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1. Buhingtubig Bag-ong Sukaranan Organization
2. Nagkahiusang mga Mag-uuma sa Catang
3. Nagkahiusang Kabus nga Mag-uuma sa Lapay

Members of People's Organizations in Bohol namely:

1. Datag Multi-Purpose Cooperative
2. La Victoria Multi-Purpose Cooperative
3. Anonang Multi-Purpose Cooperative
4. Botong Multi-Purpose Cooperative
5. Cambigsi Multi-Purpose Cooperative
6. Cabanitan Multi-Purpose Cooperative
7. LUMAD Multi-Purpose Cooperative
8. Cantaub Visayan Eskaya Farmers Association
9. La Union Multi-Purpose Cooperative
10. Visayan Eskaya Multi-Purpose Cooperative
11. Lundag Eskaya Tribe Multi-Purpose Cooperative
12. Farmers Association of Owac
13. Yanaya Community Development Association
14. Villa Suerte Farmers Association
15. Candijay Small Scale Livestock Raisers Association

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2. Mat-i Landcare Association

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## 2 Executive summary

CATP's main objective is to accelerate the adoption of ACIAR's past and current research in farming communities to improve farmers' agricultural production resulting to increased income. Hence, faculty/researchers of the Visayas State University who were involved in past and current ACIAR research were invited to share their research outputs/results through trainings conducted in farming communities. Partner NGOs also tapped the technical expertise of agriculture officers, technicians and provincial veterinarians and faculty/research and extension personnel of nearby state colleges. Prior to the official start of the Community Agricultural Technology Program (CATP) in June 2006, initial activities like the Better Practice and Increasing Income Workshops were conducted in August and September 2005 and February 2006.

The following were trainings conducted by the partners: goat production and health management, pasture and forage production and management, feeds and feeding management, goat waste management, swine fattening, livestock production and management, livestock health and productivity management, alternative trading and marketing systems, feed formulation of locally available feed ingredients, soil fertility management, silage making, endoparasite control for small ruminants, financial analysis and gross margin review, marketing techniques, cross-sectional and longitudinal analysis of agricultural commodities, nursery management and tree growing, agroforestry systems management, rubber-based agroforestry system, and tree registration.

A marked improvement in farmers' agricultural and livestock production was observed after three years due to the adoption of new technologies and improved agricultural practices. The project was able to achieve its objective of introducing ACIAR research outputs and technology to farmers and was able to encourage its use and adoption. In Cebu, trials which evaluated the effects of organic-inorganic fertilizer combination showed that the combination of various organic fertilizer sources (with or without inorganic fertilizer) resulted in average grain yield of corn in Pinamungajan of 3,465 kg/ha compared to 1,980 kg/ha for unfertilized corn. In Argao, total harvest was 6,660 kg/ha for fertilized corn as compared to 1,920 kg/ha for corn with no fertilizer input. The improved soil fertility led to the increase in corn harvest.

Corn farmers earned at least P17,000/ha in one production cycle (110 days) or a minimum of P34,000/ha/year. For cattle raisers, the net income was P10,900 in four months or P21,800/year. The use of organic fertilizer also improved the vegetable yield and farmers' estimated net earnings was P10,240/year. Hence, the computed total net income per farmer is P66,040/year or P5,503/month.

For the goat projects, there was a 21% increase in goat population in SWCFI areas. From 231 heads in 2006, goat stocks increased to 279. Baseline survey conducted in early 2007 showed that average income of farmers from goat raising and sale of manure was P597. At the end of the project, average net income per family from goat raising increased to P1,643/year. For PROCESS, from 183 goats at the start of the project, it increased to 214 heads in year 3. Total goats sold was 125 which yielded a gross income of P127,800 or an average of P3,000/farmer.

One of the major impacts of the project is the building-up of knowledge, skills and capacity of partners especially the farmers. They gained confidence in sharing to others their knowledge and skills in improved agricultural practices. Hence, a sense of ownership of the technologies introduced was developed. Farmers also learned to conduct on-farm experiments like trying various combinations of chicken dung, cattle/goat manure and urine as organic fertilizers for their vegetables and using various herb extracts as dewormer for goats.

The farmers' heightened awareness and interest in the project was observed as they continue to have an active discussion about the agricultural practices they adopted in their own farms during their formal and informal gatherings in the village.

The improvement in the CATP farmers' agricultural production drew the interest and attention of other farmers. This led to their inquiry on the improved practices and technology adopted and some have now improved the design of their goat houses, used cut feeds, planted legumes and grasses, dewormed their goats regularly, and used cow and goat manure to fertilize their corn and other crops. The forages planted along contours of hilly farms, which served as hedgerows, acted as control measure against soil erosion and surface run-off.

The project strengthened the linkages and cooperation among POs, LGUs, the academe and other NGOs. Learning opportunities were created for all partners. LGUs involvement also enabled farmers to access government products and services and the project was able to complement existing government programs on agriculture.

Despite the small funding provided to partners, project impact was observed in the community because of improved production, increased income, improvement in community relationships, improved linkages with local government units and NGOs, and improvement in farmers' self-confidence, knowledge and skills.

It is recommended that small initiatives in technology adoption like CATP are introduced in other farming communities. Farmers actively participate if they feel that their ideas and opinions count and if they have control over their activities and resources. CATP has proven that technology adoption is possible and that farmers' attitude and perceptions can change given the right training and guidance from the academe, LGUs and other partners in development.

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## 3 Background

ACIAR has provided assistance in various Philippine agricultural research projects and supported a number of initiatives in introducing research outputs in the field for adoption at the farm level. And one of these initiatives is CATP, a 3-year project designed to utilize past and current ACIAR research results to improve production and income of farmers. NGOs that are already implementing projects funded by foreign donors like the Philippine-Australian Community Assistance Program (PACAP) were encouraged to join the project as CATP's aim is to also complement the livelihood initiatives and projects of other donors.

It was envisioned that the close collaboration with existing donors will ensure facilitation support to NGO field staff; give communities time to explore the ramifications of the introduced technology particularly its integration in the other aspects of the farming system; allow NGOs to identify and train community leaders and local specialists in their efforts to spread the technology to neighbouring communities; and ensure that farmers had access to credit, social organization and marketing which are all crucial for wider adoption.

ACIAR entered into an agreement with IIRR based in Silang, Cavite, Philippines in 2006 and officially started in June of the same year. The program (there are still two aquaculture projects remaining) will end in December 2009.

A Better Practice and Increasing Income Workshops were held. Various NGOs in the Visayas and Mindanao areas, faculty and researchers from University of the Philippines Los Banos (UPLB), PCARRD, VSU and Australian researchers attended the workshops. The invited researchers were involved in past and current ACIAR research and shared research results and information on selected agricultural commodities and enterprises.

The Better Practice Workshop and Increasing Income Workshops were replicated in the field and gave farmers the opportunity to examine their existing practices, evaluate their strengths and weaknesses and identify options to increase their income through improved production of selected agricultural commodities. The workshop not only focused on areas where ACIAR research results can be used, but also on the wider overall analysis of the agricultural commodity. Issues on production, post harvest, processing and marketing systems were addressed. The workshop also provided an opportunity to validate ACIAR research results against actual field situations as presented by the NGOs and LGUs.

The Increasing Income Workshop utilized outputs from the Better Practice Workshop. Again, ACIAR researchers, NGOs and LGUs were invited to help analyze and understand farmers' practices and production systems. The workshop introduced action-learning cycles that focused on increasing farmers' income.

During project implementation, the NGO team assisted farmer groups in analyzing existing practices and identifying their strengths and weaknesses. A Better Practice guide which was the output of the Better Practice Workshop was used to provide farmers with a wide range of technological alternatives to increase their income. Farmers were asked to



select and help implement changes they considered as most beneficial and practical. Farmer meetings were later facilitated by NGO partners to assess the impact of the changes, identify lessons learned and initiate the next action cycle. Initially, CATP approved mini-projects of MFI, SWCFI, PROCESS, CASEC and LFPI in 2006. In mid 2007, funding for ACE and Gata Daku and LEAF were approved and a small funding was granted to SPPI in December 2008.

This terminal report will focus on four projects that ended in June 30, 2009 namely MFI, SWCFI, PROCESS, and LFPI. CASEC which was not granted funding for year 3 and LEAF which did not take off after funds were released in 2007 are also mentioned in this report.

The NGOs' projects focused on the following:

1. MFI - corn production, soil fertility management, cattle fattening and forage production and management
2. SWCFI - goat production and health management (including endoparasite control for small ruminants) and forage production and management
3. PROCESS - goat production and health management (including endoparasite control for small ruminants) and forage production and management
4. CASEC - swine production (particularly on pig fattening) and management
5. LFPI - nursery management, timber tree production, and agroforestry system
6. LEAF - goat production and health management (including endoparasite control for small ruminants)

All partners are required to submit new proposals and budgets every year and this is reviewed and approved by the CATP Program Manager. Yearly budget of partners are approved by ACIAR's Research Program Manager for Agricultural Systems.

The following are ACIAR research used by the partners:

1. Sustainable endoparasite control for small ruminants in Southeast Asia (AS1/1997/133)
2. Carbon dynamics, nutrient cycling and the sustainability of cropping and pasture systems (LWR2/1994/048)
3. Development of a knowledge system for the selection of forages for farming systems in the tropics (AS2/2001/029)
4. New Leucaenas for Southeast Asian, South Pacific and Australian Agriculture (PN9433)
5. Defining problems and opportunities for smallholder pig production in the Philippines (AS2/1994/121)
6. Sustaining and growing landcare systems in the Philippines and Australia (ASEM/2002/051)
7. Improving financial returns to smallholder tree farmers in the Philippines (ASEM/2003/052)
8. Nutrient management under rainfed cropping systems (LWR2/1991/002)
9. Tree production technologies for the Philippines and tropical Australia (FST/1996/110)
10. Leyte Livestock Improvement Project (ASEM/00/047)

Technical assistance was provided by partner LGUs like the Office of the Provincial Veterinarian in Bohol, Ubay Stock Farm of the Department of Agriculture Region 7, and the Office of the Municipal Agriculturist in Claveria, Misamis Oriental. The faculty of VSU, CVSCAFT, and MOSCAT were tapped to assist in the trainings conducted by SWCFI, PROCESS, CASEC and LFPI.

CATP sought to address the following key main issues: low levels of crop and animal production resulting to low farm incomes and slow uptake of appropriate agricultural technologies at the farm level.

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## 4 Objectives

CATP's main objective is to accelerate the adoption within Philippine farming communities of technical innovations based on results from selected past and current ACIAR funded projects. These interventions would be delivered at the community level by NGOs and LGUs that have on-going rural livelihood programs. As CATP approves yearly the partners' proposals and budgets, their objectives were also adjusted based on observations made in the implementation of their projects.

### MFI

Project Title: Improvement of Corn Production and Livelihood Enhancement Project  
Project field: Upland Farming

#### YEAR 1

1. to increase the corn production of 100 farmers in 3 sites by at least 30% in 3 years.
2. at least 100 farmers will have improve awareness on resources conservation and increasing income
3. farmers will improve their ability to manage resources for profit and sustainability

#### YEAR 2

1. Improved Cultural Practices: a) to increase corn production of 60 farmers in two project sites by at least 30% and b) to improve cattle fattening strategies of 60 farmers in the two project sites.
2. Adoption: Implement strategies for the transfer and adoption of appropriate technologies on:
  - a. carbon dynamic, nutrient cycling (LWR/1994/048) for corn production
  - b. development of knowledge system for the selection of forages for farming system in the tropics (AS2/2001/029) and using new *Leucaenas* for South Pacific and Asia Agriculture (PN 9433)
  - c. defining problems and opportunities for smallholder pig production in the Philippines (AS2/1994/121) using cross-sectional (phase 1) and longitudinal (phase 2) analysis and silage making (phase 3) as alternative feeds for cattle fattening
3. Production Assessment: Assess the seasonal and long-term trend in corn production and cattle fattening that will serve as basis to formulate plans govern the sustainability of the adoption of the technology
4. Impact: Assess whether beneficiaries have adopted/applied the corn production and cattle fattening technologies learnt during trainings conducted by MFI and VSU researchers.

Assess whether there is an improvement in total harvest/production of corn and fattened cattle and if there is significant improvement in income of farmer beneficiaries after adoption of ACIAR technologies.

### YEAR 3

1. Improved Cultural Practices: a) to increase corn production of 100 farmers in 3 project sites by at least 30% and b) to improve cattle fattening strategies of 100 farmers in the 3 project sites.
2. Adoption: Implement strategies for the transfer and adoption of appropriate technologies using IEC materials on:
  - a. carbon dynamic, nutrient cycling (LWR/1994/048) for corn production
  - b. development of knowledge system for the selection of forages for farming system in the tropics (AS2/2001/029) and using new *Leucaenas* for South Pacific and Asia Agriculture (PN 9433)
  - c. defining problems and opportunities for smallholder pig production in the Philippines (AS2/1994/121) using cross-sectional (phase 1) and longitudinal (phase 2) analysis and deworming for small and large animal
3. Production Assessment: Assess the seasonal and long-term trend in corn production and cattle fattening that will serve as basis to formulate IEC materials that govern the sustainability of the adoption of the technology to more farmers.
4. Impact : Assess whether beneficiaries have adopted/applied the corn production and cattle fattening technologies learnt during trainings conducted by MFI and VSU researchers).

Assess whether there is an improvement in total harvest/production of corn and fattened cattle and if there is significant improvement in income of farmer beneficiaries after adoption of ACIAR technologies.

### CASEC

Project Title: The Increasing Income from Family-based Small Scale Livestock  
Project field: Small Livestock

#### YEAR 1

1. Develop and increase the income of small scale farmers through animal husbandry and create new systems in small scale livestock based on and following ACIAR research.
2. The farmer family beneficiaries are provided sufficient guidance in animal husbandry.
3. Farmer beneficiaries are able to produce sufficient forages to feed their animals.
4. Beneficiaries can learn scientific methods of animal husbandry.
5. Create a marketing system for their products.
6. Establish farmer network on small scale livestock raisers.

#### YEAR 2

1. Defining improved cultural practices: a) to develop integrated livestock farming systems; b) enable farmers to produce sufficient forages and raw materials for feeds; c) to develop skills, knowledge and attitude of partner farmers in proper small scale pig productivity and management; d) to create marketing systems for farmers livestock products and establish network of small scale livestock raisers; and e) to accelerate adoption of effective, economical, adoptable and smallholder experienced based livestock technology.

2. Adoption: a) formation of grassroots trainers for new beneficiaries and b) use of specific ACIAR technologies.
3. Production Assessment: Monthly assessment of the seasonal and long-term trend of the actual output and hands on from the consultants input and their actual experience, that will serve as a basis to formulate plans that govern the sustainability of the adoption of the technology.
4. Impact: Assess whether beneficiaries have adopted/applied the ACIAR technologies.  
Assess whether there is an improvement in total harvest/production of pigs and if there is significant improvement in incomes of farmer beneficiaries after adoption of ACIAR technologies

**(PARTNERSHIP UP TO YEAR 2 ONLY).**

**PROCESS**

Project Title: Participatory Research and Extension Project on Farm Animal and Rice Management (PREP-FARM)

Project field: Small Livestock and Upland Farming

**YEAR 1**

1. to increase goat and rice production and income through the adoption of appropriate management technologies
2. to build the capacity of farm households in implementing appropriate management technologies.

**YEAR 2**

1. Defining improved cultural practices: identify key goat production and constraints and develop improved cultural practices for use in a participatory learning process.
2. Adoption: Implement strategies for the transfer and adoption of appropriate technologies on control of endoparasites for goats targeting farmer-beneficiaries in partnership with LGU-Bilar, CVSCAFT, OPV-Bohol, USF-Ubay/FITS, VSU and other stakeholders through training activities, site visits and other participatory methods.
3. Production Assessment: Assess the performance of goats and incidence of diseases, which will serve as basis to formulate plans that govern the sustainability of technology adoption.
4. Impact: Assess whether beneficiaries have adopted/applied the sustainable endoparasite control, use of appropriate forages, especially shrub/tree legumes technologies learned during training and experience sharing activities conducted by PROCESS and VSU.

Assess whether there is an improvement in production of goats and if there is significant improvement in incomes of farmer-beneficiaries after adoption of ACIAR technologies.

**YEAR 3**

1. Assessment and Monitoring of Cultural Changes: to identify major changes in goat farm practices and farmers behaviour resulting from the application of goat production technologies derived from ACIAR-sponsored researches.

2. Documentation and dissemination of IEC materials.
3. Impacts: To measure project impacts, both tangible and intangible, in farm households.

## **SWCFI**

Project Title : Increasing income of farmer groups through improved practices of goat production and pasture management

Project field: Livestock and pasture improvement

### YEAR 1

1. Increase the income of individual farmer goat raisers from the sales of goats and manure.
2. Farmers trained and have practiced basic goat management, herd health management and pasture management.
3. Increase farmers' capacity to undertake and manage change.
4. Develop a cadre of technically competent farmer instructors that will train others in goat management at the local level.

### YEAR 2

#### 1. Defining Improved Goat Management Practices

Key production constraints in raising goats such as 1) mortality of kids; 2) inadequate number of stocks; and 3) farmers' attitudes in goat raising will be identified to develop and increase the income of farmer-beneficiaries in areas covered.

#### 2. Adoption:

- a. Implement strategies for the transfer and adoption of appropriate technologies on endoparasite control of small ruminants (ASI/97/133) and utilization of appropriate forage species (AS 2/2001/029 and PN 9433) to 30 farmer-beneficiaries, project partners (LGU and other government agencies) and other stakeholders; through training activities and cross visits facilitated by SWCFI, LGUs and VSU researcher.
- b. Produce IEC materials from the best practices and results of the utilization of appropriate forage species in layman's term. The IEC will then be distributed to farmers raising goats in the areas served and its neighbouring barangays.
3. Production Assessment: identify potential forage species using the software developed by ACIAR on tropical forages (AS 2/2001/029) and assess the adaptability and growth of forages in the sites.
4. Impact: Assess whether beneficiaries have adopted/applied the management practices and technologies learned during trainings conducted by SWCFI and VSU researchers.

### YEAR 3

#### 1. Defining Improved Goat Management Practices

Key production constraints in raising goats such as 1) mortality of kids; 2) inadequate number of stocks; and 3) farmers' attitudes in goat raising will be identified to develop and increase the income and number of farmer-beneficiaries adopting the technologies on goat raising in the areas covered.

2. Adoption:

- a. Implement strategies for the transfer and adoption of appropriate technologies on endoparasite control of small ruminants (ASI/97/133) and utilization of appropriate forage species (AS 2/2001/029 and PN 9433) to 30 farmer-beneficiaries and other stakeholders; through training activities, documentation of best practices and cross visits facilitated by SWCFI and VSU counterparts.
3. Production Assessment: Continue the production of identified forage species already tested and produced in year 2 using the software developed by ACIAR on tropical forages (AS 2/2001/029) and assess the adaptability and growth of forages in the sites and neighbouring areas.
4. Impact: a) Assess whether beneficiaries have sustained the income derived from the adoption of proper goat management practices and technologies learned; b) Assess the number of adopters of goat management practices as a result of the FIs capability to convince other goat raisers to adopt the technology.

**LFPI**

Project Title: Facilitating tree-growing partnership between the wood industry and smallholder farmers

Project Field : Smallholder Agroforestry

YEAR 1

1. to establish equitable partnerships between the wood industry and smallholder farmers
2. to facilitate adoption of forest tree-based agroforestry systems that increase farm incomes
3. to develop community and farmers' technical and institutional and marketing skills and capacities

YEAR 2

1. Defining improved cultural practices: a) to identify key production constraints and develop improved cultural practices for use in a participatory action-learning process using ACIAR research outputs on agroforestry and crop production technologies and extension approach and b) to be able to impart workable technologies concerning tree agricultural crop production, management and marketing.
2. Adoption: Implement strategies for the transfer and adoption of appropriate technologies by smallholder agroforestry farmers in two upland communities in Claveria.
3. Production Assessment: Assess the seasonal and long-term trends in cost, yields and income that will serve as a basis to formulate plans that govern the sustainability of the adoption of the technology. Monitor tree growth as basis for determining potential income from agroforestry trees.
4. Impact: Assess whether there is an improvement in total harvest/production of identified commodities and if there is significant improvement in incomes of farmer beneficiaries after adoption of ACIAR technologies/approaches.

**(YEAR 3 OBJECTIVES ARE THE SAME AS YEAR 2 OBJECTIVES)**

## 5 Methodology

The project sites are existing sites of partner NGOs and have benefited from the technical assistance extended by other donors like the Philippine-Australian Community Assistance Program (PACAP), European Commission (EC), Dienst Voor Internationale Samenwerking aan Ontwikkelingo Projecten / New Zealand Aid (DISOP/NZAID), The International Centre for Research in Agroforestry (ICRAF) now known as World Agroforestry Centre, and other foreign donors. This is part of CATP's strategy of supplementing larger and longer term NGO programs to complement the NGOs existing activities in the field. The following are the areas covered by the project:

NGO	Province	Municipality	Barangay
MFI	Cebu	Argao	Catang, Lapay
		Pinamungajan	Buhingtubig
PROCESS	Bohol	Bilar	Owac, Villa Suerte, Yanaya
CASEC	Bohol	Candijay	La Union, Can-olin, Canawa, Cadapdapan, Cambane, Luan, Tambongan and Panas
SWCFI	Bohol	Garcia-Hernandez	Datag, Cambuyo
		Valencia	Banderahan
		Bilar	Cambigsi
		Batuan	Cabacnitan
		Duero	Taytay
		Sierra Bullones	Cantaub, La Union
LFPI	Misamis Oriental	Claveria	Mat-i, Madaguing

CATP started with the conduct of the Better Practice and Increasing Income Workshops where NGOs in selected areas in the Visayas and Mindanao and partnered with faculty and researchers from the Visayas State University (VSU), Central Visayas State College of Agriculture, Forestry and Technology (CVSCAFT) and Misamis Oriental State College of Agriculture and Technology (MOSCAT). They were also assisted by partner LGUs namely the Municipal Agriculture Office (MAO) in Pinamungajan, Cebu, Office of the Provincial Veterinarian (OPV) in Bohol, Office of the Municipal Agriculturist (OMAg) in Claveria, Misamis Oriental and Ubay Stock Farm (USF) in Bohol.

CATP employed an extension approach for sustained development in the form of an action-learning cycle to build capability of farmers to sustain increase in income from agricultural production. The action-learning cycle starts with a farmers' meeting where individual farmers give updates on their production volume and problems encountered in crop production and livestock raising. After the data is collected and analyzed, farmers write their desired production, sales and net income in a one-page monitoring form called the Statement of Intention and Achievement (SIA). In this form, the farmers wrote the



practices done before and after a technology/improved practices are introduced, sales data, production expenses incurred and net profit received. Farmers can easily see the changes in their income and production after they have done the improved practices. Farmers also write in the SIA the changes that they will do on the improved practices that they will adopt like planting of specific grasses and legumes, giving of salt and water to goats, purchase of upgraded does and others. Farmers were made to sign the SIA and copies were given copies of the signed forms. The program's scope and objectives are explained during farmers' meetings and usually VSU researchers were present to list down and provide an overview of ACIAR technologies and research outputs.

A series of trainings consisting of lectures and hands-on demonstrations are then scheduled by the NGO and VSU faculty/researchers, faculty from local state colleges and LGU partners. There are more hands-on demonstrations as most farmers learn better when lectures are short and simple but actual hands-on activities are longer and more intensive. Meetings, trainings and workshops are held in the barangay chapel, barangay halls or in meeting places of POs.

After the trainings were conducted, the NGO staff monitored farmers' application and adoption of improved practices and technologies. Sites were visited once a month. Farms are usually located in the uplands and takes 15 minutes to an hour of walking before one can reach these.

On-farm experimental trials were conducted especially in the use of organic fertilizer and the planting of forages. In Cebu, farmers applied cattle manure and urine, chicken dung with urea and complete fertilizer and cattle manure with urea and complete fertilizer. In Bohol, farmers established forage gardens of mixed grasses and legumes. Area planted ranged from 30 to 2,500 sqm. LFPI also experimented in using organic fertilizer and de-topping of corn.

MFI, SWCFI, PROCESS and LFPI conducted cross visits to farm sites in other barangays and provinces. PROCESS also visited Farmer Livestock Schools in Pangasinan and Nueva Ecija. They also visited USF in Bohol and were given free grasses. The farmers also were able to purchase legume seeds from USF.

## PARTNERS

The VSU researchers who constantly provided technical assistance and guidance to the partners were Dr. Angela Almendras-Ferraren and Dr. Raquel Serojihos who gave lectures in soil fertility management. Prof. Francisco Gabunada provided technical inputs and guidance on goat production and management, endoparasite control for small ruminants and forage selection and production. Dr. Alberto Taveros assisted the farmers on animal health management and swine and feeds production. Dr. Eduardo Mangaoang, who was involved in an ACIAR project on smallholder agroforestry lead technical trainings on agroforestry systems, tree management, trees in agroforestry farming, nursery management and tree registration. Dr. Nestor Gregorio, together with Mr. Jack Baynes, a lecturer from the University of Queensland, conducted a nursery management training in Bohol.

MOSCAT faculty, research and extension staff provided trainings on de-topping of corn for silage making and material for livestock feeds, animal manure utilization as component in organic fertilizer formulation, use of Nature Farming Technology System (NFTS) as component in indigenous micro-organism (IMO) and fermented plant juice (FPJ)

formulation, formulation of IMO5 ORGANO Plus organic fertilizer, use of Bio-N and vermi-composting technology.

Bio-N is a solid inoculant in powder form that contains two species of nitrogen-fixing bacteria that were isolated from the roots of *Saccharum spontaneum* L. It is capable of converting atmospheric nitrogen (N<sub>2</sub>) into a form usable by rice and corn plants. Bio-N is a research output of the National Institute of Molecular Biology and Biotechnology (BIOTECH) of the University of the Philippines Los Banos (UPLB).

MOSCAT assisted LFPI in monitoring farmers' progress. CVSCAFT on the other hand, provided trainings on goat production to SWCFI's and PROCESS' farmers. The Catholic Relief Services, a LFPI partner, assisted LFPI farmers on the cluster marketing of bananas. The Municipal Agriculture Officer in Pinamungajan, Ms. Carmelita Yape, assisted in the training and monitoring of field activities of farmers in Cebu. She actively advocated for the use of the Bio-N in MFI areas and gave free samples to farmers. In Bohol, the staff of the Office of the Provincial Veterinarian namely Dr. Meydallyn Dagandan and Dr. Frederick Madrinan assisted PROCESS and SWCFI in its training and monitoring activities. They actively spearheaded Animal Health Clinics in Bohol's far flung barangays. Mr. Marianito Doydora of the Ubay Stock Farm provided training on forage selection and production and helped monitor the progress of PROCESS' and SWCFI's farmers. Ms. Elaine Cahayagan of the Office of the Municipal Agriculturist in Claveria, Misamis Oriental encouraged farmers to attend the government sponsored farmer field schools and assisted LFPI in its trainings and field monitoring activities.

## PROJECT IMPLEMENTATION

### MFI

MFI used the strategy of involving the whole household in the design of a comprehensive farm plan that serves as guide for daily farm activities. The plan details the target, starting date of the activity, target completion date and corresponding activities. MFI covered two municipalities, Argao and Pinamungajan. In Argao, they assisted barangay. Catang and brgy. Lapay while in Pinamungajan, they covered brgy. Buhingtubig.

MFI mobilized two farmer instructors to facilitate the establishment of POs and farm trials as well as the conduct of regular project activities. Initial phase of the program was the establishment of the organization. The members were then asked to formulate their action plans as an individual and as an organization. The formulated action plans were then presented to the group for refinement and approval. After the organization is formed, the FI worked closely with the group. The FIs were also responsible in monitoring farm activities addressing project related problems of farmers. The close monitoring gave FIs the opportunity to determine what training, seminar and services are needed in the field.

In MFI, aside from the FIs, monitoring and evaluation was done monthly by a farmer group selected by members of the organization. The farmer monitoring group in Pinamungajan was also assisted by the MAO. The MFI management team also conducted quarterly monitoring and evaluation to assess the status of individual farm activities based on plans developed by individual farmers as outlined in the SIA. This activity determines project gaps and further encourages farmers to continue project implementation. MFI farmers also organized themselves into "alayan", a group that practices shared labor and resources in farming activities. It is organized among neighbors and relatives within a

locality to help in regular and labor intensive farm activities and even during occurrence of natural calamities.

MFI farmers in one barangay conducted cross visits to MFI's other barangays and vice versa. This further fostered the interest of farmers in various improved practices in agricultural production. MFI was assisted by VSU and MAO in its training and monitoring activities. It introduced the following technologies to farmers: soil fertility management, silage making, forage production, cattle fattening and livestock health management. Cross sectional and longitudinal analysis of agricultural commodities were also shared to farmers.

## SWCFI

SWCFI started with 10 interested goat raisers. Later, the experiences and practices of the first batch of farmers convinced other farmers to join the project. From 11 farmer-adopters of sustainable endoparasite control technology and improved pasture, the number of beneficiaries increased to 38 at the end of the project. Twenty-two were identified as FI's and became farmer livestock technicians in their barangays. Farmers were selected according to the following criteria: a) adopted soil conservation technologies introduced by PACAP, DISOP and EC Projects; b) availed of goat dispersal program of previous projects; c) initially planted some forage crops as feeds for his livestock; d) a good goat raiser, and e) willing to be trained.

SWCFI employed an extension approach for sustained development in the form of an action-learning cycle to build farmers' capability. During initial meetings, each farmer wrote their goals for the next production cycle. The goals were specific like planting of rensonii, flamengia and napier; giving regular supply of salt and water to goats; buying upgraded does; and others.

The farmers underwent participatory learning processes, best practice and increasing income workshops. These allowed the farmers to develop individual plans as outlined in their SIA. These plans became the basis for the integration of improved practices/technologies in their production system.

SWCFI monitored the farmers monthly. In year 1, two staff were assigned to CATP. Their salaries partly came from the project. However, after their other projects ended, only one staff from their PACAP project was retained to monitor CATP's activities. VSU, OPV, USF and CVSCAFT assisted SWCFI in its training and monitoring activities.

SWCFI was able to make a consolidated monitoring record on their farmers' progress on forage/pasture activities and goat production. However, they covered too many barangays with only two or three beneficiaries/barangay. The following are the improved practices introduced by SWCFI to its beneficiaries: goat production and livestock health management, pasture/forage production and goat waste management. SWCFI covered one barangay in each of its seven municipalities namely Garcia Hernandez, Valencia, Bilar, Batuan, Duero, Sierra Bullones and Guindulman.

## PROCESS

The following are the goat management technologies and practices introduced to farmers:

1. establishment of forage bank using adapted forage species
2. proper nutrition and feeding management like use of cut feeds during rainy days, provision of vitamins A,D,E and minerals using a mineral block, use of molasses and salt, as well as provision of water.
3. proper housing (construction of goat house)
4. endoparasite control and prevention management like strategic deworming, no grazing at early morning, daily cleaning of goat pens, hoof trimming

A total of 41 interested farmers from three farmer groups, , volunteered to join the project. The farmer groups were the Farmers Association of Owac, Yanaya Community Development Association and Villa Suerte Farmers Association. They started with an Increasing Income Workshop and developed individual action plans as reflected in their SIAs. Upon implementation of the action plans in their farms, PROCESS selected 9 model farms. The criteria used were a) application of sustainable endoparasite control technology and b) use of forages, especially trees and leguminous shrubs.

Every six months, a review workshop was held. Farmers assessed their progress in implementing the action plans as indicated in the SIA, draw learnings and evaluated initial successes. The workshop also signified the beginning of the next learning cycle within the same time frame. Farmers also filled-up a new SIA to draw new action plans.

PROCESS was assisted by VSU, OPV, USF and CVSCAFT in its training and monitoring activities. A cross visit was done in Central Luzon State University in Nueva Ecija and a Farmer Field School in Pangasinan.

## LFPI

Sixteen Landcare farmers in brgy. Mat-i and 16 farmers in brgy. Madaguig were selected as CATP beneficiaries. After conducting the Better Practice and Increasing Income workshops in both barangays, farmers filled-up and signed the SIA where farmers committed to improve their tree and crop production practices.

Trainings were then conducted on timber tree production, nursery management, agroforestry systems and tree registration. MOSCAT on the other hand conducted trainings on Bio-N application, vermicomposting, de-topping of corn, NFTS and formulation of IMO-ORGANO. Later, CRS conducted trainings on cluster marketing of banana. OMAg, on the other hand, promoted the Farmer Field Schools. Both OMAg and MOSCAT assisted LFPI staff in its monitoring activities. A cross visit to SWCFI goat sites in Bohol were conducted at the end of its year 3 operations.

LFPI distributed assorted seedlings to its farmers. Communal nurseries were constructed in both CATP covered barangays. Madaguig also constructed a rooting chamber for clone timber production and was able to propagate rooted seedlings like calamansi, cherries and ane-I (*Erythrina fusca*).

LFPI staff monitored farmers' activities during monthly meetings in the barangay and occasional visits to farm sites. Some sites are very far and travel time takes at least half a day just to visit one farm. In the second year, LFPI did not require individual SIAs to be filled-up but only use one SIA per barangay. They also devised their own monitoring form to capture other data they need for their other projects.

After every production cycle, a review meeting was held with the beneficiaries and results of farm trials and activities were discussed and assessed. After this, the farmers came up with a new group SIA and planned their next activities.

## CASEC

Forty farmers were invited to join the project and they attended the Better Practice and Increasing Income Workshops. They came from eight barangays of Candijay, Bohol namely La Union, Can-olin, Cadapdapan, Cambane, Canawa, Luan, Panas and Tambongan. Farmers were asked to fill-up and sign the SIAs after the Increasing Income Workshop was conducted. Dr. Alberto Taveros assisted CASEC in its training and monitoring activities. No partnership was established with any LGU unit in Candijay or the provincial office.

Trainings conducted related to ACIAR research were on livestock health and productivity management including pig fattening, feed formulation, forage production and development, and cross-sectional and longitudinal analysis of agricultural commodities.

Aside from the ACIAR outputs shared during trainings, farmers were also trained on alternative trading and marketing systems. Farmers were taught to use a price calendar to strategically and timely market their products.

Monitoring visits are done once a month since the barangays covered are far from the town proper. Farmers usually stay overnight at CASEC's training center in Candijay so that concerns and issues on the project can be discussed thoroughly without worrying of having to leave the venue early to catch the last public transport back to their villages.

Since the farmers have just started with their swine fattening project when CATP's partnership with CASEC ceased after year 2, it cannot be determined whether they have continued practicing the introduced technologies. Sixteen SIAs were submitted by CASEC to the CATP Program Manager in year 2.

## LEAF

The approach to the project would have been different as there would no longer be the conduct of a Better Practice and Increasing Income Workshops. After the initial orientation meeting with farmers on the project, trainings by Prof. Gabunada would have immediately started. However, despite the availability of funds, the initial orientation meeting was not conducted. The partnership with LEAF ceased in 2008, less than a year after its funds were released in 2007.

## 6 Achievements against activities and outputs/milestones

MFI

**Objective 1: To increase corn production of 100 farmers in 3 project sites by at least 30%**

no.	activity	outputs/ milestones	completion date	comments
	Increasing Income Workshop	Established baseline data  Formulate research design  Formulate group and individual action plans	July 2006 in Pinamungajan; Feb. 2007 in Argao	Corn harvest improved due to improvement in soil fertility
	Soil sampling		July 2007	Sites have more calcium elements and less phosphorus.
	Forage and silage making production seminar		August 2007	Farmers easily adopted the forage production practice but formula given on silage making needs further improvement.
	Field trials on corn production			Experimented on using cattle manure and urine, chicken dung with urea and complete fertilizer, and cattle manure with urea and complete fertilizer.
	Training on soil fertility management	Defining soil health and quality Determine soil nutrient Knowledge on the importance of soil organic matter management	July 2008	Cattle manure and urine were identified and proven as an effective alternative source of organic fertilizer
	Farmers meetings		monthly	
	Monitoring		monthly	

PC = partner country, A = Australia

**Objective 2: To improve cattle fattening strategies of 100 farmers in 3 project sites**

no.	activity	outputs/ milestones	completion date	Comments
	Increasing Income Workshop		July 2006 and Feb. 2007	After adoption of improved practices, increased income was observed due to use of improved breed and feed quality.

Conduct of trainings on livestock care and management;				Fattening period was shortened from 36 months. Adding legumes to the feeding scheme contributed to the health improvement of cattle resulting to increase in weight.
forage production;			May 2008	
forage management			July 2008	
silage making;			May 2008	
silage making and animal diseases management review			July 2008	
endoparasite control;			Feb. 2008	
cross-sectional and longitudinal analysis			July 2008	

PC = partner country, A = Australia

**Objective 3: Farmers will improve their ability to manage resources for profit and sustainability.**

no.	Activity	outputs/ milestones	completion date	Comments
	Farmers Meeting		Monthly	Planning, designing of on-field research and data gathering are discussed. Internal monitoring and evaluation are also taken up.
	Cross Visits to CATP barangays		2008	Argao farmers went to Pinamungajan CATP site and vice-versa.

PC = partner country, A = Australia

SWCFI

**Objective 1: To increase the income and sustain the goat production of 30 goat raisers in 11 barangays of 8 municipalities of Bohol.**

no.	Activity	outputs/ milestones	completion date	Comments
	Conduct Increasing Income workshop/assessment	1 workshop conducted; 26 farmers from 11 barangays attended	May 2007	Results of the income assessment revealed that of the 14 identified farmer instructors, 12 were able to generate income. Others experienced losses and/or break-even due to initial costs of housing or improvement of goat barns.

	Conduct baseline information and gross margin analysis	1 baseline information conducted; attended by 38 participants from 11 barangays	December 2007	Baseline survey for each goat raiser was gathered. The survey revealed a total of 231 goats raised by 38 farmers or at an average of 6 goats per farmer.
	Conduct farmers meeting to assess technology adoption and income	5 assessments conducted; 2 assessments tackled the results of OPVs blood and fecal sampling	May 2007 to April 2009	Farmers meetings reinforced the learnings of the farmers during the training and validated/updated their knowledge about goat technology. Sharing of experiences and ideas were likewise momentous.
	Conduct impact monitoring to assess increase in income, goat production trends and adoption trends in goat management practices.	2 impact monitoring conducted; 38 farmer-beneficiaries were involved	November 2007 and June 2009	Increasing goat production and technology adoption trends were noticed. From an initial count of 231 goats in 2007, production rose to 279. Likewise, from 11 farmer-beneficiaries in 2007, a total of 44 farmers are now applying the technology on goat production and improved forage practices.

PC = partner country, A = Australia

**Objective 2: To increase the capacity of farmer-beneficiaries to adopt and manage change on basic goat management, herd health management and pasture management.**

no.	Activity	outputs/ milestones	completion date	comments
	Conduct of best practice workshop	1 workshop conducted attended by 22 farmer goat-raisers.	May 2007	Participants identified and recognized their existing best practices based on 5 parameters, namely; 1) forage production, 2) housing, 3) breeding, 4) general management, and 5) marketing.
	Conduct basic goat production training	1 training conducted attended by 20 farmers	July 2007	The training was facilitated by farmer instructors of Mag-uugmad Foundation, Inc. It was a farmer-to-farmer sharing of experiences which resulted to a dynamic discussion not only on basic goat production but also nutrient cycling and crop diversification.
	Conduct goat herd health management training	3 trainings conducted; 2 of which were intended for new adopters of technology and 1 for the farmer instructors' trainers training.	June 2007 May 2008 August 2008	Attended by 25 goat raisers, the training was vital to their understanding on health management practices of goats which has a direct bearing to its growth performance thereby resulting to improved income.
	Conduct pasture / forage production seminar	2 trainings conducted both for new adopters and for farmer instructors.	August 2007 September 2008	Attended by 23 farmer instructors and new beneficiaries. The training was best appreciated by farmers due to their increase in knowledge and discovery on its importance in ruminant nutrition.



	Conduct feeds and feeding management training	2 trainings conducted both for new adopters and for farmer instructors.	June 2008 September 2008	Attended by 25 farmer instructors, the training reinforced the beneficiaries' knowledge about ruminant nutrition in specific terms. It taught them the correct feeding requirements of goats, estimating live weights and preparing mineral supplements and feeding concentrates.
	Conduct goat waste management training	1 training conducted	June 2008	Attended by 25 goat raisers, the training taught the farmers basic steps and procedures of vermi composting using goat manure. It also bolstered their knowledge on organic farming.
	Conduct cross-visits	A total of 2 cross-visits were conducted.	June 2007 August 2008	Attended by 20 farmer instructors, the exposure trips heightened the confidence of farmers to perform better after they observed similar and successful projects from other places.
	Regular monitoring of adoption and application of technologies learned during the training (SWCF/OPV)	SWCF: monthly monitoring of beneficiaries.  OPV: Quarterly monitoring or bi-annual monitoring and sampling as well as livestock clinic	June 2007 to May 2009	A monitoring record for goat beneficiaries was developed by the beneficiaries and the project staff. However, farmers hardly kept records of their activities.  The Office of the Provincial Veterinarian through Dr. Meydallyn Dagandan regularly conducts monitoring. The activity constitutes fecal and blood sampling. In most cases, livestock clinic is also conducted during monitoring visits. The clinic served as practicum session for all farmer instructors.

PC = partner country, A = Australia

**Objective 3: To develop a cadre of technically-competent farmer instructors (FIs) who will train others in goat husbandry and pasture management.**

no.	Activity	outputs/ milestones	completion date	Comments
	Selection and identification of farmer instructors	3 sessions conducted among staff and farmer leaders	May 2007 August 2008	Farmer beneficiaries were selected from peoples organizations formed by SWCF in the barangays covered by the project. Selection criteria were formulated and from there, a shortlist was generated.
	Establishment of on-farm trials for forage crops	Cumulative total of 2.6 hectares were established	Continuing activity	Forage garden established were planted with improved grasses and legumes located in the boundaries of the farms, idle lands, hilly areas not utilized for crops and under coconut trees.
	Conduct trainers training for farmer instructors (FIs)	3 sessions conducted for all 22 farmer instructors	June to September 2008	The training was intended to enhance the livestock skills of farmer instructors to teach other farmers in their respective barangays about goat husbandry. All 22 FIs underwent this series of trainings.

	Distribute veterinary kits to the farmer instructors in the barangays served.	21 were distributed to farmer instructors in the 11 barangays covered by the project.	June 2007 and October 2008	The veterinary kits were equipped with sets of needles and syringes as well as medical tools such as forceps, surgical scissors and the likes. In addition, basic medicines for common illnesses of goats were also included.
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PC = partner country, A = Australia

**Objective 4: To develop IEC materials and document best practices in goat management and forage management which will serve as a guidebook or manual for farmer instructors in the area.**

no.	Activity	outputs/ milestones	completion date	Comments
	Conduct writing workshop	2 writeshops were conducted; one was attended by FIs; the other by NGO Partners and LGUs	November 2008 and February 2009	The writeshops gave farmers the opportunity to express the impact of the project in their lives. A case study document was the final output of the writeshop.
	Develop IEC materials in collaboration with the Office of the Provincial Veterinarian, Province of Bohol.	2 IEC materials (Goat Management Manual and Forage Manual) were developed and distributed.	June 2008	The IEC materials developed were written in the Boholano dialect and contain the actual experiences of farmers in goat raising. It also served as a daily guidebook for farmers on various diseases and health management practices.
	Distribute IEC materials/manuals and fact sheets.	A total of 150 goat and forage manuals were already distributed to farmers. In addition, 35 trainers training fact sheets were also given to FIs.	June 2008	FIs and other farmers who joined the project received the goat manuals.  The trainers training fact sheets contains articles about silage production, forage establishment, herbal medicine production for goats, understanding antibiotics, how to read drug labels, suturing procedures and a list of common surgical instruments.

PC = partner country, A = Australia

## PROCESS

**Objective 1: To identify major changes in goat farm practices and farmers behavior resulting from the application of goat production technologies derived from ACIAR-sponsored researches.**

no.	activity	outputs/ milestones	completion date	comments
	Quarterly assessment and monitoring of goat performance and disease incidence	Analysis of production rate, income from sales, and blood sampling conducted	June 2009	Issues and problems discussed at farm level with technical people
	Semi-annual evaluation	Adoption of introduced technologies and experience sharing activities	June 2009	ACIAR-technology best practitioners were given recognition & awards

	End-of-project assessment	Improvement of goat production and increase in family incomes assessed	June 2009	Most farmers reported improvement in goat production and incomes.
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PC = partner country, A = Australia

**Objective 2: To measure project impacts, both tangible and intangible, in farm households.**

no.	activity	outputs/ milestones	completion date	Comments
	Basic story making writeshop	14 field stories drafted	October 15-16, 2008	Farmers related their experiences on feeding management, housing, waste utilization & use of cut feed as supplement
	Drafting of case study	1 case study drafted & polished during CATP writeshop	January 26-29, 2009	Project impacts in farm households and the support system provided by extension workers, researchers and fellow farmers in the action learning process highlighted
	Production of IEC materials	Tarp posters & brochures printed & circulated	August 2009	Poster with pictures of farmers applying improved goat production and health management practices Brochures include illustration of improved practices.
	Farmer-trainers training on goat production & pasture management	14 community leaders trained to become resource persons of their own specialized field of expertise	November 6-7, 2008	To sustain spread of technologies to neighbouring communities

PC = partner country, A = Australia

LFPI

**Objective 1: To identify key production constraints and develop improved cultural practices for use in a participatory action-learning process using ACIAR research outputs on agroforestry and crop production technologies and extension approach.**

no.	activity	outputs/ milestones	completion date	Comments
	Farmers meeting	Got feedback on status of communal nurseries and seedlings planted	monthly	Assisted by OMAg and MOSCAT
	Monitoring	Assess progress of farmers	monthly	-same-

PC = partner country, A = Australia

**Objective 2: To impart workable technologies concerning tree and agricultural crop production, management and marketing.**

no.	activity	outputs/ milestones	completion date	Comments
	Use of Bio-N		2007	Reduce cost of nitrogen fertilizer; MOSCAT provided the training
	Vermicomposting		2007	MOSCAT provided the training
	Nature Farming Technology System (NFTS)		2007	Component in the formulation of indigenous micro-organism (IMO) and fermented plant juice (FPJ); MOSCAT provided the training
	Formulation of IMO5 ORGANO Plus organic fertilizer		2007	MOSCAT provided the training
	De-topping of corn for silage making		2007	Used as feed for livestock (also to improve small livestock production); MOSCAT provided the training
	Animal manure utilization		2007	MOSCAT provided the training, component in organic fertilizer formulation

PC = partner country, A = Australia

**Objective 3: To implement strategies for the transfer and adoption of appropriate technologies by smallholder agroforestry farmers in two upland communities in Claveria.**

no.	activity	outputs/ milestones	completion date	Comments
	Increasing income workshop		2006	Actual income on tree production and nursery management were not determined by LFPI
	Better practice workshop		2006	LFPI was assisted by MOSCAT and OMAg in the conduct of the workshop
	Tree registration		2006	Led by Dr. Mangaoang of VSU
	Nursery management		2007	held in Bohol and led by Mr. Jack Baynes of Queensland University and Dr. Nestor Gregorio of VSU
	Cross-visit to SWCFI goat sites		April 20-24, 2009	Legume seeds were purchased at Ubay Stock farm and grasses were given to LFPI farmers. LFPI later distributed the grasses to the farmers.
	Re-echo of cross visit to other LFPI farmers		May 21-22, 2009	36 farmers participated in six selected barangays; this led to the organization of the Competitive Animal Raisers Entrepreneur (CARE), a marketing group.

PC = partner country, A = Australia

**Objective 4: To assess the seasonal and long-term trends in cost, yields and income that will serve as a basis to formulate plans that govern the sustainability of the adoption of the technology. Monitor tree growth as basis for determining potential income from agroforestry trees.**

no.	activity	outputs/ milestones	completion date	Comments
	monitoring		monthly	Will have to wait for 7 to 8 years before trees are harvested and sold and before increase in income is determined.

PC = partner country, A = Australia

**Objective 5: To assess whether there is an improvement in total harvest/production of identified commodities and if there is significant improvement in incomes of farmer beneficiaries after adoption of ACIAR technologies/approaches.**

no.	activity	outputs/ milestones	completion date	Comments
	Farmers meetings		Monthly	Usually banana cluster marketing are discussed
	monitoring		Monthly	25% increase in production of quality bananas; improvement of price by at least P2/kg.

PC = partner country, A = Australia

CASEC

YEAR 1

**Objective 1: Develop and increase the income of small scale farmers through animal husbandry and create new systems in small scale livestock based on and following ACIAR research.**

**Objective 2: The farmer family beneficiaries are provided sufficient guidance in animal husbandry.**

**Objective 3: Farmer beneficiaries are able to produce sufficient forages to feed their animals.**

**Objective 4: Beneficiaries can learn scientific methods of animal husbandry.**

**Objective 5: Create a marketing system for their products.**

**Objective 6: Establish farmer network on small scale livestock raisers.**

YEAR 2

**Objective 1: Defining improved cultural practices:**

- 1. To develop integrated livestock farming systems.**
- 2. To enable farmers to produce sufficient forages and raw materials for livestock feeds.**
- 3. To develop skills, knowledge and attitude of partner farmers in proper small scale pig productivity and management.**
- 4. To create marketing systems for farmers livestock products and network of small scale livestock raisers.**

**5. To accelerate adoption of effective, economical, adoptable and smallholder experienced based livestock technology.**

no.	activity	outputs/ milestones	completion date	Comments
	Pig fattening workshop			Led by Dr. Alberto Taveros; farmers given feed formulation using locally available materials
	Feed formulation training			Livestock fed with locally mixed feeds became more sturdy showed signs of muscularity and has faster growth rate. According to farmers, feed cost decreased by 80%.
	Forage development workshop			Prof. Francisco Gabunada; farmers will be given forage seeds by the first batch of CATP farmers.

PC = partner country, A = Australia

**Objective 2: The farmer family beneficiaries are provided sufficient guidance in animal husbandry.**

**Objective 3: Farmer beneficiaries are able to produce sufficient forages to feed their animals.**

**Objective 4: Beneficiaries can learn scientific methods of animal husbandry.**

**Objective 5: Create marketing system for their products**

no.	Activity	outputs/ milestones	completion date	Comments
	Alternative trading and marketing systems		2007	Farmers learned to market and price their products.
	Farmers implemented the introduced technology depending on the livestock's production cycle.	80% of the 16 farmers in 5 brigys have implemented the introduced technology	Late 2007 and mid 2008	Resulted to improved weight of pigs
	Farmers are planning sustainable measures to source locally available ingredients for their feed mix			Some farmers were unable to mix their own feeds but still fed their pigs with rootcrops, vegetables and leftover food.
	Linkage among CASEC, VSU and farmers was established			Partners were able to immediately address farmers' problems and concerns in technology application.
	Farmer to farmer reporting workshop		Early 2008	Conducted by CASEC at their training center in Candijay
	Meetings		monthly	
	Monitoring		monthly	

PC = partner country, A = Australia

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## 7 Key results and discussion

### MFI

After the increasing Income workshops, the corn farmers conducted farm trials on the effects of organic-inorganic fertilizer combination. The farm trial results showed that the combination of various organic fertilizer sources (with or without inorganic fertilizer) increased corn yield as compared to non-use of any kinds of fertilizer.

At the Pinamungajan site, average grain yield of fertilized corn was 3,465 kg/ha while for unfertilized corn, it was 1,980 kg/ha. At the Argao site, a similar trend (6,660 kg/ha for fertilized corn versus 1,920 kg/ha for the control) was observed. However, overall crop yield and biomass contribution was higher in Argao than in Pinamungajan.

The significant response of corn to fertilizer application is attributed to improved soil fertility as the soils in both sites are calcareous. Majority of soil samples collected from randomly selected farms in three barangays revealed that the project sites had high soil pH and low organic matter extractable phosphorus (P) and exchangeable potassium (K). This implies that application of fertilizer is necessary.

During the project's first year of operations, farmers got an average increase of 147 kg/ha of corn harvest or a 27% increase from their previous harvest. Before CATP, they only get 11 cavans (550 kg) of shelled corn. After adopting the improved soil fertility technology, they are now harvesting 13.94 cavans (697 kg/ha). With a selling price of P12/kg, this resulted to an average income of P1,764/cropping or P3,258/year for two croppings.

The increased in production and income of farmers can be attributed to the following:

- 1) improved planting distance, from 1m x 1m to 50cm x 75cm and 25 cm x 75 cm
- 2) use of improved corn varieties like "tiniguib", "latura" and "pioneer"
- 3) improved plant density from 5 to 6 seeds/hill to 1 to 2 seeds/hill
- 4) change of fertilizer application from 1 tsp/hill to 1 tbsp/hill
- 5) proper use, timing and application of organic and inorganic fertilizer

A corn varietal trial was done by farmers in brgy. Buhingtubig, using a 400 sqm land. The objectives of the experiment were:

- 1) to determine which variety of corn can produce more yield
- 2) to determine which variety can tolerate the calcareous soil (high in calcium, low in phosphorus)
- 3) to determine which variety requires less inputs

The land was plowed twice using a carabao. Furrowing was done and chicken dung was applied through broadcast method. The distance between furrows was 75 cm and 50 cm between hills with 2 seeds/hill. Fifteen days after planting, complete fertilizer was applied through broadcast method. After 30 days, urea was applied. Weeding and harrowing was done 30 days after planting when the corn was already knee high.

During the second week of September 2006, seeds were planted with a distance of 75cm between rows and 25 cm between hills. One farmer group planted 2 seeds/hill while another group planted 1 seed/hill. The chicken dung was applied 2 weeks before planting. The complete fertilizer was applied 15 days after planting and followed up with application of urea 30 days after planting. One group applied 1 tbsp/hill while another group applied 1 tsp/hill. The trial on the use of different fertilizers, rate of fertilizer application, timing of fertilizer application were done by individual farmers. Trials were also done on pest management, density and plant spacing. The following are the results of the farmers' experiments:

- 1) November is not an ideal month for planting because of typhoons that hit the province during this month. Insects and pests are also prevalent during this period.
- 2) pioneer variety is late in ear tassel development and maturity.
- 3) application of manure before planting makes plants grow vigorously.
- 4) katura and tiniguib varieties can be stored for a longer period of time.
- 5) use of katura and tiniguib increased production by 27%.
- 6) local varieties produced more corn grits which is more palatable and has lesser corn bran.
- 7) use of the pioneer variety increased production by 30%.
- 8) different varieties should be planted in different areas.
- 9) manure should be applied before planting.

The corn research activity in two on-farm communal research areas in Argao and three areas in Buhingtubig have shown that application of cattle manure and urine resulted to higher corn yield per hectare compared to the use of chicken dung with urine/ complete fertilizer and cattle manure with urea/complete fertilizer. Farmer-beneficiaries in nearby areas have started using cattle manure on their corn crops. This on-farm experimentation was a result of a soil fertility training conducted by Dr. Jill Almendras of VSU where soil improvement was emphasized to increase corn yield.

MFI used the concept of "Alayon" or group work to strengthen the interpersonal relationship of the PO members and encourage the active participation of project beneficiaries in farm-related activities. Alayon improved individual social behaviours and emphasized the benefits and positive values of working together. There were immediate interventions to farmers' concerns and issues that led to a more harmonious relationship among the group.

Partnership with government institutions and other development organizations enabled farmers to secure additional resources and access technical assistance on corn production and livestock management.

### Cattle Fattening

Farmers reported an increase in income from cattle fattening. Prior to their adoption of improved practices, farmers recalled that it took them three years before they can sell their cattle. But through the cattle fattening technology adopted, the fattening period was shortened to only three months. Adequate amounts and quality of feeds were given to the cattle and legumes were added to the feeding scheme to help improve its health and weight resulting to higher selling prices.



Most farmers from the three project sites, who attended the forage production and management training conducted by Prof. Gabunada, decided to make a comparative study between cattle fed with the prescribed 30% legumes and those fed with grasses and concentrates.

The use of legumes in the beneficiaries' cattle fattening project resulted to an increase in their monthly income. In Catang and Lapay, Argao, 32 farmers had an increase in monthly income of P2,000 while 13 farmers declared a P3,000 to P5,000/month increase. Farmers from the neighboring barangays of Catang and Lapay have expressed interest in using silage for their own cattle fattening activities. MFI has introduced the technology to their other non CATP beneficiaries in Mabinay and Sibulan, Negros Oriental and Macrohon, Southern Leyte.

The farmers realized that there are technologies that do not require high inputs yet have resulted to higher yields and higher income in a sustainable basis. Integrating corn production and cattle fattening led to an overall increase in farm production and quality of farm produce.

## PROCESS

At the end of 2008, there was a significant increase in the number of raised goats. From 183 goats at the start of the project, a total of 397 goats or an additional 214 goats were produced by 41 farmers. A hundred and twenty five goats were sold giving them an income of P127,800 (US\$2,720) or an average of P3,000 per farmer. Hence, some farmers increased their goat herd both for selling and reproduction purposes. Data shows that for every 5 new goats produced, 3 are sold while the rest are kept for reproduction. PROCESS claimed that in just one year of introducing agricultural innovations, farmers reported an increase in income from 40% to 100%.

Three model farms have been established per barangay or a total of nine across all sites. The farms showcases endoparasite and disease control technologies for goats, use of forages, and agroforestry practices. Other farmers who will be interested to adopt the technologies in their own farms can also visit these model farms.

Thirty-three of the 41 farmer-beneficiaries have improved the design of their goat pens and established forage banks in their own farms. These forages are integrated with their agricultural crops. They are also using tree leaves and shrubs, crop residues, concentrates and other feed supplements as part of their goats' daily diet.

Ninety-five percent are involved in a participatory learning process towards improving cultural practices as indicated in the application of proper feeding practices, housing, waste utilization and use of cut feed as supplement during rainy days.

Deworming of goats has been regularly conducted by trained Barangay Livestock Aides (BALAs) and animal owners who used locally available medicinal herbs to supplement this. After undergoing several trainings and cross-visits, farmers came up with their own designs for goat pens. The size and design were based on the number of goats and available capital to purchase the materials needed. Through informal sessions, each farmer shared ideas to help improve the technology. Most farmers constructed goat pens

with a 1 meter distance between the floor and the ground surface. Farmers have their own forage banks where sufficient supply of cut feeds is readily available for their animals.

Most farmers shifted to using ethnoveterinary medicines and practices. Medicinal plants like “bunga” for deworming, are locally available and easy to prepare. They also tried the ABC (avocado, bayabas (guava) and caimito) formula in treating diarrhea and other related health disorders of goats. Farmers have also adopted organic farming because of the high cost of inorganic fertilizer. They now use goat manure and sell this to rice farmers at P150/sack.

## SWCFI

The training and seminars given by the project further enriched the knowledge and skills of farmers. The following are the improved practices that they have applied:

a) Goat Management System. Most farmers implemented a semi-confinement system of raising goats. Before the project, farmers completely tethered their animals. But now, goats are kept in goat houses or barns which gave them more protection from adverse environmental conditions. Salt or mineral lick, clean water, and feeding trough for both forages and concentrates were provided. Regular collection of manure was done and used as organic fertilizer in vegetable gardens and other crops. It was also sold giving farmers additional income.

b) Goat Production and Health Management. A baseline survey of goat raisers at the start of the project revealed that farmers owned an average of 6 goats and total goat population was 231 herds. To date, there are now 279 goats. This is the result of decreased mortality due to improve health, proper forage and feeding, as well as good breeding and selection practices. The farmers' knowledge of herd health management and hands-on treatment and vaccination, castration and regular deworming of animals improved the herd condition.

Goat herd health management training introduced farmers to proper goat health management practices. Anatomy and physiology of goats were discussed in relation to common goat diseases. Housing, feeding and breeding practices were also explained plus practical aspects of castrating goats, drenching, artificial insemination and feed formulation. FIs were given veterinary starting kits so they can immediately treat their livestock when the need arises.

The pasture and forage production seminar equipped farmers in forage management, utilization and preservation. Farmers were also given the skills and techniques in forage establishment, farm planning and lay-outing. The soil samples they bought were examined using a pH meter and they were given a list of grasses that will thrive in their areas.

Dr. Meydallyn Dagandan of OPV provided the training on goat herd health management. The FIs knowledge and skills on basic animal health management such as preventive measures for common diseases were reviewed. Also discussed were a) reproductive biology, b) care and management of does, c) diarrhea and dehydration, d) mastitis, e) ketosis/lameness, and f) prevention of external and internal parasites. Practical sessions

were also conducted so that farmers can further practice their skills in various goat management practices.

Mr. Marianito Doydora of the Region VII Office of the Department of Agriculture and formerly assigned in the Ubay Stock Farm in Bohol conducted the pasture/forage production. He is actively involved in training CATP farmers on forage and pasture management. During the lecture, he emphasized the value of forages in animal production. Practical aspect of forage production especially on forage establishment, management, utilization and preservation were also explained to the farmers. The training helped revalidate farmers' knowledge in identifying forages planted on their farms and its uses.

c) Feeding Practices. Prior to the project, establishment of an improved pasture area was never considered by the farmers. They thought that grasses were enough feeds for their livestock. After the training on pasture management, goat raisers began to develop forage production areas in their farms, idle lots, farm boundaries, or beside coconut trees. Forage areas were planted with 10 kinds of improved grasses such as napier, B22 napier, guatemala, signal grass, star grass, setaria, guinea, para grass, humidicula and guinea T58. Napier grass is common in the area. They also incorporated legume crops in the diet of their goats. Leguminous plants found in the area are ipil-ipil, *Gliricidia* sp., *Arachis pentoi*, *Calliandra*, *Desmodium rensonii*, *indigofera* and *Flemingia macrophylla*. Some farmers also feed concentrates to the animals especially to lactating does.

Increase in Income, Benefits and Utilization. Farmer beneficiaries get their income from sales of goats, kids and manure. Baseline survey showed that at the start of the project, average income of the beneficiaries from goat sales was only P597/year for sales of goats and manure. At the end of the project, cumulative income of 30 beneficiaries was Php49,300 or an average income per family of P1,643. The beneficiaries used their income to pay school tuition and loans from their POs. They also slaughter goats as source of meat for the family. The manure collected per day from an adult goat range from 0.5 to 1 kg.

Better Linkages and Coordination. The linkage established by the project with the following offices proved to be productive and useful:

a) Office of the Provincial Veterinarian (OPV) in Bohol - OPV helped boost the confidence of farmers in treating livestock in their barangays especially in the absence of veterinarians in their area. It educated the beneficiaries on animal health management and farmers have undergone hands-on practicum on livestock management. Dr. Meydallyn Dagandan regularly monitored the project and shared the value of animal health as the first defense to combat mortality due to worm infestations. The regular fecal and blood sampling conducted resulted to new strategies in treating pests and diseases in the area. A feedback mechanism between OPV and the farmers was established through farmers meeting. Thus, solutions to problems were readily addressed.

b) Ubay Stock Farm (USF) - The USF staff provided farmers some planting materials after the training on forage management and establishment. It also shared technical knowledge in the establishment of on-farm trials for forage in the 11 barangays covered by the project. USF's monitoring of beneficiaries' progress also helped change farmers' traditional practices of giving only grasses and legumes to animals.

c) Visayas State University (VSU) - VSU faculty/researcher assisted in the initial assessment, monitoring and technical trainings to assure transfer of technology in the field. However, the distance of Bohol from VSU limits VSU staff's participation to the project especially when the farmers need them and they are not available.

Based from SWCFI records, from 11 direct beneficiaries in year 1, 8 other farmers (indirect beneficiaries) benefited. In year 2, direct beneficiaries were 22 and indirect beneficiaries were 16. In year 3, 44 directly benefited from the project while 54 farmers were indirectly benefited.

#### Forage Production

Forty-seven farmers from 11 barangays established their own pasture areas that have 3-5 kinds of improved grasses planted. The grasses were sourced from USF or from farmers' neighbours.

Brgys	Forage Area (sqm)	No. of Farmers	Kinds/type of forage planted
Anonang	765	4	star grass, setaria, Guatemala, Centrosema, stylosanthes, flemingia
Batuan	3,220	3	napier, setaria, Guatemala, rensonii, gliricidia, flemingia
Biabas	3,500	6	star grass, napier, rensonii, flemingia, Guatemala, ipil-ipil, humidicula
Botong	1,000	2	Napier, rensonii, flemingia, setaria, Guatemala, humidicula, centrosema, ipil-ipil, gliricidia
Cambigsi	1,500	2	Napier, rensonii, flemingia, setaria, stylosanthes
Cantaub	5,000	2	rensonii, stylosanthes, setaria, napier, arachis pentoi, flemingia, tricantera, indigofera and calliandra
Datag	5,220	10	setaria, Guatemala, rensonii, napier, stylosanthes, guinea T-58, humidicula
La Union	1,750	8	napier, setaria, indigofera, guinea, Flemingia, gliricidia
La Victoria	1,100	2	setaria, napier, paspalum, Guatemala, Centrosema
Lundag	1,750	4	B22 napier, napier, signal grass, star grass, Guatemala, indigofera, centrosema, calliandra
Taytay	1,470	4	ipil-ipil, napier, setaria

Forty-seven farmers in 11 barangays established pasture areas planted with 3-5 kinds of improved grasses that were sourced from the Ubay Stock farm or from neighbours. Only SWCFI was able to show the list of farmers that planted forages, the area size and forages planted.

The planting of forages improved the nutrient and feeding requirement of farmers' livestock resulting to increased weight and higher selling price of goats. There is also less time spent in looking for good pasture areas or in searching for a place to tether animals.

## LFPI

At the start of the project, the farmers were able to establish partnership with the Mindanao Association of Wood Processors (MAWP). MAWP encouraged them to expand their existing timber tree production to plant falcata because of its high demand in the market. MAWP also provided free seeds and technical assistance (regular field monitoring visit to prospective farmers).

Due to the link with MAWP, one farmer was able to sell her timber at a higher price compared to those who sold their trees through the old marketing system. There was also a change in farmers' production/management practices in corn, banana, forage and coffee.

In corn production, some improvements done were:

- a) Conducted soil analysis using soil testing kit with the assistance from the MAO. Farmers followed the recommended fertilizer rates upon learning of the mineral deficiencies in their farm soil.
- b) Used Bio-N to lessen the application of expensive inorganic fertilizer.
- c) Properly timed their fertilizer application.
- d) Used organic compost as supplementary fertilizer for their crops.

For banana production, the farmers implemented and practiced de-leafing, de-suckering, monthly weeding and use of organic fertilizer. For coffee production, trees were properly pruned, fertilizer applied and ring weeding practiced especially for newly planted coffee plants.

Their CATP activities during the first year were right on track. They conducted trainings on nursery management, tree-growing, and agroforestry system management where farmers were given hands-on training and field trial demonstration on nursery and tree-growing practices. The tree registration process was also facilitated at the barangay level. Farmers' field trials (two for each barangay) were also established which showcased improved agroforestry practices of farmers. One CATP farmer established a communal nursery which is a source of timber planting materials. LFPI distributed seedlings to farmers which they integrated in their farms.

Demo trials on corn production was also established using three treatments of organic fertilizer namely composted biodegradable material waste which includes goat and cattle manure; pure chicken dung; and formulated IMO5 Organo Plus. The demo farms serve as venue for farmers to observe, evaluate and test the effectiveness of formulated organic fertilizers. There is also an ongoing corn experiment at the demo farms where farmers can evaluate the results of de-topped corn in terms of production and source of feeds for livestock.

Increasing Income Workshops were conducted during the first and second years. In the second year of project operations, MOSCAT trained farmers on de-topping of corn for

silage making and feeds for livestock, use of animal manure utilization as component in organic fertilizer formulation, use of NFTS as component in the formulation of IMO and FPJ, formulation of IMO5 ORGANO Plus organic fertilizer, continued use of BIO-N to reduce cost in Nitrogen (N) fertilizer requirement for corn, and vermi- composting. Mat-i farmers were also assisted in their procurement of good quality coffee seedling materials from NESTLE' in Tagum, Davao del Norte. The seedlings were first placed in the communal nursery and later distributed to individual farmers.

A training on nursery management was also conducted by Dr. Nestor Gregorio of VSU and Mr. Jack Baynes of the University of Queensland. A combination of lecture, demonstration and practical sessions were done during the training and the following were discussed: nursery management; use of fertilizer (N,P,K and micro-nutrients); plantation layouts and agroforestry regimes; site preparation and tree planting demonstration; thinning demonstration and group exercise; pruning demonstration; tree measuring and valuing; tree registration; and DENR legislations which was conducted by a DENR staff.

During the 3rd year, most of the activities were centered on monitoring existing communal nurseries and beneficiaries' farms. LFPI also monitored the trees planted during the project's first year of operations. This was done to evaluate if farmers have applied the technologies learned during trainings conducted on proper tree management, proper pruning, thinning and others. An assessment on goat production in six selected barangays in the Municipality of Claveria was also conducted to determine how many farmers have integrated livestock (especially small ruminant) in their farming system. After the assessment, the project team selected farmers who were included in the cross visit to Bohol and were trained on goat production and animal herd health management practices.

Later a re-echo training was conducted to share what farmers learned in Bohol and farmers organized themselves into a group called "Competitive Animal Raisers Entrepreneur (CARE) of Claveria". The group will handle the marketing of the goats of its members.

The Madaguig Landcare members reportedly distributed around 8,107 assorted seedlings to 30 CATP farmers. About 80% of the total tree seedlings planted survived and the rest particularly the falcata trees died. These trees were planted in an open space where there was no partial shading.

The Mat-i group also equally distributed to 30 CATP farmers around 7,700 assorted seedlings. Although their falcata seedlings were also hit by the gal disease, the mortality was lower because the seedlings were planted in areas with partial shading.

Madaguig's first nursery was constructed in a government owned lot at the back of the public market. After the 2007 local election, there was a change in the barangay leadership. Most of the officials elected were new. Because of personal biases, the new officials ordered the transfer of the CATP communal nursery to another site. LFPI partly attributes this action to the political rivalry between the new local officials and LFPI's field facilitator who was also the former barangay captain of Madaguig. The farmers complied but this caused discouragement among the members who toiled hard to care for the nursery daily.

A rooting chamber was constructed for clone timber production. Hence, seedlings like mahogany, rubber and coffee are available for distribution to members. They also propagated rooted seedling like calamansi, cherries and ane-I (erythrina fusca). For Mat-i, their nursery was transferred at the back of the barangay hall. They also constructed a rooting chamber and mahogany seedlings are now available.

LFPI tapped more of MOSCAT's research and extension staff to assist them during trainings rather than VSU faculty/researchers. This is because the MOSCAT campus is just adjacent to LFPI's office, making their technical staff accessible when LFPI needs them. MOSCAT also assisted LFPI in monitoring the farmers. The following were trainings conducted by MOSCAT: vermicomposting, use of Bio-N in corn production, Nature Farming Technology System (NFTS), formulation of IMO-5 ORGANO Plus organic fertilizer, de-topping of corn for silage making and animal manure utilization. Five farmers in Madaguig and two farmers in Madaguig are already doing vermi-composting and have used the vermin-cast and compost as fertilizers. The use of organic fertilizer lowered the corn production cost by an average of 25%. The following is the computation of farmers' income/ha in corn production:

Production Cost (labor cost)	(in Philippine Pesos)
land preparation	2,030
sowing/planting	1,060
weeding	1,510
harvesting	1,225
shelling	450
rental fee for mechanical sheller	700
sun drying or mechanical drying	937
market delivery	645
Farm inputs:	
Seeds	2,600
Chicken dung	2,500
Fertilizers	4,735
Total cost	18,392
Total yield/ha	2,579 kg
Price corn/kilo	10.40
Total price of corn yield	26,822
Less total expenses	18,392
Net profit	8,430

(Source: LFPI's 2007 CATP report)

The Catholic Relief Services is assisting LFPI on its agro-enterprise activity on banana. They have undergone a training on "Clustering Approach to Agro-enterprise Development" and conducted three test marketing activities. Trainings on improving banana quality was already conducted in barangays Mat-i, Poblacion, Panampawan, and Madaguig.

## CASEC

Per CASEC's report in year 2, most of their farmer-beneficiaries have adopted swine raising and fattening technologies and feeds formulation which was shared by Dr. Alberto Taveros of VSU. Their average net income in swine raising is P1,586 (4 months production cycle) while previously, they only got a net income of P260 (5 months production cycle). The increase in net income is attributed to low cost of feeds formulated. The cost is only P357/sack compared to P820/sack of commercial feeds. The following is the breakdown of the feeds formula and a simple computation of net income.

### Average Farmers Production Cost Comparative Statement (Feed Mixing/Fattening)

#### A. Previous Production Practices and Costs

Production Duration: 5 months

Number of Pigs: 1

Description	Cost (P)
Piglet	1,000
Commercial Feeds (2.5 sacks x P820/sack from weaning to selling)	1,640
Electricity	50
Water	50
Biologics	150
Labor	400
Logistics	50
Total production cost	3,340
Total weight harvest: 45 kg x P 80	3,600
Total Net Income	260

#### B. Using Feed Formulation Technology and Cost

Production Duration: 4 months

Number of Pigs: 1

Description	Cost (P)
Piglet	1,000
Materials used in feed formulation (2.5 sacks x P 357/sack)	714*
Electricity	50
Water	50
Biologics	150
Labor	400
Logistics	50
Total production cost	2,414
Total weight harvest: 50 kg x P 80	4,000
Total Net Income	1,586

**Note: \* Includes multivitamins and probiotics which enhance the digestive system and strengthens the immune system from common diseases.**

**Biologics and logistics costs decreased because of the use of available materials found in farm areas.**



## Assessment of CATP Projects

MFI covered two sites in years 1 and 2 but added another barangay in Argao in year 3. They were able to encourage the transfer and adoption of practical technologies like soil fertility management using organic fertilizer from cattle manure and urine. They also encouraged farmers to plant forages for their cattle and try silage making. Although they failed to perfect the silage making technology (the silage had a foul smell which they attribute to either the fresh grass used or the feed supplements added), MFI and the farmers are still willing to try again and come up with a good formula. They plan to use corn residues and dry grasses in the next trial.

Endoparasite control on livestock was also shared by VSU researchers which resulted to the cattle's improved health. Dewormers, mostly local herbs, are regularly given. The farmers' limited funds prevented them from buying commercial dewormers like Ivomec in agricultural supply stores.

MFI failed to produce any IEC material. In their year 3 proposal, this was included in the expected outputs. The proposed IEC material is on techniques for improved corn production through appropriate soil fertility management practices. Another is on knowledge system for the selection of best forages for contour farming and feeds for cattle fattening particularly on Leucaena. MFI failed to show the detailed computation of the cost and return analysis of their corn production and cattle fattening projects although they indicated in their report the average computation of net income and total production. Farmer records were kept by the field facilitators and no copies were found in their office.

MFI field facilitators are effective in the field and have credibility with the farmers as they are practicing farmers who also used the technologies shared by the project in their own farms. MFI is good in organizing and establishing people's organizations and have been doing development projects in various areas in Cebu for more than 20 years.

They also succeeded in involving the MAO of Pinamungajan in the project which made farmers access the services and free agricultural supplies like Bio-N from the municipal office.

Only three barangays are covered by the project. Hence, MFI was able to closely monitor the farmers' progress. There are many farmers who attended the trainings because the training venues are near their residences. MFI focused also on the POs and not on the individual members. Thus, almost all PO members were involved in the project. Sharing of experiences was easier because farm results were discussed during formal and informal gatherings of members. It also achieved its objectives of raising the income of 100 corn farmers who are also the project's cattle raisers.

MFI established a good rapport and linkage with VSU researchers namely Dr. Angela Almendras-Ferraren, Prof. Francisco Gabunada and Dr. Alberto Taveros. Dr. Ferraren also provided technical assistance on rice production and integrated pest management practices.

MFI was observed to be weak in documenting and recording field activities. Its top management does not regularly collect and consolidate the monitoring reports of its field staff. They only ask for data during the submission of progress reports.

They also failed to produce IEC materials although this was included in their year 3 plans. They also did not to monitor the increase in income of farmers in year 3. They only concentrated in getting the data on production or total harvest.

## PROCESS

It only covered three areas in Bilar. Hence, the assigned field staff was able to properly monitor the farmers' activities. The CATP beneficiaries have been supported by PROCESS' various projects for many years and have received various trainings and capability building assistance already. Farmers were observed to be open to new ideas and new projects introduced by PROCESS.

The assigned field staff, although not a farmer, was able to get the trust and confidence of the beneficiaries. She has been handling other projects of PROCESS in the community prior to CATP and stays in the community during weekdays. She is treated as a member of the community. PROCESS is also good in organizing and establishing people's organizations. It has established a good track record in Bilar and other covered areas in Bohol and has been in the development field since the 1990s.

Like MFI, they focused on the POs. But only PO members that were interested to join the project were invited during trainings conducted. Sharing of field observations, insights, suggestions, opinions and farm trials and output were done in formal and informal gathering of members.

PROCESS was able to meet the objectives of at least 80% of farmers applying improved cultural goat management practices specifically on proper feeding management, proper housing, waste management and use of cut feeds during rainy periods.

There was also a decreased mortality of goats to less than 10% at the end of the project. Many farmers also improved the design and construction of their goat pens. However, around 30% still did not follow the recommended design. Some farmers don't want to shell out additional capital and exert additional labour in repairing their goat pens. Eighty percent of farmers established forage gardens although areas planted are along farm borders or in backyards. Only a few planted forages in vacant lots. Majority used crop residues, concentrates and other feed supplements for their goats.

PROCESS have prepared IEC materials like brochures on goat and forage production and a tarpaulin poster outlining the same topics. They originally planned to produce a video documentation and powerpoint presentation on improved goat practices and forage management but was not able to do this anymore.

The PROCESS staff were assisted by Prof. Francisco Gabunada and Dr. Alberto Taveros in their training activities. But CVSCAFT, OPV and USF also assisted them in their training and monitoring activities. Although the MAO staff in Bilar were present during some trainings conducted, they were not able to go to the field and visit the sites. This is due to the limited staff of the MAO which cannot cover all the barangays in the municipality. Areas visited are mostly those that are easily accessible by public transport.

The MAO has limited budget for travel and does not have its own vehicle to use during field work.

PROCESS is weak in the preparation of progress reports and sometimes have failed to submit their reports on time. They also failed to make a thorough analysis on farmers' increased income due to adoption of technologies. There is no conscious effort on the staff's part to do this which is partly attributed to their lack of skills and experience on financial analysis. They just stated how much were the total volume of production, sales and net income. There was no effort made to record input purchases of farmers during monitoring visits.

The PROCESS staff assigned to CATP has already resigned due to lack of funds to keep her. The farmers' progress will be difficult to follow because of lack of staff to monitor the farmers' activities.

### SWCFI

CATP farmers are also long time SWCFI beneficiaries that have received various kinds of technical assistance from other foreign donors. They were observed to be open minded and exudes confidence when expressing their ideas. They are also not afraid to speak out and express their ideas. This is a good indication that SWCFI was successful in building the capabilities and capacities of its partners in the field. Like PROCESS, it is assisted by CVSCAFT, OPV and USF in its training and monitoring activities. VSU researchers, Prof. Francisco Gabunada and Dr. Alberto Taveros, gave trainings on goat production, animal health management and cross-sectional and longitudinal analysis of agricultural commodities..

The CATP field staff is not a farmer but has established good relations with the community. He also sleeps in the community during weekdays and is treated like a community member by the farmers. Their working relationship is more personal and relaxed and they communicate their concerns and problems openly.

There were two staff assigned to CATP in the first year of the project's operation. But after some projects ended, the staff assigned to PACAP was assigned to CATP. It is important that farmers trust the field staff since they will only cooperate if they feel comfortable and can openly communicate with the assigned staff.

SWCFI has a good track record in implementing projects in the community. They continue to visit their areas even after their projects have ended. They realized that farmers need continuous guidance and technical assistance. They realized that the efforts they made on their previous projects would just go to waste if communities are totally abandoned and left to fend for themselves.

SWCFI covered many far flung barangays. The distance from one barangay to another is very far hence monitoring is difficult to do. There are also only two or three PO members/barangay. Hence, it was observed that the PO did not took interest in the project as none have officially approached SWCFI and requested to avail of the trainings on goat production for its members.

It was able to meet its objectives of at least sustaining the increase in income of farmers by at least 15% from goat enterprises. This is due to the decrease in mortality of kids by 50% and decrease in mortality of goats to less than 10%. Only a few farmers increased their goat stocks. Majority still maintain 1 to 2 goats/year. Although the total number of goat raisers increased after 3 years, some of those trained in year 1 dropped out in year 2 and the new farmers in year 2 dropped out in year 3.

Most farmers improved the design and construction of their goat pens but some farmers visited did not improve their goat houses. One lady beneficiary abandoned her small shack and it now houses her goats. The shack is not elevated from the ground and goat manure is scattered all over the floor. She has around 22 goat stocks. The goats are small although Dr. Dagandan said that these are cross-bred stocks. However, the farmer gets a good price from buyers in her area. There was no UMMB seen. Only water and salt were given.

Majority of farmers planted forages in their backyard, front yard and vacant lots near their residences. Size of areas planted varies. Majority allotted around 30 to 50sqm while 20% utilized 300 to 2,500 sqm forage areas.

Because of OPV's technical guidance, some SWCFI farmers have become farmer-instructors and are now providing advice and treatment to their neighbours goats. SWCFI has also produced a manual on goat production and health management practices and have distributed these to the farmers as a handy reference on goat raising. There is also a draft manual on forage production which is currently being reviewed by Mr. Doydora of USF and Prof. Francisco Gabunada.

SWCFI has good monitoring records and was able to consolidate the data of farmers in one monitoring form. However, like PROCESS, the data is more on production and total sales and did not include data on cost of inputs.

Only a few farmers have adopted all the technologies and improved practices that they learned from the trainings. Others were active only for 1 year. After a year, another group of farmers joined the project and have missed the trainings given the previous year. Hence, another set of trainings were again conducted. Since the inactive farmers progress was not monitored, there is no way of knowing whether they have adopted and used what they learned from the trainings shared by the project.

Also some active farmers do not take part in succeeding trainings. They usually send their wives and sons to attend these training if they are busy with other livelihood activities. Hence, the accuracy of the transfer of knowledge from the wife or children to the farmer cannot be determined. Although wives and sons also help in goat rearing, it is the farmer that makes decisions with regards to how he will rear his goats, improvement in the goat pens, purchase of UMMB and when to sell the goats. Wives and children usually help in looking after the goats when these are freely grazing in the open field.

It is also hard to call for a general meeting as the farmers live far from the town proper. They usually stay overnight at the SWCFI training center in Bilar. Travel time from their

barangays to the town proper takes 3 to 4 hours. Hence, one whole day is spent just travelling to and from the meeting venue alone.

Like MFI and PROCESS, SWCFI failed to make a thorough analysis on the improvement of farmers' income. They just reported how much were the volume of production and total sales. They also did not make an effort to record the input purchases of farmers. This is again attributed to the lack of skill of SWCFI staff to make this kind of analysis on the project.

## LFPI

LFPI is handling another ACIAR funded project, the Landcare Program, and its CATP beneficiaries have received a lot of capability building and technical assistance already from Australian and local scientists involved in other projects.

It has established links with MAWP, CRS and other marketing associations in the province. MOSCAT and OMAg assisted LFPI in most of its training and monitoring activities. It was only during the first year that a VSU faculty/researcher, Dr. Eduardo Mangaoang, led an agroforestry training in Claveria. One reason why he was not invited often is his very high consultancy fees during training activities.

The CATP field facilitator is a former barangay captain of Madaguig and therefore has authority and influence in his barangay. He is well respected by the farmers and since he is also into farming, he also adopted the technologies and improved practices introduced by the project. He provided feedback to LFPI management and other farmers on a technology's adoptability in his area. LFPI has established a good reputation in Claveria and other provinces. Many farmers are interested to know what LFPI is doing and what Landcare is all about.

LFPI produced brochures on coffee, banana, rubber, tree registration and agroforestry which will be distributed to the CATP farmers and other LFPI beneficiaries.

There were only two trainings led by ACIAR researchers. One is on smallholder agroforestry and tree registration by Dr. Mangaoang and the other is on nursery management by Mr. Jack Baynes and Dr. Nestor Gregorio. The rest of the trainings and agricultural technologies introduced to farmers came from MOSCAT's research and extension personnel.

LFPI also has only filled-up SIAs for each CATP farmer during the first year. In years 2 and 3, it only has one SIA (group SIA) for each barangay. It used another monitoring form that contains data which are required by its other projects. Since no income is derived yet from the trees and there is little or no income generated from the nurseries because seedlings are given free to farmers, computation of income is on a per commodity basis like banana. However, no record was shown on the sales of other crops.

Focus of LFPI has shifted to cluster marketing of bananas as tree growing takes time and farmers needs immediate income. Hence LFPI's focus shifted from nursery management and tree registration to cluster marketing. Also, farmers don't have enough money to pay

the required fees of DENR. Hence, despite the assistance on the required papers and documents from LFPI, farmers were unable to continue with the tree registration.

LFPI only covered two barangays, Mat-i and Madaguing, and only have 16 beneficiaries per barangay. Hence, monitoring was easier for the LFPI staff. It is not known if LFPI reports do not mention whether other farmers in the barangay were encouraged to also adopt nursery management activities or agroforestry practices introduced by the project.

Since the CATP field facilitator was a former barangay captain in Madaguing, project activities were affected when he lost in the 2007 local election. The new barangay council no longer supported the project and passed a local resolution disbanding the communal nursery of the farmers. This caused discouragement to most farmers who religiously tended the nursery during year 1.

Since farms of CATP beneficiaries are far from the main road, it is hard to reach most of these areas. One has to walk for 1 to 2 hours just to go to one farm site. Hence, farms cannot be regularly monitored by the LFPI staff since he is also handling other LFPI projects. However, since this is an agroforestry project and that trees take time to grow, monthly visits to the sites is not necessary. The field facilitator also seemed to rely mostly on the feedback of farmers regarding the status of their trees and crops during formal and informal gatherings. LFPI usually calls farmers' meetings once a month and this is where they get the feedback from farmers. Also during the CATP Program Manager's visit to LFPI sites, the LFPI field facilitator always brings her to the same sites because these farms are the nearest and most accessible from the main road.

However, most farmers are not aware what CATP is. Every project is associated with Landcare and LFPI did not make a conscious effort to emphasize what CATP is to their beneficiaries. However, it was noted that the farmers are more aware of the project funded by the Philippine Tropical Forest Conservation Foundation (PTFCF). This can be attributed to the big tarpaulin posters hanging inside the barangay halls.

## CASEC

CASEC has long been operating in Candijay, Bohol and has been in the development field for over twenty years. It has received funding from PACAP and other foreign donors in the past. CATP beneficiaries are poor farmers in Candijay, Bohol and are the same beneficiaries of CASEC's other projects. CASEC field staff is a long time CASEC employee and has established good rapport with the community.

Dr. Alberto Taveros provided trainings on pig fattening, feed formulation and cross-sectional and longitudinal analysis of agricultural commodities. However, there was no partnership established with any local state college or LGU.

There was a small feedmill constructed in CASEC's training center where a grinder was purchased out of CATP funds. This was supposed to be used by the farmers for their feedmilling activities. However, because of the distance of the farmers' residences from the training center, they were not able to use the feedmill. It is not known whether CASEC is using it for other purposes as they also have a school inside the center where agriculture subjects are offered to students.

CASEC was able to submit a filled-up SIAs of CATP farmers. However, the data was not validated as the partnership with CASEC was not continued in year 3. CASEC's financial system is not in order and there are questionable transactions made during year 2.

#### LEAF

LEAF is an established organization in Bislig City, Agusan del Sur and has long been operating in Agusan del Sur and Agusan del Norte. They are recipient of PACAP funding and has also received funding from other foreign donors.

Target farmers for the project are long time beneficiaries of LEAF who have received goat trainings from LEAF's previous projects. LEAF field staff is well trained and also acts as PACAP secretariat. He has established a very good relationship with the community and barangay council members of the covered barangays. LEAF has already coordinated with Prof. Francisco Gabunada on the tentative schedule of the goat production trainings.

No project activities were started even if the funds were already released to LEAF. LEAF's top management has been using the funds for other purposes. Hence, the partnership was immediately terminated after LEAF failed to start the project. There is still a remaining balance amounting to P 197,039.37. But despite efforts to call and email the President, Mr. Roberto Dormendo, he did not reply or returned the calls. The LEAF office is now closed but the field staff including the Program Director have not been paid their past due salaries.

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## 8 Impacts

CATP brought about changes to farmers' production practices. Their acceptance of the technology together with their attendance to trainings and the Better Practice and Increasing Income Workshops improved and enhanced their understanding on agricultural production and livestock management. Farmers also developed their documentation skills and made their own observations, assessments and evaluations on the condition of their crops and livestock during project implementation. The farmers' interaction with the academe and LGU boosted their morale and increased their self-confidence that led to the proper implementation and adoption of select agricultural technologies. An increase in family income was also reported due to the adoption of improved practices and technologies in crop and livestock production.

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### 8.1 Scientific impacts – now and in 5 years

none

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### 8.2 Capacity impacts – now and in 5 years

The project helped strengthen all partners' linkage and relationship with one another. These interactions created learning opportunities as well for the NGO staff. They were able to share their experiences, knowledge and skills acquired in the project's introduced technology and improved agricultural practices to other partner POs and NGOs in other regions and provinces in the country.

VSU researchers also benefited from the project. Their exposure to the field and guidance in the conduct of farm trials validated their theoretical knowledge on agricultural production which they were able to bring back, use and share to their students at VSU and in their own respective research and extension activities. The LGUs collaboration with NGOs, POs and the academe opened up new opportunities for them. They were able to access far flung barangays because of the free transportation provided by the NGO. They were also updated on the latest agricultural technologies and research outputs of international research institutions like ACIAR. The project also made them appreciate the use of participatory development approaches to encourage farmers to adopt improved practices and new technologies in the field.

The PO members, on the other hand, gained confidence in applying the technologies/improved practices that they learned during trainings. Aside from the brochures provided by NGOs to guide them in their farm activities, they now have a direct contact with OPV. The project also strengthened the POs' organizational operation because of the active participation of the members in farm-related activities. The strengthened partnership with government institutions and other organizations enabled them to secure additional resources or materials and technical skills for corn production and livestock management.

The project significantly changed farmers' attitudes towards agricultural production and livestock management particularly on goat raising. After 3 years, the farmers who were trained to become farmer-technicians, are now better equipped with technical skills to perform deworming, castration and to properly administer veterinary drugs to their goat herds.



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## 8.3 Community impacts – now and in 5 years

The success of adoption trials in forages attracted other non-CATP farmers to try planting grasses and legumes in their own farms. As a result, patches of forage gardens are seen in some neighbours' backyards ranging from 100 sqm to 5,000 sqm.

A closer working and personal relationship among farmers were developed resulting to sharing of resources and manpower when needed. Community concerns and issues are now easily addressed because farmers are working towards one goal of improving their economic status in the community.

The improved income of CATP farmers convinced some "wait-and-see" farmers to try goat raising through a caretaker arrangement (neighbours take care of other farmers' goats and offsprings are shared to the caretaker later).

Farmers developed self-confidence in sharing their knowledge and skills to other farmers and there is an increased sense of ownership in the technologies adopted. Farmers are also providing advice and technical assistance to other farmers on goat production, animal health management, treatment of various goat diseases, corn production, cattle fattening and organic fertilizer application.

### 8.3.1 Economic impacts

In the cattle fattening project of MFI, the use of cattle manure and urine as fertilizer for vegetables and other crops planted by farmers lessened the cost of farm inputs resulting to higher profits. Based on SWCFI's baseline survey of the project in November 2007, there is a cumulative total of P10,750 from 18 farmers or an average of P597/family for those selling goats and manure. During the first year, some farmers only got a breakeven income and a few had losses. Weight of goat was based on estimates only hence farmers received less income.

However, in year 2, prices improved due to the increase in local demand of chevon and breeder stocks in the local market. Farmers became aware of the importance of marketing animals at the right time and at the right price. Farmers were able to peg the price of goat at P100/kilo. At the end of the project in year 3, cumulative income of 30 beneficiaries was P49,300 or an average additional income per family of P1,643. This is a 175% increase from their year 1 goat enterprise income.

PROCESS' farmers realized that selling by weighing gives them a better price compared to mere estimation of body weight. However, most buyers still buy through estimation of goat weight and buying price is usually P1,500/head. Hence, they earn at least P3,000 per year additional income. Farmers sell 5 sacks of goat manure/year at P50/sack (30kg/sack) depending on their goat stocks. But most of the manure are used to fertilize their vegetables and other crops. Farmers with forages also earn from the sales of planting materials. Legume seeds like flemengia and renzonii costs about P600/kg. Two farmers from Owac and one farmer in Yanaya sell their seeds at least once a year to other farmers.

Based on CASEC's report, the project resulted in the increased profit of farmers through implementation of pig fattening technologies. The significant reduction in feed cost due to the use of local materials in the feed formulation resulted to an increase in income of swine raisers.

### **8.3.2 Social impacts**

The improved individual social behaviours and positive values developed resulted to a harmonious working relationship among farmers. The cross-visits and farmer meetings led CATP farmers from various barangays to have a closer relationship with one another. The sharing and exchange of knowledge and skills among the farmers is now very common in their communities.

The improvement in goat health and production of farmer beneficiaries who led other non-CATP farmers of POs to also try the improved practices led to the interest of other farmers even local officials to try planting forages in their own lots and have even visited USF to source different kinds of grasses. Various legumes and grasses are now planted in their yards and vacant lots.

Farmers from barangays Yanaya and Owac were able to give OPV's demo farm in CVSCAFT campus in Bilar, Bohol leguminous forages and grasses like rensonii, flemengia and callandra.

The Animal Health Clinics of OPV allowed non-CATP beneficiaries to bring their livestock for check-up and treatment to these clinics. Also, CATP farmers' improved practices have caught the interest of their immediate neighbours especially in the proper design of goat houses and use of cut feeds during rainy season. Some have already adopted these practices.

### **8.3.3 Environmental impacts**

Goat farming encourages biodiversity conservation due to the diversification of farms planted with various kinds of pasture grasses and legumes. Moreover, animal manure which is used by farmers as organic fertilizer for their vegetables and other crops and as vermicomposting material helped minimize the use of inorganic fertilizer which is harmful to the environment. The use of organic fertilizer enhances the soil condition and nurtures the soil microbial activity, improves soil fertility and conserves water. The use of goat manure as fertilizer also improved the present farming system of farmers.

Some of the forages planted along contours of hilly farms served as hedgerows. The strips serves as control measure against soil erosion and surface runoff due to heavy rainfall and natural descent of soil, rocks and other materials.

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## 8.4 Communication and dissemination activities

SWCFI was able to develop three IEC materials (in the Boholano dialect) which serve as quick guides to farmers in treating their farm animals. The IEC materials are as follows:

- a. goat manual - defines the various management practices of goats from production to health, to breeding and disease control and prevention.
- b. forage manual - outlines the different kinds of forage materials available in the locality. This serves as quick guide to identify forage materials.
- c. trainers training fact sheets - a complete guide on silage production, forage establishment, herbal medicine production for goats, understanding antibiotics, reading drug labels, suturing procedures and listing of common surgical instruments.

PROCESS has come out with five draft brochures (in the Boholano dialect) which were reviewed by Dr. Meydallyn Dagandan and Prof. Francisco Gabunada. These are on goat production, proper design and structure of goat houses, calendar of maintaining good health of goats, determining status of goat's health and proper goat health management practices, common diseases of goats, and endoparasites in goats.

LFPI printed the following brochures for distribution to their farmers:

(in the Cebuano dialect)

1. Planting and Cultivation of Banana under an Agroforestry System
2. Planting and Raising Rubber under an Agroforestry System
3. Planting and Cultivation of Coffee
4. Seedling Propagation, Planting and Raising of Falcata.
5. Production and Raising of Rubber.

(in the English dialect)

1. Primer on Tree Registration, Harvesting, Transport and Marketing Policies in Private lands

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## 9 Conclusions and recommendations

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### 9.1 Conclusions

The farmers only used technologies and research outputs that are simple to apply, does not entail much cost, offers alternatives like use of local materials and technical assistance and guidance from experts are present while they are still learning and trying out their new skills and knowledge in the field. Farmers also learn better if they can immediately apply what they learn and have the opportunity to do this every day.

Farmers' agricultural produce like corn are mostly grown for their family's consumption and goats are sold only when the family need funds. Most farmers don't aspire to expand their crop and livestock production because of limited capital and small land areas to expand their crop production.

There is increased additional income for the family due to the improved practices adopted by farmers but this is still small. If only farmers will expand their crop production and increased their livestock will they reap the full benefits of the new technologies introduced by the project. It is also hard to assess the accuracy of the reported increase in income of farmers as they have a very poor recording system and some input costs are not considered when computing their net incomes. Some of them also hide their true income and usually give lower figures than what they actually earn. However, improvement in family income can be determined with the family's purchase of new appliances, repair of houses and ability to send the children to school.

The project was able to reinforce and serve its purpose in complementing the partner NGOs' current and previous projects. The project allowed the NGOs to maintain its involvement in project sites after funding from bigger funded projects have ceased to operate. CATP provided bridging support and continuity in the operation of the NGOs.

It is also important to choose projects that can generate income in a shorter period. LFPI should have included a goat production component in their agroforestry project right from the start so that there is more project impact in the community. Improvement of farmers' income is hard to determine because farmers have to wait for 7-8 years before trees are harvested and sold. The decision to integrate goat raising in the agroforestry component came a little too late.

It is hard to assume that there will be sustained adoption of improved technologies in the communities covered by the project. Based on the experience of the partner NGOs, their presence and technical assistance are needed by POs for at least 10 years. If other donors can continue the activities started by CATP, then sustained adoption is possible. Despite the increase in income experienced by farmers, technology adoption depends a lot on farmers' attitude. Some farmers have a mindset which resulted from years of doing work that requires less mental effort and a very relaxed and easy lifestyle. It is hard for them to shift to a proactive mode and change their old habits.

The increase in income in farming is still marginal compared to when a family member is fully employed in a factory or hired as a daily wage earner outside his home. A hired labourer receives P300/day. If he works five days a week, he earns P1,500 or P6,000/month. The youth finds this more attractive than labouring all day in the field. Most migrate to cities after finishing high school. They no longer need to wait for the harvest period to have money. As they are daily wage earners, they have cash on hand at the end of the day which they can immediately use to buy food and other necessities for their families.

Some farmers find the application of improved practices too cumbersome to do like the building of improved housing for goats. They are reluctant to shell out funds or do not want to exert extra time and effort on this. Farmers appreciate the efforts of NGOs and other partners to help them. But some have developed the bad habit of not continuing what they have started. This can be attributed to the lack of drive or initiative. Presence of NGOs gives farmers a "push". Without the NGOs', they might go back to their old ways and practices especially if farmers are new beneficiaries.

MFI was able to achieve its objectives from year 1 to year 3. They were able to increase corn production from 11 bags to 15 bags/ha/cropping season; organized action learning groups, and build soil and water conservation structures and barriers on individual farms. An improvement in cattle fattening strategies of 60 farmers was observed. And the partner NGO was able to conduct trainings on soil fertility management, corn production, cattle fattening, silage making and forage management.

Farm trials were also conducted that demonstrated techniques for improved corn production thru improved soil fertility management practices. It also showcased the use of select forages for feeds to fattened cattle and silage as alternative feeds for cattle fattening. In Cebu, corn is the staple crop and is readily available at all times. There is also no shortage of cattle meat in the local market.

For SWCFI and PROCESS, 80% of their farmers applied improved cultural management practices specifically on: proper feeding management, proper housing, waste management and use of cut forages. There was an observed decrease in mortality rate. From 20%, it decreased to no more than 10% by project's end. Eighty percent of their farmers improved their goat pens. Farmers also increased their goat stocks. Both NGOs monitored goat performance, disease incidence, fecal analyses, weight gain, morbidity incidence, mortality rates, conception rates, kidding rate and kidding size. They were assisted by OPV in these activities.

SWCFI have records showing the area of farmers' forage gardens that range from 500 to 5,000sqm. and planted with various forage species. In PROCESS' goat sites, forage gardens were also observed. However, they have no record of the exact or estimated size/area of these plots. But based on a few sites visited, forage areas ranged from 25sqm to 2,000sqm.

PROCESS, SWCFI and LFPI were able to produce IEC materials with technical assistance coming from VSU, CVSCAFT, MOSCAT, OPV and USF.

Partnerships were also strengthened through the project. LFPI was able to link the smallholder farmers with the Mindanao Association of Wood Processors. However, since most farmers lost interest in the tree registration process because of the required fees by DENR, LFPI decided to focus on cluster marketing of bananas. This will give farmers immediate income while waiting for the trees to mature in 7-8 years time.

It is difficult to monitor LFPI's activities because their CATP activities overlap with their Landcare and ICRAF projects. It is difficult to assess and pinpoint what is CATP and what is Landcare and ICRAF. Use of funds is also overlapping. It was reported that the LFPI top management tried to charge one expense item to both the CATP and Landcare accounts.

It was also observed in LFPI's communal nurseries that farmers did not apply what was shared during the nursery management training course conducted by Mr. Jack Baynes and Dr. Nestor Gregorio. Weeds were not removed from plastic bags and bigger seedlings were not transplanted to larger containers. Hence, roots were coming out from the sides and underneath the plastic bags.

Having a local official as a full time employee/staff of the project is not advantageous given the culture of local politics in the country. With LFPI, although the local officials were able to command attention, respect and authority over the locals, projects that were initiated under their leadership like the communal nurseries of LFPI, can be removed/transferred if new officials are elected in office.

For CASEC, LGU support was absent because of the political rivalry between its Executive Director who is also the Vice-Mayor of Candijay, and the incumbent mayor. Hence, it was very difficult for them to get the MAO's assistance and services for their covered barangays.

It is difficult to determine if there is improvement in income and adoption of pig fattening and feed formulation technologies of CASEC farmers because the project only operated for two years. But during the monitoring visits conducted in selected barangays, only a few farmers adopted the feed formulation technology introduced by Dr. Taveros. Some farmers also have not provided housing for their pigs. Some are tied underneath a shack and fed only rootcrops and leafy vegetables. The farmers visited are very poor. Hence, they do not have funds to buy hollow blocks and cement to build simple piggens or to purchase materials for the feed formulation. It was also observed that CASEC has not progressed in the establishment of their marketing system and market outlets.

Questionable financial transactions and records led to an audit of their financial books. It was decided later not to release CASEC's year 3 budget after CASEC failed to submit the required documents requested by the auditors and the CATP Program Manager. They also failed to provide an acceptable explanation on their questionable financial records.

LEAF would have been a good project because the covered communities are open to new agricultural practices, have been recipients of a goat dispersal program by another donor and were already trained previously in goat management by LEAF. The staff are also knowledgeable in goat production, are committed and dedicated to their work and have established good relations with the community. The project did not take-off because

LEAF'S top management diverted CATP's funds and funds from other donors to other purposes. CATP ceased its partnership with LEAF and requested for the return of the remaining funds in 2008. However, LEAF's top management has not returned the said funds. The head office in Bislig City and branches of LEAF in Agusan del Sur and Agusan del Norte are now closed. Getting an established NGO like LEAF therefore is not a guarantee that a project like CATP will be implemented smoothly as planned.

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## 9.2 Recommendations

A revisit to the sites after two or three years is recommended to assess whether adoption was sustained after the project has ended. This will determine if farmers can really continue simple improved agricultural practices on their own.

ACIAR should continue working and complementing the activities of NGOs as they serve areas that are not within reach by the LGUs because of the distance from the town proper. NGOs like MFI, SWCFI and PROCESS which have established links and partnerships can create bigger impact and replication potential with present partners. Also these three have good financial and administrative systems that ensure proper disbursement of funds.

Involvement of local researchers from nearby state colleges in ACIAR's future projects is also recommended because they are more accessible to NGOs and farmers. Accessibility of researchers or technical personnel is very important as NGOs and farmers need constant guidance and technical advice in agricultural matters given their educational background. Most farmers only reached the elementary grade level. There should be more involvement of the LGUs in agricultural projects. One way to get their cooperation is to provide honoraria and travel allowance. The LGU involvement will bring the government services closer to the farmers. Coordination, complementation and cooperation among all actors that aim to provide the same services to the community is very important so that farmers fully benefit from all the development efforts that are being implemented in their community.

Involvement of the LGU right from the start of the conceptualization of a project is recommended so that projects are coordinated with the current thrusts and efforts of the national and local government. This will also make the LGU participate actively because they have been consulted and took part in the planning of the project.

NGOs can link select farmers who have expanded their goat stocks to agencies that can provide training on milk/meat processing so that they can try supplying supermarkets or high end restaurants in the future. Upland farmers should be encouraged to integrate goat raising in agroforestry projects so that they can have a regular source of income while waiting for hard wood trees planted to mature.

It was also observed that the covered communities have no awareness on the ACIAR projects being implemented in their areas. It is therefore recommended that ACIAR require its partners to put placards, sign boards, tarpaulin posters on their ACIAR project to create awareness on the ACIAR project being implemented in the community.

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## **10 References**

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### **10.1 References cited in report**

CATP Progress Reports April-June 2006

CATP Progress Report June-December 2006

CATP Bi-Annual Report January - June 2007

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CATP Bi-Annual Report July - December 2008

CATP Bi-Annual Report January - May 2009

CATP Annual Report 2007

CATP Annual Report 2008

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### **10.2 List of publications produced by project**

Community Agricultural Technology Program Book (to be printed in September 2009)



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# 11 Appendixes

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## 11.1 Appendix 1:

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