

Establishing a Reforestation Baseline in Community Forestry in Leyte

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ABSTRACT

This paper discusses the collection of information to establish a reforestation baseline in community forestry in Leyte, Philippines. The paper outlines how baseline information about current nursery practices, including an assessment of seedling availability and quality and current levels of tree planting, will be used to assess the testing of intervention measures designed to overcome impediments identified as part of an ongoing research project.

Keywords: baseline study; forestry nurseries; community tree nurseries; social baseline; seedling availability.

INTRODUCTION

There is a clear imperative for reforestation in the Philippines. Deforestation greatly increased from the 1950s, and by 1997 only 5.4 M ha (18% of the Philippine land area) remained under forest cover, of which less than 1 M ha was old growth forest (DENR, 1998). Kummer and Sham (1994) have suggested that deforestation in the Philippines was the result of a two-stage process. Logging initially converted primary forest into degraded secondary forest, and subsistence agriculture then converted secondary forest into farmland. However, the Department of Environment and Natural Resources (DENR, 1990) maintained that legal and illegal agricultural operations have been the cause of deforestation of two-thirds of the forestland cleared since WW2.

Irrespective of the cause of deforestation, there is a substantial effort to restore vegetation cover through reforestation programs. However evidence to date suggests that reforestation efforts in the Philippines have met with mixed success (Venn and Harrison, 2001). In recognition of the need for reforestation in the Philippines and the slowness at which it is currently being undertaken, the Australian Centre for International Agricultural Research (ACIAR) has funded a project to investigate how greater reforestation can be enhanced through the redevelopment of a timber industry on Leyte. The project, ASEM/2000/088 *Redevelopment of a Timber Industry Following Extensive Land Clearing*, commenced in January 2001 and is to run for three years. As part of that project,

Harrison and Herbohn (in press) have discussed the strategies for reforestation in Leyte and identified a number of options for forest industry development (Table 1). Within the project work a number of trials are being undertaken to examine possible mechanisms for increasing the level of reforestation and the effectiveness of support measures. In particular, the role of nurseries will be examined in detail and a number of seedling trials undertaken.

Previous research suggests that seedling unavailability is a major impediment to small-scale forestry (Herbohn *et al.*, 2001). Currently the species that are planted are strongly influenced by the availability of seed or seedlings, with little apparent consideration given to site-species matching (Herbohn *et al.*, 2001). This may be associated with inability of local agencies to produce seedlings of some species (particularly eucalypts) or high cost of seedlings for low-income farmers. It could be that training is required in germinating seedlings for community forestry groups or DENR nurseries, or that support is needed for private nurseries (centrally based and large scale, or numerous and small-scale and located near planting areas). Project research will identify the key impediments and then intervention measures will be developed and trialed within communities. Baseline information about reforestation in Leyte, and in particular in the communities in which the trials are to be undertaken, is crucial if the effectiveness of the intervention measures are to be assessed.

Table 1. Some forestry options, strategies and impediments for Leyte

Government versus privately owned plantations
Industrial versus small-scale forestry
Choice of native versus exotic species
Biological versus bio-economic site-species-systems matching
Large central versus small local nurseries
Purposes of tree planting
Strategic focus on impediments versus keys to progress
Impediments to industrial and small-scale forestry

Source: Harrison and Herbohn (in press).

Much research has been undertaken on site-species matching, such as under ACIAR project FST 96/110 *Tree Production Technologies for the Philippines and Tropical Australia*, with a number of trial sites established on Leyte. Such new technology is largely irrelevant to small-scale forestry unless it can be effectively transferred to landholders and community leaders. For this to occur, extension information concerning the most appropriate species for their area must be readily available and communicated to landholders. Most important, however, is that seedlings (or seeds) of the most appropriate species are readily available from local sources. It could be that the most effective way to provide extension advice on site-species matching (and hence ensure technology transfer) to landholders is at the point of sale of seedlings from local nurseries. As part of

the ACIAR project ASEM/2000/088, trials are being undertaken of various mechanisms to improve the availability of seedlings and the provision of site-species matching information. Once again, baseline information about existing community knowledge about site-species matching and current seedling availability is crucial if the effectiveness of the intervention measures are to be assessed.

An approach sometimes adopted in projects concerned with regional forestry progress is to undertake a *baseline study* early in the project, against which to benchmark later performance. For example, Cuc and Rambo (2001) carried out what they described as a baseline study of social and economic conditions, including the status of forestry, in rural communities in northern Vietnam, and a more targeted forestry baseline study is now being carried out by the Vietnamese Ministry of Agricultural and Rural Development (MARD) with support from ACIAR Project FST/2000/003 – *Mixed Species Plantations of High-value Trees for Timber Production and Enhanced Community Services in Vietnam and Australia*.

In the Philippines, forest industry redevelopment has been justified on the basis it will have positive social, economic and environmental impacts, particularly on rural and regional communities. In order to assess the impacts of forest industry development associated with reforestation, a baseline of social and economic information about communities would be invaluable. Such baseline information is currently being collected as part of ACIAR Project ASEM/2000/088. A survey of four communities on Leyte has been conducted and information has been collected on household demographics, land ownership and management, present and intended tree planting and management activities, and community organizations and forestry.

The following sections outline in detail some of the research in progress or proposed as part of ACIAR Project ASEM/2000/088 and how baseline information will be collected prior to intervention measures being tested.

SEEDLING NURSERY RESEARCH

Research is proposed into the forestry nursery sector in Leyte at a number of case study sites. Initial research will identify the existing distribution mechanisms for seedlings and seeds and will identify how farmers currently decide what species to grow and how to obtain seedlings. This research will investigate relative seedling production costs and sale prices, and attitudes of landholders to purchase of seedlings, for centralised versus local small-scale seedling production systems. A financial model will be developed to estimate seedling production costs.

A pilot scheme will be developed with one of the nurseries currently servicing landholders in one of the study sites. The most appropriate species for this site will be identified from previous trials such as conducted in FST 96/110 and experience of local researchers. These data will be combined with expert opinion

to modify stand growth models for small-scale forestry in the Philippines developed by Venn *et al.* (2001). If feasible, this nursery will be assisted in providing seedlings of the identified species in a cost effective manner so that cost does not limit species selection. This will provide information about the selection of species without the constraints of price and availability normally experienced for many species (an exception being *Gmelina arborea*).

An extension package will be developed for nursery staff to assist landholders in the appropriate choice of species for their site. This will provide information about the importance of extension in the selection of species by landholders. Follow-up will be undertaken with landholders to assess the extent to which they follow the advice provided and their level of satisfaction with the scheme. This will be compared with baseline data collected in the initial stages of the project to monitor whether the intervention has affected attitudes of landholders, especially in relation to species selections.

Preliminary field observations suggest that there are problems with the existing nursery practices of community groups and in particular severe "J rooting" and use of inappropriate potting media. As a result, seedling quality is low, and likely to result in high mortality or underperforming trees when planted. Also of concern is the source of nursery material, which is either seed from local trees or wildlings. A trial will be conducted where appropriate potting containers (Hyko trays) along with suitable potting media will be provided to local nurseries and community groups. In order for this the effectiveness of this trial to be assessed, it will be necessary to collect baseline data prior to commencement. Potting media and potting container trials (Hyko trays and plastic bags) with two species (*Acacia mangium* and *Eucalyptus deglupta*) have now been completed and further trials are in process.

BASELINE DATA ON NURSERY PRACTICES

Table 2 summarises the types of data which need to be collected to establish a baseline of the state of Leyte nurseries in the various case-study areas. Information about nursery practices will allow the assessment of the effectiveness of the various intervention measures, such as outlined above. Data will be collected by personal visits to nurseries.

ESTABLISHING A BASELINE ON PLANTING ACTIVITIES

One way to assess the effectiveness of forestry intervention measures is to compare the level of forestry activity prior to and after intervention. For industrial-scale forestry, as undertaken by large companies and government forestry departments, it is relatively easy to compare the area under plantation before and after the introduction of planting programs and assistance schemes. However, comparative baseline data is rarely available for community and farm forestry activities at the regional or community level, particularly in developing

countries. For assistance schemes that provide direct assistance for establishing plantations, it may be possible to collect data directly, for example the areas (in hectares) planted as part of a Government or NGO assistance programs such as Community Based Forest Management (CBFM) and Community Based Resource Management (CBRM). In other cases, such as schemes that provide indirect assistance through nursery technology development, it is more difficult to assess the impact on forestry activities.

Table 2. Data types to characterize Leyte nursery practices

Current media used
Current nursery practices
Seedling health (prevalence of J rooting, shoot/root ratio)
Source of seed (source of last seed/wildlings obtained, most common source of seed and wildling stock)
Species currently grown and approximate numbers
Demand for seedlings
Species that want to grow but are not currently and why (e.g. no seed, lack of propagation techniques)
Intended use of nursery output
Estimate of production capacity and cost of production
Main problems encountered in nursery activities

A number of methods may be employed to collect baseline data relating to current levels of forestry activities in the case study areas in Leyte, particularly in the case study areas. It is, however, extremely difficult to collect precise data on current levels of forestry activities. The most precise method would be to undertake a census of all landholders and communities in each area and to record their current involvement in forestry. The enormous financial and human resource required makes this approach impossible. It is however possible to develop a number surrogates or indirect methods measure planting activity. Three methods which could be used are: (1) estimates of planting levels provided by Barangay Captains; (2) estimates of activity based on nursery production and sales; and (3) estimates of activity based on interviews with landholders.

Method 1: Barangay captains' estimates

Interviews with Barangay Captains could be undertaken at one of their regular meetings. At this meeting, each will be asked to categorise their barangay into the matrix provided in Figure 1.

Exposing the ratings provided by individual barangay captains to the group for critical comment will provide a means to obtain a degree of consistency in ratings between barangays.

		Current level of planting		
		Low	Medium	High
Potential for planting, i.e. amount of suitable land available	Low			
	Medium			
	High			

Figure 1. Matrix for classifying Barangays according to current levels of planting and the potential for planting

Method 2: Nursery sales

Current seedling sales are usual surrogate for currently planting activity. A survey of the levels of seedling sales to farmers by nurseries could be undertaken as part of the nursery baseline data collection. The usefulness of current sales as an indicator of current planting levels is however limited by the potential for people within the area to purchase seedlings from sources outside the area and for seedlings to be sold to people coming to the nursery from other areas.

Method 3: Landholder surveys, community visits, participatory appraisal or immersion techniques

Data relating to planting levels of individuals and communities could be collected in conjunction with survey work on landholder and community attitudes to forestry utilising various techniques. Participatory approaches include Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA), e.g. Singzon *et al.* (1993), PROCESS Foundation (1996). These approaches provide a rapid and inexpensive means of collecting information on community resources, behaviour and attitudes. However, they are potentially subject to considerable bias. For example, when a community meeting is held, the attendance may include only a small proportion of the community members and these may not be representative of the overall community. More reliable information can be expected if the researcher takes up residence in the community for a number of weeks or months (i.e. immersion) and in doing so gains the acceptance of the community. However, this is a time consuming and costly approach and hence cannot be used to collect information from more than a handful of communities. Furthermore, an interpreter may be required which further increases the cost and poses problems of information being lost or misrepresented in the process of translation. A formal survey, involving teams of interviewers, is another possible approach. In many ways, this approach is a compromise between the participatory and immersion strategies. It is more costly than the participatory

approaches but is likely to produce more reliable results providing the questionnaire is well constructed and then administered in an appropriate manner. The training of interviewers administering the questionnaire is particularly important. Furthermore, data from a formal survey can be analysed using quantitative and qualitative methods, which are often not applicable to data collected from participatory methods.

Ideally, estimates of planting activity provided by each of the three measures should be compared. Each method has its advantages and disadvantages and ultimately each will provide a different estimate of planting activity. Triangulation (i.e. confirmation from a number of sources) of estimates would provide additional confidence in the reliability of the estimates obtained. It is also possible that a composite measure could be developed using a combination of the three techniques.

CONCLUDING COMMENTS

Comparing baseline data with a resurvey at a late date, allows estimates of the extent of change over time of data to be derived. Baseline data relating to the extent of current involvement and interest of landholders and communities in forestry will be useful in future ex post evaluations of assistance measures designed to increase forestry uptake. Baseline data about current nursery practices, sources of seeds and wildlings and the quality of planting stock produced, will greatly aid in assessing the impact of changes in nursery practices.

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