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Mid –Term Evaluation of:

CATIE's Program on Ecologically-Based Participatory Implementation of IPM and Agroforestry in Nicaragua and Central America (CATIE-MIP/AF) Phase III

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1. EXECUTIVE SUMMARY

CATIE-MIP/AF is a well-conceived and well-managed program that has capitalized on lessons learned in previous phases and from other programs. It developed in response to the weakening of the extension function within national agricultural systems in Central America and has contributed to the reorientation of the linear transfer-of-technology model prevailing in Nicaragua and other Central American Countries into a participatory extension approach that links farm families, extensionists, researchers and trainers, and decision-makers. The participatory methodologies developed by the program are a major strength in addressing challenges posed by modern-day complexity, uncertainty and dynamism in agriculture and natural resource management by farmers. The Program has catalyzed the establishment of a field-based multi-level, multi-institutional platform for participatory development and extension of technology for three important Central American farming systems, coffee, vegetables and basic grains (maize and beans), combining these with a broad array of ecological practices based on principles of agroforestry, integrated pest management, and natural resource conservation. The participatory capacity-building supported by the program develops powers of ecological reasoning, and incorporates a gender and family focus. The program has supported participatory training of 19,964 farmers, 861extensionists, 133 trainers (specialists) and has involved 380 decision-makers in joint planning and public monitoring of the process. Benefits to participating farmers of at least US$3.7 million have accrued during the first three years of the program. High priorities during the remaining two years of the program include Sustained effort in:

- systematization of program experience,
- promotion of institutional learning in CATIE about the MIP/AF experience;
- capacity-building to develop ecological reasoning;
- development of the regionalization process for scaling-out the work of the program to pilot areas in other Central Amercian countries
- capacity-building work on basic grains,

The mission also recommends formulation of a plan to ensure devolution of the field based, multi-level, multi-institutional process in Nicaragua and elswhere when appropriate. This could occur by establishment of a process for promoting proposal development by counterparts, and by the program, that will ensure the future integrity of the multinstitutional platform and of the integrated MIP/AF focus. The review mission recommends further sustained funding counterpart organisations and to the program. The mission sees a need for developing empresarial reasoning as a complement to the current focus on ecological reasoning. Combining the two within a new cycle of funding involving both counterpart organisations and CATIE will increase the sustainability of achievements and the chances of significant impact on poverty alleviation in the future.

2. INTRODUCTION

2.1. Purpose of the Review Mission

The purpose of this mission is to:

- Evaluate the advances made by the Program on “Ecologically-Based Participatory Implementation of IPM and Agroforestry in Nicaragua and Central America” hereafter referred to as “the Program” or CATIE-MIP/AF;

- Propose necessary modifications for the following years of project activity and for future collaboration between CATIE and NORAD for further implementation of IPM and Agroforestry in the region.

This midterm evaluation assesses the design of the Program, its relevance and effectiveness, and the sustainability of its achievements to date.

The Terms of Reference are appended in section 7.1 of the Annex.

2.2. Process

The evaluation team consisted of two independent consultants, a representative of NORAD, and a representative of the Program's Advisory Committee. The main elements of the evaluation included:

- A briefing at the embassy with NORAD representatives Alf Friisø, Reidun Roald and Felipe Ríos Gamero
- Briefings and presentations by Program staff
- Visits to institutions, Program activities and participating farm families in Nicaragua
- A visit to CATIE headquarters (HQ) in Costa Rica
- Visits to institutions, Program activities and participating farm families in El Salvador, Honduras, and Guatemala
- Presentation and discussion of the main elements of the mission report to NORAD staff.
- Presentation and discussion of the mail elements of the mission report to CATIE-MIP/AF staff
- Finalization of the Mission report based on the discussions with NORAD and CATIE-MIP/AF.The program of activities realized by the evaluation team is given in the Annex. Several adjustments to the initial program proposed by CATIE-MIP/AF were made in response to requests by the evaluation team. It should be noted that the interviews and visits were primarily concentrated on Program activities related to coffee and vegetables. The main emphasis of the review was on capacity-building elements of the Program.

A list of documents consulted is presented in section 7.5 of the Annex.

3. MAJOR FINDINGS & RECOMMENDATIONS

Major recommendations will focus on three main issues as follows:

- Changes needed in the program design, strategies or in areas of focus to ensure consolidation and sustainability of achievements to date in Nicaragua and the region.
- Particular tasks requiring high priority over the next two years and
- Possible approaches for longer-term future cooperation between NORAD, CATIE and national partners to enhance the impact and sustainability of the Program after the completion of the current phase.Ways that implementation of the program can be improved**Changes in Program Design, Strategies or Areas of Focus**

The three phases of the Program, and particularly the third phase have had widespread impact in Nicaragua in terms of building human capacity in ecological reasoning,

participatory planning, public monitoring and in development of a platform for collaboration between multiple institutions and actors at different levels. This experience has provided a strong foundation for extending the impact to other countries in the region. The institution and capacity-building targets set by the project have been superseded both in Nicaragua and in the regional pilot areas. The pace of advance in institutional and capacity-building has proceeded faster in the regional pilot areas than in Nicaragua, showing that the Program is capitalizing on the lessons learned in the earlier phases. Recent developments in the regional pilot areas are pointing the way forward. The work in the tri-national Trifinio region is showing that the path to translating the new knowledge, attitudes and practices among decision-makers, specialists, extensionists and farmers into improved well-being for small and medium-scale producers is through creating an instutional and farmer culture that **ecological and empresarial reasoning**, and that stresses **organised cooperation among farmers** within regions and countries, and among the institutes providing support services to them. These developments require methodologies to achieve better **differentiation of farmers** so that the capacity-building delivered by extension services is designed in accordance with their production and empresarial niches, and favourable **policy** environments in which to flourish. Here Nicaragua is showing the way forward with the establishment of a National IPM Committee, which could take on the role of advising the government on appropriate policies to support ecological and empresarial agriculture at the small and medium scale.

Returns on NORAD's investment can be multiplied further by supporting the Program and counterpart organisations to continue evolution from an ecological production focus to also encompass the empresarial focus, so that the entire production-to consumption-chain can become the focus of capacity-building and particpatory research for technology development. This requires that future efforts also address the related issues of farmer differentiation, farmer organization and favorable policy environments.

The incorporation of this additional area of focus is a significant undertaking, which cannot be achieved in the two years remaining. It would require development of expertise and experience in CATIE-MIP/AF, in CATIE-HQ and among counterpart organizations. Possible future mechanisms for supporting the new areas of empresarial reasoning, farmer organization and policy are discussed below in section 3.3 on Approaches for longer-term future cooperation.

3.2. Tasks requiring high priority in Nicaragua and the Region

Over the next two years high priority tasks include:

1. Sustained effort in systematization of Program experience
   Systematizing the experience of the Program is needed to support further multiplication of its methods and approaches both in Central America and beyond. The Project represents a important experience in reformulating and restructuring the extension process and in confronting the challenges of complexity and diversity in agriculture and resource management. It took IPM as an entry point, and combined it with dimensions of participation, gender and family for three types of farming systems (coffee, vegetables and basic grains). It then integrated the technical area of agroforestry to evolve a more holistic ecological agriculture focus. It is and is now beginning to integrate elements of empresarial agriculture in at least one pilot area. It has taken the linear transfer-of –technology culture in Nicaragua and Central

America as its starting point and made it more responsive to the needs of farm families.

2. Devolution of the field based, multi-level, multi-institutional process in Nicaragua
   See section 5 for further details
3. Sustained effort to foment institutional learning in CATIE about the MIP/AF experience. For further details see section 5.
4. Sustained effort in the capacity-building process to develop ecological reasoning among more farm families and to reinforce the process in families with only one or two seasons of training. Although the Program has reached the farm family targets in capacity building, benefits to farmers can be increased by a maintaining an emphasis on capacity-building throughout the current phase. See section for details on benefits that have accrued to farm families through participation in Program-supported training. Although targets for training decision-makers, specialists and extensionists have also been reached, sustained effort is required because of the rapid pace of change and turnover in the Central American institutional environment.
5. Importance of sustained effort on Basic Grains
   The mission devoted most of its effort to reviewing Program efforts related to households producing coffee and vegetable, nevertheless, it is important to mention why the team believes that a sustained effort on basic grains is important. The Program has devoted the greatest share of its resources to build capacity among farming households producing coffee (58% of farm families trained) and vegetables (29%). Although only 13% of farm families trained are primarily maize and beans producers, those trained represent only 1% of basic grain growers in the target countries (see section 6.3.1). Food security is an important issue for small-scale farm families who grow primarily basic grains. These are the poorest farmers among those targeted by the Program. Nicaragua has the lowest productivity of basic grains in Central America, and productivity has been stagnant over the last decade. Working to improve productivity and to increase farm diversification as a way of improving food security continues to have great relevance for poor basic grain producers.
6. Maintainence of the regionalization effort
   Regionalisation is an important multiplication mechanism, which can contribute to speeding up the learning process among the multi-institutional platforms developed in each country (or region, in the case of Trifinio). Coss-learning mechanisms and opportunities should be developed to ensure exchange of knowledge and experience among the different regions and countries where the project is working.
7. Proposal development by counterparts and by the Program
   See section 3.3 for suggestions on how this could be structured.

3.3. Approaches for longer-term future cooperation

Continued commitment to the Program would provide the opportunity to develop and integrate the new area of empresarial reasoning within the Program in Nicaragua and in other Central American countries. This represents a new area for CATIE-MIP/AF for CATIE Headquarters; and for many counterpart organizations, therefore considerable expertise would need to be developed at multiple levels. The development and integration of this new area would need to be gradual and complementary to the focus on developing ecological reasoning. This should occur as part of the on-going multi-institutional learning process that CATIE-MIP/AF has catalyzed, and the multi-institutional platform that has been created should be considered as a basic resource for making this possible. The learning process should be structured around pilot

experiences that can be replicated and progressively scaled out. Experiences in Latin America and such as that of the Asociación para la diversificación y el desarrollo Agricola Comunal (ADDAC, Matagalpa, Nicaragua), which are already integrating ecological and empresarial reasoning, should be indentified to provide methodological models and lessons learned.

Within the Program itself, the pilot area in the tri-national Trifinio area represents a base of expertise and experience upon which to build. Several national and local organisations[1] around the region have already begun to focus on commercialization issues. CATIE-HQ has initiated some areas of development that could help provide support and expertise. The Ecological Agriculture Department has been developing a systems view of organic coffee that encompasses the production to consumption chain. The department has a staff member with experience in certification of organic products. CATIE-MIP/AF's staff member based in in the Agroforestry Department has experience with development of farmer's organizations to support commercialization of forest products. The Environment and Rural Development and Ecological Agriculture departments have begun working together to build strategic alliances with several universities and other organisations with expertise in transformation of products, adding value, agribuisness and commercialization. CATIE is working with EARTH and Zamorano to set up an educational triangle, which would provide scholarships for the best undergraduates from Earth and Zamorano to continue postgraduate study at CATIE. The strong emphasis at EARTH on developing empresarial capacities means that EARTH students doing Master's or PhD degrees at CATIE would represent a resource in terms of strengthening CATIE's capacity in this area.

Due to time limitations, the external review mission was not able to investigate the current levels of experience and expertise related to policy formulation and organizational development within CATIE, the Program or within their counterpart organizations; however the impression of the review team is that these areas also represent expertise gaps which would require considerable future development as important complements to the area of empresarial reasoning.

A strategy for continued collaboration with NORAD could include elements of continued long-term funding at moderate levels. Achieving this could involve NORAD assistance in leveraging funding from other donors. NORAD should also consider identifying mechanisms for funding to counterpart organisations. Through the small project mechanism, the Program currently disburses small amounts of funding to counterparts undertaking training and participatory research activities. A non-competitive small project mechanism has been intentionally deployed by the Program in order to create a learning environment which builds project formulation, monitoring and evaluation skills. In order to capitalize on these skills, counterpart organisations require opportunities to use these skills in a broader context. In other words, the small project mechanism should be used to build skills, and phased out when counterpart organisations have gained sufficient experience to be able to generate projects autonomously.

In funding projects related to the MIP/AF experience, NORAD should consider the importance of maintaining and and further strengthening the integrity of the multi-institutional platforms and the integrated ecological agriculture/participation-family-

[1] INTA, SIMAS, APENN, FHIA, PRODECOOP, ADDAC and UNICAFE in Nicaragua are examples of organisations that are already working with post harvest and commercialization. Similar examples exist in the other Central and South American countries. CIAT's agroenterprise project could be a valuable source of informaition on other experiences and of expertise.

gender focus. To be considered for funding projects could be required to show how they contribute to strengthening the platform and the integrated focus.

A further element could be assistance on the part of NORAD in leveraging assistance from and Norwegian institutions in strengthening national, CATIE and Program capacities in empresarial expertise. Similar Norwegian assistance in strengthening regional expertise for establishment of favorable policy environments for ecological agriculture and for commercialisation efforts by small to medium-scale producers, and development of appropriate farmer organizations could be contemplated.

4. BACKGROUND TO THE PROJECT

4.1. Project objectives and their relevance

In Nicaragua and Central America, the Program aims to achieve improved, more secure and more diversified production and better conservation of resources through improved decision-making in crop, pest and tree management based on ecological reasoning.

The Program aims to accomplish this by strengthening the capacity of local, national and regional institutions to develop, organise, integrate and improve participatory IPM and Agroforestry programs involving families of small and medium-level producers. The Program focuses on coffee, vegetables, plantains/bananas and and the main regional food grain staples of beans and maize, incorporating principles and elements of agroforestry and gender-sensitivity. The values of the Program embrace participation, gender equity and cooperation.

The objectives are relevant to CATIE's mission, which is to improve human well-being through the application of scientific investigation and post-graduate education to the conservation and sustainable use of natural resources in tropical America.

At present, the objective of the Program does not paralell CATIE's explicit focus on human well-being. Nevertheless, the Program is oriented towards strengthening decision-making capacity, reducing the vulnerability, improving the assets of families of small and medium-level producers, and reducing costs of production. Vulnerability is exacerbated by the prevailing conditions of rapid change and increasing economic, institutional and ecological variability and uncertainty. At present the main Program strategy for reducing vulnerability is through stimulating the diversification of production systems through their agroforestry focus and the introduction of new crops. The soil and trees natural assets that provide a myriad of ecological services that are the basis of agricultural production. Trees provide critical shade and water-retention functions. The combined IPM/AF focus with its focus on building soil fertility, controlling erosion and amplifying the use of trees on farms is contributing to asset creation and regeneration.

It should be noted that vulnerability and asset-generation count among a series of important elements in current concepts of poverty, which go far beyond inadequate income. Poverty is increasingly seen as poor quality of life, stemming from vulnerability to external shocks and crises, lack of assets, inadequate access and lack of choice with regard to food, shelter, income, education, health and security, lack of equality, respect and dignity, exclusion from opportunities and from decision-making.

The Program has developed various mechanisms to ensure relevance of the Program objectives to national and local agendas. These include the multinstitutional and multilevel approach that forms the backbone of the Program, and the specific

mechanisms of participatory planning and public monitoring. These are discussed in greater detail in section 4.3 Program Description.

4.2. Laying the foundation in Nicaragua

The first phase of the Program was negotiated with NORAD (and ASDI) in 1988 with the research and extension office in the Nicaraguan Ministry of Agriculture and Agrarian Reform with a commodity focus on cotton, bananas, soybean, coffee, tomato and cabbage, all crops of economic importance with high levels of pesticide use, and prioritised in government planning. The Program proposed the integration of Nicaragua into the Central American IPM network supported by USAID with a sequence of activities similar to those found in other member countries. These began with crop loss assessment continued with component research and ended with IPM packages to be transferred. Activities in training and technical assistance for national scientists followed a similar sequence.

As the Program became established the Central American IPM network list its funding. At the same time a new government in Nicaragua (in 1990) began a multi-year reorganization and restructuring of agricultural institutions. Over the following two years agricultural extension activities were drastically reduced and attempts were made to turn over agricultural research centers to private producers' organisations. The cotton sector collapsed and programs for the promotion of soybean planting were discontinued.

In 1991 CATIE began a second phase of the USAID-funded IPM project. In-country IPM specialists from CATIE were eliminated and the network was reduced to a number of bilateral projects run by CATIE-HQ staff.

A number of project actions became particularly relevant in this environment and can be identified as lessons fromthis early period, which continue to be pertinent a decade later. These include:

- Diversification of counterparts as program survival strategy
- Working groups as a mechanism to build on counterpart experience, promote integrated approaches, and increase efficiency in use of scarce resources
- Work routine in which each meeting ends with agreement on follow-up tasks and responsibilities and a time and date for the next meeting
- Importance of direct farmer experimentation with technologies
- Limited utility of isolated training events without practice or follow-up

The Program modified the initial project strategy to incorporate participatory IPM technology development, in tomato and expanded to coffee and plantain, and involving a diversity of collaborations. The project also worked in formal research on non-pesticide alternatives for pest management. Both participatory and formal research activities were coordinated through interdisciplinary, interinstitutional working groups with capacity-building events integrated into these activities. In 1993 the national agricultural technology institute (INTA) was organised by the government with an IPM program that was designated as the official project counterpart. Lessons emerging from this period included:

- Designation of model crops to organize multidisciplinary teams and develop working mechanisms for research and capacity-building helped work go forward

in an environment where shifting national priorities and individual researcher preferences cause resources to be dispersed among many crops
- Ecological reasoning for decision-making is a practical tool for working with farmers, extensionists and researchers
- Farmer training in pest ecology, observation methods and data collection is a prerequisite for participatory technology development
- Extensionists and scientists need training and experience before they can go beyond their general knowledge of a crop to the development of specific crop management strategies that fit farmer capacities and resources
- Methods for working with institutions cannot depend on the characteristics of specific individuals, since staff turnover is often sudden and inevitable.

The first phase of widespread implementation of IPM with funding from NORAD began in Nicaragua in 1995. The Program maintained a focus on national capacity-building, however the the partnerships (mostly scientists and professors from national institutions) were broadened to include farm families, extensionists and institutional decision-makers. Participatory working procedures developed in the first phase were expanded in the second phase. To respond to feedback from collaborators that the project was too autonomous, a multi-institutional advisory committee was established and emphasis was placed on procedures for joint planning. An on-going issue was how to work effectively with farmers, with farm families and how to transform extensionists from technology transfer specialists into facilitators. Lessons learned during the period from 1995-98 included:

- Strengthening farmer capacity to manage the local variability created by diverse soils, weather, topography, distance-to-market and infrastructure is critical for the development of profitable, compteitive and sustainabile agriculture;
- The value of organising farmer training by crop stage;
- The importance of structured training process for extensionists to build skills in ecological reasoning and to overcome resistance to participatory methods;
- The importance of techniques for gender-sensitization;
- The importance of methods for measuring impact;
- The importance of considering interactions with decision-makers as type of capacity building process in which participants acquire new knowledge and skills.

By the end of the second phase the Program in Nicaragua had reached more than 9,000 farm families, 530 extensionists, 50 IPM specialists, and 70 institutional decision-makers; however the project team felt far from their goal with the realization that farmer and extensionist training was still not resulting in changed farmer practice. Furthermore, NORAD alleged that no evidence could be found at CATIE-HQ of institutional learning about participatory IPM implementation.

This led to the proposal for a third phase, involving more widespread implementation of IPM combined with Agroforestry. The national capacity-building in Nicaragua drew on and expanded the lessons from these previous phases. The new phase refocused training and research on factors limiting crop profitability, sustainability and resource conservation, and adopted several new elements including:

- The use of the logical framework for project planning, monitoring and evaluation;
- The use of small projects as a working mechanism for the whole program;
- Greater use of discovery-based learning.

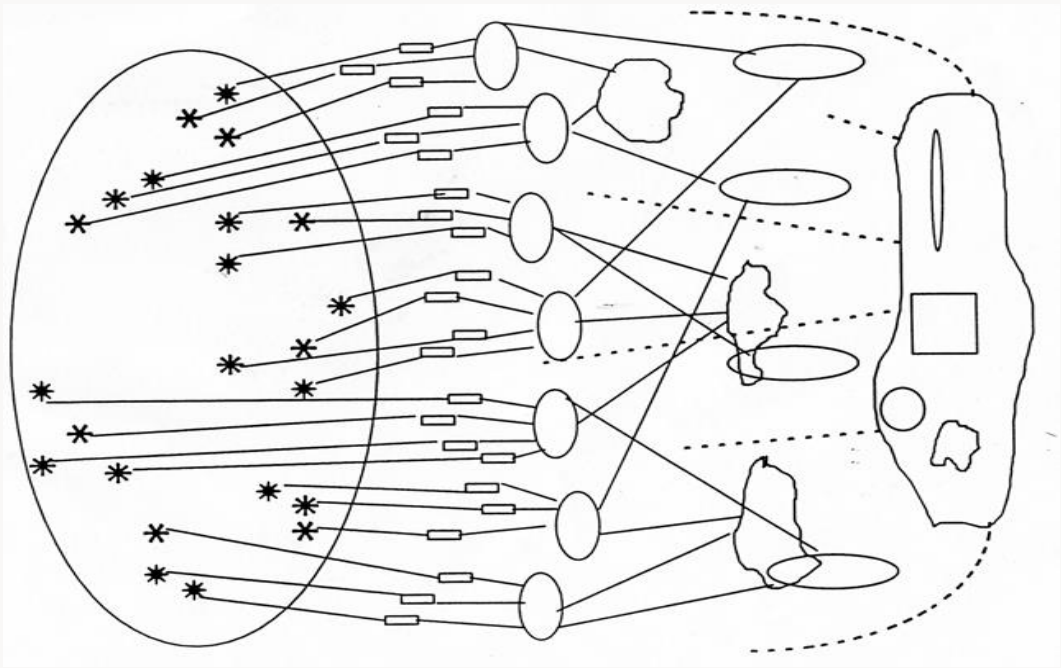
4.3. Program Description

The Program engages multiple institutions in joint planning of activities and public monitoring of results. An annual work plan for the Program is developed based on feedback from farm households (from diagnostic activities and previous participatory training cycles) and the interests of institutional stakeholders. The institutional environment spans government organizations, public universities, national and local farmers organisations, non-governmental organizations and private techical assistance enterprises. Planning is organised on a regional basis, with 5 regional groups now active in Nicaragua and three in other Central American countries (one in Honduras, another operating the tri-national Trifinio region of Guatemala, El Salvador and Honduras, and a third in Costa Rica)

The multi-institutional planning process is carried out with several levels of actors, with institutions and levels linked as illustrated in Figure 1.

Trainers (specialists from universities and research organizations) and farm households are linked through a mechanism or methodology known as the “Zig-zag.” CATIE’s role in the Zig-zag is as facilitator, convenor and catalyst, and also though the development of content for participatory training. Figure 2 shows how trainers, extensionists, and farm households interact through the “Zig-zag” and how planning and training activities are organized to mirror the developmental stage of the crop.

Figure 1. Linkages among different actors in the CATIE-MIP/AF Program to connect decision-makers, specialists, trainers, extension workers and farm households.

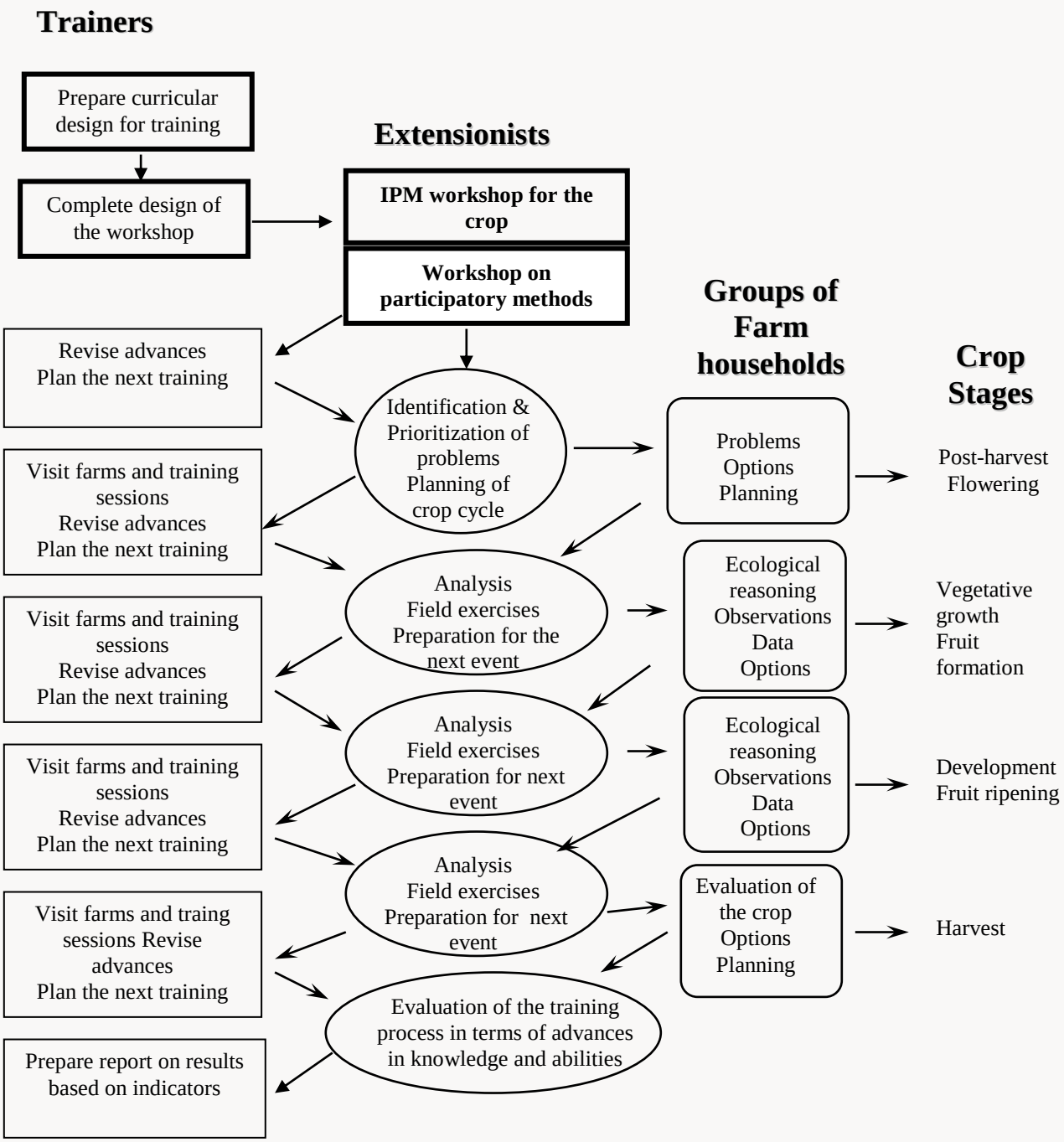


Groups of farm households learning and experimenting by crop stage	Extension workers in training to improve their capacity to work with farm households learning and experimenting by crop stage	Regional multi-institutional groups planning, coordinating and evaluating IPM-AF activities	National groups by crops or themes developing improved methods and contents for learning by crop stage	National and local decision-makers evaluating impacts of IPM-AF activities and proposing new projects

Participants at all levels plan their activities within the framework of a small project with objectives that can be monitored and evaluated. These small projects are funded by CATIE and executed by counterpart organisations. They not awarded on a competitive basis, but rather designed to create opportunities for counterpart organisations to judge the merits of participatory learning approaches by applying them themselves. Farmer experimentation with technical options is integrated within the training activities of each small project during a crop cycle. The Program actively encourages the participation of the whole farm family and the collection of gender-disaggregated data. The technical content of the training is designed to develop decision-making capacity based on ecological reasoning, integrating concepts related to diversification, soil, pest, disease, water and shade management concepts and practices. Typically the budget for a small project is on the order of $700.

CATIE-MIP/AF staff collaborate with specialists, CATIE-HQ staff and CATIE technical offices in the region to develop support mterials for training, and to carry out strategic regional research based on feedback from the Zig-zag process.

Figure 2. The Zig-zag methodology developed by CATIE-MIP/AF



4.4. Genesis of the regionalization process within the project

The regionalization of the Program to include activities in Guatemala, El Salvador, Costa Rica and Honduras is a response to demand from these countries. This demand arose after various institutions learned about the activities, results and impact of the project in Nicaragua.

The initiation of the process has involved consultations with national organisations and with the regional actors REDAHOR (Red Regional de Hortalizas) and PROMICAFE (Programa Regional Centroamericana de Café) and the CGIAR-s Systemwide Program on Whitefly. Drawing on lessons learned in Nicaragua, consultation and joint planning with decision-makers from these institutions has resulted in the negotiation of different strategies in each country and with the formation of advisory committees.

The regionalization process currently encompasses three pilot zones in Honduras, Costa Rica and in the Trifinio Region. Trifinio is an area of 7000 m^2 that spans parts of Honduras, El Salvador and El Salvador. The inclusion of Trifinio as a pilot area has provided an opportunity for developing cooperation among the institutional actors from these countries.

5. ANALYSIS OF PROJECT IMPLEMENTATION

Counterpart perceptions of CATIE-MIP/AF, funding arrangements and sustainability

The decision-makers of counterpart organisations appreciate the role the project has played in creating a multi-institutional environment and in providing effective methodologial tools for participatory extension. However, decision-makers of several counterpart organizations in Nicaragua are concerned about reciprocity in their relationship with CATIE-MIP/AF. Perceptions of power relationships between CATIE-MIP/AF and counterparts are sometimes negatively influenced by the funding modality, which places the management of funds in Program hands with disbursements to counterpart institutions in the form of small projects. In the view of decision-makers, the Program uses its resources to “buy the cheap labour” of counterpart organisations, an arrangement which is felt to be unsustainable. Several suggestions for ways to ameliorate the negative perception of these funding arrangements emerged during interviews with decision-makers. One mechanism would be for CATIE-MIP/AF to increase its responsiveness to the agendas of counterpart organisations. An example of the reciprocity desired by counterparts would be provision of support by the Program to undergraduate teaching programs. Another solution, which would also contribute to the sustainability of the work of the Program, would be to involve donors and the multi-institutional platform that the Program has created (perhaps through the auspices of the Advisory Committee) in seeking mechanisms for progressively extending access to financial resources and managerial responsibility to counterpart organisations. Once an institution has gained practical experience in formulating, monitoring and evaluating small projects, it should be considered as a candidate for formulating projects directly (see section 3.3 for further ideas). The project should also consider devolving more managerial responsibility for the Program itself to Nicaraguan nationals.

An additional modality being explored in other similar projects is to place some resources in the hands of farmer organisations so that they can purchase services from the Program, thereby increasing itsaccountability to farmer/clients. This external review

has recommended placing greater emphasis in the Program on developing strategies that contribute to the formation of farmer organisations. Currently, there is no attempt by the Program to influence the ways that counterpart organisations form farmer groups. Placing Program resources in the hands of farmers would require the existence of strong farmer organisations.

Advisory Committees

The Program's Advisory Committee in Nicaragua has been affected by problems at least partly associated to the volatility of the institutional environment in the country. Membership is unstable, the Committee does not meet regularly, and members often delegate others to attend, further exacerbating the lack of continuity. Effective functioning of the committee is the responsibility of both the Program and of the counterpart organisations that serve on it. The decision-makers who serve on the committee perceive the meetings as a forum where information is communicated to them, rather than as an opportunity for analysis and decision-making. At least initially, the Program may need to take the initiative to develop meeting agendas that are more appropriate. At the same time, the participating organizations need to take more responsibility for continuity in attendance. Mechanisms such as rotating responsibility for developing the agenda and facilitating the meeting might be considered, if they are not already in place. Negotiating a role for the Advisory Committee in decision-making regarding the coordination of project formulation (see previous section on Counterpart perceptions of CATIE-MIP/AF, funding arrangements and sustainability) could provide an incentive to motivate better quality participation in the committee.

Institutional learning by CATIE

At the end of the second phase of the Program NORAD expressed concern that little evidence could be found at CATIE-HQ of institutional learning about participatory IPM implementation. To explore this issue, meetings were held at CATIE-HQ with members of the management team and staff from the Departments of Ecological Agriculture, Agroforestry, and Enviroment & Rural Development. Continued effort will be required on the part of CATIE-HQ and the Program to integrate and socialise this learning on a wider scale, to improve communication and coordinate efforts so that common visions can be pursued effectively. Mechanisms established for this and specific impacts that the Program has had on HQ are discussed below.

Under CATIE's new structure, all projects are based within the departments[2]. CATIE-MIP/AF's administrative base is in the Ecological Agriculture department, however, the affiliation of several members of the Program to the Agroforestry and Environment and Rural Development Departments results in a broadened base of interaction. The placement of a CATIE-MIP/AF staff member (locally recruited) at HQ in the Agroforestry Department and the partial funding by the Program of a staff member (with expertise in participatory methdologies) in the Environment and Rural Development Department has increased information flow and interaction. The Ecological Agriculture Department now sees CATIE-MIP/AF as its "vanguard" in Nicaragua and Central America and as mechanism for achieving greater decentralization of CATIE and improving the relevance of it's post-graduate program. The recent shortening and intensification of some courses from three months to three weeks is seen as new opportunity to for taking advantage of Program staff experience in teaching. This mechanism could help to increase the limited

[2] CATIE's recent reorganisation gives greater prominence and responsibility to its four departments, which encompass the principal areas of research and teaching. This is seen as a mechanism to strengthen linkages and responsiveness to member countries via joint projects involving national organizations.

range of IPM courses offered by the Department. At the same time staff recognise from all three Departments linked to the Program recognise that they need to step up their commitment to support Program activities in Nicaragua and the region. They would also like to see even greater presence of the Program on campus in the form of an internationally-recruited staff member.

Specific examples of institutional learning at HQ about participatory IPM/AF include:

- Uptake of Program methodology as a model for other large new regional projects (eg. The FOCUENCAS project and a new proposal to NORAD for degraded pastures and participatory domestication of fruit trees)
- Promotion by CATIE of interdisciplinary groups modeled on the regional groups catalyzed by the Program in Nicaragua and elsewhere (eg. PECALA)
- Dissemination of information from the Agroforestry and Ecological Agriculture departments to a much wider audience via the Program's distribution channels
- Closer relationships with the national coffee institutes and the consortium PROMECAFE, based on relationships built through Program activities
- Publication of the Program's experience at different levels. The Program's contribution to the International Union of Forestry Research Organisations was judged as the most significant new contribution to a symposium on Multistrata AF systems with perennial crops, and has been published in a special issue of the important journal AF Systms. The Program also published a special issue on IPM in CATIE's regional journal, Agroforesteria en las Americas
- Collaboration with national coffee institutes in the establishment joint strategic research involving a long-term multifactorial trial comparing organic and conventional management under different shade regimes, including high value timber trees.

The Program has based a full time staff member (national hire) in the AF department and has negotiated an arrangement with the Environment and Rural Development to share the expertise of the department's specialist on participatory approaches.

Policy

The Program should consider taking a proactive role in encouraging the development of policies favourable to ecological agriculture. A possible mechanism in Nicaragua could be through the Program's contacts with the National IPM Committee, which was created recently by ministerial decree. The Committee is considering its role and is aware that it could evolve to have a role in formulating and recommending ecological-agriculture-friendly policies to the government.

Sharing Credit

Staff of counterpart organizations in Nicaragua frequently mentioned dissatisfaction in the approaches used by the Program to share credit with national organisations. This issue was preceived as difficult to broach since it is frequently the case that the counterpart and CATIE staff members have worked together for a long period and are often on very friendly terms. Issues such as this might best be handled by creating regular opportunities for structured two-way feedback to explore the theme of "How are we working together?" Providing these spaces at different levels of contact (eg. among

decision-makers, among counterparts) should provide ample opportunity for “delicate” issues to be put on the table. The issue of how to appropriately acknowledge farmers’ for their contributions is one that is beginning to emerge.

Monitoring and Evaluation

Counterpart organisations made frequent reference to the volume of data required by the Program as a heavy burden. This may be due in some cases, to the pressures created by the simultaneous involvement of counterpart staff in several externally funded projects. Another probable cause is that data collection has been organised thematically leading to repetition and overlap of questions in the different reporting “notebooks” that counterpart projects are required to keep. The Program should consider reexamination of monitoring and evaluation processes, in order to better coordinate and streamline data needs.

There are always some farm households who drop out of the small capacity-building projects. When asked about the reasons why people drop out, extensionists and participating farmers generally offerred two main explanations. The first is that drop-outs do not understand the importance of the capacity-building events; the second is that people have migrated out of the area in search of work. In the latter case, it is difficult to follow-up, however it is possible to follow-up with people dropped out but remained in the region. It is important to asking such people why they discontinued. Their input can be used inform the process of better differentiating farmers and can feed into the development of better-targeted capacity-building efforts.

Logical Framework

There are some problems with the way the Logical Framework has been formulated. For example, the project goals are expressed as indicators. The use of the terms "objectives" and "goals" is somewhat unusual, and doesn't correspond to logframe development protocols known to the consultants. However, such confusion about logframes is common. Constructing them is a highly complicated process that can consume a great deal of time time and resources, especially for local stakeholders. The terminology and process are often misunderstood, and as a consequence the end result is often flawed. Problems with logframes are not however, restricted to the operational level of projects. At a broader development level there mounting criticism of tying institutions to detailed sets of outputs and indicators, which reduce flexibility and tend to distort accountability in favour of the external donors rather than the local beneficiaries. Logframes force organisations to focus on short-term outputs rather than long term sustainable development outcomes. For a detailed discussion of this see the classic paper by Michael Edwards and David Hulme: Too close for Comfort" The Impact of Official Aid on Nongovernment Organisations. World Development vol 24(6):961-973.

Gender

In Nicaragua there seem to be some unfulfilled expectations within CATIE-MIP/AF and among counterpart organisations relating to the Program’s gender-related focus and achievements. It has been surprising difficult to pinpoint what is underlying the lack satisfaction with the Program’s gender strategy. The objective of the gender-sensitisation conducted by the Program seems to be to increase the participation of women in the small projects that form the backbone of the capacity-building process. A major recommendation of this external review is greater differentiation of farmers based on their farm enterprise goals, so that capacity-building becomes better targeted, more relevant and less generic. By implementing this recommendation, the Program should

be able to contribute to resolving the concern about the effectiveness of its gender strategy. Greater differentiation implies working backwards from what farm households or farmer organisations are trying to accomplish in terms of commercialization and developing small projects that can respond more specifically to these goals. In the current world environment for coffee and vegetables, it is possible to add value to agricultural products by marketing facets that may have had little value in the past. These include characteristics of the production system (eg. organic, low input, IPM, grown under shade) and origin (eg. produced in Guatemala; grown on the Cascajal Farm). Better differentiation of producers to respond to these opportunities should allow the Program to capture differing needs and priorities of women and men; thereby strengthening the Program's gender strategy.

Extentionist communication skills

The Program is concerned that staff working directly with farmers should avoid coming across as promotors of specific technologies, as this works against the development of ecological reasoning capacity by farmers. Adding training in communication skills to the curriculum for extension staff could help improve their performance. Effective participatory approaches are underpinned by communication with farmers in which leading questions are avoided and there is greater reliance on open questions, and the appropriate use of probing questions. A further communication issue is the types of skills and methods required for working with farmers who are not literate. This issue is also related to the development of strategies for better differentiation of farmers as a way to improve the relevance of the capacity-building undertaken by the Program

Farmers as trainers

Programs such as Campesino-A-Campesino in Nicaragua and the Global IPM Facility Farmer Field Schools have effective capitalised on the benefits of farmers as trainers. The Program might consider experimenting with this modality. At least one counterpart institution in Nicaragua, INPHRU has already done so (see Box 1).

Box. 1. Farmers as a IPM/AF promoters

The non-governmental organization INPRHU develops and promotes environmentally friendly agriculture programs. INPRHU initiated a small project four years ago based on CATIE's IPM/AF principles. The project began with 11 families from supported by one INPRHU staff member. In order to increase the dissemination of IPM/AF practices, the INPRHU promotor began to share her responsibility for training with farmers by forming "paratécnicos". The paratécnicos are farmers who train others after they participated in n MIP/AF training and have implemented what they have learned on their own farms. Two years ago, INPHRU-trained farmers began to promote MIP/AF practices among other farmer in their area, and the number of farmers are implementing MIP/AF principles has increase from 11 to 403 families. According to participating farmers, the key to success is the participation of both men and women. Farmer-promotors make good trainers because they can understand and communiticate with their neighbors more easily and enjoy a higher level of credibility and trust than do outsiders. .

Instititution/Donor/Government relationships

Several different donors are supporting similar projects or project components in Central America. These projects are executed by different institutions (eg. CATIE-MIP/AF funded by NORAD; PROMIPAC, funded by COSUDE; MAGFOR's Programa Nacional de Tecnología y Formación Técnica Agrícola funded by World Bank COSUDE and FIDA). Such projects typically work with the same counterpart staff in national organizations. This can create situations of overload, overlap and duplication of effort, and can lead to lower quality implementation, as local and national staff are engaged in various projects simultaneously. Such projects may employ different methodologies,

which at best raises issues of how they may complement eachother, or at worst, causes confusion and competition. Better coordination among donors and between donors and governments when projects are proposed, planned and reviewed is needed in order to minimize the occurrence of these problems.

This issue and others related to relationships between governments, donors and insitutions are the subject of a component report prepared by Mariela Covault, NORAD's representative on this external review.

6. ANALYSIS OF PROGRAM DESIGN

6.1. What has been accomplished?

In terms of the logical framework outputs (see annex section 7.2) the targets in Nicaragua and in the regional pilot areas for program-supported training for farm households, extensionists, trainers (specialists) and decision-makers have been superseded although it is 2 years before the end of the current phase. Publications targets are close to being met, apart from those intended for specialists (1 produced of 5 planned). Decision-makers, specialists, extensionists and farmer groups in Nicaragua and the regional pilot areas acclaim the effectiveness of the zig-zag methodology and of the multi-institutional platform that has been created. The platform is highly valued as effective communication and coordination mechanism. Before the project, coordination and cooperation among institutions and with farmer groups were on a bilateral basis, at best.

A good start has been made on intitutionalising program experience in CATIE and the reorganisation and reorientation that CATIE's new management has been catalysing is providing a favourable environment for further institutionalisation to take place. CATIE's new structure places each regional project within a department (Agroforestry, Ecological Agriculture, Forestry, Environment and Rural Development), rather than in the office responsible for outreach (for further details see section 5).

In terms of research outputs the direct impact has been in four areas.

1. Important ecological knowledge has been generated through related to:
   - Relationships between disease incidence and shade levels of coffee
   - Mechanical and biological methods for managing coffee berry borer and various pests of vegetables pests respectively
   - Effect of altitude on coffee quality
   - Role of rural women in food production

2. Participatory research has led to new methods for working with coffee farmers on design of coffee agroforestry systems, analysis of soil fertility and fertilization needs, relationships between disease incidence in coffee and shade levels and tecniques for organic production of vegetables.

3. Research projects have been used as a forum to train students. Six BS thesis students have participated in small projects in Nicaragua. The Master's courses in CATIE-HQ have used the drawn on program participatory research experiences to expose students to methods for working with farmers, and two students have conducted their thesis research on this.

4. A further area of impact has been in the content of training courses and materials for the training of extensionists and farmers. Farmer training sessions on coffee shade management and coffee agroforestry system design have been incorporated in to the training curriculum for extensionists. Two training modules on natural control of pests have been incorporated in the training curriculum of extensionists working in basic grains.

In terms of the quantitative logical framework indicators related to development objectives, these are the subject im impact studies underway by independent consultants. Later this year there will be a cost/benefit analysis performed by H. Weibel, a highly recognized authority in this field. Although it was beyond the scope of this mission to assess indicators relating to the development objective, we formed some general impressions from discussions with farm families who have participated in program-supported training indicates. Areas of impact perceived by the mission include:

- Reduction in pesticide use
- Less pest/disease damage
- Increased agroecological diversity
- Better use and conservation of natural resources
- Reduction of risk through diversification

6.2. Impact and sustainability

6.2.1. Modifications in design of future projects following-on from CATIE-MIP/AF

The development goal of the program is to achieve improved, more secure and more diversified production and better conservation of resources through improved decision-making (based on ecological reasoning) in crop, pest and agroforestry management in Nicaragua and Central America. Although the program does not have an explicit goal of alleviating poverty, pathways to reducing poverty are a major concern of donors, instititions (including CATIE) and governments in Central America.

It is clear that the program includes several elements that are directly related to improving the well-being of farm households. The program stresses diversification though incorporation of trees and new crop species into the farm. Diversification reduces the risks of associated with crop failure and makes farm households less vulnerable to unfavourable market conditions. The program also stresses asset-creation. Assets are human/social, natural, material or financial resources. Assets are the basis of wealth creation in modern society. Soil fertility management, erosion control and adding trees to the farm, are important aspects of ecological agriculture that build natural assets. The program has a focus on pesticide use reduction, which contributes to better health. Health is an important form of natural capital. In its absence, the contribution of individuals to the well-being of their families is limited. The program also builds human and social capital through its capacity and institution-building activities. The natural, human and social capital generated through the project may be viewed as contributing to the creation of wealth and the improvement of well-being.

The program also has a focus on reducing costs of production and improving quality to attract better prices in order to increase profit margins. However these economics-oriented strategies are ultimately subject to market forces, which are not currently

addressed by the program. As the examples in section 6.2.2 show, considerations such as the cost of labor (a market issue), or the presence or absence of a market for a commodity or a product would be a central part of an economics-oriented strategy.

Investment in the program and has resulted in an estimated US$3.7 million dollars of economic gains benefits for farm families (see section 6.3.5). This was based on a direct expenditure of 39% (US$2.44 million) of the budget liquidated so far, (US. 6.2 million). The remaining 60% of the liquidated budget is considered as indirect expenditure that provided the infrastructure (human, material, transportation etc.) to support the program.

These benefits could continue by providing for the continuity of the multi-institutional platform created by the project, or could be multiplied further, depending on the extent to which government policies favourable to small and medium scale ecological agriculture are put in place, and on potential connection to the market. It is therefore the opinion of the review mission that a powerful way to capitalize further on the resources (human, institutional and methodological), developed by the program would be to integrate a new area of emphasis to complement ecological reasoning – this may be referred to as **empresarial reasoning**. The integration of ecological and empresarial reasoning as the twin pillars of the activities developed by the multi-institutional platforms for ecological agriculture would improve the chance of improving the economic well-being of small and medium-scale farm households in Central America. An example of a counterpart organisation developing a program centered around commercialization is given in Box 2.

Furthermore, examples abound of projects that have promoted agricultural innovations in the hope that markets would materialise. Many such projects have created expectations among farmers, which were deflated, often with devastating effects, when the anticipated market did not materialise. Since the Project has already begun to take on concepts of adding value through marketing attributes related to ecological agriculture (eg. organic, low-input, IPM-certified, biological corridor, shade grown), integrating an empresarial reasoning into the existing model is a responsible course of action.

A further justification for this new direction is stems from the global coffee market situation. The recent worldwide crash in prices was largely due to Vietnam's emergence as a producer of cheap, low quality coffee. This has had devastating effects upon small and medium-scale farmers in Central America, putting one of their most successful livelihood strategies – coffee farming – at risk. Unfortunately, further perturbations (rapid drops in price) in the world coffee market due to emergence of new producer countries may continue, because of the promotion of coffee as a cocaine-substitution crop.

As the examples in sections 6.2.2, 6.2.3 and 6.2.4 show, differentiated markets require differentiation of farmers according to their commercialization goals, greater levels of farmer organisation, more investment in participatory technology development and strategic conventional research, favourable policy and the delopment of differentiated training content.

Box 2. INTA's Small Agribusiness Program

Small and medium-scale farming households often lack of knowledge of post-harvest technologies commercialization , and of the supply and demand for agricultural products in national and international markets. To address this problem INTA has developed an extension program with the following objective:

"Urban and rural families, as individuals and organized groups shall have access to information about services, financing, harvest and post-harvest technology and marketing."

The principal activities of the program include:

- Training of households producing basic grains in approaches for reducing post harvest losses; training of fruit and vegetable producers in handling of management of perishable produce, techniques and indicators of maturity and practices for maitining quality and shelf-life of products.
- Creation of commodity-based farmer Training on basic principles of commercialization of perishable products with the objective of creating small rural and urgan agribusinesses to add value and generate employment
- Provision of information on prices and markets. Execution of marketing studies to identify potention markets
- Facilitation of commercial transactions

The program identifies farmers who are interested in creating microbusinesses. They receive training and later continue cooperating in local working groups . Eventually successful microbusinesses have the option to become legally constituted enterprises

6.2.2. Differentiation of farmers, strategies and training content

The current program design focuses on IPM/AF-driven technology across the board. This design can benefit from developing the training curriculum according to the different types of socioeconomic characteristics of farmers, existing production systems, market constraints and opportunities, and labor costs. This point is illustrated below in a comparison of the interventions introduced by the program to coffee production systems in Jinotega, Nicaragua and Metapan, El Salvador (Table 1). It must be noted that the data presented in this report were generated from interviews with a limited number of producers and are not meant to be precise or generalizable. They are used to provide a general idea of the inputs and outputs in the production system, from which we attempt to draw tentative conclusions on general trends.

In this case study example (Table 1), the main points that demonstrate the need for differentiated strategies are as follows:

- Before farmer participation in training, the conventional Metapan system was more intensive, with higher material, and less labor, inputs; therefore it is more difficult to orient this type of existing system to IPM management system without increasing costs.
- Labor cost in Metapan (US$ 5.6/person-days) is higher than that ofJinotega (US$ 2.9/person-days), therefore, changing to a labor-intensive IPM-management production system results in higher labor costs.
- Major production costs in Jinotega are in weeding and harvesting, both labor-intensive activities; therefore, more efforts need be focused on labor-efficient methods in organic fertilizer application, weed management, and harvest-processing in order to reduce costs.
- As a more intensive production system, major costs in Metapan are in fertilization

and harvesting, efforts in this area should focus on low-input organic fertilizer and efficient harvest methods in order to improve production efficiency. The costs of fertilization in the production system of Jinotega, on the other hand, are moderate and the vehicle for improvement should focus on harvesting and processing which occupy a large part of the production costs.

In summary, introduction of organic farming is more appropriate where the production system has not been intensive and where labor is relatively cheap, such as the case in many parts of Nicaragua. In Guatemala, Costa Rica, or Salvador where production system has been more intense and more efficient and where labor costs may be higher, it is more important to formulate the curriculum to address the issue of labor while orienting the production toward a more ecologically sound system.

The conventional practice of the vegetable production systems in Jinotega and Matagalga, Nicaragua requires major material input in every aspect of vegetable production; and the introduced inexpensive organic fertilizer has contributed considerably in lowering costs (Table 2). This benefits, however, is somewhat offset by the heavier labor requirement of organic fertilizer application. Thus, development of labor-saving methods of applying such fertilizer could be a follow-up participatory research activity oriented to further cost reduction. In general, the organic system introduced by the MIP-AF program requires more labor input, resulting in a more even split between labor and material, except in cabbage production (the difference could be due to the difference in producers instead of crop). This additional labor inputs reduces the economic benefits of overall benefits derived from organic practices. Developing laborsaving technology in all areas of the organic production system would contribute greatly to the economic efficiency of the production. On the other hand, biological pesticide management, while reducing production costs significantly, requires little additional labor, but the material costs can still be reduced by participatory research oriented towards developing locally-made biological pesticides.

Table 1. Breakdown of production costs for introduced and conventional systems of coffee production in Jinotega, Nicaragua (cordoba[1]/manzana) and Metapan, El Salvador (colon[2]/manzana).

Costs	Jinotega, Nicaragua		Metapan, El Salvador	
	Organic	**Chemical**	**Now**	**Before**
Fertilizer Costs				
Labor	1600	120	1260	540
Material	0	1400	1860	2620
Total	1600	1520	3120	3160
Pesticide				
Labor	40	160	270	180
Material	0	360	0	17.5
Total	40	520	270	197.5
Fungicide				
Labor	200	120	90	90
Material	200	480	250	250
Total	400	600	340	340
Weeding				
Labor	800	200	640	480
Harvest & process				
Labor	3320	4800	3090	2730
Total Costs, of which	**6,160**	**7,640**	**7,460**	**6,908**
% labor	97	71	72	58
% material	3	29	28	42
of which				
% fertilization	26	20	42	46
% pesticide	1	7	4[3]	3
% fungicide	6	8	5	5
% weeding	13	3	9	7
% harvest & process	54	63	41	40

[1] 1 US$ = 13.8 cordoba [2] 1 US$ = 8 colon

Weeding, in particular, in organic production requires an enormous amount of labor (Table 2), this imposes the following constraints, which may benefit from some differentiated strategies for different type of scale of production, market orientation, labor availability of the households:

- This type of production can only be practiced at small scale
- Small-scale production implies limited opportunity for organized market option
- This may not be applicable to certain families: resource-poor families with little labor availability may not be able to pay for the hired labor.

[3] Please note that the cost of pesticides is all for labour, with no costs for material since the pesticides applied now are not purchased, but rather prepared on the farm from biological materials, accounting for the increased labour cost. The total cost (labour plus materials) of pesticide use is slightly higher now than before the advent of the introduced system. This does not mean that chemical pesticide use has increased but only that the total cost of applying biological pesticides is slightly higher thatn the total cost of applying chemical pesticides.

Table 2. Breakdown of production costs of organic vs. chemical vegetable production systems in two areas in Nicaragua (cordoba/manzana).

	Matagalpa				**Jinotega**	
	Onion		**Cucumber**		**Cabbage**	
Production costs	Organic	Chemical	Organic	Chemical	Organic	Chemical
Fertilizer Costs						
Labor	480	240	480	240	560	240
Fertilizer	1400	2040	168	850	0	2550
Total	1880	2280	648	1090	560	2790
Pesticide						
Labor	80	80	80	80	80	80
Pesticide	720	2,400	700	1,800	90	400
Total	800	2480	780	1,880	170	480
Fungicide						
Labor						
Fungicide	240	600	0	500		
Total						
Foliage pesticide						
Material	320	1120	600	320	12	60
Herbicide						
Material cost	0	800	0	800		
Weeding						
Labor	2400	240	800	40	2400	240
Soil pesticide						
Labor	120	0	120	0	120	0
Material	200	300	50	75	25	150
Soil pesticide (transp)						
Labor					80	80
Material					20	150
Total Costs, of which	**5,960**	**7,820**	**2,998**	**4,705**	**3,387**	**3,950**
% labor	52	7	49	8	96	16
% material	48	93	51	92	4	84
Of which						
% fertilizer	32	29	22	23	17	71
% pesticide	13	32	26	40	5	12
% fungicide	4	8	0	11	0	0
% Foliage pesticide	5	14	20	7	0	2
% herbicide	0	10	0	17	0	0
% weeding	40	3	27	1	71	6
% soil pesticide	5	4	6	2	7	10

6.2.3. Commercialisation

In discussions with producers, extensionists, and specialists of all crops commercialization was on everyone's mind. Capacity building by the program on technical and ecological issues has provided a firm basis from which to improve production in Nicaragua, but by itself capacity building in ecological reasoning does not lead to the economic impact desired by producers. In some areas of Honduras, we were told that few farmers were interested in the project and that if the project gave more focus to commercialization, "there would surely be more interest." A further analysis of the cost/benefit of the case of vegetable production in the previous section demonstrates the importance of commercialization. The following points are identified from analysis in Table 3:

- Costs of production/profit ratio of onion and cucumber were very low, indicating that lowering costs does not make a big difference in profit margin.
- For example, organic production of onion reduced 31% of costs, but this reduction only resulted in 6% in profit; Cucumber, on the other hand, reduced 57% of costs and increased 33% of profit. The difference in profit of the two crops was attributed to increased yield in cucumber.
- Organic production of cabbage, on the other hand, reduced only 17% of production costs, with the same yield and price, increased 9% of profit. The reason the increased profit margin was higher than that of onion was because the overall profit of cabbage was considerably lower than that of onion; therefore, proportionally the increased profit was higher.
- Reducing costs did contribute to economic benefits, but the real benefits have to come from either increased productivity or higher prices for organic products. For example, 31% increase of price in onion would lead to 36% of profit increase; while the reduction of 31% of cost has led to only 6% of profit increase. By the same token, with 57% cost reduction and 20% increased yield in cucumber, the profit has increased 33%; while with 57% price increase and 20% increased yield, the profit would increase by 63%.
- These data indicate that focusing on cost reduction in these organic systems is less economically beneficial than focusing on yield increase.
- Marketing should be an integral part of the program: securing prices that reflect the organic production system will increase the profit margin far more efficiently than focusing on cost reduction.

Table 3. Costs and benefits of organic and chemical production of onion, cucumber, and cabbage in Matagalpa and Jinotega, Nicaragua.

	Onion		Cucumber		Cabbage	
	Organic	Chemical	Organic	Chemical	Organic	Chemical
Total costs (cord/mz)	5,960	7,820	2,998	4,705	3,387	3,950
Yield (per mz)	200 quintal	200 quintal	300 bags	250 bags	15000 heads	15000 heads
Income (cord/mz)	40,000	40,000	30,000	25,000	10,000	10,000
Profit (cord/mz)	34,040	32,180	27,002	20,295	6,613	6,050
Cost/profit ratio %	18	24	11	23	51	65
% cost reduction[1] % profit increase	31 6		57 33		17 9	
% price increase[2] % profit increase	31 36		57 63		17 28	

[1] Calculation based on real cost reduction from data collected.
[2] Calculation based on hypothetical assumption of of the same rate of price increase as cost reduction.

The analysis of cost/benefit of the case of the coffee producers in Jinotega, Nicaragua and Metapan, Salvador also serves to demonstrate the need for a commercialization orientation. In Table 4, the following points can be identified:

- Reduction in production costs in Jinotega was offset by the reduction of yield, thus, resulting in low profits. Nevertheless, farmers were pinning their hopes on eventually tapping into higher prices for organic coffee. In the case of Jinotega, the price of organic coffee must reach 840 cordoba/quintal, an increase of 280 cordova/quintal, in order to offset the loss due to reduced yield.
- On the other hand, in the case of Metapan, reduced pesticide use with the same level of fertilization, has increased productivity. In this case, the cost has actually increased (due to the high labor cost), but the increased productivity helped buffer the increased cost. In the end, if the price were higher, the IPM management method would result in higher profit. Currently, due to the low price received, it only resulted in lower loss.
- Organic production needs to be accompanied by higher prices for organic products in order to be cost effective. Until such prices can be secured, it is more profitable to employ IPM management without converting completely to organic production. Better-off farmers can stand to take some loss until higher prices can be secured, and resource-poor farmers can convert from IPM management to complete organic production when prices have been secured.

It must be noted though that the reduction in yield in organic farming, in this case, was partially due to the agroforestry practices introduced into the farming system by the program. This means that part of the land was allocated for diversification, i.e., other crop production. Therefore, other economic and ecological benefits need to be taken into consideration in order to determine the exact benefits. There are also significant benefits of diversification in buffering farmers from potential crises caused by monocropping and the vagaries of the export economy. The forestry literature offers some indicators (see publications by CIFOR) that may be useful in monitoring the benefits and impacts of such systems.

Table 4. Costs and profit of organic, IPM-management, and chemical production of coffee in Jinotega, Nicaragua and Metapan, El Salvador.

	Jinotega, Nicaragua		Metapan, Salvador	
	Organic	**Chemical**	**Now**	**Before**
Total costs (C/Mz)	6,160	7,640	7,460	6,908
Yield (quital/Mz)	20	30	25	22
Price (C/Mz)[1]	560	560	220	220
Total income (C/Mz)	11,200	16,800	5,500	4,840
Profit (cord/mz)	5,040	9,160	-1,960	-2,068

[1] There is a large price difference reported by farmers interviewed in Nicaragua (US$ 40.6/Quintal) and El Salvador (US$27.5/Quintal).

Including commercialization as an integral part of the program will require the program and its partners to assess their own capacity and to establish different working relationships with the collaborating institutions. For example, UNICAFE in Nicaragua has a strong orientation in coffee production system with limited expertise in commercialization while ANACAFE in Guatemala is far more market conscious and tracks the world coffee price constantly. They are experts on coffee export marketing. In the future, the program needs to consider employing a specialist who can, for example, provide direct support for UNICAFE in commercialization while serving as a linkage person with ANACAFE on such issues.

To complement training farmers in ecological reasoning in order to take decisions in production systems, they also need to receive training in enterprise development reasoning in to take informed decisions on commercialization and marketing. In this case, having access to and knowing how to analyze short and long term market information is a key to empowering farmers in making the right decisions. For example, some coffee farmers have abandoned their farms as a result of the current crisis, which might have seemed insurmountable to the producers. However, an analysis by ANACAFE of the long-term coffee price data, adjusted for inflation, indicates that this is simply another crisis in the cyclical fluctuations. Each crisis is caused by a new perturbation in the system, but eventually market emerges with a new equilibrium. Having access to such long-term data and information would help farmers understand the cyclical nature of the market and thus, to make better decisions.

In the development of ecological reasoning the program has generally taken diagnosis of farming problems as the point of departure. Ecological reasoning is applied to problems related to pesticide use, pest and disease attack, soil degredation and so on. For the development of empresarial reasoning, the problem-based focus needs to be complemented by a vision-based orientation focused on identification of opportunities. This new, complementary orientation will require the deployment of appropriate participatory tools and methods

6.2.4. Organization for commercialization.

Organization of producers was an important topic among the extensionists, particularly the specialists, as it was identified as a fundamental basis for commercialization of production. Organization for commercialization is important for the following reasons:

- To avoid price collapsing from overproduction. Vegetable production in Esquipulas served as a case in point of overproduction. Due to the lack of organization of vegetable producers, prices collapsed whenever overproduction occurred. The specialists in this area recognized the importance of organizing producers to collectively target production based on analysis of demand in the market. All the coffee producers are painfully aware of the detrimental effects of global overproduction on prices because most of the coffee production has been targeted for export market. The vegetable productions, on the other hand, are mainly for localized markets, and organization of producers could help avoid overproduction.
- The need for collective organic or IPM production. The producers who had converted to organic farming were aware that in order to market organic produce their neighbors must produce in the same manner. This is also true with the IPM vegetable production, even if not organic. Only when the farmers in the same area organize themselves to produce the same manner would they be able to market their produce accordingly.
- Economy of scale for marketing. The farmers are fully aware of the gap in farmgate prices and consumer prices. For example, the farmers in Jinotega received 0.75 cordoba for one head of cabbage, and the same head was sold for 4 cordoba in the Managua market. In order to engage in more direct marketing, farmers must be organized to achieve a certain scale in order to collectively organize transportation, establish market linkage, and access market information.
- Orienting production systems according to market opportunities. The coffee crisis has led producers and specialists to re-think their marketing strategies. Since the international market is now flooded with low-quality coffee from Vietnam, the producers need to organize themselves to produce specialty coffee to obtain reasonable prices. Production systems must be oriented toward identified market opportunities, and organization of producers is necessary to allocate and target the production for specific markets.

In the future, all of the above issues could be translated into relevant training content for all the levels of the multi-institutional platform that has been developed by the program.

Box 3 illustrates an example of organization for commercialization.

Box 3. PRODECOOP and organzation for commercialization in Nicaragua

With the advent of globalization, small coffee producers in northern Nicaragua encountered difficulties in commercialization and negotiation of good prices for their coffee. PRODECOOP was established to address this challenge. The cooperative is operated by 45 farmers, and represents 2318 farm families. The aim of PRODECOOP is to promote integrated sustainable development among the members through organic production of coffee. Nearly 30 members have achieved certification and others are in transition to organic coffee production). The services offered by the cooperative include, assistance with commercialization, credit and training (where CATIE-MIP/AF has had an important role), with the goal of increasing the autonomy, self-management, and productivity of small-scale coffee enterprises. The coffee produced by PRODECOOP is sold in the USA and Europe under the brand name of "E*l Sabor de Segovia*". Its high quality is achieved by local processing of coffee beans grown by families belonging to the cooperative. PRODECOOP has adopted IPM principles as a tool to help achieve more environmentally-friendly production and better prices for its coffee. Members recognize the change form conventional to environmentally-friendly production would have been difficult without the existence of a market for their organic coffee and the support of a strong farmer's organization.

6.2.5. Policy

Policy is an critical instrument for influencing development outcomes. In terms of ecological agriculture, a key policy areas relates to the pesticide regulation and subsidy structures. In Guatemala, for example, we learned that the lack of regulation and the relatively low prices of pesticides make IPM options relatively unattractive to vegetable growers. Other projects such as FAO's Farmer Field School program in Indonesia have demonstrated the major impact that pesticide policy formulation can have on providing a favorable environment for IPM. IPM in rice took off after the government banned 57 pesticides and reduced subsidies.

Nicaragua's National IPM Committee, established as a consequence of the CATIE-MIP/AF platform-building, has the potential of playing a role in formulating and recommending policy to the government.

Other areas where favorable policy could play an important role in enabling ecological agriculture include facilitation of organic and other forms certification, policies related to grower's organisations such as the national coffee organisations and related to the establishment of farmer organisations in general.

6.3. Cost effectiveness

The original funding for the program was NOK$ 78,500,000 (USD 10 million). The equivalent dollar value dropped by 20% due to the depreciation of the Kroner relative to the dollar. With another 1.5 - 2 years to completion, the program has USD 1.8 million of unspent budget. The program has liquidated USD 6.2 million to achieve the following impacts, mainly in, but not exclusive to, Nicaragua. The positive impacts are indicated in: 1) human resources development (capacity-building) for specialists, extensionists, and producers, 2) economic benefits received, 3) publications available for different purposes and audiences, and 4) education support for students. All data used in this analysis were provided by the program.

6.3.1. Human resources development (Capacity-building)

Based on the project design three levels of capacity building have been carried out: for specialists who serve as trainers for extensionists, extensionists who provide capacity building for producers, and producers. The largest impact from capacity-building is on coffee growers: 58% of the producers were coffee growers, 29% were vegetable growers, 13% grain growers, while no plantain growers were included, same as the extensionists and specialists (Table 5). The 19,964 producer families who participated in program-supported capacity building consisted of only 40% of the coffee growers distributed in six regions of Nicaragua; while 5,818 vegetable growers consisted of 68% of all growers. The least impact is on basic grain (maize/beans) growers where only 2,533 farmers, consisting of only 1% of all growers, participated in training.

Cost effectiveness of capacity building for producers ($35.33/person) is considerably higher than that of extensionists ($253.6/person) or specialists ($234.43/person). Focusing on capacity building for producers (12% of total spent budget), instead of extensionists and specialists, therefore contributed to high economic efficiency of the program expenditure.

Table 5. Capacity building training for producers, extensionists, and specialists organized by crops.

Crops	Producers			Extensionists		Specialists	
	# trained	%	% of all producers	# trained	%	# trained	%
Coffee	11,621	58	40	354	41	44	33
Vegetables	5,818	29	68	248	29	35	26
Grains	2,533	13	1	152	18	41	31
Plantain	0	0	0	107	12	13	10
Total number	19,964	100		861	100	133	100
Investment:							
$/person	35.33			253.60		234.43	
Total $	728,622			219,559		30,849	
% total budget	12			4		0.5	

6.3.2. Economic benefits

Economic benefits of the program are distributed among:

- Those receive direct payment from the program for various purposes.
- Producers whose income has increased as the result of capacity building.

The most direct economic benefits were received by the 14 national staff employed by the program, accounting for 15% of the total spent budget (Table 6). Salary and employment benefits make up the bulk of this expenditure. Funds spent for domestic and international travel can be viewed as both direct economic and professional benefits and because program-related travels certainly contribute to capacity building of the program staff. These travel are important opportunity for professional development since there has been little formal capacity-building for the program staff.

Table 6. Funds allocated for project employees' salary, employment benefits, and travels.

	Salary and benefits	Domestic travel	International travel	Total	Per capita
Amount	658,300	188,800	83,000	930,100	66,436
% of budget	11	3	1	15	

The program has allocated a small portion of the funds for 51 specialist trainers from the national institutions as stipends, for additional training, and for attending workshops (Table 7). These expenditures only amounted to 3% of total spent budget, and of this modest expenditure the emphasis was on workshop participation, which is an important activity for professional development for these specialists.

Table 7. Funds allocated for specialist trainers from the national institutions.

	Stipend	Capacity	Workshops	Total	Per capita
Amount	17,100	4,800	54,400	187,300	1,067
% of budget	0.3	0.1	0.9	3	

The more important economic benefits derived from the central focus of the project—capacity-building for producers. The direct investment in producer families was $728,622 (all other expenditures are considered as infrastructures needed to achieve this goal and are viewed as indirect investment in them), and idea of the program was that these producers would turn a profit from these direct and indirect investments on them. So far these benefits are measured by a combination of cost reduction and yield increase because, as mentioned in an earlier section, there have not been price increases for their produce.

Based on the data provided by the program, the savings from cost reduction among coffee, vegetable, and grain producers have been significant with coffee producers enjoying the largest reduction ($547,922), which reflects the emphasis on capacity building for coffee producers (Table 8). Government policies on pesticide imports and subsidieswill have major impacts on the projection of such benefits; therefore it is not very productive to project such savings in the future. The gain from yield increase, again based on the data provided by the program, is far more significant, with coffee and vegetables each providing $1.5 million of additional income to producers (Table 9). Between the savings and gain, it is estimated by the program that the economic benefits for participating farmers in 1999-2001 totaled $4.1 million (Table 9).

Table 8. Savings from cost reduction of producers who have learned and adopted the technology introduced by the program (based on data provided by the program).

	Pesticide use (lit/mz)	Cropping area (mz/HH)	Pesticide cost (US$/lit)	Pesticide use after training (lit/mz)		# farmers trained		Savings through reduction (US$)		Total reduction (US$)
	before 99	99-01	2001	99-00	00-01	99-00	00-01	99-00	00-01	99-01
Coffee	4.50	2.00	15.00	2.07	1.70	2256	4565	164462	383,460	547,922
Vegetables	7.50	1.00	20.00	5.40	4.70	1080	2338	34,020	98,196	132,216
Grains	2.80	2.00	15.00	1.30	0.80	414	911	18,630	34,093	52,723

Table 9. Economic gains and total benefits of producers who have learned and adopted the technology introduced by the program (based on data provided by the program).

	Yield in 1999 (lb/mz) (mt/mz)	Yield in 2000 (lb/mz) (mt/mz)	Produce price (US$/lb) (US$/mt)	Total gain (US$)	Total benefits (US$)
Coffee	2699	2929	0.70	1,469,930	2,017,852
Vegetables	26	27	400	1,496,320	1,628,536
GRAINS				--	52,723

*Based on the same number of farmers trained and cropping areas as in Table 8.

There is some discrepancy in the data collected by the evaluation team and by the program on cost reduction and yield increase, but both show the same trend of farmers enjoying economic benefits. In addition to economic benefits, other areas of impact indicators that need to be tracked more systematically are the effects of IPM or organic farming on the health of the producers and their families and on the environment. These two indicators, along with knowledge (gained from capacity building) and economic benefits (result of adoption of appropriate technology), are the four important areas of concern and interest identified by the producers. Currently, CABI has been contracted to conduct a complementary project on systematic monitoring and evaluation of the program. If CABI designs a system that incorporates the indicators on measuring the impact on knowledge, economics, health, and environment, it will be able to produce more precise and reliable results in monitoring the overall impact of the program.

6.3.3. Publications

The program has produced various publications specifically to be used by researchers/specialists, decision-makers, extensionists, and producers, and the total cost 1.6% of the total spent budget (Table 10). These publications will produce wider impact for both educational and extension purpose.

Table 10. The number and cost of publications produced by the program targeting for producers, extensionists, decision-makers, and researchers/specialists, and producers.

	Researchers/ Specialists	Decision-makers	Extensionists	Producers	Total
# publications (#)	1	4	4	9	18
Total costs (US$)	800	12,300	51,200	36,100	100,400
% of total budget	0.01	0.2	0.8	0.6	1.6

6.3.4. Education

The impact on education is also a significant contribution of the program to the development of Central America. So far, the program has provided financial and technical support to 9 MSc students in CATIE-Turrialba and another 8 in Nicaragua, together 15 MSc theses were produced (Table 11). The 15 B. Sc students who received technical support, on the other hand, did not receive financial support.

Table 11. MSc and B.Sc students supported by the program.

Student	Financial support ($)	Technical support	Theses
MSc students in CATIE (n=9)	182,000	9	9
MSc students in UNAN Leon (n=8)	18,000	8	6
BSC Students in Nicaragua (n=15)		15	15
% of total budget	3.2		

6.3.5. Summary

Overall, 39.3% (US$ 2.44 million) of the liquidated budget (US$ 6.2 million) was spent directly on producing field results, capacity-development and economic benefits in Central America (Table 12). The other approximately 60% (US$3.76 million) of the liquidated budget was indirect expenditure that provided infrastructure (institutional, human, material, transportation, and etc.) to support the program. These direct and indirect expenditures resulted in close to 20,000 trained producers, 861 trained extensionists, 133 trained specialists, 14 trained staff, and 15 trained students.

At the time of this writing, it should be noted that the program has already superseded its training targets in all categories. The direct economic impact is $3.699,111 of benefits for producers from cost reduction and yield increase. When divided among those producers who received training, each received $185.29 of benefits. These benefits could continue, or even increase, depending on government policies and potential connection to the market. The direct benefits for the national program staff averaged $66,436 per person, some of which has become capital for personal investment which contributes to overall national economic development.

Table 12. Impact on producer families, extensionists, specialists, CATI-MIP/AF staff and on undergraduate and post-graduate students

	Producers	Extensionists	Specialists	Staff	Students	Total
% budget						**39.3**
Training	12	4	0.5		3.2	19.7
Publication	0.6	0.8	0.21			1.61
Payment			3	15		18
Impact produced						
# trained	19,964	861	133	14	15	
Total economic benefits (US$)	3,699,111			930,100		
Economic benefits (US$/person)	185.29			66,436		

7. ANNEX

7.1. Terms of Reference

I. Background

In 1989 CATIE set up an IPM team in Nicaragua financed by NORAD and ASDI. Initially the CATIE/MIDINRA-IPM (NORAD-ASDI) project proposed the integration of Nicaragua into the Central American IPM network supported by AID-RENARM through activities in research, technology transfer, and training, similar to those found in other member countries. CATIE's IPM activities financed by NORAD-ASDI in Nicaragua began as conventional research and training aimed at scientists and to a lesser extent to extensionists. This approach was in keeping with CATIE's role in support of the ministries of agriculture throughout Central America can be referred to as the researcher-driven model of IPM implementation.

As the project became established, the Central American IPM network lost its funding. At the same time, the project faced circumstances in Nicaragua that led to the development of participatory, multi-institutional approaches. In close collaboration with multiple counterparts (universities, national institutions, NGOs, and grower associations), the project developed mechanisms for strengthening national capacity to put IPM into the hands of rural families during the first (1989-94: CATIE/MIDINRA-IPM project supported by NORAD-ASDI) and second phase (1995-1998: CATIE/INTA-IPM project supported by NORAD).

Based on the advances achieved during these phases, a proposal for "Regional program for implementation of IPM and Coffee Agroforestry based on ecology and participation in Nicaragua and Central America" was prepared by CATIE and submitted to NORAD in May, 1997. NORAD approved financing of the proposal and an agreement was signed between CATIE and NORAD for the implementation of this project in September, 1998.

CATIE's Regional Program for implementation of IPM and Coffee Agroforestry is executed by a project team of 6 international specialists and 13 Central American specialists (12 men, 7 women), with the participation of decision-makers, specialists, extension workers of more than 120 national institutions and 10000 farming families. Three major types of activities are currently underway: 1) scaling up in Nicaragua, 2) pilot zones in three other Central American countries and regional research in Coffee, 3) pilot zones in two other Central American Countries and regional research in annual crops and 4) Phasing in through CATIE institutional strengthening,

In 2002, the program will complete its third field cycle of scaling-up in Nicaragua and its first field cycle in the pilot zones. At this juncture, a critical look is being cast on the advances made by the project during this period by the stakeholders. Activities of phasing-in are being accelerated and ideas of continuing the efforts of wide-scale implementation of IPM and Coffee Agroforestry in Nicaragua and other Central American countries is gathering more and more importance in the discussions with the national institutions and decision-makers.

This sets up the scene of the mid-term external evaluation of the project.

II. Purpose of the mid-term external evaluation

The agreement signed between CATIE and NORAD, proposes a mid-term review to be carried out not later than in March, 2001.

However, considering a slow build-up to full scale field activities in 2000-2002, in the annual meeting held on 26th March, 2001, CATIE and NORAD agreed to carry out the external evaluation during 2001-2002 and allocated funds for this purpose. It was further agreed that team members for the external evaluation and their Terms of Reference will be approved by NORAD, based on short-lists and drafts prepared by the Project team and that CATIE will provide support to the review team in the form of background papers and consultations and facilitating the work with the national counterparts. It was agreed that mid-term evaluation of the program will serve to evaluate the advances made by the project, propose necessary modifications for the following years of project activities and consider the issue of future collaboration between CATIE and NORAD for further implementation of IPM and Agroforestry in the region.

III. Scope of the Review

1. The Mid-term External Evaluation will asses:

a) the degree to which the Project is appropriately designed, to ensure:

- clarity of objectives and goals, focus and realism in the overall Program and the components
- clarity and logical consistency between, inputs, activities, outputs and progress towards achievement of objectives (quality, quantity and time-frame and the extent to which indicators are in place to verify progress).

b) the sustainability of achievements to date, including:

- potential of conserving the capacity installed in the critical mass of stakeholders in the pilot zones for continuing IPM-AF implementation in the pilot zones and further expansion of the Program's approach from pilot zones to wide-scale implementation in the countries
- potential of conserving the capacity installed in the critical mass of stakeholders and expanding the work of IPM-AF implementation in Nicaragua through incorporation of program approaches and methods in the future projects of the national counter-part institutions for multiplying the impacts.
- incorporation of program approaches and techniques by individual communities and groups of farmers and spontaneous spread of program approaches to other farmers;

c) the relevance and effectiveness of the Program's approaches, particularly in terms of:
   - the economic sustainability of IPM approaches at farmer level;
   - viability at national level of IPM approaches for food security and in economic terms;
   - participatory development of technologies, systems and approaches;
   - enhancing gender balance in development;

d) the cost-effectiveness of the Program including the appropriateness of arrangements to facilitate partnerships, networking and efficiency.

   - relationship of the program with the counter-part institutions including public institutions like INTA

e) the relevance of the Project results to evolving needs of development and application of IPM and Coffee Agroforestry in the Central America and Caribbean Region, including systematic assessment of:

   - the actual work carried out during the present phase in relation to planned outputs and objectives (but also including unplanned work).
   - the likelihood that remaining planned outputs will be produced in accordance with the project documents and effects achieved, in the light of the financial and human resources available to the Program;
   - necessities of future collaboration between CATIE and NORAD to apply the project results to the future needs of the region, from pilot zones to country wide programs, supporting Nicaraguan institutions future efforts, regional IPM-AF research and educational network etc.

2. Recommendations will be made for:

a) changes that are needed in either the design of the program, the strategies which it employs, and/or the areas on which it focuses during the remaining two years of Phase III in order to ensure the consolidation and sustainability of achievements to date;

b) particular tasks or results which need to be given high priority for completion and/or establishment on a self-sustaining basis over the next two years with phasing out of assistance;

c) possible approaches for longer-term future cooperation between NORAD, CATIE and partners at national and international which will enhance the impact and sustainability of the IPM-AF Programs after the completion of the current phase

IV. Composition of the Review Team

The review team will consist of four members as follows:

1. Team Leader, Ecologist, Expert on participatory IPM implementation
2. Social Scientist, Expert on analysis of project planning, results and impacts
3. Representative of Project Advisory Committee, Nicaragua
4. Norwegian expert, social scientist with interest in environmental impact

The Team Leader should be internationally recognized in his or her field. The person should have at least 15 years experience in agricultural development and be familiar with programs and policies of governments, institutions and donors in Central America. Between the Team Leader and the other mission members there should be least expertise in each of the following fields: i) IPM, ecology and natural resource management; ii) Project Joint Planing and Public Monitoring; iii) rural development policy formulation and planning; iv) agricultural production systems. The team members should speak English and Spanish.

V. Program and Itinerary for the Mission

The Review will take place for 2 weeks in February 2002. The indicative program of the mission will be as follows:

1 day	Briefings Managua, plus team discussions
9 days	Work in Nicaragua, Honduras, Trifinio, CATIE
5 days	Finalization of mission report, including findings and recommendations Managua (Team Leader)
1 day	De-briefing of entire mission – NORAD
1 day	De-briefing mission leader - CATIE

VI. Consultations

It is the intention that the mission findings and recommendations will be agreed by the whole team and the report finalized before the mission disperses and that these will be discussed in detail with Program management and the operations and technical staff from CATIE. The mission will complete its report in Managua and then proceed to NORAD and CATIE for one day of de-briefing. Ideally the mission should provide an opportunity for a process of open thinking on the future of the Program.

During country visits the mission will maintain close liaison with the CATIE and the concerned national agencies, as well as with national and international project staff.

VII. Reporting

The mission is fully responsible for its independent report which may not necessarily reflect the views of the CATIE, counter-part institutions and NORAD. With some room for flexibility, the report will be written in conformity with the following headings:

Executive summary (maximum 2 pages)
Introduction
Major Findings and Recommendations
Background to the Program
Program Objectives and Their Relevance
Program Design
Summary of Program Implementation (including Budget and Expenditure)
Program Results including:
Outputs
Development Process
Program Effects and their Sustainability and Impact
Cost effectiveness
Lessons Learned

Annexes as required, including:

- Component Reports
- Summary by inputs and activities supported in each country
- Terms of Reference

The findings and recommendations will be completed and agreed prior to termination of the mission. The report also will be completed to the maximum extent possible.

7.2. Logical Framework

	Program Goals	Indicators	Sources of Verification	Assumptions
Development objective				
In Central America small and medium farm households have more secure, diversified and increased farm production with improved human health and resource conservation based on ecological reasoning for better decision-making in pest, crop, and tree management.	• By 2003, 7500 Farm households in Nicaragua and pilot zones of other countries of the region growing coffee. Vegetables, food grains and plantains/cooking bananas have more secure, diversified and increased farm production with improved human health and resource conservation based on ecological reasoning for better decision-making in pest, crop, and tree management. • By 2008, 15000 farm households in Nicaragua and other countries of the region growing coffee. Vegetables, food grains and plantains/cooking bananas and other crops have more secure, diversified and increased farm production with improved human health and resource conservation based on ecological reasoning for better decision-making in pest, crop, and tree management.	Farm households: • Increase productivity and economic returns by 25% either through yield increase or by improvement of produce quality • Reduce the risk of pest outbreak through timely management by 50% • Reduce pest damage in the target crops by 25% • Reduce the use of synthetic chemical pesticides for pest control in the target crops by 50% and hence reduce the intoxication related to pesticide use by 50% • Increase the use of local resources and family labor for effective pest management by 50% • Reduce the cost of production by 10% without increasing the risk of yield or quality reduction • Improve conservation of natural resources (soil and water) on their farmlands • Increase agroecological diversity (trees, groundcovers, crops, herbivores, consumers, decomposers) on their farmlands	• Technical reports of the small projects of training of farm households financed by the program (1999-2003) • Participative evaluation reports of farm households participating in training projects(1999-2003) • Institutional reports of achievement in IPM/AF implementation with farm households (2001-2003) • Impact studies conducted to identify and understand the changes occurring in the participating and non-participating households (2001-2003) • MAG-FOR/Central Bank biannual surveys on agricultural production of farm households (2001-2008)	National policies and markets provide incentive for IPM and agroforestry implementation Better quality of products and cleaner systems of production is rewarded though better price or access to markets Cost of labor and inputs for implementing IPM/AF compares favorably cost of pesticides Institutions have the motivation and capacity to implement policy and legal framework favoring IPM/AF

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Program objective				
Throughout Central America local, national, and regional institutions in agriculture, including CATIE, employ their increased capacity in participatory implementation of IPM and coffee agroforestry to develop and organize more and better programs with small and medium households.	• By 2003, 40 Nicaraguan institutions employ their increased capacity in participatory implementation of IPM and coffee agroforestry to develop and organize more and better programs with small and medium households. • By 2003, 10 institutions of other countries of the region employ their increased capacity in participatory implementation of IPM and coffee agroforestry to develop and organize more and better programs with small and medium households. • By 2003, CATIE develops strategic partnership with 50 institutions implementing IPM/AF in the countries of the region	By 2003 • Programs and activities of participatory implementation of IPM/AF are included in the work plans of 40 counterpart institutions in Nicaragua. • 75% of the programs and activities of IPM/AF included in the workplans have ecological focus, employ participation and incorporate gender focus • 30 new projects and programs have been developed by the counterparts for continuing/expanding IPM/AF implementation in Nicaragua and other countries of the region. 25% of the proposed new programs and activities starts up before 2003 • CATIE has developed ideas, mechanism and has identified funding sources for providing technical assistance to the on-going counterpart efforts	• Study of the workplan, strategies, proposals and opinion of decision-makers of counterpart institutions and organizations (2001-2003) • Results of the impact studies conducted to identify and understand the changes occurring in the participating and non-participating households (2001-2003) analyzed with institutional focus to determine the quality of the programs	National and government policies favor promotion of IPM/AF implementation Donors and executing institutions maintain on-going interest in IPM/AF implementation IPM/AF implementation remains on the institutional agenda during the period

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.1 Small and medium farm households participating in program supported training have improved decision-making based on ecological reasoning and systematic observation for better crop, tree, and pest management in coffee, vegetables, food grains, and cooking bananas/plantains	• By 2003, 15000 members of rural households in Nicaragua participate in program supported training for two crop seasons to improve their decision-making for better crop, tree, and pest management in coffee, vegetables, food grains, and cooking bananas/plantains • By 2003, 900 member of coffee growing households and 600 members of rural households growing annual crops in pilot zones of other countries in the region participate in program supported training for two crop seasons to improve their decision-making for better crop, tree, and pest management in coffee and vegetables. • 10 practical publications are developed, printed and distributed to facilitate improved crop, pest and tree management by farm households	By 2003, of 16500 participating farm households • 75% identify key pests and natural enemies • 75% have good knowledge about pest life cycle and pest - climate relation • 75% have good knowledge of the critical crop stage for pest damage • 75% have good knowledge of actions of natural enemies • 35% implement and evaluate improved methods of crop and pest management • 25% implement and evaluate improved methods of tree management • 25% carries out systematic pest counts to assess current state of crop health • 25% maintains production, cost and income records to evaluate economic returns • 50% communicates with other family members and neighbors about ecological pest, crop and tree management 25% utilizes the practical documents for discussion of crop, pest and tree management with family members and neighbors	• Technical reports of the small projects of training of farm households financed by the program (1999-2003) • Participative evaluation reports of farm households participating in training projects (1999-2003 • Impact studies conducted to identify and understand the changes occurring in the participating and non-participating households (2001-2003)	• Institutions maintain interest in keeping IPM/AF on their workplan with farmers • There are no extreme natural disasters • Trained farm households do not migrate and remain engaged in agricultural activities

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.2 Extensionists working with small and medium households in coffee, vegetables, and food grains have strengthened knowledge and skills for participatory ecologically based implementation of IPM and coffee agroforestry with a gender focus	• By 2003, 400 extensionists working with small and medium households in Nicaragua have participated in two season long training processes to strengthen their knowledge and skills for participatory ecologically-based implementation of IPM and coffee agroforestry with a gender focus • By 2003, 135 extensionists working with small and medium coffee growers and 30 extensionists working with small and medium annual crop growers in other countries of the region have participated in two season long training processes to strengthen their knowledge and skills for participatory ecologically-based implementation of IPM and coffee agroforestry with a gender focus • By 2003, 5 practical publications developed, published and distributed to facilitate training and implementation of IPM and agroforestry with farm households	Of 565 participating extension workers • 75% use participative methods for IPM/AF implementation with groups of farm households • 50% have capacity to organize training process for IPM/AF implementation with groups of farm households • 75% have ecological understanding of factors related to crops, pests, trees and natural enemies • 40% have a good understanding of improved tree management in coffee fields • 75% have knowledge and understanding of implementation of gender focus in their interactions with the farm households	• Technical reports of the small projects of training of extensionists financed by the program (1999-2003) • Participative evaluation reports of extension workers participating in training projects (1999-2003) • Results of the monitoring of training activities with farm household conducted by extensionists • Results of the impact studies conducted to identify and understand the changes occurring in the participating and non-participating households (2001-2003) analyzed with institutional focus to determine the quality of the programs and working routines of the extension workers	• Institutions maintain interest in keeping IPM/AF on their workplan • Participating extensionists continue to occupy the posts in their respective institutions • There are no extreme natural disasters • Participating extensionists do not migrate to other zones or get transferred to other jobs

Logical framework of CATIE Regional program on IPM/AF(NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.3 Trainers have strengthened participatory and field skills and ecological pest and crop knowledge for planning and carrying out training of extensionists working with farmer groups.	• By 2003, 60 trainers in Nicaragua and 40 trainers in other countries of the region have participated in training processes to strengthen participatory and field skills and ecological pest and crop knowledge for planning and carrying out training of extensionists working with farmer groups • By 2003, 15 Small groups of trainers (2-4 members) have carried out planning, execution and evaluation of training projects for extension workers • By 2003, 10 specialist trainers of Nicaragua improved their capabilities through formal post-graduate training in CATIE • By 2003, 5 practical publications have been developed, published and distributed to specialists in Nicaragua and the region to support training of extension workers	By 2003, of 60 trainers • 50% use participative methods based on field exercises for training of extension workers • 75% have ecological understanding of factors related to crops, pests, trees and natural enemies • 50% have developed capacities for formulating, carrying out and evaluating training projects • 75% have developed sensibilities and have acquired knowledge and skills for implementing gender focus in their training activities • 60% of the trainers have developed capacity for working in inter-institutional training teams and promote such activities	• Results from the studies of the capabilities of the trainers in 2001 and 2002 • Results from the small projects of training of extension workers • Results from monitoring of training session conducted by the trainers • Results of the impact studies conducted to identify and understand the changes occurring in the participating and non-participating trainers (2001-2003)	• Participating trainers continue to occupy the posts in their respective institutions • There are no extreme natural disasters • Participating trainers do not migrate to other zones or get transferred to other jobs

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.4 Multi-institutional groups with participating members from public and educational institutions, NGOs, projects, and grower associations working in teaching, research, extension, and regulation plan, coordinate, and evaluate IPM-agroforestry projects and activities	During 1999-2003 • In Nicaragua, Program Advisory committee, National IPM Committee, national specialists groups (7), regional groups (5) plan, coordinate, and evaluate IPM-agroforestry projects and activities • In other countries of the region pilot zones supervision committees (3) plan, coordinate, and evaluate IPM-agroforestry projects and activities • 2 practical documents for facilitating planning, monitoring and evaluation of IPM-agroforestry projects and activities	• Multi-institutional groups have functioned routinely with the participation of institutional contacts and decision-makers planning, coordinating, and evaluating IPM-agroforestry projects and activities • Multi-institutional groups have developed coordination mechanisms for efficient functioning of the group and its insertion in the national or regional networks • Multi-institutional groups have developed visions, missions, strategic plans, and annual work plans, plans for financing group activities and strategies for sustainability • Multi-institutional groups and their mode of functioning are recognized by the decision makers of the participating institutions • Multi-institutional groups and their role in planning, coordinating, and evaluating IPM-agroforestry projects and activities are recognized by the decision-makers at the national and regional level	• Study of the workplan, strategies, proposals and opinion of decision-makers of counterpart institutions and organizations (2001-2003) • Study of the workplan, strategies, proposals, scope, recognition, and role of the multi-institutional groups (2001-2003) • Technical reports of program supported small projects for functioning of the multi-institutional groups	• National and government policies favor functioning of multi-institutional planning, coordination and evaluation forums • Donors and executing institutions maintain on-going interest in multi-institutional planning, coordination and evaluation • IPM/AF implementation remains on the institutional agenda during the period

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.5 Institutional decision-makers of public and educational institutions, NGOs, projects, and grower associations in agriculture have a broader vision and understanding of participatory ecologically based IPM and coffee agroforestry with a gender and family focus	By 2003 • 40 institutional decision-makers of counterpart Nicaraguan institutions have a broader vision and understanding of participatory ecologically based IPM and coffee agroforestry with a gender and family focus • 40 counterpart institutional decision-makers of other countries of the region have a broader vision and understanding of participatory ecologically based IPM and coffee agroforestry with a gender and family focus • 2 practical documents for the use of the institutional decision-makers illustrating the principles and concepts of implementation of ecologically based IPM and coffee agroforestry have been developed, published and distributed to the institutional decision-makers of the region	• Institutional decision-makers have understanding of the concepts and importance of ecologically based IPM and coffee agroforestry • Institutional decision-makers have basic understanding of the concepts and importance of participative implementation of ecologically based IPM and coffee agroforestry with a gender and family focus • Vision of the institutional decision-makers is linked to their understanding of the concepts and importance of participatory ecologically based IPM and coffee agroforestry with a gender and family focus • Decisions taken by the institutional decision-makers reflect their understanding of participatory ecologically based IPM and coffee agroforestry with a gender and family focus and hence promote such programs and activities in their institutions	• Survey of opinions and actions of decision-makers related to program supported small projects carried out by the counterpart institutions (1999-2003) • Study of the workplan, strategies, proposals and opinion of decision-makers of counterpart institutions and organizations (2001-2003)	• Decision-makers of the counterpart institutions continue to occupy the posts in their respective institutions • Donors and executing institutions maintain on-going interest in IPM/AF implementation • There are no extreme natural disasters or social change

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.6 National and CATIE scientists develop research strategies and methods based on field priorities and generate results via participatory and conventional research for ecologically based IPM and coffee agroforestry.	By 2003 • CATIE scientists work with 30 scientists from Nicaragua and 25 from other countries of the region to develop research strategies and methods based on field priorities and to generate results via participatory and conventional research for ecologically based IPM and coffee agroforestry. • Research findings are presented in scientific meetings (30 abstracts) and 15 academic papers are published in research journals • 50 National scientists have access to research publications	By 2003, of 55 national scientists • 100% have participated in participative or formal research projects supported by the program and have good grasp on ecological understanding crops, pests, trees and natural enemies. • 75% have a good grasp of current state of technology, actual field problems and have the capacity to propose research themes based on real field problems • 75% have developed capacities for formulating, carrying out and evaluating research projects based on field problems • 60% of the scientists have developed capacity for working in inter-institutional research team and networks and promote such activities • 60% have presented their research results in scientific meetings and published the results in research journals • 30% national scientists have collaborated with CATIE scientists to develop joint research proposals	• Results from the studies of the capabilities of the scientists (2001-2003) • Results form the small research projects • Results of the impact studies conducted to identify and understand the changes occurring in the participating and non-participating scientists (2001-2003) • Research proposal developed by national and CATIE scientists: analysis of their content and collaboration status	• Scientists in the counterpart institutions continue to occupy the posts in their respective institutions • Donors and executing institutions maintain on-going interest in IPM/AF research • There are no extreme natural disasters or social change

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.7 CATIE's Units for Agroforestry, Ecological Agriculture, and Environmental Socio-economics have incorporated the concepts and experiences of participatory ecologically-based implementation of IPM and AF with a gender/family focus in graduate teaching, training, research, and outreach	By 2003 • 10 on-campus CATIE specialists have been involved in the learning process in the context of the regional program • Lessons and experiences of the program have been incorporated in graduate teaching modules (2-4) for the academic program of CATIE • Lessons and experiences of the program have been incorporated in CATIE strategic training courses for the region (1-2) • Lessons and experiences of the program have been shared in the existing multi-disciplinary research groups in CATIE (2) • Joint strategic research agenda has been developed and implemented on a regional scale for coffee IPM and agroforestry • Lessons and experiences of the program have been incorporated in other Research, training and outreach projects of CATIE (1-2)	• 10 On-campus CATIE specialists with good level of knowledge of the strategy, actions and lessons of the program in Nicaragua and other countries of the region • Contents of 2- 4 teaching modules of graduate teaching program of CATIE reflect the experiences and lessons of the program • Contents of 1-2 strategic regional training courses of CATIE reflect the experiences and lessons of the program • Some members of the multi-disciplinary research groups of CATIE start new programs and/or activities based on the program experiences • Rejuvenated regional research program on coffee IPM and agroforestry put in place • Workplan of existing projects (1-2) and proposal of new projects (2-3) reflects lessons and experiences of the program	• Survey of opinions of CATIE on-campus specialists (2001-2003) • Contents of teaching modules • Contents of the strategic training courses • Work plans of the multi-disciplinary research groups and the members and reports • Protocols of experiments in regional research program of coffee agroforestry and technical reports • Work plans of collaborating programs of CATIE and proposal of the new programs	• Donors and CATIE maintain interest in IPM/AF programs

Logical framework of CATIE Regional program on IPM/AF (NORAD)

	Program Goals	Indicators	Sources of Verification	Assumptions
Outputs or Results				
R.8 The Program team and CATIE-main campus employ management mechanisms for planning, documentation, monitoring, evaluation, and dissemination to insure Program outputs and objectives	• Logical frame work refined and approved by the counterparts (1998-200) • Annual work plans (4) developed through joint planning procedures (1999-2003) • Annual execution plans (4) developed by the program team document step by step execution of the planned activities (1999-2003) • Annual Activity reports (4) document advances in the programmed and un-programmed activities, participation and budget execution (1999-2003) • Annual Results reports (4) documents the salient advances of outputs and objectives (1999-2003) • Specific study reports (5-10) address quantitative and qualitative queries about the outputs and objectives (2001-2003) • Eternal monitoring (2000-2003) and external evaluations (2001, 2003) carried out	• Logical framework of the program is used as planning and monitoring instrument by the team, counterparts and donor • Annual plans have formal and operational support of counterpart organizations • Annual activity reports agree with the activities reported in the small projects executed by the counterpart institutions • Contents and the spirit of the Salient result reports reflect the real situation and tallies with the content of specific impact studies • Contents of the reports of external monitoring and evaluations are taken into account for modifying strategies and plans	• Project document • Logical framework • Annual plans • Annual execution plans • Annual activity reports • Annual Salient result reports • Specific study reports • External monitoring reports • External evaluation report	• Decision-makers of the counterpart institutions continue to occupy the posts in their respective institutions • Donors and executing institutions maintain on-going interest in IPM/AF implementation • There are no extreme natural disasters

13 March, 2002

7.3. Component report: Scientific Collaboration between CATIE-MIP/AF and Norwegian Institutions

Prepared by Mariela Covault Tyrihjell

The purpose of this task was to:

- Establish the status of the scientists' collaboration between the CATIE-IPM/AF program and Norwegians Institutions.

The following sections provide the activities, major findings and suggestions for the future in relation to the scientists' collaboration.

Activities by CATIE, the IPM/AF program and Norwegian Institutions:

The IMP-AF program phase III, includes a budget for the scientific cooperation between scientists in CATIE and Norwegian Institutions working in agriculture and natural resources.

Norwegian scientists have participated in external evaluations during phase I and II of the IPM program. Also, at CATIE-Costa Rica, Norwegian consultants financed by NORAD visited the institution in order to participate in the evaluation of the institutional framework.

During the phase III, CATIE-IPM/AF has covered the accommodation and travelling expenses for a Norwegian mission during March 2000 (the report can be found at Plante Forsk, Norway). As a result of this mission a master student, Mr. Ørjan Simonsen elaborated his thesis research in Nicaragua using the facilities of CATIE-IPM/AF and UNA. A visit by his MSc. supervisor was financed by the program and a lecture was organized while the supervisor was in Nicaragua. There were also other planned activities, which until now have not been carried out.

Later the same MSc. student presented his results in a conference organized by the Society for Invertebrate Pathology. The program financed the travel expenses.

CATIE's scientists from IPM/AF and a Nicaraguan professor from UNA participated in the Nordic graduate course on entomology in November 2000. As a result of this visit a position for a PhD candidate (UNA professor) was considered, but the lack of funding has not made it possible.

A visit by the CATIE Agroforestry leader to Norway (August 2001) resulted in an agreement with NINA (The Norwegian Institute for Nature Research) to cooperate and support the agricultural and forestry development in Latin America and the Caribbean.

The Department of Agroforestry at CATIE/HQ in Costa Rica is working on a research proposal for a regional integrated Silvo-Pastoral Approach to Ecosystem Management; the principles of IPM will have an important role in this research.

Major Findings:

- The long-term sustainable socio-economic development in Central America depends to a great measure on the appropriated use, management and maintenance of natural resources, where educational institutions like CATIE have been working for many years in addressing these issues through educational programs, research and experience documentation.

- CATIE and specially the program IPM/AF have managed to develop a multi-institutional collaboration in Nicaragua and the other countries where it is currently working. However, the institutional collaboration between Norwegian Institutions, the program and CATIE headquarter has been developing slowly and it does not form part of a sequential process.

- NORAD has not assigned the Norwegian Institution counterpart who will support and promote the program IPM/AF in Norway, as the contract states. This situation affects the planning and collaboration between the Norwegian institutions and the program as well as CATIE.

- Norwegian Institutions recognize the importance of scientists' collaboration due to the fact that there is limited Norwegian expertise on Latin America (E.g. some courses at the Norwegian Agriculture University focus on tropical areas, however these courses are too methodological and they lack the practical hands-on experience with tropical conditions as found in Latin America)

Suggestions for future developments

The interchange of experience needs to be strengthened and planned taking into account the particular context of the country where the programs take place. Collaboration objectives, strategies, relevance, working areas, funding accessibility and time schedules need to be defined and established.
CATIE's experience in research and program training in Latin America and its new institutional organization seems to provide the adequate base for a well-functioning cooperation and collaboration with Norwegian Institutions and scientists, however, CATIEs' financial situation may limit an active cooperation. This situation needs more attention.

Agriculture development should be seen as a "business" and it is important to evaluate (or re-evaluate) the actual frame of agricultural studies given at CATIE and Norwegian Institution in order cover these aspects (E.g. EARTH's educational curriculum addresses this issue through real project work under a course called "Proyectos Empresariales").

The combination of Ecological Agriculture and Agribusiness studies, research and programs need to be considered.

Program donor alliances under the comprehensive development framework (CDF) may facilitate a more integrated and effective approach for further development programs in areas like planning, monitoring, continuity, policy developments, institutional collaboration and effectiveness in the multiplication process.
The scientists collaboration between Norwegian Institution and CATIE and it's programs represent a great opportunities to Norwegian scientists to develop practical abilities that may not been found in Norway. However, this collaboration programs need to be strengthen.

Norwegian Institution recognized the importance of scientists' collaboration due to the fact that there are not many Norwegian expertises with experience in Latin America.

Some courses at Norwegian Agriculture University has the tropical focus, however this courses are to methodological and they lack of the practical abilities in tropical conditions, specially the found in Latin America.

CATIE's experience in Latin America tropical condition and its' new institutional organization, seen to provide a great opportunity to develop a well-oriented scientists collaboration program with Norwegian Institution.

7.4. Program of Activities conducted by the mission

Fecha	Hora	Aspecto	Lugar	Responsable CATIE	Responsable Contraparte
28 de enero	12.00 m.	Llegada de Dra. Ana Braun		Arelys Cano	
28 de enero	8.00 p.m.	Llegada de Dra. Dai Peters		Arelys Cano	
29 de enero	8.00 10.00	**Reunión con NORAD** **Sesión de trabajo informativo con equipo** • Programa MIP-AF • Componente Nicaragua • Actividades y Resultados en Café • Actividades y Resultados en musaceas	Managua Oficina	 Falguni Guharay Elida Méndez Mirna Barrios Silvia Castillo	
29 de enero	12.30	Almuerzo en Oficina		Arelys Cano	
29 de enero	2.00 3.15 3.45 4.30 5.00 6.00	**Reunión con Comité Asesor del Componente Nicaragua** **Presentación de los estudios de impacto:** Resultados de Estudio Estadístico Resultados de Estudio Valorización campesina Resultados de Estudio Institucional Discusión en Panel Cocktail	INTA Managua INTA Managua	Julio Monterrey Estela Alemán Elia Kuan Patrick Lorenzo Leonel Elia Kuan Arelys Cano	INTA INTA
29 de enero	8.45 p-m.	**Llegada de Ing. Mariela Covault**	Managua	Arelys Cano	
30 de enero	8.30	**Sesión de trabajo con el equipo** • Actividades y Resultados en Hortalizas • Actividades y Resultados en Granos B • Metodología de capacitación • Planificación conjunta • Monitoreo Publico • Publicaciones: lógica y logros • Enfoque de Genero: estrategia y logros	Oficina	 J. Monterrey C.Staver C.Staver J. Monterrey E. Kuan P. Chaput Rosa Rugama	
30 de enero	11.00	**Sesión de trabajo con Comité Nacional MIP**	Oficina	J.Monterrey	CN-MIP

Fecha	Hora	Aspecto	Lugar	Responsable CATIE	Responsable Contraparte
30 de enero	12.30	Almuerzo con CN-MIP		Arelys Cano	
30 de enero	 2.00 4.00	**Grupo A: Mariela Covault, Dai Peters** Reunión con INTA Reunión con UNA	 INTA UNA	 Ramón Mendoza	 INTA UNA
30 de enero	 2.00 4.00	**Grupo B: A. Braun, J.Mercado** Reunión UNICAFE Sesión genero	 UNICAFE oficina	 Rosa Rugama Rosa Rugama	 UNICAFE
30 de enero	7.00 p.m. 8.00 p.m.	**Reunión de intercambio de impresiones miembros misson evaluadora** **Reunión de equipo estrategia**	Hotel Hotel	F.Guharay	
31 de enero	 7.30 12.30 3.00 7.00	**Grupo A: Mariella Covault, D. Peters** Visita a grupo de productores de hortalizas en La China, Apompopua Sesión de trabajo con técnicos y directores de instituciones de Matagalpa ADEC, CPC, INTA, ADDAC Visita a grupo de productores de café, La Corona Cena con directores de instituciones Grupo Regional INTA, CURN, CTADER, ADHS	 La China San Ramón La Corona Matagalpa	 F. Guharay F. Guharay F. Guharay F. Guharay	 FUPADE CPC ADEC INTA
31 de enero	 07.30 10.00 2.00	**Grupo B: A. Braun, J.Mercado** Visita a UNAN-Leon Rectoría, Campos Agroecologia Sesión de trabajo con directores, técnicos y productores de Grupo Regional León - Chinandega Sesión de trabajo con productores de hortícola del Pacifico Sur	 León León Diriamba La Palmera	 D. Padilla D. Padilla J. Monterrey	 UNAN-L INTA Gr Reg

Fecha	Hora	Aspecto	Lugar	Responsable CATIE	Responsable Contraparte
1 de febrero		**Grupo A: Mariela Covault, D.Peters**			
	8.00	Visita a grupo de productores de hortalizas (INTA)	Sasle	F. Guharay	INTA
	1.00	Almuerzo con directores de instituciones de Grupo regional INTA, La Cuculmeca, UNICAFE, FUNJIDES, SERVITEC, Aldea Global	Jinotega Jinotega	M. Barrios	SERVITEC
	4.00	Sesión de trabajo con grupo de extensionistas y capacitadores café		F. Guharay	FUNJIDES
1 de febrero		**Grupo B: A. Braun, J.Mercado**			
	7.30	Sesión de trabajo con técnicos y directores de las instituciones de la zona Rivas: EIAG, INTA, MAG-FOR, PCAC, CANTERA	Rivas	J. Monterrey J. Monterrey	EIAG EIAG
	9.00	Visita a grupo de productores de musaceas	Rivas		
	1.00	Almuerzo con decisores de las instituciones del grupo regional Pacifico Sur	Catarina	J. Monterrey	Grupo Regional
	3.30	Visita a productores de café y hortalizas (AGRODERSA)	La Concha	J. Monterrey	AGRODERSA
2 de febrero	10.00	**Trabajo del equipo de evaluacion**	Oficina		
	1.00	Almuerzo			
	2.00	Estrategia de trabajo regional MIP-AF	Oficina	C. Staver	
	2.30			J. Haggar	
	3.00	Actividades de Café Regional y Logros		D. Padilla	
	3.30	Actividades de Hortícola Regional y logros Estrategia de Institucionalización y logros		C. Staver	
3 de febrero	3.00 p.m.	Salida para Costa Rica CATIE **A. Braun, M. Covault, D. Peters**		A. Cano	
4 de febrero	8.00	Reunión STR (Proyección externa)	Turrialba	Dr. A. Gonzalez	
	9.00	Reunión Agricultura Ecológica	Turrialba	Dr. R. Muschler	
	11.00	Reunión Agroforestería	Turrialba	Dr. J.Beer	
	2.00	Reunión Socio-economía	Turrialba	Dr. M.Piedra	
	4.00	Ensayo de Sistema	Turrialba	E. De Melo	
	6.00	Reunión Social	Turrialba		

Fecha	Hora	Aspecto	Lugar	Responsable CATIE	Responsable Contraparte
5 de febrero	8.00 10.00 12.00	**Grupo A: A.Braun** Reunión Director General Reunión Planificación y Proyección Regional Salida para Managua	Turrialba Turrialba	Dr. P. Ferreira Dra. T.Ammour	
5 de febrero	2:00	**Grupo B: D. Peters, A. Braun** Salida para El Salvador Salida para Esquipulus, Guatemala	San Salvador	Dr. J. Haggar L. Barahona	
6 de febrero	7.00 10.00 3.00 4.00 5.00	**Grupo A: M Covault** Salida Para Honduras por tierra Visita a grupo de productores de café (UNICAFE) Sesión con capacitadores Honduras Sesión con decisores Honduras Sesión con gerentes de las empresas Honduras	UNIAFE, Ocotal Danli Danli Danli	C. Staver	UNICAFE
6 de febrero	8.00 10.00 2.00 9.00	**Grupo B: D. Peters, A.Braun** Evento evaluación Técnicos Café Grupo de Especialistas Café Trabajo con Decisores Locales Grupo B: D. Peters Visita a grupo de productores en TRIFINIO	Esquipulas Esquipulas	J. Haggar L. Barahona	
7 de febrero	8.00 10.00 3.00	**Grupo A: M. Covault** Visita a Campo Sesiones de Técnicos Visita a grupo de productores de café orgánicos	Danli Danli Beneficio Café Orgánico, PRODECOOP Palacaguina	A. Aguilar A. Aguilar F. Guharay	
7 de febrero	8.00 4.00	**Grupo B: A. Braun, D. Peters** Visita a Productores de Café Evento con Decisores	Ocotepeque Ocotepeque Esquipulas	L. Barahona L. Barahona	
7 de febrero	8.00 a.m. 1.00 p.m.	**GRUPO C: J. MERCADO** Visita a grupo de productores (ECASPRO) Visita a grupo de productores (CETA)	Leon Chinandega	S.Castillo	

Fecha	Hora	Aspecto	Lugar	Responsable CATIE	Responsable Contraparte
8 de febrero	 8.00 2.00 p.m	**Grupo A: M. Covault** Visita a grupo de productores de café (INPRHU-Somoto) Reunion con PROMIPAC	 Somoto Estelí		INPRHU-S
8 de febrero	 a.m. p.m.	**Grupo B: A. Braun, D. Peters** Visita a productores café Regreso a Managua	 Metapan Managua	L. Barahona J. Haggar	
9 de febrero		Trabajo de Oficina	Managua		
9 de febrero		Trabajo de Oficina	Managua		
11 de febrero	a.m. 10:00 3.30 p.m.	Trabajo de Oficina Reunion con NORAD **M Covault** Reunion con MAG-FOR **M. Covault, J.Mercado**	Managua MAG-FOR Oficica de Direcion de Tecnologia		J.Solorzano MAG-FOR
12 de febrero	a.m. p.m.	Trabajo de Oficina	Managua		
13 de febrero	a.m. p.m.	Trabajo de Oficina	Managua		
14 de febrero	a.m. p.m.	Trabajo de Oficina	Managua		
15 de febrero	a.m. p.m.	Reunión de Cierre NORAD Reunion de Cierre CATIE	Managua		
16 de febrero	a.m. p.m.	Trabajo de Oficina	Managua		

7.5. Principal documents consulted by the mission

CATIE. 2001. Institutional Development Plan. Agenda for the 2001-2002 period.
CATIE-MIP/AF (NORAD). 1998. Project Document: Programa Regional CATIE-MIP/Agroforestería (NORAD).
CATIE-MIP/AF logical framework
Letter of Agreement dated 18, Nov 1998 between CATIE and NORAD for support to the Program on Ecologically-based participatory implementation of IPM and Agroforestry in Nicaragua and Central America.
Capacity-building materials produced to date including Guharay et al. 2000. Manejo Integrado de Plagas en el cultivo del café. and Díaz et al. 1999. Manejo Integrado de Plagas en el cultivo de repollo.
Recent issues (2000, 2001) of CATIE journals “Revista MIP” and “Agroforesteria en Las Americas”
Three impact studies on Institutional impact, Farmer’s perceptions and on adoption of IPM practices.
Muschler, R. Arboles de Cafetales.
CATIE-MIP/AF’s collection of gender-related reports and materials
CATIE. 2002. Strategic Plan for 2003-2012 (Draft).
Staver, C. 2002. Changing development paradigms in IPM: can project learning be institutionalized. DRAFT.
CATIE-MIP/AF. Documentation from East-Central Regional Group, Nicaragua
CATIE-MIP/AF. Curso Corto Tecnico Metodologico sobre Manejo Integrado de Plagas en Café.

7.6. Acronyms

Acronym	Name
ADDAC	Asociación para la diversificación y el Desarrollo Agrícola Comunal
ADEC	Acción para el Desarrollo Campesino
ADHS-Popol Vuh	Asociación para el Desarrollo Humano Sostenible
AGRODERSA	Asociación de Servicios Agropecuario y Desarrollo Rural
ANACAFE	Asociación Nacional de Cafetaleros
ASDI	
CANTERA	Centro de Educación y Comunicación Popular
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CETA	Centro Técnico Agropecuario
COSUDE	Agencia Suiza para el Desarrollo y la Cooperación
CPCPV	Centro Promocional Cristiano por la Paz y la Vida
CTADER	Consultora de Tecnología Agropecuaria y Desarrollo Rural
EARTH	Escuela de Agricultura de la Región Tropical Húmeda
ECASPRO	Empresa de Capacitación y servicios al pequeño productor S.A.
EIAG	Escuela Internacional de Agricultura y Ganadería
FIDA	Fondo Internacional de Desarrollo Agricola
FUNJIDES	Fundación Jinotegana para el Desarrollo Sostenible
FUPADE	Fundación Rubén Darío
ICAFE	Instituto del Café
IHCAFE	Instituto Hondureño del Café
INCAE	Instituto Centro-Americano para la Administración de Empresas
INPRHU	Instituto de Promoción Humana
INTA	Instituto Nicaragüense de Tecnología Agropecuaria
MAG-FOR	Ministerio de Agropecuario y Forestal
NORAD	Fondo de Desarrollo Noruego
PROCAFE	Fundación Salvadoreña para la Investigación de Café
PRODECOOP	Programa de Desarrollo Cooperativo
PROMECAFE	Programa de Mejoramiento de la Caficultura Centroamericana, Mexico y el Caribe
PROMIPAC	Proyecto de Manejo Integrado de Plagas con Productores de América Central
SERVITEC	Empresa de Servicios Técnicos Agropecuarios
SIMAS	Servicio de Información Mesoamericana de Agricultura Sostenible
UNA	Universidad Nacional Agraria
UNAG PCaC	Unión Nacional de Agricultores y Ganaderos
UNAN	Universidad Nacional Autónoma de Nicaragua
UNICAFE	Unión Nicaragüense de Cafetaleros
USAID	Unidad de Ayuda y Desarrollo Internacional de Estados Unidos
ZAMORANO	Escuela Agrícola Panamericana