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Identification and Production of Aren Plants Available at Gn. Riting Village, Membalong Subdistrict, Belitung

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ABSTRACT

Sugar palm is a plant that has many benefits in human life. One of the most popular is water sap which is made to produce palm sugar, and even palm plants can also be produced to produce flour. This study aimed to identify the parts contained in the sugar palm plant and the sap produced by the sugar palm plant in GN Riting Village, Membalong Belitung District. This research was conducted to identify the parts contained in one sugar palm plant and the production of sap produced by sugar palm plants. The research method used in this study is a survey method with a sampling technique using purposive sampling. Based on the results of a survey conducted by researchers, the height of the sugar palm stem is 580 cm, the number of leaves is 11 leaves, the number of Mayang is seven female Mayang, 2-3 male Mayang, and fruit length is 39.8 cm, and the resulting sap production is 30 liters.

Keywords: *Identification, production, palm plants, palm sugar, flour.*

1. INTRODUCTION

Non-timber forest products in Indonesia have long been an important component and are utilized by forest communities, although in general, they are still seasonal or part-time activities. The Ministry of Forestry reports that the management of non-timber forest products has a significant role in the nation's economy, with 30 million people "directly relying on the forestry sector for their livelihoods, namely taking and managing non-timber forest products" for their livelihoods and as a place to absorb labor. The large population growth causes basic needs to increase, including the need for food in the form of sugar. The large role of sugar in everyday life and the industrial sector causes the need for sugar to continue to increase.

Aren (Arenga pinnata Merr.) is a species belonging to the Arecaceae family. Many regional names (vernacular names) are given to sugar palms in Indonesia, and this is because the level of distribution is very wide (Mutia, 2018). The sugar palm plant is a plant in that each part has its benefits for humans. Sugar palm plants thrive in the tropics, from sea level to high land. The palm tree is versatile for humans, from roots to leaves. Sugar palm is a plant that has many benefits in every part. According to (Kusmanto, 2008), there are five main products produced by palm trees, namely 1) male flowers that are tapped will produce sap for brown sugar (palm sugar, brown sugar); 2) the young fruit, namely Kolang-Kaling; 3) the fibers are for rope material, house roofs and water infiltration filters in buildings; 4) sugar palm trunk (outer part) is hardwood (Ruyung) that is resistant to weathering which is used as additional income for the entrepreneur himself; 5) Sugar palm also produces flour from the pith of the stem before flowering plants. Sugar palm plants are still managed traditionally and are limited to raw materials for palm wine and Sakka sugar (palm sugar) with traditional patterns. Farmers still rely on seeds from sugar palms that grow naturally in their gardens. Civets usually spread the palm seeds that become the seeds. In addition to garden management, tapping and processing produce is still carried out traditionally.

Sugar palm is a type of palm widely distributed in Indonesia, covering an area of 62,009 ha (Fatimah, 2020). Sugar palm is a versatile plant because almost all of its parts can be used. Sugar palm has the potential to overcome food shortages and is easily adaptable to various agro-climates from the lowlands to an altitude of 1,400 meters above sea level. In addition, sugar palm is used as a raw material for various handicrafts and household utensils. Researchers identified the sugar palm plant to find out what parts are contained in the palm plant. In one palm plant, several parts have benefits for human life. The parts of the palm plant include the stem of the palm plant and the leaves. Mayang consists of two types: female and male mayang, palm fruit, sugar palm flower, and water sap, which are the result of sugar palm plants' production.

As one of the materials obtained from sugar palm plants, the palm stems can be used as building materials and equipment (Ismanto, 1995). A fertile sugar palm plant with large and tall trunks, fresh green leaves, and many will produce large and long flower stalks (Mahyuni, 2018). The larger and longer the flower stalks of the sugar palm plant, the more juice produced by each tree. On the other hand, if the sugar palm plants are small in diameter and not fertile, the

flower stalks will also be short, affecting the production of sap. The interest of the community, especially those who live around the forest, to take advantage of the sugar palm is very large. In general, they use sugar palm as food, medicine and energy. In addition to meeting their own needs, it is not uncommon for people to use palm sugar to increase villagers' income by making it a source of business. The stems of sugar palm plants have starch which can produce flour.

Palm flour is obtained from starch extracted from mature palm tree trunks. The Aren plant's stems contain approximately 26-37 percent of starch, but each palm tree produces varying amounts of flour. Besides that, palm flour also has low protein and fat content. Because of its content, palm flour is widely used as a food ingredient (Apriliani, 2008). Palm flour is one of the local food ingredients, which is an alternative to support food diversification. With the emerging palm flour agroindustry, it is hoped that the food diversification program can be achieved so that the country can reduce dependence on imported raw products (Apriliani, 2008). Palm flour will bring in a selling price, an added value for other processed products.

In addition to the sugar palm stems used for building, the sugar palm plant also produces flour from starch extracted from mature palm tree trunks. The sugar palm plant's stem contains approximately 26-37 percent of starch, but each palm tree produces a varying amount of flour. Besides that, palm flour also has low protein and fat content. Because of its content, palm flour is widely used as a food ingredient (Manatar et al., 2012). The use of sugar palm can be felt directly by the community in the vicinity of the forest through traditional use. Sugar palm can be used as a sap-producing plant, a source of carbohydrates, a mixture of food and drink (fro and fro), a building material and as a conservation plant for critical land (Srena, 2018). Almost all palm tree parts can be used, from the roots to the bunches. Fresh roots produce arak as a remedy for constipation, dysentery and lung disease. The stems produce sago as a source of carbohydrates for household purposes in the manufacture of bread, glass noodles, noodles and glue mixtures. Besides that, hard rods are commonly used as building materials, bridges, sticks and fibers, and ropes/roofing materials. Young leaves are used as cigarette wrappers, and old leaves are used as roofs for houses. Leaf fronds for bottle caps. The leaves are used as brooms and flower baskets. Male flower bunches as a producer of sugar sap.

The main product of the palm plant is palm sap. Palm sap can be made into drinks (Lahang) and palm sugar (Sugar Kawung). Fermented palm sugar can also be made into ethanol which can be used as an alternative fuel to replace kerosene, LPG, and gasoline. Palm water fermented into vinegar can be used as a preservative (kills microbes) in fish and other foods, as well as giving food a taste (Pontoh & Gunawan, 2011). Processing palm sap into rock sugar (brown sugar) or ant sugar in the form of crystals. In addition, palm sugar has many advantages, such as a much higher price and a more fragrant aroma. However, using palm sap in crystalline white sugar has not been carried out. According to (Sitti Marwah and Nurhayati Hadjar, 2020) healthy drink in the form of a secondary product of fermented brown sugar is very efficacious in preventing and treating various diseases, such as gout,

asthma, stomach acid (ulcer), etc. Palm trees should be preserved and cultivated by the community. Palm trees can prevent erosion or commonly called landslides. This fact is also stated by (Mulyanie, Erni, and Romani, n.d.), sugar palm is a conservation plant that prevents erosion or landslides. Sugar palm conservation needs to be done considering the many benefits that can be obtained from the sugar palm. Sugar palm can also be used as a beneficial medicine for the body (Panggabean, 2019).

The availability of existing technology supports opportunities to develop sugar palms. Besides that, sugar palm plants are easily adaptable to various types of soil throughout Indonesia, including critical land, Alang-Alang and for reforestation and forest conservation programs. Meanwhile, the challenges that need to be overcome to develop this crop include minimal technological input, improved production management, improved processing, traditional marketing, limited dissemination to a small number of farmers, and difficulties with superior seeds. Sugar palm plants have good adaptability to various land and agro-climatic conditions, are high tolerance in mixed cropping patterns, including woody plants, and grow fast because they have many roots and dense crowns. Because of this plant, it is very suitable to be developed on marginal lands that poor farmers mostly own. Plant types such as sugar palm are needed to overcome the increasing area and number of poor land areas in Indonesia at a higher rate.

Research results by (Harahap, 2013) Regarding the genotypic character of sugar palm plants showed that 24 accessions of sugar palm in natural populations in the South Tapanuli area showed high genetic diversity seen from the distribution of sugar palm accessions in each area used so that they were suitable for the development of sugar palm plants.

2. MATERIAL AND METHOD

The research location is in the village of GN Rinting, Kec. Balong Belitung. The material used is a sugar palm plant that grows on community plantation land in a predetermined sub-district. This village was chosen as the research sample because it has the most sugar palm trees compared to other villages.

a. Phenotypic Character Studies

Observations of phenotypic character studies were carried out in GN Rinting Village, Kec. Balong Belitung. The following is a flow chart of the implementation of this research as shown in Figure 1 below.

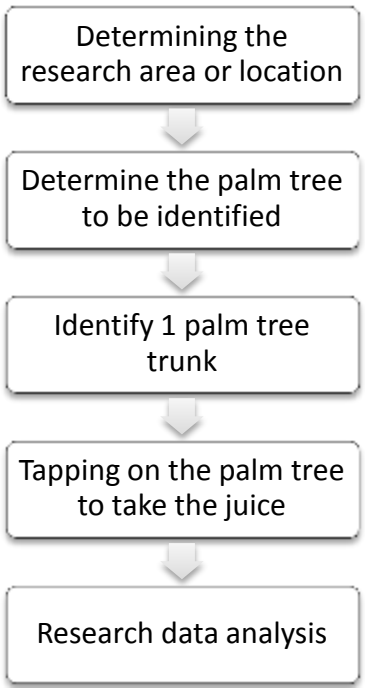

Figure 1. Flowchart of Research Implementation

In this village, researchers took one palm tree at random to observe the morphology of the generative phase, namely stem circumference, fruit diameter, fruit length, seed length, seed diameter, number of female Mayangs, number of male Mayangs, number of fruit strands/strands, number of fruit/strands and number of the whole fruit. Stem circumference was measured at the stem 1 meter above ground level. The trees sampled were palms of productive age that had just been tapped.

b. Biochemical Character Studies

In measurements to determine the potential of the sap produced, researchers conducted tapping on one sugar palm tree in GN Rinting Village, Kec. Balong Belitung. On one palm tree that was tapped, the researchers observed the amount of sap produced by one palm tree.

The research method used in this study is a survey method at the research site with purposive sampling.

3. RESULT AND DISCUSSION

Based on the research that researchers have carried, some data are obtained related to the components or parts contained in one palm tree in the village of GN Rinting, Kec. Balong Belitung. The data obtained by the researcher when surveying the research site are as follows.

Table 1. Data from the Survey of Palm Plants in GN Rinting Village, Membalong District, Belitung

Aren Plant Component	Parameter	Note
Aren Plant	Stem Height:	580 cm
	Growing Type	Upright
	Stem Diameter	120 cm
	Plant Age	9 Years

Based on the results of a survey by researchers on sugar palm plants, data were obtained, as shown in Table 1. The sugar palm plants observed by

researchers were nine years old in GN Rinting Village, Kec. Balong Belitung. Then the researchers also observed the leaves of the sugar palm plant, as shown in the table below.

Table 2. Data Related to Leaves of Palm Plants in GN Rinting Village, Membalong District, Belitung

Aren Plant Component	Parameter	Note
Leaf	Number of Leaves	11
	Petiole Length	320 cm
	Long Rachis	830 cm
	Number of Leaflets (On One Side)	137 ea
	Leaf Color (Top Surface)	NN137 Greyish Olive Green A
	Leaf Color (Bottom Surface)	N148 Moderate Yellow A
	Leaf Child Length	157,6
	Leaf Child Width	10,26
	Leaf State	Not Glossy

Based on the survey results and researchers' observations of the sugar palm plant leaves, data were obtained, as shown in Table 2. The data was observed in one palm tree, and one palm tree had 137 fruits. The number of fruits on the palm tree depends on the length of the flower stalk of the palm tree. Furthermore, the researchers also observed the Mayang found in sugar palm plants. The data obtained are shown in the table below:

Table 3. Data Related to Mayang from Palm Plants in GN Rinting Village, Membalong District, Belitung

Aren Plant Component	Parameter	Note
Mayang	Number of Females	Seven ea
	Mayang Female Height	930 cm
	Female Mayang Stem Circumference	35 cm
	The Length of the Female Mayang Series	230 cm
	Number of Males	2 – 3 ea
	Mayang's height	830 cm
	Male Mayang Stem Circumference	35 cm
	The length of the stalk of the male Mayang	130 cm
	Length of the Mayang Male Circuit	200 cm

Based on the results of a survey of researchers on Mayang in sugar palm plants, it can be seen that there are two types of Mayang in sugar palm plants,

namely female Mayang and male Mayang. In 1 palm tree, there are more female Mayang than male Mayang, and female Mayang is also higher than male Mayang. The results of the researchers' observations of the Mayang on sugar palm plants showed that the height of the male and female Mayang has different heights. Likewise, the male mayang stalk length is longer than the female Mayang stalk.

Then the researchers also observed the fruit and flowers found on the palm tree, as shown in the table below:

Table 4. Data Related to Fruits and Flowers from Palm Plants in GN Rinting Village, Membalong District, Belitung

Aren Plant Component	Parameter	Note
Fruit and flower	Fruit Length	39,8 cm
	Fruit Width	41,33 cm
	Young Fruit Skin Color	137 Moderate Olive Green A
	Ripe Fruit Skin Color	17 Strong Orange Yellow A
	Male Flower Length	19,03 cm
	Male Flower Width	10,36 cm
	Young Male Flower Color	137 Moderate Olive Green B
	Mature Male Flower Color	N77 Greyish Purple A
	Nira Production	30 Liter

Based on the survey results conducted by the researcher, the data obtained is shown in Table 4. In the data obtained, it can be seen that there are male flowers on sugar palm plants. One palm tree can produce 30 liters of sap every time you take it.

When tapping the juice, it was suspected that the enzymes that functioned to remodel amylose and amylopectin into sucrose were present in large quantities and washed through the juice stream coming out of the tapping wound (Pontoh & Gunawan, 2011). The chemical composition of palm sap varies from time to time for one tree or from one tree to another. This composition is determined by various factors such as soil fertility, tree age, weather conditions and others. If the protein content of palm sap, which is most likely an enzyme, is closely related to the tree's ability to produce sap, then the protein content can be used to predict the production capacity of each tree. The use of good fertilizer will also impact the production of sap and the size of the stem and Mayang from the sap (Haitami & Wahyudi, 2019). Once the importance of the role of organic fertilizers in supporting plant growth and production, the presence of quality organic fertilizer products is highly coveted, but in order to get quality organic fertilizers, it is necessary to carry out direct testing on plants (D et al., 2019)

Based on the research results that researchers have carried out, it appears that in one palm tree, there are female and male Mayang and male flowers. Researchers observed that the female Mayang is more than the male Mayang in one palm tree, and the female Mayang is longer than the male Mayang. However, in the length of the series of female and

male Mayang, there is a significant difference in size, where the length of the series of female Mayang is longer than the series of male Mayang. Furthermore, the researchers also found that one palm tree produces 30 liters of sap which is used to make brown sugar or palm sugar.

Palm sap that is still fresh and tastes sweet can be drunk immediately or can be left to ferment before drinking (Lempang, n.d.). Fresh sap is used for canker sores, tuberculosis, dysentery, haemorrhoids, and defecation (Ismanto, 1995). Palm sap that has undergone fermentation (fermentation) turns into palm wine. Tuak from the fermentation of palm sap is also useful as a menstrual stimulant and is quite effective against inflammation of the lungs and the table (Lutony, 1993).

4. CONCLUSION

Based on research conducted by researchers found parts of the palm tree, namely leaves, female Mayang, male Mayang, fruit, flowers and sap juice. Palm sap water can be used to make palm sugar and can fight inflammation in the human lungs.

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