

KEY ACTORS, PRICES AND VALUE SHARES IN THE PHILIPPINE COCONUT MARKET CHAINS: IMPLICATIONS FOR POVERTY REDUCTION

**Isabelita M. Pabuayon¹, Rowena D. Cabahug², Stella Villa A. Castillo²
and Marlo D. Mendoza²**

¹Department of Agricultural Economics, College of Economics and Management
University of the Philippines Los Banos (UPLB)
College, Laguna 4031 Philippines

²College of Forestry and Natural Resources, UPLB

(Received: October 30, 2008; Accepted: April 23, 2009)

ABSTRACT

The Philippine coconut market chains was examined for three products, namely, coconut oil (CNO), virgin coconut oil (VCO), and coco wine in terms of (1) the different market actors or participants that perform the various production and marketing services to ensure that products reach the end-users in the right form, time and place; (2) the price structure that reflects the value-addition through the various stages of the chain; and (3) the distribution of the final product value among the different market participants including the coconut farmer.

Socio-economic surveys were conducted in two municipalities in Quezon, the Philippines' largest coconut producing province. The farmers have limited participation in the coconut distribution chain since they remain in the lowest stage of the chain and sell only raw materials. There is considerable value-addition taking place as coconut products move through the chain as indicated by the extent of coconut processing into high value products. The shares of the different market actors in the final value of the coconut product vary. Although the farmer's share is relatively high for some coconut products, their income remains low compared to the other market participants such as the processors and traders. Thus, coconut farmers are among the poorest in Philippine agriculture. Government support is necessary to address the market development needs of coconut farmers in order reduce poverty in coconut farming communities. These needs relate to inadequacy of capital, technical and entrepreneurial skills, equipment and tools, and market access and information. Specific measures may involve making institutional credit accessible to farmers, providing them training on product processing and quality improvement, and linking them to favorable markets. Additionally, there is a need to raise overall farm productivity through improved farm management practices. Efficient delivery of support services to farmers and initiatives for farm and marketing improvements will necessitate having strong farm organizations.

Key words: market actors, value-addition, poverty

INTRODUCTION

The coconut industry provides significant income, employment and foreign exchange to the Philippine economy. According to the Bureau of Agricultural Statistics (BAS), the coconut area is 3.36 million hectares comprising 27% of the country's total cultivated area in 2007. Nut production is 14.85 million metric tons with a value of PhP59.71 billion at current prices. Coconut is the country's top agricultural export with foreign exchange earnings of US\$965 million in 2006. The Philippine Coconut Authority (PCA) reports that the industry provides employment to more than 3 million

coconut farmers and workers and to 25 million more Filipinos working in various coconut-based enterprises throughout the country.

Despite this important contribution, the coconut farmers are considered among the poorest of the poor in agricultural communities (Balisacan, 1992). Aside from problems of low productivity and small farm sizes, coconut farmers are confronted with marketing-related difficulties such as the low and highly fluctuating prices and inability to find favorable market outlets for their products. In order to provide specific recommendations on how to improve the marketing system for coconut farmers, there is a need to have an in-depth understanding of the coconut market chains. By examining the market chain (or alternatively the production-to-consumption system), it is possible to determine how value-adding and marketing activities take place, who performs and benefits from these, and what are the constraints that need to be overcome by those who desire to benefit from value-addition. Market chain analysis can identify the principal constraints and possible solutions to improve the performance of the chain; and analyze the feasibility of opportunities for development through the adoption of innovations (production, packaging, adding value, transportation) or exploring of new markets. Pabuayon and Medina (2007) argued that linking farmers to markets and supporting value-adding activities can raise their income and thus provide incentives for improving their management practices toward greater farm productivity.

This paper (1) analyzes the market chains for the main coconut products produced in the municipalities of Sariaya and Tayabas, Quezon province; (2) identifies the constraints faced by farmers in seeking higher level markets and getting a better value for their products; and (3) discusses the implications for reducing poverty among the coconut farmers in the study area.

METHODOLOGY

Socio-economic surveys were conducted in 2006 to obtain production and marketing-related information from coconut farmers, traders and processors. Thirty-five farmers were randomly selected while 23 traders and 25 processors were selected purposively based on their availability and willingness to provide information. The respondents were personally interviewed using questionnaires. The study area is Quezon province which is located some 150 kilometers southeast of Metro Manila (Fig. 1). Quezon is the largest coconut producing province in the Philippines and although primarily agricultural, has considerable potential for economic and business growth. Although most primary data came from the two municipalities of Sariaya and Tayabas, other pertinent information for the province as a whole was considered. Key informant interviews with the personnel of PCA and farmer leaders in the villages were also undertaken to obtain additional insights on the marketing constraints faced by farmers in the area.

The market chains for coconut products were drawn to indicate the flow of the commodity from the farmer through the different market intermediaries to the consumer. Prices were compared at the different stages or levels of the market chain to reflect the value-addition taking place and determine the marketing margins of the market intermediaries. The value shares of the different market participants were estimated by taking the farm price in the case of the farmer and the marketing margin in the case of the market intermediary (trader or processor) as a percent of the final value of the product at the consumer level (retail price). The marketing margin of an intermediary is the difference between his selling price and his buying price. This margin represents his contribution in the whole process of delivering the product from its source to its final destination in terms of the marketing services he provides. It is equal to the costs he incurs and the payment he receives for his capital, labor and management in providing the marketing services.



Fig. 1. Map of the Philippines showing Quezon province as the study area

RESULTS AND DISCUSSION

Key Actors and Prices in the Coconut Market Chains

For major coconut products in Quezon, the market chains indicating the flow of the product through the various intermediaries are shown in Figures 2, 3 and 4. They reveal: (a) the movement of the coconut from the source (towns of Sariaya and Tayabas) to outside town outlets; (b) the transformation of the raw material (husked nuts) into other products such as coconut oil (CNO), desiccated coconut (DCN), coconut milk, and virgin coconut oil (VCO); and (c) the prices or values of the products at the various stages of the market chains. The flow of coco wine (produced from coconut toddy) is also shown. Called the “tree of life”, coconut yields many other products but these are not shown here.

There are different market channels for husked nuts or copra produced by the farmer (Fig. 2). He sells the husked nuts to the village agent at 3.60 Philippine pesos (PhP3.60) per kilogram (kg) who then sells them to the town trader at PhP3.75 per kg. The trader may sell the nuts to the retailer in the public market, wholesaler, coco milk processor, or desiccating processing plant at PhP5.00 per kg. The coco milk is sold to the consumer at PhP8 per kg in the town public market or PhP15 per kg at the supermarket outside town. The desiccated coconut is sold to the local or foreign-based food processors before reaching the final consumers. The farmer may also process the nuts into copra (i.e., dried coconut meat from which oil is extracted) which he sells to the town trader at PhP12.83 per kg. The trader then delivers the copra to the oil miller at PhP16.01 per kg. The oil miller produces the crude coconut oil and passes it on to the oil refiner at PhP26 per kg. The final product (cooking oil) is then sold to the consumer at PhP40 and PhP65 per liter for the unbranded and branded CNO, respectively. The town trader may also process the nuts he buys from the farmer into copra which is also sold to the oil miller.

Key actors prices and values shares in the Philippine coconut...

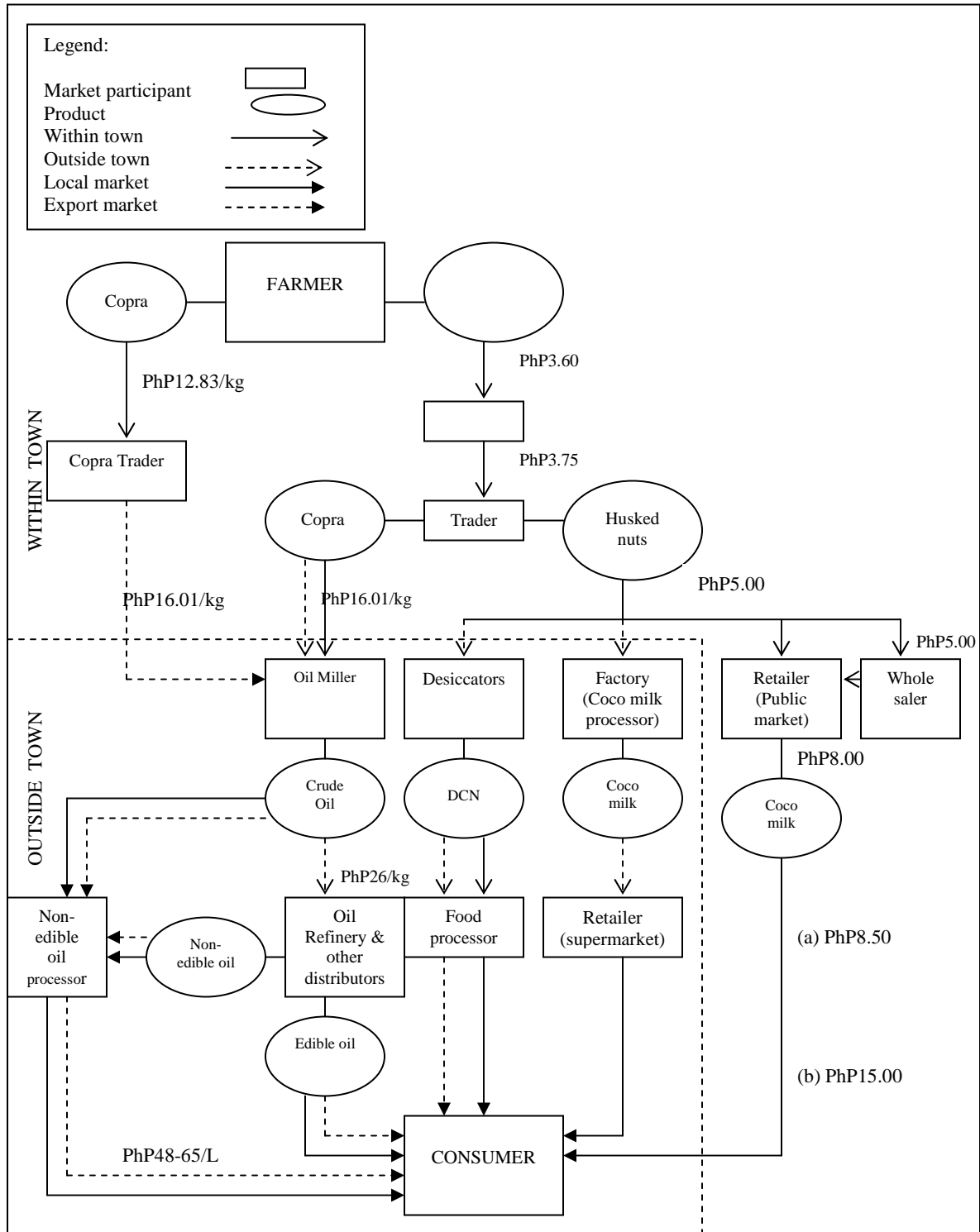


Fig. 2. Market chains for major coconut products derived from husked nuts, Tayabas and Sariaya, Quezon, March 2006

The farmer may process the husked nuts into VCO or sell them to processors (Fig. 3). VCO could be sold to some traders including an exporter located in the town at PhP96 to PhP110 per liter. This is then sold to distributors and retailers based outside the town before getting into the hands of the final consumers. Some small volumes are sold directly by the processor to consumers. At this stage, the VCO could be in various forms, unflavored or flavored packed in different sizes, and may or may not be labeled and branded. Due to varying extent of value-addition, prices could range from PhP243 to PhP522 per liter. It is noted though that consumer packages are usually in smaller sizes of 500 ml or less. Considering that 12 nuts are required to produce 1 liter of VCO, the corresponding value of the raw material at PhP4.80 per nut is PhP57.60 at the farm level, excluding other intermediate inputs.

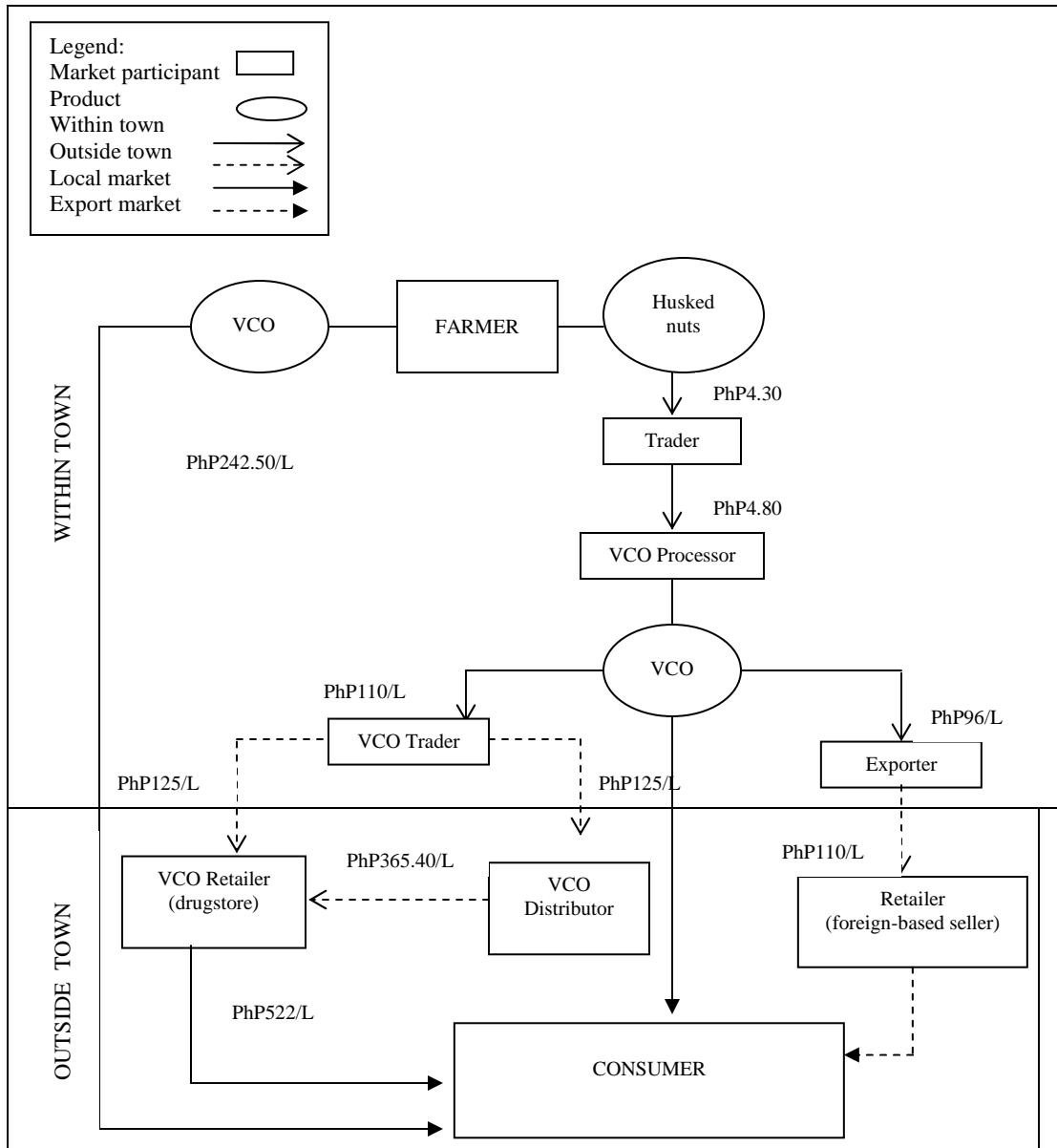


Fig. 3. Market chains for virgin coconut oil, Sariaya, Quezon, March 2006.

The bulk of coco wine produced by the farmer and any individual processor is sold to consumers in the local market through the wholesaler and retailer (Fig. 4). A limited volume of high quality coco wine, properly labeled, with improved packaging reaches the overseas markets. The farmer/processor sells at PhP110 per gallon to the wholesaler who passes it on to the retailer at PhP140, who finally sells to the consumer at PhP150. The prices at the various stages are higher when the wine is delivered to outside town buyers.

The activities performed in the chain are the exchange functions (buying, selling, wholesaling and retailing), physical functions (transportation, storage, processing, packaging), and facilitating functions (sorting and grading, financing, market intelligence, and various forms of market promotion). These activities add value to the product as indicated by the increasing prices when products move from lower to higher stages of the market chain. These marketing functions create place, time, form and possession utilities that provide satisfaction to consumers. Performance of these activities involves costs for the use of intermediate inputs and investment goods and payment of return to those who perform those activities.

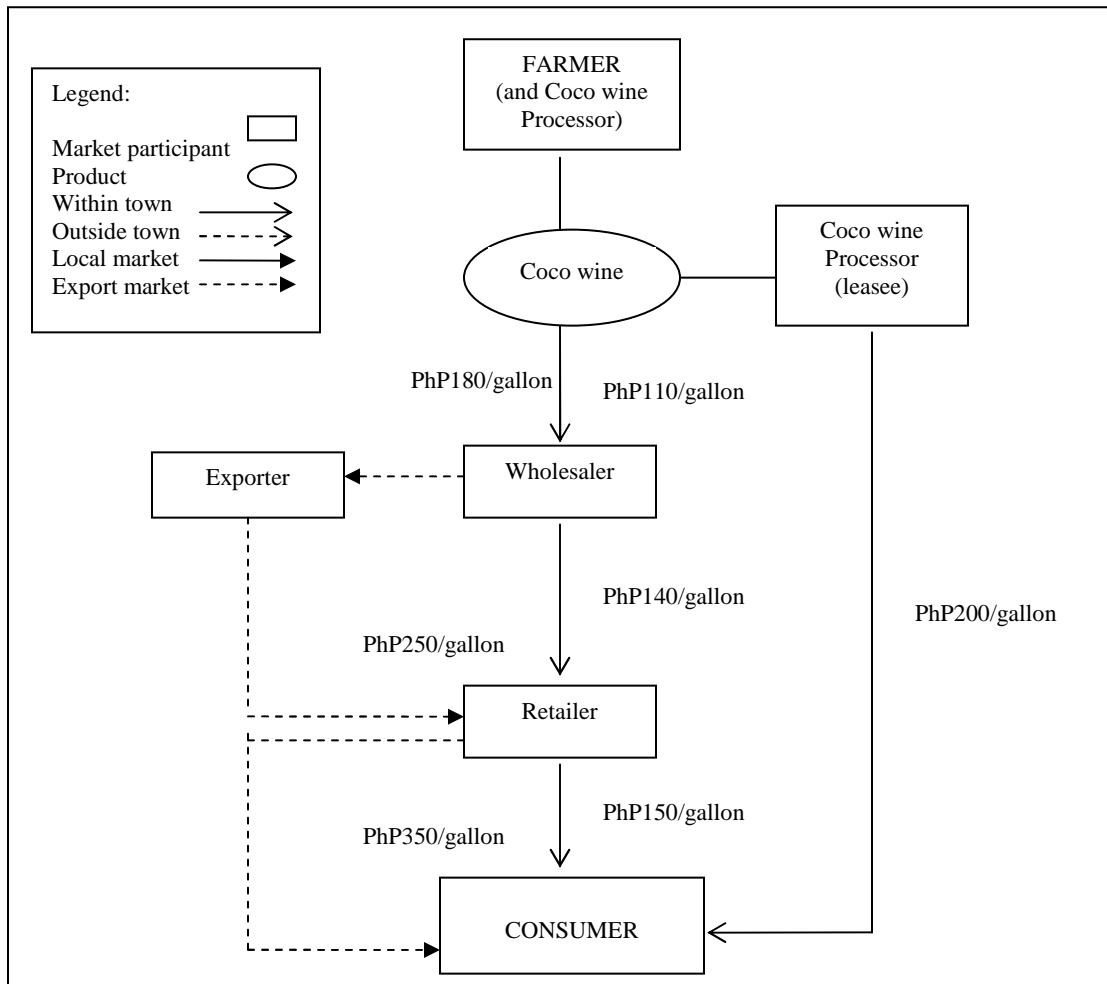


Fig. 4. Market chains for coco wine, Sariaya, Quezon, March 2006.

Distribution of Product Value Shares

For selected market channels, the market shares of the different market participants are shown in Table 1. For branded CNO sold at a supermarket outside the town, the equivalent values or prices at the different market levels are based on the following conversion factor: 1 kg (approximately 1 liter) of refined CNO = 1.081 kg crude CNO = 1.716 kg copra = 7.192 kg husked nuts. Here, the specific products are as follows: nuts at the farmer and agent's levels, copra at the trader's level, crude oil at the oil miller's level, and refined cooking oil starting at the oil refiner's level. Given their respective prices as shown above, the farmer's share of the final product value is close to 40%. The distributor and retailer combined get 53%, while the other intermediaries have much smaller shares.

For branded and flavored VCO which is processed from the nuts sold by the farmer and finally sold at an urban-based supermarket *cum* drugstore, the assumptions are as follows: 12 nuts are needed for 1 liter of VCO, price of nuts is PhP4.80 per kg, and price of VCO is PhP261 per 500 ml plastic bottle. The largest shares are for the distributor and retailer who provide additional services of bringing the product to an urban center; flavoring, branding and advertising of the product; and selling it through the supermarket. The farmer and processor get relatively smaller shares of 11% and 10%, respectively. The farmer produces the raw material (nuts) while the processor is engaged only in primary processing without much value-added while at the same time selling on picked-up and wholesale basis. The trader's contribution and therefore share is the least since his role is only to bring the product from the village-based processor to the distributor for further processing, packaging, labeling, market promotion, and distribution to retailers.

Table 1. Product value shares of the different market participants per unit of the product sold, Quezon, 2006.

Market Participant	Selling Price^a	Buying Price^a	Marketing Margin^a	Percent Share (%)
<u>Branded CNO</u>				
Farmer	25.89	-	-	39.83
Agent	26.97	25.89	1.08	1.66
Town trader	27.47	26.97	0.50	0.77
Oil miller	28.11	27.47	0.64	0.98
Oil refiner	30.50	28.11	2.39	3.68
Distributor/retailer	65.00	30.50	34.50	53.08
Consumer	-	65.00	-	100.00
<u>Branded VCO</u>				
Farmer	57.60	-	-	11.04
Processor	110.00	57.60	52.40	10.04
Trader/wholesaler	125.00	110.00	15.00	2.87
Distributor	365.40	125.00	240.40	46.05
Retailer	522.00	365.40	156.60	30.00
Consumer	-	522.00	-	100.00
<u>Coco wine</u>				
Farmer/processor	110.00	-	-	73.33
Wholesaler	140.00	110.00	30.00	20.00
Retailer	150.00	140.00	10.00	6.67
Consumer	-	150.00	-	100.00

^a Selling and buying prices are in PhP per liter for CNO and VCO and PhP per gallon for coco wine. During the time of survey (February to April 2006), the exchange rate is about 51.50 Philippine pesos per US dollar.

The simple channel for coco wine sold within the town involving only the wholesaler and retailer as intermediaries provides a considerable share of 73% to the farmer/processor. This is because of the relatively low final product value since no transportation and other value-adding costs are incurred. In the extreme case of the farmer selling directly to town consumers, the farmer will get 100% of the entire product value.

The above analysis shows that there is considerable value addition taking place in the market chains as indicated by the increasing prices of the coconut products as they move from the lower to higher stages of the chain. However, the farmer's participation in the marketing activities is quite limited as they remain in the lowest stage of the chain, the farm market level. Commonly, they sell only the raw materials (husked nuts or copra) and therefore receive the lowest price among the various market participants. Although it appears that the farmer's share is quite high especially in the case of coconut oil and coco wine, this does not necessarily translate into high farm income. The shares are based on per unit product value and since farmers have small farm sizes, low farm productivity and therefore have low marketable surplus, their incomes are generally low (Pabuayon and Medina, 2007). In fact, among the key market actors, the farmer has the lowest income (Table 2). While the trader and oil miller have much smaller shares of the final product value, their incomes are considerably higher because of their large scale operations. Incidentally, they have considerable advantage over the farmers as they have the required capital, managerial skills, and access to market and information. On the other hand, the farmers are in a disadvantaged position. Although VCO is a high-value product, farmer-processors do not get high income due to small-scale operation and inability to undertake other value-adding activities like improved packaging, labeling, advertising, and selling in high-end markets. Pabuayon (2008) reported that the coconut farming communities in the Philippines have higher poverty incidence compared to the country as a whole.

Table 2. Estimated average income (before tax) of key participants in the coconut market chains, Quezon, 2006

Market Participant	Products Produced/Sold	PhP per Month
Farmer	Husked nuts	892 – 1,138
Farmer/processor	VCO	6,762
Trader	Husked nuts, copra, charcoal	84,960
Oil miller	Crude CNO, copra cake	0.80 – 2.55 million

Constraints Faced by Farmers

The existing marketing system wherein farmers usually just sell raw materials and often to village-based traders indicates their inability to provide greater value for their products and seek higher-level markets. There are various reasons why the current marketing practices persist. These are:

- (1) no minimum or maximum volume required by the local trader; farmer can sell any volume without any purchase order or written contract governing sale
- (2) product can be delivered to or picked up by the trader anytime
- (3) buyer could be easily contacted whenever there is some product for sale
- (4) all sizes and qualities are accepted although some buyers may reject over-mature and cracked nuts and impose price discounts for copra not meeting the moisture and quality requirements
- (5) farmers are immediately paid in cash upon sale and can request for cash advances or loans charged against future sales although this arrangement provides very little market power for farmers during actual sale

- (6) long-time relationship between farmer and trader
- (7) no transport and delivery problem to higher-level markets
- (8) belief that there is no significant price advantage for products sold to town or provincial buyers

Farmers are constrained from engaging in value-adding activities and exploring alternative marketing options (Table 3). The primary reasons relate to lack of technical knowledge and inability to finance the business. Technical seminars have not been conducted yet in their area according to the farmers while others stated that although they have already attended seminars on VCO processing they still could not get the right quality required by the market. They do not have start-up capital for processing equipment and operations. Others contend that their harvest is small to support processing while some are not certain how and to whom they could sell their products.

Table 3. Constraints in engaging in coconut-based enterprises and in linking with markets

Constraints in Enterprise Development^a	%	Constraints in Linking With Markets	%
Lack of technical knowledge	55	Poor roads, high transport cost	13
Lack of capital	52	No assistance, no information	18
Lack of equipment for processing	18	Limited coconut production	15
Limited coconut production	16	Lack of capital	11
No sure market	11	Cannot compete with other sellers	16
Time management problem	5	No response	27
^a Multiple response		All	100

Poor roads and high transport cost, lack of market information, limited volume for sale, lack of capital, and inability to compete with those who have large surplus to sell make it difficult for farmers to link with favorable markets. Table 4 presents the problems and constraints reported for specific coconut products.

Table 4. Product-specific problems reported by coconut producers and sellers

Coconut Products	Problems/Constraints
Husked nuts and copra	<ul style="list-style-type: none"> • Infestation of pests and diseases and adverse weather conditions • Poor post harvest handling resulting to poor quality products • Poor farm-to-market roads • Limited access to markets and buyers
Virgin coconut oil	<ul style="list-style-type: none"> • Lack of big buyers • Lack of capital • Lack of technical and entrepreneurial skills • Limited quality control
Coco wine	<ul style="list-style-type: none"> • Absence of product standards • Inadequate quality control among small scale producers • Poor linkage with higher-level markets • Limited product development • Rising cost of production

CONCLUSIONS AND POLICY IMPLICATIONS

Due to lack of adequate resources, farmers are constrained from adopting various marketing and value-adding activities that will improve farm income. Primarily, farmers are unable to add value to their products and to reach higher level markets. As a result, they receive low prices for their products causing limited incentives for improving farm productivity. Although village-level processing of VCO and coco wine is possible, these are limited to a few farmers with adequate resources. Comparatively, farmers realize much lower income than the other players in the market such as traders and processors. This partly explains the relatively higher poverty incidence in coconut farming communities compared to the rest of the country.

In order to alleviate poverty in coconut farming communities, the policy initiatives should focus on providing assistance to farmers towards addressing their market development needs and improvement of the current marketing system. The critical needs are capital, technical assistance and training, equipment and tools, and market information to enable farmers to undertake processing and put up village-level enterprises for producing higher-value products, improve product quality, and forge linkages with favorable markets. They also need to increase their harvest through higher farm productivity to support the raw material needs of the new enterprises.

Higher productivity could be achieved through improved farm management practices including multiple cropping and replacement of senile trees with new ones. They need reliable information on prices and favorable market outlets for their products. Toward meeting these needs, the Philippine Coconut Authority must re-focus its extension program to provide a holistic package of services on technology, information, credit, markets, and entrepreneurship. On the part of the farmers, they must strengthen their organizations to enable them to undertake collective action for efficient marketing of their products, improved bargaining for better prices with their buyers, and better coordination in obtaining available services and resources from the government and NGOs. Better organization of farmers is possible through continuous training and capacity-building, sustained support from the government, and improved business linkages with the private sector.

ACKNOWLEDGEMENT

We wish to acknowledge the financial support provided by the World Agroforestry Centre (ICRAF) for our research entitled "Market Development for Coconut-Based Agroforestry Farms in Quezon, Philippines: A Case Study".

REFERENCES

- Balisacan, A.M. 1992. *Rural Poverty in the Philippines: Incidence, Determinants and Policies*. Asian Development Review: Studies of Asian and Pacific Economic Issues, Vol. 10, No. 1, Asian Development Bank.
- Bureau of Agricultural Statistics. www.bas.gov.ph
- Philippine Coconut Authority. <http://pca.da.gov.ph>
- Pabuayon, I.M. and C.M. Medina. 2007. Policy Imperatives for Coconut-Based Communities in the Philippines: The Market, Poverty and Environment Nexus. UP Los Banos and UP Center for Integrative and Development Studies. Diliman, Quezon City, Philippines. 54 p.

Pabuayon, I.M. 2008. Alleviating Poverty in Philippine Coconut-Based Communities through Value-addition and Improved Marketing Possibilities. Paper presented at the 6th Asian Society of Agricultural Economists (ASAE) Conference on “The Asian Economic Renaissance: What’s in it for Agriculture” held on 28-30 August 2008 at the AIM Conference Center, Makati City, Philippines. 17 p.