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The Role of Abaca (*Musa textilis*) in the Household Economy of a Forest Village

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Abaca (*Musa textilis*) is a plant related to the banana, the leaves of which provide some of the strongest natural fibres used by man. It is indigenous to the Philippines, and grows well particularly in the provinces of Bicol, Samar and Leyte. Abaca is also one of the few cash crops that can grow with relatively little input compared to other crops, in steep forest areas. For this reason, it is often the crop of choice of households living in villages at the forest edge. The role of abaca in the household economy of villagers in Leyte is described. The study shows that abaca is both an important secondary income source of households with lowland farms, and frequently the only source of cash income of the poorest households in the community. The implications of abaca's niche in the village economy, on increasing production of the crop, are discussed.

INTRODUCTION

The Abaca plant, which belongs to the family Musaceae, is indigenous to the Philippines and has long been used locally to generate foreign exchange (Seidenschwarz 1994, Escandor 2001). It has been a part of traditional agriculture in Southeast Asia, particularly in the Philippines. Abaca is grown as a third phase crop in forest plots, after a slash-and-burn area has become less fertile and unable to produce the initial crops of rice and corn, and after even less demanding second phase crops such as cassava and sweet potato (Capistrano and Marten 1986).

In the past, abaca rope was one of the major exports of the Philippines. However, the use of nylon for cordage had greatly reduced the market for this product, to the extent that it had placed the entire abaca industry in danger of collapsing during the 1960s and the early 1970s (PCARRD 1977). Despite this setback, abaca experienced a revival in the world market due to the discovered alternative uses found for the fibre. These include the processing of abaca for specialty papers, such as those used for condensers, tea and coffee filters, cable insulation, currency, and weatherproof maps and charts. Abaca pulp was found to be a possible substitute for coniferous pulp in paper production at a four to one ratio, making it a viable replacement option for pulp-importing countries such as the Philippines. In addition, abaca handicrafts and textiles are potential areas of expansion for the abaca production and processing industry. The Philippines' Department of Agriculture – Agribusiness and Marketing

Assistance Service (DA-AMAS) estimates the average annual growth rate of abaca exports since 1989 at 6.6% (DA-AMAS 2002).

Despite the importance of abaca to the national economy, its potential as a source of greater income to growers while serving as a crop that may actually help in slowing down deforestation, is given little policy attention. As a common component in traditional agroforestry systems in central Philippines, abaca is overlooked, a situation that may be ascribed to what Olofson (1983) describes as the ideological emphasis on 'scientific' experimental agroforestry systems, over seemingly non-scientific forest farming practices. The objectives of this study are to find if there was a correlation between income and abaca production in the village economy, and whether there was an association between land ownership and abaca production. Another objective is to find abaca's niche in the livelihood strategies of households in the community. These objectives may point to possible areas of concern in promoting the use of abaca as an agroforestry crop for reforestation purposes.

DATA COLLECTION METHOD

The data for this study were collected by interviewing the heads of 41 households in Cienda, Baybay, Leyte. There was an attempt to have a complete census of the village's household heads, but due to refusals, only 67% of the households in the village are represented.

Respondents were asked about their farming system in two rounds of interviews. During the initial interviews, questions regarding the household's socio-economic situation were asked. These included questions about the age, educational attainment, and main and secondary income sources of the household head. Questions about the number of dependent children in the household, and various crops grown for both subsistence and commercial purposes, and the quantities of these were also asked. The data for this study resulted from a larger project on non-wood forest product (NWFP) use in forest edge villages, chosen for their traditional dependence on commercial NWFP collection. Thus, questions regarding NWFPs were foremost in the interviews.

During the second phase of interviews, a list of these NWFPs formed from the data from the initial interviews was generated and shown to the respondents. This checklist was used as a tool to clarify certain statements about NWFPs. In addition, contradictions in the information given during the initial interviews, and clarification of some indefinite statements were asked during the second phase of interviews. The list of households living in Cienda came from the Cienda–San Vicente Farmers Association (CSVFA), composed of residents who were in the process of applying for a Community-based Forest Management Agreement (CBFMA) which would allow them stewardship of the surrounding forest area. From the initial interviews, it became noticeable that in Cienda, abaca was a common non-wood forest crop, and that NWFP collection often occurred in conjunction with abaca plot maintenance. Thus, more detailed questions regarding the production, processing and marketing of abaca were asked during the second round of interviews.

An interpreter was employed during both the initial and second interviews to relay questions in the dialect (Cebuano), although the researcher was able to ask and

was answered directly in Filipino in many cases. The male or female household heads were interviewed, with the assumption that they would be more aware of the family budget than anyone else in the family. The same individuals who were interviewed during the first round were also sought for the second round of interviews. This is to validate the consistency of information given during the initial phase of the interview, or to explain the inconsistencies in the information provided by the respondents.

The average duration of each interview was approximately 30 minutes to an hour, although most took longer due to various reasons, including following protocol in conducting village surveys, and accepting social invitations. In connection with this, participatory methods were used to assess the veracity of information from the interviews. These methods involved visits to forest plots planted with abaca, observation of abaca stripping and sorting, and trips to the areas where the specific non-wood forest products (NWFPs) were collected, before the initial interviews were conducted and immediately after both phases of interviews. During the data collection period of 1998 to the first half of 1999, the average exchange rate during this period of 40 Philippine Pesos (PhP) to 1 US dollar was used.

ABACA'S IMPORTANCE TO ITS PRODUCERS

Current literature about abaca's prospects tends to concentrate on the final uses of the fiber. Perhaps similar to paper production from wood pulp, the processing of abaca into high-value products such as condensers, filters, and other specialty papers, requires technology and investment that are not affordable at the village level. However, the new value-added abaca products make the abaca industry a feasible source of jobs at the regional and national level, and also provide new possibilities for export revenue, even if the final processing of these new products will be done elsewhere. In either case, the villages growing abaca are likely to find a market for greater amounts of raw fiber produced. The main concern of abaca producers and institutions promoting its production may have to concentrate on increasing the value-added income from abaca at the local level, rather than increased production.

Abaca in the Village Economy

The mean age of the respondents was 43 years, and 65% of the household heads interviewed were females. On the average, the respondents had six years of formal schooling, which means that they had completed the primary level of education under the Philippine public school system. There was a mean of five children per household, with two children per family who work as labor and contribute to the family income. The employment opportunities for the household heads are limited to the primary sector due to the combination of their limited formal education and the requirement of at least a secondary school certification for the few town jobs available. The most common primary sources of income were rice and coconut farming, and working as hired labor in agricultural production.

Of the 41 households surveyed, 12% considered abaca growing as their main income source, while 17% considered abaca production as their second most important income source, and other households considered it a 'fallback crop'.

Thirty-seven percent of the households in Cienda grew abaca, on plots with size ranging from 0.12 ha to 2 ha, the mode being 0.25 ha. Although the majority of abaca-producing households had both men and women contributing to the maintenance of the crop, it was mostly the men who do the harvesting, stripping and carrying of the fibers from the upland plots to the village proper.

The household income of the respondents ranged widely from 1500 PhP to 64,840 PhP per year. The mean, however, was 23,357 PhP a year, which is much lower than the national average of 83,161 PhP (NSO 1996); this places the majority of households in the three lowest income groups in the Philippines. The income range defines each income group set by the NSO. The majority of Cienda households belonged to the groups: earning less than or equal to 15,000 PhP; 15,000 to 19,999 PhP; and 20,000 to 29,999 PhP. Due to the agricultural nature of most respondents' livelihood, the main income generation of Cienda residents tended to be concentrated on coconut and rice harvests which occurred three times a year. The harvest of abaca, which usually happens twice a year, happened more often, whenever the households needed money immediately. Almost all the abaca harvested, whatever the color or coarseness, is sold. Initial processing which involves stripping the leaf sheaths to separate the fibers for drying, is often done within the *kaingin* farm, which is technically an agricultural plot established through slash-and-burn method in the uplands.

The most common method of stripping is by hand, using the *hagotan*, which could be translated as a 'pulling machine'. The machine consists of a straight knife or several blades (stripper) set into a knife rest or base, which can be clamped shut or released with a foot pedal. The leaf sheaths are inserted into the base, clamped securely, and placed over the stripper. The leaf sheaths are pulled away from the knives with a wooden pull operated by the worker. If the sheaths are exceptionally long, they are pulled repeatedly. The stripped portion is held by hand and the wooden pulling aid is wound nearer the knife for another pull. The stripped fibers are separated according to the source of the leaf sheath, color and roughness (this and additional methods of abaca processing in other Philippine provinces are described more fully in PCARRD 1977). The dried and bundled fibers – frequently weighing about 50 kilos – are carried downhill from the plot to the village, on the shoulders and head of the farmer while he maneuvers through the forest and streams.

As the objectives of the study include finding the niche of abaca in the village economy, and determining the role of abaca production in the household economy, correlation analysis was performed between households' annual income and land holdings planted with abaca. The latter variable indicates the proportion of the household's property allocated to abaca production. It was theorised that the lowest income households probably produced abaca more than other crops, for the reason that these households had few or no lowland holdings at all. However, the correlation coefficient of -0.025 is not significant at the 5% level, which indicates that there is no significant relationship between household income status and the size of landholding devoted to abaca production.

The role of abaca in the Cienda household economy is two-fold. Although less than half of the farmers who plant abaca (46%) belong to the middle to upper income levels in the community (earning 23,400 to 54,600 PhP), the rest of the abaca-growing households do not own any land for rice production. It could be surmised that abaca is grown as a supplementary source of income by the more well-

off households, since on the average abaca provides just less than a third of the households' total income. On the other hand, abaca is frequently the only source of cash income of poorer households, who have only abaca as their single cash crop, and various subsistence crops as supplement for their livelihood.

Abaca in the Household Farming System

In 1998, the prices of abaca in Leyte were 15 PhP per kilo for the fine white fibers, 10 PhP per kilo for the intermediate brown fibers, and 4 PhP per kilo for the coarse black or spotted fibers. Final processing and grading is done in the nearby town of Baybay, less than 5 km away. From Cienda, the farmers have to pay the driver of a jeepney, the local form of transport, 0.35 PhP/kg for abaca brought to the final processing area from the village edge, and 5 PhP to the person who will unload the abaca bundles from the jeepney. Although transporting the abaca to the buying center in Baybay is not the final stage of marketing for the abaca bundles, it is the last stop for the producers. The owners and operators of the buying center do further marketing of abaca.

A common estimate for the total revenue earned from abaca is 2000 PhP per harvest, per hectare. Given that the most frequent area planted to abaca is 0.25 ha or less, most abaca farmers then earned 500 PhP per harvest or less, from the 50 to 80 kilos of various grade fiber they produced. If one subtracts the transport cost of about 25 PhP for the usual 50 kilos of fiber produced and marketed, the average abaca-growing household earned about 475 PhP from a 0.25 ha plot.

The majority of abaca growers within the village consider the monetary income from the crop as its most important value. Most of them also plant food crops at the edges or borders of the abaca plots, in essence forming a food garden within a cash-crop plot. Except for coconut (*Cocos nucifera* L.) and rice (*Oryza sativa*), which are planted in separate areas, some of the food crops grown in the village proper can also be found alongside or within the abaca plots (Table 1). The most common intercrops with abaca are *takudo* or *pakodo* (*Xanthosoma sagittifolium* (L.) Schott.) and *balanghoy* (*Manihot esculenta* Crantz), both of which require less maintenance than cash-crop leafy vegetables such as cabbage (*Brassica oleraceae* L.) or fruits eaten as vegetables such as okra (*Abelmoschus esculentus* (L.) Moench). Fruits produced that do not require daily watering, like pineapple (*Ananas comosus* (L.) Merr.) are not as common as takudo as an intercrop, but they are viable as a forest plot cash-crop, which was also observed in the site.

Most if not all abaca crops are in what villagers call *abakahan,* meaning 'the place where abaca is grown'. The establishment of an abaca crop is usually the last stage before forest encroaches on agriculture in the *kaingin*. However, abaca plants are long-lived perennials, and in Cienda the same families have maintained the plots planted with abaca for many years, often for two or three generations. Only one household within five years was observed by the researcher to have abandoned an abaca plot and transferred to another area with a more fertile soil to do abaca planting. The relatively high economic value of abaca to the households compared to other income sources such as NWFP collection may preclude their abandoning the plots for eventual conversion into forests. This may have some implications on the use of abaca as a transition crop for reforestation purposes.

Table 1. Agricultural crops grown in Cienda, Baybay, Leyte, 1998-1999

Scientific Name	Local name
Abelmoschus esculentus (L.) Moench	Okra
Allium cepa L.	Sibuyas
Ananas comosus (L.)Merr.	Pina
Artocarpus odoratissimus Blanco	Marang
Basella alba L.	Alugbati
Brassica oleracea L.	Repolyo
Cocos nucifera L.	Niyog/Lubi
Colocasia esculenta (L.)Schott.	Gabi
Diospyros blancoi A. DC.	Mabolo
Ipomoea aquatica Forsskal	Tangkung/Kangkong
Ipomoea batatas (L.)Lamk	Kamote
Lansium domesticum Correa	Lanzones
Mangifera indica L.	Mangga
Manihot esculenta Crantz	Kalibre/Balanghoy/Kasaba
Momordica charantia L.	Ampalaya/Paliya
Moringa oleifera Lamarck	Kamunggay/Malunggay
Musa ssp	Saging
Musa textilis	Abaca
Nephelium lappaceum L.	Rambutan
Oryza sativa	Bigas/Bugas
Psidium guajava L.	Guyabas/Bayabas
Sandoricum koetjape(Burmann f.) Merrill	Santol
Sechium edule (Jacq.)Swartz	Sayote
Solanum melongena L.	Talong
Theobroma cacao	Kakao
Vigna unguiculata (L.)Walp.	Batong
Xanthosoma sagittifolium(L.) Schott.	Pakodo/Takudo
Zea mays L.	Mais
Zingiber officinale Roscoe	Luya

Abaca is grown within the forest area rather than on the lowlands around Cienda; the use of lowland areas for rice was considered more profitable. Further, abaca requires some protection from typhoons which can be provided by the surrounding forests, as noted by PCARRD (1977). Although easy access to processing centers and markets are important for this commercial crop, the shortage of land and lowland forest on the plains had made its cultivation in the uplands necessary.

An attempt was made to find a correlation between the total area of landholdings devoted to abaca production, and the number of NWFPs used by the households. This was done to statistically validate the observation that many villagers collected NWFPs when visiting their abaca plots, sometimes in several plots in different portions of the forest. No significant correlation was detected between the size of landholding and the number of NWFPs used ($r = 0.0153$). Despite the statistical

result, the respondents stated that the maintenance of the abaca plot and the harvesting of abaca were good opportunities for the collection of subsistence NWFPs. The tree or plant species grown in association with abaca and the types of NWFPs collected from them are indicated in Table 2.

Table 2. Non-wood forest products used by the villagers of Cienda, Baybay, Leyte, 1998-1999.

Scientific name	Local name	Plant part and uses
Artocarpus heterophyllus Lamarck	Nangka	Fruit; seeds (food)
Athyrium esculentum Copeland	Pako	Leaves (food)
Bambusa sp.; *Dendrocalamus* sp.; *Schizotachium* spp.	Kawayan	Stems (building material)
Bixa orellana Linnaeus	Atsuete/Suete	Seeds (medicinal)
Blumea balsamifera (L.) DC.	Gabon/Gabun	Leaves (medicinal)
Cajanus cajan (L.) Huth.	Kadyos	Seeds (food)
Calamus sp.	Rattan/Sika/Limuran/ Yantok/Ubod	Pith and fruits (food), Stems (furniture, handicraft) or labong (when used as food)
Caryota cumingii Lodd.	Pugahan	Leaves (food), Pith (food)
Chrysophyllum cainito Linn.	Kaymito/Caimito	Leaves (medicine), fruit (food)
Cinnamomum cebuense Kost.	Kaningag	Bark (medicine)
Colocasia esculenta (L.) Schott.	Gabi	Leaves, shoots, root (food)
Dioscorea hispida Dennst.	Kuyot/Kot	Tuber (food)
Gmelina	Tuba-tuba	Leaves (decoction medicinal)
Gnetum gnemon L.	Bago	Leaves, shoots (food)
Ipomoea reptans Poir.	Tangkung/Kangkong	Leaves
Moringa oleifera Lamarck *	Kamunggay/Malunggay	Fruit (food)*, Leaves (food)
Musa sp.	Saging/Banana	Fruit, inflorescence (food); leaves (wrapping material)
Nypa fruticans Wurmb.	Nipa	Leaves (building material)
	Batbat	Pith (food)
Odontanema nitidum (Jacq.)	Atay-atay	Leaves (medicine)

Scientific name	Local name	Plant part and uses
Persea americana	Abokado	Leaves (medicine), Fruit (food)
Pogostemon heyneanus Bth.	Kadlom/Kadlum	Leaves (medicine)
Psidium guajava L.	Guyabas/Bayabas	Leaves (medicine), Fruit (food)
Xanthosoma sagittifolium (L.) Schott	Takudo/Pakodo	Tuber (food)
Others, scientific name not determined:		
	Hayom-hayom	Leaves (food)
	Kinabugahay	Leaves (food)
	Kojaji	Fungi (food)
	Labkos/Libgos/Libkos	Roots (food)
	Orchids(various)	Whole plant (ornamental)
	Pichay-pichay	Leaves (food)
	Tago-sabaw	Fungi (food)
	Tangog-tangog	Fungi (food)
	Wild ginseng	Stems, roots (medicine, beverage)

* All references to the use of species for food indicates human food, except for *Moringa oleifera* leaves, which is also used as a food supplement for livestock.

CONCLUSION

The importance of any crop to those who produce it necessarily takes into account the amount of revenue that they earn from it, after subtracting the costs of its production. In this sense, abaca can be considered an ideal crop for the forest-edge households in Eastern Visayas. After the first two or three years from planting, it is possible to harvest at least twice a year with little input in terms of fertilisers, pesticides or irrigation, and there is minimal expense for initial processing. For households who have landholdings planted with rice or coconut, a forest plot with abaca provides a welcome supplementary income. For the families with little chance of employment outside agricultural work, and few opportunities to buy lowland farms, clearing a forest area for an abaca crop may be the only way to generate cash income apart from working as seasonal agricultural labour. However, the processing of abaca leaf sheath into marketable fibres, and carrying the fibres from the forest to the village, is difficult and dangerous work due to the risk of accident. In fact, this is one reason why in Cienda, abaca processing and transport was considered better left to the men, as the women did tasks which were considered equally difficult but possibly not as dangerous. Yet these disadvantages did not involve a cash outlay for outside labour, except in situations where absence of able-bodied men from the household due to old age, widowhood or other reasons prevented a family from continuing to operate their abaca plot.

Promoting the benefits of abaca as an intermediate crop from slash-and-burn farmland to regenerated forest should also be considered in balance with the possible increase in number of households who have no livelihood option other than abaca production. Nishimura (1996) described local responses to limits to expansion imposed on lowland farming by population increase and fragmentation of landholdings in the Western Visayas, which occurred as early as the 1970s. One of the most common local responses was to clear land in upland forest areas for increased crop production. Cienda is not exempt from this phenomenon, except that at present the same natural limitation to agricultural expansion occurs even for the uplands, and there is at the same time some pressure from the government to conserve upland forest. Planting abaca gives de facto rights to the land it is planted on, and reforestation efforts should take this into account as more families are forced by circumstances to settle on areas designated as forest land. Research on the feasibility of growing particular fruit tree species within abaca plots should perhaps be considered. The produce from fruit trees could allow abaca-producing households to earn an income when their abaca crops become less productive, or when harvesting the fibre becomes close to impossible for particular households, for example, due to the lack of able-bodied family members to maintain the plot and harvest the crop. Despite the promise of a resurgence of abaca in the world market, efforts to provide alternative sources of income for abaca growers are as necessary as finding ways for growers to obtain a higher price for their abaca.

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