THE SOUTHERN NEGROS SUSTAINABLE AGRICULTURE DEMONSTRATION PROJECT

PHASE III

Annual Report
End of Project Report

Submitted to the
Canadian International Development Agency (CIDA)
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Table of Contents

1.0 Project Proponents, Beneficiaries and Development Context

1.1 Project Proponents

Paghida-et sa Kauswagan Development Group (PDG) was established in 1987 in Kabankalan, Negros Occidental, Philippines. PDG aims to empower rural communities to sustain their own initiatives and meet their basic needs and aspirations, to protect and rehabilitate ecosystems, and to work toward a just and sustainable future through social transformation. The organization is currently involved in agrarian reform issues, promoting organically-based sustainable agriculture, strengthening the institutions of people`s organizations, and supporting environmental protection and mining issues. PDG began working with REAP-Canada in 1998 with the aim of expanding their sustainable agriculture outreach in Negros.

Resource Efficient Agricultural Production-Canada (REAP-Canada) is an independent, research, education and development organization based in Ste-Anne-de-Bellevue, Quebec, Canada. REAP has 17 years experience working with farmers, scientists and the private sector to create greater sustainability in farming systems and advance rural development, both in Canada and abroad. REAP-Canada has been working on Agro-Ecological Village development with Philippine partners since 1997 in projects sponsored by the CIDA Partnership Branch Environment and Sustainable Development Program, and USAID. REAP also recently began a 3-year Agro-Ecological Village project in China funded by the Shell Foundation. The organization has a leading expertise in working with communities on sustainable farming and renewable energy systems development through participatory on-farm research and development, and capacity building through the support of farmer-to-farmer training networks. In 1999, REAP-Canada was honored with the International Environment Award for excellence in programming for the Canadian Environmental Network International Program theme of Climate Change.

Collaborating Agencies

MAPISAN is a federation of farmers groups in Southern Negros that was formed in 1993. The alliance consists of 13 farmer associations representing more than 5000 farmers. MAPISAN's main objective is the promotion of organically based sustainable agriculture. The MAPISAN farmer trainer/network assists with the various farmer trainings conducted for the project. Additionally, MAPISAN farmer leaders serve as resource personnel for the cropping systems diversification trial farms.

MASIPAG is a network of farmer's organizations and local communities representing small farmers in the Philippines. MASIPAG strives to empower and improve the quality of life of resource-poor farmers by helping them regain control over seeds and agricultural production systems. MASIPAG assisted in case study documentation, conference organizing and farmer training components of the project over the 1998-2002 period.

1.2 Local context

In the mid-1980s, the island of Negros, Philippines became infamous in Southeast Asia for the collapse of its sugar industry and ensuing food crisis. Many aid organizations were created in Negros during this time, and Paghida-et sa Kauswagan Development Group (PDG) was one of the few to become established in the south. Today, with ongoing agrarian land reform efforts, peasant farmers are accessing land throughout Negros and are expressing an exceptional interest in agricultural diversification and ecological farming methods. Farmers continue to be dependant on cash crops to purchase food produced in other regions. The poverty situation is bleak and periods of poor production or crop devaluation can continue to generate hunger and malnutrition in rural communities.

The environmental quality of Southern Negros remains in a long-term trend of deterioration. The growing population is placing tremendous pressure on the region's diminishing natural resources. The secondary forests are being heavily denuded, both by charcoal producers and by upland farmers clearing land for agriculture, with the island experiencing 95% deforestation. Without significant forest cover, typhoons and El Nino events cause serious environmental damage in the region. The fisheries are being degraded as a result of mangrove clearing, cyanide and dynamite fishing, pollution from mining activities, siltation and over-fishing. Deterioration of the forest and marine resources places additional pressure on agriculture to support the rural population. The agricultural situation in Southern Negros continues to be critical. Severe soil erosion is occurring on upland farms and soil organic matter is declining due to crop residue burning. Input-intensive farming practices make small farmers loan-dependent and vulnerable to vagaries of the weather. For both ecological and economic reasons there is a pressing need to develop more resource efficient farming systems in the region.

There remains a chronic need to diversify agricultural production in Southern Negros. In the lowland areas more than half of the available land is planted to sugar cane, which is grown using high inputs of fossil fuels, synthetic pesticides and fertilizers. Additionally, conventional sugar cane production offers very limited employment opportunities for women, as the work is male-dominated. Moving away from a sugarcane monoculture would reduce the external dependency of communities and minimize the risk associated with relying on cash crops susceptible to global markets for income. Diversified farming systems including vegetable production for home consumption, would increase food security for families. It would also offer more opportunities for the full participation of women in all aspects of food production including planting, marketing and value-added processing. Furthermore, diversification facilitates equitable social and economic progress for farming communities in Southern Negros.

1.3 Project History and Rationale for Phase III

SNSADP programming over the first two years of project funding focused on introducing a range of sustainable agriculture practices to multiple farming communities and beneficiaries through demonstration trials, farmer-to-farmer trainings and the production and distribution of written materials related to sustainable agriculture. Generally, each of these individual components was implemented with success, and provided the following observations:

- Crop diversification is improving the quality of life of families in farming communities by raising income levels, providing a broader range of employment opportunities and increasing food security. Further effort must be spent on developing disease resistant open pollinated vegetables and grain legumes to support continued diversification and seed conservation
- The development of ecological sugar cane, rice and corn production systems is of paramount importance in Negros for soil fertility improvement, maintenance and erosion control
- Farmer to farmer trainings are an effective way to relay information about sustainable agriculture
- Farmers require access to low cost tools to implement sustainable agriculture

The first two years of SNSADP programming benefited communities by improving farming practices, however, project staff and beneficiaries proposed that programming could be strengthened in Phase III to create an even greater impact. To further promote a holistic development approach, the partner organizations and project beneficiaries agreed that efforts should be concentrated to help a smaller number of communities fully integrate sustainable farming practices into their lives. This would ensure community farmers would not only receive basic trainings on ecological farm management, but also allow for specialized high-level trainings on specific practices and techniques. This would also provide for thorough on the job coaching and in-depth cross-site visits. Furthermore, this approach would facilitate efficient use of project staff by enabling them to focus their time and energy on a few specific communities instead of dispersing it among several sites.

The third phase of project funding aimed to develop both the ecological and social infrastructure of communities in an integrated way by establishing 2 Agro-Ecological Village demonstration projects in two communities of agrarian reform beneficiaries. It also continued to support farming systems improvement through the support of the MAPISAN farmer to farmer training network.

1.4 Agro-Ecological Village Sustainable Community Development Model

An Agro-Ecological Village is described as a community that is largely self-reliant through the creation of diversified and integrated ecological food and energy systems. Central to this approach is the conviction that ecological land management and sound community organizing form the basis for sustainable community development.

The Agro-Ecological Village Sustainable community development model was conceptualized through 2 years of continuous improvement to the SNSADP project design. Phase III was designed to demonstrate this new model in two agrarian reform communities. Due to its ease of adoption and replication, the Agro-Ecological Village could become the basis for a model that meets the dual objectives of poverty alleviation and environmentally sound development, which could be easily adopted around the world. The general characteristics of Agro-Ecological Villages are outlined and compared to conventional approaches in Table 1.

Table 1. An agro-ecological approach to rural development

	Conventional System	Ecological System
	• *Emphasizes export markets to pay for imported goods* • *Approach leaves communities vulnerable to external forces* • *Degrades natural resource base locally and increasse greenhouse gas emissions*	• *Emphasizes self reliance & empowerment through maximizing on-farm resource utilization* • *Market development oriented towards import displacement* • *Minimizes human impact on local environment & biosphere*
Food Supply	Much food imported into community including rice (through loans), canned and dry fish, meat, pop, noodles, crackers, etc, imported livestock feeds	Internal and plant based, emphasizing farm fresh production of in- season vegetables, rice, corn, root crops, fruit, fish and eggs
Soil preparation and transportation	Tractors that need maintenance and replacement, and are fueled with diesel and gasoline	Carabaos (water buffalo) that reproduce
N Fertility	Purchased urea fertilizer	N fixation through trash farming, nitrogen fixing legumes, azolla, mudpress, soil mineralization, carabao dung
Minerals	Purchase Potassium and Phosphorus fertilizer	Minimal erosion, recycling of rice hull ash and mudpress, carabao dung, good soil structure
Seeds	Purchased hybrid seeds, no local adaptation trials, seeds derived from corporations, transgenic seeds being developed	Community seed banking of open pollinated seeds, new seeds assessed in trial farms, ongoing on-farm plant improvement
Weed Control	Herbicides and tillage	Mechanical weeding devices, crop rotation, good soil fertility management, mulch farming
Insect control	Insecticides	Biological control strategies, resistant cultivators, balanced fertility
Disease Control	Fungicides	Resistant cultivators, diverse cultural management strategies
Irrigation	Gasoline/diesel powered pumps	Modest requirement and efficient usage, provided by alternative water supply options
Crop drying	Fossil fuel powered crop dryers	Uses solar or biomass energy
Marketing	Monoculture production emphasized and sold to distant markets in the country or exported	Emphasizes internal self reliance first, then import displacement in local markets and value added processing
Household cooking	LPG fuel stove, open fire cooking, kerosene as fire-starter, fuelwood gathered off farm or purchased	Rice hull cookers, efficient wood stoves, biogas, all biofuels derived from the farm
Electrical power	High requirement and from fossil fuel based mega-projects	Low requirement, renewable sources explored if feasible
Housing	Cement block housing	Bamboo, farm derived wood, rammed earth

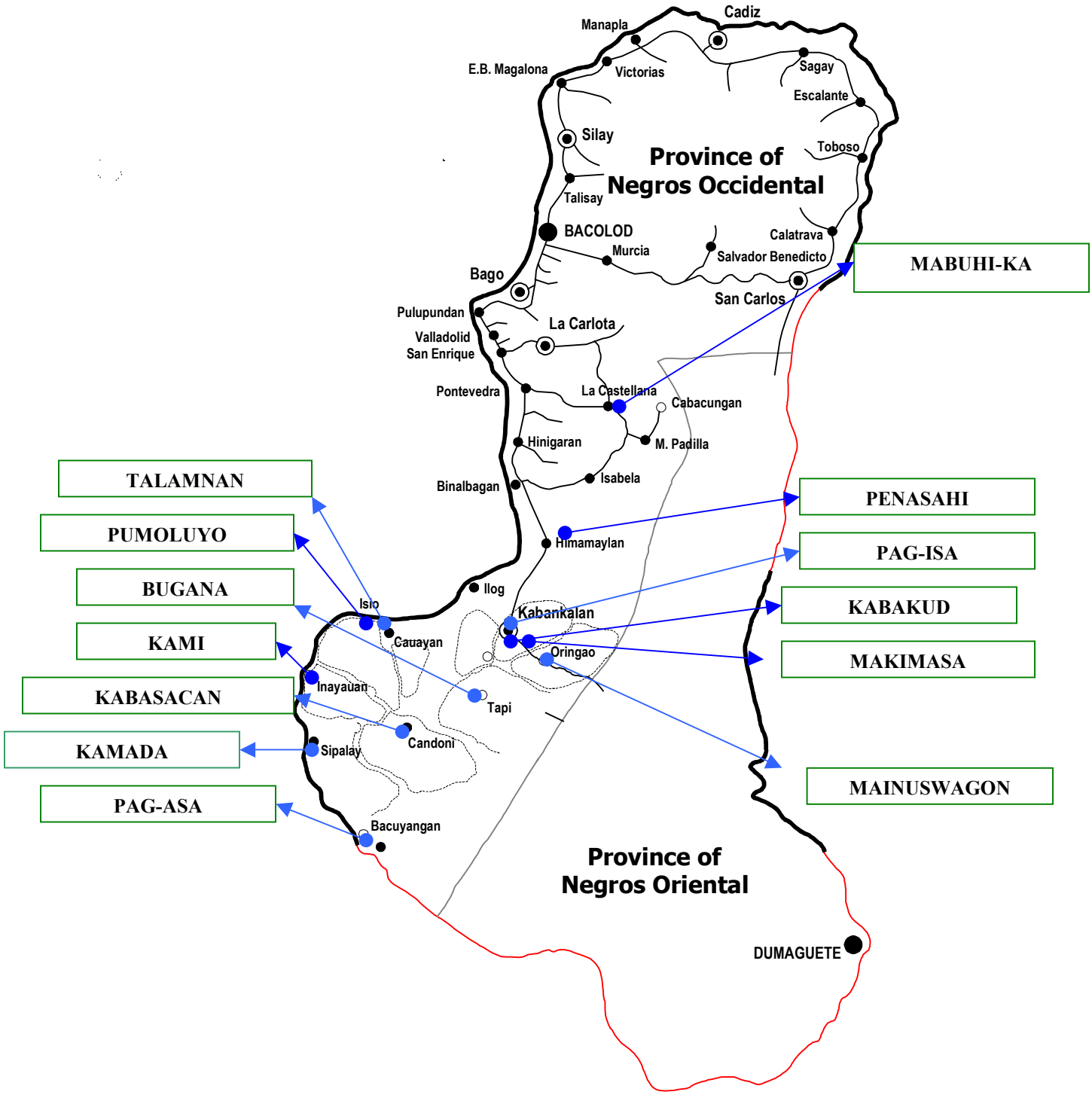
Over time, a community's adoption of an agro-ecological approach will:

- Empower farming communities to become self-reliant and enjoy a higher quality of life
- Provide farming families with a higher income and minimize household expenses, resulting in reduced indebtedness and greater protection from fluctuations in weather and the market
- Provide farming families with food security and increased access to nutritious food
- Enable more active participation of women in the community by increasing on-farm employment and marketing opportunities
- Minimize the use of synthetic pesticides through organic farming
- Reduce health risks to food producers and consumers
- Reduce community dependency on external inputs and imports
- Ensure the long-term productive capacity of the land for food production
- Improve surface and ground water quality and quantity
- Help protect and restore biodiversity
- Decrease greenhouse gas emissions through reduced fossil fuel use and minimal crop residue burning

1.5 Project Engagement

The Southern Negros Sustainable Agriculture Development project engaged farmers and communities in Negros Occidental, the principle sugar-growing region of the Philippines. Small farmers throughout Negros and Panay were involved in the project through farmer trainings on sustainable farming systems through the MASIPAG training network. Phase I of the project directly involved the 13 Farmer Associations in the MAPISAN network, interacting on a broad level throughout many communities. Phase II still involved these associations but focused most project activities in the communities of Flora, Carmin, Isio, Bunga, Masulog and San Antonio. Phase III of the project was newly focused on the agrarian reform communities of Tapi and Bajay, involving farmer federations Bugana and Penasahi respectively, located near the city of Kabankalan. Please refer to Figure 1.

Fig.1: Locations of MAPISAN farmer federations in Negros



1.6 Project Beneficiaries

The direct beneficiaries of Phase III of the SNSADP project were approximately 100 families in two communities in Negros, one in the upland community of Tapi, the other in the lowland community of Bajay. As former hacienda workers, they were accustomed to growing sugar cane, the dominant cash-crop in southern Negros. However, now these communities have secure land tenure, a moderate degree of community organization and a deepening interest in sustainable agriculture and farm diversification. A profile of the gender and age breakdown from a typical Kabankalan-area farming community is provided in Table 2.

Table 2. Kabankalan Farming Community Profile	
Number of nuclear households	73% of families
Average age of household heads and spouses	43 years
Number of household members	3.9
Education level of household head and spouse	
Primary Grade	18.6%
Intermediate	45.7%
High school	12.9%
Graduate of high school	8.6%
College	1.4%
Average yearly gross income of the family	C$700

Source: PDG-PDAP Survey of Kabankalan PPSE sites, 1997

Other beneficiaries included the 5000 southern Negros farmers in 13 farmers federations that together form the MAPISAN Alliance. They participated in sustainable agriculture trainings and on-farm research. The project also strengthened PDG and the MAPISAN Alliance by enhancing their capacity for development programming.

2.0 Project Goals, Objectives and Components

2.1 Project Goals

The goals of the Southern Negros Sustainable Agriculture Development Project are as follows:

1. To improve food security through food production self-reliance
2. To reduce external agriculture inputs including fossil fuels, synthetic pesticides and fertilizers
3. To promote farm diversification to provide a more constant flow of income
4. Improve gender equality in agrarian communities
5. Actively rehabilitate the natural resource base and minimize greenhouse gas emissions through the adoption of ecological farming practices

6. Increase awareness and responsiveness of Canadians to the challenge of creating sustainable development in southern countries such as the Philippines.

2.2 Project Objectives

The initial objectives formulated in Phase I of the SNSADP project involved the documentation of existing agronomic systems and indigenous ecological farming practices, demonstration of diversification, including grains and legumes on 4 trial farms, support of the existing MAPISAN farmer training network and integrating knowledge of sustainable agriculture into the local communities. Over the course of the project, the goals and objectives became much more concrete and specific, eventually evolving the Agro-Ecological Village Sustainable Community development model in Phase III.

The following objectives were stated for Phase III and cumulatively for the entire project:

To identify and assist two farming communities to begin the transition to Agro-Ecological Villages. The provision of organization, financial, education and technical support to assist the development and demonstration of cropping system diversification, farm ecologization and rural community empowerment through:

<u>Community Organizing / Project Planning</u>

- Initial selection of 2 communities and their orientation/Vision Mission Goals Objectives (VMGO's) for the project
- Organizing project implementation and ongoing strategic-planning for project success
- The completion of a Participatory Rural Appraisal to determine the needs of each community, and establish baseline data describing initial conditions
- Ongoing community organizing and activity development

<u>Crop Diversification</u>

- Development of 10 diversification trial farms in each of 2 agrarian reform communities introducing vegetables and grain legumes, demonstrating ecological sugar cane production through trash farming and demonstrating corn production through intercropping, and employing sustainable agricultural practices including organic MASIPAG rice production and sustainable agro-forestry
- Establishment of local seed bank and nursery
- Farming Diversification planning process completed for approximately 100 families.

<u>Micro-financing</u>

- Micro-finance support for approximately 100 families

Farmer outreach

- Training 700 farmers on sustainable agricultural practices
- Trainings including 30% women participants
- Creating training modules for ecological farming

The project also aims to see that these objectives are carried out in a manner that integrates and builds up the social, technical and ecological infrastructure in the community to create lasting, holistic development.

3.0 Project Activities and Outcomes

3.1 Community Organizing / Project Planning

One strategy of the Agro-Ecological Village development model is to empower and more effectively use community organizations in rural development. Community organizations create a social infrastructure that ground project activities in farming communities. Encouraging the efforts of farmers to work together to address local problems is critical to encouraging effective and low cost rural development. Farmer organizations link farmers in different communities in obtaining information on farming techniques and the latest agricultural trends, sharing equipment or post-harvest facilities and provide support and learning. They also facilitate cooperation with local government units, and support marketing efforts through the creation of farmer co-operatives. Community organizations enhance the ability of local farmers to take a more active role in the community's development process.

Capacity building in agrarian communities should be understood as an ongoing process, cross-cutting issues in all project components. The main aspects of the capacity building process are:

- Increasing farmers' capacity to analyse their local environment and apply ecological principles to their farming methods.
- Institutionalise approaches of mutual learning, support and information exchange within the local community
- Institutionalise approaches to network information outside the community

Through the three phases of the SNSADP development, the community organizing and strategic planning aspects of the project continually gained importance and refinement. In Phase I, the project began working through the existing MAPISAN training network, supporting trainings and trial farms throughout the province. Phase II also involved the federations of the MAPISAN Alliance, and increased the community building in 6 focus communities. The project also developed a team to implement specific project activities in these communities. In Phase III, the project had matured to develop a large experienced team of local people who continuously strove to develop project activities and technology/information transfer networks in their own communities, and throughout the province.

3.1.1 Project implementation and strategic planning

Effective preliminary organization and ongoing planning and assessment are critical for the success of any project. At the onset of Phase III, initial activities included the selection of the committee members for the Project Implementing Teams (PIT) and core groups in each community. A project coordinator, technical officer and technical writer were chosen as the core project implementing team members. In addition a Project Technical Team (PTT) for each community was formed including a community organizer, project officers and other assisting members. These groups were then strengthened by deepening their awareness of project goals and overall social orientation through regular meetings. Throughout the project, the team groups and PTT regularly met on a monthly, quarterly and semi-annual basis to assess and evaluate team accomplishments, formulate and design strategic planning, and define explicit plans for implementation.

Community farmer organizations played a key role in implementing the project and held responsibility in managing the farmer trainers and trial farms. In Phase III, the project PTT worked in coordination with organizations sharing the objectives of promoting sustainable agriculture, social awareness and the empowerment of rural communities, to undertake ongoing project activities: MAPISAN farmer alliance, the BUGANA federation and the PENASAHI federation.

3.1.2. Selection of communities and project orientation

The third phase of the Southern Negros Sustainable Agriculture Development (SNSADP) Project focused primarily on the establishment of 2 Agro-Ecological Villages in two agrarian reform communities, which is in contrast to the previous two years. In Phase I, SNSADP project activities, including trainings and trial farms, were generally spread throughout Negros. In Phase II, activities were concentrated in 6 communities but the project still involved other groups across Negros. To maintain a holistic approach to development in Phase III, the partner organizations and project beneficiaries agreed that efforts should be concentrated in two communities. This would most effectively integrate sustainable long-term farming into their daily agricultural practices by enabling project teams to invest their time, energy and individualized attention directly with the people of the communities. Consequently this ensures a greater overall impact and the long-term adoption of sustainable agriculture.

The two sites selected were the communities of Tapi and Bajay in Negros Occidental. Tapi is home to the association of Mabuhi-pa, and Bajay hosts the Mabakod, Panguma and Sagana associations. Please refer to Table 3 for the profiles of these communities.

Table 3: Phase III Community Profiles

Region	Association	Number of members	Land Base Area (ha)
Tapi	Mabuhi-pa	33	60
Bajay	Mabakod	16	20

	Sagana	18	28*
	Panguma	37	21*
	Bajay Total	71	69
	Total	*104*	*129*

* The most recent information available indicates that these associations were awaiting the processing of additional lands by the Department of Agrarian Reform. The Sagana association was anticipating the possession of 17 ha of land, while the Panguma association was awaiting possession of 21 ha of land.

The two sites were chosen because their land was previously acquired through the Comprehensive Agrarian land Reform Program (CARP) of the Philippine Government. The communities have also undergone a moderate degree of organization and have established associations necessary to ensure they have the capacity to benefit from the trainings and development involved in the project. Both Tapi and Bajay historically cultivated over 80% of their lands to sugarcane, the dominant monoculture crop in southern Negros. These two farming communities are located in the upland areas of Southern Negros, where there are low fertility and eroded soils, and they face serious environmental pressures including deforestation. The communities have also experienced chronic poverty, a limited diet and an unreliable food supply.

At the outset of Phase III, an orientation was held to introduce the communities to the project. Discussions covered the project components and framework, goals, management and implementation. Each community then underwent organizational development where the needs, constraints, and resources of the members were analyzed, and their goals, visions and strategies outlined. The associations elected officers to form a steering committee to facilitate farm management decisions, and oversee the implementation of farm plans and work activities. The community associations then began planning for the ecologization process. This involved assessing their resources, identifying barriers, problems, alternatives and options, creating a plan of action, and assessing the need for appropriate farm technologies.

Each community also underwent a social orientation, which included an introduction to important socio-economic issues such as national governmental policies, agrarian reform, social services, agricultural subsidies, free markets and free trade, feudalism and imperialism, patenting and genetically modified organisms and globalization. Considerations relating how these issues directly and indirectly affect each particular community were integrated in the orientations. Discussions also included the history of the Philippines and its long-lasting colonization, the socio-economic status of the population, and principal concepts to help the Filipino community. Subsequently, this information was disseminated into the communities by the project teams and community leaders in a more formal Basic Analysis of Social Orientation (BASO) session. These steps were taken to ensure that the communities fully understood the issues affecting them and are aware that the project is an investment to improve their well-being, not just a source of capital for temporary relief. Additionally, it was important that the community farmers be made aware that they have a choice in what they produce on their farms. They were encouraged to make informed decisions by considering the marketability of crops and how that can be affected by local and global events.

3.1.3. Participatory Rural Appraisal (PRA)

The Participatory Rural Appraisal (PRA) approach was utilized to emphasize local knowledge and enable local people to make their own appraisal, analysis, and plans. It was designed to facilitate and strengthen the capacity of farmer associations in each community. A PRA was carried out during the initial project orientation to establish preliminary conditions and determine the specific needs of each community. Detailed interviews/surveys were conducted in individual households to collect quantitative data and determine the baseline social, economic, health, and farming conditions within each community. Efforts were made to ensure that these families were representative of the larger group of agrarian reform beneficiaries in terms of socio-economic status, household size, education level, farming experience and land ownership. Information collected from these surveys has been used to record individual needs and concerns, and can provide feedback through which programming can be improved.

Information collected from these families included:

Socio-economic indicators

- Household Profile (age, sex, religion, civil status, education, occupation, relationships)
- Family income levels and primary capital generating activities
- Credit sources and use of funds
- Household expenditures
- Food consumed in the home and means of acquisition
- Perceived level of food security
- Household health status
- Housing facilities and household energy consumption
- Gender division of roles at the home, farm and community levels including decision making, financial management and property ownership
- Perception of the community association including basis for support, activities, benefits, participation, response to community issues and hopes for future programming
- Major problems facing the community

Agricultural indicators

- Land tenure and land area
- Crop production, cropping system and crop diversification
- Quantitative measure and availability of external farm inputs including fertilizers, synthetic pesticides and fossil fuels
- Farm facilities including availability of machinery and labor
- Surplus produce, storage and marketing
- Livestock and associated inputs
- Perception of security brought with farm tenure
- Future farm plans

At the time of project cessation, this information had not been processed in written form. It was used however, by project partners throughout Phase III to customize training programs in the communities and to further elucidate the communities problems, solutions, goals and aspirations.

3.2 Crop Diversification

In the first year of SNSADP programming, crop diversification was identified as a major priority for the project. The monoculture production of sugar in Negros was not desirable for many reasons:

- It makes small farmers and communities vulnerable to world sugar market fluctuations
- It reduces local food self reliance and historically has lead to starvation when the sugar industry collapsed
- It is capital intensive and most farmers have to borrow money to finance their crops
- It is seasonally harvested making for poor cash flow and seasonal gaps in employment
- It was leading to poor soil fertility as fields and residues were seasonally burned and the crop intensively managed
- It was not effective at employing women as they did not participate in harvesting, marketing or processing of the crop
- It was heavily controlled by the powerful landlords and elites of Negros

Overall there were several major changes required within the farming systems of southern Negros:

1. To increase the diversity and supply of farm production to improve the food security situation of households and communities.
2. To improve the diversity of farmers incomes sources and improve seasonal distribution of income (to make farmers less dependent on loans)
3. To reduce the cost of production through the introduction and expansion of low external input ecological farming methods
4. To enhance and maintain soil fertility (severe soil degradation was occurring because of land clearing, erosion, burning of crop residues and excessive soil tillage.

The ecological production of corn, rice, peanuts and vegetables (like squash and eggplant) were recognized as being priorities for increasing food self-reliance and could provide more season long income generating opportunities. Diversified farming systems to include vegetable production would increase food security and offer significant opportunities for the participation of women in all aspects of food production including planting, marketing and value-added processing. Diversification is an important priority for the equitable social and economic progress of farming communities in Southern Negros. It can help

stabilize the entire island economy which presently suffers through the "Lean Months" created by the seasonal employment of the sugar cane industry.

The strategy used for vegetable and field crop diversification by the project partners was to follow the MASIPAG rice adaptability trial farm model developed in the 1980's. The approach encourages farmers to receive training on ecological production followed by releasing seeds for testing in adaptability trial farms. Once the farmers have confidence in the ecological production system and plant materials for their farms, they can subsequently scale up production through seed multiplication. In this way, improved plant material and production systems can become widely available to farmers at a minimal cost and at minimal risk to the impoverished small farmers. Once these initial trainings are performed, farmers can then receive training in seed conservation and vegetable and field crop plant breeding training to ensure the long-term survival and improvement of seeds.

3.2.1. Diversification trial farms

Establishment of Trial Farms

The adaptability trial farm concept arose in the 1980's as a response to the need for localized assessment of rice varieties for local conditions. Historically, rice varieties were only tested at specialized research stations, and then certain varieties were recommended to farmers for planting. This caused problems because the growing environment of the Philippines is extremely diverse, ranging from fertile lowland soils with deep volcanic sediments to erosion prone shallow upland soils. As well rainfall varies considerably between regions, seasons and years. It was evident localized testing was necessary especially when crops were grown under ecological management. Thus adaptability trials were established, with some farmers groups testing upwards of 50 different rice varieties on a small area. This greatly aided the farmers understanding of what rice varieties were best suited to the seasonal conditions, soils and cultural management used on their farms. The adaptability trial farm approach was adopted for this project to test different types and varieties of vegetables and grain legumes in test plots in the main sugar producing areas of Southern Negros.

Crop diversification efforts in Phase I included establishing 4 Adaptability Trial Farms testing vegetable and grain legumes. From this a number of vegetables and grain legumes were recommended for further testing and replicating in Phase II. Mid-way through the Phase I project, it was realized that the communal demonstration farms were not the most effective approach at promoting crop diversification. Farmers proposed to modify the effort by placing most of the effort on their individual small farms. This was suggested for several reasons: 1) The maintenance of communal trials required considerable labor from community members (especially for weeding) and the local organizations didn't have the money to pay workers; 2) It required significant levels of organization by community leaders to coordinate the activity; 3) There were also some problems with theft from the fields; 4) Communal trials did not always reflect the soils and

management levels present within a single community. It also appeared to be the case, that once ARB's were exposed to the production of various vegetables some farmers immediately wanted to adopt it commercially on their individual farms. As a result of this feedback, more effort was placed on adoption on individual farms through the transfer and sharing of seeds and information. Nonetheless for the new ARB's, the use of a communal trial farm for one growing season appeared to help them gain confidence and experience in vegetable growing and minimized their risk. It also allowed them to multiply seed, tubers and vegetable cuttings to expand propagation of the materials in the communities. The community trial farm provided an opportunity to share experiences and observations. It also enabled the more experienced vegetable growers to mentor those with less experience. The individual farm trials appeared to generate pride within community members, as members demonstrated that they could commercially grow alternative vegetable crops.

Farmer-to-farmer trainings on sustainable vegetable production, and cross-site visits were also used to help build farmers capacity. In some communities, leading entrepreneurial farmers emerged who developed expertise around the production of crops like tomatoes, eggplant, pepper, bitter gourd and bok choy and they became important resource people for less-experienced farmers. A training session with the leading vegetable farmers was also provided by a faculty member of the University of the Philippine at Los Banos.

3.2.2 Ecological Farming Demonstrations Sites

In Phase II of the project it was decided to expand activities to include demonstrations of ecological crop production of corn and sugar cane to help address the farmers problems of declining soil fertility and high input costs in these crops. Demonstrations on ecological sugarcane (conserving sugar cane field crop residues) and corn farming were made and farmers were encouraged to experiment with different varieties, cultural management and intercropping systems. These were generally done on communal lands of the agrarian reform communities. These generally proved successful but somewhat difficult to manage. One of the major difficulties experienced was that some of the trials were placed in communities which lacked adequate basic organization. The farmer trainer in charge of the project lacked the organizational skills to also address the communities organizational challenges (the communities had no other outside help). It is generally the case that farmer trainers who are technically strong do not also possess strong social skills to organize communities. They also are only half time staff, who have their own individual farms and households to maintain, and who had modest incomes.

During Phase III, it was decided to incorporate adaptability trials and demonstration sites onto individual farms in the two Agro-Ecological Village communities to more effectively support holistic community development. These communities already had some level of community organization and the presence of community organizers. This enabled the farmer trainers to concentrate on technical improvement of the farms and released them from

responsibilities to assist with the organizational needs of the new agrarian land reform communities. Twenty demonstrations sites were established on private farm lands, with two additional test sites established on small parcels of communally owned land. Please refer to Table 3 for the demonstration farms and land area availed for diversification under Phase III of the project. During Phase III of the project, the farms were at different stages of development and employed a number of sustainable agricultural practices including vegetable and grain diversification, organic rice production, agro-forestry, intercropping sugarcane with corn and sugarcane trash farming. Long term farm planning was completed in January of 2002 and farm development commenced during the dry season of 2002 (January, February). Extensive individual farm development was also planned to be undertaken over a period of 5 years, anticipated to be an ongoing and evolving process once the farmers recognize their capacity to manage the land.

Table 3: Demonstration Farms

Region	Association	Farm Area (ha)	# of Farmer Cooperators
Tapi	Mabuhi-pa	27.2	12
		2.5	Communal farm
Bajay	Panguma	2.5	2
	Sagana	0.3	1
	Mabakod	6.9	5
		0.6	Communal farm
	Total	*40.0*	*20 individuals*

3.2.3 Evolution of "Learning Farms"

By the end of the third phase of the project, a new concept was evolving by the farmer trainers that they felt could more effectively use their time and advance the development of the plant materials and farming systems of the region. The concept was to establish a number of "Learning Farms" in each community. This approach was a logical evolution from the previous experiences of running community trial farms and on farm demonstration sites coordinated by farmer trainers. The concept here was for a leading farmer trainer to act as a facilitator in each community or for each organization to coordinate the plant material and farming systems improvement efforts. In this way, the farmer trainer could spend more time working on maintaining and improving their own individual farms while also strongly supporting the sharing of information and plant materials in the community. It also could reduce costs and stress on the trainers as they had more free time available and would be spending less on transport costs to get to distant sites. The farmer trainers felt that ideally in the Philippines there could be one learning farm per community association (roughly 20-50 farmers).

Through this approach, farmer trainers could concentrate on doing more on farm research beyond simply the adaptability trial approach that had been used for 15 years in the area. The approach could broaden development efforts by integrating the ideas of adaptability trials, demonstration sites and

"demonstrations or model farms" as well as on farm plant breeding. It was felt to be effective as it did not make the farmer a "Model Farm" but placed the farmer and the farm at the center of learning in the community. The learning approach encourages the exchange and progression of ideas and the constant observation and assessment by the farmer trainer and others in the community. This process is greatly stimulated from brainstorming sessions which can occur when the community gets together at the farm or during cross site visits that occur when from farmer trainers and farmers come from other communities. The farmer trainers felt the terminology "Learning Farm" was progressive as it did not create an image that the farm was "fully developed or perfect" and did not encourage an arrogant attitude that might be created by the term Model Farm. The farmer trainers felt the terminology was important. They wanted to put the emphasis on the farmer trainer remaining a small farmer operating a commercial farm but for him/her to become the focal point for learning on ecological farming in the community. It was also suggested by the trainers that the learning farm be chosen by the local farmers associations and that the farmer should not only be a progressive farmer but one that is willing to share ideas with others.

Overall we believe this concept to be an important new orientation that is a logical evolution for the development of farmer-led ecological farming systems research and extension. It could enable scarce resources for rural development to be used as effectively as possible.

3.2.4 Implementing vegetable and grain legume diversification

The overall goal of the vegetable trial farm component of the project was to make a wider supply of locally produced, pesticide free vegetables available for home consumption and commercial sale in Negros markets using locally adapted and maintained seeds. From an environmental perspective this reduces exposure to pesticides (encouraging human health and biodiversity) and minimizes use of fossil based energy inputs in the food production and distribution system. For the project beneficiaries, the main benefit of the expanded cultivation of vegetable and grain legumes is the opportunity to significantly increase their food self-reliance and the quality of their diet. It is also one of the few income generating activities that can match sugarcane revenues and has the added benefit of being marketable year round. Increasing capacity to cultivate vegetables thus can improve farmers' food and financial security.

The 4 trial farms established in Phase I tested a total of 18 different vegetable and grain legume varieties, with a number of different selections at each site. From these trials a number of different varieties were recommended for further scaling-up. These included bitter gourd, okra, pepper, squash, watermelon, bush sitao, mungbeans, peanuts, soybeans, carrots, cucumber, and radish.

During Phase II, 6 communal trial farms were established, testing the varieties recommended during the first year. It was identified that there were a number of vegetable crops that are more difficult to grow and require more involved cultural requirements. For new Agrarian Reform Beneficiaries (ARB's) the easy to grow

vegetables offered were the most suitable for ensuring food security. Please refer to Table 4.

Table 4: Relative Ease of cultivation of vegetables & grain legumes by new Agrarian land Reform Beneficiaries

Easy	Moderately difficult	Difficult
Sweet potato	Eggplant	Onions
Okra	Squash	Garlic
Water spinach(Kang kong)	Radish	Watermelon
Taro (Gabi)	Peppers	Tomatoes
Bush beans (sitao)	Pole beans (sitao)	Bok choy (Pechay)
Mung beans	Bitter gourd	Carrots
Cassava	Cucumber	Cabbage
Pigeon Pea		Potato
Peanuts		

After the first two years of experience, the communal demonstration of vegetables appears to be a useful approach for helping new agrarian reform communities gain some confidence and experience in vegetable production. However the new vegetable crops tested and production systems utilized must ultimately be assessed and further improved on an individual farm basis. The SNSADP project helped support this activity not only through the trial farm demos but through trainings, production and purchase of reference materials, and through small tool production (such as rakes, hoes and other weeding devices). PDG staff also supported many of these communities through its institution building processes for new communities.

At the onset of the dry season (January-February) in Phase III, the two communities established 20 demonstration trials on private farm lands, with two additional sites on communal farms. Vegetables planted included disease resistant tomatoes, heat/disease tolerant Chinese cabbage, high protein and nitrogen fixing field crops such as mung beans, green beans, soybeans, stringbeans and peanuts, root crops such as radishes and other crops such as squash, eggplant, bitter gourd, peppers, okra, radishes and bush sitao. On the lowland farms in the Kabankalan area, it was determined that eggplant was a particularly successful crop with a higher market value than sugar cane. Squash and radish production also provided farmers with considerable income and food security. Different varieties of these crops were collected and distributed among the communities to expand their range of crop production.

Farmers were encouraged to explore and develop natural methods of pest control on their farms. A wide range of such practices are now being used, including:

- Planting strips of taro (gabi) adjacent to rice paddies to attract beneficial insects and to lure rice pests to a more preferred crop

- Broadcasting gabi leaves and stems in fields for several weeks after transplanting to lure away the golden kohol snail from developing rice seedlings
- Using rice hull ash from rice hull stoves as an ant repellent for eggplant
- Intercropping eggplant with ginger (farmers have reported the smell of ginger acts as an insects repellant)
- Covering bitter gourd fruit with plastic bags to act as a physical barrier against sucking insects
- Employing hand-pushed rolling rice weeders for rapid weeding between transplanted rows of rice

Farmers were also encouraged to utilize other means of food production on their farms including the construction of fishponds. This promotes biodiversity through a variety of available on-farm habitats while providing a healthy protein source. Ducks can also use fishponds, and can additionally benefit farm ecologization by consuming the golden kohol snail and other pests in the rice paddies midway through the rice cycle.

3.2.5. Development of Ecological Farming Systems for the Major Field Crops

Over the course of the three phases, efforts were undertaken to develop ecological cropping of the three major field crops of southern Negros: sugar cane, corn and rice. This included both agronomic and plant improvement efforts.

Ecological sugarcane farming

Sugar cane dominates the lowlands of Southern Negros, and has had widely recognized ecological, social and economic impacts on the region. Conventional sugar cane production requires significant inputs of fertilizer and herbicides, which can contaminate rural drinking water and compromise human health. Sugar cane monocultures have significantly reduced the biodiversity found on the island. Crop residue burning in the field kills animals such as snakes, wildcats and ground-nesting birds, and increased rat populations have resulted from the loss of these predators. Residue burning also increases atmospheric pollution by releasing many damaging greenhouse gases and causes respiratory problems for people in nearby settlements. It is also the primary cause of declining soil fertility in Negros and causes increased water evaporation and soil erosion.

However, sugar cane production can have advantages if managed properly by using ecological farming practices and being grown as part of a diversified farm. From the small farmers' perspective, sugar cane is an important income source as the crop grows well in the lowland of Southern Negros. The Philippine government also supports the price of sugar, making it one of the most cost-competitive crops. Sugar cane is a high biomass producing perennial crop and keeps a permanent cover on the soil, as such, it is one of the few crops in the region that can improve soil fertility if managed properly. It works well as a

rotational crop with more nutrient intensive crops, such as corn and vegetables. Nonetheless there was a great deal of sensitivity used in promoting the positive aspects of the crop given the long struggle that small farmers have had with sugar landlords in Negros.

Ecological production systems can reduce cane production costs while preserving the local environment and improving soil fertility. A continuous residue farming system known as trash farming was introduced to improve fertility management. In this system, the lower cane leaves are removed 3 months before harvest (or self de-trashing varieties are used) and left to decompose in the field, and residual material (trash) is not set ablaze, which is the common practice, but left in the field after harvest. Research has shown that trash farming can minimize Nitrogen (N) fertilizer requirements because significant N fixation occurs during the decomposition process and also occurs inside the plant during the growing cycle. Trash farming could maintain soil fertility during the cane cycle and enable diversified farming of annual grain crops and vegetables without an overall depletion in soil fertility. With fewer leaves at harvest, the volume of cane residue after harvest is greatly reduced, thus simplifying trash management.

In Phase I, a continuous mulch farming system was introduced into two communities that were former sugarcane haciendas, Bino and Flora. Two, 1 ha sites, were mulched in July of 1999 and on subsequent inspection 3 months later, it was found that the residue had almost completely broken down. The farmers perceived that the trash farming system would be an excellent means of allowing sugar cane to build soil fertility in their developing diversified farms.

During Phase II, 22.5 hectares of demonstration trials were established in the communities of Flora, San Antonio, Bajay, Isio and Masulog. Flora, San Antonio, These communities observed improved cane production, reduced costs of production and a reduced need for weeding. Those that practiced additional pre-harvest detrashing noted a decreased amount of labor required at harvest and a reduction in crop lodging and rat damage to the cane. Conserving sugar cane field residues in the field and preharvest detrashing the dead cane leaves was widely appreciated by the agrarian land reform beneficiaries in the project. Because of the success of the pilot project, the ecological sugar cane farming was developed into a larger CIDA Bilateral supported project in 2001, as a poverty alleviation and greenhouse gas mitigation strategy.

During Phase III, trash farming was demonstrated on farms in both communities. Almost 80% of the Mabakod members were practicing trash farming by the end of phase II, but the practice was rather uncommon in Tapi. In addition to the demonstration sites, information was gathered from individual farmers around Southern Negros who are practicing sugarcane trash farming to expand the knowledge base of the practice in the region. The communities involved in trash farming observed improved soil fertility and increased cane production. The farmers also gained experience through the CIDA Bilateral project on Biological Nitrogen Fixing (BNF) sugar cane varieties, and these were tested and field scale planted at the two eco-villages. A total of 5 varieties have now been identified by

the farmers though adaptability trials, and are being distributed amongst the farmers federations in the impoverished upland areas of Southern Negros.

Corn intercropping

During phase II, on-farm research efforts were initiated to introduce a sustainable cropping system by intercropping corn with other crops and through trainings on corn improvement. Increased corn production in Southern Negros could help diversify the landscape away from sugarcane, while providing farmers with an alternative food and income source. The production of glutinous corn for home consumption and market sales has been encouraged in the farm planning. It is a desirable crop because it is easy to maintain and has minimal requirements for pesticides, water and weeding. As a crop harvested every 2-3 months, it provides farmers with a more continuous source of income relative to sugarcane, which is harvested only once a year.

In Phase II, three lowland demonstration sites, encompassing a total of 0.47 hectares, were established to demonstrate intercropping of corn. The corn was planted with an understory of squash, which helps suppress weeds and minimizes soil erosion, and pigeon pea, to act as a nitrogen fixing overstory species during the dry season. The system was designed to maximize the use of solar radiation and water resources throughout the growing season, and was developed in cooperation with farmer trainers in 1999. However, farmers found this combination difficult to implement. Since pigeon pea is a small tree, it interferes with plowing after the crop completes its growth cycle. Some growers also found that pigeon peas are not a good source of income, especially on the lowland soils around Kabankalan. Additionally, a problem with pigeon pea seed quality occurred, which ultimately impacted the success of the demonstration. Poor seed quality is a common problem in the tropics due to the detrimental impact of high temperature and humidity on seed germination. The pigeon pea needs to be planted prior to the month of September for the plant to be sufficiently well developed prior to the onset of flowering in the dry season. It was concluded that the original system of squash, pigeon pea and corn is likely most appropriate for food insecure farmers living on marginal upland farms where soil erosion is more problematic.

During the planting season in Phase III, corn intercropping was again integrated into the demonstration farms. Native and glutinous corn varieties were intercropped with nitrogen fixing legumes including peanuts, soybeans and mung beans. Unfortunately at project close, results regarding the performance of the intercropping trial were not available. However, through the last two years of on-farm research, it was determined that corn intercropping is a favorable option for farmers looking to diversify their production base and increase income and food security on marginal farmlands.

3.2.6 Ecological Rice Production and ECORICE

As rice is the staple food of the Philippines, productive and sustainable rice cultivation is essential for food self-sufficiency. Using the MASIPAG rice production system, farmers achieve modest productivity with minimal use of external inputs. However, the system had difficulty matching the productivity of conventional rice over the entire season. Through trainings MASIPAG rice production was introduced into communities. However, it was evident from the overall low adoption rate in the Philippines that a new rice production system needed to evolve that was more productive.

In the third phase of the project, REAP staff and farmer trainers worked together to develop a new system of rice production as the major focus activity for farming systems improvement. Several recent cultural changes in rice production were integrated together to develop ECORICE. They involved both agronomic and plant breeding activities. The three main system components integrated to evolve ECORICE are:

1. System of Rice Intensification (SRI)
2. Lock Lodge Ratooning
3. BNF and/or Nitrogen Use Efficient Varieties

A brief understanding of these components is necessary to understand how they can function together to increase rice productivity:

System of Rice Intensification: Optimizing the environment for the Plant

There is a great deal of interest in SRI production systems because they can produce considerable increases in productivity. However, unlike the green revolution, SRI is not chemically intensive but is more management intensive. The SRI system evolved in Madagascar in 1983 by a priest, Fr. Henri de Laulianie, who sought to create the best possible growing environment for rice. The main findings of his work that are critical to increasing productivity are:

1. Rice is not an aquatic plant: Although rice can survive when grown under flooded conditions, it does not thrive. Under continuous submergence the rice roots remain shallow (largely in the top 6 cm of soil) and largely degenerate by the seed-producing phase of growth. For optimal growth, rice should be kept in a well-drained soil during its vegetative growth phase.

2. Transplanting individual seedlings to the field early (not later than 15 days): This practice enables the full growth potential of individual plants and encourages a large number of tillers and bigger individual plants (Conventionally transplanted rice is planted in small groups of seedlings one month after sowing).

3. Wide spacing of plants will lead to greater root growth and increase tillering. SRI rice is planted as single plants in 25-50 cm rows. This minimizes competition and enables plants to develop large deep root systems.

Rice ratoooning: closing the yield gap by continually harvesting sunshine

One of the outstanding advantages of introducing "Green Revolution" seeds and synthetic nitrogen (N) fertilizer inputs was the overall shortening of both the period of rice cropping and the downtime between cropping cycles. Under conventional rice management systems in the Philippines, rice now matures in approximately 90-100 days. After harvest, the straw is burned and the field reworked for planting the next crop during a period of approximately 10 days. Synthetic fertilizers are applied to drive the N cycle for the subsequent crop. While these practices can be considered unsustainable over the long term, in the short term they lead to high productivity.

The ecological production system used under traditional rice farming systems is based on less intensively cropped soil and later maturing cultivars (typically of 110-120 days; which allows more time for soil mineralization processes to liberate N to the growing crop). A 30-day period for decomposition of crop residues is recommended to avoid N immobilization by the decomposing straw in the next crop, and to encourage asymbiotic N fixation processes in the soil. Overall, the ecological rice farmer has a cropping cycle of approximately 145 days as compared to 105 days in the case of the conventional rice production system. Yields are similar for conventional and ecological rice production (after farmers have gone through the initial organic transition process), however the longer production period for the ecological rice places it at a disadvantage in terms of overall rice productivity during the year. A promising means to address this problem and reduce production costs is the introduction of rice ratooning. Ratooning is a practice that allows a new crop to emerge from the residual stubble without having to rework the soil. Ratooning was a popular practice of rice farmers in the Philippines prior to the Green Revolution, and is now regaining popularity in areas of the United States with short growing seasons as a means of double cropping. Recent research on the new ratooning technique of lock lodging (where stems are broken over at the base) has increased yields by 95% compared to conventional ratooning when the crop is mowed and allowed to regrow. Under lock-lodging, yields of promising ratooning varieties are approximately 75% of conventionally grown crops. A lock-lodged rice crop has an established root system and carbohydrate reserves in residual stems and leaves which are important for a rapid regrowth of the crop canopy to occur. Lock-lodge ratooning advances the harvest cycle by about 25-35% compared to a conventionally prepared crop (10 days between crops) or 35-43% when a 30-day period for straw decomposition is practiced. In terms of kg grain produced per day, lock-lodging has demonstrated the potential to produce equivalent yields as compared to conventionally grown rice. Breeding and selection of plant materials for lock-lodging would probably further improve the relative performance of lock-lodged rice above conventionally produced rice. Significant advantages to farmers include reductions in input costs of 50-60%, reduced indebtedness (as harvest cycles are faster and input requirements lower), reduced labour and farm draught animal requirements, greater cropping flexibility, and reduced risks for crop losses from severe typhoons and droughts. The major risks of ratooning

are increased pest and disease pressure. Ecological rice varieties may prove more effective than conventional rice plant materials as they are heavily screened for resistance to pests and diseases through breeding for horizontal resistance.

Biological Nitrogen Fixation in Rice

One of the most outstanding challenges of ecological rice production is managing N fertility. This task is even more daunting when rice is managed in a ratooning cycle. In ecologically grown ratooning sugarcane crops, N requirements are met by N fixation in decomposing trash and from planting BNF fixing varieties. Our initial experience is that selection of rice for BNF and/or efficient N using varieties can be best achieved if the rice is selected under SRI management and unfertilized conditions. Under SRI, the system produces larger plants and volumes of biomass, as well as aerobic soils conditions that support beneficial bacteria. Having a nitrogen limited soil environment enables the plants to better express their differences in adaptability to N restricted growing conditions.

ECORICE: Developing the System in the Field

REAP worked with the upland farmers federations of MAPISAN (now the Negros Center for Ecological farming, or NCEF) to develop ECORICE. NCEF farmer/plant breeder Leopoldo Guilaran spearheaded the fieldwork and developed a number of advanced strains of ECORICE. These strains were selected for high tillering capacity, improved N nutrition, productivity, disease and pest resistance. By the end of the project farmers were beginning to cultivate ECORICE strains and gained experience in SRI and lock lodging management production systems. It is evident to small farmers that the new ECORICE system can dramatically reduce their production costs, as well as give them more cropping flexibility. If the season is dry the ratoon cycle can be shortened to one cropping and the field planted to more drought tolerant crops such as soybeans or peanuts. In a good rainfall year, ECORICE farmers can get three rice crops per year in about the same time period as a conventional high-input rice farmer. However, they would do so without the two cycles of crop residue burning, and the production costs for animal draft power, seed, and production inputs.

The main challenges to the system are increased potential for pest and disease problems. Negros appears to be an ideal area in the Philippines to develop ECORICE, as it is not the dominant crop in the region. By the end of the project, Leopoldo Guilaran had widely distributed small amounts of ECORICE seeds to leading farmers in upland federations of MAPISAN. We believe ECORICE is an important new development for rice production in south east Asia that can further develop through farmer led participatory research and development approaches used by progressive farmers associations.

3.2.7. Local seed bank and nursery

An important aspect of improving self-sufficiency in rural areas, is to provide farmers with information about where they can acquire new crop alternatives,

familiarize them with seed saving techniques and production methods including asexual reproduction, and train them on methods of crop evaluation so they can increase their independence by continuing seed collection and variety selection after project completion. Local seed banks and one nursery site in each community were selected and prepared for planting. Several seed varieties were collected for propagation throughout the year and planted at these sites for further plant material propagation. At the time of project cessation, information on the outcomes of the stock in these nurseries was not available.

3.3 Micro-financing

3.3.1 Micro-credit

An important component of the project was the establishment of a micro-financing program through the MAPISAN Ecological Farming Fund. The loans are critical to new Agrarian Reform Communities (ARC's) as the beneficiaries have no capital and limited farming equipment, livestock or draft animals. As well many of the ARC's have difficulty meeting their basic food needs. Many beneficiaries have no or limited income during the transition process from hacienda worker to independent small farmer.

Crop farming particularly of sugar cane requires substantial amounts of capital for soil preparation, plant materials, fertilizers and harvesting and transport. As well, the diversification process requires initial assistance and financial support for nursery materials and livestock.

Providing funds prematurely to these communities may increase the risk of delinquency in repayment. For this reason the project implementing team proceeded with caution, with the objective of providing loan assistance to those in need of capital and who are capable of managing the funds. Efforts were made to ensure the recipients understood the loan is not one-time livelihood assistance, but rather an investment to develop self-sufficiency. They are educated that reflows return to the farmer associations, to the community and ultimately to the farmers themselves. The communication of these concepts required thorough preparation and orientation in the form of discussions and trainings. The farmers have undergone extensive sustainable agriculture training in order to optimize the chances of success. Farmers attended trainings and were fully engaged in farm planning and community organization to create a sense of ownership of the project.

After completion of the initial farm planning process and orientation trainings, each farming family received the first portion of their incremental loan in January 2002. Through efforts made during the farm planning process to reduce external farm inputs, increase food self-sufficiency and produce food for market sale, the farmers were be able to keep their loans to a minimum for crop inputs. Most loans were targeted for farm equipment, livestock and farm tools. Financial management structures and policies, along with implementation guidelines were drawn up to minimize the risk associated with delinquent payments. No data was available

from the southern partner on the reflows of the loans by the time of project closure.

3.3.1 Appropriate technology development, manufacture and distribution

Another important component of the project is financing of small tools and farming implements through the revolving MAPISAN Appropriate Technology loan fund. Rather than being given cash, farmers will be provided with farm implements they will pay for through the loan program. Surveys have been completed to determine the farming implements most needed by the two communities. It was found that harrowers, furrowers, handhoes and shovels, were the most requested items, followed by plows, planting bars, pick axes and rakes. The water buffalo plays an invaluable role on the farm and was also requested by the communities. Some of the small tools, including the harrower and furrower, will be developed and produced at the Kalibutan Machine shop, ensuring availability at modest prices (small tools production was carried out for phase II of this project at the Kalibutan shop).

3.4 Farmer outreach

3.4.1 Farmer to farmer trainings

Three years of SNSADP programming indicated that farmer-to-farmer trainings are an extremely effective way of sharing sustainable farming information and technology. The farmer trainings on the agro-ecological transition process included the sensitization of the community members to environmental conservation issues such as biodiversity, food security and sustainable energy systems. Using the farmer-to-farmer training concept employed by MASIPAG, efforts were made to continually recruit new farmer trainers ("second liners") and to encourage women to participate in trainings, both as trainees and trainers. Most of the trainings were scheduled during the dry season (January to May) when farmers tend to have more free time available for being away from farm activities.

Development of trainers

The project utilized a 'farmer-to-farmer' training approach, a well proven peer education training system. It is evident with millions of rural peasants in the Philippines, conventional training approaches will not adequately meet the enormous training needs of farmers in the nation. Farmer-to-farmer training can help enable large numbers of farmers to have access to training in an effective and low cost learning method.

Fundamental to this approach is to develop experienced farmer trainers, known as "first liners" to lead training sessions. These individuals are progressive farmers and community organizers with a sound understanding of farming, and social and ecological issues and effective organizational and facilitation skills. Other farmers were in the process of becoming experienced farmer trainers, and were trained as "second-liners." During training sessions, second liners play a

support role, learn through actual experience and gain confidence in the training process. Trainer's training sessions were provided on a periodic basis to upgrade all trainers. Please refer to Table 5 for Guidelines for the effective facilitation farmer-to-farmer training sessions. Through this participatory peer education approach, trainers are continuously developed, and groups are kept small as farmers are exposed to a diversity of farmer trainers and issues.

Table 5: Guidelines for the effective facilitation of farmer-to-farmer training sessions

Important facilitating skills:	*Barriers to effective communication*
• Organize the topics • be prepared for the topic • organize the visual aids • have a good grasp of the ideas to quickly answer questions • know how to facilitate the flow of discussions • know how to get the attention of the listeners • know how to make use of gestures to emphasize his point • have self-confidence and be comfortable speaking in a group • give the audience undivided attention through frequent eye contact • know how to control unnecessary mannerisms/bosy language • avoid unnecessary repetition of words/avoid redundancy • Incorporate distractions into the context of the training • Know how to manage time • be creative • have a sense of humor • be emphatic, committed and focused • be open-minded to comments/criticisms • have a clear and audible voice • have legible penmanship • be sensitive to the needs of the participants • know how to gauge the level of listeners	• Message is not clear • Seminar/meeting is not well-organized • Language/ technical terms not understood • Divided attention on the part of listeners (personal problems may get in the way ie: participants are hungry) • Audience is uninterested in the topic • The speaker is unable to get the attention of the listeners • Excessive noise • Distractions

Training program

A “ladderized” training program was utilized in Phase II of the SNSADP project as a component of the holistic agro-ecological village development approach. Ladderized trainings are a series of training sessions presented in an order that gradually increase the technical level of information available to the farmer. The training process began with organizational seminars to introduce the project, perform a general social orientation and collect data on the preliminary conditions and community needs. Initially, a sensitization of the communities is important to deepen the level of understanding of the social and economic situation the farmers are facing, both locally and nationally. This portion also provides a historical analysis of their situation, and examines key events that brought about their current situation. The problem-solving component of the exercise is designed to energize the farmers and encourage them into action in their communities. This is followed up by technical trainings on ecological farming, and includes modules on farm planning, diversified farming, input reductions, plant improvement, and advanced ecological farming techniques. Trainings also

include “field trips” to model farms employing sustainable agriculture or in the process of conversion, and mentoring through farm visits and individualized on-the-job (OJC) coaching by trainers.

Phase I involved the training of 588 farmers (356 men and 232 women) in the MAPISAN farmer federation alliance on sustainable agriculture (SA). In the first half of Phase I, 299 trainings were conducted focusing on training/orientation on MASIPAG (levels 1&2), Diversified Farming Systems (DIFS), livestock development, organic crop production and advanced training for the MAPISAN trainers. For the second half of the project, additional trainings and cross-farm visits were conducted with farmers from northern and central Negros outside of the existing MAPISAN Alliance.

In Phase II, basic trainings were administered for 791 farmers, and covered topics including Basic Orientation to Sustainable Agriculture, Organic Fertilizer Production, Diversified Integrated Farming Systems Trainings, the MASIPAG rice production system, and Sustainable Agriculture Trainer’s Trainings. Two conferences, the Sustainable Agriculture MAPISAN conference and the Southern Negros Environment and Mining conference, were attended by and additional 216 people, to share information about agricultural and environmental issues that are affecting farmers. In total, 1007 farmers (751 males and 256 females) attended the trainings and conferences, with a 25% participation of women.

In Phase III, large number of trainings were again organized to meet the targeted number of trainees. A fundamental change occurred in this year as the trainings became much more specialized. The objective was to highly develop the skills of a specific group of farmers, rather than administering basic trainings to a large number of people (outreach). This was to ensure increased comfort, improved technical development and ongoing sustainability of these practices in the communities. The trainings scheduled in Phase III included BOSA, BASO, VMGO, DIFS, BARO, a Strategic Planning workshop, a Nursery Mgmt. Seminar, Farm Planning and Assessment, BaSEO, Organic Fertilizer Production, MASIPAG rice production, a Leadership seminar, a Co-operative seminar and Sustainable Agriculture Trainer’s Trainings. Please refer to Table 6 for a complete listing of the trainings scheduled. Project records to date indicate 646 of these trainings took place until January 2002. At the time of project close, results regarding the actual number of trainings performed were unavailable. However, we expect there were no difficulties in meeting training targets of 700 trainees for phase III of the project and estimate that the actual number exceeded 1000 trainees (which would surpass targets by 30%).

Training Format

The trainings were not conducted on more than two topics at a time, and were done in a participatory manner involving both whole group discussion and small group activities with both lecturing by the trainers and speaking/analyzing done by the farmers themselves. A special effort during the trainings was made to involve the women in activities and discussions. A typical training lasted for 2

days, but was anywhere from 1-3. Trainings were held all year round with the majority concentrated in the dry winter months (January to May) when farmers are less busy. The trainings were free for participants and healthy, well-balanced meals were provided during the session as a counterpart by the farmers groups. For some new agrarian land reform beneficiaries, these meals were very important as the farmers were largely malnourished (Farmers often experience poor initial production on their individual farms because of low skills and low capital). The location of the trainings was also important in delivering an effective session. The trainings were held in an area close to the locations of the farmers so that they did not have to travel far, in a building with adequate facilities (chalkboard etc.), light and fresh air. Trainings were also occasionally held outdoors or "off-site" where participants were able to engage in more focused and extended discussions as farmers are generally more comfortable in rural settings. The off-site trainings also provided the opportunity for visits to nearby farms.

A 2 hour "situationer" was held on the first morning of each session to discuss the social, economic, and environmental current events affecting the farmers. This process furthered the sensitization of the farmers and encouraged them to actively evaluate their local and national conditions. At the end of a training, the session was always reviewed to determine whether expectations were met, and record both the positive and negative comments as a way to further improve the trainings provided.

Table 6. Farmer trainings, seminars and activities completed and projected					
Training	Organization	Participants			Date (2002)
		Male	Female	Total	
Social Orientation (community leaders)	Mabuhi-pa Mabakod	-	-	13 11	Sept 4, 2001 Sept 13, 2001
AEV Project Orientation	Mabuhi-pa Mabakod	26 9	20 9	46 18	Sept. 13, 2001 Sept 14, 2001
PRA (Participatory Rural Assessment)	Mabuhi-pa Mabakod	19 13	12 10	31 23	Oct 11-13, 2001 Oct 15-16, 2001
BOSA (Basic Orientation on Sustainable Agriculture)	MAPISAN	-	-	22	Jan 3-4
BASO (Basic Analysis of Social Orientation)	Mabuhi-pa Mabakod	21	10	31	Jan 18-19
VMGO (Vision, Mission, Goals, Objectives Formulation)	Mabuhi-pa Mabakod	*26* 13	*20* 12	*46* 25	Jan 24-26, February 5
Strategic Planning Workshop	Mabuhi-pa Mabakod	*26* 13	*20* 12	*46* 25	February 5 Jan 24-26
BOSA (Basic Orientation on Sustainable Agriculture) with social orientation	MAPISAN	-	-	25	Jan 27-29
BOSA (Basic Orientation on Sustainable Agriculture)	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	February
Nursery management Seminar	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	March 2 February 22-23
DIFS (Diversified Integrated Farming Systems)	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	February 15-16 February 5-6
Farm Planning and Assessment	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	February 15-16 February 5-6
Total actual trainings held		*330*	*245*	*646*	
Planned Training Sessions					
OJC (On the job coaching/mentoring)	Mabuhi-pa Mabakod				*Ongoing*
BARO (Basic Agrarian Reform Orientation)	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	March
Advanced Ecological Farming Orientation (AEFO) MASIPAG Level II • MCMP (Masipag Cultural Mgmt Practices) • IKS (Indigenous knowledge Systems) • Soil Fertility Mgnt Cycle • BDU (Bio-fertilizers development and Usage) • Rice Breeding • APM (Alternative Pest Mgmt) • SWCM (Soil & Water Conservation /Mgnt)	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	March
BaSEO (Basic Socio-Economic Orientation)	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	April
Organic Vegetable and Fertilizer production	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	April
Leadership Seminar	Mabuhi-pa Mabakod	*10*	*5*	*15*	May
Co-operative Seminar	Mabuhi-pa Mabakod	*25* *16*	*20* *10*	*45* *26*	May
Trainers Training (Organizational & Technical) (sensitizing communities)	Mabuhi-pa Mabakod	-	-	-	Not Scheduled
Total training sessions planned		*215*	*155*	*370*	
Total Project Phase III Training Sessions		***545***	***400***	***1016***	

Farm Planning

Through individual mentoring and formal farm-planning trainings, the project provided support to farming families in helping them to create detailed action plans for their individual farms. These plans included land use maps, workplans and predicted expenditures for the proposed farm diversification and ecologization. In these trainings, farmers discussed strategies to conserve water and soil and minimize the use of fossil fuels and synthetic pesticides and fertilizers on their farms. Individual farm transformations included the implementation of ecological sugar cane and corn production, diversified vegetable and grain legume production, organic rice cultivation, and sustainable agro-forestry activities. Preliminary activities and planning took place in Phase III but the entire process is expected to take place over a time period of approximately 5 years, and continuously evolve after that. As new agrarian land reform beneficiaries, farmers were advised to concentrate most of their planning efforts on the first year of transformation, although less detailed planning of longer term farm transformations will be encouraged. Community members also created management plans for the smaller communal farms in each area.

In phase III, 71 detailed farm plans were constructed by community members in Tapi and Bajay. Farm plans ranged from simple to highly complex and involved transformations on the farm anticipated at least 5 years in advance. Farm planning activities were assisted by cross site visits to encourage brainstorming and feedbacking with other farmers on new ideas. Farm planning activities were also supplemented with “on the job coaching” to remedy any problems or questions the farmers may have by others who were more experienced. Although there were 104 beneficiaries arranged to participate in the trainings sessions in Farm Planning, only 71 participated by January 2002. This may be due to a lack of time available to attend the trainings as most participants are farmers and must tend their fields during the day. An expansion area for farm planning for a third ecovillage was planned for the BASAK community in Pumoloyo Federation but this was just being initiated at the time of the last REAP staff mission in June 2002.

Cross-site Visits

Training in the form of on-site visits to working model farms implementing sustainable farming practices are a particularly effective method of solidifying training lessons and illustrating the benefits of a diversified farm. A farm in Tapi, owned by Mr. Rodolfo Oray, was selected as a diversified learning farm for this project. Mr. Oray is a farmer trainer within the MAPISAN/ MASIPAG farmer network and begun the diversification process on his farm over 15 years ago. He successfully employs many ecological and sustainable practices on his farm including DIFS, vegetable and legume production, intercropping, trash farming, agro-forestry and MASIPAG rice production. His farm was the location for several site visits and an additional source of native seeds for the local seed bank.

Development of farmer training modules

In order to more effectively conduct sustainable agriculture trainings, training modules were translated into Illongo by trainers in the MAPISAN alliance during Phase I. This

made the modules more accessible to farmers in Negros. Translations focused on the following sustainable farming technologies:

1. Alternative Pest Management
2. What is Sustainable Agriculture?
3. Bio-fertilizers: Fertilizers coming from living organisms
4. Corn Breeding
5. Data Gathering
6. Diversified Integrated Farming Systems
7. Duck Raising
8. Soils and Fertility Management
9. Characteristics of a Good Farmer Trainer
10. Guidelines in Managing a MASIPAG Farm
11. Rice Breeding
12. Herbal plants to control poultry and livestock diseases
13. The Effect of Green Revolution
14. MASIPAG Overview
15. Training Methodologies
16. Herbal Plants to Control Pests
17. Why Conduct On-farm research and training?
18. Sustainable Agriculture: Sustainable Organic Farming
19. seed production and conservation
20. A Guide to Control Rat Damage
21. Appropriate Soils Management
22. Rice (MASIPAG Cultural Management Practices)
23. Trial Farm Strategy
24. A Guide to Tilapia Culture in Freshwater
25. Trial Farm establishment
26. Traditional seeds: Foundation for Sustainable Agriculture

3.4.2 Women and trainings

An important component of the project is to improve and empower rural women in Negros Occidental and involving a high level of female participants at the sustainable agriculture trainings is an effective way to increase opportunities for women through education. It was also essential that women were enlisted as trainers in the farmer-to-farmer training program, as it ensured the success of the trainings on many different levels. First, the involvement of women built the capacity of these individual women as trainers. Second, having women engaged as active participants in the project and ultimately in the community, increases cohesion within the village and ensures overall project success; and finally because it is from women that other women will learn best.

Since project onset, female participation has averaged around 40% for the activities conducted to date. During Phase III, there were 10 female farmer trainers who aided in administering the trainings, and 245 women (42%) who participated in the ecological farming trainings.

4.0 Problems Encountered, Recommendations and Lessons Learned
Problems Encountered

There were two main problems that were experienced during the course of the programming: partnership relationships and increasing political instability.

Dynamic Partnership Relationships

The sustainable agriculture movement in the Philippines underwent dynamic change during the course of the programming partnership (1998-2002). This affected local partnerships and split the national sustainable agriculture network into two main groups by the end of 2002. During the 5 year project partnership in Negros, the dynamics of the relationships between PDG and the farmers federations of MAPISAN changed significantly. At the outset of the project partnership in 1997, PDG (the NGO) had a strong level of interest and activity in sustainable agriculture and agrarian land reform issues. Their main strength was (and is) organizing and strengthening people organizations (farmers organizations) particularly individual federations of the MAPISAN Alliance. Some of these farmers organization such as Bugana federation, had been organized by PDG for more than 13 years. Gradually farmer leaders within the most progressive farmers federations demanded more autonomy to manage their own sustainable agriculture programming. By the end of 2002, 5 of 10 of the active federations of MAPISAN decided to break their partnership with PDG on sustainable agriculture programming and establish the new Negros Center for Ecological Farming (NCEF). Within the VISAYAS more than 90 of the 173 federations linked with MASIPAG decided to join the new farmer led-scientist supported PABINHI network (the plant scientists founding MASIPAG disassociated in March 2002). Both the scientists and the farmers disassociated due to differences in conviction on how a participatory research and development program should be developed to implement a truly farmer-led program on sustainable agriculture in the Philippines. In November 2002, the new PABINHI network was established and joined in Negros by the 5 federations of MAPISAN. The new national chair of the organization Leopoldo Guilaran was a farmer from the Bugana Federation and the past national chair of MASIPAG.

Increasing Political Instability

In the Philippines, Negros has the reputation of being a social volcano due to the longstanding oppression of the poor by the powerful landlords and elites on the island. Southern Negros had historically been a hotbed of the insurgency movement in the Philippines. During the course of the 5 year partnership the situation intensified. Militarization of southern Negros increased with a significant expansion in presence of the Philippine Military, the expansion of the National Peoples Army (NPA) and the emergence of new and expanded paramilitary groups.

PDG, the local implementing partner, gradually became a higher profile agency in the agrarian land reform struggles of southern Negros and in advocacy campaigns. The organization became engaged in higher profile activities against the powerful forces of Negros. Several events occurred in 2001-2002 which raised the profile of PDG in national and or local news including :

- A PDG staff and the PDG driver were arrested and held by the Philippine military,
- A fully loaded PDG passenger van was attacked by several shotgun bearing masked gunmen
- PDG taking the lead in organizing a 2 day conference on the business activities of Danding Cojuangco (a candidate for the Philippine presidency in 2004 and the largest landlord in the Philippines)

The increasing activities of PDG with the deteriorating political situation made it difficult to implement sustainable agriculture projects with the organization and caused rifts between PDG staff and some farmer leaders of MAPISAN. Staff security also became a more serious concern. Some rural areas were also no longer considered safe due to their control by the paramilitary groups.

Lessons learned

Despite the problems encountered, the beneficiaries advanced their quality of life considerably and there was significant advancement in the capacity and empowerment of peoples organizations. Several significant lessons were learned which could have significant influence on development in the Philippines and elsewhere:

1.The project enabled the conceptualization and successful development and implementation of a new holistic rural development model, the Agro-Ecological Village development model. This model enables community organizing, ecological farm planning and training, micro-credit and technical support to be fully integrated to facilitate community development.

2. Successful approaches evolved to encourage the transfer of information from farmer to farmer for farming systems diversification and ecological farming.

- The emergence of the concept of learning farms as a cornerstone to development practices. Learning farms promote an integration of existing technology transfer approaches from the evolution of model farms, demonstration sites and adaptability trials.
- Ladderized training approaches in the communities as an alternative to the wide scale introductory trainings that were implemented in Phase I of the project.

3 Through participatory on-farm research, adaptability trials and demonstrations and farmer-led plant breeding innovative new farming systems and advanced plant materials were identified and/or developed for ecological sugarcane and rice farming including the ECO-RICE System.

Recommendations

1. CIDA should support holistic rural development models such as the Agroecological Village Development Model which integrate the social, ecological and technological development of communities that is necessary to create sustainable rural development.
2. CIDA should support the increased research and development of ecological farming through participatory farmer led plant improvement, farmer to farmer training and learning farms as new production systems such as ECO-RICE can make a significant contribution to sustainable rural development.
3. CIDA should refocus its program funding for poverty alleviation in the rural sector (agriculture, fisheries etc.) to favour the direct support of genuine people organizations in the Philippines. CIDA should take a leadership position on this issue in the Philippines by declare a target for ending the funding of NGO's in the Philippines (NGO workers can be integrated into the staff of the PO's).

5.0 Project Closing

The three phases of the SNSADP project were successful in that they introduced a number of sustainable agricultural techniques permanently into the community and empowered farmer beneficiaries. Largely the project was implemented as planned and the project beneficiaries benefited significantly from the programming.

Unfortunately events occurring outside of the SNSADP III project eventually led to the early closure of the field activities of the project. The relationship between REAP and PDG and the federations within the MAPISAN Alliance became strained as a result of partnership difficulties experienced on the CIDA Bilateral Funded Philippine Agricultural Climate Change Project and the aforementioned break away of 5 federation of the MAPISAN Alliance from PDG. As a result of this, PDG decided not to continue the SNSADP III project and was uncooperative in reporting the final results of the project. There was significant resistance to the decision by the project beneficiaries as they were not adequately consulted by PDG in this process. This was particularly the case in the Pumoloyo federation where the BASAK community was scheduled to become the third ecovillage with the remaining funds available for the project. It was regrettable that an early closure to the field activities of the project occurred as the project had very strong environmental and poverty alleviation impacts and the rural communities in Southern Negros are in desperate need of developmental assistance.

6.0 Project Reaches

6.1 Project Impact

The benefits of farm diversification and sustainable agricultural systems can directly increase the quality of life and self-sufficiency of the communities in Southern Negros. Farmers that have successfully implemented sugar cane trash farming are realizing higher production rates and are benefiting from improved soil quality and reduced costs for agri-chemical inputs. Organic rice production and the introduction of vegetable

farming as well as corn and grain legumes provides farmers with alternative sources of income, increases the quantity of low-cost nutritious foods available in local markets, and enhances food security and the general quality of life for farming families.

In particular, women have benefited from farm diversification. The expanding vegetable, corn and rice production in farming communities has created more employment opportunities for women, including vegetable cultivation, marketing and value-added processing. Income from these activities could be used in the future to educate children and make home repairs.

The SNSADP project had further developmental results in that the first two years of programming provided the basis for the evolution of a larger CIDA funded REAP-PDG development project, which started in March, 2001. This project, entitled “Conservation and Utilization of Crop Residues in the Philippines as a Greenhouse Gas Mitigation Strategy” built on the accomplishments of the SNSADP project by expanding the application of ecological sugar cane trash farming and increasing the production and distribution of Rice Hull cookers (The Mayon Turbo Stove).

6.2 Canadian Public Engagement

In early winter 2002, a speaking tour was arranged for Ms. Georie Pitong, director of MASIPAG-Visayas and a founding member of PDG, and Mr. Leopoldo Guilaran, a member of the MASIPAG network in Southern Negros, a farmer trainer and local rice breeder. This speaking tour is being supported by CIDA's ESDP Public Engagement Fund. The tour included stops at several Canadian universities, as well as NGO's interested in organic farming and international development work. Canadians learned first hand about how community organizing through the Agro-Ecological Village development model has helped agrarian reform beneficiaries (ARB's) in the Philippines improve their livelihoods and protect and rehabilitate their local environment. Ecological farming and its impact on the environment was discussed, along with its ability to reduce greenhouse gas emissions. In particular, the essential components of the Agro-Ecological Village model will be explained including the focus on community strengthening, farmer-to-farmer trainings and sustainable agriculture as a means to achieving food security and community self-sufficiency.

PROGRAMMES-PROJETS / ANNUAL PROGRAM-PROJECT PROGRESS REPORT 2001 - 2002

The Southern Negros Sustainable Agriculture Development Project

Direction et Division/ Directon and Division **Partnership Branch/ESDP** **Agent de l'ACDI / CIDA Officer:** Laurence Morrissette

Partenaire de la DGPC / CPB Partner: Resource Efficient Agricultural Production (REAP)-Canada

PAYS / COUNTR(IES): The Philippines	**PRIORITÉ(S) / PRIORITY(IES):** 40% Basic human needs 20% Women in development 40% Environment	**Budget total / Total Budget:** *100.000.00* **Contribution de l'ACDI / CIDA's Contribution:***:75%* **Décaissements pour 2001-02 Disbursements:** $75,000 **Décaissements totaux fin 01-02 / Total Disbursements end of 00-01:** $75,000	
DÉBUT / START: *March, 2001* **FIN / END:** *March, 2002*	**RÉSULTAT(S) D.G. / BRANCH RESULT(S):** Alleviation of poverty in rural areas by implementing environmentally friendly measures.	**OBJECTIFS / OBJECTIVES:** 5. To assist two farming communities commence the transition to Agro-Ecological Villages, including farm diversification and ecologization 6. To enhance farmer training on sustainable agriculture	**BUT(S) / GOAL(S):** the project envisions empowered and gender sensitive communities sustainably meeting their subsistence and other needs, actively rehabilitating the natural resource base and reducing greenhouse gas emissions through the adoption of ecological farming

EXPECTED OUTPUTS PHASE III	ACTUAL OUTPUTS PHASE 1	ACTUAL OUPUTS PHASE 3	VARIANCE
1. Farm diversification planning process completed for approximately 100 families 2. Micro-finance initiated for approximately 100 families 3. Field scale implementation of sustainable agriculture demonstrations in two communities 4. 700 farmers receive sustainable agriculture training, 30% (210) of which are women	1. Creation of three case studies describing six farming systems 2. Development of five diversification trial farms testing 25 cropping alternatives 3. Provision of 21 trainings to 588 farmers and 3 conferences to 633 participants 4. Provision of sustainable agriculture library material to Negros Occidental Agriculture College **ACTUAL OUTPUTS PHASE 2** 1. Establishment of 5 sugar cane trash farming trial farms 2. Establishment of 3 trials testing corn/squash/pigeon pea intercropping systems 3. Establishment of vegetable and grain legume trial farms in 6 communities, testing 17, 12, 11,10, 9 and 3 varieties, respectively 4. Development of 4 female farmer trainers 5. Provision of 26 trainings to 791 farmers and 2 conferences to 226 participants 6. Creation of 2 new farming manuals and additional library materials to NOAC	1. 71diversification plans completed 2. Loan reflow data not collected from two communities 3. 22 demonstration plots in two communities 4. 646 farmers trained, 42% (245) women **Progress Achieved to date (Phase 3):** 1. 71% 2. N/A 3. 100% 4. 92%, 100% (exceeded goal by 1.16)	1. Although there were 104 beneficiaries arranged to participate in the trainings sessions in Farm Planning, only 71 actually participated. This may be due to a lack of time available to attend the trainings as most participants are farmers and must tend their fields during the day. 2. Caution was used by the project implementing team to ensure that those in need of capital were adequately prepared to receive loan assistance and manage the funds. Providing funds prematurely to these communities may increase the risk of delinquency in repayment. 4. In actual fact, trainings were scheduled for 1016 farmers, including 400 women. However, due to a lack of complete data, we only have official records for the numbers indicated. There is no reason to expect the planned training did not go ahead as scheduled.

EXPECTED OUTCOMES	ACTUAL CUMULATIVE OUTCOMES		COMMENTS / VARIANCE
1. Former sugarcane monocultures are replaced with diversified crop production systems 2. Agro-Ecological Village implementation reduces fossil energy, pesticide and food imports into the community *3.* 40% of male and female farmers receiving training apply new knowledge	1. 40 ha of farmland area designated to undergo transition to diversified farming systems during the next 5 years 2. PRA activities determine that impoverished farmers are enthusiastic to begin diversifying their farms and after some orientations understand the issues involved, but lack the technical knowledge to do so 3. Long term evaluation of trainings indicates that 84% of male and female farmers apply lessons from trainings and adopt new techniques	**Progress Achieved to date (in order listed above):** 1. 100% 2. 100% 3. 100%	Area designated for diversification represents 31% of the total farm lands possessed by the communities. As diversification is completed over the long term, tangible results were not attainable at project cessation. Data from PRA activities were not submitted by project partners and cannot be elaborated on at this time. Short term results indicate that techniques have been readily adopted by farmers involved in trainings however tangible results were not attainable at project cessation

EXPECTED IMPACT(S)	ACTUAL IMPACT(S)
1. Diversified, ecological farming practices bring environmental benefits including reduced greenhouse gas emissions, restoration of biodiversity, and improved soil, air and water quality 2. Trainings encourage the widespread implementation of sustainable farming by both men and women in southern Negros	1. Improved food security and higher income levels because of in an increased ability of farming families to meet their basic needs, improve production and minimize indebtedness Although not apparent in all farming communities, some farm families (particularly those that have had the most successful adoption of practices such as vegetable diversification) have reported a higher degree of food security and increased income levels stemming from sustainable farming techniques 2. Increasing use of the Agro-Ecological Village as a development approach in other regions including new projects in China and Africa. Longer term environmental benefits stemming from this project, such as reduced greenhouse gas emissions and the preservation of biodiversity from the elimination of crop residue burning, will likely only be realized several years after the completion of the project but were beginning to be evidenced at the time of project cessation. 3. Increasing adoption of sustainable farming techniques among members of the MAPISAN Alliance though continued development of community trainings and demonstrations over the past several years of project implementation. Farmer empowerment is has risen and will continue to grow beyond the lifespan of the project as farmers increasingly apply their new knowledge and gain confidence from positive experiences, measured by the self-sufficiency of farmers and their readiness to investigate new farming practices. Increasing demand by farmers for more self-sufficiency has prompted the farmers themselves to create the Negros Center for Ecological Farming (NCEF), a farmer organization committed to furthering ecological agriculture development in local agrarian communities.

Cross-cutting Themes	EXPECTED OUTCOMES	ACTUAL OUTCOMES
IFD & ÉG / WID&GE	• Increased participation of women in farming communities, including more on-farm employment opportunities, increased representation within the sustainable agriculture movement, and heightened access to new technologies	• Women having equal opportunity to participate in project activities and act as agents of change in the social and ecological development of the community. The quality of life of women is expected to improve beyond the lifespan of the project as women engage more fully in the sustainable agriculture movement and take advantage of new employment opportunities that result from the project • At least 4 women in the community have become farmer trainers and 11 were undergoing trainers training to become trainers • Over the three years of the project, at least 766 women participating in project trainings on sustainable agriculture and community development • Interviews with women indicate their involvement in and enjoyment of a wide range of on-farm employment, increased control over farm resources and improved decision making in farm and household management • Women gained access to rice hull cookers and heat retaining devices that reduce cooking time and limit exposure to indoor air pollution
ENVIRONNEMENT / ENVIRONMENT	• Increased understanding of sustainable agriculture techniques and the importance of the environment and diversification in farm management. • Reduced air pollution from crop burning and household cooking • Reduction in the use of synthetic pesticides	• Environmental issues integrated into all community activities • Improved environmental conditions in the deforested croplands of Negros through the use of sustainable agriculture techniques such as crop diversification, water and erosion management, reforestation, organic or minimal chemical input production, improved crop rotation. • Project activities focused on long-term rehabilitation of the land while still allowing short term solutions for farmers to combat poverty and unstable weather by diversifying crop production and planting drought resistant fruit trees while finding more ecological ways to produce sugarcane as a source of capital. • Elimination of crop residue burning on 22.5 hectares of trash farming trial farms and distribution of 70 LT-2000 multifuel cookers and 20 heat retaining devices is decreasing air pollution and reducing GHG emissions. Successful implementation of these technologies prompted support for CIDA bi-lateral project in the Philippines to implement trash farming over 1000 ha and introduce 9000 multi-fuel cookers in Negros and Panay. • The use of natural pest control methods by 60% of farmers in 5 communities to reduce the concentration of synthetic chemicals in the regional land and water • Increased understanding of the importance of environmental issues by local peoples
ENGAGEMENT DU PUBLIC / PUBLIC ENGAGEMENT	• Domestic and international public exposures to programming to encourage support for development	*4.* Domestic and international presentations and publications inform a large and varied audience of this project that increased public support and engagement in development activities in the Philippines

LESSONS LEARNED

5. Successful development and implementation of a holistic rural development model, the Agro-Ecological Village programming where community organizing, ecological farm planning and training, loan support and technical support are fully integrated to facilitate community development.
6. Successful approaches evolved to encourage the transfer of information from farmer to farmer for farming systems diversification and ecological farming.
7. The emergence of the concept of learning farms as a cornerstone to development practices. Learning farms promote an integration of existing technology transfer approaches from the evolution of model farms, demonstration sites and adaptability trials.
8. Ladderized training approaches in the communities as an alternative to the wide scale introductory trainings that were implemented in Phase I of the project.
9. Through participatory on-farm research and demonstrations, innovative new approaches and plant materials were developed, particularly for ecological sugarcane and rice production (ECO-RICE).
10. Evolution of project partnership and supporting the farmers taking control of their own local conditions and activities with less reliance on local NGO's.
11. Learning to adapt project activities to the local situation becoming increasingly charged with increasing friction between the peasants and local government peoples, in particular with reference to the agrarian reform program currently being administered by the National Government of the Philippines Department of Agriculture.

FOR CIDA USE ONLY

Rating of the program or project: *(The rating provides an overview of the program or project progress and performance to date and should be selected based on the **officer's** understanding of the program or project (and not the partners'.) Use the % of progress in achieving outputs and outcomes and the following scale:*

- *a - project/program is likely to exceed expected results;*
- *b - project is viable and progressing satisfactorily;*
- *c - project has problems that are manageable;*
- *d - project has serious problems requiring major corrective actions and is unlikely to achieve expected results;*
- *e - unable to rate: provide reason e.g. "Too soon to tell".)*

Financial risks: *(As indicated in last FRAU report.)*

Sign off: Officer _____ Director