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Education to Strengthen The Economy of The Utilization of Aren Nira Producing Bioetanol in Lonuo Village, Bone Bolango District

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ABSTRACT

This economic education activity for palm sap farmers aims to provide economic strengthening and build awareness among the public, especially palm sap farmers, that palm sap water can be utilized and made into several products with high economic value, for example bioethanol products. Apart from that, it can also minimize the negative impact of the production of alcoholic drinks made from palm sap in Lonuo village. This activity uses educational methods, socialization and community assistance for sugar palm sap farmers. Empowering sugar palm farmers through product diversification is the key to increasing the quality and quantity of sugar palm sap products into various marketable products such as bioethanol. This economic education activity for palm sap farmers has had a positive impact and response from the Lonuo village community. This can be seen from the enthusiasm of the community in participating in activities at the village office. The community received education well and smoothly and increased public understanding regarding the use of palm sap into products of high economic value such as bioethanol .

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INTRODUCTION

Palm trees are flora that originate from tropical Asia. Sugar palm plants are naturally spread from western eastern India to Southeast Asia, such as Malaysia, Indonesia and the Philippines. Apart from this area, other tropical areas where sugar palm is distributed are Taiwan, Laos and Vietnam. Apart from growing wild in the wilderness, sugar palm has also been developed as a cultivated plant. The natural habitat of palm trees is a tropical climate, such as Asian climate conditions in general.

Sugar palm is easy to adapt and can grow anywhere, but its growth will be optimal if planted in hilly areas, slopes or river banks with high humidity levels (Wurarah, 2020).

From an economic perspective, sugar palm through a very simple process produces sap as the main product which can be processed into brown sugar as a substitute for white sugar and bioethanol which is very important for energy. Viewed from the aspect of income distribution, sugar palm is cultivated by small farmers and most of them still use trees that grow naturally in forests or areas around residential areas or are not cultivated trees. Therefore, the economic products mentioned above can be utilized by people who have sugar palm trees on their land.

Sugar palm trees that have reached maximum vegetative growth (around 6 years old if growing wild or naturally) will produce up to 6.8 or 12 female flower clusters. This flower stalk is the place to tap palm sap from both the female flower stalk and the male flower stalk. If sugar palm is planted like oil palm by selecting superior seeds, intensive maintenance, adequate fertilization, adequate plantation management, the results will certainly be better than those currently produced from natural trees, even those that grow wild at irregular distances. If development is on a wider scale compared to current conditions, then knowledge and socialization about sugar palm must be increased.

The knowledge that must be possessed in the production of palm sap is firstly selecting plants that have high productivity and how to propagate them; second, knowledge of efficient and effective harvest processes; third, transportation of sap from the tree to production processing centers or factories so that it is not damaged; fourth, a modern product processing and packaging system. Fifth, organization and management, starting from farmer organizations, central raw material management organizations, and distribution organizations from farmers to factories, as well as management that manages the sugar palm-based agribusiness system.

A diversification of palm sap other than palm sugar and ant sugar is bioethanol. Palm sap is one of the most productive bioethanol raw materials. Excess production of palm sap can be processed into derivative products such as palm sugar, palm sugar, bioethanol, fresh drinks of various flavors and other derivative products from palm sap. Likewise, other parts outside palm sap, such as palm fiber, sticks, fruit (kolang kaling), and many other derivative products can be utilized and developed into

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products that have economic value. In this case, government intervention in designing and preparing technology for product diversification and seeking market share is very necessary. When this mechanism is running and the community has an alternative source of income from its flagship commodity other than selling palm sap directly, the government can carry out gradual outreach and education to the community.

Palm sap can actually be developed or diversified into a very diverse range of products, including: 1) fresh palm sap; 2) fresh palm sap with various flavors & aromas, 3) pure palm syrup, 4) palm syrup with various flavors & aromas, 5) palm sugar, 6) molded palm sugar with various flavors & aromas, 7) powdered palm sugar, 8) sugar palm powder with various flavors & aromas, 9) various nutritious instant drinks (combination with various herbs with medicinal properties), and many other products if explored in more depth. So the sugar palm commodity actually has quite large economic potential and is promising for the welfare of the community in several regions or villages in Indonesia that have the potential for sugar palm trees.

Lonuo Village, Tilongkabila District, Bone Bolango Regency is an area that produces palm sap water. Palm sap farmers in Lunuo village use palm sap water as a raw material for making the alcoholic drink "Saguer", palm sugar and ant sugar, buckwheat candy and palm fruit. The people of Lonuo village have long used palm trees as a source of life and livelihood for their residents. People make more alcoholic drinks because the price of the drink can be priced higher than some derivative palm juice products such as brown sugar, buckwheat candy, or palm fruit. This of course raises concerns for all parties regarding these alcoholic drinks and will have a negative impact on the community and the village generation in particular (Piyohu, 2022).

The government's commitment through the strategic policy of sugar palm development must be really serious, considering that the program set for this commodity is a multiyear program and the budget intervention is not small. When a community agreement is created that is in synergy with government policy, then concerns about the negative impacts of this commodity from social aspects and immorality can be minimized or even eliminated. The importance of economic education to the community in order to provide reinforcement in terms of utilizing palm sap water into high quality products such as bioethanol must be carried out. Of course, in synergy with all stakeholders and policy makers .

LITERATURE REVIEW

Sugar palm plants can grow from land parallel to sea level up to an altitude of 1,400 meters above sea level. However, the most ideal height is between 500 and 1,200 meters above sea level. Meanwhile, sugar palm cultivators generally plant sugar palm on land at a height of 500 to 700 meters above sea level. Good soil conditions for sugar palm growth are volcanic soil found around mountain slopes,

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loose soil, or sandy soil that can be found near river flows. A good temperature for sugar palm plants is around 25 degrees Celsius, a moderate to wet climate with an average rainfall of 1,200 mm per year. Sugar palm is a group of palm plants that grow tall and large. The maximum height that can be reached is around 25 meters with a diameter of 65 cm. The stem is sturdy and there are black fibers at the top of the stem which are known as palm fibers.

The structure of the sugar palm stem is woody on the outside and fibrous on the inside. The stem morphology of this plant is very distinctive and similar to a coconut tree. The type of leaf of the sugar palm plant is compound with pinnate bones, more or less the same as the leaves of coconut or nipa trees. The leaves can reach 5 meters in length and have leaf stalks up to 1.5 meters long. The leaf blades are about 1.4 meters long and 7 cm wide. Palm tree leaves also have pinnate spines with a lanceolate shape. The tip of young leaves is tapered, while the base is rounded. The edges are flat and have a color gradient from light green to dark green. Right at the bottom of the leaflets there is a layer of wax (Arrazzaq, 2019).

Palm flowers are cob-shaped and are monoecious flowers, meaning the female and male flowers grow together on the cob. The location of the growth of male sugar palm flowers is in the leaf axils and has stamens, while the female flowers are round. Palm fruit grows in clusters and has a round shape with a diameter of about 4 cm. Inside the fruit there are three chambers and it also has three seeds which are found in strands that resemble a chain. One bunch has at least 10 stalks and each stalk contains around 50 palm fruits. Palm trees actually have great potential as plants that provide welfare for society (Putri, 2022).

Apart from palm sugar and bioethanol as products commonly known in the community, palm trees have other agribusiness potential if developed. Sugar palm-based agribusiness produces the main product brown sugar or crystal sugar which can be an alternative source of sugar other than sugar from sugar cane (Rindengan, 2020; Sartika, 2022). Apart from sugar, palm sap can be processed into ethanol, a renewable and environmentally friendly energy source. Apart from producing sugar and bioethanol, palm trees can also produce sticks, fibers, leaves for house roofs, and very good quality wood. Sugar palm can also produce delicious-tasting food, namely kolang kaling. Sugar palm has potential in terms of economics, equal distribution of income, poverty alleviation, as well as environmental preservation.

MATERIAL AND METHOD

The tools and materials needed for this economic education activity for palm sap farmers are plano paper, stationery, sticky notes, projector and laptop. These tools and materials are used by resource persons and moderators

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to provide education during the activity. This activity was carried out at the Lonuo Village Office, Tilongkabila District, Bone Bolango Regency, on Saturday, September 23 2023. Participants who took part in the activity were 30 sugar palm sap farmers from Lonuo village. Apart from that, it was attended by 9 lecturers and 27 students from Gorontalo State University, the Head of the Department of Industry and Trade (Disperindag), the Lonuo village youth group, hamlet heads, community leaders, stakeholders and the Lonuo village government.

This economic education activity for palm sap farmers aims to provide economic strengthening and build awareness among the public, especially palm sap farmers, that palm sap water can be utilized and made into several products with high economic value, for example bioethanol products. Apart from that, it can also minimize the negative impact of the production of alcoholic drinks made from palm sap in Lonuo village.

This activity uses educational methods, socialization and community assistance for sugar palm sap farmers. There were 3 resource persons who provided material in this activity, namely Mrs. Hapsawati Taan, ST., M.M as an economic expert, Mr. Wawan Pembengo, SP., M.Sc., as an expert on agriculture and sugar palm plants, and Mr. Abdul Rasyid, ST., MT., as a raw materials management expert. There are 3 materials provided in this activity, namely 1) Economic Education for sugar palm palm farmers; 2) Cultivation of sugar palm trees for farmers; and 3) Management of raw materials for sugar palm sap farmers.

The stages in this activity include preparation, implementation and evaluation. The first stage is preparation, by preparing all the tools and materials that will be used in carrying out the activity, preparing invitations and activity locations and coordinating with the Lonuo Village government and the industry and trade department. Coordinate with resource persons and sugar palm sap farmers. The second stage is implementation, before the activity begins, first provide an initial assessment to participants regarding the participants' initial knowledge regarding palm trees, palm sap, utilization of palm sap, palm sap products and management of raw materials for palm sap farmers. After that, economic education activities were carried out at the village office with material provided by 3 resource persons. The third stage is evaluation, this stage provides a final assessment to participants regarding their final understanding of palm trees, palm sap, utilization of palm sap, palm sap products and raw material management.

RESULT AND DISCUSSION

Empowering sugar palm farmers through product diversification is the key to increasing the quality and quantity of palm sap products into various marketable products such as bioethanol, palm sugar syrup and ant sugar. A technological touch to the products produced can increase the product's

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bargaining value along with attractive product packaging and labels to expand the marketing network (Wahyuni 2019; Widyasari, 2019; Sutrisno, 2021).

Economic education needs to be provided to the Lonuo village community regarding the use of palm sap into various products with high economic value. One of the products that is expected to become a business center for sugar palm sap farmers is bioethanol. The village government and the Bone Bolango Regency industry and trade office have also provided facilities and infrastructure to support this. The existence of a bioethanol center building in Lonuo village is proof that the village government and the Bone Bolango district industry and trade department are serious about providing support to sugar palm farmers.

Public understanding in developing businesses for bioethanol products is still lacking so efforts must continue to be made for transformation and in-depth education, especially for sugar palm farmers. Apart from that, building awareness and motivation for farmers in utilizing palm sap into bioethanol also needs to be improved. The public, especially sugar palm farmers, need to understand the efficiency and effectiveness related to production management, namely 1) Business actors can plan and develop; 2) Can reduce the cost of production as low as possible; 3) Emphasis on the cost of goods sold (product selling prices can be competitive); 4) Production cost savings; 5) Determining the optimum, not maximum, production level; 6) Utilization of new technology that is suitable for business.

The following is an overview of the activities carried out to provide economic education to the community, especially to sugar palm farmers in Lonuo village, Bone Bolango Regency.

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Figure 1.
Providing Economic Education Materials

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Indicators of successful production management from palm sap are sufficient production (productivity), having sufficient market, utilizing existing technology, having competitive selling prices, having superior products, attractive packaging. Several factors that influence business product determination are product sales, product profit potential, product distribution channels, competitive position, potential for increased sales, product life cycle, product demand projections.

The advantages for sugar palm sap farmers in implementing a systems approach in production management are it is easier to see and observe changes that occur in the implementation of the production process within the Company.

Traditional workmanship cannot see changes quickly and precisely; 3) The more complex the activities carried out, the more profitable it can be for the business. By implementing the management process in the production sector within a business/company, production activities and production processes within the business/company concerned will always be carried out by planning, organizing, directing, coordinating and controlling.

The main problems with sugar palm development include very minimal technological input, production management, processing and marketing are still carried out using traditional methods; technology dissemination has not yet reached the majority of farmers; negative impact of sugar palm production as a liquor. Difficulty in providing superior seeds/seedlings. Until now no varieties have been released, the existing seeds are taken from High Yielding Blocks (BPT) which are selected based on the selection of the best individuals in the population (Ritabulan, 2018). The use of sugar palm plants from reforestation activities is only for buffer zones and reforestation activities by Departments/ Agencies for conservation but has not empowered farmers so that these plants do not have added value. The capacity of human resources, officers and farmers is limited because the results of the dissemination of technological innovation from competent institutions do not reach users/consumers. (Effendi, 2010)

CONCLUTION AND RECOMMENDATION

Based on economic education activities for the Lonuo village community, it was concluded that these activities had a positive impact and response from the Lonuo village community. This can be seen from the enthusiasm of the community in participating in activities at the village office. The community received education well and smoothly and increased public understanding regarding the use of palm sap as a bioethanol product. Participants hope to receive further training and assistance to utilize palm sap water into high-value products such as bioethanol.

Suggestions for follow-up to this activity are that ongoing activities are needed related to training and assistance in making bioethanol products from palm sap water.

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