

Increasing The Productivity Of Palm Sugar Through High Degree Of Crystalline Sugar Production

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Abstract.

One of the victims of Covid-19 is micro industry. The research team attempts to find the community of original palm sugar (sugar from sugar palm tree) industry which will be process to become gula semut (crystalline sugar). The location where the research and the public service are done is Deli Serdang Regency, North Sumatera. It seems that the farmers of palm sugar industry are decreasing in number in Deli Serdang so that the research team is interested in increasing the community of palm sugar farmers and industry in developing their micro business. Another objective of the research is to increase the welfare of the palm sugar farmers in Deli Serdang, North Sumatera, with good and qualified crystalline sugar so that its sales price increases and it can enter domestic and international markets. The research employs descriptive qualitative method. The data are gathered by conducting interviews and using Focus Group Discussion with stakeholders. Specifically, the sugar palm trees are used for hand-handle sap tapping which yields water that flows from the stem of sugar palm tree. The water is called palm water (juice of the sugar palm which when fermented turns into toddy and vinegar). It has numerous kinds of palm sugar and one of them is crystalline sugar processing. In this research, crystalline sugar is used as the innovation from palm sugar processing in the form of slabs because its sales value is very promising. The concept of marketing strategy applied in this research is the online and offline marketing.

Keywords: Palm Sugar, Crystalline Sugar, Deli Serdang, North Sumatera

I. INTRODUCTION

In the era of covid-19 pandemic today, stakeholders play their role in making a serious effort to help people, especially those who are affected by the covid-19, and the real victim of this covid-19 pandemic is small and micro industry (Setyani Agung Dwi Astuti, 2021). The research team attempts to find out the original palm sugar industry which will be processed to become crystalline sugar. The location where the research and the public service were done was Deli Serdang Regency, North Sumatera. The palm sugar commodity in Deli Serdang is becoming decreasing which means that the palm sugar business people are decreasing (Joni Ennervon Taraja, Sri Fajar Ayu, 2018). Therefore, the research team makes a serious effort to increase the condition of the palm sugar farmers and business people in developing their micro business. Sugar palm trees constitute an agricultural business commodity in the future since it is the sector of palm sugar commodity business which becomes of the favorite one. The government and private companies have not yet used sugar palm trees as the non-oil and gas production sector, unlike the favorite oil palm, coffee, rubber, and rattan plantations which have become export business commodities. Talking about palm sugar industry is related to its farmers. Palm sugar is North Sumatera today is still very limited and constrained in getting the productivity of sugar palm trees (Sebayang, 2016).

The lack of palm sugar farmers is caused by the topographical position of the sugar palm trees which are still abundant in the highland which has the enough sunlight intensity (Pertanian, 2008). Sugar palm trees are still categorized as forest plants or plants which grow freely in forest so that they are rarely used as special cultivated plants. Palm sugar farmers' low level of knowledge about the planting method of sugar palm trees has caused the main potency of palm sugar has not been obtained. Most of the Indonesian people only use palm water as *tuak* (palm wine) as the people's traditional beverage for warming their bodies in the highland (Anggraini, 2017). Palm water is drunk with the fermentation of *arau* wood (Fatmawati, 2018). Besides that, it can also be used as the very limited kitchen complements. In this case, implementing palm sugar through integrated processing in manufacture industry will produce crystalline sugar which has low

quality of water content. The structure of good granular water will yield high sales value for the sale of crystalline sugar which is expected to get sold will not only domestically but also in foreign countries. The sales value of crystalline sugar will increase to 400%, compared with the sales value of slab palm sugar. By processing palm sugar to crystalline sugar, consumers will be more interested in using granular crystalline sugar, compared with slab palm sugar, especially at home or as coffee shop consumers, hotels or hospitals, modern retails, and modern markets. Besides its good quality, it is also supported by attractive its package design which will eventually increase its sales value. The last objective of this research is to increase the quality of sugar palm farmers' welfare in Deli Serdang, North Sumatera through qualified crystalline sugar product so that it can be sold domestically and in foreign countries.

II. METHODS

The research employs descriptive qualitative method (Sugiyono, 2009). The data are gathered by conducting interviews and Focus Group Discussion (FGD) with stakeholders. In this research, the researchers do not intend to test the hypothesis but only to describe and to analyze the data. The research has scientific background with its cycle process (James H. McMillan; Sally Schumacher, 2010). This descriptive research is designed to obtain information about phenomena which occurs while the research is conducted. It is aimed at describing the process of making palm sugar to crystalline sugar which has an emphasis on observation and scientific atmosphere so that it would produce a follow up study on an increase in crystalline sugar marketing to people (Dachlan M. A, 1984).

III. DISCUSSION

Sugar palm tree is included in the genus of palm trees which grows in the hilly topography in the altitude of 0-1.400 meters above the sea level (Perkebunan, 2015). Sugar palm tree is included in forest plants which have a lot of benefits for human daily life. Their benefits lie on their leaves, fruit, stem, roots, frond hair, and water which flows from the fronds or limbs (Effendi, 2010). This specific plant if a forest plant grown traditionally by farmers and is still cultivated conventionally, and its benefit is still very simple to be produced for increase the income of farmers who reside at villages or fringe of forest.

Specifically, this sugar palm tree is used at the stalk tapping which yields water that flows from the stem of the sugar palm tree (Lempang, 2000). This water is called palm water which has a lot of benefits in its processing.

A. Processing Palm Water to Crystalline Water

Processing palm water to crystalline water is follows:

1. First, a sugar palm tree is tapped on its fruit stalks, starting from cutting the 29th stem (the most upper part). Its stalk is sliced repeatedly until the palm water flows drop by drop continuously. The palm water is then caught by using plastic receptacle such as buckets or jerry cans of five to seven liters. The farmers usually do the tapping in the morning, starting with cleaning up the hair (black sugar palm fibers) existing surrounding the leaf fronds. The palm water stem which will be cut off is beaten repeatedly within 15 to 20 minutes. The aim is to make the water easy to flow in the stem swiftly after the tapping of the stem. Usually the farmers will get about 5 to 35 liters of the sugar palm juice per day or per palm tree. A good sugar palm tree will produce 35 liters of sugar palm juice per day. The palm sugar juice which has been boiled in a big *kuali* (a kind of wok) with the water capacity of 80 to 100 liters. It is suggested that the palm sugar juice be boiled not more than one hour since it is taken from the tree so that it will not become fermented acid.
2. The palm sugar juice is boiled in three hours with continuous heating; it is boiled on a heating stove. Good heating can be used with firewood or a 3 or 19-kg LPG (Liquefied Petroleum Gas). Heating by using firewood will yield heat equally on the whole surface of the wok. During the heating process in three hours, the palm sugar juice will be done, identified by the palm sugar juice which is changed to sugar in the form of caramel (high fructose syrup) in foam with bubbles in it. The volume of the palm sugar juice will decrease drastically. In the process of boiling eight liters of palm sugar juice will yield one kilogram of palm sugar in the form of slabs s that 80 liters of palm sugar juice will yield eight kilograms of palm sugar slabs. Palm

sugar in the form of caramel is taken out by using scoop or water dipper made of stainless aluminum and poured into various sizes of mold.

3. To make dredged palm sugar in the form of granular palm sugar, the boiling is continued from the form of caramel until the palm sugar juice changes to granular powder while stirring it equally and continuously on the wok.

4. If we want to make crystalline sugar, the next process is by putting palm sugar slabs into a mincing machine. It is a machine made of iron or aluminum, especially to cut up palm sugar slabs to become small pieces (3 to 5 cm) to make them easy to decrease water content contained in the palm sugar slabs. The next step is that the palm sugar slabs which have been minced with the mincing machine are put into an oven at the capacity of 50 kilograms of palm sugar.

5. The palm sugar slabs which have been minced into small pieces are put into heating cake molds. 48 cake molds which are arranged in four shelves in the oven. There are 12 cake molds on each shelf with about the distance of 10 centimeters between the cake molds, and the distance between the cake mold lines in the oven is five centimeters. The treatment of dehydrating of this palm sugar in the oven is divided into 24 cake molds as dredged palm sugar which will be turned into granular powder, and the other 25 cake molds are in the form of palm sugar of about three to five centimeters which are minced by the mincing machine.

6. In the process of dehydrating in the oven, dredged palm sugar or palm sugar slabs which have been crushed is heated at the temperature of 80°C (stable temperature) in three minutes. The aim is to decrease the content of water which is still contained in the palm sugar. The water content in the palm sugar slabs is 5 to 10 degrees. The water content of dredged palm sugar is about three degrees. In this phase, the different temperature treatment is done in the different heating time in order to yield the variant of dredged palm sugar which has different tastes. Some of the variants of crystalline sugar taste sweet, some of them taste strong, and some of them have low calorie but are rich of fat. When the process of dehydrating increases to 80 degrees, air windows should be opened to remove hot room temperature so that it will be stabilized at the temperature of 80 degrees. The aim is to avoid being scorched during the crystalline sugar preservation.

7. After the process of dehydration in the oven has lasted three hours, the oven door is opened widely to remove hot temperature in the oven. It should be known that the oven space is given Air condition of 1.5 PK which can establish the stability of room temperature to be cold which lasts for thirty minutes. After that, the palm sugar in the oven is dredged to remove the sugar low layer which stuck firmly to it during the heating process; this will be very helpful for moving the sugar in the oven to the sieve (filtering machine).

8. After that, the dredged sugar and the crystalline sugar in the oven are moved gradually into the filtering or sieving machine to be filtered by filtering gauze at the size of 100mes for about 30 minutes. This process will produce fine sugar, crystalline sugar which is collected with a plastic container which accommodates 25 kilograms put under the machine. In the process of sieving, the 24 cake molds will yield 95% of grade A crystalline sugar with the light brown in color, shiny, and tiny bits with very low water content of one degree. If the 24 cake molds of sugar in the oven which are moved to the sieve are ground, 40% of the crystalline sugar will become very tiny bits and its color will be dark brown. The remaining 60% in the filtering machine will become ground sugar.

9. The dredged palm sugar which has been sieved or filtered is put into packages. Ground sugar will yield 40% of Grade A crystalline sugar which is ready to be packed up while the remaining 60% sieved in the form of round crystal will be put again into the different grinding machine. In this grinding machine the filtered grains will be refined again so that they become dredged sugar.

10. The refined crystalline sugar in the grinding machine is baked in the oven again in one hour at the temperature of 50 degrees. This second time of baking it in the oven is aim to decrease the water content containing in the palm sugar. Like the first baking in the oven, this second time of baking in the oven should be maintained the room temperature stability at the temperature of 50 degrees.

11. After the second baking in the oven is done, the palm sugar is cooled by opening the oven door in 30 minutes in order that the temperature is stable. The whole palm sugar which has been put in the cake molds is put into the sieve in 30 minutes. Through this treatment will yield Grade B crystalline sugar which

becomes more brownish. When it is in the sieve, the bigger crystalline sugar will be ground for the second time, and so on.

12. The Grade A and Grade B crystalline sugar which has been sieved well is put into plastic packages of 250 grams, 500 grams, and sachet of 10 grams.

13. The crystalline sugar which has been put into various sizes of package is done by being laminated in the package laminating machine. Each of the upper lips of the packages is put into the laminating press machine. Carefulness should be heeded because the hot temperature can reach 200 degrees. The packages which have been put into the press machine is released so that the plastic packages of the crystalline sugar will run by themselves until the end of the machine. The process of packaging is done.

14. The sugar which has been packed and laminated is put into package boxes written with trade marks.

15. The product is ready to be marketed.

B. Marketing Strategy

Marketing strategy or marketing is a series of logics about marketing in which a certain business expects value-added and profit obtained from the form of the relationship with clients or consumers (Kotler & Amstrong, 2008). The success in the increase in the sales price of crystalline sugar product depends upon the marketing strategy (Buchari Alma, 2011). The concept of the marketing strategy applied in this research by online and offline. Talking about marketing by online of crystalline sugar, it is marketed through social media network such as shoppe, instagram, facebook, and other social media (Andes, J. R., & Sunaryanto, 2020). Unlike the marketing concept by offline, crystalline sugar is marketed in some commercial places such as coffee shops, hotels, hospitals, and modern retails. The concept of marketing by online or what we know as online shop is very promising today. Marketing products by online can collaborate with influencer such as celebgram so that this concept of marketing strategy is considered effective in unceasing business sales value of crystalline sugar.

IV. CLOSING REMARKS

Sugar palm tree is an agricultural business commodity in the future since the sector of palm sugar commodity business becomes one of the favorite businesses. The palm sugar industry in Deli Serdang Regency, North Sumatera, is very little even though the process of this palm sugar is very promising in increasing the welfare of palm sugar farmers and palm sugar industry. One of palm sugar processes which becomes the interest of domestic and international consumers; that is, processing palm sugar slabs to become crystalline sugar. The crystalline sugar is favored by coffee shops, hotels, hospitals, modern retails, and other modern retails.

The background of this research is relevant to the final objective of this research in increasing the quality of the welfare of palm sugar farmers in Deli Serdang, North Sumatera through good quality of palm sugar production and in increasing the sales value of crystalline sugar so that it can enter domestic and international markets. After through various kinds of processing palm sugar to become crystalline sugar, the concept of marketing strategy proposed in this research is through two kinds of strategy: (1) marketing strategy by online or it is known as online shop, and (2) marketing strategy by offline. In the marketing strategy by online, crystalline sugar product is marketed through social media network such as shoppe, instagram, facebook, and other social media. Meanwhile, in the concept of marketing by offline, crystalline sugar is marketed in some places such as coffee shops, hotels, hospitals, and modern retails.

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