

An Assessment of Farm-Level Virgin Coconut Oil Production in CARAGA Region, Philippines

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Abstract—Virgin coconut oil (VCO) is one of the non-traditional and high-value coconut products emerging nowadays. Its importance, both in the local and foreign market, is mainly due to its numerous health benefits. Studies have shown that it has antimicrobial and antiviral capacities as well as dermatologic and cosmetic uses. In the Philippines, VCO production is very popular in the farm level. Engaging in the production of high-value coconut products among coconut farmers and cooperatives provides increased rural employment and income, hence, enhancing the productivity and competitiveness of the coconut industry. However, there are several issues and concerns confronting the farm-level VCO producers that affect their productivity as well as product quality. In this study, an assessment is conducted on the existing practices of VCO producers in the farm level in CARAGA region. Ocular inspections, personal interviews and survey method are employed in the study. All of the coconut cooperatives engaged in VCO production under study are utilizing hydraulic jack presser in their extraction of coconut milk. In fact, a number are using the mechanical screw-type pressing. These existing methods of extraction practice have contributed to the low productivity and poor quality of the product. None of the VCO producers under study have accreditation with the Food and Drug Administration (FDA). Findings of this assessment study are valuable inputs in coming up with an innovative pressing device to sustain and enhance the productivity of VCO industry in the farm level.

Keywords—Virgin coconut oil(VCO); assessment; farm-level; hydraulic jack presser; CARAGA region

I. INTRODUCTION

Virgin coconut oil (VCO) is a non-traditional and emerging high-value coconut product. It is defined as the oil obtained from the fresh, mature kernel of the coconut by mechanical or natural means, with or without the use of heat, without undergoing chemical refining, bleaching or deodorizing, and which does not lead to the alteration of the nature of the oil [1]. Some of its numerous health benefits are lowering of total cholesterol, triglycerides, phospholipids, low-density lipoprotein (LDL) and very low-density lipoprotein (VLDL) cholesterol levels and increased high-density lipoprotein (HDL) cholesterol in serum and tissues. It has also antimicrobial and antiviral capacities and used for dermatologic & cosmetic purposes. Further, it improves digestion, stress relief, increased immunity, relief from kidney problems, heart disease, high blood pressure, diabetes, HIV and cancer, dental care, bone strength, nutrient

absorption, and even helps in regular bowel movement [2] [3] [4] [5] [6] [7-8]

In the Philippines, there is an increased interest in the benefits of VCO in the international and domestic markets. The Philippine VCO exports from 2001-2005 registered an average volume of 155 MT worth US\$53,676,000 (FOB) with an average growth of 1749% for the said period. The result was an increase in the number of registered VCNO producers from 45 to 148. The United States is almost an exclusive destination with 170 MT for a market share of 96%. The market price for a liter of VCO ranges from P300 to P1,000 depending on the way it is packaged. The rising demand, both local and international, of VCO has become so great that a number of small to medium-sized companies are engaged in the production and export of VCO. The Philippine government, thru the Philippine Coconut Authority (PCA), set quality standards to bolster worldwide acceptance of the product in the global market [9]. In safeguarding and regulating the VCO with subsector, the PCA issued Administrative order no. 01 Series 2005 to enforce standards in the production and marketing of VCO [10]. To obtain an accreditation, a VCO producer should meet the requirements and standards set by the Food and Drug Administration (FDA), formerly the Bureau of Food and Drugs (BFAD).

VCO production in the farm level is also very popular in the country. Engaging in the production of high-value coconut products among coconut farmers and cooperatives provides increased rural employment and income, hence, enhancing the productivity and competitiveness of the coconut industry. However, there are several issues and concerns confronting the farm-level VCO producers that affect their productivity as well as product quality.

One of the regions of the country with vast supply of coconut is the CARAGA region. Located in the northeastern portion of the island of Mindanao, it has a total land area of 18,846.97 km² and is characterized by mountainous areas, flat and rolling lands [11]. Coconut, being one of the major agricultural products, is the major source of income and livelihood of the region. In order to sustain and enhance the productivity of the coconut industry, a number of coconut farmers and cooperatives engaged in the production of VCO, being a high-value coconut product, are sprouting in the

region. These VCO producers from the provinces of Surigao del Norte, Agusan del Norte, Agusan del Sur and Surigao del Sur are registered and/or listed in the Philippine Coconut Authority (PCA), CARAGA Regional Office [12] as well as in the Cooperative Development Authority (CDA) Office of the region [13]. These farm-level VCO producers which are coconut farmer cooperatives are encountering several problems and concerns that greatly affect their productivity, efficiency and product quality. Aside from these farmer cooperatives that are registered in the CDA, there are also a number of backyard VCO producing cooperatives existing in the region that are not yet registered or still on the process of registering CDA and PCA.

In this study, an assessment of the existing practices of VCO producers in the farm-level in CARAGA region has been conducted. The assessment of VCO producers is based on the list provided by the Cooperative Development Authority, CARAGA Region. Findings of this study will be valuable inputs in coming up with an innovative and improved pressing device to sustain and enhance the productivity of VCO industry in the farm level, particularly in the region of CARAGA.

II. METHODOLOGY

This assessment utilized a descriptive method in conducting research with the aid of a questionnaire. The pressing practices and the average production capacity of VCO producers at farm-level in the region were determined. Ocular inspections, personal interviews and survey method were also employed in the study.

III. RESULTS

In this study, 26 coconut farmers cooperatives engaged in VCO production in the region were surveyed. The distribution of these cooperatives in the region is shown in Fig. 1. Majority of these coconut farmer cooperatives are concentrated in the provinces of Surigao del Norte, Agusan del Sur and Agusan del Norte.

The number of workers in each coconut farmer cooperative engaged in VCO production was also determined. Results are presented in Fig. 2. As shown in the figure, majority of the coconut farmer cooperatives have 5-6 workers. One cooperative has 10 workers while the lowest number is 3. These coconut farmers' cooperatives under study are in existence just very recently. As shown in Fig. 3, 23% of them are in operation for 3 years, 42% in 2 years, and 35% of them are on their first year of operation. The average production capacity in terms of volume of VCO produced per day (in liters) was also determined. The results are presented in Fig. 4. Due to the low production capacity of VCO, majority of the cooperatives sell their product on a monthly basis. As shown in Fig. 5, only 23% of them have a weekly selling frequency.

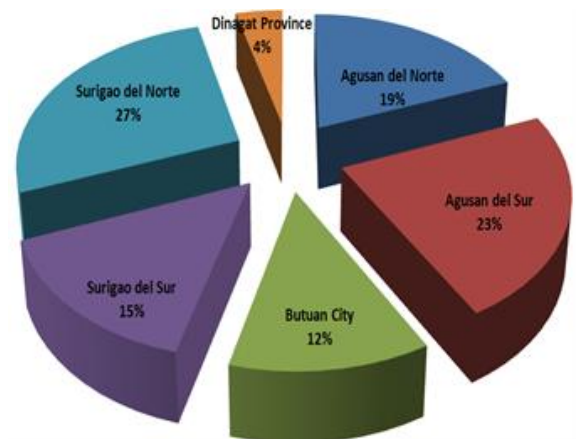


Fig. 1. Distribution of Coconut Farmer Cooperatives Engaged in VCO Production in CARAGA Region

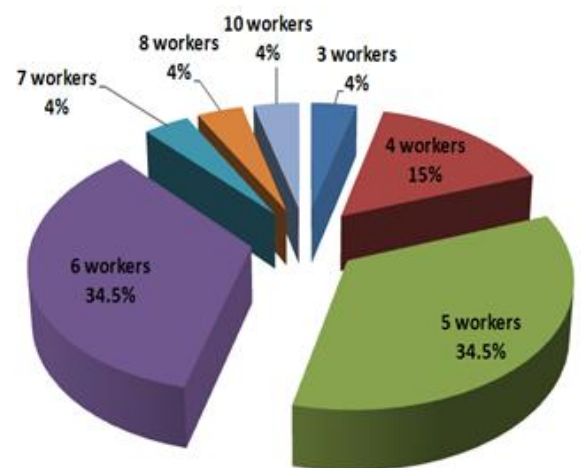


Fig. 2. Number of Workers in a Cooperatives Engaged in VCO Production in CARAGA Region

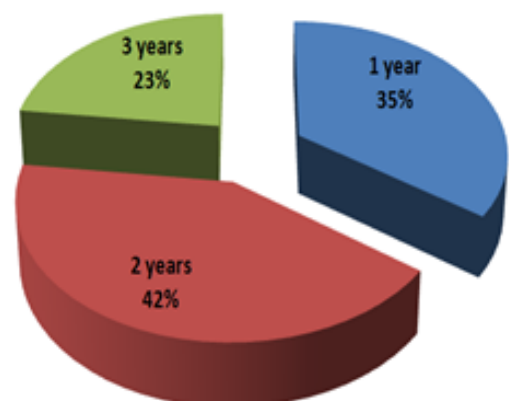


Fig. 3. Number of Years in Operation of Coconut Farmer Cooperatives Engaged in VCO Production in CARAGA Region

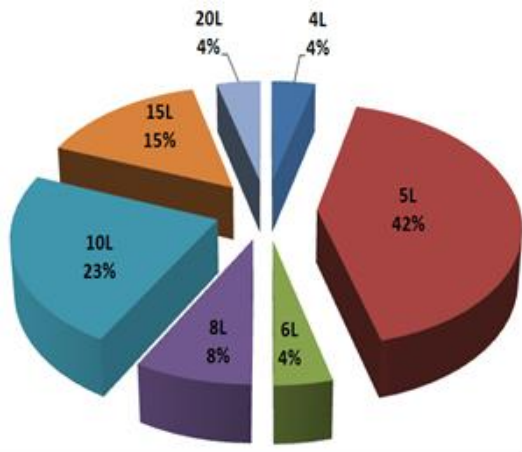


Fig. 4. Average Volume of VCO produced per day (in liters)

Moreover, the method of coconut milk extraction was also investigated. This is one of the very important factors in the productivity and product quality of the VCO. As shown in Fig. 6, majority of the farm-level VCO producers have used a hydraulic jack presser in extracting the coconut milk. In fact, there are some who are using the mechanical screw-type pressing. One cooperative utilizes a combination of hydraulic presser and screw type. Fig. 7 shows actual photos of the existing devices utilized in coconut milk extraction.

The capacity per batch (in kilogram) was also assessed. This refers to the maximum weight of coconut meat treated per batch of extraction. As can be seen in Fig. 8, most of the VCO producers has a capacity of 2 kg. per batch of loading for milk extraction. Also, the pressing time cycle per batch was

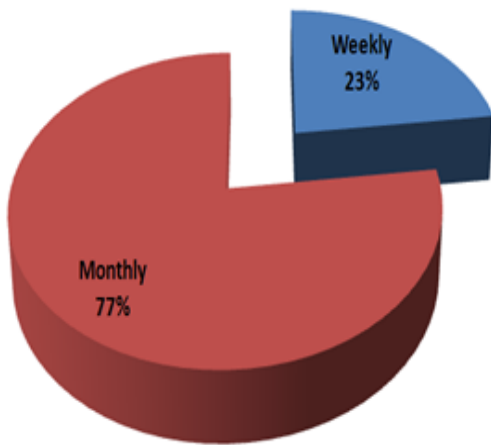


Fig. 5. Selling Frequency of VCO products

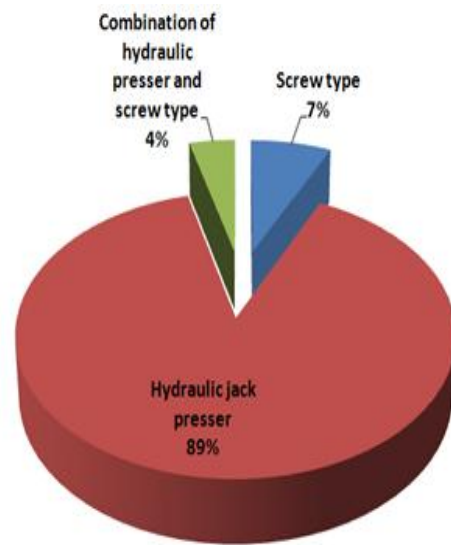


Fig. 6. Distribution of Existing Methods Utilized in Coconut Milk Extraction during VCO Production in CARAGA Region



Screw type presser



Hydraulic jack presser



Combination of screw and hydraulic jack

Fig. 7. Photos of Existing Devices Utilized in Coconut Milk Extraction during VCO Production in CARAGA Region

also surveyed. Fig. 9 shows that majority of the VCO producer-cooperatives have a pressing time cycle of 5-10 minutes. This low capacity and longer pressing time cycle are associated to the pressing device presently used by these cooperatives. These are the contributory factors on the low productivity and efficiency of VCO production at farm level.

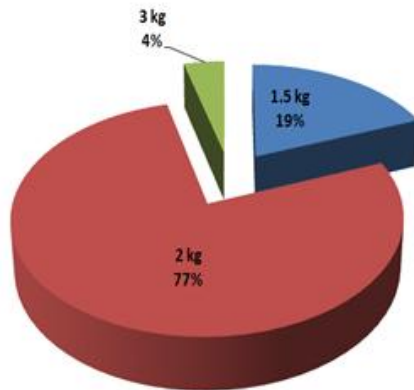


Fig. 8. Capacity per batch of loading for milk extraction (in kg.)

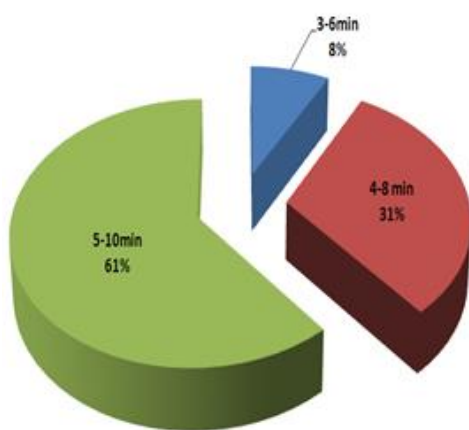


Fig. 9. Pressing time cycle per batch (in minutes)

IV. SUMMARY OF FINDINGS

The following are the findings for this assessment study:

- All respondents in this study operate 8 hours daily and 12 months a year.
- Majority of the VCO producers surveyed at farm-level have 5-6 workers.
- Most of the respondents are newly established VCO producers (at most 3 years in operation)
- Most of the farmer cooperatives in this study produced an average of just 5 liters of VCO per day.
- Almost all of the respondents sold their VCO products on monthly basis in local market only. The products are sold either direct or on second-party basis.
- Common problems encountered are low productivity, low income and low quality.

- Almost all of the coconut cooperatives engaged in VCO production under the study are utilizing hydraulic jack presser in the extraction of coconut milk.
 - In fact, there are some who are using the mechanical screw-type pressing.*
 - These existing methods of extraction practice have contributed to the low productivity and poor quality of the product.*
- Majority of the respondents have a production capacity per batch and pressing time cycle of 2 kg and 5-10 min, respectively.
 - Thus, the productivity is quite low.*
- None of the VCO producers under study have accreditation with the Food and Drug Administration (FDA).

V. CONCLUSION

Based on the results and findings of the assessment, the low productivity and efficiency as well the quality of the product can be attributed to the method used by the VCO producers in extracting coconut milk. Hence, a motorized hydraulic pressing (MHP) device is proposed to sustain and enhance the productivity and efficiency of VCO industry in the farm level.

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