

Jose Edwin C. Cubelo  
College of Agriculture, Silliman University

## Smallhold Coconut Farmers in Negros Oriental: Status, Problems, and Recommendations

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The study analyzed the status and constraints of smallhold coconut farmers in Negros Oriental, Philippines to provide the basis for interventions geared towards boosting their productivity and income. Primary data were obtained from key informants at the Philippine Coconut Authority (PCA), and from coconut farmers in nine municipalities in the province using survey methodology. Secondary data were also collected. The participating farmers are small scale with coconut landholdings averaging 1.40 hectares, slightly larger than the provincial average of 1.32 ha, but about a hectare smaller than the national average of 2.4 ha. Almost all are members of small coconut farmers' organizations (SCFOs). Among the PCA-initiated programs, majority (56.4%) have availed of the corn seed dispersal project for intercropping, 39.8% participated in trainings on coconut-related technologies, and not many (19.5%) have availed of the "plant-now-pay-later" program (PNPL) involving improved coconut varieties. Majority have experienced a decline in coconut yield that was mainly attributed to poor crop nutrition, the most neglected agronomic practice. Many follow a corn-coconut intercropping scheme in about one-third of their coconut land holdings. Practically no product diversification and very little value-adding activities are taking place with almost everyone opting to produce and sell only copra from their coconut trees.

Based on the existing realities of the responding farmers, the following problems and constraints were ascertained: 1) low coconut yield due to poor agronomic practices; 2) low farm productivity due to underutilization of land resources; 3) low farm income due to, among others, the absence of product diversification and value-adding activities; 4) inefficient marketing system; and 5) lack of access to support services, particularly in the area of production credit. A set of interventions is suggested to address the plight of this farming sector.

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**T**he Philippines is one of the top two coconut producers in the world contributing 24.40% of the total global coconut production, and a 59% share in the world coconut exports. Coconut products are one of the country's top five net foreign exchange earners. It remains as the leading

agricultural export averaging US\$760 million a year. Close to 80% of the production are exported to 114 countries and only 20% are consumed domestically (Agustin, 2005, cited in Dy & Reyes, 2006).

The coconut industry is considered a major pillar in employment generation for the country (Aragon, 2000). In 2005, the Philippine Coconut Authority (PCA) reported that more than 25 million Filipinos are directly or indirectly dependent on the coconut industry for their livelihood. In 2006, coconuts occupied some 3.243 million hectares (24.89 %) of the country's arable agricultural land, an increase of 3.06% (99,369 ha) from 2000 (Table 1). These are distributed in 68 out of a total of 79 provinces, and owned by more than 3.5 million coconut farmers. Of the three major island groups, Mindanao has more than half (51.93%) of the country's coconut lands, followed by Luzon (27.18%), and Visayas (20.89%). For the same period, the country had a total bearing coconut tree population of 328.657 million trees, up by 8.46% from 2000, yielding a total volume of production of 14,824,485 metric tons, an increase of 12.34% from the year 2000.

The Filipino coconut farmers are among the largest stakeholders in Philippine agriculture but are among the most impoverished (Dy & Reyes, 2006). Bernal (2006) reported that around 90% of coconut farmers and farm workers in the country live below the poverty line earning an annual average income of about P12,000 or around P33 per day. Reportedly, this marginalized sector is suffering due to, among others, declining coconut yield and farm productivity spawned by many interrelated factors, and unstable markets for copra as a result of increased competition from other vegetable oils in the world market (Bernal, 2006 and Santos, et al. 1999, cited in Aragon, 2000). Despite what appears to be a bleak picture of the industry, the country still continues to produce coconuts in view of its importance not only as an exportable commodity, but as a social crop. Certainly, the coconut industry plays an indispensable role in economic development and poverty alleviation particularly among the rural population (Suharto, 1998).

Indeed, a number of studies have diagnosed and analyzed the performance and issues confronting the Philippine coconut industry as a whole, and have put forward a number of recommendations (Habito, 1988; David, 1992; Batugal, 1998; Aragon, 2000; and Dy & Reyes, 2006). However, the situation of the coconut industry in Negros Oriental in general and of the smallhold coconut farming sector in particular, specifically those that are situated in the province's poorest municipalities, is not empirically well established. There is a dearth of location-specific information and studies focusing on this particular sector in the province are scant. To help alleviate the plight of smallhold coconut farmers in the province, certain gaps in information have to be addressed to formulate an informed set of recommendations or interventions. Specifically, this study was conducted in order to describe the status and performance of small scale coconut farmers in selected municipalities of the province, and to provide relevant data that



may be used as bases for generating recommendations geared towards uplifting their productivity and income.

### Methodology

Data for this study were collected from primary and secondary sources. Primary data were obtained from key informants in the PCA such as the provincial manager, senior agriculturist, and coconut development officers (CDOs) through a combination of unstructured interviews and self-administered questionnaires. To generate data on the status and conditions of small coconut farmers in the province, a random sample of 134 coconut farmers who are members of small coconut farmers' organizations (SCFOs) from the municipalities of Bindoy, Tayasan, La Libertad, Ayungon, Vallehermoso, Jimalalud, and the city of Guihulngan in the north, and Sta. Catalina and Bayawan City in the south were invited to participate in the study. These nine municipalities/cities were chosen because they were among the priority municipalities of the Peace Equity Access for Community Empowerment Foundation or Peace and Equity Foundation (PEF), a non-stock, non-profit governmental organization whose development agenda are focused on the needs of the rural and urban poor. These municipalities/cities are considered among the province's ten poorest based on PEF's development index that includes infant mortality and malnutrition rates as two of the key indicators. The PEF commissioned the conduct of the study with the intent of identifying possible interventions that could help alleviate the plight of smallhold coconut farmers in these areas. The CDOs assigned in these municipalities took the responsibility of setting up the meetings with the farmers in each of the municipalities/cities. Most of the meetings were scheduled to coincide with the regular monthly meetings of the CDOs with the SCFOs. A two-page questionnaire written in the vernacular was handed out to each one of the farmers to generate basic background information. The farmers were individually guided through each part of the questionnaire as each item in it was read aloud with the assistance of the CDO. After the basic background information was gathered, each of the farmers' groups discussed the problems they are facing in relation to their coconut production activities, and on possible programs that can be implemented to improve their conditions. Secondary data were obtained from the provincial and regional PCA office, as well as from the Bureau of Agricultural Statistics (BAS) online statistics database.

### Results and Discussion

#### Profile of the Coconut Industry in Negros Oriental

*Production Area.* The province of Negros Oriental is politically divided into three districts consisting of 19 municipalities, six cities, and 557 barangays, of which 337 are cococal barangays. It has a total land area of 540,230 hectares

(ha) of which 80,518 ha (12.6%) are planted to coconuts (Table 2). In 2006, the province had a total of 8.85 million coconut trees, where 7.08 million were bearing and 1.77 million non-bearing. About 708,557 trees (8%) were considered senile meaning that they were over 60 years old, past their peak productive years.

Although the area planted to coconuts in the province is relatively small compared to the total land size, these trees are grown in practically all the municipalities and cities of the province's three districts. District I, comprising seven municipalities and two cities in the north, has a slightly bigger area planted to coconuts at 28,695 ha (35.64%) compared to District II (25,918 ha) and District III (25,905 ha). Correspondingly, District I had the highest total coconut tree population of 3,156,450 trees (35.63%), followed by District II and III, respectively. The top three municipalities both in terms of area planted to coconuts and total number of bearing and non-bearing coconut trees are Pamplona—11, 022 ha planted with about 1.2 million coconut trees, followed by Guihulngan—9,100 ha (about 1 million coconut trees), and Valencia—5,478 ha (602, 580 coconut trees).

*Coconut Farmers.* In 2006, the province had a total of 61,072 (68.5%) coconut farmers and about 28,058 (31.5%) coconut farm workers. Coconut farmers owned the land on which their trees are growing, while farm workers are caretakers or tenants of coconut farms. Based on this characterization, it would appear that the coconut farmers in the province have an average coconut farm size of 1.32 hectares, grown to an average of 145 bearing and non-bearing coconut trees. However, if land ownership was disregarded, the average coconut farm size of each farmer falls below a hectare (0.90 ha) with less than a hundred trees each (99.37 trees.)

*Coconut Production.* In 2005, PCA reported that the entire province had a total production of 283,200,000 nuts, down by 3.5% from the previous year's production of 293,200,000. This level of production translates to about 39 nuts/bearing tree/year that is below the national average nut production per tree of 40 nuts per tree/year, but higher than Region VII's average of 35 nuts/tree/year. For the same period, the province produced a total of 70,800,000 metric tons (MT) of copra. About 4.5 nuts are required to produce a kilo of copra (PCA). Based on the provincial level of nut production, the province stood to produce 46,728,000 MT of coconut shell, about 102,800,000 MT of husks, and 68,534,000 MT of coco water (PCA Negros Oriental).

*Copra Marketing and Processing.* In 2005, there were 106 registered copra buyers and traders in the province. With the exception of a small coconut farmers' cooperative that has also ventured into direct copra marketing, those registered were private entities. Most of the barangay and municipal copra traders sold their assembled products to either of the two major wholesalers (ACM Commodities and JOEBON Marketing) which, in turn, supply the bulk of the copra requirements of the province's lone oil mill, the Dumaguete Coconut Oil Mill, Inc. (DUCOMI). A number of relatively large-scale municipal copra buyers/ traders have direct arrangements with the oil mill. According



to a PCA staff in the province, practically all of the copra produced in the province are bought by the lone coconut oil mill. That the oil mill is sourcing additional copra from neighboring provinces is an indication of the insufficiency of local copra supply.

During the same period, there were 117 lumber processors and 63 lumber dealers all over the province, somehow indicative of the extent to which coconut trees are being cut down. There were two coco coir processors situated in the municipalities of Bacong, and Guihulngan. Having accumulated some 80 MT of unsold coco fiber, these coir processors discontinued their operations in 2006 after less than a year of production operation due to marketing problems.

In 2005, PCA had identified 16 home-based Virgin Coconut Oil (VCO) producers with an aggregate average production of 256 liters per month, or an average of 16 liters of VCO per processor per month. However, more recent reports indicate that not all of these producers have continued their operations, with some opting to do so intermittently. On the other hand, there were three commercial VCO producers in the province with an aggregated average production of 940 liters/month. However, BUGLAS VCO which used to produce 1,380 liters/month had ceased production operations in July 2006 due to marketing difficulties. On the other hand, BLISSCOFA, a farmers' association that used to have an average production of 1,200 liters/month has scaled down its operation due to decreasing product demand.

*Support Services.* The PCA is the sole government agency that is primarily tasked to provide the leadership for the development of the country's coconut industry. However, staff from the PCA provincial office indicated that there has been minimal public investment in the coconut industry thereby affecting the extent and quality of their programs for the countryside. This attached agency of the Department of Agriculture has its own cadre of agricultural technicians referred to as Coconut Development Officers (CDOs) who are assigned to various coconut producing areas of the country. They perform tasks in line with the mandate, mission, and programs of the PCA. For the entire province of Negros Oriental, a total of only nine CDOs are fielded. Although small in number, these CDOs are experienced having served as CDOs for an average of 17.22 years, putting them in a good position to render an assessment as to the problems and needs of the coconut farmers. These CDOs are assigned to serve two to four municipalities each, equivalent to 44 to 89 barangays each. This large coverage raises questions as to how frequently the CDOs get to interact with farmers in a particular barangay that bears implications on the quality of service that they are able to provide to the client farmers. Among the projects being implemented by the CDOs in the areas involved in this study are the following: OPV corn seed dispersal for intercropping with coconut; coco planting/ replanting (Plant Now Pay Later); Cocolife Insurance Coverage; organization and strengthening of SCFOs; and trainings on production and post harvest technologies.

The PCA has been instrumental in facilitating the formation of Small Coconut Farmers Organizations (SCFOs) and their development into Cooperatives. PCA records show that it has organized and accredited a total of 260 SCFOs with a total membership of 21,846 coconut farmers for the entire province. A total of 63 SCFOs (24.23%) were able to register with the Bureau of Rural Workers (BRW). Some SCFOs obtained dual memberships in the Cooperative Development Authority (CDA) and the BRW. The number of SCFOs per municipality or city ranges from two to 22, with an average of 10.4 per municipality or city. A number of the SCFOs have evolved into regular, multipurpose cooperatives or credit cooperatives through which a number of PCA programs like the CFSNP-Micro Finance and Credit Matutupad programs, among others, are channeled.

### Profile of Smallhold Coconut Farmers in Negros Oriental

*Socioeconomic Characteristics.* The farmer respondents are quite old, averaging 56.73 years old in age (Table 3). They have an average of 9.36 years of formal education meaning that they have attained some secondary level of formal education. On the average, they have 3.62 children, slightly lower than the average household size of 5.09 persons. The farmer respondents operate farms with sizes ranging from as small as 300 square meters (.03 ha) to as large as 16 ha, with an average farm size of 2.49 ha. The size of their coconut farms was about a hectare smaller than their total farm size averaging only 1.40 ha, slightly larger than provincial average of 1.33 ha, but about a hectare smaller than the national average of 2.40 ha. On the average, the farmers own 134 coconut trees, mostly the "local tall" variety, estimated to be about 38.26 years in age. On the average, only about 103 (74.8%) of the farmers' coconut trees were bearing nuts, meaning that there are trees that are not yet at the bearing age or have already turned senile.

*System of Land Ownership.* Various land tenure arrangements characterize the farmers' system of land ownership of the lands they farm. Majority (84.2%) of the farmers owned the land that they till, or portions thereof, including those that were not necessarily planted to coconuts. More than half (60.1%) of the farmers owned the whole land they were tilling, while about one-fifth (21.4%) were merely part-owners, suggesting that the lands have not yet been legally divided among the other owners. Tenants constitute only 15.8% of the farmer respondents.

*Means of Livelihood.* The farmer respondents were not exclusively engaged in coconut farming; they also grew other crops such as corn, fruit trees, vegetables, sugarcane, and so on, although not necessarily on the same land as their coconuts. The varying degrees of the respondents' dependence on their farms, including but not limited to their coconut farms, as a means of livelihood, or their sufficiency as a source of family income, are revealed by the involvement of some farmers in other off-farm or non-farm income generating endeavors. Only about half (53%) of the farmer respondents were



wholly dependent on the farms they were working on for their livelihood, while 34.3% had other non-farm sources of income such as driving, buy and sell, occasional employment in LGU projects, and so on. A small number of the respondents were government retirees (teachers, clerks, and the like) and are therefore enjoying pension benefits. A number of farmers (12.7%) were also engaged in off-farm employment by working as laborers for other farms to augment their income sources. The foregoing scenario indicates that farming alone may not have been sufficiently providing for their household needs, hence, the need to supplement their income sources.

*Membership in Coconut Farmers' Association.* In the study area, PCA has organized and duly accredited a total of 106 SCFOs, with an average of 10.6 SCFOs per municipality, with each SCFO having an average of 42.13 farmer members. Almost all (97.7%) of the farmer respondents were members of the SCFOs. The establishment of the SCFOs and their evolution into Cooperatives in a few areas is one of the key program thrusts of PCA. The CDOs are tasked to facilitate the organization and strengthening of these farmers' organizations. These are done through various coconut-related extension services, capability building activities, and implementation of farmers' safety net programs such as OPV corn seed dispersal, upgraded insurance, microfinance and credit.

*Farmers' Participation in Coconut-Related Projects.* Farmer respondents had opportunities to participate in different projects from the time of the study and within the last five years (Table 4). Among the projects presented, it appears that the corn seed dispersal project, implemented in partnership with DA, benefited more coconut farmers (56.4%) than any other project. The project involved the distribution of corn seeds to coconut farmers to be planted as intercrops in their coconut plantations. This was intended to provide them the opportunity to generate additional income from their coconut lands. More than one-third (39.8%) of the respondents participated in trainings/seminars that were conducted by CDOs on various topics related to the technical aspects of coconut production and post harvest handling practices. As the program celebrated its second year in 2006, the plant-now-pay-later program (PNPL), a project funded by the provincial government and implemented through the PCA, was availed by only about one fifth (19.5%) of the farmer respondents. The project involved the dispersal of improved varieties of coconut seedlings under three schemes: "full payment" at reduced price per seedling, "50% payment" with remaining balance payable in seven years at a slightly higher price per seedling, and "pay later" at slightly higher price per seedling also payable after seven years either in cash or in kind (seedling). Other projects that were reportedly availed of, albeit by very few coconut farmers, include animal dispersal and microfinance or lending. The list does not include the insurance coverage that was open to all qualified members of SCFOs.

*Coconut Management Practices.* Farmers have employed a variety of production management practices (Table 5) in managing their coconut trees based on the last 5 cropping years. Less than one-tenth (6.7%) of the farmers applied fertilizers (organic or inorganic) on their coconut trees within the last

5 years. Reportedly, the last time most of the farmers applied fertilizers on their trees was more than seven years ago. This was in conjunction with the World Bank-funded coconut rehabilitation project through fertilization that was implemented by PCA at that time. This information suggests that coconut farmers were largely dependent on the availability of publicly funded fertilization projects. The almost-zero fertilization on coconut tree within the last 5 years was largely attributed to the farmers' lack of financial capital; the unstable, often low price of copra that makes further investment seemingly unattractive or lacking in viability, and the notion that the trees will bear fruits anyway, with or without nutrient supplementation.

On the other hand, majority of the farmers claimed to have occasionally performed weeding or brushing operations to remove unwanted plants from their coconut plantations. The farmers who practiced intercropping performed inter-tillage operations on their fields although they were not originally intended for the coconut trees but for the intercrops, e.g. corn. It should be noted that the farmers who practiced intercropping did so on an average of less than one third of their coconut landholdings, leaving a considerable portion of the land underutilized. At the recommended planting distance of 10 meters by 10 meters, the coconut trees can only occupy about 20% of the total space, thereby leaving ample space (80%) for the production of other crops or for the integration of livestock in the farming system (Suharto, 1998).

Pest management practices were not popularly practiced either. Rat and beetle infestation, considered major pests, were practically unmitigated by most farmers. The aforementioned scenario lends credence to the pervasive notion that coconuts are one of the most neglected crops, often times, attended to only during harvest periods and virtually left to fend for themselves most of the time.

*Perceived Trend in Coconut Yield Performance.* If the cultural management practices implemented by the farmers on their trees were to be solely used as a basis for determining yield, one may readily conclude poor yield performance as the outcome. Indeed, in comparing this year's yield with the preceding years', majority of the farmers have noticed a decline in coconut yield, with less than one tenth claiming to have observed an increasing trend (Table 6). It must be noted that about the same number of farmers (6.7%) claimed to have fertilized their trees at least once within the last three years. Farmers primarily attributed the reduction in yield to their failure to provide for the nutrient requirement of the trees. As mentioned earlier, the bulk (93.3%) of the respondents have not been able to fertilize their trees within the last seven years. In view of the fact that a significant proportion of these trees are standing on marginal, infertile areas, the decline in yield was inevitable. Also considered a contributory factor is the increasing percentage of senile trees that have apparently gone past their peak productivity periods. Indeed, provincial data indicate that the average nut yield per tree has declined from 41 nuts per tree/year in previous years down to 39 nuts per tree/year.



*Knowledge and Practice of Value-Adding Activities.* The farmers were asked whether they know something about certain coconut processing activities in order to determine possible value adding activities that they can potentially perform on their coconut-based products. It appears that many of the farmers did possess some knowledge about certain post production practices that have the potential of generating more revenues from their produce, but did not necessarily practice them (Table 7). For instance, all the farmers knew the process of producing dried copra, but less than half practiced them, opting instead to sell their produce immediately after meat extraction to copra traders. It is the copra traders who benefit economically from drying the coconut meat to add value to the product. This practice has clearly deprived the farmers of the opportunity to earn additional income. Similarly, many of the farmers knew charcoal making, participated in VCO processing demonstrations, and had the raw materials for both activities, but none of them engaged in business out of them. This may be attributed to a number of interrelated factors such as the possible lack of entrepreneurial spirit and skill, or the lack or absence of capital and marketing opportunities. Meanwhile, the processing of coconut coir into coconut fiber and coco peat, and the making of *nata de coco* appeared to be unfamiliar to most of the farmers.

*Product Diversification Activities.* The farmers involved in this study may be classified as traditionally-oriented in terms of the kinds of coconut products they produced. Based on the last three years, none reported to have sold products other than copra (which are mostly marketed as fresh copra), whole mature nuts, or young coconuts. It has been pointed out that coconut meat is only about 30% of the nut yield depending on the variety. Specifically, the dominant "local tall" variety of coconut produces nuts that average about 1.416 kilos each in weight. By proportion of the total nut weight, the meat is 32.5%; the husk 24.7%; shell 16.5%; while coconut water is about 26.3% (PCA). Despite the farmers' exposure to seminars on virgin coconut oil making, and the knowhow on charcoal making, broomsticks production, handicrafts, and so on, it appears that none of the farmers have engaged in entrepreneurial activities out of these potential income-generating activities, with the exception of a few farmers who have set aside a few trees for the production of coconut toddy and made some business out of it.

There appears to be a lack of appreciation among these farmer respondents of the potential of certain value-adding activities. A case in point is the tendency of most of the responding farmers to sell their copra fresh despite the knowledge that they could get greater value for their produce if they move a step further by drying their copra. This is attributed to the immediate need for cash to meet basic needs, and/or the absence or lack of access to post-harvest facilities. The common practice of getting the cash in advance prior to product delivery from copra traders may be offered as another explanation. This is one possible area that needs intervention because it does not entail much to implement.

The lack of initiative to engage in a business ventures using coconut by-products such as shells, midribs, spathe, husks, and the like, may be due to the fact that some of these materials are also used by majority of the farmers for their household fuel needs. This lack of interest on basic forms of product diversification may have sprung from what the CDOs regarded as the farmers' lack of entrepreneurial skills. It may also be attributed to the lack of success stories among local coconut farmers engaging in product diversification. Farmers with inspiring stories could serve as powerful examples worthy of emulation. As indicated by responses to the question on what projects can help boost their productivity and income, it appears that most of the farmers are not looking at value adding activities as a way to augment their income, but on increasing the yield of their trees, and by venturing into farming systems that increase the production efficiency per unit area.

### **Problems and Constraints of the Coconut Farmers**

Having worked with the coconut farmers for a considerably long and sustained period of time, the CDOs are in a good position to know their plight and concerns. The CDOs were asked to identify what they thought were the major problems confronting the coconut farmers based on the circumstances of their respective localities. Although intertwined, the identified problems were categorized in relation to productivity, income, and marketing (Table 8).

The CDOs recognized the low yield and productivity performance of coconut farms in the province. There are many contributory factors to yield such as aging of trees, marginal or infertile lands, pest problems, genetically poor varieties, and so on. However, there appears to be a pervading notion that low yield is due to farmers' inability to implement recommended cultural management practices for the trees which, in turn, is blamed on the farmers' lack of means and access to production inputs and support services.

Low productivity and yield inevitably leads to low income. The interrelatedness of yield, productivity, and income is further illustrated by the relationship of factors causing them such as the relationship between the availability of capital and farmers' ability to provide for vital inputs for production. However, there are other factors that influence farmers' income. From the CDOs' perspective, low income of coconut farmers is also due to fluctuating, often low, price of copra. Indeed, price is a major determinant of income because even with high productivity, income could still be low if the price of the product is extremely low such as often the case for copra. Moreover, the farmers' penchant for monoculture prevents them from taking advantage of still utilizable spaces between coconut trees. The CDOs also lamented the farmers' lack of value adding and product diversification activities that is related to their perceived lack of entrepreneurial skills.

There are also problems related to marketing. In addition to the problem of unstable, often low, price of copra, the CDOs also noted the presence of numerous copra traders and their marketing intermediaries who control the



farm gate price. Moreover, farmers have to contend with the high cost of transporting their products. This is due to the bulkiness of copra or whole coconuts and their being produced, to a significant extent, in far flung areas that may not have direct access to passable farm to market roads. In addition, the farmers' lack of access to post harvest processing facilities affects the quality of their produce. PCA reported that Philippine copra have been found to contain an average aflatoxin B1 content of 62.6ppb, while EU requirement is at 20ppb. The absence of postharvest facilities also prevents farmers from engaging in other value adding activities because they are forced to sell their products immediately after harvest, thus depriving them of additional returns.

### **Yield, Productivity, and Income-Enhancing Measures as Perceived by CDOs**

The CDOs were asked to identify measures that have the potential of helping coconut farmers increase the yield and productivity of their coconut farms. Two of the most frequently mentioned are technology-oriented, involving the fertilization of coconut trees and the planting and/or replanting of improved or promising high yielding varieties (Table 9). The farmers' failure to fertilize their coconut trees for so long and the consequent observed decline in coconut yield over the years have clearly precipitated the recognition of the indispensability of fertilizers as a productivity-enhancing factor. The CDOs are also recommending that an ongoing LGU funded program on coconut seedling dispersal involving promising coconut varieties for planting and replanting purposes (PNPL) be sustained and expanded. Understandably, the current program has not yet reached the majority of the coconut farmers in the province due to funding limitations. As explained by the CDOs, this proposed project is long-term in orientation and is geared towards the long term viability of the coconut industry.

The CDOs also viewed intercropping, mixed cropping, multicropping systems, or livestock integration schemes as ways to improve overall farm productivity. They have also seen the need for microfinancing to provide farmers with credit facility to invest in production inputs, and in other possible livelihood ventures to augment income from their coconut farms. One recommendation veers toward copra trading or dried copra marketing by the SCFOs. In effect, the CDOs are saying that the coconut farmers can dry the copra themselves and therefore add value to their products. They can also engage in copra trading collectively for additional income. This proposal can be realized if farmers have the requisite drying and storage facilities.

### **Summary and Conclusion**

Based on the aforementioned data, the smallhold coconut farmers involved in this study may be characterized by the following:

*Low yield performance.* The low coconut yield (average of 39 nuts/tree/year) of the small coconut farmers is attributed to a possible confluence of the

following factors: a) poor or non-existent agronomic and farm management practices, particularly in the area of crop nutrition due to the farmers' lack of means and access to production inputs, and support services, or indifference to recommended agronomic practices; b) poor growing conditions such as those in drought prone, pest infested, infertile, marginal sloping areas, and so on, the effects of which are compounded by the non-implementation of recommended cultural practices; and c) poor genetic attributes of local traditional varieties most of which are aging, with some turning senile.

*Low Farm Productivity/Underutilization of land resource.* The farmer respondents have failed to maximize use of their land resource due to their adherence to a largely monocropping scheme. Although a number of the respondents claimed to have planted either annual or perennial crops, or both, alongside their coconut trees, the majority did so in less than a third of the total size of their coconut landholdings. This leaves ample space for the production of other crops or the integration of livestock in the farming system. In a number of studies, Magat (1990) demonstrated the greater economic advantage of intercropping, multiple cropping or mixed cropping systems compared to coconut monocultures. However, such are not widely practiced by the farmers involved in the study explaining why they are deprived of additional sources of income

*Lack of Value-Adding and Product Diversification Activities.* Setting aside market forces, the farmers' low income is also attributable to the farmers' lack of value adding activities and product diversification. For instance, the tendency of most farmers involved in this study to sell fresh copra as opposed to dried copra has deprived them of the opportunity to add value to their product. Their dependence on copra as the main product from their trees has limited their earning potential. Practically all of the farmers included in this study have not made productive and profitable use of other tree abundant products like the shell, husks, coconut water, twigs, midribs, spathe, and the like. Their lack of skills or interest in making full use of these harvestable products have diminished their income generating potential.

*Inefficient Marketing System.* The presence of well-entrenched, multi-layered participants in copra trading contributes to low farm gate prices. Geographically dispersed, less organized, owning very small coconut farms, and individually producing small volumes of copra products, the coconut farmers in this study are at the mercy of local coconut traders when it comes to the price of their product. Often needing the cash immediately, the farmers are forced to sell their products at a price dictated by the traders with a very small margin of profit. This local particularity operates under the more serious problem of fluctuating often low world prices of copra that all the more puts the already marginalized local farmers at a disadvantaged position.

*Inadequate Support Services.* The lack of access to capital or production credit was identified by the CDOs and farmer respondents as major problems besetting coconut farmers in the province. Due to farmers' current low coconut yields and low farm productivity that consequently translates into low income,



the average coconut farmer has no capital to invest in improved crop management practices, processing and marketing ventures, and in alternative cropping or farming systems that have the likelihood of improving overall productivity and income. The very small number of CDOs fielded all over the province has serious implications on the quality and intensity of extension service that is being provided to the coconut farmers. The limited public investment in the coconut industry has limited the support services available to this sector. According to the CDOs, they have to make do with whatever government support PCA gets in terms of programs regarding post harvest facilities, such as dryers and other farm facilities and infrastructure. The absence of good post harvest facilities has resulted in poor post harvest practices. There is a need for government support in terms of production credit to which most of the farmers in this study have no access, market information, and other marketing interventions.

### Recommendations

Given the problems and constraints that beset the smallhold coconut farmers involved in this study, the following are recommended:

*Multisectoral Planning For Support Services.* The problems coconut farmers face are many and multifaceted. The coconut farmers need support services that may not be provided by only one agency or institution such as the PCA, given its own logistical constraints. It is recommended that a provincial coconut industry council be created to assess the industry, draw up recommendations, review and create local policies, develop short- and medium-term development plans, and pursue the implementation of programs for the local coconut industry. Representatives from the provincial and municipal local government units (LGUs), government agencies such as the Philippine Coconut Authority, Department of Agriculture, Agricultural Training Institute, Department of Trade and Industry, Department of Science and Technology, Fiber Industry Development Authority, Philippine Information Agency, and Department of Public Works and Highways; non-governmental organizations, state universities and colleges, various coconut-based agribusiness sectors and other stakeholders in the province should form part of the council. This is to address the multifaceted needs of small coconut farmers or pursue some of the recommendations of this study.

*Promotion of Alternative Coconut-Based Cropping Systems.* Coconut-based cropping systems such as intercropping, mixed cropping, or multi-storey cropping, and livestock integration have been demonstrated to bring significant improvement in coconut farmers' income compared to monoculture schemes. In addition, the planting of crops between coconut palms has been found to be advantageous because it promotes intensification of cultural management, not only of the intercrops but also of the coconut that results in improvement of the coconut yield (Batugal, 1998). These technologies exist

and are accessible. Thus, it is recommended that an assessment on the most suitable cropping system or coconut-livestock integration scheme be made in collaboration with the farmers so that the most technically feasible, socially acceptable, and economically viable production system can be implemented. This should be coupled with the requisite support services in terms of appropriate technology, production credit, and market linkages.

*Push for Product Diversification and By-product Utilization.* Coconut farmers can have opportunities to augment their income by engaging in value-added activities and product diversification. The coconut farmers involved in the study need to be informed and be convinced that coconut production is not just about copra. It is thus recommended that farmers be given opportunities to develop livelihood skills out of other coconut products and raw materials like juice or vinegar making (from coconut water), charcoal making (shell), handicrafts (shell, husks, midribs, and the like), VCO, and so on. This should be coupled with programs focusing on the development of entrepreneurial skills to make productive and profitable use of abundant supplies of raw materials in order to augment income sources. The fledgling coir processing ventures in the province need to be supported in terms of marketing linkage so as to provide farmers with possible market outlets for their waste products such as husks. An integral part of a program encouraging product diversification is the provision of support services in terms of appropriate technology, production credit, and market linkages.

*Improved Agronomic Practices to Increase Coconut Yield.* If coconut yield were to be improved or maintained at a satisfactory level, improved agronomic practices should be introduced. One of these is soil nutrition because the trees have been deprived of adequate nutrients for seven years or more. Other recommended practices are inter-tillage, pest management, and others. Both the CDOs and farmers have clamored for a project on fertilizer dispersal to rehabilitate the trees. A program that would afford farmers access to this vital production input will certainly help improve coconut yield. However, in the absence of such programs, it is recommended that low-cost farm technology that is within the capacity of the farmer to implement has to be introduced. Bio-farming or organic farming has been found to reduce production cost by as much as 50%, not to mention its ecological soundness and sustainability (Suharto, 1998). Programs of this nature need a strong extension support service to create awareness and promote adoption of available technology.

*Strengthening and Mobilization of Coconut Farmers' Organizations.* The small-scale orientation and geographical dispersion of coconut farmers in the province creates an impression that they are less organized and have lesser bargaining and economic clout. They are therefore vulnerable to unfair tactics and manipulation by private traders. The establishment of Small Coconut Farmers Development Organizations in the coconut growing areas of the province by the PCA is a welcome development that needs to be sustained and strengthened. These organizations must be mobilized to go beyond being



mere channels of information or providers of extension services. They should take a more proactive stance in accessing vital support services such as post-harvest facilities and infrastructure, production credit, the establishment of cooperative marketing ventures for copra and other products, and other income generating projects that will serve its members. Programs that would enhance the capability of these organizations to function as independent and self-managed organizations capable of organizing, directing, and managing its own programs are needed.

### Acknowledgment

This paper is a portion of a study funded by the Peace and Equity Foundation, Region VII. The author acknowledges with deep gratitude the invaluable assistance and incessant support of the provincial manager of PCA Negros Oriental and the wholehearted participation of CDOs in the conduct of the study. This study would not have materialized without the active involvement of coconut farmers who willingly supplied the bulk of the data that formed part of the basis of this report.

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2005	3,243,278	328,657,399	14,824,485
Average	3,198,769	315,943,872	13,940,679

Source: BAS; PCA National Office

Table 2. Coconut statistics for Negros Oriental, 2006

District/ Municipalities	Total Land Area (has)	Coconut Area (has)	Number of Trees		Total	Senile	No. of Farmers		Total
			Bearing	Non-Bearing			Coco Farmers	Farm Workers	
District I	176,155	28,695	2,525,160	631,290	3,166,450	262,516	21,392	9,830	31,222
Ayungon	15,360	4,390	386,320	96,580	482,900	38,632	2,554	2,482	5,036
Bindoy	17,370	2,904	255,552	63,888	319,440	25,555	3,830	2,857	6,487
Canlaon City	16,070	280	24,640	6,160	30,800	2,464	100	50	150
Guihulangan	42,275	9,100	800,800	200,200	1,001,000	80,080	2,728	492	3,220
Jimalalud	13,950	2,255	198,440	49,610	248,050	19,844	3,178	1,456	4,634
La Libertad	13,960	1,725	151,800	37,950	189,750	15,180	3,356	1,050	4,408
Manjuyod	26,480	2,681	235,928	58,982	294,910	23,593	1,525	285	1,810
Tayasan	15,420	3,590	315,920	78,980	393,900	31,592	3,728	758	4,486
Vallehermoso	15,290	1,770	155,760	38,940	194,700	15,576	593	400	993
District II	153,360	25,918	2,280,784	570,196	2,850,980	228,078	19,878	8,823	28,701
Amlan	5,940	1,793	157,784	39,446	197,230	15,781	800	2,160	2,960
Bais City	31,690	3,370	296,580	74,140	370,720	29,656	2,838	392	3,230
Dumaguete City	5,580	1,184	104,192	26,048	130,240	10,419	3,575	651	4,126
Mabinay	14,290	218	19,184	4,796	23,980	1,918	202	19	221
Pamplona	20,220	11,022	969,936	242,484	1,212,420	96,992	2,466	4,360	6,826
San Jose	5,440	1,534	134,992	33,748	168,740	13,499	3,064	487	3,531
Sibulan	16,300	2,767	243,496	80,874	304,370	24,349	3,981	551	4,532
Tanjay	53,900	4,030	354,640	88,660	443,300	35,487	2,952	323	3,275
District III	210,715.0	25,905	2,279,640	589,910	2,849,660	227,963	19,802	9,405	29,207
Bacong	2,500	2,283	209,704	52,426	262,130	20,970	4,040	1,906	5,946
Basay	23,780	1,458	128,304	32,076	160,380	12,830	525	147	672
Bayawan	63,795	2,250	198,000	49,500	247,500	19,800	1,612	294	1,906
Dauin	11,410	5,331	469,128	117,282	586,410	46,913	2,569	885	3,454
Sta. Catalina	52,310	3,470	305,380	76,340	381,720	30,536	1,388	368	1,756
Siaton	33,540	4,100	380,800	90,200	471,000	36,080	1,695	3,258	4,943
Valencia	14,830	5,478	482,064	120,580	602,644	48,206	6,672	2,044	8,716
Zamboanguita	8,550	1,435	126,280	31,570	157,850	12,628	1,311	503	1,814
GRAND TOTAL	540,230	80,518	7,086,584	1,771,398	8,856,980	708,557	61,072	28,058	89,130

Source: PCA, Negros Oriental



Table 3. Socio-economic characteristics of small coconut farmers.

Particulars	Circumstances	Characteristics
Age (Years)	Quite old	Average of 56.73 years Range: 26-81 years SD: 12.59
Educational Attainment (Years)	With some secondary education	Average of 9.36 years of formal education Range: 2 - 16 years SD: 3.45
Number of Children	Few	Average of 3.62 children Range: 0 -12 children SD: 2.20
Household Size	Relatively small	Average of 5.09 household members Range: 1 -15 members SD: 2.50
Farm Size (hectares)	Small total farm size	Average of 2.49 hectares Range: 0.03 - 16 hectares SD: 2.64
Number of Land Parcels	Few	Average of 1.79 parcels Range: 1 - 4 parcels SD: 0.91
Size of Coconut Farm	Small coconut landholding	Average of 1.40 hectares Range: 0.15 - 8 hectares SD: 1.31
Number of Coconut trees	Few coconut trees	Average of 134 coconut trees Range: 5 - 800 trees SD: 126
Number of Bearing Coco trees	Fewer bearing trees	Average of 103.25 bearing trees Range: 0 - 608 trees SD: 91.92
Age of Coconut trees	Middle aged	Average of 38.26 years old Range: 2 - 70 years old SD: 16.16
System of Land Ownership	Majority are farm owners	84.2% of the farmers owned the farms they operate, either as whole owners (60.1%) or part owners (21.4%). The rest (15.8%) are tenants.
Livelihood	All are farmers, but many are engaged in off-farm and non-farm work.	53 % lived off their own or tenanted farms; 12.7% get additional work from other farms (off-farm); while 34.3% have other non-farm livelihood.

Table 4. Proportion of farmers who have participated in coconut-related programs of PCA, DA, or LGU

Coconut Related Projects	f	% (n = 134)
Corn Seed Dispersal for intercropping	75	56.4
Training / seminars	53	39.8
Coconut Seedling Dispersal	26	19.5
Animal Dispersal Project	9	6.8
Microfinance/lending	5	3.8

Table 5. Cultural management practices employed by coconut farmers within the last five years

Farmers' cultural practices	f	% (n=134)
Weeding/ brushing	107	79.9
Replanting / replacement of senile trees	70	52.2
Tillage/ Cultivation	63	47.0
Pest Management Practices	18	13.4
Irrigation	9	6.7
Fertilizer Application	9	6.7

Table 6. Perceived trend in coconut productivity based on the last 5 years

Trend in Coconut Productivity	f	% (n=134)
Increasing	12	9.2
Stable/basically the same	23	17.6
Decreasing	96	73.3

Table 7. Farmers' knowledge and practice of coconut -related processing activities.

Processing Activities	% With knowledge (n = 134)	% Who actually practiced them (n = 134)
Drying of Copra	100	39
Coco Shell Charcoal Making	57.9	15
Virgin Coconut Oil	36.1	0
Coco coir (coco fiber & coco dust)	12.0	0
Nata de coco	2.3	0



Table 8. Farmers' problems as perceived by CDOs.

Yield and Productivity-Related Problems	% Reporting (n = 9)
Low yield and productivity	100
Lack of means and access to farm inputs (fertilizers, planting materials etc) and technology	100
Lack of technical knowhow, improper mgt practices, farmers' resistance to new technologies, still using traditional methods	77.8
Lack of technology transfer/ lack of farmers' training	33.3
Declining soil fertility/ land degradation	33.3
Pest damage	33.3
Lack of sustainability of certain projects e.g. seeds/ some farmers do not have access to government programs	22.2
Income-Related Problems	
Low income	100
Lack of capital	88.9
Fluctuating price of copra	88.9
Non-utilization of whole area for other crops or for livestock (Monocropping orientation)	77.8
Lack of other sustainable livelihood projects	66.7
No market for coconut byproducts	55.6
Lack of entrepreneurial skills to pursue business ventures	55.6
Production focus on traditional product e.g. copra	55.6
Marketing-Related Problems	
Low prices of copra and other coconut products	88.9
Presence of many middlemen and traders dictating the price	66.7
Access to farm to market roads	66.7
High transportation costs while price of products remains the same	55.6
Lack of post harvest facilities/ poor quality of products; threat of aflatoxin due to poor processing of products by oil millers	55.6
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No ready market for farm products/lack of strategy and methods for marketing products	33.3
Absence or lack of cooperative business undertakings	33.3

Table 9. Coconut yield/ productivity enhancing projects for small farmers as perceived by CDOs.

Suggested Projects	% Reporting (n = 9)
Fertilization	77.8
Coconut planting and replanting program (promising varieties, hybrids)	66.7
Intercropping/ multiple cropping	66,7
Continuous pest management	33.3
Agricultural credit financing	33.3
Organization and empowerment of coconut farmers	33.3

Table 10. Income-enhancing projects for small coconut farmers as perceived by Coconut Development Officers (CDOs).

Suggested Projects	% Reporting (n = 9)
Coconut processing/value-adding activities	66.7
Livestock integration/ dispersal	55.6
Microfinance, livelihood financing, credit	55.6
Dried copra marketing / copra trading, marketing tie ups	55.6
Skills development – post harvest processing	33.3
Post harvest facilities	22.2

