

The Community Partnership Program at UMKM Puncak Sejahtera Bukit Aren Village through Mentoring and Development of Virgin Coconut Oil (VCO) and Gula Aren Products

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Abstract

UMKM Puncak Sejahtera is a micro, small, and medium enterprise that produces virgin coconut oil (VCO) and palm sugar which are faced with production and marketing problems. The problems faced from the production aspect are that the product is still limited, does not have technological skills innovation, good product packaging and storage does not have a machine with a large capacity, and produces good quality. The problem from another aspect is not having extensive business management and marketing capabilities so financially the results obtained are insufficient for daily needs. Even though the potential of coconut and palm sugar can be developed various products with a fairly high economic value. The community partnership program (PKM) aims to help and develop VCO and palm sugar businesses in UMKM Puncak Sejahtera. VCO manufacturing innovation training has been carried out with several methods and has been tested in the laboratory, assistance in processing technology for coconut and palm sugar-based product innovations, VCO training, and palm sugar business management through packaging technology, design labeling techniques, storage time, and marketing. Business license assistance for business development and online marketing is also carried out in this program. The methods used are the RRA (Rapid Rural Appraisal) and PRA (Participatory Rural Appraisal) approaches, including 1) priority of problems to be addressed, 2) training and assistance based on problems in stages, 3) product improvements are carried out based on the results of laboratory tests. The result of this activity is an increase in the understanding, and skills of members of the UMKM Puncak Sejahtera group in Bukit Aren village in processing VCO and palm sugar with good quality and quantity of production. VCO products and cooking oil are certified for nutritional value in the laboratory. Product marketing is expanded online to make it easier to sell products.

Keywords: Training, Mentoring, VCO, palm sugar, UMKM

INTRODUCTION

Bukit Aren Village is one of the 8 villages in Pulubala District, Gorontalo Regency is a transmigration settlement area located in a hilly area with a plantation area of 1440 hectares. Bukit Aren Village one of the national food security development areas in Gorontalo Regency is a coconut producer with an area of about 60% of the total plantation area. Nevertheless, the potential of coconut has not been put to good use. Bukit Aren village farmers mostly only sell coconuts to collectors at low prices of around Rp. 1000 / piece. The increase in the number of poverty in Gorontalo Regency from 66.72 thousand people (2020) to 67.21 thousand people (2021) is an indicator that this area has not been able to take advantage of the potential of natural resources such as coconuts.

The vast potential of coconut land allows Bukit Aren village to develop innovative coconut-based products. Coconut (*Cocos nucifera* L.) is one of the plants that are very useful in rural economic life because all parts of the coconut tree can be used to meet human needs. The use of coconut fruit as a food and health ingredient has been recorded for thousands of years. Coconut palm trees are seen as a sustainable resource that provides crops that affect all aspects of people's lives in the tropics. An important part of the coconut tree is its fruit, coconut flesh, coconut water, coconut milk, and oil (Grimwood et al. 1975).

One part of the coconut that has many benefits is the flesh of the coconut fruit which is taken from coconut milk to be used as virgin coconut oil (VCO). This potential has not been developed in Bukit Aren village because coconut fruit is only sold to collectors at low prices. Alternative processing into other products, namely into pure coconut oil, is only a small part of it is carried out by people who are members of the UMKM Puncak Sejahtera group. Even though this product has high economic value because it has many benefits for health and also beauty care. VCO contains 92% medium chain fatty acids such as lauric acid that can be directly absorbed through the intestinal wall, this process is faster because it does not go through hydrolysis and enzymatic processes. Furthermore, it is directly supplied into the bloodstream and directly taken into the liver organs to be tabulated. In the liver VCO is processed into energy only, not cholesterol and fat deposits, the energy is used to improve the functioning of all endocrine glands, organs, and tissues of the body. VCO can be used as an antimicrobial, immune system, good cholesterol, super antibiotic, good for pregnant and lactating women, maintain heart and blood vessel health, osteoporosis, diabetes mellitus (diabetes), liver, cancer, help lose weight, increase stamina, maintain skin health, and maintain healthy hair (Cox et al. 1998).

The results of the latest study in 2021 stated that VCO can help inhibit the corona-19 virus during the 28-day treatment in 63 adult patients in isolation rooms with random treatment, namely receiving standard food (control group) and food mixed with a predetermined dose of VCO (treatment group). Changes in clinical markers were measured at three points in time (days 0, 14, and 28), with daily monitoring of COVID-19 symptoms. Participants in the intervention group showed a significant decrease in the level of C-reactive proteins, with the average CRP level normalized to ≤ 5 mg / dL on the 14th day of the intervention. The group that received food mixed with VCO effectively encouraged faster recovery. The results in all studies are favorable because VCO can boost the body's immune system, inhibiting the growth of the coronavirus (Imelda et al. 2021). Some research reports that using VCO as a dietary supplement with doses ranging from 30 mL/day to 50 mL/day, for a period of 4 to 6 weeks may increase the body's immunity. The main composition of VCO is lauric acid and capric acid. This acid in the human body is converted into monolaurin and monocaprin which are anti-viral, anti-bacterial, and anti-fungal (Hornung et al. 1994). VCO before being marketed must have standard parameters such as density, water content, free fatty acid number, peroxide number, and percentage of saturated and unsaturated fatty acid content. VCO is made from crushed old coconut meat and then coconut milk is taken. Coconut milk is an emulsion of oil in water and protein (in the form of lipoprotein) contained in coconut milk functions as an emulsifier. One of the causes of the loss of protein stability is the presence of stirring, heating, or microbial activity. This means that the protein denatures so that its solubility is reduced. The hydrophobic layer of the inner protein molecule turns outwards, while the hydrophilic outer part folds inwards. This causes the protein to coagulate and will eventually undergo precipitation so that the oil and water layers can separate. Therefore, the manufacture of VCO does not use hot temperatures (Ghani et al. 2018).

In addition to coconuts, palm trees also grow a lot in this area so this village is called Bukit aren. The results of interviews with the head of Bukit aren village and the head of UMKM stated that palm trees grow wild and are commonly found in Bukit aren villages. The potential of palm trees is very likely to be developed into products that have a fairly high economic value and are rich in benefits such as kolang-kaling and palm sugar. The process carried out is by tapping the male bunches that have bloomed and spreading yellow pollen. The bunches will secrete the sap and can be produced into palm sugar.

The problems faced by UMKM Puncak Sejahtera, Bukit Aren village, are: field of production, and business management and marketing.

Field of Production

The manufacture of VCO products is still traditionally with makeshift equipment. The manufacturing method used is still manual and unhygienic. The separation and filtering process is still traditional and manual so the production process is quite long.

Since 2019 this business has been allowed by UMKM Puncak Sejahtera has only produced VCO 7 (seven) times. Once produced usually this group uses 120 coconut seeds which produce about 5 liters of VCO.

Not paying attention to the development aspects and factors of good quality and quality are the problems of the VCO products produced by these UMKM. In the filtering process, it is still manual, not paying attention to cleanliness so there are still many blondos carried away and affecting the clarity of the oil produced. The filtering process is less than perfect and the storage is still less hygienic so it can cause the shelf life of VCO to be shorter (not durable) so that it is easily rancid.

For palm sugar products, there are problems in terms of packaging and there has been no innovation to develop products such as liquid palm sugar and ant sugar which have a higher economic value.

Business Management and Marketing

Have not understood the administrative system so partners have not been able to calculate the profit/profit from this product in an organized manner. Direct marketing has only been limited to the area around Bukit Aren. Likewise, palm sugar products are only marketed in the local market with low shelf life quality because they are not hygienic packaged. The business group included in the "micro enterprise" category, namely UMKM that have a craftsman nature but does not yet have a high entrepreneurial nature. This business has also not been registered in the PIRT and has not been tested for its composition in the laboratory so it has not been legitimized. This affects the selling price. The market price of coconut/fruit is Rp. 2000. The market price of VCO varies according to the packaging. For a 125 ml bottle package, it is priced at Rp.25,000 and a 250ml bottle is priced at Rp.50,000. The proceeds from the sale of VCO/liter mean only Rp. 200,000., so the income for each production is Rp. 1,000,000 (one million Rupiah). The profit obtained once the VCO manufacturing process after deducting capital and production processes is around Rp. 700,000.

For the palm sugar business, marketing is still limited because it is only deposited in the nearest market. The price of palm sugar or brown sugar ranges from Rp. 10,000-15,000/kg. The production of sap from palm trees is about 10 liters/tree. The brown sugar produced is only about 25% so for one production of about 50 liters of sap, the brown sugar produced is about 12.5 kg. This is still not enough to support UMKM members so this business is only a side business.

METHOD

This community partnership program (PKM) uses the RRA (Rapid Rural Appraisal) and PRA (Participatory Rural Appraisal) approaches. RRA and PRA are philosophies, a methodical approach known as understanding village problems quickly with the following stages.

Preparatory Stages

At this stage, coordination with partners and the Bukit aren village government, Pulubala district, and Gorontalo regency will be carried out about the PKM program that will be carried out. Preparation is important to determine the schedule of activities, training locations, calculation of the number of participants, scheduling of advanced activities, preparation of training materials, preparation of raw materials, and purchase of production machines and other supports.

Socialization

This stage includes socialization of the program that will be carried out related to education to UMKM members and the surrounding community through leaflets/brochures and discussion forum groups (FGD).

Training and Partner Mentoring

The business development technology of VCO and palm sugar products will be directed at training activities in the form of strengthening VCO technology and developing palm sugar processing techniques such as becoming ant sugar products, palm sugar, and liquid brown sugar.

Coconut kneading machine technology and coconut milk and pulp separation machine are used to support the improvement of production capacity and quality of VCO products. Therefore, with the training on the use of coconut shredders and coconut milk and pulp separation machines, it is hoped that it can support and improve the quality and quantity of VCO products. benchmarking activities for UMKM members to coconut centers that have been successfully carried out is also at this stage.

Overall, by utilizing the right and optimal process technology, it is expected that there will be a multiplier effect in the form of an increase in additional income, development of new coconut product-based businesses, increased product sales turnover, and improved welfare from partners of the Puncak Sejahtera group in Bukit Aren village.

Forum Group Discussion (FGD) for business development and product innovation

This activity aims to guide the community and members of the UMKM Puncak Sejahtera to develop VCO and sugar ant businesses in Bukit Aren village.

Monitoring and Evaluation

The activities carried out are to assist UMKM Puncak Sejahtera in product marketing both directly and online. The process of obtaining a business license towards PIRT certification is carried out at this stage.

RESULTS

Survey, Coordination and Socialization with The Head of Bukit Aren Village and Members of The UMKM Puncak Sejahtera

This activity is carried out by the service team related to the location of service, analysis of partner needs, and coordination with related parties, especially with village heads and leaders of UMKM Puncak Sejahtera. This activity aims to socialize the program plan of activities that will be carried out in the Community Partnership Program (PKM) in Bukit Aren village. Socialization is carried out directly to UMKM members through the presentation of work programs related to the development of VCO and palm sugar products. The Bukit Aren village government agreed to support the implementation of the Community Partnership Program (PKM). The UMKM Puncak Sejahtera was very enthusiastic and agreed to cooperate with the service team. The implementation of the cooperation that has been signed by the chairman of UMKM is proof of the seriousness of UMKM cooperating in this program for 8 (eight) months starting from May – December 2022.

Benchmarking Partners to Coconut IKM Centers







A business requires an orientation to increase business in both production and business management. This activity aims to study the VCO and cooking oil business at the Aina Cipta Coconut IKM center which has been successful in the VCO and cooking oil industry. This center also has complete equipment to process VCO so this activity also designs activities for training plans with VCO processing machine technology. The results of this benchmarking encourage members of the UMKM Puncak Sejahtera to improve the quality of VCO and cooking oil products.

Innovation Training on The Manufacture of VCO and Cooking Oil

Training in the form of providing skills in the form of direct demonstrations by actively involving members of UMKM about the processing of VCO and cooking oil through appropriate technology based on fermentation biotechnology to produce good, healthy, and nutritious VCO and cooking oil products.

Table 1. Results of Training Implementation

Before the implementation of the training	After the implementation of training
1. The processing method is still not hygienic because it still uses hands without gloves	1. Education on the use of gloves so that the product is safe and not contaminated is understood by trainees 2. The separation of coconut milk from coconut pulp has used a coconut milk

Before the implementation of the training	After the implementation of training
<p>2. The separation of coconut milk and coconut pulp is still done manually and is less hygienic because it still uses hands to squeeze the coconut into coconut milk</p> 	<p>squeezing machine with a machine that has a large capacity and a hydraulic machine to maximize the acquisition of coconut milk from the coconut milk squeezing machine</p> 
<p>3. Separation of VCO oil from blondo still uses plastic containers with limited capacity</p> 	<p>The separation of VCO oil from blondo already uses a larger container and is educated by the centrifugation method</p> 
<p>4. The separation of VCO oil from blondo already uses a larger container and is educated by the centrifugation method</p>	<p>VCO oil filtration is clear because of the multistage filtration system with the use of filter paper that makes the oil clear.</p> 
	

Palm Sugar Product Innovation Training

The purpose of carrying out the activity is carried out because the raw materials in the form of palm trees grow wild a lot so it has the potential to be used as a product with high economic value. Palm trees are an agricultural commodity that is a business opportunity for the community in Bukit Aren village, but the knowledge and skills to process palm juice products into various processed products that have a nutritional, display, and economic value have not been thought of by farmers and PKM partners. Palm sugar is made by several community groups in Bukit Aren village. The process of making palm sugar cubes is very simple because it only requires a large pan where palm juice is ripened. Palm sugar is a product that results from the concentration of palm juice which is traditionally through heating or cooking. The heating process lasts several hours until the moisture content is reduced to 6-5 percent. By cooling into molds over time the product hardens which can now be referred to as palm sugar cubes or brown sugar in the vernacular in Gorontalo. The process of making palm sugar is the same as liquid palm sugar. Namely, fresh sap is put into a cauldron with a certain heat until the material becomes thick. If the goal is to make liquid palm sugar heating lasts until the volume stays (one-fifth) $1/5$ of the original volume. Meanwhile, if you aim to make sugar cubes or brown sugar, the heating lasts until the volume of sap (palm syrup) is reduced to $1/10$ of the original volume. Only after that the viscous liquid is poured into a mold in the form of coconut shells or bamboo or other molds and waited until it cools. Palm sugar that has hardened and cooled is packaged in a sealed container to avoid moisture. Palm ant sugar is a powdered or granulated or granulated version of brown sugar. This is the type of sweetener that millennial society is increasingly looking for. Due to the increasing awareness that maintaining health, one of them can be through food and drink intake. For sweetening options fall on organic palm ant sugar. a simple way to get ant sugar can be from brown sugar. How to make ant sugar from brown sugar is also relatively easy. Take a few grains of real and quality palm sugar. Because brown sugar is not of high quality, it is not easy to crystallize. Slice the sugar thinly or chop it with a palm sugar chopping machine so that it becomes a smaller piece. Put in a wide container such as a tray, then dry with an oven that is set the temperature not to exceed 50o C until the brown sugar slices dry. After drying, it can be sifted like ant sugar. The results of training in the form of providing skills in making liquid palm sugar and palm ant sugar as diversification of palm sugar products went well and the participants were very enthusiastic.

Technical Guidance for Business Development and Product Innovation

This activity aims to guide the community and members of the UMKM Puncak Sejahtera to develop VCO and sugar ant businesses in Bukit Aren village. This activity invited stakeholders as resource persons, namely successful entrepreneurs in Gorontalo and the Head of the Industry and Trade Office (Disperindag) of Gorontalo Regency. Tips for successful business development were presented by the resource persons to increase and increase the enthusiasm of training participants. Guidance on the improvement of VCO products is provided in the form of exposure to well-known and globally marketed VCO products. In this activity, it was agreed to collaborate with the Disperindag office as a sustainability of the VCO and palm sugar development programs.

Forum Group Discussion (FGD) for Packaging and Labeling Assistance Activities

This activity aims to improve product quality by making attractive packaging, labeling informative packaging, and how calculating product expiration. In this activity, the labeling of UMKM products such as VCO, cooking oil, liquid palm sugar, and ant sugar has been made by the service team, a team of students together with members of the UMKM Puncak Sejahtera. The FGD results in the form of informative labels are seen in figure 1.





Figure 1. Product Results of Packaging Assistance and Labeling

DISCUSSION

The implementation of community partnership program activities with the mentoring and development programs for VCO and palm sugar products at UMKM Puncak Sejahtera was successfully implemented.

- Some of the things that can be seen from the results of this community partnership program are: Human resource capacity building
- Quality improvement and product innovation
- Products are more attractive and have the potential to increase marketability
- Broader marketing area
- The occurrence of extensive partnerships

Human Resource Capacity Building

The UMKM Puncak Sejahtera members are human resources who are willing to learn so training and mentoring activities have increased knowledge because there is a transfer in the form of science and technology in processing VCO and palm sugar and product innovation.

The attitude/mentality is more enthusiastic, there is a transfer of energy from the entrepreneur's soul to develop the potential of the natural resources of bukit aren village. Skills are improved because they already know innovative products based on coconut and palm sugar.

There has been an increase in the knowledge and skills of UMKM after being given training and technical guidance on how to produce processed food (CPPOB) properly. The principles of good CPPOB, especially the means of production, are important knowledge for UMKM actors.

Quality Improvement and Product Innovation

After training and mentoring, the quality of VCO products increased and the innovation of palm sugar into ant sugar was in demand by business actors in Bukit aren village. the provision of VCO processing tools or machines to UMKM Puncak Sejahtera directly increases the quantity of VCO. The process is faster so it is not easily contaminated. For cooking oil products, it is better because UMKM members have paid attention to the product storage process by placing it in a special cabinet in a shaded place to avoid sunlight and heat. For palm sugar innovation products such as liquid brown sugar and palm ant sugar will be developed and approved by the village government to become a brand product of Bukit Aren village.

Products are More Attractive and Have The Potential to Increase Marketability

Packaging and labeling assistance has resulted in products with informative labels. The nutritional value label and expiration date are the results of the analysis of the team of students implementing the service in the chemistry laboratory.

Broader Marketing Area

Assistance in terms of online marketing through online media such as Facebook and Instagram increases the amount of consumer demand.

The Occurrence of Extensive Partnerships

The results of this activity expand the network of partnerships between Universitas Negeri Gorontalo, the Gorontalo Regency government, and UMKM in Bukit Aren village.

CONCLUSIONS AND RECOMMENDATIONS

Coconut-based products such as VCO and cooking oil are beneficial for health so they need to be widely developed in both production, management, and marketing processes. Palm sugar

innovation products such as liquid palm sugar and ant sugar have high economic value so they can become business opportunities and product brands.

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APPENDIX



Figure 3. Technical guidance on VCO and Palm Sugar Business Development



Figure 4. FGD for packaging and labeling assistance activities