COMMUNITY FORESTRY AND AGROFORESTRY TECHNIQUES FOR THE ASACLAT PILOT PROJECT, QUIRINO, LUZON, PHILIPPINES

John Beer
CATIE, Turrialba, Costa Rica
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TECHNICAL COOPERATION BETWEEN THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES AND THE FEDERAL REPUBLIC OF GERMANY

RP-GERMAN DIPTEROCARP FOREST MANAGEMENT PROJECT

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List of Abbreviations

AF	Agroforestry
ISFP	Integrated Social Forestry Program
CSC	Certificate of Stewardship Contract
CFMA	Community Forest Management Agreement
DENR	Department of Environment and Natural Resources
FMB	Forest Management Bureau
DAO	Department Administrative Order
UPLB	University of the Philippines at Los Baños
LOI	Letter of Instruction
NGO	Non-government organization
RP	Republic of the Philippines

Acknowledgements

One of the first questions that a consultant should ask is "What can I offer that is not presently available?" Having answered that it is possible to concentrate on priority topics from which beneficial changes might be achieved. However, for social/community forestry in the Philippines it is not so easy to answer that question since a broad and in-depth range of knowledge and experience already exists. A consultant collects information, evaluates it and tries to synthesize it with his previous experience in order to present a new and concise point of view. He or she has the advantage of being free to concentrate exclusively on one task, a luxury that permanent project staff never have. Nevertheless, without the accumulated local knowledge and ideas of in-country contacts, no consultant could produce a realistic report on a social or community forestry project. The information and suggestions presented in this report are thus a product of many years of dedicated work by the Philippine and German staff members of the RP German forestry projects; a highly constructive and agreeable relationship that has existed for approximately two decades. The presentation and interpretation are the responsibility of the author but the credit is due to these motivated officers who work for, or with, the Forest Management Bureau (FMB) and the Department of Environment and Natural Resources (DENR). I can not name them all individually but they all merit my most sincere thanks and best wishes that they achieve their admirable aims.

Abstract

An evaluation and proposal for the Asaclat community forestry pilot project, of the "RP-German Dipterocarp Forest Management Project", are made. The key aspects are: project organization and its relation to other RP community/social forestry projects; effective local community involvement in planning as well as implementation; setting priorities according to community needs and hence promotion of sustainable cash crop systems; existing social organization and traditional agricultural practices; advantages and disadvantages of a communal vs project nursery; possible forms of land-tenure and land-use planning; selection of collaborating farmers and trial sites; the critical importance and ways of documenting a pilot project so that the experience is used.

The specific activities which are discussed (including design and evaluation criteria) are: a survey concentrating on existing agricultural knowledge but avoiding the more sensitive socio-economic parameters; a method of promoting reforestation at the same time as increasing cash crop production by establishing timber shade trees and coffee on abandoned land; sloping agricultural land technology (SALT, a form of alley-cropping) to maintain soil nutrient levels as well as to control erosion; empirical testing, by farmers, of a limited number of fruit trees which will be produced by a central nursery. Proposals are made for future community/agroforestry projects and for improving the relevant regulations.

1. Introduction

The technical aspects of Dipterocarp forest management are relatively well developed. On the other hand, despite a massive effort by the Philippine Government, to introduce integrated social forestry projects to stabilize upland communities, forest destruction for agriculture continues unabated. The RP-German Dipterocarp Forest Management Project has thus identified the need for effective community forest management models, in order that sustainable natural forest management will be possible in the Philippines in the future.

A pilot area, in North-East Luzon, has been chosen taking into account the following criteria: interest and ability of the local people to develop a community forestry project; existence of natural forest with the potential for sustainable commercial management; access and/or peace and order are not limitations; potential of cleared land to support sustainable agriculture; absence of serious cultural or socio-economic limitations for community forest management; no conflicting government or non-government interests on land tenure and/or resource utilization. The assistance of local political and administrative leaders, as well as the DENR, has been obtained and initial contacts with the community have been positive. Participants opted for Certificate of Stewardship Contracts (CSC; 25 year renewable land leases of forestry land) and agreed that the project start boundary surveys. A nursery and project house are under construction and local participants are actively involved in discussions about sustainable land-use methods, both for the already cleared "agricultural" land and for the remaining forest land, which will be managed under a Community Forest Management Agreement (CFMA; 25 year renewable land lease).

In order to clarify concepts, plan activities and to review training as well as resource needs, an agroforestry consultant was contracted with the following Terms of Reference:

- Analysis of existing cultivation techniques in target area Quirino, Northern Luzon
- Evaluation of possibilities and limitations for agroforestry schemes to be introduced by the project
- Proposal of appropriate techniques, food and cash crops.
- Proposals for other relevant means to improve the livelihood of the rural population, such as bee keeping, silkworm rearing etc.

- Assessment of extension requirements like training, credit, marketing assistance, community organization, etc.

The following evaluation and proposals resulted from a three week mission during which: i) relevant documents were reviewed and discussed; ii) the pilot zone was visited for one week and local officials, field staff and farmers were interviewed; iii) other projects (provinces) and institutions which could offer information and ideas were also visited; v) a provisional summary of this report was revised with head office officials.

2. Organizational and collaborative possibilities

Since the DENR and FMB are implementing a number of pilot community forestry projects, in addition to the huge number of ongoing social (community) forestry development projects, it is clearly important to ensure communication and cooperation between head office staff responsible for these activities. In fact these officers are charged with the task of reviewing Department Administrative Order (DAO) 123 in the light of experiences from their pilot projects and therefore close cooperation from now on will help them to jointly develop methodologies, and hence comply with this responsibility. Another reason why unusually close cooperation is desirable in this case, is that the same field staff (e.g. PENRO, CENRO) may be involved in more than one pilot project. If head office staff can not provide consistent messages, then confusion in the field is inevitable. Finally, a pilot project serves no purpose if nobody learns from the experience and the first recipients of the results should be the staff in similar pilot projects. A working group of concerned FMB and DENR officers has therefore been proposed and a first informal meeting, to discuss the formation of the group and the recommendations in this report, was held on 24/1/90 (see Appendix 1 for initial participants). The following objectives for the working group were suggested:

1) Learn from each others experience and jointly develop methodologies for community forestry projects (revise DAO 123).

2) Positively criticize each others work programme

3) Provide consistent messages to field staff, rural organizations, etc.

The following activities may be considered to ensure coordination:

1) Formal periodic meetings for the discussion of work plans, reports, seminars, specific problems, etc.

2) Exchange of annual work plans, reports and relevant publications

3) Joint field visits to pilot project sites

4) Organization of a workshop to discuss methodologies, community organization, etc.

5) Informal personal contacts (actual situation)

An active organized group would also be able to respond to higher staff levels about the potentials and limitations of community forestry projects. Additional resources for community forestry projects can be expected in the future, and the group could help in the design and promotion of new activities. However, care must be taken to avoid duplicating the functions of existing groups (e.g. Upland Development Programme) and it is advisable to initially maintain a small informal group with narrowly defined personal interests.

This working group should also ensure that regional (provincial) coordination occurs to ensure that:

1) There is a consistent interpretation of official directives (DAO 123, etc) and hence messages to farmers

2) There is no competition between pilot projects and rather they offer mutual assistance (e.g. logistical efficiency such as transport)

3) Field staff do not make the same mistakes

4) A common front is presented to external pressures (e.g. political)

5) Training opportunities for actual project staff and others, invited to participate for limited periods ("in service training"), are maximized.

However, such regional coordination will require greater planning, takes time and implies that project staff have to be willing to change their methods to ensure overall consistency (but obviously site specific modifications are required for each community). Moreover, if real overall goals and methods are highly divergent, forced coordination would reduce the efficiency of each pilot project.

The following activities may be considered to ensure regional (provincial) coordination:

1) Work under the same general directives (orientation from DAO 123; framework from L01 1260)

2) Identify a regional (provincial) officer who will be responsible for coordinating the zone's community forestry pilot projects. It is important that this person is supplied with the relevant documents and other information, by all projects. The working group may need to prepare "Terms of Reference" for this position.

3) Periodic regional (provincial) meetings (every three months?), of staff responsible for implementing the pilot projects, to discuss technical aspects.

3. Work plan for Asaclat pilot project

3.1 Planning mechanisms

The three years ending 30 November 1991 are foreseen as an establishment phase for the pilot area which should be developed during a follow-up phase of five years. The following proposals are based on the assumption that a five year extension will be agreed: i.e. long-term community development activities and field trials including tree components are feasible and justified. The project should not try to make decisions without involving the community in order to rapidly initiate visible activities before the November 1990 evaluation. This evaluation team must recognize that a more important goal of a community forest management project is good communication, understanding and eventually participation of the local people. Without this there is no possibility of a community project becoming even partially independent of outside support. Such achievements are superficially invisible but if these foundations are carefully placed during this establishment phase, future project impact is going to be much greater than will result from immediate but non-participatory action such as the establishment of a demonstration farm by the project personnel alone, in the hope that it will latter influence agricultural practices.

Without the project extension, drastic reprogramming would obviously be needed. In such a case, the Asaclat project should concentrate on community strengthening activities which can be rapidly implemented, together with evaluations of traditional agricultural practices, community organization, influence of existing government regulations and other socio-economic studies which could be completed in the remaining time. There would be

no sense in initiating AF field trials which are invariably medium-long term (i.e. greater than 3 years).

The framework for making any work plan is provided by the project evaluation and "Objectives- orientated project planning" (ZOPP) exercise of 1989, together with the relevant government regulations for community or social forestry projects: e.g. Presidential Letter of Instruction (L01) 1260 and Certificate of Stewardship Contract (CSC) conditions (1982); Bureau of Forest Development Circulars 13 (1983); 29 (1985); 12 (1986); 12 (1987); Department Administrative Order (DAO) 97 (1988) and 123 (1989). This report concentrates on the community organization and agricultural (principally AF) activities in Asaclat. The technical aspects of community forest management, including rattan culture, timber stand improvement (TSI) and enrichment planting are not covered.

The next step should be the preparation of a work plan, for the Asaclat zone, for the remaining 1.5 years of this phase. Although it is the responsibility of project staff to prepare this plan, synthesizing the ideas documented in this report together with others which have already been discussed and/or initiated (e.g. rattan), it is vitally important that the community is not only consulted but also feels that it has an influence on decisions (Aguilar 1986). As far as is possible, the responsibility for future planning should be gradually transferred to the community representatives (see 3.4). Monthly logistical planning is also necessary to ensure efficiency of the actual pilot project. Assuming that the community or its representatives have helped formulate and approved the overall work plan, the monthly planning of activities can be drafted by Asaclat project staff for later approval during regular head office meetings. During the remaining short time of this phase, the preparation of annual work plans is not justified, but in a five year follow-up phase it would be necessary to prepare annual work plans for Asaclat.

3.2. Setting priorities

Justifying how priorities will be set, necessitates a discussion of the project's approach (its "philosophy" towards development) and not only helps clarify why certain goals have been chosen but also indicates the ways of reaching them. For example, the project staff have already chosen to emphasize commercial production alternatives, rather than try to improve subsistence agriculture, which is a reflection of the communities opinions and proposals*. Differentiating between "What the

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* Specific interests will be ascertained during a study (survey?) of agricultural activities, problems, limitations, interests and potentials (see section 4.1).

community needs" (should receive high priority) and "What they want" (priority depends upon consequences which should be jointly evaluated) is extremely difficult for project staff who are instructed to act as a collaborator and advisor rather than as a manager or enforcement official. Thus the following discussion gives priority to commercial activities but tries to promote them by means of sustainable agricultural methods, within the context of appropriate land-use planning, to avoid detrimental consequences should any one activity be widely adopted. Without the concurrent adoption of appropriate land-use planning, any agricultural development is potentially hazardous.

The justification for emphasizing AF systems for Asaclat is that they should be able to maintain and possibly increase sustainable production from lands used for agriculture (could include thinned and underbrushed forest where coffee has been planted). Thus the objectives of maintaining soil fertility, which principally refers to avoiding nutrient depletion on flat as well as sloping land, and of controlling erosion on slopes, are both important. The promotion of diversified cropping systems is another important justification for AF projects. However, it is hard to motivate farmers to establish and care for trees or shrubs which do not produce any directly utilizable product. A possible exception is the use of trees to produce organic fertilizer (4.2.), an activity which may be readily accepted by farmers <u>if</u> there is a notable short-term effect on associated crop yields. The Ifugao farmers of Asaclat have only limited possibilities to work for long-term benefits, such as the maintenance of soil fertility, and the best way to achieve such an objective is by means of a technology which answers an immediate need but also provides this secondary long-term benefit. For example, planting permanent shade and coffee on open ground provides increased commercial production (coffee) at the same time as promoting reforestation (shade trees).

Priority should be given to innovations which are derived from existing methods, include locally known species and which fit within the traditional socio-economic (cultural) system. This concept is strongly emphasized in all government regulations (3.1). New methods should be simple and inexpensive, not because the Ifugao are incapable of adopting complex techniques but in order to facilitate development and extension activities and to reduce the economic risks for farmers. The Ifugao tradition of terracing steep hillsides for paddy rice shows that, if motivated, they have the ability to establish massive infrastructure improvements and they should be able to easily relate to the idea of providing physical barriers (e.g. hedgerows) to retain soil and water. Thus, the promotion of alley cropping (i.e. SALT) with the leguminous tree Madre de cacao (<u>Gliricidia sepium</u>) is an example of an innovation which can be related to a traditional practice but which includes a species which is not well known by Asaclat farmers. Furthermore,

this technology usually relies upon vegetative establishment methods with which they are probably not familiar. Hence in the future it would be worthwhile testing locally known alternative species, but this is not recommended for the initial trials in view of the increased risks for the project (failed establishment = negative demonstration = loss of project credibility). It is recommended that the project initially only works with crops which Asaclat farmers actually cultivate, to reduce the technical difficulties and socio-economic risks. For example, it does not seem advisable to promote black pepper (Piper nigrum) cultivation at this stage, even though it was suggested by a few farmers and some government staff.

A more comprehensive and intensive evaluation of possible project activities may be justified at the end of this project phase to reconsider priorities. The ICRAF Design and Diagnosis methodology (ICRAF 1983a, 1983b, 1987) or the related rapid rural appraisal methods described in various Philippine publications (Upland Development Program, 1985; Sajise, no date), all of which require a multidisciplinary team, could be used. However, the impact of such a group on the community, and on the project's attempts to fit into the existing socio-cultural organization, so that the communities representatives are involved in decisions, has to be considered. These planning methods, which are carried out by outsiders, depend upon an information base, part of which is provided by qualified informants. Both the information base and the access to key farmers, within an open relationship based on confidence, do not yet exist and therefore it is recommended to first establish some field activities and to promote community involvement in the project. Initial priorities based on existing practices, and in accordance with farmer's expressed interests, are probably going to be confirmed by these multi-disciplinary diagnosis methods. However, these methods have the advantage of more completely defining socio-economic as well as bio-physical interactions within the project zone. Hence the critical factors or interactions, which should be given priority during the study of each new or adapted technology/system, can be identified.

One limitation to the adoption of any agricultural innovation will be the availability of farm resources, in particular labour. A study of the existing agricultural calendar is urgently needed to identify labour "bottle-necks" and times when people are under-employed*. However, it is not enough to only know when a particular agricultural activity is carried out, since there is a clear division of responsibilities between men (e.g. clearing trees, ploughing) and women (e.g. planting, weeding). Labour "bottle-necks" or availability, for both sexes,

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* Depending upon the motivation and available land, it appears that some farmers are permanently occupied and the introduction of any labour demanding innovation (e.g. SALT) may be difficult.

need to be separately ascertained. The priority of any particular project activity might thus be increased to help one or the other, or conversely decreased to avoid disadvantaging one or the other.

A final but critical aspect when discussing priorities is obviously the project's own resource limitations, in particular man power. When only a few activities are undertaken, the failure of any one has a relatively large influence on the project's level of accomplishment. On the other hand, spreading scarce resources over many activities virtually guarantees that none will show their true potential. If project planning and monitoring (ICRAF, 1987) are correctly carried out, then the risks of choosing inappropriate activities are reduced, and thus a strict priority order can be made. Although few professionals would disagree with this conclusion, it is alarming to find that the planning documents of many research as well as development projects include a highly diversified and exaggerated number of activities. The ZOPP planning procedure seems to have this problem, as is exemplified by the ambitious planning matrix of the RP-German Dipterocarp Forest Management project. A specific risk for this project is that it might try to introduce many different fruit tree species or varieties via the nursery. An effort should be made to evaluate the potential and risks of each species/variety, to strictly set priorities, and to enforce them until a group planning or monitoring exercise suggests changes. Where project resources are involved, individuals should not be allowed to "try out" something new without consensus.

3.3. Role of project personnel

Researchers are trained to seek information whilst extensionists are trained to provide it, and thus the former are better prepared to ask questions and to listen to farmer's answers about traditional agricultural methods, community organization, etc. (Steiner, 1987; Chambers, 1983). Although this generalization is unfair to many extensionists who are well integrated with their clients, it serves to illustrate the need for this essential skill, which must be demonstrated by Asaclat project staff. Their role in Asaclat is firstly as students, secondly as a collaborator with farmers as equal partners, and thirdly as advisors to the community. Their job is to help the community make decisions, to help to implement these decisions and then to document the results. They must avoid taking the role of the leader and must delegate as much authority as is possible to the community representatives. It therefore follows that personnel evaluation methods must give more weight to evidence that the above relationship has been achieved (no easy task!) and less to mere physical evidence of activities, such as number of trees produced by the project nursery and/or planted out. This relationship is a necessary condition for the

achievement of the project's goal of demonstrating that a sustainable and socially acceptable community forest project is feasible, whilst statistics on field activities completed by project staff are totally irrelevant to an evaluation of this central goal.

The project staff should be seen by the community to be neutral with respect to all external and internal politics and interest groups. This recommendation presumes that the staff are sufficiently aquainted with the actual local power structures and that they stay alert to any shifts of interests. Some informal study to identify existing factions and their relative roles (interests) is needed before initiating further activities in the Asaclat zone. It is not advisable to be closely associated with any one person or group since the project's future status will then depend as much on the performance of this collaborator as on its own achievements. It is almost inevitable that local leaders and groups will try to use the project to further their own ambitions, and although their plans may be sincere and beneficial to the community, project staff have to be aware of the implications. Collaboration is desirable and the decision to make initial contacts via local political and administrative leaders was certainly correct. However, it now necessary to make contact with, and involve, all groups in Asaclat.

International as well as national consultants, and students, may be invited to work with the project in order to achieve specific goals (e.g. expertise on survey methods; research activities). Such activities should first be discussed with the community representatives and the implications of failure assessed. Inflated expectations can result in a serious kick-back, detrimental to the credibility of the whole project. All new out-side collaborators must be carefully briefed on the politics of the project to avoid that they make any promises or create impressions that project staff subsequently have to respond to. It is probably not advisable to involve students during the remaining 1.5 years of this establishment phase. Moreover, the requirements for higher level natural science degrees (M.S./Ph.D.) are not compatible with the simple trial designs recommended for this pilot project (see 4.2, 4.3, 4.4). On the other hand, it would be valuable to get some scientific backstopping (Universities?) for project staff charged with evaluating soil fertility (sampling methods; soil classification), surveys, crop productivity measurements (how many plants to measure per sample plot; distribution of sample plots), community organization methods, etc. If such advise is funneled through project staff, rather than directly implemented, then the possible negative influences of outsiders on an emerging (therefore sensitive) community project should be avoided. Contracting of other organizations to complete specific activities, such as surveys, should be a last recourse. The only exception would be project evaluations, which should of course be

carried out by independant organizations (again, the involvement of Philippine Universities could be valuable).

3.4 Community organization and participation

Project staff have set good foundations for community participation by initially working with locally elected leaders and by presenting plans at barangay meetings. The latter forum appears to be the best place to present ideas, to solicit cooperation, to plan farm visits, and programme community activities (e.g. nursery, see 3.5). Even when the project is underway, there should be at least one meeting with the community each year, to jointly review project progress and to obtain ideas for the following years work plan. However, it is obviously not practical to consult everybody for each decision and therefore it is necessary to try to reach agreement on who should represent the community, and hence can make decisions on behalf of the rest. Traditional Ifugao communities recognize a group of Elders who could fulfill this role (Personal communication, D Rice). It is not known whether such Elders are recognized among the Ifugao farmers who migrated to Asaclat during the last fifteen years. Some efforts should now be devoted to trying to identify such individuals since it is assumed that a traditional administrative system would be more effective in coordinating a community forestry project than any outside (therefore artificial) organizational structure; e.g. the associations "imposed" as part of many Philippine integrated social forestry projects (Aguilar 1986). Unfortunately a complication may arise since it was reported that Asaclat Ifugao originate from two different areas (Banaue and Lagawe), which have different dialects and quite possibly still recognize different Elders. The convening of a meeting to discuss the Certificate of Stewardship (CSC) land leases, which most if not all farmers wish to obtain, should ensure representative participation of all groups and would be an opportunity to formally recognize and organize (elect?) a "Board of Elders" who would then represent the community. However, project staff should do some informal "homework", before taking this important step, to evaluate its potential strengths and weaknesses.

Once this Board, or any other association, is established, project staff will have to clarify with them their "Terms of Reference"; i.e. who makes which decisions and what the limits of authority are for all parties. Some limits are already set or implicit in existing Government regulations covering community forestry projects (DAO 97 and 123). As far as is possible, project staff should always present their ideas through the Board, which then decides. At least initially, some activities will have to remain under the control of project staff but hopefully with the understanding that authority will be gradually transferred to the Board. Project criteria (e.g. for selection

of trial farmers and/or sites) might not be consistent with the Board's suggestions and therefore difficulties in the implementation of this idea can be expected but the potential benefits outweigh the costs (Rice, 1981). Since problems are expected, project plans should be flexible, though all parties have to recognize that AF trials are long-term and once initiated should only be changed under extreme circumstances. Flexibility is necessary to take advantage of experience gained during the development of the project-Board (community) relationship. In fact, this development should be treated as an important activity to be documented, whose result will be a critical indicator of the success of this pilot project and vital for the transfer of the methods to other projects.

Whilst setting up the Board, it is worthwhile discussing how to deal with conflicts. Disagreements between project participants (e.g. allocation of planting material) should be resolved by the Board. Disagreements between participants and the project (e.g. appropriate land-use) should also be resolved by the Board, if at all possible. Problems between the project and the Board would be more serious, as would outside political pressures, and would need priority attention from the DENR-FMB. However if all parties respect the Asaclat Memoranda of Agreement and obligations therein, then the latter case should not occur. In order to achieve continued community support for the project, activities which equally benefit the majority should be undertaken (e.g. road improvement, school water supply). The awarding of the CSC is the most obvious example.

3.5 Communal vs project nursery

A communal nursery, where participants are paid with seedlings in accordance with the time invested (or tasks completed), has many advantages compared to a project operated nursery, which offers low-cost seedlings (providing free seedlings is definitely not recommended):

i) The most important justification is that participants will consider that the nursery is theirs, which greatly improves the probability that they will continue to operate it, even when assistance is reduced to a minimum. To achieve this perception, the community has to take responsibility for the nursery at an early stage and preferably from its conception.

ii) It should provide a more equitable distribution of benefits. There is less risk that only a few people benefit financially (wages). The latter case can lead to divisive pressures which affect the development of other community activities; e.g. Buhi project (Aguilar, 1986).

iii) It is more likely to respond to the participants interests (e.g. choice of species).

iv) Training in nursery techniques (preparation of seed beds, grafting, etc.) is provided to many participants rather than to a few employees.

v) One method for improving the farmers marketing possibilities and bargaining strength, is to organize a central collection point (and date) to provide some product guarantee (quantity/quality) for buyers. This can be achieved with a farmers association, formed around a communal nursery. The existence of communal nurseries, in many villages of one province in Costa Rica, enabled the formation of a provincial farmers association; seedling production (cacao and fruit trees) being the initial attraction to participate but in reality only a by-product of the main goal of this NGO project.

vi) The programming of a communal nursery work day (a fixed day every week or month) facilitates simultaneous contact with a large number of project participants; for example, for extension classes or the organization of other community project activities.

A communal nursery can also have disadvantages and limitations compared to a project operated nursery:

i) Seedling quality may be lower

ii) In Asaclat, a nursery foreman will still be needed (at least part-time) and labour costs are not going to be very different. However, supervision costs, to ensure that the correct techniques are always being used, are going to be greater and thus overall costs of a communal nursery are probably going to be higher.

iii) Without some outside support, it is improbable that a communal nursery will continue to operate post-project. However, in some countries a commercial nursery, set up by an ex-participant of a communal nursery (which disappeared), has continued to supply seedlings after a project terminated.

iv) If it is successful, the Asaclat nursery may rapidly produce most of the seedlings needed by the participants. Once they have established tree crops on all suitable land, the motivation to participate in a communal nursery will be greatly reduced.

v) It is often difficult to run a communal nursery without conflicts about the distribution of products in relation to the inputs (usually labour) of each participant. Although the Board should be capable of resolving such conflicts, this load on them is avoided if the project takes direct responsibility for producing seedlings.

3.6. Land tenure and land-use planning

Gaining security of land tenure is apparently a motivation for the Asaclat farmers to accept the proposed pilot project, although it must be recognized that they regard the land as their own with or without government certificates. The lack of interest in the completion of the boundary surveys, shown by some farmers, is apparently a reflection of this attitude but it would be worthwhile checking if there are other reasons. The farmers have requested individual CSC rather than a communal land lease. Their decision now has to be honoured even though it could have negative consequences, such as the appearance of outside speculators once individuals have some government recognized rights (CSC). However, the CSC includes an open section where specific conditions can be agreed between the grantor (government) and the grantee (farmer). This could be used to ensure consistency of the individual CSC leases with the conditions of the Community Forestry Management Agreement (CFMA), proposed for the upper watershed which will be managed under rules agreed between the DENR and the community (DAO 123). However, specifying additional conditions for the CSC might delay their ratification; a consequence which has to be discussed and accepted by all members of the community. This is a case where the project staff can only spell out the advantages and disadvantages of each option but the community has to decide (as has been done until now). The individual CSC leases can be converted into a joint community lease (BFD circular 12-87), an aspect which should be explored once the organizational activities (3.4) and the issuance of the CFMA is underway.

The granting of a CSC requires a rough map of recommended land-use for each individual lot. The project should first have prepared an appropriate land-use plan for the whole pilot zone (even if only an approximation) to help guide the preparation of each CSC, especially if any land exchanges are proposed to avoid legalizing grossly inappropriate land-use and to provide for viable farming units for each family. It is not clear how families with the smallest lots are expected to survive, especially if existing commercial off-farm activities, like harvesting Narra (Pterocarpus indicus), are to be strictly controlled. The project and the community has to think of viable alternatives for these families, to ensure compliance with community forest management plans. The government was never able to impose regulations on forest dwellers and although a community

organization might be more successful in this policing role, it would probably be a self-destructive activity.

On the farms where project trials are to be established, more detailed studies and appropriate land-use mapping will be required in order to demonstrate how each trial fits into the existing farm structure (bio-physical and socio-economic). Trials can not be evaluated in isolation of the existing farming systems.

3.7 Trial location and design criteria

Demonstration farms have been emphasized in previous ISF projects and are required under current regulations (DAO 97). However many of the existing demonstration areas are poorly maintained and could have a negative demonstration effect. If a project can identify motivated competent farmers, who are truely interested in testing a technology on their own land, then this maintenance problem will certainly be less and may disappear. More importantly, acceptance by farmers of a new technology is usually greater when they see it demonstrated on a private farm with the involvement of the owner, who may turn out to be the most effective extension agent a project can have. Other reasons for preferring on-farm trials (initially technician managed) instead of demonstration farms are: i) risks are reduced since trials are spread over a wider area; ii) benefits of having or participating in a trial are thus also spread over a wider area; iii) the technical team has a better opportunity to learn from the farmers (see also Steiner, 1987). Nevertheless, there are some good reasons for also trying to establish one example of each new technology on the communal land around the Asaclat school, which is conveniently near to the nursery and will be the community centre (barangay hall and church are planned for this site).

The interests and available resources of the project preclude complex experimental designs and methodologies. The potential of certain "packets of technology" (examples: 4.2 and 4.3), for Asaclat farmers, has to be evaluated. At present, there is little justification for statistically designed experiments to compare treatments and the main parameters to be measured are inputs and outputs from trial plots which should be replicated on different farms (Huxley and Mead, 1988). Since there are four different "sitios" (inhabited areas) within the Asaclat pilot project zone, it is recommended that one trial of each technology be established within each "sitio", together with an example on the communal land, giving a total of five replications. This total is the minimum, given that site and management variability will be high, and there is a risk that some of these collaborative trials could fail. For Asaclat,

simplicity and extra replication (farms) are more desirable than complex intensive studies on only one farm.

Until now, the majority of the project's activities have been carried out at or near to the nursery. Therefore the first trials should be established in different "sitios" to avoid giving the impression that one privileged group (sitio) will be the only project beneficiaries. Although it might be logistically easier to start with the nursery or communal (school) sites, the moment has come to demonstrate to the other "sitios" that the project is neutral. Activities which benefit the whole community (3.4) are also important to avoid the perception that the only project beneficiaries are collaborating farmers.

Initially the technicians should be in charge of the plots to prove their ideas as well as to ensure adequate control and documentation. However, every effort must be made to involve the farmer in decisions and evaluations, and not just as a labourer. Once experience has been gained and some of the agronomic problems have been overcome, the technology should be tested with a representative group of farmers (i.e. ranging from the less well off/less experienced up to the better off/experienced) who would manage their own plots, receiving only technical advise. At the moment, without experience, there are so many bio-physical as well as socio-economic limitations, that the project should deliberately bias its selection procedure towards the "best" farmers (See Appendix 2 for criteria used in Costa Rica, which should be adapted for use in Asaclat) and it should avoid the worst sites (but not pick only the best soil!)*. The intention is to establish convincing demonstration plots and to evaluate each technology under well defined (albeit biased) and documented conditions. In the future some farmers may obtain worst results (and some may obtain better!) but all are capable of making adaptations according to their circumstances, once they have seen an idea demonstrated.

As a first step, the project has to learn about existing farming practices, as well as how to manage the proposed technologies, which is another justification for initially selecting the "best" collaborators (i.e. similar process to involving qualified consultants!). The project should not pretend to cover all possibilities whilst taking this first step. Only after the farmers have been selected should trial sites be chosen together with them. Since site and management conditions are bound to differ, minor modifications, suggested by each collaborating farmer for his site, can be introduced.

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* For a more detailed justification and explanation of this selection procedure see Beer, 1989 or Beer, 1990.

3.8 Training and information needs

The need to fit project activities into existing (traditional) agricultural practices and community organization, implies studying these aspects both informally (day-to-day observation) and formally (specific activities for this purpose). The informal information flow can be accelerated by involving local people in the project as field trial collaborators or as project staff, but it requires first and foremost having the time and interest to learn as well as to teach. This should be one of the criteria for choosing project staff. The survey proposed in the following section (4.1) is intended to provide information on present agricultural practices, including species involved. Open-ended questions are deliberately used in order to learn about the agricultural calendar, limitations, desirable species characteristics and other such qualitative information. Statistical results from this survey are of lesser importance. Another specific activity, to better understand the social background, would be a study tour of the Banaue and Lagawe villages from which the Asaclat residents emigrated, assuming that adequate communication could be established with the elders or other leaders of these communities.

A highly recommendable way to initiate the Asaclat project, to motivate farmers and to clarify concepts, technologies, etc, is to arrange a study tour for some representatives of the community. This group should include farmers who will collaborate (on-farm trials), but it also should include the elders/leaders/influential respected farmers, or indeed whoever the community chooses to nominate. Available project resources should be used to take a larger group on a regional tour rather than a smaller group on a national tour. Sites to visit would include examples of bad land-use (e.g. soil erosion in the Magat area), good land-use (Kalahan project, Santa Fe, Nueva Vizcaya) as well as project areas where examples of proposed technologies could be seen. The latter should include the RP-German Fruit Tree Project, Baguio City, to let farmers select species/varieties to be produced in the Asaclat nursery; and the International Institute for Rural Reconstruction project, Cavite, to see different coffee management options, including the establishment of temporary and permanent shade. Farmer-farmer contact is very important and tour preparations should include the identification of suitable farmers who could (ideally) talk directly to at least some members of the visiting Asaclat group. During a study tour, and any future farmer training events like field days, one staff member should be recording the farmer's questions and comments as an indication of their perceptions, priorities and what criteria they use to judge a system. For example, they rarely give erosion control a high priority but will always evaluate the extra work required to change actual methods.

Technical assistance for the Asaclat project could also be provided by some of these existing projects. The proposal that extensionists from the RP-German Fruit Tree Project spend some weeks in Asaclat, advising the farmers on their own land about their options for orchards or AF systems including fruit trees, is a good example. A reciprocal visit by Pastor Rice and persons contacted in the Kalahan project during the study tour, could lead to useful suggestions about community-project organization, as well as agricultural and/or forestry alternatives. In Manila, a link to the Philippine Association for Intercultural Development (PAFID), which coordinates development projects for upland tribal groups, should be explored.

There is also a need to train project staff for the management of specific technologies in order that they can successfully implement the initial trials and later provide technical assistance to Asaclat farmers. Options worth checking are short courses or in-service training on SALT with the Mindanao Baptist Church project at Davao, Mindinao; and on community organization methods with the RP-German Cebu Upland Project, Cebu. Many institutions now offer AF training (including CATIE, Costa Rica, but usually in Spanish). The most suitable options may be offered by the University of the Philippines at Los Baños (UPLB) and possibly other S-E Asian Universities, since training can be more easily related to the situation in Asaclat. European, North American and other university AF courses, outside of the tropics, are usually too theoretical and research orientated to be suitable for Asaclat project personnel.

A critical review, is needed of FMB (BFD) and DENR regulations. The standard repealing clause (e.g. section 9 of DAO 123), that inconsistent previous instructions are no longer valid, implies that those which do not contradict the new guidelines, still apply. It is therefore apparently necessary to reread all previous instructions which refer to the same topic, to determine the full extent of actual regulations. It would seem recommendable that the authors of new orders accept the responsibility of carefully reviewing all relevant documents and of producing a complete set of instructions which cancel all previous corresponding orders (which should be specifically identified). Since head-office staff (FMB and DENR) are apparently not in agreement about the applicability of DAO 97 and DAO 123, confusion of field staff, responsible for implementing these orders, can be expected. Moreover, it is possible that some of the proposed Asaclat activities (TSI; rattan cultivation and harvest; land-use allocation) will contravene existing instructions. It is therefore recommended that one or more head-office staff review all existing and previous regulations to determine their consequences for the Asaclat project. It is already foreseen that DAO 123 will be reviewed on the basis of future experience of the various community forestry projects (see

Appendix 3 for suggestions about points which may need attention) and maybe this will be the opportunity to establish one consistent and exclusive set of instructions for community forestry projects.

More information is required on marketing and other economic aspects of the proposed technologies. The project clearly does not have the possibility to carry out marketing studies on the potential products, although this is an activity where a student might be able to produce useful results. However, the project has to be aware of actual marketing mechanisms and be careful not to disrupt existing arrangements unless the consequences have been evaluated and alternatives are available. In particular, the control of marketing by middle-men (e.g. commercialization of rattan) and their influence over the farmers, indicates that the project should try to enlist the cooperation of these merchants to implement changes rather than to oppose them; for example, by immediately promoting community marketing. Many projects have suffered serious set-backs, as a consequence of deliberate misinformation, because they ignored existing socio-economic (and/or political) linkages.

3.9. Documentation

There is little justification for mounting "pilot" projects, which by definition are supposed to teach others what does and does not work, if these projects are not adequately documented. Documentation is needed on: the pilot zone; the farms where collaborative studies are carried out; the on-farm trials; the nursery; and on the development of the project as a whole (i.e. organizational aspects).

3.9.1. Documentation of the pilot zone

This includes a bio-physical characterization and maybe a stratification if important intra-zone differences are detected. Variables to be described/measured* include: precipitation; temperature; extreme events (e.g. typhoons); soils; land-use history; vegetative formations (natural and actual); socio-economic and cultural characteristics; land tenure; slopes; outside influences including political, markets, access, neighbouring cultural groups; population growth rates (reproduction and imigration); educational level; origin of settlers; availability of governmental or other services. The information must be gathered gradually and to a large degree informally. A huge survey, to quantify all these variables at

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* See also "Guidelines in the preparation of the five-year integrated social forestry development plan, Section 3 and Annex, BFD Circular No. 29-85".

the initiation of the project, should not be carried out (See 4.1).

3.9.2. Documentation of farms

It is important to be able to report the results of on-farm trials within the context of the actual farming systems. Farm and trial (3.9.3) documentation could be combined, but it also may be necessary to present a general description/characterization of the farms selected for trials, when discussing the project's methodology. Variables to be described/measured include: actual land-use, slopes, proposed land-use, location of trial site (maps and drawings); farm resources and characteristics; agricultural activities including annual calendar; family characteristics and history; important differences of the farm/family from their neighbours (e.g. resources, access, year of arrival).

3.9.3. Documentation of a trial

There are many text books on trial documentation (e.g. Steiner, 1987) and some publications specifically for on-farm AF trials (Beer, 1989; ICRAF meeting February, 1990). Since AF trials are long-term, and staff may change, it is particularly important to record the reasons why a trial was established (background) and all observations. The file, for each trial site, should also include: maps and descriptions of the farm and plot locations (see 3.9.2.); drawing of the trial plot(s) showing spacings and layout (tree and/or crop); objectives; description of design and treatments when appropriate; foreseen management; measurements to be taken and dates; proposed analyses and presentation of results. Additional information, that is normally needed, would be: land-use history of the trial site and a soil characterization, including fertility analysis. The most important observations may be recorded on three principal data forms: 1) monthly inspection of each trial plot (bio-physical observations; Appendix 4); 2) monthly listing of inputs, which are mostly labour, provided by the project and the farmer (socio-economic; based on an interview with the collaborating farmer at the time of the monthly plot inspection; Appendix 5); 3) tri-monthly formal recording of farmer's observations with respect to the trial and the project activities (Appendix 6 for some possible questions; continuous recording of the farmer's informal observations is equally important). As a general rule, the information in the file for each site must be sufficient to enable any qualified technician to locate, maintain, measure and analyse the trial, even if he can not discuss it with the initiators.

3.9.4. Documentation of the nursery

Some standard procedures to control and record incoming seed or plant lots; out-going seedlings (what, to whom, and how many) and a diary of daily nursery activities (dates of sowing, germination, transplanting; agrochemicals used; etc.) are invaluable to attain plant quality control. Ideally the nursery foreman should be trained to maintain these three separate books. Alternatively a field assistant should bring these books up to date at least once a week. If it proves possible to establish a communal nursery, then a secretary, nominated by the community has to keep a separate record of the contribution of each family (piece work or hours) and number of seedlings received in compensation.

3.9.5. Documentation of the project

The applicability and practicality of the guidelines for project monitoring, recommended by the Upland Development Group, should be reviewed with respect to the Asaclat project. As far as is possible, these guidelines should be adopted by all community forestry pilot projects, to facilitate comparisons and the design of more effective future projects. In Asaclat a simple but important start to project documentation can be achieved by keeping a diary of daily project-community activities. Observations should include the apparent understanding (or misunderstanding) of proposed activities; negative individual or communal reactions; suggestions (project staff or community) for alternative approaches to community and/or field trial organization. The diary should <u>discuss</u> the development of the project and not just be a simple listing of activities. If the project staff could develop a self-critical attitude towards their work, this diary would be invaluable for recording ideas on how to improve the implementation of community forestry projects.

3.10 <u>Personnel requirements</u>

Since the initial focus, and possibly the principal future activity, will be the development of agricultural alternatives for Asaclat, there is obviously a need for a staff member with considerable agricultural experience. In view of the actual and future responsibilities, it not realistic to expect the present Chief of Agroforestry to fulfill this role. Moreover the programmed community forestry activities (TSI, enrichment planting, rattan culture) will demand the full time attention of the existing forestry field assistant.

If all three evaluations of each trial, mentioned above in 3.9.3, are to be completed at the same time, then one assistant could probably only evaluate two farms in one day. This implies six man-days/year for monitoring each on-farm trial, although the frequency of monitoring could be reduced in the future. Production measurements will usually necessitate the presence of project staff and with two crops/year, the total rises to ten man-days field work/year for each trial once it is established. When other community activities and office work are taken into account, a qualified technician with an assistant should be able to manage a maximum of 15-20 simple trials. This number would decrease if more complicated (e.g. statistical comparison of many treatments) and/or diverse on-farm trials were involved, but would increase for a community forestry development project where detailed documentation was not needed.

To complete the work programme outlined in this proposal, it will therefore be necessary to contract two new staff members to run the on-farm trials, as well as a nursery foreman. Ideally a local teacher would be additionally contracted for socio-economic studies (surveys, monitoring, etc.) but in view of budget limitations it is acceptable to combine two positions (socio-economic and agronomy assistants) in one, during the rest of this phase. The woman teacher, who is a candidate for this position, offers the considerable advantages of being able to introduce the farmers wives point of view, as well as being a long standing member of the community. For an assistant, previous research and agronomic training are not important since this can be provided but her ability to carry out field work (e.g. interviews and some measurements) has to be checked. A complete list of staff and principal collaborators is given below:

ASACLAT PROJECT STAFF

1. Social Forester and Chief (S.Soriano)
2. Agroforester (B.Sc Agronomy; Open)
3. Forestry field assistant (R. Acosta)
4. Socio-economic field assistant (Local teacher)
5. Agronomy field assistant (Optional)
6. Nursery foreman (Asaclat resident; Open)
7. Driver and general assistant (R. Victorio)

PRINCIPAL COLLABORATORS

1. Barangay Captain (B. Pindog)
2. Board of Elders
3. Farmers selected for trials
4. Provincial environmental and natural resource officer (PENRO)
5. Community environmental and natural resource officer (CENRO)

4. Field activities for the Asaclat Pilot Project

The following section describes four activities that should be initiated during the remaining 18 months of this phase.

4.1. Survey of agricultural activities

The survey has two objectives:

i) To gain information on present agricultural and forestry activities, including: division of labour; preferred species and hence desirable characteristics (plants and trees); limitations; needs; interests.

ii) To help to identify suitable farmers and farms for collaborative trials.

These general objectives need to be agreed within the project and more specific objectives defined before trying to prepare the questionnaire. Since this will be the first direct project-participant contact, excepting the boundary survey, the impression that will be created must be carefully considered. This initial survey should be simple, requiring a short interview on the farmer's land (not just in the house) and if a lot of information is needed, it might be better to divide the survey into different sections. These could be completed on different samples of the Asaclat population or return visits might be considered. Sensitive questions (e.g. income, religion, education, peace and order) should be avoided unless absolutely necessary.

A good exercise, before initiating field interviews, is to try to immediately draft data tables (results) to check if all necessary information will be obtained and what questions are unnecessary. Open-ended questions, and not the restricted "box" type, are more appropriate for this kind of study to permit free conversation and not limit the answers to a set format. In this

case, as a general guide, if a computer can be readily used for the analysis, then the questionnaire has not been correctly designed! Surveys are extremely complex and difficult to carry out correctly. For this reason, statistical results from surveys are often totally inaccurate. Qualified advise should be sought at all stages in the development, implementation and analysis of the results of a survey. The IFO forms (pages 39-42) in the "Implementation Manual for Participatory ISF Projects" (1989) provide some examples of questions best avoided (income; peace and order; etc) leading questions ("Are you aware of...") and an apparent desire to collect statistical information which will probably be inaccurate and possibly never used. Are these questions, and some of the clauses in the CSC, a hang-over from the days when the Bureau of Forest Development acted like a police agency with respect to upland inhabitants, and are they still really necessary?

In general, survey questionnaires can not be adapted and a unique form should be prepared according to the specific needs of every study. Farmers like to talk about farming, and a questionnaire that concentrates on this topic (Appendix 7) should help initiate a constructive relationship between the Asaclat residents and the project. If more detailed statistical information is needed (for example, for baseline data for judging the future impact of the project) this can be collected later, once confidence has been built and the inquisitive nature of the questions does not provoke a negative reaction and hence misinformation. Moreover, there may be other ways to more accurately and easily obtain such data; e.g. measuring the total amount of Narra sold in Nagtipunan rather than asking each Asaclat resident how much he cut last year.

Any questionnaire should be tested in the field and refined before starting the study. To guarantee adequate communication between the enumerator and farmers, the project should have a local person trained (e.g. a school teacher during holidays) in interview techniques (examples: see ISF Manual, 1989). Previous explanations to the community, their assistance in programming interviews, and a later presentation of the results, are all valuable ways to reduce the negative impacts of a survey. Qualified advise (Universities?) should be sought to decide if all 160 farmers should be interviewed, and if not how to select a sample. Is pre-stratification of the zone needed and how (by "sitio")?. Interviewing all 160 families ensures divulgation of information about the project (introduction given by enumerator before interviews) and that all potential collaborators are visited, but it will take at least three months full-time for one person. Hence the survey would have to start immediately if the results are to be used to help select collaborating farmers.

This survey must not be allowed to turn into a research exercise and some of the information (for example; agricultural calendar) might be more easily obtained in group sessions where the farmers are given a chance to discuss each topic and then give a common response (but beware that one person dominates). Some of the more sensitive information might be best obtained from key informants with whom confidence already exists. For example, is it really necessary to ask each farmer for their marital status; details on their children and dependents; their educational level; etc; or might not a general description, prepared with local leaders and elders, be sufficient?

4.2. Sloping agricultural land technology (SALT) trials

The principal commercial crops in Asaclat (two cropping cycles/year) include peanuts and white beans, which may be intercropped or planted in rotation with maize or sometimes upland rice. Farmers would like to increase production of peanuts/beans but most already have no alternative to working steep slopes where erosion is evident. There is a lot of fallow land in Asaclat, which is an indication that soil fertility losses do occur after several years cropping. Thus there is a need for a technology which can maintain production of these annual crops, reduce erosion and maintain soil fertility. SALT (a variation of alley-cropping) has fulfilled these objectives in other parts of the Philippines (Watson and Laquihon, 1985, 1987) and should be tested in Asaclat. This particular system is also given priority because local first-hand experience (Quirino province) is available, which is not the case for many of the other AF alternatives.

The proposal is to establish five trials (see 3.7), each of which would consist of a SALT plot (Fig. 1) established within a field where the farmer would continue with his actual management practices (in the SALT plot as well), although a technician should control and document what is done. For this study, the minimum dimensions of the SALT plot should be 20 x 22 m, when four 20 m long contour hedges are established, but preferably should be 20 x 36 m (six hedges). Erosion control and organic mulch production will be achieved by close planting of three staggered lines (two may be sufficient but one is not) of Madre de cacao (G. sepium) which will be frequently pruned at 0.5 m height, according to crop management needs (avoid shading). Owing to the lack of planting material, it will probably be necessary to establish temporary nurseries near to each trial site to produce the 500 G. sepium seedlings needed for a 20 x 22 m (four hedges) plot. Future establishment would be with cuttings. G. sepium is preferred, as vigorous examples were observed on similar nearbye sites, and the only alternative well known leguminous shrub is Leucaena leucocephala, which has proven to be weedy and is now frequently attacked by Heteropsylla cubana

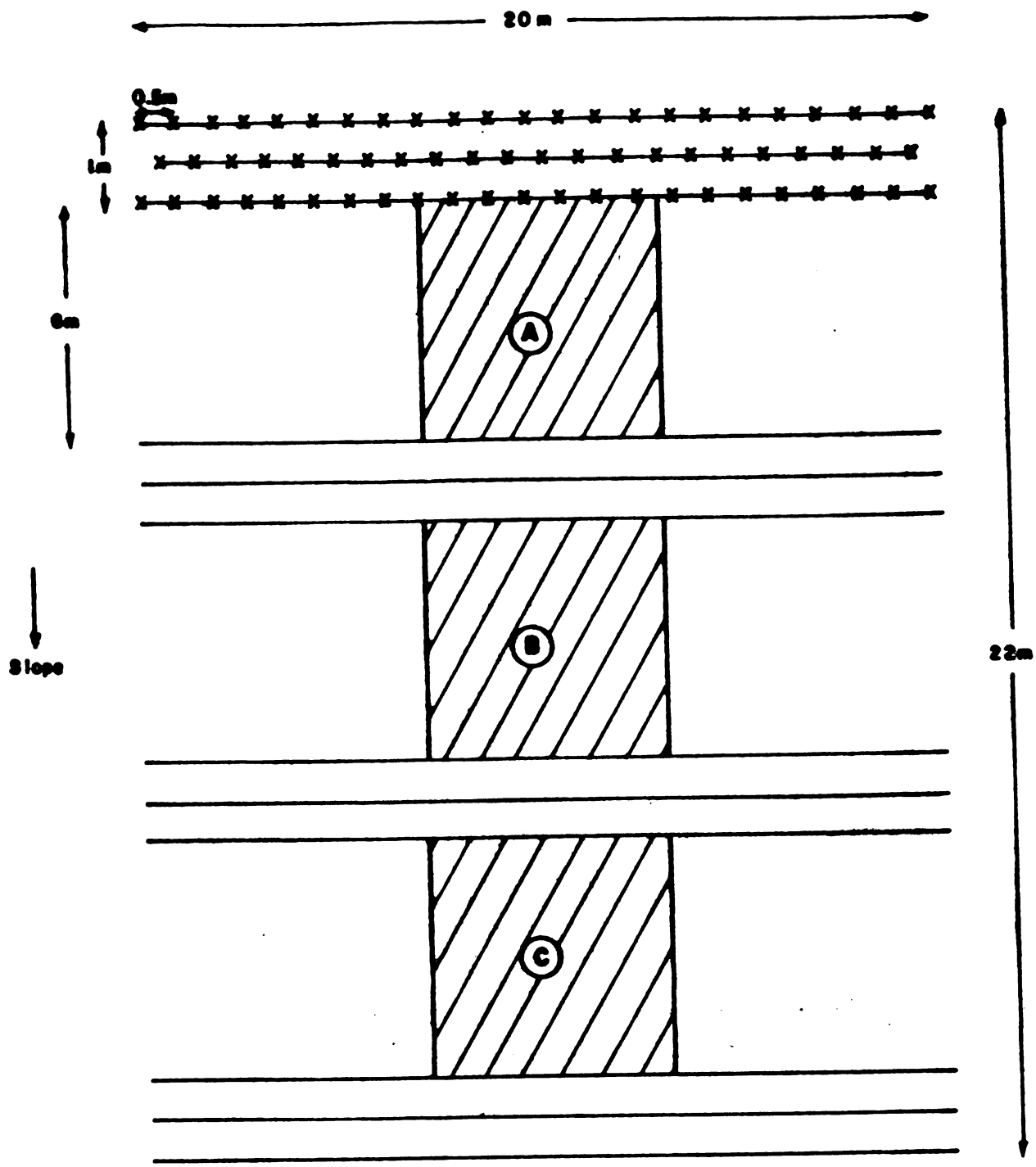

Fig. 1 Layout for a SALT demonstration using Gliricidia sepium hedges at 0.5 x 0.5m (X = G. sepium ; ▨ = Crop sampling area)

and also does not do well at higher altitudes on acid soils. In the future it would be worthwhile trying to identify a local leguminous shrub which could fulfill this role and to consider other barrier plants, which by competing less with associated crops might be more successful (Garrity, 1989).

The SALT demonstrations which were observed, appear to have been well established but badly maintained. Thus a main concern of the project should be how to ensure maintenance and to check why this has failed in existing examples (Garrity, 1989). Trees should be replaced immediately they die to avoid micro-gulleys forming in the gaps. Pruning should be with an upward cut of a sharp bolo to avoid splitting branch stubs, which leads to rot, lower biomass productivity and possibly mortality. Pruning should precede sowing, which can be made through the resulting mulch by using a dibble (planting) stick. Larger branches (greater than 3 cm diameter) are piled on the uphill side of the hedge to help provide a physical barrier and thus trap run-off as well as eroded soil. If the crop has already germinated, then all pruned material would have to be chopped and piled along the upper hedge margin, thus reducing the benefit of a flush of nutrients from this organic fertilizer to the crop. However this latter benefit should not be exaggerated if phosphorous is the limiting soil nutrient rather than nitrogen. The trees need an establishment period before pruning can begin, but this implies excessive shading of the crops in the first year. One option would be to establish the hedges in a fallow, but then the normal land preparation of burning the cut fallow could not be followed and the branches in the resulting organic mulch would interfere with ploughing.

Adaptations of SALT for the Asaclat area are going to be needed and must be discussed with experienced Philippine technicians, as well as local farmers. No recipe can yet be given, due to site-specific variations. For example, G. sepium reportedly tolerates more frequent pruning in the Philippines than in Costa Rica, where mortality occurs if a three month interval or less is used.

The 6 m inter-hedge spacing is proposed as the minimum which leaves sufficient unshaded land for crop production. If slope angle requires closer spacing, SALT would not appear to be practical as it requires the farmer to give up too much land (greater than 15% of total area). Three closely spaced tree lines, but widely spaced hedges, are proposed to produce sufficient organic fertilizer yet minimize tree-crop competition. The latter may still be a problem due to root spread, an aspect which should be observed with care. Establishment of SALT on an irregularly sloped field, where crop strip spacing varies according to slope, is going to complicate the farmer's management (e.g. ploughing). The initial trial plots should be on a constant slope to avoid this extra complication.

If the trials are to be established on a cultivated field, then the present crop development may serve as an indicator of non-homogeneous areas which should be avoided for future productivity measurements ("uniformity trial" but depends on homogeneous management of actual crop; in particular, no variation in planting dates). The establishment of the five trials will obviously be on different dates, but should be within the shortest period possible. Planning will have to take into account existing farm activities and the division of responsibilities between men and women (e.g. planting). Trials would not be realistic if this was changed only on the SALT plots. Land preparation must be evaluated as one of the inputs. Planning of seed needs for each site (local crop cultivars) is important to ensure that sufficient homogeneous material is available to be planted at the same time on the SALT and control plots.

Crop yields should be measured by project staff on previously identified sampling areas, within the SALT and adjacent traditionally managed field. The size of the sampling areas and degree of replication needed on any one site, will depend upon the crop and soil variability. As a very crude rule, use areas of 6 x 6 m in the centre of each cropping strip (Fig. 1) (leave out upper and lower border strips if 6 contour hedges are established) and corresponding areas, without border influences, on the same slope position in the adjacent field. Measurement of the number of surviving plants, as well as the yield of each sample plot, permits calculation of yield/plant as well as yield/m^2, to determine if survival and/or crop development varies. Yield/ha for SALT must also be calculated, taking into account the 15% land occupied by the 1 m deep hedges between the 6 m cropping strips. Labour inputs for crop management can be estimated from the input for the whole field (no differentiation between the SALT plot and the rest) since it will be difficult to separate these. It will therefore be necessary to accurately measure the total area of each field which contains a SALT plot. Specific inputs for hedgerow establishment and management do of course also have to be evaluated but there is no need to measure hedgerow biomass production, at least during this phase. There is also no justification for suggesting erosion control measurements in these plots, since it will be obvious if the hedges are trapping soil and hence reducing erosion.

4.3. Promotion of coffee and planted shade trees

Coffee (*Coffea robusta*) is one of the important cash crops in Asaclat, despite the actual low prices. It is invariably grown by under-planting existing intervened forest on sloping land. Management intensity is very low, limited to girdling some forest trees to reduce shade, and "pegging" mature coffee stems

to promote development of secondary stems and thus increase the fruit bearing green wood. A few farmers claim to have transplanted Narra (Pterocarpus indicus) wildings to increase the number of valuable timber species interplanted with coffee, but the majority apply no post-planting coffee management apart from underbrushing and harvesting. Coffee pruning is not practiced. The demand for coffee seedlings in neighbouring projects, the formation of a coffee cooperative in Nagtipunan, the widespread planting of coffee in the area, and the frequency with which it was mentioned by the farmers, all justify promoting this crop as a means of increasing the cash income of the majority of the farmers. Although improved management and marketing would be beneficial, it is recommended that the project concentrate on demonstrating how coffee can be established on brush land by planting temporary shade crops as well as valuable permanent shade trees, thus promoting reforestation at the same time as improving agricultural productivity. One reason for not working on the improvement of coffee plantations under existing forest is that any success might encourage farmers to underbrush and disturb more forest in order to increase coffee production. The same reservation was expressed about promoting coffee plantations on open land ("forest may be cut down"). Unfortunately, without land-use planning this is a danger with any agricultural development and a risk the foresters have to learn to accept when farmers are present within timberlands.

In line with the recommendation to keep activities simple, and in view of the large plots needed to test alternative permanent shade trees for coffee, no experimental design is proposed. Instead five demonstration plots of the combination of raintree (Pithecolobium saman) with Coffea robusta should be established. Since only one 7 x 7 = 49 shade tree plot is proposed, with an initial 6 x 6 m spacing, each plot will only need 36 x 36 m = 0.13 ha. (Fig. 2). Coffee planting will be at 3 x 3 m, consistent with traditional practice and the large size of the Robusta plants. Actual management practice will initially be employed to avoid complicating the management and demonstration value. However, improved coffee pruning techniques could be considered for the future and even at an early stage if the farmers request this after extension activities and visits to improved plantations (e.g. study tour).

Tree measurements would be simply height growth and survival at 6 monthly intervals for the first two years, and at yearly intervals during the dry season thereafter. Since these measurements will be carried out by project staff, it is reasonable to require that trees are individually coded (Fig. 2) and corresponding records maintained. Only the central 25 trees of each plot should be measured. Most data can be recorded on

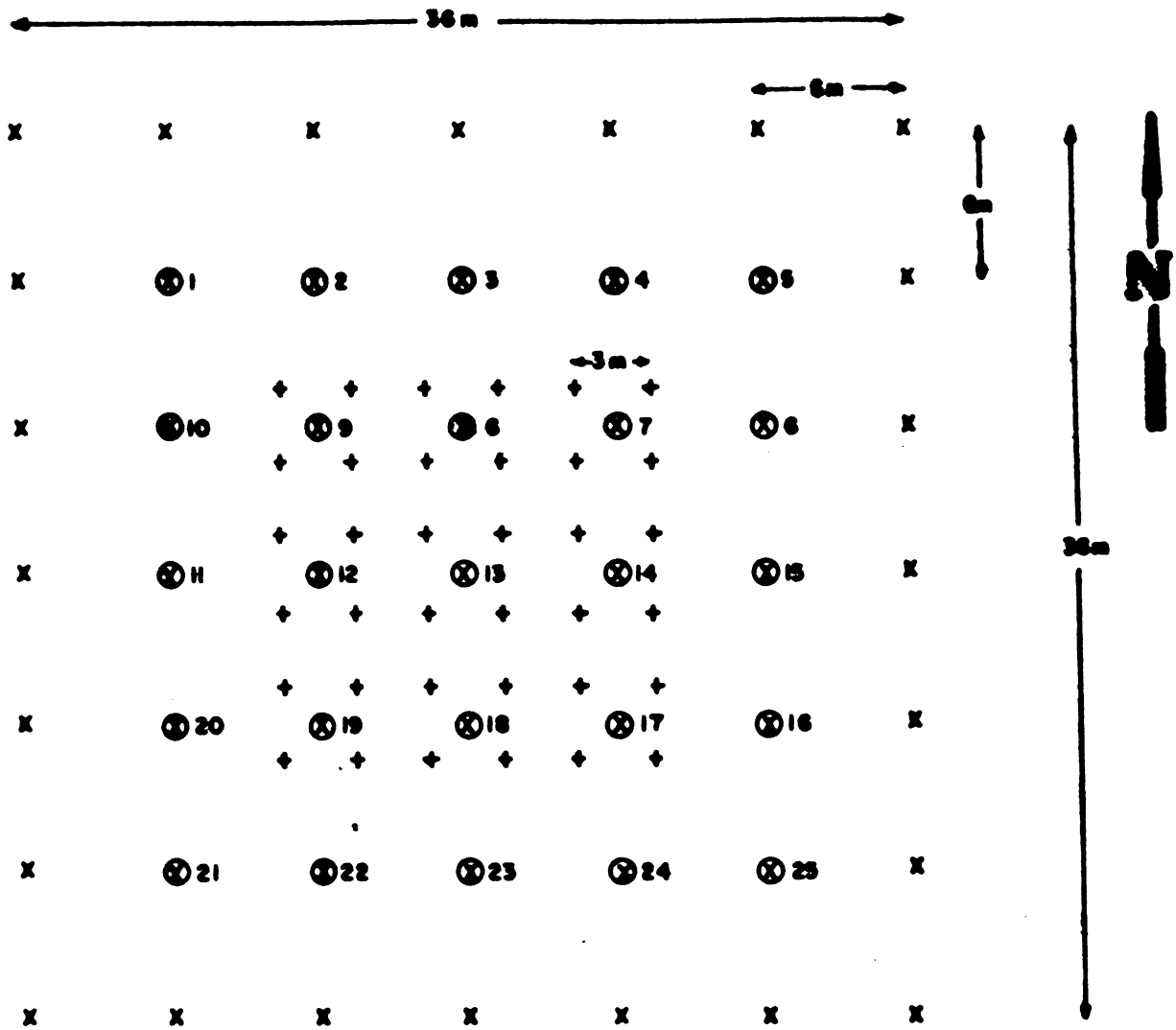

Figure 2 Layout for coffee-shade tree trial plots

the monthly inspection and input-output formulae (Appendices 4, 5). However, a special simple form, which can be taken to the field to check subsequent measurements, has to be prepared for the tree growth data. It is not reasonable to expect staff to measure all coffee harvests, and since the farmer will have difficulty to separate the harvest of any central measurement area, it is proposed that total coffee harvests for the whole plot be noted from information given by the farmer (rather than from any exact quantification) at the time when the project assistant makes the monthly inspection. Should site access and project resources permit, it would of course be desirable to obtain more accurate production data, which would be the total yield from the central 36 coffee plants (not individually) (Fig. 2).

Bearing in mind that the intention is to evaluate inputs and outputs, rather than make any statistical comparisons, approximate yield data is acceptable. However, this objective necessitates recording all inputs (mostly labour) and outputs (yields) from the temporary shade species as well. The possibilities include bananas (Musa spp.) bush bean (Cajanus cajan), Gabi (Colocasia esculenta or Xanthosoma sagittifolium) the former two being preferable.

Temporary shade and permanent shade trees should be established at the same time, leaving adequate space (light) for the permanent shade trees to develop. Since no fertilizers will be used, it is not recommended to establish the first trials on degraded soils and the shade species must provide some protection before establishing coffee seedlings. During at least the first year, all dead trees/plants should be replaced after recording their location (particularly in the case of trees). Locally available seed sources can be used, except in the case of the raintree for which seed may have to be imported and which will need pre-treatment prior to sowing in the nursery. Although the farmer would not carefully lay out a plot with exact spacing, it is recommendable to ensure straight planting lines and precise spacing (horizontal distance, not slope) due to the improved demonstration value. However, as mentioned above, management should follow traditional practice (size of planting holes, etc.) of the better farmers and should not include many innovations, to reduce the risk that the farmers consider the method inappropriate and not feasible on their own land.

Coffee plants should be produced in bags or beds in a temporary nursery at each trial site to ensure that homogeneous plants are established at the beginning of the trial. Great care is needed to avoid bending roots when planting out coffee seedlings, and if necessary roots should be pruned. These practices surpass traditional techniques but are considered necessary to ensure a demonstration that impresses farmers without appearing to be beyond their capabilities. Density of

the temporary shade species will vary according to species, and these plants should be progressively (not suddenly) reduced as the coffee and permanent shade becomes established. For example, bush bean initially at 1.5 x 1.5 m or bananas at 6 x 6 m, interspaced with the coffee and permanent shade rather than replacing them. Later, it will also be necessary to gradually thin out the raintree until an approximate 12 x 12 m spacing is left. The number of central trees for measurement will then be insufficient but the trials will already have served their main purpose. The raintree has been chosen for the first set of trials because: i) it was suggested by some Asaclat farmers; ii) impressive examples of raintree-coffee can be seen at the same elevation in Ifugao province and in other areas in the Philippines (Lasco, 1988); iii) it is used as shade for coffee and cacao in other countries (see Appendix 8 for desirable characteristics of shade trees for these crops); iv) its value for wood carving, which is a traditional livelihood industry of the Ifugao. However, growth and form will probably not be as good as some alternative species such as mahogony (Swietenia macrophylla), assuming in this latter case that shoot-borer attack is not serious. If resources become available, other timber species should be tested (e.g. "kalantas" Toona kalantas) but for the moment the raintree is closest to traditional practice and has the highest probability of being a success. Narra is not suggested in view of slow growth rates and poor form even though it might initially be more attractive to the farmers. Fruit trees are also not proposed since their crown characteristics and management needs are often not consistent with the criteria for choosing permanent coffee shade trees. It appears that idle land is still available on many farms to establish fruits and coffee separately, although this observation will have to be checked when farm lot surveying is complete.

Cooperating farmers have to be reassured that production from the trial is theirs and that the project only reserves the right to measure and bring visitors, principally other farmers (for an example of a possible agreement, see Appendix 9).

4.4. Promotion of fruit trees

Planting of fruit trees around homes is an Ifugao tradition (Codamon-Quitzon, n.d.) and in Asaclat, planting along field boundaries was also observed. Government regulations (e.g. DAO 97) require tree planting along boundaries of leased land. In the Asaclat area fruit trees are more likely to be attractive to farmers than timber trees, due to the proximity of natural commercial forest stands, and farmers have expressed interest in obtaining commercial fruit species or better varieties of existing species. The distribution of fruit tree seedlings is an activity which should benefit a large number of Asaclat families and thus is a community support activity (3.4) which will improve

overall perception of and participation in the project. Moreover farmers like to learn new agricultural techniques such as grafting, and the demonstration of such can be an attraction to obtain greater participation in a communal nursery. Thus there is clearly a strong justification for producing fruit trees in the Asaclat nursery.

Marketing limitations are a major factor to consider before promoting fruit tree planting beyond family needs (this is not such a concern for coffee/white beans/ peanuts, since market outlets already exist). Marketing studies are not yet feasible but a strict selection and promotion of a limited number of species/varieties is necessary to avoid dispersing project resources, and also to improve marketing possibilities by ensuring sufficient production to attract buyers. Initially it is probably better to emphasize improved varieties of existing or known species but some caution is still needed with respect to their disease, site and pest tolerance compared to the less productive but better adapted traditional varieties. The choice of what to produce should be mainly decided by the community but taking into account advise from the project on what is unsuitable (rather than staff promoting what they favour!). Limits on the maximum number of species/varieties, and on the maximum number of any one that can be produced, have to be agreed.

Due to the complexity of home gardens, each has to be regarded as a case study with unknown possibilities for extrapolation to other sites. It is not feasible to set up "replications", as has been proposed for the SALT and coffee trials, unless pure plantations of one species are established. Production measurements of individual fruit trees, which would be necessary over several months, are beyond the project's capabilities and therefore the only quantitative data which can be obtained will be that which is reported by the farmers. If the harvest was sold, his information could be quite accurate although some check for deliberate under or over-estimation (depends on the farmer's perception of why the information was requested) would be advisable.

The best way to get some useful data on the impact of this activity would be to start with nursery records on the distribution of seedlings (number of each type received by each participant). The farmers will be informally testing the potential of each. To take advantage of this empirical "research", good documentation procedures will be required over a number of years until each species reaches its commercial potential. This is clearly neither necessary nor possible on all Asaclat farms. Farmers selected for follow-up could be those that show the greatest interest (who planted out the largest number of seedlings of any one type?). A more easily managed alternative is to follow-up seedlings planted on farms where collaborative trials have been established (SALT; coffee) since

they have to be visited regularly. However, this has the disadvantage of appearing to favour selected farmers with more than one project supported activity (especially if some extension advise on fruit tree management is provided) rather than to spread the benefits. Logistical limitations and the interests of the farmers will help resolve this question once the on-farm trials are underway.

In conclusion, no specific plot design is proposed for fruit tree trials and the information to be gathered will be limited to documenting what the farmers do with the seedlings they receive and what results (observations and yields/tree) they obtain.

5. Conclusions and recommendations

1. The need for coordination and consistency amongst head office staff, in charge of community forestry pilot projects, has been stressed. The formation of a working group has been proposed as one way of increasing the efficiency and effectiveness of these projects which should support one another rather than compete. The existing regulations for the implementation of these projects are well designed but some details and definitions, which in part will come from experience, are urgently needed. In particular the characteristics, abilities and motivations of the NGO's needs to be examined with great care, before projects are entrusted to them.

2. There is a need for better training programmes for field technicians and in particular for follow-up activities with graduated students. Greater decentralization and increased resources for the regional (provincial) offices are needed to strengthen existing DENR social forestry units. If resources were available, the establishment of regional training centres, whose teaching staff also had the obligation to provide technical and logistical assistance to other projects, would be a means of mobilizing the huge human resource presently available (social forestry officers, etc.) whose actual level of impact is low, due to inadequate training and resources (see Appendix 10 for a more detailed Proposal).

3. There is no justification in maintaining pilot projects if they are not adequately documented. This necessitates an inter-disciplinary approach since the qualitative observations are equally important to quantitative trial plot results, and socio-economic limitations are likely to be more critical than bio-physical limitations.

4. It is impossible to establish a sustainable community forestry project without a well-organized representative community organization, as has been amply shown by the limited success of many previous projects. The identification, study of and cooperation with existing community organizations is therefore considered a prerequisite to setting up such projects, and timetables should reflect this need.

5. Studies of traditional agricultural practices are already recognized as a necessary precursor to rural development activities in the Philippines. However, these studies must go beyond "what" is done to include "who" does it (women play an important role in agriculture) and even "why" and "how". An essential skill for community forestry officers is the ability to listen and use the information that the farmers possess. It will normally be desirable to ensure that the project team includes both female and male technicians. Local staff, with the ability to relate to, as well as talk to, the farmers are another ingredient for successful projects. Specialist backstopping from Universities, etc is desirable for pilot projects but preferably should be funneled through project staff in order to help protect the close relationship between the community and the project.

6. The project objectives for agricultural land should include promotion of crop diversity and the maintenance of soil fertility as well as erosion control. These objectives should be met by innovations which also satisfy the farmer's needs, which are principally commercial. Land-use planning and a community organization capable of enforcing it are essential complements to the promotion of any new techniques.

7. Project staff have to gain experience with the proposed technologies before attempting widespread adoption. They should not attempt to work initially on the worst sites and with less capable farmers. Experienced, motivated farmers are needed as collaborators during the first trials in order to adapt the theory to local conditions and provide successful demonstrations to motivate other residents to try the same methods. Thus, the introduction of new technologies should be preceeded by a studious selection of the most suitable farmers for researcher-managed on-farm trials, which should take precedence over the establishment of a demonstration farm.

8. The need for practical information, gained from experience, and for a close collaboration between the project and the farmers, can be partially fulfilled by organizing a study tour to other projects, for Asaclat field staff and farmers.

9. Project staffing must reflect the field work priorities (agronomic expertise is presently lacking) and further staff training in agroforestry; community organization, etc, should be provided.

10. Project resources should not be diverted into research but reliable input and production data is needed from well controlled trials. Efforts should be concentrated on a strictly reduced number of activities. Long-term trials are usually needed to provide site specific adaptations of each AF technology.

11. Complex formal surveys, to characterize the Asaclat population, are not desirable during the first project phase. Informal interviews of a large number of farmers, concentrating on actual agricultural practices, are recommended to select potential collaborators, learn about traditional methods and to check the suitability of the proposed work plan.

12. Taking into account the farmer's interests, the project's resources, available knowledge and existing regulations, it is recommended that the project initially promote: i) the SALT technology for white beans, peanuts and maize; ii) planting of raintree as permanent shade for coffee on fallow lands; iii) promotion of a limited number of fruit tree species/varieties through a communal nursery.

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Appendix 1

Persons contacted*

** Mr. Bernardo Agaloos, National Coordinator, Integrated Social Forestry Programme, DENR.

Mr. Cirilo Serna, Director, Forest Management Bureau (FMB).

** Mr. Reynaldo Bayabos, Head, Social Forestry Division, (FMB).

** Mr. Bacalla, Section Chief Upland Community Management Section, Social Forestry Division, FMB.

** Mr. Moises Butic, National Project Coordinator, Integrated Social Forestry Project, FMB.

Dr. Martti Saarilahti, Team Leader, Master Plan for Forestry Development, DENR.

Dr. Ollii Saastamoinen, Resource Economist, Master Plan for Forestry Development, DENR

Dr. Manuel Bonita, Economist, Master Plan for Forestry Development, DENR.

Mr. N Collado, PENRO (OIC), Quirino Province

** Dr. Antonio Manila, Project Manager, Dipterocarp Forest Management Project, FMB.

Mr. Silvestre Soriano, Chief, Agroforestry, Dipterocarp Forest Management Project, FMB.

** Dr. Juergen Schade, Chief Advisor, Dipterocarp Forest Management Project, FMB.

** Dr. Konrad Uebelhör, Silviculture Advisor, Dipterocarp Forest Management Project, FMB.

** Dr. Prahlad Manandhar, Chief Technical Advisor, Integrated Social Forestry Project, FMB.

Dr. Cesar Nuevo, Director, Institute of Forest Conservation, UPLB.

Dr. Dennis Garrity, Crop Ecologist, International Rice Research Institute.

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* The author apologizes to any persons contacted, whose names have been unintentionally omitted from this list.

Dr. Iswandi Basri, Visiting scientist, Multiple Cropping Department, International Rice Research Institute.

Dr. C Lightfoot, Research Scientist, International Center for Living Aquatic Resources Management, Manila.

Ms. R Labaro, Service Chief, Foreign Assisted and Special Projects, DENR.

Mr. Blando, Mayor, Nagtipunan

Mr Benito Pindog, Barangay Captain, Asaclat

Mr. Hector Yagyagon, Farmer, Asaclat.

Ms Verrona Delmas, Forester, DENR, Nagtipunan

Ms Victorina Ramilloza, Social Forestry Technician, DENR, Nagtipunan

Mr. D Rice, Kalahan Educational Foundation

** Mr Conrado Gulmatico, Coordinator of Community Forestry Programme, DENR

** Mr Edgardo Azcarraga, Assistant Coordinator of Community Forestry Programme, DENR

** Present during the initial informal meeting of a possible working group for community forestry projects of the DENR-FMB. It was suggested that Mr Agaloos chair this group.

Appendix 2

Criteria for the selection of Costa Rican farmers for collaborative agroforestry research trials[1]

A. Criteria for selecting cooperating farmers

1. Age: neither too young nor too old (maybe 35-45 is optimal).

2. Resident farmer: working with an absentee owner is not desirable.

3. Prefer farmers who are already respected and recognized leaders[2] in their community: e.g. nursery secretary; member of community development committee. (But be careful not to alienate the majority because of excessive backing of an elite group).

4. Reputation: is he respected by his neighbours as a successful farmer?

5. Recommendations: seek advise from local officials (e.g. government or NGO extension officers), priests, teachers, etc.

6. Within the context of local land use, how well managed is the farm? Pick the best farmers from the target group.

7. In initial interview(s) how does he respond to the idea of a trial? Does he make suggestions? Avoid unresponsive farmers. (This assumes that the project has been adequately explained so that he understands the proposals).

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[1] It is highly unlikely that any one farmer will fulfill all criteria. This list is a guide to criteria that should be considered on a person-by-person basis, and it is intended to select the farmers with whom there is a high probability of establishing well managed and hence successful experiments. These farmers are not necessarily representative of the "average" farmer but should belong to the target group.

[2] It may be preferable that the local political leaders are involved as informal assistants, reinforcing the suggestions from project staff, rather than as collaborating farmers.

8. Does the farmer (may include family but the farmer should personally participate) have the time to participate or does he show concern about the commitment required? (A responsible farmer would check what is required. However, avoid anyone who indicates that he might not be available - collaborative trials are required, not land lent to the project).

9. Check which of the specific technologies, proposed for testing, are of interest to him. He may be interested in only one of the project's activities.

10. Personality of the farmer: changeable or stable? Has he tried many new crops/technologies only to abandon the innovation before it was fully tested?

11. Avoid farmers who also have outside incomes/jobs as being outside of the target group. (they are also less likely to be available for collaborative work).

B. Criteria for selecting suitable sites

1. Proximity to established extension infrastructure: there may be a logistical advantage in working in a resettlement scheme where access to farmers is facilitated through a regional office and technicians with experience in the area.

2. Proximity to other trial sites for logistical efficiency of project.

3. Central location with respect to other farmers who might be recipients of an extension programme. The trial should be visible near a road, communal nursery or other meeting point.

4. Accessability: not more than 30 minutes from vehicle during rainy season (but not all along the main road!).

5. Secure land tenure: sufficient to guarantee that the farmer or his family can harvest any tree products which may require a long rotation. Evidence of permanence on site (e.g. has he built a permanent home?).

6. Representative soil: the soil of a chosen site should be representative of one of the main soil types in the study area.

7. Site homogeneity: choose flat land or a constant slope; avoid plots with internal changes in soil fertility (e.g. due to adjacent road construction) or spatially variable land - use history.

8. Drainage: should be good or easily provided; avoid areas subject to occasional inundation (unless a system is being proposed for areas which suffer this specific problem).

9. Wind susceptibility: avoid the most exposed, susceptible areas such as mountain ridge/tops (subject to the condition noted in "8" above).

10. Existing tree cover: avoid areas with heavy forest cover in view of the negative demonstration effect of clear-felling and logistical problems of laying out a trial where tree stumps interfere. Avoid plots with large trees at less than 20 m from the border, due to early morning or late afternoon lateral shade.

11. Only one trial per farmer unless a demonstration farm is programmed. Spread the benefits and risks (for both parties) of collaborative research trials.

12. Ecological suitability of site for proposed system: e.g. black pepper on living support trees should be planted on well drained sloping land rather than flat, valley-bottom sites even though the latter might be more fertile.

13. Plot security: what is the risk of damage by animals (e.g. proximity to goat herds is a disadvantage) or by people (e.g. proximity to collaborating farmer's house is an advantage).

14. Existence of farm statistics: it is an advantage if the extension service, or other organization (local agricultural cooperative), can provide production statistics from previous years (e.g. T. cacao sales).

Appendix 3

Review of Department Administrative Order 123 (Series 1989): Community Forestry Program

The focus, structure and scope of this order is well thought out and it certainly should continue to serve as a basic directive for community forestry projects in the Philippines. The following suggestions, which inevitably appear to be criticisms, should be taken as a constructive contribution to improve what is basically a well prepared document. Most of these comments reflect the concern that some of the theoretically justifiable aspects will not be practical, or may be distorted far from the original intention, when implementation is attempted.

1) "Equitable access to natural resources". Admirable in the sense that rural communities now may utilize, profit and hence we hope will protect surrounding forests. Dangerous if used as an open door that permits everybody to follow the previous destructive methods of many large logging companies.

2) "Provide livelihood opportunities". No definition of what these are, except for timber harvesting. There is obviously an urgent need for research, development and dissemination of information on alternative forest based livelihood opportunities, such as rattan, or even secondary processing of lumber into furniture to promote greater wood-use efficiency (a good example was seen in Sangbay, Quirino). This should be a priority for the pilot projects and therefore these projects should not concentrate their initial activities on community logging, to avoid giving the wrong example.

3) DAO 123 places a lot of emphasis on non-government organizations (NGO's) without providing guidelines for accrediting these NGO's. Presumably the emphasis on NGO's comes from past experience that these grass-roots organizations have a closer and more effective relationship to communities than do central government agencies. However, an NGO which is formed for the purpose of implementing one of these pilot projects, and which is imposed on a community, is probably going to be less effective than the existing government services. Effective local NGO's are generally not (at least initially) motivated by commercial gain. The draft contract (Annex 2) suggests payments of P 1,700,000 to the NGO, during the first three years of a project, and is likely

to attract an "NGO" whose main interest is not the well-being of the community. This aspect is the weakest point of DAO 123 and could be a direct cause of the future failure of many community forestry projects. NGO's are not always more efficient than government agencies, often because of a lack of experience and technical knowledge. Real rather than rhetorical efforts to decentralize and strengthen regional (provincial) DENR community forestry programmes, including improving staff conditions, would be more likely to provide a sustainable effective support for community forestry projects, than pouring the money into ephemeral NGO's.

4) "Two man saws (rather than chain saws) shall be used". The risks of permiting chain saws are obvious, but the risks of proposing an unenforceable rule rather than developing an acceptable and enforceable compromise, must also be discussed.

5) "TSI management will be implemented". TSI is a complex method, which professional foresters have difficulty to implement correctly (results with timber concessions have often been sub-standard). Difficulties in the training and control of TSI operations, carried out by a community, can be expected.

6) "Inventory should cover 100% of all trees, above 10 cm diameter, to be utilized during the first two years". Leaving aside the technical impossibility that a community and most NGO's could carry this out, it is logistically impossible to inventory all areas involved. It is not even necessary unless all forest inventory and statistical methods are considered false!

7) "Seven copies of development plan". This and some other statements suggest that the government forestry offices still act as a bureaucratic policing agency rather than as a <u>partner</u> in forest development and conservation.

INSPECTION REGISTER*

Site name: _____ Type of experiment: _____

Site No.: _____

Experiment No.: _____

Date: _____

Name recorder: _____

		1= little 2= moderate 3= strong					
Species Plot No.	Repetition	Insect attack	Disease attack	Wind damage	Animal damage	Fire damage	Observation

Treatment 1 applied?_____ Date: _____

Treatment 2 applied?_____ Date: _____

Fence inspection: _____ Repair date?: ____

Weed growth? _____ cm.

Tree Growth Cycles (Mark with x for phenological activity)					
Species	Vegetative growth	Leaf fall	Flowering	Fruit or seed	Observation

Approval _____

* Translated and adapted from the "Registro de Inspecciones" prepared by the CATIE-GTZ Agroforestry Project (Costa Rica).

Appendix 5

LABOUR AND INPUT REGISTER*
Production costs

Location: _____ Type of experiment: _____

Site number: _____

Plantation date: _____

Date Day	Month	Year	Name of activity or input used	Labour (days or hours)** Farmer	GTZ	Salary per day or hour	Total salary	Inputs Used Quantity Farmer	GTZ	Unit price	Total	Supervision (hours)

* Translated from the 'Registro de Trabajo e Insumos' prepared by the CATIE-GTZ Agroforestry Project.

** One days labour = 8 hours

Appendix 6

Examples of topics to cover when requesting the farmer's opinions on collaborative trials.

The following questions are suggestions of the kind of information (feed-back) which could be obtained from farmers. The actual structure of the questions and the interview would need careful preparation and testing, hopefully with the advise of a qualified and experienced social/anthropological scientist. A complicated long questionnaire is not desirable.

1. With respect to plot management, his opinion on:

   i) Methods used to establish the AF system (are there better ways?)

   ii) On-going management of the AF system (are cheaper more simple alternatives possible?)

   iii) The species chosen (alternatives?)

   iv) Other problems with this AF system

2. With respect to the potential of this AF system:

   i) Without outside help, except maybe planting materials, would he extend the trial management to other parts of the farm? If yes, what area and how. If no, why not.

   ii) Are his neighbours/friends/family interested in planting similar plots without project support (i.e. as a commercial option)? If yes, who, how many people, what area. If no, why is this AF system not attractive to them.

   iii) Would he recommend this AF system to other farmers? If yes, with what modifications. If no, why not.

3) With respect to his role in this trial:

   i) What is his understanding of the reasons for mounting the trial? How has his opinion changed since it was established?

   ii) Does he think that the trial is going to achieve its goals?

   iii) What is his participation in the trial and what suggestions would he like to make to change this (e.g. responsibilities)?

4. With respect to commercial potential:

   i) Does he think it will be easy to sell the products from the trial? Where and how?

   ii) Will the value of the products be greater than the total costs/assuming that he was paying for all establishment/maintenance costs?

   iii) How could this AF system be made more financially attractive?

5. If he had the chance to start all over again with the project, would be request the same trial or a different one?

6. What can the project do to improve its relationship with the community and the individual farmers?

Appendix 7

Interview form for selection of farmers*

PART I**

Farmer's name _____ Estimated age _____

Date _____ Place _____

Interviewer's name _____

1. To which crops do you devote most time at present?

2. Would you be interested in planting timber trees on the land you cultivate? (which species?)***

3. Would you be interested in planting coffee on the land you cultivate?***

4. Have you observed soil losses on any of the land you cultivate? (with which crop?)

5. Would you be interested in planting trees or shrubs to stop soil losses on slopes?***

6. Would you be interested in planting timber trees, fruit trees or something else along the boundaries of the land you cultivate?***
   If so what and where?

7. Can you suggest any other desirable way of planting trees on the land you cultivate (i.e. he would like to try it?)

8. Are you interested in establishing a demonstration plot or experiment on the land you cultivate (Note explain what they are again)?
   What kind of plot would you like to try?

9. What are your principal problems for agricultural or forestry production?

---

* (2, 11).
** To be completed with information given by the farmer.
*** Note that these leading questions are included to prompt the farmer to discuss the topics of interest to the project. This is not a survey and the results should not be used as a statistic that "x"% of farmers are interested in any particular activity since the value will be artificially high.

PART II*

(Instruction to interviewer -It is necessary to visit the farmer's land, in order to evaluate the management, before completing this section. If it was not possible to see all the land managed by a farmer, or for other reasons it was not possible to respond to all the questions in this and the preceeding section, make appropriate indications, annotations, explaining the reasons when possible.)

1. Condition of any plants or trees which have been recently introduced onto the farm (e.g. coffee, fruit trees).

2. Quality of management of the land? (with respect to the average for the area).

3. Attitude of the farmer (does he look like a good candidate for a collaborating farmer)

4. Characteristics of potential sites for experiments (short description)

   Homogeneous soil? _____

   Slope? _____

   Soil drainage _____

   Site irregularities _____

   Access to site _____

   (Mark potential sites on the attached "farm" plan)**

5. Does the farmer seem to be established in one place or is he likely to move in the next 5 years?

---

* To be completed with the interviewer's observations after he leaves the farm.

** Give the approximate area and distribution of each main crop, pasture and forested land. Mark the farmer's house, access routes and the approximate area of each plot (farmer's estimate). Total area cultivated _____ ha?

Desirable characteristics for perennial crop shade trees

(1) Compatibility with the crop, which means minimal competition for water, nutrients and growing space, e.g. does not produce suckers; the crown branches above the crop; deep rooting; minimum overlapping of understory and overstory species root zones.
(2) Strong rooting systems (not susceptible to wind throw). Shade trees are more exposed to adverse climatic conditions than are trees in a forest or a plantation and should be capable of adaptation to open-grown conditions.
(3) Rooting ability of stakes to permit rapid shade establishment by vegetative propagation.
(4) Ability to extract soil nutrients which are not trapped by the crop[3].
(5) Ability to fix nitrogen.
(6) A light crown that provides a regular mottled shade pattern rather than uniform shadow of photosynthetically poor quality light.
(7) In the case of objective "2" (timber producing species). A small diameter light crown to: a) reduce the wind resistance of the foliage and hence the risk of wind throw, b) permit relatively high shade tree densities without reducing light levels below critical values for the crop; and c) minimize crop damage when individual trees (continuous timber yield system) are harvested.
(8) Non-brittle branches and stem.
(9) Thornless stem and branches to facilitate management.
(10) Rapid apical growth (Obj. "2").
(11) Self-pruning and the ability to form a straight unforked stem in open-grown conditions (Obj. "2").
(12) Tolerance of repeated heavy pruning or pollarding (Obj. "1").
(13) High biomass productivity of material that is recycled, through leaf-fall and/or pruning. Readily decomposed leaves and woody material.
(14) If deciduous, rapid flushing of new leaves to regenerate the shade cover.
(15) Absence of major disease or insect susceptibility which could lead to sudden defoliation.
(16) Small leaves to minimize rain drop coalescence and subsequent drip damage.
(17) No allelopathic properties.
(18) Smooth bark that does not harbour epiphytes.
(19) Valuable wood, fruit or other product, e.g. rubber from Hevea spp.
(20) Not an alternative host for insects and pathogens which are major enemies of the crop.
(21) Shade tree species should not have the capacity to become a weed e.g. Ricinus communis and Leucaena leucocephala (certain areas).

Appendix 9

LETTER OF UNDERSTANDING BETWEEN THE CATIE-GTZ AGROFORESTRY PROJECT AND FARMER*

Experiment: Comparison of shade trees for hybrid cacao

This document is not a contract nor does it have legal value.

Based on discussions between the CATIE-GTZ Agroforestry project and the Talamanca farmers, concerning the cacao shade experiments, the attached table was prepared to remind both parties of their responsibilities, agreed verbally up to the date _____.

The project hopes that the collaborating farmers participate in all field activities, that they give their criticisms and suggestions with respect to all activities, and that they always regard the plot as their own and not as land lent to the project. Therefore it should be clear that all products from the plot belong to the farmer and apart from samples for quality control, the project makes no claim over these products.

The project will provide all necessary materials for this plot except for those that may be obtained on the farm (e.g. posts for fencing but see attached table for a complete list).

The principal responsibility of the farmer is to look after and protect the experiment against animals, weeds, fire and the entry of anyone who may cause damage. He agrees to not carry out any activity (e.g. fertilization, harvesting) without previous agreement with the project. The farmer also agrees to permit site visits of groups authorized by the project (e.g. Ministry of Agriculture; Forestry Service; students).

In the attached table, where the project only or the farmer only are marked, then the responsibility for that activity is 100% that of the indicated partner. When both are marked then the responsibility should be equally shared. Nevertheless, the project will try to participate in all the activities and it hopes that the farmer will always participate whenever project staff are present on his demonstration/trial plot.

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* Translated and adapted from the "Carta de Entendimiento" prepared by the CATIE-GTZ Agroforestry Project (Costa Rica).

DISTRIBUTION OF RESPONSIBILITIES

(Cacao-shade experiment)

Activities	Responsible: Project	Responsible: Farmer
Plot measurement	x	
Clearing site		x
Staking	x	
Drainage		x
Planting holes		x
Cacao nursery	x	x
Tree nursery	x	x
Temporary shade		x
Planting cacao	x	x
Planting trees	x	x
Weeding (manual)		x
Weeding (herbicide)		x
Replanting	x	
Tree pruning	x	x
Cacao pruning	x	x
Pesticide application	x	
Fencing		x
Harvesting	x	x
Materials		
Equipment	x	x
Cacao seed	x	
Tree seed	x	
Agrochemicals	x	
Fence wire	x	
Fence posts		x

Appendix 10

Proposal for Community Forestry Training Centres in the Philippines

Introduction

A massive social forestry/community forestry infrastructure already exists in the Philippines, as a response to ever increasing problems created by upland settlements in officially designated forest areas. Both the government and non-government organizations have an impressive number of projects and staff in the field (Del Castillo and Castro, 1986; Lee, 1989) but the problem continues to grow. The government has made a significant step in accepting that it can not remove the millions of "forest" dwellers and therefore has to work with them in social/community forest projects (Aquino *et al*, 1987). However not all government officials have made this transition and there remains a huge need for: i) appropriate land-use technologies; ii) models of successful community forestry projects; iii) training, especially of field staff. The evaluation of past and existing projects (Seymour, 1985; Rao *et al*, 1985; Aguilar, 1986; Aquino *et al*, 1987) shows that a major reason for the limited success of most projects has been inadequate community participation. Lack of resources for field staff must also be a major limitation. Projects are established with enthusiasm and then neglected; trial plots and demonstrations are not maintained. The backstopping of field staff (principally government social forestry officers) is evidently inadequate.

Project objective

To establish a support mechanism for community/social forestry officers that will provide training, resources and technical backstopping to improve the impact and promote continuity of existing and planned uplands projects.

Target groups:

1) Field officers of government and non-government uplands projects
2) Upland farmers in pilot projects

3) Upland dwellers in general

Groups 1 and 2 would be the initial beneficiaries. If successful, the programme would improve the effectiveness of a large number of existing and planned projects and hence benefit upland dwellers nationwide (Group 3).

Project components

The enormous variability of bio-physical and socio-economic conditions in the Philippines, and the government's plans for decentralization, necessitate that a nationwide project be split into relatively independent regional units which coincide in overall goals but have the power and resources to respond efficiently to local problems. Each region should have a centre that provides training, administers resources, has the capacity to evaluate projects and project areas, plan activities and implement them without needing head office authorization (up to 5000 ha?). Obviously some limits with respect to target areas/groups need to be agreed with head office, as well as on total amounts of resources (including cash) that can be invested in any one project. The regional centre would provide infrastructure (classrooms, dormitories, etc.); permanent teaching-technical assistance staff; transport facilities for staff and maybe also for backstopping graduated students; equipment for demonstration purposes (mobile saw mills and woodworking equipment for furniture manufacture, etc.); grants for students; and other project support facilities such as seed storage capacity and workshops.

An essential characteristic of these centres would be post-training follow-up. The main practical exercise of each student would be the preparation of a detailed evaluation and work plan for his project area, during which time he would be taught community organization and participation methods (Upland Development Program, 1989); agricultural, agro-forestry and forestry technologies appropriate for upland areas; project planning and documentation; socio-economic aspects. The staff of the Centre would be obliged to participate in the implementation of these projects by visiting the area during the training period and at least once per year for the following five years, assuming project continuity. The staff would thus have to justify their ideas in the field and would continuously gain practical experience, which should avoid training becoming too theoretical, as tends to happen with Universities.

The goal is technical, practical training and support for project implementation. A board of directors, with representatives from all institutions concerned with management of the Uplands, would provide overall policy but

each regional centre should have a relatively independent Direction. Guidelines should specify that these centres are not empowered to accept research students to avoid that their practical focus becomes diluted. Considerable external funding would be needed to establish this regional system but a lot of the necessary manpower could be found in actual social/community forestry projects. Existing pilot projects should obviously be linked to the appropriate regional centre, and be used for training, although with care to avoid excessive disturbance. The benefits of such a programme would not be immediate and therefore long-term financing needs to be secured before embarking on this ambitious project.

The regional centres could also play a role in the control and training of NGO's to ensure a minimum level of competence and achievement (i.e. collaborate on project evaluations utilizing local inside knowledge on the status and activities of a project).

The potential for true development in the Uplands is severly limited by the absence of credit. There is a risk that the granting of CSC leases will result in present tenants losing control of the land they now occupy, after they accept "local" financing. If a credit scheme could be linked to the granting of the CSC, under the general training/development umbrella of a regional institute, then real improvements would be far more feasible.

Given that the first aim of this project is to promote community forestry within the context of securing the future existence of the Philippine Dipterocarp forests, then the initial priority would be for centres in regions with the largest remaining areas of natural forest. However, to avoid regional jealousy, the establishment of centres with a different focus could be considered for deforested areas (i.e. vary the relative emphasis on reforestation vs TSI; on agroforestry <u>vs</u> commercial management of closed forest).

These centres could also consider offering training courses to community elders and to community extension officers (farmers) although the initial students should be social/community forestry officers. The centres should have sufficient independence from the Government to be able to make their own selection criteria of candidates, and NGO staff should certainly be included rather than limiting entry to Government officials only. Staff selection for the training centre should give equal emphasis to socio-economic professionals as to technical (forestry/agronomy) staff since training on community organization, credit schemes, marketing, project accounting, etc, can be equally if not more critical abilities of the community "advisor" than the technical aspects of agriculture in which farmers are experts. These regional centres could fill the gap in the

presently inadequate extension services; which is the reason why the Government is now turning to commercial NGO's to run projects. If the funds presently marked for such NGO's were channelled to the regional centres, considerable financing would already be available. In the medium term such a Centre should replace the commercially orientated NGO's to ensure sustained backstopping for community forestry projects.