

13. SMALLHOLDER TREE GROWING AND TIMBER MARKETING PRACTICES ON LEYTE ISLAND

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This paper reports the results of an analysis of part of the data from a socio-economic survey conducted in seven randomly selected municipalities in Leyte and Southern Leyte Province in the Philippines. It focuses on the management of smallholder tree farmers as well as their experiences in timber selling, and their technical knowledge. The survey examined the intentions and aspirations of smallholders with regard to adopting tree farming on Leyte Island. It was found that most of the respondents relied on their own knowledge and experience in nursery and plantation establishment and maintenance. More than half the respondents had harvested timber in the last three years. Gmelina and mahogany were the species most often harvested.

INTRODUCTION

From the 1960s until 1990s, the Philippine Government has undergone a number of changes in its forest management system (Pulhin 1997). Large-scale timber-oriented industrial forestry was popular in the 1960s to 1980s but from the 1990s the government has been promoting people-oriented smallholder forestry (Mangaoang 1998). Decentralized forest management has given rise to the sporadic establishment of tree plantations or 'tree farms'. While there is a strong move towards decentralized forest management in the Philippines, the promotion of smallholder forestry is hampered by the limited availability of planting stock and low quality planting materials (Gregorio 2006).

Tree farming in the Philippines has been viewed not only as a conservation activity but also as a business venture. As in any other business venture the ultimate goal in tree farming is sustained economic and social benefits. In the past, most tree farming activities took place without due consideration of their sustainability. Species planted were often not compatible with the site, and there has been little regard for soil fertility. The choice of species was not related to the intended goal of harvesting high quality timber for specific end-uses, and management was poor, with limited investment in woodlot maintenance, protection and silviculture (Aggangan 2003).

While the problems with smallholder forestry are understood in general terms, there has been a lack of information about specific forestry practices, attitudes and skills of smallholders. To improve the information base on smallholder forestry on Leyte Island, a socio-economic survey was carried out in 2006–07 on a random sample of smallholders, using the same sampling frame as a tree inventory study¹. This paper presents the survey findings on the topics of tree farming and timber marketing.

¹ Both studies have been undertaken as part of ACIAR Project ASEM/2003/052 – Improving Financial Returns to Smallholder Tree Farmers in the Philippines.

RESEARCH METHOD

The sample of respondents was drawn from a two-stage probability proportional to size (PPS) sample used in the tree measurement study which covered seven municipalities in Leyte and Southern Leyte Provinces. The survey investigated the tree farmers' (a) household demographics, (b) indicators of well-being, (c) farm and farming enterprises, (d) production and sales, (e) income sources, (f) forestry system and management, (g) tree registration issues, (h) timber selling experiences, and (i) views, know-how and attitudes related to forestry and agroforestry. Some preliminary findings from the survey and further details of the survey method are reported by Severe *et al.* (2007). This paper concentrates on sections (f) and (i) of the survey.

RESULTS OF THE STUDY

Tree Farm Management

The smallholders' management of tree farms depends on their knowledge gained through attending training courses and seminars and exposure to related projects, and from co-farmers in terms of their various care and maintenance activities, silvicultural practices, forest protection schemes and other activities required to achieve successful tree farming.

Survey responses concerning planting and managing trees are summarized in Table 1. Thirty seven respondents (45.7%) preferred to collect and germinate the seed themselves, while 30 (37%) preferred to purchase seed. There were 14 respondents (17.3%) who preferred to collect and propagate wildlings. Some respondents (12.3%) collected wildlings on the ground floor and planted them directly in the field. During planting, most of the respondents (52, 64.2%) hired labour to plant the trees on their farms. Nearly half (39) hired labour for maintenance. Thirty-one respondents (31%) declared they did their own planting, and 36 (44.4%) carried out their own maintenance.

Table 1. Tree growing and management activities of smallholder tree farmers

Activity	Frequency	Relative frequency (%)
Purchase seeds and germinate	30	37.0
Collect seeds and germinate	37	45.7
Collect wildlings and pot	14	17.3
Collect wildlings and plant directly	10	12.3
Produce seedlings using own labour	23	28.4
Purchase seedlings	28	34.6
Plant using own labour	31	38.3
Plant and maintain using own labour	36	44.4
Hire labour for planting	52	64.2
Hire labour for maintenance	39	48.1
Alayon (i.e. shared labour)	4	4.9

Table 2 summarizes the sources of information on nursery, plantation establishment and maintenance techniques that had been adopted by the respondents. The most widely reported source of information (over 25% of respondents) was their own knowledge and experience, followed by that of friends and relatives. Relatively few reported attending training courses or accessing government extension services or materials.

Table 2. Sources of information for smallholders on nursery, plantation establishment and maintenance techniques

Sources of Information	Nursery techniques		Plantation establishment and maintenance techniques	
	Frequency	Relative frequency (%)	Frequency	Relative frequency (%)
Friends and relatives	20	22.5	17	19.8
Extension materials	5	5.6	4	4.7
Own experience and knowledge	23	25.8	26	30.2
Learned at school	5	5.6	5	5.8
Seminars or training courses	8	9	7	8.1
Department of Agriculture-extension work	4	4.5	3	3.5
DENR-extension service	6	6.7	8	9.3
Co-farmers	3	3.4	6	7.0
Barangay officials	1	1.1	1	1.2
Bureau of Plant Industry	1	1.1	1	1.2
Fisheries personnel	1	1.1	1	1.2
No experience	1	1.1	0	0
Research	1	1.1	0	0
Visayas State University ^a	1	1.1	0	0
Hired extension officers	1	1.1	1	1.2
TV	1	1.1	2	4.7
Radio	0	0	1	1.2

^a VSU was formerly known as Visayas State College of Agriculture (ViSCA).

Table 3 summarizes the problems encountered by smallholders during planting stock propagation, and plantation establishment and maintenance. Six respondents (7.3%) reported problems with a poor germination rate and five (6.1%) encountered poor growth of seedlings. This may have been the case where the farmers relied solely on their own knowledge and experience in nursery seedling propagation. In the area of plantation establishment and maintenance, nine respondents (10.7%) encountered problems such as damage caused by animals, pests and diseases.

As indicated in the list of trees commonly pruned and thinned by the smallholders (Table 4), gmelina (*Gmelina arborea*) plantations have been observed to be widely thinned and pruned on farms on Leyte Island (58.9% of responses), followed by large leaf mahogany (*Swietenia macrophylla*) (34.3%), and mangium (*Acacia mangium*) (6.9%). This table also provides basic information as to whether the farmer respondents were able to apply silvicultural treatments such as thinning and pruning on their farms. Fifty-six (69.1%) of respondents pruned their trees and 27 (33.3%) reported that they had thinned their trees.

Table 3. Problems with planting stock propagation, and plantation establishment and maintenance as identified by smallholders

Problems or constraints	Planting stock propagation		Plantation establishment and maintenance	
	Frequency	Relative frequency (%)	Frequency	Relative frequency (%)
Pests and diseases	4	4.9	4	4.8
Damage by animals	2	2.4	9	10.7
Weeds competition	1	1.2	1	1.2
Seedling mortality	2	2.4	1	1.2
Financial assistance	2	2.4	2	2.4
Poor growth	5	6.1	3	3.6
No problem	2	2.4	2	2.4
Water supply	2	2.4	2	2.4
Damaged by typhoon	1	1.2	1	1.2
Lack of technical skills	3	3.7	0	0
Poor germination rate	6	7.3	0	0
Fire	1	1.2	0	0
No uniform size of seedlings	1	1.2	0	0
Hauling problems	1	1.2	0	0
Seed availability	1	1.2	0	0
Seed sources	1	1.2	0	0
Lack of time	0	0	1	1.2
Landholding-related problems	0	0	1	1.2
Difficulties in establishment	0	0	1	1.2
Theft of planted seedlings	0	0	2	2.4
Work not done properly by some labourers	0	0	1	1.2
Site preparation problems	0	0	1	1.2

Table 4. List of tree species commonly pruned and thinned by smallholders

Species name	Frequency	Relative frequency (%)
Gmelina (<i>Gmelina arborea</i>)	43	58.9
Large leaf mahogany (<i>Swietenia macrophylla</i>)	25	34.3
Mangium (<i>Acacia mangium</i>)	5	6.9

Table 5 reports the reasons given by respondents as to why they applied silvicultural treatments, particularly thinning and pruning of their planted trees. The majority stated that their reasons for pruning trees were to obtain an improved tree form and growth increment, and to produce straight bole timber. The reasons for thinning were to provide growing space to good-form trees and to achieve high quality timber. About 40% respondents applied fertilizer on their trees during planting, including over 30% who used inorganic fertilizer.

Table 5. Reasons for applying silvicultural treatments

Silvicultural treatment	Reasons
Pruning	<ul style="list-style-type: none"> To improve tree form To increase the growth rate Remove liabilities in the plant To make the tree straight To prevent falling and wind throw Not to destroy other trees and plants Increase stem, not to overtop the coconut Cut branches are utilized as firewood
Thinning	<ul style="list-style-type: none"> To provide space to some good trees Cut the trees that are not growing well To achieve good form and quality of trees Lessen the competition Fence posts Done mainly for harvest To decrease density Increase the volume of the other trees Free from competition Eliminate the suppressed trees To eliminate badly formed trees Enhance the growth of the desirable trees For light construction materials 'I was told by the DENR personnel' To make the stem of the trees straight

SMALLHOLDERS' TIMBER SELLING EXPERIENCES, VIEWS AND TECHNICAL KNOWLEDGE

As indicated in Table 6, almost half of the respondents (42%) claimed that they had harvested timber during the last three years, with gmelina the species most often harvested (47.8% of responses), and followed by mahogany (9.8%).

Table 6. Tree species harvested by the respondents^a

Species	Frequency	Relative frequency (%)
Gmelina	44	47.8
Mahogany	9	9.8
Antipolo	1	1.1
Ipil-Ipipl	2	2.2
Binunga	1	1.1
Mangium	1	1.1
None	34	36.9

^a Some respondents harvested more than one species.

The most frequent harvest age reported for both gmelina and mahogany was 10 to 15 years, although 17 respondents harvested at age 4 to 9 years (Table 7). Few harvested at ages beyond 15 years, although apart from perhaps gmelina, there is insufficient data to draw conclusions about rotations longer than 15 years.

Table 7. Age of trees harvested by smallholders (per species)

Tree age (yrs)	Gmelina ^a	Mahogany	Antipolo	Ipil-Ipil	Binunga	Mangium
4–9	17	2				1
10–15	20	5				
16–21	2	1		1	1	
22–27	2		1	1		
28–33		1				

^a The number of responses differs in Table 7 because there were some respondents who couldn't recall the harvest age of their trees.

Only a small number of respondents provided estimates of the number of trees harvested (Table 8). Only six reported having harvested more than 50 trees in the last three years.

Table 8. Number of trees harvested as declared by the respondents

Number of trees	Frequency	Relative frequency (%)
1–10	22	46.8%
11–20	14	29.7%
21–50	4	8.5%
51–100	2	4.2%
101–300	1	2.1%
301–1000	1	2.1%
1001–6500	1	2.1%
6501–13,900	1	2.1%

Table 9 presents the estimated volume of trees harvested by the respondents, measured in board feet (bft). Twelve respondents (14.7%) declared that they had harvested estimated total volume ranges of from 1001 to 10,000 bft from their tree farms.

Table 9. Volume of trees harvested ^a

Volume(bft)	Frequency	Relative frequency (%)
0–250	10	12.2
251–1000	7	8.5
1001–10,000	12	14.7
Over 10,000	3	3.6

^a Some respondents harvested more than one species.

Respondents who had harvested timber sold their products to household buyers (11 respondents), lumber dealers (4), construction buyers (1) and two private companies, PASAR and Philphos (2).

Respondents were also asked whether they had experience of selling their planted trees and in what form that they sold their tree products. Table 10 shows that the smallholders' timber had been sold on stump, and as roundlog, pole, flitch, sawn timber and firewood. Half of those who sold timber had sold it in sawn form, about 18% selling on the stump and 18% as flitches. Thus, during the selling of their timber most of the respondents received a low price because the buyers would shoulder all the expenses in registering their trees, tree felling and hauling their timber and there were no other buyers in the area. Some respondents obtained a higher price by selling sawn timber. The respondents preferred that their timber products be collected by the buyers in order to avoid hassles during the transport of the

wood products to the buyers' place. In fact, this has also been the practice of almost all timber buyers on Leyte Island.

Table 10. Forms of timber product sold by smallholders

Forms of timber product	Frequency	Relative frequency (%)
Sawn	11	50
Stump	4	18.18
Flitch	4	18.18
Firewood	1	4.54
Roundlog	2	9.10

Five types of timber buyers were identified by the respondents, as listed in Table 11. These include household buyers, lumber dealers, construction firms, bakers' establishments, and private companies (e.g. Philippine Associated Smelting and Refining Corporation (PASAR) and Philippine Phosphate Fertilizer Corporation (Philphos). To source timber, most of the buyers approach tree farm owners known in a given locality, or seek information through friends. More than half of the respondents did not indicate the specific buyers of their timber products.

Table 11. Types of timber buyer as identified by smallholders

Buyer	Frequency	Relative frequency (%)
Household buyers	11	13.5
Lumber dealers	4	4.9
Construction buyers	1	1.2
Bakers' establishments	1	1.2
Private companies (PASAR and Philphos)	2	2.4

Table 12 shows the income earned by the respondents through timber selling. Among all the respondents who declared their income, more than half (52.9%) had a total sales value of not more than PhP50,000.

Table 12. Smallholders' timber sales

Timber sales (Peso)	Frequency	Relative frequency (%)
0–50,000	9	52.94
50,001–100,000	3	17.65
100,001–500,000	3	17.65
Over 500,000	2	11.76

SUMMARY

In seedling production, most smallholder tree farmers in Leyte are collecting their own planting materials rather than purchasing seedlings. The techniques used in nursery and plantation establishments and maintenance are largely based on their own experiences and those gained from others (i.e. relatives, friends and seminars or trainings).

The most common species harvested by smallholder tree farmers are gmelina (*Gmelina arborea*), mahogany (*Swietenia mahogani*), ipil-ipil (*Leucaena leucocephala*), and mangium (*Acacia mangium*).

It was noted that there are particular conditions required to support timber selling, such as a high market demand with reasonable price, easy access to buyers, and availability of buyers who buy bulk volumes of timber. In this regard, a special effort is needed to support smallholder tree farmers and to encourage them to plant more timber trees. Local government units and even private institutions could collaborate to formulate activities that would assist tree farmers. An information campaign aimed at tree farmers could be held by ACIAR Project Staff, for instance, in order to market the timber with the help of the ACIAR Smallholder Forestry Project as part of their extension campaign program. A comprehensive training in the technical aspects of growing quality trees for timber, lack of thinning, low harvest ages, small volume harvested, and prevalence of sawn timber could be provided.

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