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Improvement of Processing and Marketing of Innovative Coconut and Nut-Based Products at the Sari Nadhi Business Study Group, Carangsari Village, Badung

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A B S T R A C T

The processing of agricultural products, especially coconuts into VCO, coconut oil, sounding, and tempeh, with several types of processed products for innovative snacks with soybean ingredients has been produced and marketed by partners in Carangsari Village and its surroundings, but with limited marketing, and the products still need to be improved in quality to be able to compete with similar products. The problems faced are that the product quality is inconsistent, the product packaging is still simple, and there is no knowledge of business management and bookkeeping, so there are obstacles in managing production and marketing. The solution to the problems faced is to improve processing technology and packaging technology; turnover increases; product quality and quantity increase

Contribution to Sustainable Development Goals (SDGs):

SDG 1: No Poverty

SDG 2: Zero Hunger

SDG 4: Quality Education

SDG 8: Decent Work and Economic Growth

SDG 9: Industry, Innovation, and Infrastructure

SDG 17: Partnerships for the Goals

1. INTRODUCTION

1.1. Research Background

Coconut is one of the agricultural products that has high economic value if further processing is carried out because almost all parts of the plant can be further processed, especially the fruit. Various processed products can be made from coconut fruit besides coconut oil, including dry grated coconut, copra, coconut sugar, coconut milk, nata de coco, coconut water syrup, coconut soy sauce, chips, coconut jam, preserved coconut milk, and many processed products with coconut as the main ingredient [1].

Innovation in the use of coconuts in high-value products needs to be done to increase the economic income of Canangsari Village, Badung. Through diversification of processed coconut oil products in the form of VCO, it is hoped that the selling value will increase by 5-12 times. If people's insights are open, it is hoped that in the future people's income will increase as well as their welfare [2].

Nuts are also potential agricultural products of Carangsari and its surroundings. This type of agricultural product is also widely sold in the village market located on the side of the main road of Carangsari village, which is planted by the community as a crop rotation. However, this type of agricultural product is only consumed fresh and has not been processed into other products, so it needs to be considered to



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be processed into a product that can add innovative products to support Carangsari Tourism Village in the future.

Indonesia has more than 12,000 types of beans, including peanuts, green beans, red beans, black beans, cowpeas, pigeon peas, Bogor beans, string beans, soybeans, and snow peas. Meanwhile, in Maluku, it is not yet known for sure how many types of legumes are planted. Legumes have spread widely in various provinces and have been well cultivated. The beans cultivated by the community are upright and creeping types, short-lived and clumping plants with various types planted [3].

The potential depicted above will support the tourism village if the potential is utilized and empowered to increase community income. Collaboration between the community, in this case, the fostered partners with universities, is needed to maximize the potential through community service activities. The introduction of new technology with high economic value for processed nuts given to the foster group is the training in processing tempeh, which is widely consumed by the community.

Carangsari Village, which is known as a tourist area, has 10 (ten) traditional hamlets/banjars, namely Samuan Kangin Hamlet, Samuan Kawan Hamlet, Mekar Sari Hamlet, Bedauh Hamlet, Pemijian Hamlet, Senapan Hamlet, Anggungan Hamlet, Sangut Hamlet, Beng Hamlet, and Telugtug Hamlet. Carangsari Village, which is known as a tourist area, has 10 (ten) traditional hamlets/banjars, namely Samuan Kangin Hamlet, Samuan Kawan Hamlet, Mekar Sari Hamlet, Bedauh Hamlet, Pemijian Hamlet, Senapan Hamlet, Anggungan Hamlet, Sangut Hamlet, Beng Hamlet, and Telugtug Hamlet [4]. Carangsari Village is located in Petang District, Badung Regency, and is one of the villages with an area of around 885 ha and an altitude of 400-500 m above sea level.

Coconut, which has the Latin name *Cocos nucifera* L., genus *Cocos* from the Arecaceae family, is a plant often found in tropical climates, one of which is Indonesia. The content of coconut fruit includes coconut fiber with a composition of 33%, coconut shell 12%, fruit flesh 28%, and water 25%. Almost all parts of the coconut can be used to meet human life needs. Coconut fruit contains 30–50% oil. Fresh coconut fruit, when dried, has an oil content of 63–65%. The older the coconut fruit, the higher the oil content it contains [5].

Coconut is a plant with great potential to be cultivated because many products can be made from coconut. Coconut is known as a fruit that has high economic value [6]. Coconut is a superior product commodity with an important role in development [7]. Several research results show aspects of VCO as a herbal/plant medicine, including as a preventative for pressure ulcers in stroke patients [8], antimicrobial [9], and preventing premature aging [10]. In addition, VCO also makes the brain healthy, reduces the risk of heart disease [11], burns calories, and makes the skin, hair, and teeth healthy [12].

Soybeans contain the highest quality complete protein compared to other plants. There are vitamins B1, B2, B3, B5, B6, and K. The iron content in soybeans is almost equivalent to the iron content in 4 ounces of roasted chicken breast [13]. Several studies of soy protein with isoflavones have shown significant results in lowering cholesterol levels in menopausal women [14].

Soy protein is the only type of bean that has the most complete composition of essential amino acids [15]. The quality of protein in soybeans is not inferior to cow's milk [16]. This makes the content of soybeans important for human health [17].

Soybeans also contain carbohydrates, vitamin B, vitamin D, and calcium, which are useful for bone and tooth growth, and also contain lecithin, which helps brain cell development. In addition, soy milk also contains fat, phosphorus, iron, provitamin A, vitamin B complex (except B12), and water [18]

1.2. Research Objective

This study aims to increase production turnover, product quality, and quantity, thereby strengthening the economic resilience of local producers and contributing to the development of sustainable agro-industries in the region.

2. MATERIALS AND METHODS

The method of implementing the Community Service Program activities to improve the processing of coconuts and nuts into innovative products is carried out using a discussion method to find out the real problems experienced by partners so that solutions can be found for the problems faced. Furthermore, with a direct face-to-face method and providing training according to partner needs, partners gain additional knowledge about processing coconuts and nuts with a manufacturing method that can be done with simple tools, an understanding of sanitation and hygiene of processing, packaging and labeling, entrepreneurship, business management, and improving bookkeeping [19]. Then, direct practice in the form of training, guided by instructors from among lecturers, alumni, and students who have taken the courses on Plantation Product Processing Technology and Nut Processing Technology, so that partners can directly improve their products [20].

3. RESULT AND DISCUSSION

3.1. Delivery of Technology and Innovation Product Application

The application of technology that is to be introduced in this context refers to the process of how technology and innovation that have been provided as a step to improve technology can be utilized by the community. The following are some important aspects that need to be considered in the delivery or application process, namely mapping potential by conducting data collection through mapping of agricultural potential, land area, and coconut and nut production in Carangsari Village, where on average the community has fields/dry fields and yards that are quite large. In addition, analyzing needs and problems by identifying community needs related to coconut processing, such as access to appropriate processing technology, market information, and effective training. Then, skills and knowledge gained by evaluating the level of skills and knowledge of the community that has been provided can be applied in processing coconut and nut products that are widely cultivated in Carangsari Village, Badung. The target results obtained can be seen in Table 1.

3.2. Relevance and Community Participation

Utilization of local potential by using coconut is a commodity that grows a lot in Bali, including Carangsari Village. Improvement of the processing process is carried out to be able to increase the added value of coconut products and open up new economic

opportunities for the community, especially KBU Sari Nadhi Carangsari Village.

Fulfillment of market needs, namely innovative products processed from coconut and nuts, have quite high market demand. Improvement of the processing process provides wider market opportunities because process improvement is intended to improve the quality of innovative products and Provide a bargaining position to be the choice of people visiting Carangsari Tourism Village.

Table 1. Target Results for the Implementation of Technology and Innovation Products

No	Solution	Target Result
a	Coconut and nut-based food processing technology improvement transfer program	Partners can implement improvements in the process of processing coconut and nuts into several products using the TTG provided to KBU
b	Extension program on sanitation and hygiene of processing, packaging, and product labeling. Entrepreneurship, business management, and bookkeeping	The product has been sent and has a label, able to develop the business
c	Preparing marketing strategies to expand the market	Partner turnover can increase and reach a wider market
d	Partner institutional strengthening program and partner management arrangement	Partners have been able to work together compactly and can run well
e	Facilitate to obtain P-IRT Permit	Partners already understand the procedures and requirements for obtaining a P-IRT permit
f	Help with equipment and business capital	Partners have received tools and materials to be used by the group for production

Increasing Income By processing coconut and nuts into high-value products such as VCO, serundeng/saur, and tempeh-based products, people can increase their income. These products have a higher selling value compared to fresh coconut and nuts.

All partners (100%) actively participated in the activities, and partners expect continuous assistance in processing coconuts into Virgin Coconut Oil (VCO) products, serundeng from coconut dregs, and other innovative products.

3.3. Productivity

The economic impact of this activity is seen. There is an increase in the added value of the product. Through the improvement of the processing process, the community can process coconuts into products with economic value compared to selling coconuts produced in fresh form. This will increase the selling price of the product and provide greater benefits for the foster partners. Another impact is the opening of employment opportunities, which causes the growth of the coconut and nut processing industry to open up new job opportunities, both at the production

and marketing levels. The increase in partner income is also starting to be seen with the added value of the product and new job opportunities; community income will increase so that it can improve their standard of living.



Figure 1. VCO Product Result of Labeling Improvement

4. CONCLUSION

Improvement of the Processing Process by holding Training for the manufacture of processed products based on coconut and nuts can be carried out smoothly, and training participants can make these products well. Community service activities have run smoothly. KBU Sari Nadhi in Banjar Bedauh, Carangsari Village, has been able to independently take steps to improve by implementing coconut processing technology and has produced Virgin Coconut Oil (VCO) products, serundeng from coconut dregs, tempeh, and various processed products. 100% of partners have learned how to process properly, package, and label products, wider marketing, and entrepreneurship. Analysis of the results of the participants' production results is carried out by analyzing and assessing the quality of the products produced, and the level of market acceptance of these products. The results of the analysis are used as material for evaluating activities.

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