major objective under PPB is to empower people and provide technical inputs for integrated natural resource management particularly of the rich genetic diversity of rice for poverty reduction. The initiative has helped impart and evolve techniques for quality seed selection, and for new 'formal' methods of cultivation to maintain soil fertility and increase crop productivity. The process started with a focus on enhancing the utility of people-preferred landraces (LR) of rice through simple, easily adoptable plant breeding techniques. Scientists and men and women farmers together undertook field evaluation on methods of cultivation of landraces preferred by the community vis-à-vis tribal tradition and scientific practices of cultivation. The realized potential of the latter was found to be substantial. Over the five-year period, the general trend of high yields of landraces has been established and a participatory conservation system initiated. A total of 55 farm families from eight villages have participated in the process and evaluated and multiplied 72 landraces.

The PPB program has educated the farmers on the inter-relation between genetic enhancement and LR diversity. In fact, the program initiated three participatory breeding options, with people playing an active role-hybridization between selected LRs, exchanging varieties across upland, medium land and lowland and introduction of a local variety from Kerala. These were tried on an experimental basis and helped people to understand the value and utility of germplasm and hence their conservation.

The tribal people who were once finding it difficult to meet even their consumption needs from landrace cultivation have now been able to realize high yields that makes it possible to save considerable quantity of grain for sale. Thus PPB as a tool, has formulated a pathway, identified activities in a chronological sequence, and executed them with the consensus of people. The major activities have come a full circle from rich unrefined natural resources, through identifying operational tools and employing them deftly to manage the resource to perceptible gains in the economic and food fronts.

Local institutions for food and seed security – banks with a difference

The Community Gene-seed-Grain Bank continuum is a cornerstone of the approach of promoting conservation while ensuring food security and is in operation in all the project villages.

Gene Bank – Landraces with distinct characteristics are stored for long term, both by ensuring their continued cultivation in the farm and through cold storage at the 'Community Gene Bank' at MSSRF. The seeds of these landraces are accessed for their genetic material and the economic benefit arising from such use will go to the individual or community who conserved the landrace.

Seed Bank – a facility for storage of excess seeds of farmers, which can be accessed during times of seed shortage. The Seed Bank ensures that seeds are available for cultivation even in times of distress.

Grain Bank – a decentralized facility for storage of grain, which can be lent (and returned with interest) to families in need. The Grain Banks ensure food security of the region and also reduce the danger of seeds being consumed in times of stress. Building on the initial external grain corpus support, the community revolves and increases the stock, effectively addressing the problem of seasonal food scarcity. Sustainability of the grain banks hinges on livelihood security of the community.

The three banks have been integrated to support each other. The chain offers both ecological security and livelihood options. Loss of viability of seeds from the seed bank can be met by gene bank samples. The grain bank supplies excess grain as seed and gene material in times of need. These banks are managed by Village councils or *Palli Samitis* and the Panchayats, with support from MSSRF.

Linking primary conservers to the market

High yields from local landraces of rice having been established, their cultivation is being encouraged for sale in the market. Some are sold as grain and others after value addition as puffed rice, or other attractive food items. Awareness about market demand for local landraces with special characteristics like

fragrance, taste, and medicinal properties has been created. Some farm families have been encouraged to take up organic farming, which has reduced the need for expensive purchased inputs and led to a renewal of interest in the cultivation of native variety.

As a result, the area under the local landraces has increased. Marketing of local landraces like *Kaljeera*, *Barapanka*, *Muktabali* and other rice varieties, medicinal plants and organic cultivation have had an impact on local incomes. Kalajeera rice that was identified in PPB trials in the year 2000, sold in a fair sponsored by the district administration of Koraput in November 2003 at Rs. 22 a kg compared to Rs. 10 a kg of other LRs. Work is in progress to promote further production of seeds and grain of Kaljeera rice and marketing under a brand name.

Contour bunds on hill slopes and reservoirs at suitable sites in the foothills have brought back large upland and medium elevation land into cultivation, ensured water availability and created employment opportunities for landless labourers through agriculture, horticulture and aquaculture, creating scope for increased production for the market.

Information empowerment – genetic and legal literacy

Agrobiodiversity is a rich repository of many economically useful genes. The economic content of biodiversity and its public good value is deeply interlinked with the lifestyles, cultural value systems and associated traditional knowledge of the people. The conservation strategies are not restricted to the local community but find an echo at the policy level. In 1994, an initiative was taken to give recognition to the efforts of farmers as conservers and cultivators, resulting in the formulation of the Protection of Plant Varieties and Farmers' Rights Act 2001 (PPVFR) in the drafting of which MSSRF played a major role. In addition to acknowledging the important role played by farmers as cultivators, it also recognizes the role of tribal and rural farming women and men as conservers and enhancers of agrobiodiversity, and legally provides for their recognition and monetary reward.

The PPVFR Act allows temporary ownership rights for specific period on plant varieties to those who develop them including farmers or community of farmers. The biodiversity Act 2002 establishes sovereign right over its biological resources, seeks to promote its conservation and sustainable use and entitlement for equitable sharing of benefits from commercialization of biodiversity or associated traditional knowledge to those communities which had conserved or created them. These scientific advancements and legislative interventions have implications on all communities, particularly farming and rural communities. The Gene Fund, National Biodiversity Fund and State Biodiversity Fund are some of the structures setup under the Acts to reward the primary consumers. The awareness on the role of biodiversity in biotechnology, the entitlements allowed to them by the two legislations and informed public

participation in guiding responsible research in biological sciences are assuming increasing importance.

Folk media like drama and street plays have been used to educate the communities on these issues.

A genetic and legal literacy movement has recently been launched under the banner of Genome Clubs targeting schools, youth, farmers, development functionaries and panchayat members in rural areas to address these issues. These clubs hope to create a cadre of young men and women with functional knowledge on genetics and legislations pertaining to biodiversity and rights of farmers on seeds. They may serve as agents for mass awareness on these subjects.

Reward and recognition

The MSSRF's efforts in creating partnership in conservation of biodiversity and reduction of poverty involving tribal women and men at Jeypore, Orissa was one of 25 projects that were awarded the *Equator Initiative's* Innovative Partnerships Award for Sustainable Development in Tropical Ecosystems at the World Summit on Sustainable Development held in Johannesburg in August 2002.

The *Equator Initiative*, a partnership of UNDP, UN's Global Development Network, IUCN, Government of Canada, and few other agencies, is a global movement committed to identifying and supporting innovative partnerships that reduce poverty through the conservation and sustainable use of biodiversity. The programme is based on the recognition that, while biodiversity losses and poverty are increasing in most tropical countries, indigenous and other local communities are rising to meet these challenges in creative effective ways.

Community initiative for future development

Following the Equator Initiative Award, **Panchabati Grama Unnayan Samiti (PGUS)**, a farmers' association was formed in 2002 by villages working with MSSRF. Panchabati is the old name of Koraput region, Grama Unnayan means rural development. Registered under the Societies Registration Act, the objective of PGUS is to popularize the success achieved with the help of MSSRF in harnessing science and technology to make the villages self reliant in agriculture and food sector. Representatives selected by central village communities of 17 villages constitute the executive body of PGUS. Half of them are women. They have been monitoring the conservation approaches in practice in 10 villages, are organizing training programmes in collaboration with MSSRF on integrated pest management and formal practices of cultivation and have developed good linkages with the district administration. Due to their intervention, some extant but dormant government schemes have become functional in a few villages. PGUS is custodian of the Equator Initiative award amount of USD 30000 (approx

Rs. 13.50 lacs), which is being maintained in trust as a fund for community development. The samit is processing requests from villages to utilize the endowment grant for conservation and development work. The formation of PGUS may be seen as one of the first and finest examples of institutionalization of benefit sharing.

Power of Partnerships

Linkages have been developed with the Orissa State Government Departments (the Fisheries Department, the District Rural Development Agency, Integrated Tribal Development Agency and others) and with international agencies like UNDP and DANIDA to promote cross-project interaction and learning. This process enables information dissemination to interested parties, facilitates transfer of technology and builds capacities to implement such efforts. Other NGOs operating in the region have come forward to replicate some of the activities.

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