

Palm Ant Sugar Management Technology and Its Potential as Souvenirs from Belirang National Tourism Village

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Abstract. Belitar Seberang Village is a village that has various agricultural and plantation crops that can be found in every area of the village. Plantation crops are dominated by palm or aren (Arengan piñata) plants. Palm sugar (King Aren) in powder form is a natural sweetener made from pure sap water, has a distinctive taste and aroma, is beneficial for health and can be added to coffee, tea and other drinks. The targets of this community service activity are: 1. education and training programs through socialization of Local Commodity-Based Product Development Innovations as Typical Souvenirs from Belirang Tourism Village, 2. Information on packaging materials and forms that can make products last for a long time (etiquette), 3. Design and labeling. 4. Packaging training that attracts consumer interest. 5. Sharing information on effective product marketing methods. The approach taken by the proposer and partners together establishes a vision and mission that can be a solution to partner problems, including through an approach by synergizing activities based on the use of existing resources (socialization and training). "Commodity-Based Product Development Innovation as Typical Souvenirs of Belirang Village" presented a demonstration on how to process quality palm ant sugar. The community has received counseling and training on "Technology for Managing Palm Sugar Ants and Its Potential as Souvenirs with the characteristics of Belirang Tourism Village" and information on how to make attractive packaging and include information (labeling) on packages so as to increase product selling value.

Keywords: Belitar Seberang Village, Palm ant sugar, Souvenirs, Technology

1 Introduction

Belitar Seberang Village is a village which administratively consists of 3 (three) hamlets (Sawentar, Simping and Penataran) with a population of 1010 people with an area of 625 Ha. The livelihoods of the majority of local residents rely on agricultural and plantation products from their own land [1]. The management of the village's natural potential is quite good, as evidenced by the fact that Belitar Seberang Village has been named the top 100 Indonesian Tourism Village Award (ADWI) in 2021 and Champion I national hope for the category of public toilets at ADWI 2022, so that many tourists, both local and national, visit to enjoy tourism and culinary specialties of Belitar Seberang Village.

The village has various agricultural and plantation crops that can be found in every area of the village. Plantation crops are dominated by palm or aren (Arengan piñata) plants. Another plantation crop that is also widely planted by villagers is Robusta coffee. Meanwhile, many agricultural crops are found in rice fields close to residential areas. In that area various types of agricultural crops are planted such as corn, tomatoes, chilies, celery leaves, carrots and others [1]. The people of Belirang Tourism Village process palm plants into brown sugar or printed palm sugar in the form of small bowls which are then packaged simply using plastic bags. The palm sugar is then sold to the market or visitors. Residents sell vegetables directly after harvest. Vegetables that don't sell well will be consumed by themselves or thrown away when they start to rot.

Palm ant sugar is one of the processed products of palm sap. In contrast to brown sugar, ant sugar is in the form of crystals, easy to handle, use, pack and store [2]. Due to the limited knowledge of the community, until now no one has tried to make palm sugar, even though ant sugar has several advantages compared to printed

sugar, namely it is practical to use, dissolves easily, is easily packed according to modern packaging, can be added with spices such as ginger and has a shelf life of up to 1 year[3].. Palm sugar and these vegetables require a touch of processing and packaging technology that can increase their selling value and maintain their durability so they are not easily damaged.



Figure 1. Palm sugar printed by residents of Belirang Village



Figure 2. Agricultural land in Belirang Tourism Village

Processing palm sugar into ant palm sugar and processing vegetables into frozen vegetables is one of the efforts that can be made to support the development of plantation and agricultural products in Belirang Tourism Village. Palm ant sugar (King Aren) in powder form is a natural sweetener made from pure sap water, has a distinctive taste and aroma, is beneficial for health and can be added to coffee, tea and so on [4]. Palm ant sugar and frozen vegetables that are packaged properly are expected to last longer and be practical to carry around and can become souvenirs typical of Belirang Tourism Village.

2 Target and Outcomes

Determination of priority problems faced by partners (carried out jointly between the proposing team). Therefore partners are given support, motivation and training in technology for processing palm sugar and frozen vegetables starting from good and clean processing, the use of packaging materials that can ensure long-lasting products, are attractive to look at and include information needed by consumers. Furthermore, partners will also be provided with marketing methods through E-Commerce to promote and increase the reach of the marketing area.

The proposer actively takes an approach in the form of field surveys and visits to partner areas and holds joint discussions in determining solutions to solve problems faced by partners, the proposer considers several things, including the need for experts in the field of Agricultural Product Technology and Agribusiness, according to the type -types of problems faced by partners. The target of this community service activity is:

1. Carry out the implementation of education and training programs through socialization of Local Commodity-Based Product Development Innovations as Typical Souvenirs from Belirang Tourism Village to packaging and marketing via E-Commerce.
2. Provide information on materials and forms of packaging that can make the product last for a long time, places to order packaging to information that must be included on the packaging (etiquette).
3. Assistance in the form of packages that have been designed and labeled[5].
4. Design training, packaging process and packaging labeling that attracts consumer interest.
5. Sharing information on effective product marketing methods by cooperating with supermarkets and marketing methods through attractive online media

Participation of partners in implementing the program is demonstrated by the support, participation and ability to cooperate with the team from the Faculty of Agriculture, University of Dehasen Bengkulu in the application of science and technology. Participation of these partners is shown through carrying out activities together in terms of taking the time to attend socialization activities, providing places, raw materials and high curiosity about innovation in processing, packaging and labeling and marketing of palm sugar and frozen vegetables.

Partner participation is expected to be able to support the Belitar Seberang Tourism Village program by having typical souvenirs that are properly processed and packaged for tourists, so that later they can improve people's welfare. Dehasen University as the supervisor of the Belitar Seberang Tourism Village plays a role in providing sustainable innovation through the development of local commodities and entrepreneurial character.

3 Implementation Method

The approach taken by the proposer and the partner together establishes a vision and mission that can be a solution to the partner's problems, including through an approach by synergizing activities based on the use of existing resources. There is processed palm sugar and agricultural products, but has not received information on processing and packaging optimally.

Solutions are directed through directions to provide stimulants and knowledge related to the potential for increased processing, benefits, knowledge regarding the latest good packaging and marketing so as to provide perfect information to consumers. Public interest in increasing revenue through online and offline marketing[6]. So that in detail the stages of training activities include:

1. Preparation, in the form of correspondence activities to partners, preparing processing tools and materials, materials and places for activities
2. Implementation, in the form of counseling activities using infocus
3. Demonstrations are carried out by carrying out direct practice of making products

The evaluation is in the form of questions and answers and discussion

4 Results And Discussion

The implementation of the activity begins by providing counseling to the public about the potential for palm sap to be processed into palm ant sugar so that it has added value, increases income and is easy for consumers to carry around. After carrying out the counseling activities, a demonstration was carried out on how to process palm sugar and frozen vegetables.

4.1 Palm Ant Sugar Processing

The material used for making palm sugar is in the form of palm sap that has just been tapped from the tree. Palm juice that has been tapped for a long time will turn sour because the sucrose contained in it is easily broken down by microbes, making it difficult for the sugar crystallization process [4]. The sap that has been tapped from the tree is then filtered to remove the impurities contained therein. Furthermore, the sap is put into the cauldron over the stove fire at a temperature of 100-120 oC for 2-3 hours while stirring until it boils, thickens and is saturated. When the sap boils, foam appears which is then removed with a sieve so it doesn't come out of the cauldron. Cooking is stopped when the sap starts to thicken which is indicated by if it is dropped in water it will solidify and not dissolve immediately. Cooking should not exceed the end point, namely the sap begins to thicken and explode and visually this can be seen by the clumping of the sap when it is put in cold water [7]



Figure 3. People Trying to Practice Palm Ant Sugar Processing

After the thick sap the heating is stopped. The thick sap is stirred slowly in a steady direction and the longer the stirring the faster it gets to form uniform crystals preventing the formation of sugar lumps. After the process of crystallization and powder formation is complete, the ant sugar is sieved to obtain a uniform size. The ant sugar that did not pass through the sieve was crushed and sieved again. These powders are packaged in water-resistant packaging such as polypropylene plastic [8]. Palm ant sugar is made with 2 flavors, namely original and ginger. Good ant sugar has a shelf life of up to 1 year because of its low water content (<3%), higher sucrose purity, which is 80% min and lower reducing sugar content (SNI 01 -3743-1995 Palm Sugar Quality Standard)[9][10].

4.2 Processing of Frozen Vegetables

Vegetables are generally still traded in fresh form. Unlike the case with fruits, processed vegetable products are almost said to have no established processed products in Indonesia. The technology applied is fermented vegetables such as salted vegetables and drying which are still limited. Improper handling causes vegetables to lose their economic value. In addition, overproduction, for example during the main harvest, causes fresh vegetables not to be absorbed all of them.

Freezing vegetables is the most frequently used preservation technique, compared to canning and drying techniques. This is because freezing can provide an advantage in maintaining the quality of frozen vegetables the same as their fresh form in terms of sensory and nutritional attributes [10]

Frozen vegetables are one way of preserving agricultural products in the form of vegetables using low temperatures. Freezing can kill several types of harmful microbes, sometimes even up to more than 90%. Freezing treatment can be done on some mixed products from several vegetables that are ready to use[11].

The stages of freezing include:

1. Preparation in the form of washing and cutting vegetables into small sizes.
2. Blanching.

Blanching is a heat treatment process for vegetables in a short time. According to [10] blanching is done by placing vegetables in hot water or by providing hot steam for 1-10 minutes at a temperature of 75-95 oC. the combination of time and temperature depends on the type of vegetable. Blanching is done to reduce the number of microbes and inactivate enzymes that can cause changes in texture during freezing. In addition, according to [11], blanching not only extends shelf life by inactivating enzymes that cause browning (polyphenoloxidase, lipoxygenase, and peroxidase) but can also strengthen the color and flavor of vegetables.

3. Soaking in cold water

After the blanching process is complete, the temperature of the vegetables must be reduced immediately by cooling the vegetables. Vegetables that have been cooked for 10 minutes are then removed and immediately immersed in ice water to cool. Furthermore, the vegetables are drained and then put in the package and then frozen.

4. Product Name And Logo

Must include the name and logo on the product packaging that you will sell. In addition to the requirements for SNI packaging, logos and product names can also be used as a means of promotion for the products you sell.

5. Information on the Composition of Materials and Additives
Including information on the composition and additives on the packaging is a requirement in SNI standard packaging design. Include the raw materials used to inform the net weight of the product you are selling.
6. Expiration date information
Expiry date information must also be stated on the packaging in full, starting from the date, month and year of expiration of the product you are selling. Because to facilitate consumers in knowing the feasibility of the contents of these products[12].
7. Explain the benefits of the product
Writing down the benefits of the product intends to increase the attractiveness so that consumers want to buy the product.



Figure 4. Palm Ant Sugar Packaging

After packaging the product, it is followed by vacuum packaging. In this activity, the community enthusiastically tried to practice how to use a plastic packaging vacuum sealer. Vacuum packaging aims to inhibit the process of damage that occurs in foodstuffs by removing air from the packaging so that the packaging is in a vacuum or vacuum [8]



Figure 5. People Trying to Practice Vacuum Packaging

The vacuum packaging technique is currently a packaging technique that is currently well known among the public[8]. Food products packed in a vacuum are free of gas and water vapor so that they can reduce the amount and growth, inhibit changes in smell, taste and appearance during storage [6]

5 Conclusions and Recommendations

5.1 Conclusion

The community has received counseling and training on "Technology for Managing Palm Sugar Ants and Its Potential as Souvenirs from the Belirang Tourism Village" which can be used as souvenirs for visitors, increase income for the village community and maintain the preservation of the community's agricultural products.

The public has been given information on how to make attractive packaging and the inclusion of information (labeling) on the packaging so as to increase the selling value of the product. The community is also taught how to market products through social media so that products can be widely known. Provision of information regarding proper processing, packaging, labeling and marketing methods to the community will provide added value thereby increasing the selling value of products and people's income.

5.2 Recommendations

It is hoped that partners will apply the technology that has been taught diligently and continuously in order to obtain various benefits for the environment, social and economy.

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