

Forest Products Research and Development Institute

ITTO Project PD 15/96 Rev. 2 (M.I.)

FINAL TECHNICAL REPORT

UTILIZATION, COLLECTION AND TRADE OF TROPICAL NON-WOOD FOREST PRODUCTS IN THE PHILIPPINES

PART II

COLLECTION, PROCESSING AND TRADE, CHEMICAL PROTECTION,
MARKET RESEARCH AND MARKET INFORMATION
ON NON-WOOD FOREST PRODUCTS



Los Baños, Laguna, Philippines
February 2002

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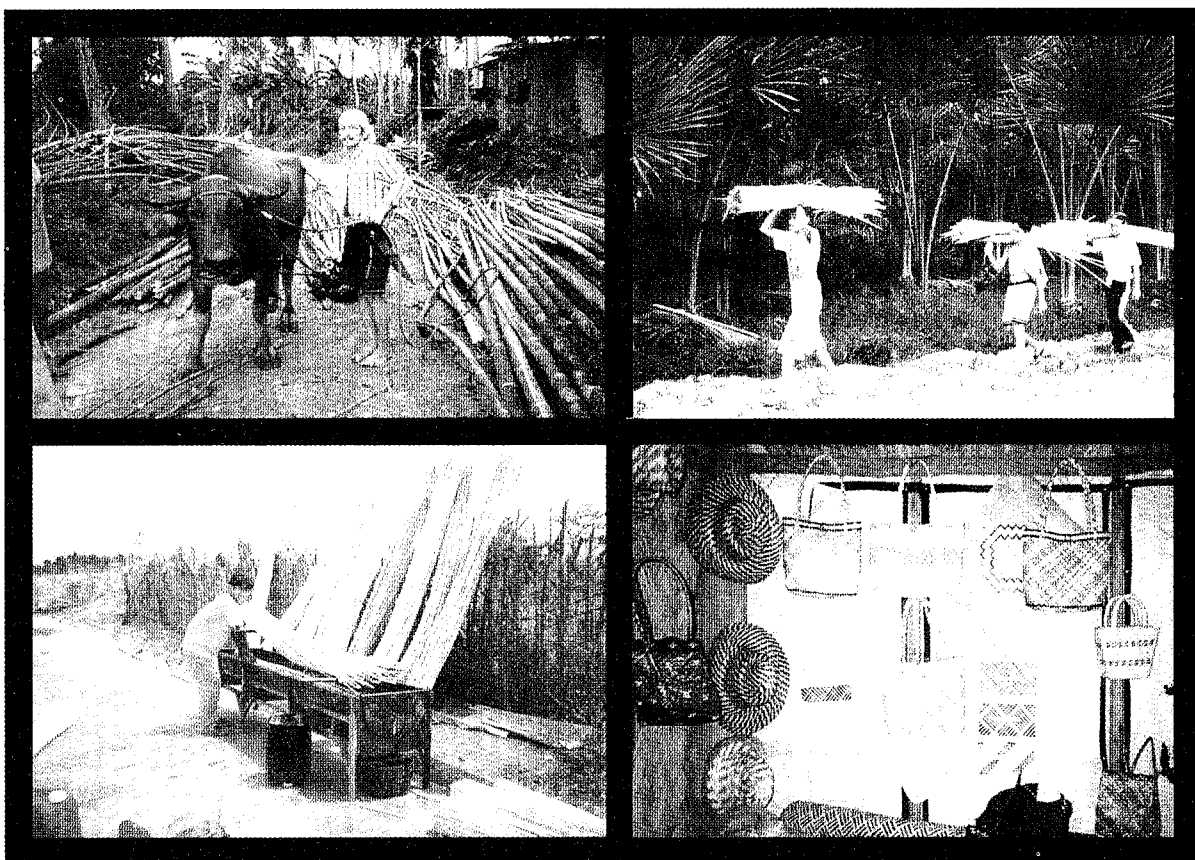
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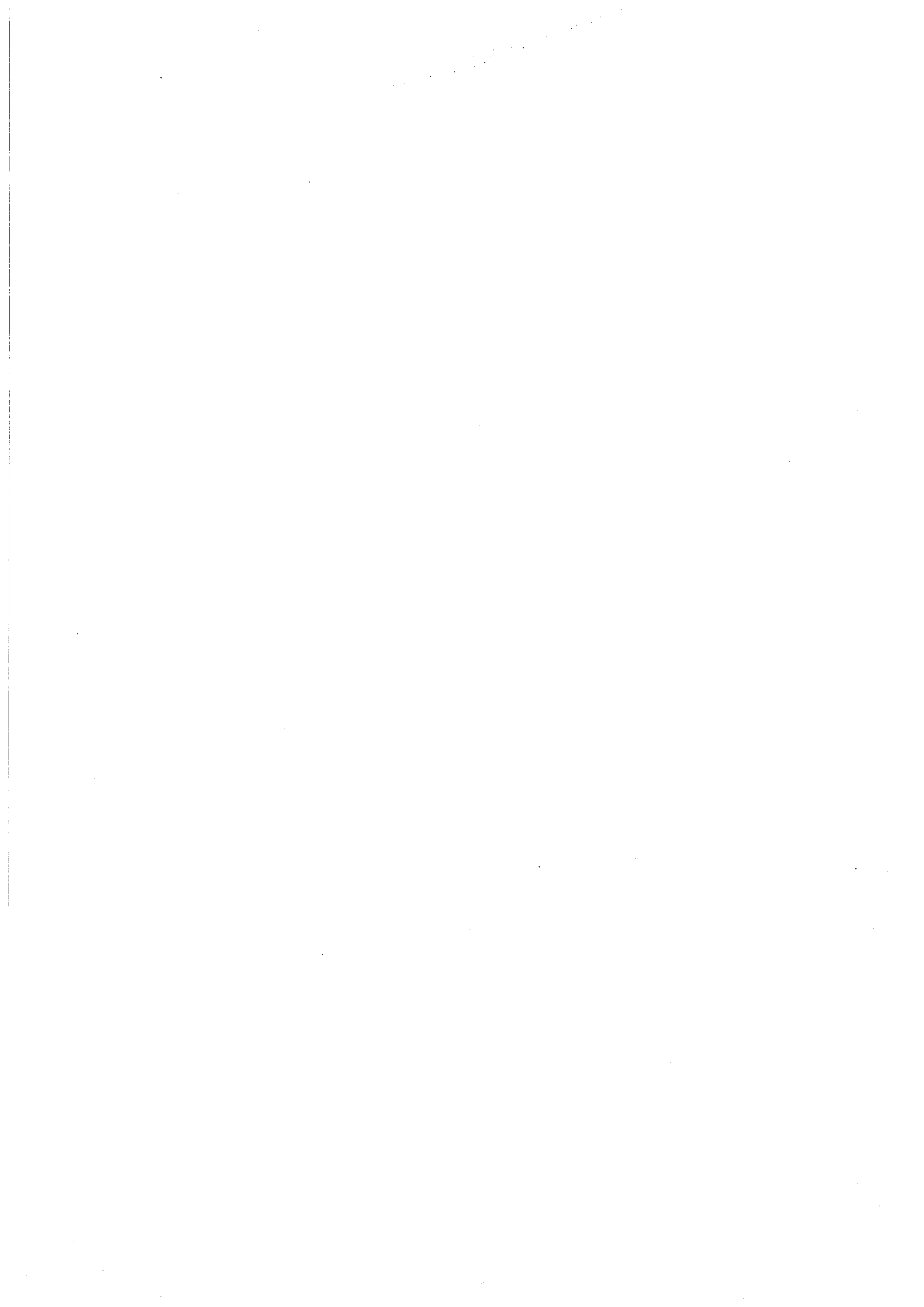


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ABSTRACT

A resource survey and inventory of important non-wood forest products (NWFP) such as bamboo, rattan, erect palms, vines, almaciga resin and honey was undertaken in four project areas in the Philippines. Regeneration cycle and pattern of NWFP were determined and assessed and some sustained-yield collection practices for sustainable supply were emphasized and disseminated to the local communities and upland forest dwellers. An assessment on the approximate number of forest dwellers engaged in the collection and sale of NWFP for their livelihood was undertaken. The problems and needs of upland forest dwellers in the project areas were assessed. Improved methods of collection, processing and storage of selected NWFP were disseminated and recommended to the upland people. Chemical protection of NWFP from deteriorating organisms was disseminated to the local communities. Market research on the collection and utilization of some NWFP and an assessment of marketing practices employed in trading NWFP were undertaken. A seminar-workshop on the analysis and preparation of market feasibility study was conducted with the participation of researchers, students, faculty members and some entrepreneurs.

INTRODUCTION

The forest resources of the Philippines are composed of timber and non-timber or non-wood products. Although timber has been recognized as a major product from the forest, other products derived from non-wood are likewise valuable resources. These NWFP include bamboo, rattan, erect palms, vines, honey, medicinal plants, bast fiber plants and other plants producing resins or gums. Most of these plants are being used for the production of gifts, toys and housewares and has been found as a good alternative for wood in the manufacture of handicrafts and furniture. Statistics showed that the 1998 exports of furniture and handicraft from bamboo, buri (*Corypha sp.*) and rattan was US \$ 81.22 million FOB and US \$32.37 million FOB respectively. In 1999, exports of similar commodities using bamboo, buri and rattan increased to US \$ 86.93 million and US \$ 73.44 million respectively. The collection, utilization and trade of NWFP provide employment and livelihood not only to the forest dwellers but also to the local communities and urban areas. A substantial labor force is being utilized in the collection and partial processing of NWFP for various valuable finished products.

In 1996, about 17.8 million of the country's population live within the forest zone. Majority of the segment of the population belong to the poorest of the poor. Historically, these upland dwellers or forest occupants have contributed significantly to the degradation of the forest, but more importantly, they have the potential and they present a great challenge to be harnessed, motivated, mobilized and sustained to become an effective force in forest rehabilitation and conservation.

Considering that there are about 17.8 million forest dwellers in 1996 and about 22 million in year 2000 in the Philippines, the benefits that will be derived from the project would directly relate to the economic, social and ecological dimensions of the forest occupants/dwellers. The forest occupants will gain technical knowledge and skills in the collection and processing of NWFP to maintain and improved their income. They can also gain employment in neighboring towns where processing of NWFP for various handicrafts and related economic products are being done. Besides, forest occupants would acquire some know-how on sustained-yield collection practices and observation measures for sustainable supply of identified NWFP. The benefits and other social impact that may be derived from the project would not remain isolated but will find ways to reach other forest communities in which occupants would likewise adopt for their common welfare. The sustain yield collection practices for the sustainable supply of important NWFP has a direct and strong linkage to the handicraft and furniture industry sector.

After three years and ten months of research work, essential data and information and technology on the role of NWFP, specifically bamboo, rattan, erect palms, vines, twigs, almaciga resin, honey utilization, collection and trade in promoting the income and livelihood in local communities were generated. The aim to assist in the promotion that the collection and utilization of NWFP will be on sustainable basis and an integral component of sustainable forest management was given primary focus and attention in the project work. Subsequently, the volume of important NWFP in the project areas and vicinity were determined and their regeneration pattern and cycle were studied and documented. Forest dwellers engaged in the collection, processing and sale of NWFP were surveyed and documented. The income derived from collection and sale of NWFP were determined. Needs and problems of forest dwellers in collection, processing, storage and sale of NWFP were identified and given technical solutions. Information on marketing practices and price structure were gathered and evaluated. Relevant data and information on growth and yield, seasonability of harvesting, collection and procurement system, expenses incurred in collection, storage, transport and processing practices for NWFP were gathered and generated. Although the project has no pre-project component, it can be stated that the situation after project completion was quite informative and important to the forest dwellers, the local forest communities and other individuals or groups that are concerned and interested with NWFP collection, utilization and trade.

MAIN TEXT

Presented in this report are the data and information, and other relevant achievements obtained in the three R and D activities covering Part II of the project. A separate report was prepared covering Part I of the project on resource survey and inventory of important NWFP in the Philippines. The three activities focused primarily on (1) assessment on the collection, processing and trade of non-wood forest products in local communities; (2) dissemination and demonstration on the chemical treatment/protection of rattan, bamboo, palms, twigs and vines in upland communities; and (3) market research and market information on non-wood forest products. The project activities were undertaken in the four project areas in the Philippines and in other satellite areas in the provinces of Quezon, Masbate and Bukidnon. The four areas are located in the concession areas of the Industries Development Corporation (IDC), the San Jose Timber Corporation (SJTC), Surigao Development Corporation (SUDECOR) and in an area granted by the government to the Nagkakaisang Tribo ng Palawan (NATRIPAL).

LOCATION OF PROJECT AREAS



BRIEF DESCRIPTION OF PROJECT AREAS

A. Industries Development Corporation

The areas are located in the municipalities of Casiguran and Dilasag in Aurora province. The project includes four local communities in San Ildefonso peninsula. The land area of San Ildefonso is about 20,000 hectares. Aurora form part of the Sierra Madre Ranges and extend towards the shoreline of the east facing the Pacific Ocean. The terrain is generally rugged and mountainous, with approximately three-fourths of the total land area forested and the remaining is devoted to farming and settlement sites. Four ethnic minority groups, namely: the Dumagats, Ilongots, Baluga and Igorots are found in the area. These ethnic groups survive by hunting and fishing and others engage in the collection of NWFP such as rattan, vines anahaw leaves and poles and almaciga resins. Some are also engage in making handicraft using NWFP.

B. San Jose Timber Corporation

The project areas are located in the municipalities of Paranas and Hinabangan in Western Samar Province. The project sites covers an area of about 2,100 hectares of forest lands. The two municipalities are bounded on all sides by public forest lands. The forest vegetation is biologically diverse and dominated by lowland and lower hill Dipterocarp species. The under story is densely covered by NWFP, such as rattan, vines, erect palms, pandan, herbs and brushes. The area are 98% occupied by Waray and the rest are Cebuano, Tagalog and Manobos.

C. Surigao Development Corporation

The project areas are located in the municipalities of Lanuza, Carmen and Tago in Surigao del Sur province. These areas are logged-over areas of SUDECOR which accounted for a small portion of the total area of 71,120 hectares. Of this area, only 45,551 hectares are operable forest. The settlers are predominantly the tribe of Manobos and the rest, about 10% are Cebuano and Waray. About 5,000 people live in four barangays in the project area.

Considering the thick forest, the settlers are engrossed to engaged in fuelwood/industrial tree plantation farming. Others resorted to the collection of NWFP such as rattan, anibong palms, abaca stalks, anahaw leaves, buri, pandan, vines, orchids and game animals.

D. Nagkakaisang Tribu ng Palawan (NATRIPAL)

There are three sites in NATRIPAL. The first site is located in Barangay Tagabinit. Tagabinit has an area of 4,000 hectares and near Puerto Princesa City is generally mountainous and inhabited by indigenous people (IP's) called Batak and Tagabanua. The second project site is located in Barangay Campung Ulay in Rizal municipality in which the Western part is facing China Sea. Campung Ulay has a total land area of 14,925 hectares. The area is generally characterized by low mountains with secondary and primary forests. The inhabitants are 60% IP's called Palau'an and the rest are non-indigenous migrants. The third site is located in Barangay Punta Baja also in Rizal. Punta Baja has a total land area of 12,118 hectares of which 2,113 hectares is arable. The inhabitants about 65% in the area are mostly Palau'an, Malbag or Tagabanua and the remaining are migrants. Farming is the most important source of livelihood. Tapping of almaciga resin, gathering of honey and rattan are other important sources of income. NATRIPAL, which is an association of indigenous groups in Palawan province was generous and cooperative in the conduct of the various activities in the project. These activities ranged from resource inventory of important NWFP to collection, protection, trading and marketing. The primary aim of NATRIPAL is to secure the freedom of indigenous people within their ancestral domains or native lands. Among other things the association is also involved in the promotion of the sustainable use of natural resources to improve the quality of life of the IP's.

PRESENTATION OF DATA

Collection and trading of NWFP in Industries Development Corporation (IDC) Aurora.

Rattan

The NWFP available in the IDC area are: rattan, woody vines, pandan, buri, erect palms and occasionally almaciga resin. The IP's especially the Dumagats share their practice of extracting NWFP with migrants from neighboring provinces of Quirino and Isabela. They follow the traditional system of collecting NWFP. The DENR grants licensees permits to gather rattan. The indigenous community can avail of this opportunity given by the government. A licensee applying for an annual allowable cut of 623,000 lineal meters will pay about P 80,000.00 for licensees, permits, oath fee from the DENR and the Department of Trade and Industry. The licensee is required to submit a feasibility study which covers on the areas where forest products are to be extracted to ensure that the people do not go beyond the protected areas and forest reserves and also on the areas of other licensees. The feasibility study also includes the market and social aspects to reflect the benefits that the licensee and the rest of the community will gain from the extraction of NWFP. The license also serves as a passport in transporting the products to different marketing chain.

During the collection stage of rattan, a group of ten to twelve gatherers go to the forest to collect rattan. A gatherer normally collects 50 to 100 pieces of rattan ten feet long per day and sold them at P 2.00 per pole. Rattan poles are transported from cutting sites to pick-up site by foot and occasionally by carabao skidding. A rattan gatherer earns an average of P 2,000.00 to P 3,000.00 per month from sale of rattan. Rattan poles are classified according to their sizes or diameter. Prices are based on the length and diameter.



Out-of-school youth in Casiguran, Aurora (IDC area) cleans rattan poles in preparation for its binding and stacking.



Table 1. Rattan products, selling price and net income derived by processors (per unit basis in Pesos).

Rattan Products	Selling Price	Production Cost	Net Income
Furniture	1,800.00	1,125.00	675.00
Basket (25.5 cm base x 35.6 cm. ht.)	50.00	32.00	18.00
Hammock			
76.2 cm x 152.5 cm.	300.00	195.00	105.00
101.6 cm x 152.5 cm	400.00	210.00	190.00
127 cm x 152.5 cm	500.00	220.00	280.00
152.5 cm x 152.5 cm	600.00	240.00	360.00

Table 2. Prices of rattan poles in Aurora Province (in Pesos).

Size/Diameter (cm)	Casiguran		San Luis	
	Gatherer	Trader	Gatherer	Trader
3.6 m, round core				
2.00	-	-	3.50	7.00
1.60	3.00	7.00	3.00	6.00
1.25	-	-	2.00	5.00
1.00	0.40	1.75	1.40	4.00
0.50	0.90	2.00	1.00	3.00
0.40	-	-	0.80	2.00
2.30	2.00	5.00	-	-
Splits (50 pcs. per bundle)	7.50	12.00 – 13.00	-	-

Collection and utilization of anahaw leaves and trunks, buri leaves and stalk, and vines are common part time source of living. Anahaw leaves are sold at P 20.00 per bundle. One bundle consists of 15 to 20 pieces of leaves. These leaves are usually used for roofing in resort cottages and houses in nearby provinces particularly in Pangasinan. Gatherers earn an average of P 200.00 per month in collecting anahaw leaves. On the other hand the non-IP's or migrants concentrates on the collection of vines (*Freycinetia* spp.) buri and anahaw leaves. Majority of these migrants had acquired skills in weaving vinecrafts and weaving fans and other decorative items using anahaw and buri leaves. Finished products are transported by buyers to Manila for domestic and export purposes. Prices of buri/anahaw fans ranged from P 1.50 to P 2.50 . Majority of the fan weaver are women and each weaver can finish an average of 200 fans per day. A weaver is paid P 20.00 per 100 fans. After weaving the fan, a handle is usually fixed or placed. A fixer of fan handle is paid P 15.00 per 100 fan handles. On the average a family could generate P 4,000.00 per month income from the sale of fans.

Vines

Vines gathered and traded in Aurora Province are hagnaya [*Stenochlaena paluatres* (Burm.) Bedd.] and hinggiw [*Ichnocarpus frustestens* (L.) R. Br.]. Gathering of vines is community-based activity. A community in San Luis, Aurora collects an average of 2,000 bundles per month with a bundle consisting of 100 pieces of vines 12 feet long. A gatherer can collect 3 – 5 bundles of vines in 2 – 3 days and paid P 32.00 – P 35.00 per bundle. Traders' sale the vines at P 50.00 per bundle of hagnaya and P 65.00 for the white vines.

Extraction of vines also requires an application for license and permit from the local government, the DENR and DTI. An application fee of P 500.00, an oath fee of P 300.00 and a license fee of P 3,000.00 are paid to the government. Collected vines are delivered to processors of Christmas decorations in Bulacan and Cavite Provinces and in Metro Manila. A processor of vine decors is considering the idea of producing the products at the source in San Luis and have it delivered to exporters. A set of Christmas reindeer is sold at P 1,500.00. Santa Claus deers and angels are sold each at P 50.00 for small size and P 150.00 for bigger ones.



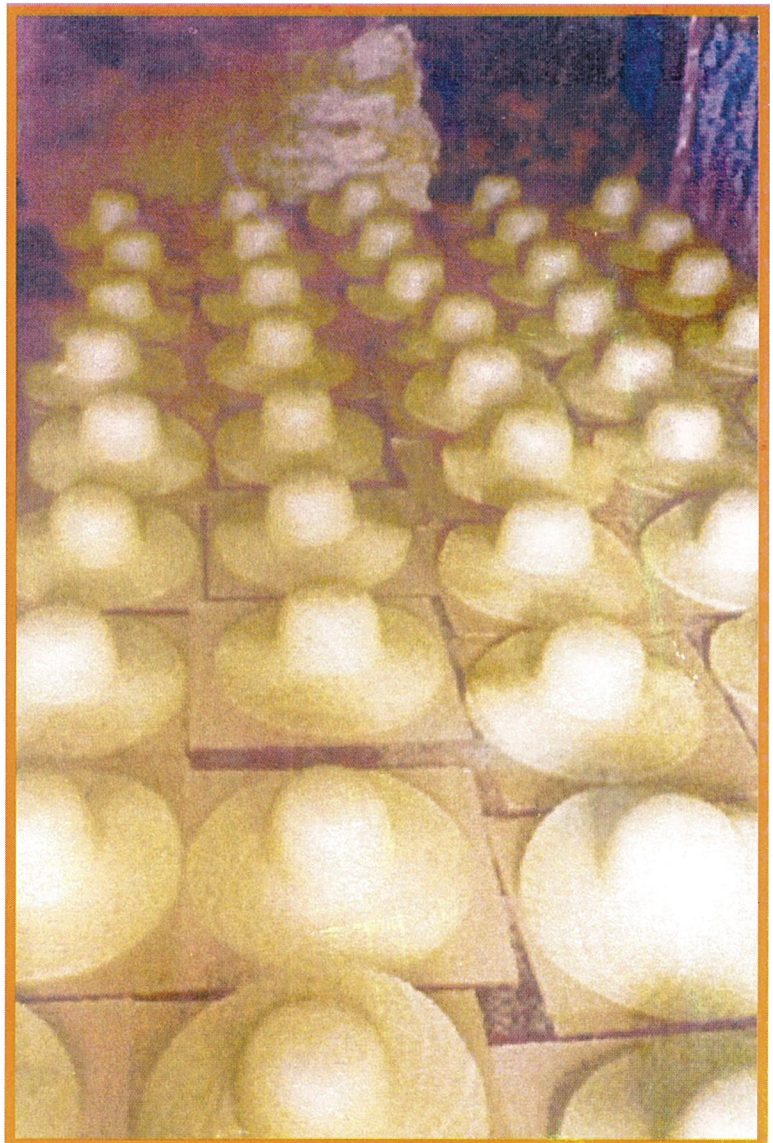
Vines are partially air dried prior to utilization into various end-products.

Sabutan

Sabutan [*Pandanus Sabotan* (Blanco)] grows naturally along the highway of Baler, Aurora. It resembles the characteristics of pandan and the edges of the leaves are thorny. Sabutan leaves are woven into mats, hats, placemats. Woven hats are exported to the United States, Guam and some parts in Europe. Some are for the domestic market. Split sabutan leaves are sold at P 35.00 per kilo. During peak season, 3000 kg of sabutan leaves are consumed. This can produce 60,000 hats which are sold at US \$ 1.60 – 3.50 depending on the design and accessories used.

Collection of honey, orchids and game animals are minor and seasonal but profitable activities for Dumagats and other IP's living in IDC areas. Honey gatherer earns P 2,000.00 per month from the sale of honey. A bottle of one-liter honey cost P 100.00, orchids are sold at P 10.00 to P 20.00 depending on the variety.

Other NWFP collected by IP's in the area include bamboo. Gatherers of bamboo sell a bamboo culm of 12 feet long at P 8.00 to handicraft producers. A Dumagat farmer earned an average of P 3,000.00 per month from the sale of bamboo. Although collection are seasonal and on order basis, forest settlers are satisfied of the extra income they get from the sale of bamboo which they collect from their backyard, an area covered by a Certificate of Ancestral Domain Title (CADT) grant. Collected bamboos are transported from cutting site to nearby towns either by carabao skidding or by dumptrucks. Transport facilities depend on the distance, topography and road conditions in the IDC areas.



Hats made from sabutan leaves are ready for packaging.

Collection and Trading of NWFP in San Jose Timber Corporation (SJTC)

Almaciga Resins

At present there are four almaciga resin licensees operating within SJTC areas. Three of the licensees have each 50,000 kg approved quota and the fourth has 75,000 kg. Tapping almaciga is physically taxing. Each tapper covers an average of 250 trees. Each day he taps 15 to 25 trees. The resin is collected after thirty days (harvesting cycle) and with a cutting cycle of fifteen days. About 15 to 20 kg of resins is collected per tree tapped per month. The resin is bought by the licensee or concessionaire from the gatherer at a price of P 8.50 per kg. (including a trucking fee of P 0.50) and he sells it to a final buyer at P 13.00 per kg. The resins are processed into local varnish and paints for the furniture and handicraft industries. At present there are three processors of resin. These are Treasure Island Industries Corporation (TIIC), Styropor Philippines Inc., and Anson Chemical Products. TIIC get their raw material from Palawan. The company consumed an average of 20,000 kg. resin per month for their operation. It produces 12,000 bottles (375 cc each bottle) per day and each bottle is sold at P 16.65. Varnish produced from almaciga resin collected from Samar province are characterized by being glossy but with longer drying time. On the other hand, varnish from resins collected from Palawan province exhibited brittleness but with lesser drying time. Central and Southern Philippine provinces are the only market of resin derived products.



Sorting of almaciga resin



Newly pack varnish from almaciga resin ready for distribution.

Balau Resin from Apitong a Dipterocarp Species

Balau, a sticky and thick gummy substance when mixed with other materials is used for caulking boats. To some extent, it is also used as mild stimulant, disinfectant, diuretic and laxative. It is also used locally in the manufacture of varnish. Collection of balau resin does not follow any schedule neither in peak season for reason that the Department of Environment and Natural Resources (DENR) does not grant permits to gather balau resin. A gatherer generates an income of P 120.00 per container (4 liters) from the sale of balau resin. A tapper could tap ten trees per day. One tree could produce one liter of resin. A container of 4-liter capacity are sold at P 230.00 to boat makers and P 300.00 in the market.



Balau resins from Apitong species (*Dipterocarpus* spp.) collected in the forests of Samar province.

Rattan

Ten species of rattan were noted at SJTC areas. To date, there is one rattan licensee actively involved in trading rattan with direct supervision of the Community Environment and Natural Resources Office (CENRO) of DENR. Rattan are collected by a group of cutters and carried out once a month. Collected rattan poles are transported from cutting sites to the collection points by foot and to the stockyard of the licensee by truck. These finally are delivered to the furniture and handicraft producers in Cebu City and Metro Manila.

Table 3. Selling price of rattan poles in Samar

Rattan Products	Diameter (cm)	Gatherers (P)	Traders (P)
Palasan	2.25	8.50	14.00
Tumalim	3.25	26.70	45.00
Kalapi	2.50	10.50	17.00
Olisi	2.75	16.00	28.00
	1.65	3.00	11.00

Bamboo

The town of Jiabong is the demand center for bamboo where mussel farming is a major industry. Mussels grow on bamboo poles which immersed in the sea. Marketing of bamboo in the community is a direct production to consumption system. Mussel farmers contact bamboo producers for their pole requirements. At an agreed price, the poles are delivered to a pick-up site agreed upon by the buyer and bamboo producer. The average expenses entailed in the collection of bamboo poles are:

Labor for cutting/gathering	P 6.50 per pole
Food	P 0.30 per pole
Loading/Unloading	P 3.50 per pole

The species of bamboo used are locally called “Kabughayan” and “patung.” The productive area of mussel farming is about 8.13 hectares and mussel production is estimated at 1,870 metric tons a year. Demand for bamboo is about 19,000 poles. Prices of bamboo in Jiabong, Samar varies with size or diameter. Poles having a diameter of 10 cm are prices P 15.00 to P 20.00 and poles with 6 cm diameter is sold at P 10.00 each.

Other NWFP at SJTC

There are eight species of erect palms found in the area. Anibong a gregarious palm has a tendency to clump is most predominant. However, anahaw, whose leaves are gathered by local residents and sold as substitute roofing material is commercially most important erect palm.

Wild abaca abounds in lower elevations, colonizing the patches of open areas along creeks. Some families gather abaca stalks, process them into fibers and sell the fibers at P 7.00 per kilo. Bariw, a member of the pandan family, whose leaves are made into bags, mats and other handicrafts are also available in the area. Balinguway, which is used as substitute for rattan as tying materials grows abundantly in areas left open by logging. The area is rich in other NWFP such as vines, edible roots, medicinal plants, orchids and fauna.

Collection and Trading of NWFP in Surigao Development Corporation (SUDECOR)

Rattan

Among the NWFP in the area, rattan is the most exploited. Manobo tribe rattan gatherers collect rattan poles by camping in the forest for one week. They directly transport their collected rattans to their identified buyers in nearby towns. Other groups of gatherers transport their rattan weekly by foot from the forest to satellite pick-up sites and finally transported to the central pick-up site using SUDECOR dump trucks free of charge. From the central pick-up site, rattan poles are delivered to buyers/traders in Surigao del Sur for possible chemical treatment before these are finally delivered to buyers or traders in Cebu City. Rattan traders set the buying price of rattan poles depending on the size or diameter and species.

Table 4. Selling price of rattan poles in Surigao del Sur.

Species of Rattan	Diameter (inch) Length of Pole 8 meters	Selling Price Per Pole (P)
Palasan	1-1/4	20.00
	1-1/8	12.00
	1	10.00
	7/8	6.00
Kalapi	1-1/4	26.00
	1-1/8	18.00
	1	10.00
Tumalim	7/8	8.00
	5/8	5.00
	3/4	6.00

Split rattans are sold at P 15.00 per 100 pieces.

A Manobo tribe can collect 100 pieces of rattan poles per week which is equivalent to P 300.00 per week or a net income of P 1,200.00 per month. Some Manobos processed their collected rattans into baskets/containers, hammock and novelty items with intrinsic designs. A family of four could finish three sets of hammock a week regardless of size. Prices of hammock ranged from P 100.00 for small, P 200.00 for medium and P 300.00 for big size. A family could generate additional income of P 500.00 a week by weaving baskets and mats using buri leaves. Furthermore, about 50% of the Manobos in the area are actively engaged in industrial tree plantation, i.e., yemane (*Gmelina arborea* R.Br.) and Moluccan sau [*Albizia falcataria* (L.) Fosb.] in the logged-over portions of the concession. The area has been granted to the IP's under CADT program of the Philippine government.

Other NWFP collected include balau resin from apitong species and damar resins from yakal species. These resins are solely used for domestic purposes such as for kindling fire, as incense to rituals and religious ceremonies. Kalingag leaves and barks are also extracted for medicinal and confectioneries purposes. Occasionally wild honey and game animals are also collected. The price of a bottle (about 350 cc) is P 50.00 and an adult talking parrot cost P 150.00. Though these activities are seasonal, it also generates additional income among Manobo IP's.

Vines

The province does not have much of cottage industry but some communities are starting to organize livelihood program to augment their income. Community-based processing of forest vines and ferns is done in Babuyan, Carrascal and Lanuza, Surigao del Sur. Vines such as nito, hagnaya or diliman and baleskaron are gathered by members of the community and are sold to processors in the province. The prices of some NWFP are:

<u>Non-Wood Forest Products</u>	<u>Selling Price</u>
Agsam fern (split)	P 25.00 per 100 pieces
Nito Vine (3 m long)	40.00 per 100 pieces
Rattan split (4 m long)	50.00 per 100 pieces
Bales karon	40.00 per 100 pieces

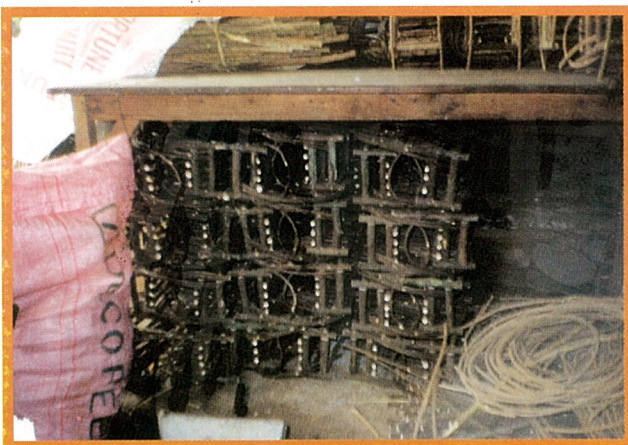
Mixed vines of 250 bundles of 100 pieces per bundle are used to weave 500 baskets and trays. Purchase orders for the products are distributed to members of the community who want to earn more. Products are sold on weekly basis. The community provides the labor and is paid at a rate of P 40.00 per item produced.

The marketing agent supervises the production and provides the needed raw materials. He passes the finished products to traders in the market and souvenir shops. The selling price of NWFP produced at the community-based livelihood project are:

- Baskets are sold at P 30.00 to P 40.00 each
- Trays (25.5 cm x 2.5 cm x 10.2 cm at P 40.00 to P 70.00
- Wall decorations at P 30.00 each

Agsam

Agsam is a giant fern growing abundantly in Lanuza. It is processed into fashion accessories. A cooperative with 30 members are involved in the weaving of headbands, bracelets, necklaces, hair clips and belts. Gatherers of agsam sell the material at P 20.00 to P 25.00 per bundle of 200 pieces. Each member of the cooperative produces his own set of products. The products are pooled for delivery to market outlets, in neighboring provinces and cities. The members get his share of income from the sale of the products after payment has been made by the buyers. Pricing of the finished products are made by the cooperative.



Twigs used as handicraft materials



Bundled vines being sun dried.

Collection and Trade of NWFP in NATRIPAL

(Nagkakaisang Tribu ng Palawan)

In 1989, Indigenous Peoples Apostolate (IPA) brought together twenty indigenous village associations from across the island of Palawan. The objective of the organization or NATRIPAL was to advocate for the recognition of ancestral tenurial rights and to bring access to land and its natural resources situated close to these group of IP's. It also aimed to enhance the economic bargaining position of indigenous peoples organizations through capability building on sustainable management and trading of NWFP. Since 1990, NATRIPAL has established and operated trading activities on rattan, almaciga resin and honey. It has set up trucking and marketing service to transport NWFP from the island to the market outlets in Cebu and Manila.

At the community level, trading of NWFP (almaciga resin, honey and other products) is through the Area Servicing Unit (ASU) of each indigenous community. The ASU serves as a depot for the community's NWFP supplied by gatherers. The manager, cashier, bookkeeper and utility personnel come from the community. ASU extends credit, mobiles, savings, conducts merchandizing and trading of honey, rattan, almaciga resin and handicraft processing. The members raise their own capital. Capital for marketing was initially provided by NATRIPAL as a counterpart to match the resources generated by the association or cooperative.

At the federation level, NWFP trading is consolidated by the Enterprise Development Unit (EDU). The unit is headed by a General Manager. Under him are three supervisors that take charge of (1) NWFP trading; (2) credit and merchandizing and (3) marketing and product development.

Almaciga Resin

Manila copal is another term for almaciga resin. Originally the license to gather resin has been granted to pioneer settlers of the lowlands or private concessions who are non-members of indigenous cultural communities (ICC). Management of concessions has been handed down to families and heirs of the original license holders.

Recent developments in government policies particularly on the recognition of ICC as embodied under DENR DAO No. 04 – 1, Series of 1989 (Special provisions within areas reserved/occupied by cultural communities), a move by DENR to protect the rights of ICC to their ancestral lands to ensure their economic, social, and cultural well-being as mandated by the 1987 constitution and also of Section 7 of the Strategic Environmental Plan (SEP) for Palawan Act (RA 7611) which provides for the establishment of SEP which ensures the protection of tribal people and the preservation of their culture. Following the principles of SEP and other government policies, the tribal organization under NATRIPAL had submitted their petition to the Palawan Council for Sustainable Development (PCSD) to recognize their rights to ancestral lands including the management of resources. The PCSD have adopted Resolution No. 94-51 on July 25,



A participant demonstrating the scientific way of tapping almaciga resin.

1994 giving ICC preferential rights to collect and gather minor forest products. This resolution is now a source of conflict between ICC and private concessionaires. The resolution has been amended to resolve the conflict.

Almaciga trees are protected by the government and resin tapping is only permitted under license. Collected resins are to be registered with the DENR and a fee of P 1.00 per kg of resin is collected as forest charges prior to its sale and transport. The communities/people has to be granted the license to harvest almaciga resin. In the processing of licenses, permits are properly screened to ensure that the areas being applied for resin extraction are not in conflict with the ancestral domain of the ICC.

Tappers of almaciga resin have a “kapatás” or lead man. The kapatás makes cash advances from the head of the association working under NATRIPAL. The cash advance is used to buy food items for their stay in the forest. The value of the goods and cash advance to the resin gatherers is deducted by the kapatás from the share of the gatherers on the resins collected and delivered. A gatherer can earn P 200.00 to P 600.00 while the kapatás earns P 500.00 to P 3,000.00. Gatherers spend three days at a time in the forest gathering resin. The collected resins are stock in warehouses in Punta Baja and Kayasan and transported to the NATRIPAL main office in Puerto Princesa City. NATRIPAL pays the community gatherers P 5.00 per kg of resin. It is then sold on to local processors of paints and varnishes and plastics at P 13.50 per kg. either in Cebu City or in Manila. Majority of the raw resin is sent abroad.

Grades of Almaciga Resin

There are three grades of raw almaciga resin sold in Palawan. These are Grade A or extra white, Grade B or semi-white and Grade C or assorted. Grade A is the top quality stuff, Grade B, there is a fair percentage of high quality resin and Grade C the assorted grade known locally as “ladlad” is very dirty and with little resin.

Table 5. Selling price of almaciga resin in Palawan

Market Level	Prices in Pesos Per Kg
Tappers	4.50
Agents (Kapatás)	6.50
Concessionaires	
Grade A	10.00
Grade B	9.00
Assorted	8.00

The profitability of almaciga resin extraction activity at the concessionaires level in Palawan are as follows:

Gross income during the past year	₱ 660,000.00
Expenditure during the past year	247,180.00
Estimated net income per annum	412,820.00
Total area of concession	10,968 ha.
Net return per ha. per concession per annum	18.80

Source: PCSD

While tapping almaciga is a veritable economic activity, very traditional and unscientific methods of extraction are still being practiced by the IP's in the three project sites. Among the crude and old extraction practices are: No restriction on the diameters of trees to be tapped; initial cut of four inches wide (horizontal cut) with no definite thickness; rechipping of one inch thickness per cut; and maximum of eight tapping cut with no definite sizes for bigger trees and four tapping cuts for smaller trees.

With the goal of rectifying the wrong practices of tapping and collecting almaciga exudates and to avert possible loss of almaciga trees, project management and staff in collaboration with DENR and NATRIPAL decided to hold a seminar-training to the tappers. The training program consisted of both classroom work, i.e., lecturers, field demonstration and hands-on-exercises. This is supplemented with handouts, illustrations and presentation of tapping tools and materials. The national language (Pilipino) and English were employed as medium of instruction, however, the lecture were being translated into the dialect of the Bataks and Palau'an by NATRIPAL staff. The participants were required to note the right and scientific tapping procedure in preparation for their practical examination in the forest.

During the practicum, the participants were required to demonstrate their current old method of tapping almaciga trees. After this, the scientific method of tapping developed by FPRDI was demonstrated. The advantages and disadvantages of both methods were explained. Each participant was required to demonstrate the correct tapping procedure learned in the training. NATRIPAL staff monitored the performance of 32 participants under the supervision of the trainer. Generally, the training-seminar was a success. The participants showed their enthusiasm and interest on the subject by participating actively in the discussions. They shared their problems in tapping and the most important of which are:

1. Unfamiliarity with the legal framework in almaciga utilization;
2. Insufficient knowledge on correct method of almaciga tapping;
3. Trading and marketing of almaciga resin; and
4. Perennial attack of pest and diseases particularly termites on standing almaciga trees.

Honey Gathering

Indigenous residents in the three project sites gain additional income from gathering and selling wild honey. This activity is done from March to May, when forest trees of nato [*Palaquium luzoniense* (F. Vill.) Vid.], ipil [*Intsia bijuga* (Colebr.)] and manggis [*koompassia excelsa* (Becc.) Taub.] are abloom and bees abound. To get a beehive that is ready for the picking, a gatherer first smoke out the bees from the hive. This is best done in the evening when the bees are less active. About four nests may be found

on one tree, each nest yields around four liters of honey. The gatherer gets the comb and squeezes out the honey, filtering the extract through a fine meshed plastic screen. Further refinement may be done by heating the honey to remove excess water. Gathering wild honey is a very profitable activity for the IP's. Twenty liters of honey sells for P 1,250.00.

Honey Production and Processing

The production and processing of honey appears to be a simple activity until one considers entering the export and commercial production scales. The common practice of processing is by pressing the honeycomb to extract the honey, passing the honey through a sieve and placing the clean honey into bottles and plastic containers. Other honey by-products (mainly beeswax) are also collected, for local household use (candle, medicine) and for sale to wax buyers. Honey is preferred if not cooked or heated. Cooked honey taste different and destroys the medicinal value.

NATRIPAL buys honey in bulk and sells it locally in Palawan and in Manila. Similarly the buyers from the municipality or barangays pass on the to provincial buyers. These buyers' sells honey to Manila buyers. To understand the requisites of honey production and processing, accordingly, there



is diversity in the quality of honey especially for wild honey. It derives its flavor, color, and aroma from the dominant flower in season. Poor handling in the field contributes among other factors to the difficulties of commercial production of tropical honey.

A collected pair of bee hives containing the honey ready for processing

Table 6. Selling price of honey in Palawan

Market Level	Selling Price (in Peso)
Gatherers	250.00 – 270.00/gallon (Municipal Buyers) 250.00 – 270.00/gallon (NATRIPAL)
NATRIPAL	540.00/gallon (Local Buyers)
Barangay/Municipal Buyers	30.00 – 40.00/gin bottle of 350 cc (Local Buyers)
Provincial Buyers	250.00 – 270.00/gallon (Provincial Buyers) 40.00 – 50.00/gin bottle (Local Buyers) 400.00 435.00/gallon (Manila Buyers)

Rattan

Rattan gathering is a major supplementary source of income for household in the project areas. Gatherers from the indigenous groups follow appropriate norms for harvesting, e.g., cutting only mature canes (roughly, at least twenty meters in length), clearing the underbrush around rattan wildlings and transplanting suckers and wildlings in less dense areas. A single rattan plant may yield as many as thirty mature poles. On the average a plant yield ten poles.

Rattan gathering is a laborious process. It usually requires cooperative efforts of three to five people. Collected rattan are transported from the forest either by foot or by carabao skidding to pre-arranged collection points and finally to the stockyard of NATRIPAL local traders. Assorted rattan species of 12 feet long and $\frac{3}{4}$ inch diameter are sold at P 4.00 per pole and P 6.00 for $\frac{5}{8}$ -inch diameter. Split rattan is sold for P 25.00 per 100 pieces. Rattan gatherer is paid half the selling price for his labor. A gatherer gets an average income of P 500.00 per month. The species of rattan found in the area are the *Calamus* and *Daemonorops*.



Rattan in bundles in a warehouse in Kulpisan, Punta B a j a , R i z a l , Palawan.

Bamboo

Other NWFP available in the project areas are bamboo especially Buho (*Schizostachyum lumampao*). This species is commonly used as material for fencing and very popular for making sawali mats. The standard size of sawali is 8 m x 2.5 m is sold at P 300.00 per piece. Anibong (*caryota cumingii*) is another important NWFP available in the area. The leaves of this palm are a popular roofing material and the stem/trunk is used for house posts and flooring and also for tool handles. Tiger grass (*Thysanolaena maxima*) a popular NWFP is available in one project area. This grass is a very suitable material for making brooms. A regular bundle of tiger grass is sold at P 5.00 and a well-made broom sells at P 35.00. Thus value is added to the raw grass as a material.

Buho is harvested from ancestral domain of the IP. A gatherer can cut 200 pieces of 2-meter long buho a day. Bamboo are sold to traders in the market and paid P 35.00 for a bundle of 50 pieces. For 200 pieces the gatherer gets P 140.00 as gross income. He spends P 15.00 for transportation and P 5.00 for permit from DENR. A gatherer can earn a net income of P 120.00 from trading buho poles. Flattened bamboo shingles is also traded at P 60.00 per bundle of 10 pieces.



Bamboo and sawali mats stacked in roadside for sale.



In the project site of NATRIPAL, forest settlers are actively engage in sawali making using buho [*Schizostachyum lumampao* (Blanco) Merr.] which are abundantly growing in the area.

Collection and Handling of Selected NWFPP in Quezon

Canarium Resin

Tapping of resin from *Canarium* species provides livelihood for people of the Bondoc Peninsula and Alabat island where they abound in between coconut plantations and occasionally in secondary forest. Each family own and taps an average of fifteen trees found in their backyard. Tapping methods were crude and unscientific. Collection of resin is done every fifteen days. An average of twenty-eight kg of resin is collected every fifteen day from fifteen trees. A family generates an income of P 1,770.00 per month from the sale of canarium resins. Resin traders on the other hand, store their purchased resin in warehouses where they finally sold it to buyers in Metro Manila at P 40.00 to P 45.00 per kg. A leading buyer of canarium resin based in Gumaca, Quezon Province normally exports eight tons of resin per month to Europe specifically France.

To rectify the crude practices of tapping and harvesting canarium exudates and likewise avert possible loss of canarium trees in the areas, Project Management of FPRDI-ITTO project decided to conduct seminar-workshop on proper techniques of tapping canarium resins popularly known a Manila elemi resins among resin tappers.



A tapped *Canarium* tree showing a day's harvest by tappers of resin following techniques gained in the training course.

Anahaw Leaves

Farmers in Lopez and Calauag, Quezon Province are engaged in the collection and utilization of NWFPP especially anahaw leaves. Farmers and some forest settlers are utilizing anahaw leaves mainly for roofing purposes and also for weaving fancy fans and decors for export to Japan. This activity is a good source of income for the farmers considering the supply and free source of raw material. The frequency of collection is once a week with 300 pieces of anahaw leaves per collection which is equivalent to 1,200 leaves per month. The collected leaves are transported from collection site to the weavers house either by foot or carabao skidding. One piece of anahaw leaf is sold at P 0.30. Weavers can weaved 2,000 pieces of export quality fans a month and sold at P 1.10 per fan. Though the system is on order basis, a family of anahaw fan weaver earned P 2,000 a month during peak season.



A farmer in Lopez, Quezon inspects young anahaw leaves being dried in preparation for weaving into fancy fans and other miniature products.



Fresh collected and dried leaves awaits further processing and transport from Ticao Island to Masbate..



Collection and Trade of NWFP in Tayabas, Quezon

Tayabas town is a production center for handicrafts, weaving is a known industry and skills on this craft have been honed since childhood. Weavers supply the labor force and the subcontractors or exporters supply them the needed materials. NWFP used are buri, coconut leaves, vines and twigs. Bamboo on the other hand are also collected but are sold to end-users and mussel farmers in Cavite province. Bamboos are harvested by gatherers and producers. Traders pick-up the bamboo poles along roadside and deliver them to Cavite. Buying price of bamboo depends on the size and diameter. The buying and selling price for a 6.0 cm diameter bamboo is P 3.00 – P 3.50 and P 6.00 – P 7.00 respectively. For 8.0 cm diameter, buying price is P 5.00 – P 6.00, while selling price is P 7.00 – P 10.00. A trader could realize a net profit of P 2,500.00 for each truckload of bamboo poles.

Another NWFP available in Tayabas is buri. The leaves of this plant are cut along the midrib and soaked in a solution of water and vinegar for bleaching. After drying the soaked leaves, these are dyed if quality of materials are not good. Cost of dye is P 15.00 per gram and is good for 2 rolls of buri.

Fresh buri is purchased at P 6.00 per stalk. A stalk makes two rolls of buri which is sold at P 11.50 per roll. Braided buri can be made into braided placemats sold at P 10.00 per roll and P 13.00 per roll for hats. Multi colored braided buri are sold at P 20.00 per 30 yards while single colored braided buri are sold at P 18.00 per 30 yards. The weaver has no problem in marketing their products because buri has always been used in the production of novelty items. They can also sell the products in the market where native products are being sold.

Another NWFP available in Tayabas are twigs and vines. Twigs from bolong-eta (*Diospyros* spp.) are used in the production of novelty items which are sold to exporters in Manila. Volume of products used is based on the purchase orders and design of the product. Vines on the other hand are used in the production of baskets for export. The agent buys the materials and have it distributed to producers in the communities. There is no estimate of how much vines are processed into baskets and trays. But some traders indicated that they sell 1,500 – 2,000 kg of assorted vines a week or 6000 – 8000 kg per month. There are 1,000 weavers in the town and meets an average of 200 customers weekly. There is a fast recovery of investment in trading vines. A trader recovers his P 20,000.00 in one day.

The species of vines available are hagnaya, galtang, gugo or crazy vines. About 30 gatherers alternately supply NWFP in the area.



Plantation of young buri palm *Corypha* Spp. in one of the projects areas.

Buri fiber ready for utilization into various end-products



Table 7. Selling price of vines in Quezon

Type of Vines	Selling Price (in Pesos)
Gugo (2 meters long)	
smallest	3.00 per piece
small	4.00 per piece
medium	5.00 per piece
large	7.00 per piece
Galtang	6.00 per piece
Hagnaya	35.00 per 100 pieces

Collection and Trading of NWFP (Pandanus) in Laguna Province

The towns of Majayjay, Cavinti and Luisiana in Laguna Province have abundant source of pandan (*Pandanus spp.*) which is primarily used for weaving mats, bags, and hats. The leaves of pandan are stripped to the desired width by using a stripper. After stripping, the leaves are dried under sunlight for 1 to 3 days. The leaves are then pressed by rolling cement cylinder over the leaves. The roller weighs 500 kg. After pressing, dyeing may or may not be done. Dyed or undyed leaves are weaved into mats of different sizes. Pandan leaves cost P 75.00 per bundle of 70 pieces of unsplit leaves. This is enough to produce two single size mats measuring 76.2 cm x 137.3 cm.

Table 8. Selling price of woven pandan mats in Laguna

Traditional Size (Feet)	Standard Size	No. of Strips	Selling Price		
			Weaver	Middlemen	Trader
5 and 9	76.2 cm x 137.3 cm	180-350	P 60.00	P 80.00	P 100.00
6 and 9	91.5 cm x 137.3 cm	230-400	90.00	120.00	150.00
8 and 10	122 cm x 152.4 cm	330-500	120.00	140.00	400.00
7 and 9	106.7cm x137.3 cm	280-450	100.00	140.00	500.00
11 and 9	167.8cm x 137.3cm	380-550	140.00	160.00	50.00
3 and 4	61 cm x 91.5 cm	50	25.00	35.00	

The marketing system is that middlemen buy the mats from the weavers and peddle these in different provinces. An average of P 200.00 is spent for transportation. The mats are sold to traders in market places



A typical store where some NWFP are being sold.



Woven mats and bags using buri and pandan leaves.

The IP's of Bukidnon Province

An NGO the Fr. Vincent Cullen Tulungan Learning Development Center assist two Higaonon communities in the province. Higaonon is one of the "lumads" indigenous groups in Mindanao. They work on handicraft production using NWFP and the famous abaca fiber-based hinabol and kamuyot. They also do farming and hunting for their survival. They cultivate their own land acquired with the permission of their Datu. To acquire their daily necessities available in lowlands (such as kerosene, school supplies and additional food), they barter their agricultural products.

The Higaonon harvest abaca fibers during full moon because they believe that fibers at this time are of better quality, i.e., fibers are longer, thick and more durable. Processing of hinabol after the abaca harvest is simple and light and easily managed and implemented by women. The number of looms determines the production capacity of the enterprise. Each loom can produce about eight meters of hinabol a day. The weaving process is filled with rituals. Prior to weaving, the women make some offerings to have a quality output, to ensure a functioning of the weaving loom and to avoid accidents. The only one who leads the ritual is the datu. No other man is allowed to watch the weaving process. Weaving of hinabol is not done everyday. The weavers do the weaving only during Saturdays as they prioritize their duties/activities at home. They increase their production when there are orders. The Higaonon have no problem on the supply and availability of abaca. The abaca grows in their area and is harvested two to three times a year. The families in the community continuously plant abaca. These abaca plantations are located about five kilometers from their weaving sites and residences.

The Sumilao Tribes as Broom Makers

The Sumilao Tribes who are mostly farmers generates extra income from making brooms using tiger grass. Some thirty-five individuals could produce 65 brooms per day. Each broom is sold at P 30.00. One hundred stalks of tiger grass could be made into to 2 to 3 brooms. Broom making is a family affair with the father and other adult member of the family do the collection and does the broom making. A family has an average income of P 2,000.00 per month from the sale of brooms.

The tribes have no problem in the supply and availability of tiger grass. People collect the materials whenever order comes from traders/buyers from neighboring towns. At this time some have engaged in planting the grass in their backyard farms to ensure sustainability of supply.



A tradition "Higaonon" tribe weaves natural hinabol fibers.



A “Sumilao” tribe sorting tiger grass prior to broom making.



Brooms made from tiger grass ready for sale in Bukidnon.

Collection and Handling of Selected NWFP in Burias, Ticao and Masbate

Masbate province is a special area for the project owing to the unique NWFP found in the area. Foremost of these are canarium resin, salago (*Wikstroemia spp.*) barks, bamboo, anahaw leaves and white vine (*Freycinetia spp.*). In the island of Ticao alone some 400 tappers of canarium resin are present. Tapping is unscientific and very crude. The *canarium* trees are found in the secondary forest and in between coconuts in plantations. It would take about three days of extraction to fill a coconut shell cup with resin. Some farmers sell their resin at P 8.00 per coconut shell directly to buyers while the buyers/traders sell it to the market at P 12.00 per coconut shell. A farmer earns a small amount of P 160.00 per month on the sale of resins. Anahaw leaves are also collected by farmers and sold at P 125.00 per bundle (100 pieces per bundle) for roofing. Bamboo is also being collected for housing components and for handicraft making. Bamboo is sold at P 150.00 per culm. Another NWFP found in Masbate is white vines know as “sig-id” (*Freycinetia spp.*). One handicraft entrepreneur revealed that he consumed an average of 100 pieces of white vine a month. He bought the vines at P 50.00 per 100 pieces. Product lines from white vines include food cover, hamper, plant and flower holder, wall decor, placemats, and market baskets.

Wild salago barks are naturally growing in the towns of Cataingan and Balud in Masbate. Forest settlers and farmers sell salago barks to traders at P 140.00 per kg. The frequency of extraction is every three months to allow barks to regenerate for the next harvest. Raw salago bark is shipped to Legaspi City in Region V three times a year and each shipment ranged from seven to nine tons.



Collected *Canarium* resins contained in coconut shells for sale at San Fernando public market, San Fernando, Masbate.

Table 9. Information gathered from the four project sites and selected areas where occupants are engaged in the collection of NWFP

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection
1. Industries Dev. Corporation (IDC)	Rattan (10 ft. long) assorted species, palasan, Limuran and gatasan		₱ 2.00/pole	1,250 poles	₱ 2,500.00	Contract basis	By foot from cutting site to pick-up site.	Weekly or as order comes
							By company's service truck to Dibacong IDC.	
							By weapon truck from IDC to either Baler, Aurora and Cabanatuan City.	
	Anahaw leaves		₱ 20.00/bundle (15 to 20 pcs./bundle)	200 pcs.	₱ 200.00	Contract basis	By foot	As order comes
		Anahaw fan	₱ 2.00 (summer time) ₱ 1.50 (rainy season)	1,300 pcs.	₱ 2,500.00		By jeep hiring	As order comes
	Bamboos (Bolo species)		₱ 8.00/pole outside IDC (12 ft. long) ₱ 5.00/pole for IDC	5,000 pcs. Every three months	₱ 3,500.00/ month a Dumagat farmer earns from bamboos	Contract basis	By carabao skidding or jeep hiring or IDC trucks	As order comes/ every three months for IDC
	Wild Honey		₱ 100.00/bottle (1 li)	5 gal. during peak season	₱ 2,000.00/ month	Contract basis	By making use of IDC trucks	Seasonal

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection
2. San Jose Timber Corporation (SJTC), Samar	Almaciga resin		₱ 5.50/kg/gatherer or tapper	25 to 30 kgs.	₱ 250.00	Via licensee	By foot to middle men	Per order by licensee
			₱ 8.50/kg/middlemen		Summer time		By truck or van and boat to Cebu	
			₱ 13.50/kg for varnish/ Paint manufacturer in Cebu City					
	Balau Resin (Apitong)		₱ 120.00/container (kerosene can) from the gatherer					
			₱ 230.00/container middlemen					
			₱ 300.00/container in the market					
	Rattan(8 ft.long) Palasan sp.		₱ 20.00/pole	1,000 poles	₱ 2,000.00	Contract basis	By foot to pickup sites By jeep hiring to traders warehouse	As order comes
	Vines (hagnaya)		₱ 100.00/100 pcs. (2-meter length)	1,500 pcs.	₱ 1,200.00	Contract basis	By foot to pick up sites By jeep hiring to market	As order comes
	Anahaw leaf		₱ 1.00/leaf	2,000 pcs. (peak season)	₱ 1,500.00	Contract basis	By foot to pickup sites (for leaf)	As order comes
	Anahaw pole		₱ 300.00/pole	100 pcs. (peak season)	₱ 2,000.00		By carabao skidding for anahaw poles By jeep hiring from pickup site to the market	As order comes

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection
3. Surigao Development Corporation (SUDECOR)	Rattan (100 ft. long)			400 poles	₱ 1,200.00	Contract basis	By foot from cutting site to pickup sites	As order comes
	Species Palasan		Size(in.) Selling Price 1 1/4 ₱ 20.00/pole 1 1/8 12.00/pole 1 10.00/pole 7/8 6.00/pole				By company's dump truck from pickup sites to Antao (central pickup station)	
	Kalape		1 1/4 ₱ 26.00/pole 1 1/8 18.00/pole 1 10.00/pole 7/8 8.00/pole					
	Tumalim		5/8 ₱ 5.00/pole 3/4 6.00/pole					
	Split rattan		₱ 15.00/bundle* * bundle is equivalent to 100 pcs.					
	Rattan hammock		₱ 100.00/set (small size) 200.00/set (med. size) 300.00/set (large size)	12 sets	₱ 2,000.00		SUDECOR's trucks from local communities to Antao (main pickup site)	As order comes
	Erect Palms Anibong (bahi)		₱ 2.00/pc. Size: 3 x 5 ft.	600 pcs.	₱ 1,300.00	Contract basis	By company's dump truck to Antao (central pickup site)	As order comes
	Fuel Wood		₱ 5.50/bundle	300 bundles	₱ 1,500.00	Contract basis	By jeep from Antao to Tandang, Madrid or Tago, SDS (markets)	As order comes
	Gmelina/Albizia poles		Size Selling Price (diameter cm) (m³) 30-39 ₱ 2,500.00 40-49 2,900.00 50-59 3,000.00 60 and above 3,100.00	50 m³ per harvest	₱ 120,000.00/ harvest		By 10-wheeler truck from SUDECOR to Butuan City at ₱ 18,000.00/trip	

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection	
4. NATRIPAL, Palawan	Almáciga resin		₱ 5.00/kg. from gatherer	90 kg.	₱ 400.00 (during months of Jan., Feb., Mar. and Apr.	Via license	By foot from tapping site to kapatás, middlemen	Per advised by "kapatás"/ middlemen	
			₱ 8.50/kg. from middlemen		₱ 250.00 (for the rest of the year)		By jeep and boat to Cebu and Manila		
			₱ 13.50 to ₱ 15.00/kg. for varnish and paints manufacturers in Cebu and Metro Manila						
		Rattan (12 ft. long, assorted species)		Size(in.) Price 3/4 ₱ 4.00 5/8 6.00	120 poles	₱ 600.00	Contract basis	By foot and carabao skidding from cutting sites to central pick up sites	As order comes from kapatás and traders
				Split rattan- ₱ 25.00/ bundle				By jeep to traders/kapatás warehouses and finally by boat for Manila and Cebu	
				1 bundle is 100 pcs.					
	Wild honey		₱ 250.00/gal.	Thirty containers (5 gal. each)	₱ 7,500.00 (for the whole honey gathering season i.e., Mar. Apr. & May)	Contract basis	For pickup by buyers in prearranged collection sites	Seasonal (March to April)	
	Bamboos		₱ 35.00/bundle of 50 pcs of Buho (2 m long)	3,000 pcs.	₱ 1,200.00	Contract basis	By foot or carabao skidding from collection site to pickup site	As order comes	
	Buho		*sawali				By jeep hiring to the traders		
			8m x 25m ₱ 300.00/roll						
			*bilao ₱ 30.00/pc						

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection
5. Quezon Province (Bondoc Peninsula, Alabat Island, Infanta and Gen. Nakar, ICDAI)	Canarium resins		₱ 35.00/kg from gatherers ₱ 45.00/kg as per sold by middlemen to local manufacturers or exporter	50 kg.	₱ 1,770.00	Contract basis	By foot or carabao skidding to pre-arranged collection sites By tricycle or jeep to either Gumaca or Lucena City	Every 15 days as per advised by kapatas or middlemen
	Almaciga resins		₱ 4.00/kg. from gatherer ₱ 8.00/kg. from middle man to the market	70 kg.	₱ 300.00	Contract basis	By foot and boat from tapping site to pick-up site to pick-up sites By weapon jeep to Infanta	Per advised by "kapatas" or middlemen
	Rattan (12 ft. long)		Finger size ₱ 2.00/pole 0.05 coin size ₱ 3.00/ pole 0.25 coin size ₱ 4.00/ pole 0.50 coin size ₱ 8.00/ pole	700 poles	₱ 5,000.00	Contract basis	By boat to pick up site By jeep to Gumaca, Lucena and Infanta	As order comes
	Assorted species		₱ 1.00 coin size ₱ 12.00/ Pالاسان sp. (scraped) ₱ 28.00/pole					
	Bamboos (kauayan tinik)		₱ 25.00/pole	200 poles	₱ 4,000.00	Contract basis	By carabao skidding and jeep hiring to designated pick-up sites	As order comes
	Palm leave (Anahaw)		₱ 0.30/leaf (payment given to leaf gatherer)	1,200		Contract basis	By foot, carabao skidding and boat to weavers house	As order comes
	Quezon Province		Anahaw leaf fan is sold at ₱ 1.10 a piece	2,000 pcs/	₱ 2,000.00		By jeep to market site as pick up by traders/middlemen	
	Vines (hingiw)		₱ 140.00/100 pcs. at 30 ft. long	700 pcs.	₱ 900.00	Contract basis	By foot, carabao skidding and boat	As order comes
	lukmoy		₱ 85.00/100 pcs. at 30 ft. long for vinecraft	800 pcs.	₱ 700.00	Contract basis	By foot, carabao skidding and boat	As order comes

Project Areas	NWFP and Others	Products	Prevailing Prices Per Unit Kilo or Volume	Volume Extracted Per Month (Ave.)	Ave. Income Derived/ Month (per family)	System of Trading	Means of Transport	Frequency of Collection	
6. Masbate including the islands of Burias and Ticao	Canarium resins		₱ 8.00/coco cup from gatherers	20 coco cups	₱ 160.00	Contract basis	By foot or carabao skidding and tricycle from tapping site to the market	As order comes	
			₱ 12.00/coco cup as sold by traders in the local market						
			₱ 20.00/coco cup for traders in Cebu						
			₱ 1.25/leaf or ₱ 125.00/bundle (100 pcs. per bundle)	10 bundles or 1000 pcs.	₱ 1,200.00	Contract basis	By carabao skidding and jeep to traders house/market	As order comes	
			12 ft. long at ₱ 150.00/pole for housing and bambooocraft	100 poles	₱ 12,000.00	Contract basis	By carabao skidding and jeep to traders house/market	As order comes	
			₱ 14.00/kg from gatherers	2,000 kg. from 10 gatherers	₱ 6,000.00 (every 3 months)	Contract basis	By jeep hiring to middlemen and by boat to traders in Legaspi City	As order comes	
			₱ 20.00/kg as sold by middlemen to traders						
			White vines						
			<i>Freycinittia spp.</i>						
						₱ 50.00/100 pcs. at 30 ft. long	1,500 pcs.	₱ 700.00	Contract basis
7. Fr. Vincent Cullian Tulugan Learning Center (FVCTLDC) Bukidnon	Himabol Kamuyot products from abaca		₱ 30.00/m	25 in/mo (1.5 m. wide)	₱ 1,700.00/mo	Contract basis	By carabao skidding By motor bike	As order comes	
8. Sumilao Tribes San Vicente, Bukidnon	Tiger grass for broom making		₱ 30.00/pc.	4,000 stalks	₱ 1,200.00/mo	Contract basis	By jeep hiring	As order comes	

Problems in Collection, Processing and Marketing of NWFP

A. *Industries Development Corporation (IDC)*

1. Poor marketing system for collected NWFP due to poor road conditions and transport facilities.
2. Unawareness of chemical preservative treatment of rattan, bamboo and palm to minimize rejects brought by stains, molds, insect attack and other factors that causes biological deterioration.
3. Delay in issuance of permits and processing of papers by the DENR to collect and transport NWFP.
4. Poor communication facilities.
5. Insufficient forest extension officers to conduct seminar/training on sustainability of NWFP.

B. *San Jose Timber Corporation (SJTC)*

1. Insufficient transport system and poor roads to transport collected NWFP.
2. Unawareness of scientific and proper techniques of tapping almaciga and apitong resins to sustain yield of resins and not endangering the health of the trees.
3. Insufficient knowledge in preservative treatment of rattan to minimize the occurrence of stains, insect attack and water damage to minimize rejects and demerits in price.
4. Low level of knowledge in processing and maximum utilization of other NWFP.
1. Broaden spectrum by DENR and other government agencies with regard to tapping of apitong and other species for resin yield.

C. *Surigao Development Corporation (SUDECOR)*

1. Lack of technical know-how of IP rattan gatherers on the chemical preservative protection of rattan from stain and insect attack.
2. Lack of technical know-how in processing NWFP for higher value-added products.
3. Lack of transport facilities to bring products to market outlets.
4. Squatting and occupancy by IP in the concession area of SUDECOR.
5. Peace and order situation.
6. Lack of market information and linkages to improve capability.

D. *NATRIPAL Area*

1. Lack of transport facilities and roads to transport NWFP.
2. Crude system of extracting almaciga resin by tappers.
3. Lack of information on the chemical protection of rattan and bamboo from wood deteriorating agents.
4. Fast depletion of bamboo and rattan in three sites, hence sustainability is a problem.
5. High moisture content and impurities in wild honey.
6. Lack of skills and experience in handling business matters. The communities do not possess adequate skills and technologies in handling and marketing of NWFP. Lack of consciousness of quality and delivery time.

7. On honey marketing, NATRIPAL encountered the problems on the high moisture content; impurities, fermentation; diversity of honey flavor, color, aroma; adulterations; pricing; and irregular supply.

As regards to the socio-economic aspects of the forest dwellers, the following issues need to be resolved:

- a. Lack of access to resources.
- b. Extortion from some government personnel on transport and shipment of products.
- c. Use of pesticides on agricultural products causes harm to honeybees.
- d. Destruction of forest due to encroachment and its negative effect on the environment.
- e. Lack of information on technologies to improve production and quality of products as well as marketing information.

Conduct of Training Programs on Chemical Protection of NWFP

The training program and course outline was the same for all trainings. It was composed of a lecture, demonstration and hands on exercises. Lecturers are presented either in Pilipino or English language depending on the prerogative of the participants. Damaged and undamaged NWFP samples are shown. This provided the participants to visualize the actual damage caused by the different agents of wood deterioration. The participants gave an appraisal of the course and the trainers after each training. The trainers presented certificates of recognition and appreciation to the participants and coordinators respectively. It is important that samples of chemicals be provided for demonstration purposes. From the training, the participants were able to acquire knowledge on the nature and causes of biodeterioration in the raw material and finished products made of bamboo, rattan, palms, vines and twigs. Participants were able to determine the signs and symptoms of insect and fungal attack and their methods of control. The various methods of applying chemicals to the materials/products were learned by the participants.

Sites of Training

1. Sabani Agricultural College, Dupinga, Gabaldon, Nueva Ecija
2. DOST Region IV, Puerto Princesa City, Palawan
3. Jiabong Municipal Hall, Jiabong, Samar
4. Kiamba, Sarangani Province
5. Tandag, Babuyan, Adlay, Norcia and Cantilan, Surigao del Sur
6. DENR Training Center, Aurora Trading Center and Diteki, in Baler, Setan, Aurora Province
7. Casecnan Rattancraft, Casecnan, Nueva Ecija
8. Mircan Furniture Manufacturing Corp. Angeles City, Pampanga Province

Indicators on the Acceptability of the Technology

The acceptability of the technology on the application of chemical treatment on NWFP was manifested by the increase in the number of inquiries regarding the availability of chemicals and copies of the pamphlets. Additional pamphlets were printed and sent to requesting parties. Likewise, requests to conduct training program in other sites were done as per endorsement of organizations or individuals who have undergone the training. This indicates that the disseminated technology is being applied by the target clientele.

Upon the completion of the study, other requests which were not accommodated during the implementation shall be continued.



Participants with their supervisor at the warehouse of MIRCAN Furniture.

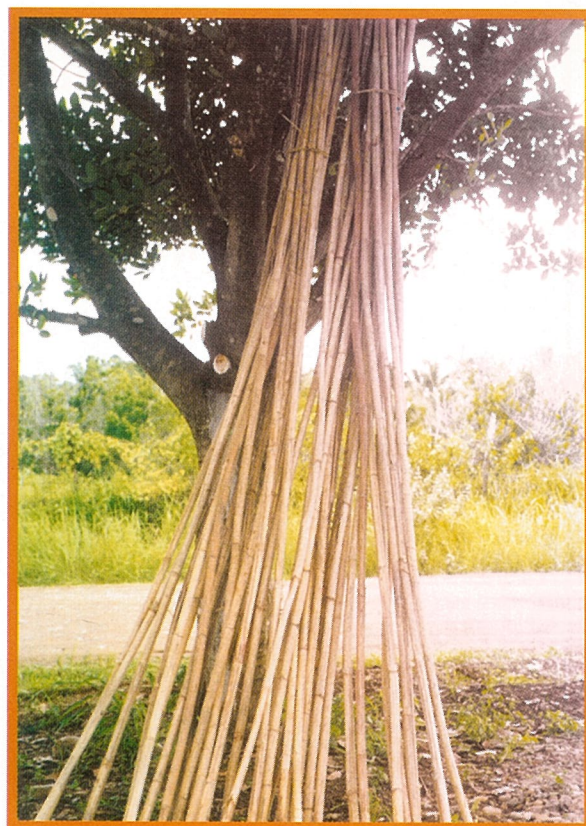


Rattan canes with molds and staining fungi. Proper storage was recommended.

It was also learned that some participants had ventured into the treatment application and have produced raw materials which are of the required specifications. Likewise, manufacturing firms have also adopted the technology because of the current competition in the world market.



Placing rattan canes in the plastic lined trench.



Drying of rattan canes after chemical treatment



Abaca waste for the manufacture of woven products.



Some finished products from abaca and other agricultural wastes.

Conduct of Training on Tapping of Almaciga Resin

1. *Training conducted at Hinabangan, Samar*

The training-seminar was conceived to rectify the crude and unscientific method of resin collection being practiced by tappers in the area. It was also envisioned to encourage almaciga tappers to maintain and preserved almaciga trees.

Two pamphlets were prepared and used in the dissemination of information and served as a guide for the participants in the training. The participants noted that the topics and technologies are very useful. They became interested in saving the trees, enhancing resin yield and improving resin quality.

The training was first conducted in Hinabangan for thirty participants and after two days it was transferred to Paranas to train another group of twenty participants. The training consisted of lecture-discussion, visual presentation and field demonstrations where the participants apply the current scientific method of tapping resin from almaciga trees. Each lecture session is followed by an open forum. During the discussions, the participants forwarded some issues encountered in resin tapping. Some of the problems are:

- a. Legal framework surrounding almaciga utilization
- b. Handling cleaning, grading and marketing of collected resins
- c. Acquisition of tools, materials and other paraphernalia in tapping almaciga resin
- d. Scientific procedure in tapping the resin.

2. *Training conducted at NATRIPAL*

The training was conducted by FPRDI-ITTO Project Staff in collaboration with the DENR provincial office and NATRIPAL. Participants came from three project sites in Kayasan, Campung Ulay and Punta Baha, representing three ethnic groups of the province, the Bataks, Tagbanuas and Palau'ans. Majority of these ethnic groups could neither read nor write, especially the Bataks. They are almaciga resin, tappers, rattan and honey gatherers.

The training program consisted of similar activities held in Samar. Pilipino and English were as a medium of instruction. Lectures were translated into the dialect of the Bataks and Palau'ans by NATRIPAL Staff. The trainees posted a 100% attendance in all meetings and participated enthusiastically in the open fora. This indicates a high level of interest on the subjects discussed.

During the practicum, the participants were first requested to demonstrate their current method of tapping. After which, the scientific method of tapping developed by FPRDI was demonstrated in detail. The advantages and disadvantages of both methods were emphasized. The trainees were required to demonstrate the correct tapping method learned from the training. NATRIPAL Staff monitored the performance of 32 participants under the supervision of the trainers.

Generally, the training-seminar was successful. The participants showed their enthusiasm and interest on the subject matter and actively participated in the discussions. They shared their problems in tapping resins from almaciga trees and in trading and marketing the resin. Attack of termites on standing almaciga trees is also a problem of participants.

Acceptability of Technology

After eight months, a follow-up and monitoring of almaciga tapping by the IP's was conducted and the following data and information was gathered.

1. Scientific tapping of almaciga was followed by tappers particularly those found at 200-400 meters above sea level.
2. Rechipping are hardly observed by tappers who do the round of tapping in high elevation areas (above 400 meters). For this reason, rechipping is done only once a month.
3. Increased in number of regular tappers in Kulpisan and Punta Baja, Rizal, Palawan from 15 to 25 is an indication that almaciga tapping generates employment. The number of trees tapped increased from 115 to 160.
4. Income of tappers increased from P 500.00 to P 675.00 per month.
4. Tappers had minimized the injurious tapping practices thus making them aware of the importance of not damaging the cambium layer during the tapping.
5. Minimized tapping of undersized trees.
6. There was increased in almaciga resin buyers.
7. NATRIPAL officers, resin tappers, and leadman had further disseminated the correct tapping procedures with their colleagues who failed to attend the training course by conducting a house-to-house campaign.

Resin tappers in Samar Province did not patronized much the proper techniques of tapping. This could be attributed to the lesser awareness and participation of the tappers, licensees, leadman "kapatas," and DENR officials on the social, economic and environmental impact of the training. Somehow the training would serve as an "eye opener" for the tappers to safeguard and avert the possible loss of almaciga trees in their area.

On the otherhand, canarium resin tapper in Alabat and Bondoc Peninsula areas are more adopt to follow religiously the proper methods. With these practices, farmers are vocal to say that aside from increase in resin yield, clean and quality resins are also produced.

Rattan gatherers from all walks of life both from the IP group and non-IP's follow corresponding norms in harvesting only mature canes. Others resorted to cutting even immature plants.

Wild honeys are collected following belief and rituals offered by IP's. So far, there is no scientific method of collecting honey.

With regard to erect palms, anahaw, buri and anibong trunks including leaves are cut and collected once they are mature and ready for processing to desired end products.

The wild salago (*Wikstroemia spp.*) barks are collected in very crude manner. Farmers in Masbate province collect salago by stripping the barks, i.e., deep cutting and oversized cutting that injure the plant. These processes, damage and kill the cambium and wood ray cells that ensure the proper transport of nutrients and water between the roots and the other parts of the plant. Destroying these cells will lead to the death of the salago tree. An appropriate method of salago bark extraction that will not endanger the tree but sustain its bark yield is recommended to the farmers and gatherers of salago bark. The method is as follows:

Divide tree girth into two parts and strip one part. The unstripped bark served as the pathways for the continuous supply of food materials between the roots and leaves. This enables the tree to carry on its physiological functions and gave the bark a chance to regenerate.

Stripping shall be done during the rainy season, as the loosening effect of water made the bark easy to remove. From 20 cm above the ground, a one-foot long strip of the bark shall be removed. Extra care should be taken to minimize injury of the cambial layer while debarking.

Effect of Harvesting NWFP on the Socio-Economic Condition of Dependent Communities

The study indicated that harvesting of the so-called NWFP is favorably accepted and gaining strong support from the forest settlers especially the indigenous people. Emphasis on community participation has also focused attention on NWFP upon which many local communities are dependent.

Impact of extracting NWFP on the socio-economic and everyday living of forest settlers and farmers are indeed important findings of the study, viz:

1) Upliftment of socio-economic standard due to employment generations

The economic patterns in all the project sites studied are basically the same. Majority of the households depend on agriculture and forest related activities. Some households work their own wet-rice farms in the lowlands, majority tend to their kaingin in the uplands and seek extra employment on other farms whenever possible. With the rich forest resources around, majority further engage in the gathering and selling of NWFP, i.e., rattan, resin, honey, erect palms, woody vines, etc. The activity therefore generates employment and extra income among the indigenous people. Other supplementary activities involving NWFP utilization which further generates employment include weaving of buri mats, fan from anahaw leaves, basketries, sawali or bamboo mats, hammock from rattan and vinecrafts. These activities somehow increased the number of direct and indirect jobs and local business opportunities.

2) Provide access to forest areas

Opening of forest in the course of construction of trails and establishment of temporary camping sites in the forest in the process of tapping and collecting almaciga resins, rattans, wild honey and woody vines is an advantage among forest settlers. This activity is an avenue for easy collection and transport of NWFP from collection sites to pick-up sites, hence, save time, effort and money.

Further, harvesting and processing of NWFP result to reduction of kaingin making activities and illegal harvest of forest products due to employment opportunities among indigenous people.

3) Creation of people's organizations

As social impact, extraction of NWFP generates strong ties and camaraderie among resin tappers, rattan gatherers, resin and rattan licensees and permittees, bamboo growers, traders, entrepreneurs, government officials especially DENR, private sectors and NGO's thus develop the necessary connections and contacts that could uplift the system of handling, trading and marketing of NWFP. This further brought in the creation of community organizations for the three project sites in Palawan. These were organized jointly by the NATRIPAL itself and the concerned Indigenous Cultural Communities (ICC). These organizations are: Campong it Mapangarapan it Palawano (CAMPAL) in Bgy. Campung Ulay; Samahan ng mga Tribu sa Kayasan (SATRIKA) in Kayasan and Bayatao; and Pinagtibukan it mga Palaw'an (PINPAL) in Punta Baja. The same is true with the orga-

nization formed in Aurora among Dumagats, called the Samahan ng Katutubong Dumagat sa Aurora (SAKADA).

Primarily, these organizations were organized as a sort of cooperative where the NWFP of the ICC's can be brought in for collective selling. Whereas, before when these ICC's have yet to be organized they are virtually at the mercy of the middlemen, to a large extent this dispensation has changed. The ICC's after these NWFP have piled up in their respective Area Servicing Units (ASU) can now bargain for a higher price. In addition, the outflow of NWFP is now controlled to maintain competitive market price, as opposed to those times where NWFP's production is unhampered, sometimes to a point where it spurs a NWFP glut in the market, thereby keeping the prices at a very low level.

Above all these, the people's organizations ensure that the resources are managed sustainably. They organize cooperative efforts to replenish what otherwise have been heavily exploited areas. The organizations also secure that the NWFP production level is within the limits of the annual allowable harvest enshrined on its ancestral domain management plans.

These organizations hold their meetings on a monthly basis and at least convene the entire community in a general assembly twice a year.

4) Collection and feeling of some timber species, i.e., nato, ipil and manggis by some forest settlers mostly for domestic uses offer negative impact to the local communities. These species serve as important host for bees-producing wild honey. The activity would further results in the increase of distance of collection site for wild honey from the IP's respective dwelling areas, hence, the end resulting to possible excessive migration or transfer of living areas into a more productive site.

CONCLUSIONS

Past and present methods of harvesting NWFP especially from indigenous groups did not vary much. Collection of rattan, vines, bamboo, erect palms depends solely on the maturity of the species. Honey gathering on the other hand, is seasonal and is done from March to May, when many forest trees are abloom and bees are around. Almaciga and canarium resins gave best yield during dry season. Old and faulty systems of resin extraction were corrected by conducting training-seminar on the scientific method of resin tapping. Proper methods of extracting salago bark was likewise developed and introduced to extractors/collectors. The identified main problems of NWFP gatherers include marketing, illiteracy on the part of the IP's and insurgency in some areas.

Members of indigenous groups tend to depend on trading NWFP. These products are diverse in terms of species and distributed in distant communities. Some of the places are not accessible by any form of transportation. Distance play a very vital role toward efficient collection, transport and marketing of NWFP thus affect the income of gatherers.

Adoption of the technology on proper harvesting of NWFP generates more employment and increase income of gatherers which could be attributed to higher production of NWFP. Moreover the technologies disseminated educate and emphasized environment-awareness among IP's and others involved in NWFP extraction thus contribute to lessen environmental problems. This minimizes unscrupulous and crude method of extracting NWFP thus contribute in the forest conservation program of the government. The adoption of the technology on resin tapping and salago bark extraction, the opening of rattan and bamboo plantations as enhanced by the government and private sectors and the continuous agro-forestry farming, e.i., abaca and fuelwood/ITPS ensures the sustainability of NWFP. Strengthening the local communities prevent the encroachment of lowlanders and entry of their business activities.

Most gatherers of rattan and almaciga resin sell their products to concessionaire's agents locally known as "kapatás." From the concessionaire, rattan poles are delivered to furniture and handicraft producers while almaciga resin to varnish producers or exporters. Gatherers have no access to marketing information. They rely on prices already existing in the market or those dictated by the buyers. Their lack of market information makes them too timid to negotiate directly with end-users. Their illiteracy makes them vulnerable to tricks by some unscrupulous traders. Their lack of knowledge on business operation makes them stagnate as gatherers. The tenurial rights should make them managers of their own land but what is prevailing is that they do not have full access to extraction of resources.

NWFP are so diverse not only in the species available in the area but on their number or volume available. Resources may be scarce in production centers but are abundant in areas seldom reached by transportation and programs of government. It could be regarded that location is a detrimental factor on the utilization of NWFP. Transporting the products to the final consumers would be too expensive. The final price would make products uncompetitive in the market.

RECOMMENDATIONS

Based on the findings of this project, the following recommendations are forwarded:

1. Training should be the optimum linkage to impart technical knowledge to forest dwellers. Appropriate training on environmental impact assessment, integrated community-based resource management to include protection and conservation of biodiversity especially endangered species should be undertaken. The government should forge more linkages with other government agencies and non-government offices (NGO) so that extensive training activities could be undertaken on the importance and socio-economic effects of harvesting NWFP which at the end pave the way for more employment opportunities in the project areas.

Intensive training should be implemented to raise the level of literacy to enhance information dissemination and technology transfer on NWFP collection and utilization. This could be done through radio broadcast, poster papers and on local reading materials.

2. Immediate action should be done on the needs of tribal groups on issues concerning tenurial rights and the indifferences between indigenous and non-indigenous groups (licensees and permittees). These issues are key factors to attain peace and unity in local communities.
3. Construction of transport facilities such as roads and bridges to ease movement of collected NWFP from source to market.
4. Provide more employment opportunities by opening small-scale cottage industry using NWFP as the raw material.
5. It is necessary to get in touch with market outlets and NWFP buyers. Market surveys should be initiated to determine which NWFP have a strong market potential. The possibility of establishing marketing cooperative for forest occupants should be properly addressed. This could served as an organize vehicle for soliciting active and direct participation of forest settlers in which majority are upland dwellers.
6. The Department of Trade and Industry (DTI) and DENR should have the necessary baseline information on markets for NWFP. They should provide the linkage between markets and source. This would help reduce the cost of resources for the production sector as gatherers can deal directly with end-users and would eliminate the mark-up added by intermediaries. Product development using NWFP should be done continuously. This would help developed and improved the skills and creativity of forest dwellers toward the development of competitive high-end products.

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