Community Income from Palm Sugar Processing in Sangtandung Village, Luwu Regency, Indonesia

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Abstract- Palm sugar or brown sugar is a sweetener made from sap derived from the male flower bunches of the palm tree (Arenga pinnata). The community has felt the role of NTFPs as a source of income, but the processing system is still traditional, so the quality produced is still far from the expected standard, and the price is still low. This study aims to determine the amount of community income from palm sugar processing in Sangtandung Village, Luwu Regency. This research was conducted in August-June 2021 in Sangtandung Village, Luwu Regency, with a sample of 20 palm sugar processors respondents. This study uses direct interviews with selected respondents regarding the equipment and the number of costs used in the manufacture of palm sugar, as well as the amount of palm sugar produced and the amount of money received from the sale of the palm sugar. The result of this research is that the total cost of spending on palm sugar business in Sangtandung Village, North Walenrang District, Luwu Regency is Rp. 33,860,000 with an average expenditure of Rp. 2.636.000/year. The total revenue each year is Rp. 258,5000 with palm sugar production costing 20,000-25,000 \pack so that the average income of each farmer is Rp. 12,925,000\years. So it concludes that the average net income received by palm sugar processing farmers is Rp. 12,925,000/year. The average amount spent on palm sugar products is Rp. 2,636,000\years. while for the average income of palm sugar processing farmers, Rp. 10,289,000/year.

Keywords- Palm sugar, NTFPs, Community Income

I. INTRODUCTION

Non-timber forest products are plants that grow inside and outside the forest area. Although the community has felt the role of NTFPs as a source of income, the processing system is still traditional, so the quality produced is still far from the expected standard, and the price is still low [1].

The role of non-timber forest products is from an ecological perspective and an economic and social-cultural aspect. From the financial part, non-timber forest products can be a source of income for the community and the government. Meanwhile, from social culture, the community utilizes and processes non-timber forest products [1]. One of the non-timber product commodities that grow in the Sangtandung village area is the palm tree which grows naturally on the slopes of rivers and mountains. The number of palm trees makes household businesses process sap from palm trees into sugar. The economic value produced by the sugar palm plant can improve the community's economy, especially in the Sangtandung Village area, by utilizing sugar palms as a source of income.

Production from palm trees is included in the Non-Timber Forest Products (NTFP) category because it produces starch (carbohydrates), whereas derivatives from palm trees can produce palm flour and sugar. The processing of palm sugar carried out by the people of Sangtandung Village with raw materials derived from palm sap experienced several obstacles, namely the results of erratic palm sap tapping, distribution channels that were still traditional, and no group of palm sugar craftsmen had been formed. In general, palm sugar artisans have side jobs, but in reality, they are more dependent on the business of making palm sugar. An economic basis for the people (rural communities) is appropriate and needs to be developed. In addition, palm sap palm growers are generally concurrently craftsmen who make sugar themselves. In other words, no palm sap farmers sell their sap to palm sugar makers. Because there are many palm sugar artisans, each makes palm sugar traditionally; each artisan is generally static, so there are no ideas to improve the production quality. So the results of sugar production vary from one craftsman to another. Even the production of the same person can differ between the results of one day's show with the next day. Due to its traditional nature, the farmers have not considered looking for alternative markets that buy their sugar products more expensive than the price set by the collectors. In marketing, almost all craftsmen do not know the marketing channels or networks [1]. Until now, nearly no cooperatives or artisan groups have aimed to find alternative markets. The only way to sell their products is to the collectors at a standard price set by the collectors. Sugar palm as a source of income for people living around forest areas has been used for generations. The public utilizes

this commodity to make palm sugar and serve as a source of income. However, the community has not tried it as a business unit. They only use this business as a subsystem to meet their daily needs[2].

Sugar produced from palm sugar processing is very helpful in increasing people's income; so far, the palm sugar industry is still used as a side business, especially by the people of Sangtandung Village. They do not expect too much from the palm sugar industry, considering the income is too little. Because they are also still working in the fields and other jobs to support their family's economic life. Therefore, it is very appropriate if the government, in this case, the Ministry of Industry and Trade, always provides encouragement and motivation to the community, especially the Sangtandung Village community, to improve their welfare through the palm sugar industry they already have. The purpose of the study was to determine the amount of community income from palm sugar processing in Sangtandung Village.

II. LITERATUR REVIEW

A. Non-Timber Forest Products

Non-timber forest products (NTFPs) are plants that grow inside and outside the forest area. Although the community has felt the role of NTFPs as a source of income, the management system is still traditional, so the quality produced is still far from the expected standard, and the price is still low [1]. NTFPs or Non-Timber Forest products have a very strategic value. NTFPs are one of the natural resources that have the advantage of being cooperative and in direct contact with forest communities.

Non-timber forest product (NTFP) is the most logical choice because, in protected forest areas, the use of wood is not allowed. The analysis results of the suitability of the location to be rehabilitated are the primary considerations in selecting the kind of NTFPs. However, species that will be developed in the context of rehabilitating protected forests should have other added values, for example, the potential to prevent erosion and landslides. One of the parameters that can be used in this case is the root system [3].

According to Arief that "Forest communities are people who live in and around forests whose livelihoods and environment are largely dependent on the existence of forests and forestry activities [4]. in the southeastern archipelagic countries, including Malaysia, India, Myanmar, Laos, Vietnam, the Ryukyu Islands, Taiwan and the Philippines (Hadi, 1991). In Indonesia, sugar palm plants are abundant and spread in almost all parts of the archipelago, especially in humid, hilly areas (Sunanto, 1993), and grow individually or in groups. Sugar palm plants often grow from sea level to an altitude of 1,300 m above sea level. But this plant prefers places with a height of 500-1,200 m (Lutony, 1993) and when cultivated in areas with an altitude of 500-700 m above sea level. Will give satisfactory results (Soeseno, 1992). Soil conditions that are sufficient to nest or carry excess water, such as loose soil, volcanic soil on mountain slopes, and sandy soil around riverbanks are ideal for sugar palm growth. The best environmental temperature is an average of 250C with an average annual rainfall of 1,200 mm. There are such wide varieties of products that are marketed every day whose raw materials come from palm trees and the demand for these products for domestic and export needs is increasing. Almost all palm tree parts are helpful and can be used for various conditions, including physical parts (leaves, stems, fibres, roots, etc.) and production parts (fruit, sap and starch/flour). The palm tree is a type of palm plant that produces fruit, liquid and starch or flour in the trunk.

B. Income

1. Understanding Income

According to [5], the amount of income that will be obtained from a farming activity depends on several influencing factors such as land area, production level, entrepreneur identity, planting, and efficient use of labour. Farmers hope to increase their income by carrying out farming activities so that their daily needs can be met [6]. Income can be divided into two, namely farm income and household income. Revenue is a subtraction of revenue from total costs. Household income is income derived from farming activities plus income from activities outside of farming. Farming income is the difference between gross income (output) and production costs (input), calculated per month, year, and growing season. Non-farming income is income earned from doing activities outside of farming, such as trading, motorcycle taxis, etc.

2. Types of Income

a. Farming Income

Farming income, according to [7], can be divided into two meanings, namely (a) gross income, namely all income earned by farmers in farming for one year, which can be calculated from the sale or exchange of production products that are valued in rupiah based on the price per unit of weight at the time of harvesting the results, (b) net income, namely all income earned by farmers in one year reduced by production costs during the production process. Production costs include the real cost of labour and the actual cost of the means of production.

In farming income, two elements are used: the income and expenditure elements of the farming business. Revenue results from multiplying the total number of products with the selling price unit, while expenses or costs are intended as the value of the use of production facilities and others incurred in the production process (Ahmadi, 2001). Production is related to revenue and production costs, and farmers receive the receipts because they still have to be reduced by production costs, namely the overall costs used in the production process [8].

According to Soekartawi (2008) [9], farming costs are all farm expenditures. Farming costs are divided into two, namely fixed costs and variable costs. Fixed costs are costs whose amount does not depend on the product's size, while variable costs are costs whose size is influenced by the production volume.

b. Fixed Cost (Fixed Cost)
Fixed costs (fixed costs or fixed expenses) are costs that, during a specific operating time range or a certain level of production capacity, are always resolved in number or do not change even though the production volume changes [10]. Meanwhile, (Rosidi & Suherman, 2005) [11] suggests that fixed costs are components of overall fixed costs and will vary per unit with increasing production. The amount of output will be inversely proportional to the cost per unit, so the higher the outcome, the lower the cost per unit.
a. Variable cost (variable cost)
Variable costs depend on the number of products and services produced.
b. Average Cost (Average Cost)
The average cost is the total cost of production per unit that has been produced. The average price is calculated by dividing the total cost by the number of products made
c. Total Cost (Total Cost)
Total costs are costs incurred to produce a finished product that is ready for sale, or total costs are all costs incurred in carrying out production activities or other activities.
f. Household Income
According to [12], a significant benchmark to see the welfare of farmers is household income because some aspects of interest depend on the level of farmers' income. The payment of the farmer itself will affect the basic needs that must be met, namely, food, clothing, shelter, health and employment. The concept and measurement of the level of community welfare developed and used by several countries always use a multi-dimensional measure [13]. The level of household income is an essential indicator in determining household living. Generally, household income in rural areas does not come from one source but from two or more sources of revenue. The income level is thought to be influenced by the fulfilment of the basic needs of farmer households.
[14] stated that two factors influence the success of farming: internal factors such as soil, water, climate, technology level, management, labour, capital, and the number of workers. In addition to internal factors, there are also external factors, namely the availability of transportation and communication facilities, prices, production facilities, credit facilities, and counselling. Low-income levels require household members to work or try harder to meet their daily needs. Family income is expected to reflect the wealth level, and the number of capital farmers owns. The higher the income of farming families tend to be more willing to take risks. High income reflects the availability of sufficient funds for other farming, and low income causes a decrease in investment and efforts to accumulate capital.

C. Revenue Size
According to Sadono (2010) [8], there are four measures of income:
a. Farmer's Work Income
This income is obtained by calculating all income and investment increases which are then reduced by expenditures, both cash and interest on capital and investment in the value of family work.
b. Family Work Income
Income derived from remuneration and work, as well as management, carried out by farmers and their members, aimed at increasing household income. Sources of household income are classified into two sectors, namely, the agricultural and non-agricultural sectors. Sources of income from the agricultural sector can be further broken down into payment from farming, livestock, farm labour, renting out land and profit sharing. Sources of income from home industries, trade, employees, services, non-agricultural workers and other agricultural sub-sector workers.
According to Soeratno (1996), the measure of income used for the level of family welfare is household income obtained from work. Every member of the working-age family in the household will be encouraged to work for the welfare of his family. Several studies show that family members such as wives and children are contributors to various activities, both in household work and earning a living.
According to Hernanto (2012), farmers' income is allocated for activities:
1. productive activities, namely to finance their farming activities,
2. consumptive activities, namely for food, housing, health, education, recreation, and taxes,
3. investment maintenance, and
4. investment and savings.

III. RESEARCH METHODS

A. Time and Location of Research
This research was conducted in August-September 2022 in Sangtandung Village, Luwu Regency. The tools used in this research are computers, digital cameras, recorders and writing instruments. The material used in this research is a questionnaire. Primary data were collected through direct interviews with selected respondents regarding the equipment and the number of costs used in making palm sugar as well as the amount of palm sugar produced and the amount of money received from the sale of the palm sugar. Secondary data is data obtained from other parties, not directly obtained by researchers from the research subject. Secondary data that will be used in this study is the general condition of the research location, namely geographical location, area/land climate and socio-economic conditions of the local community. The population in this study were people who processed palm sugar, as many as 20

people. Determination of the sample using the census method, namely, all the population was made as a sample. The respondents in this study were 20 people.

B. Data Collection Techniques

Observation is the process of systematically observing and recording any object you want to observe, carried out directly in the field so that the information needed to continue research is obtained. Furthermore, an interview is a conversation between two or more people to get the correct information. Documentation is collecting data by flowing or taking data from records, documentation, and administration following the problem being studied.

C. Data Analysis

The data obtained, both primary data and secondary data, were analyzed descriptively and quantitatively. Quantitative descriptive analysis determines people's income from palm sugar processing. Palm sugar farmers' income is calculated using the following formula:

a. Cost:

TC = TFC + TVC

Information:

TC = Total Cost (Rp)

TFC = Total Fixed Cost (Rp)

TVC = Total Variable Cost (Rp)

b. Admissions are:

TR = P x Q

Information :

TR = Total Revenue (Rp)

P = Price (Rp)

Q = Production (Kg)

c. Income :

I = TR – TC

Information:

Income = I

Revenue = TR

Cost = TC

IV. Result and Discussion

A. Palm Sugar Processing

1. Tapping Palm

The oil tapping activity was started by preparing the necessary tools: ladders, sticks of bunches of wood, knives, special cutters and ropes. Choosing a tree with the male flower Mayang, the characteristics can be seen from the male flower essence that begins to fall, separating the Mayang stalk from the palm fibre leaves and the fallen frond. The male flower stalk is beaten slowly until it releases sap water. After that, the sap water is accommodated into the bamboo. The water that has been adjusted is transferred to the jerry can. On average, wiretapping is carried out twice daily in the morning at 05:00 -07:00 and 4:00-5:00 p.m.

Figure 1. Tapping Nira Aren

2. Cooking

The results of tapping sap in the afternoon are made into sugar water. The consequences of tapping sap in the morning are cooked simultaneously with high and constant fire for approximately 4 to 5 hours. After boiling, the sap water is filtered to separate impurities and white-bubble. Add one tablespoon of granulated sugar; if the sap water starts to thicken, remove the pan from the fireplace and stir

the sap water while slowly adding mineral water (± litre). Mixing with wood is done for 7-10 minutes so that it quickly cools and the resulting sugar is solid and does not have holes in the middle.

Figure 2. Cooking Sugar Palm Nira Traditionally using a fire stove

3. *Molding*

The palm sugar moulding process is prepared when the sugar has thickened. The moulds used by the artisans are usually made of coconut shells. Before printing, the shell is first moistened with water so that the sugar to be printed does not stick when removed from the mould.

Figure 3. Palm Sugar moulding

4. Packaging

Prepare the leaves (macaranga sp)\ (Lingkobong) to pack/wrap the cold sugar.

Figure 4. Palm Sugar Packaging

Table 1. Cost of Palm Sugar Processing in One Year in Sangtandung Village, Luwu Regency.

No	Equipment Type	Amount	Amount people	Price(RP) Per unit	Total price (Rp)
I.	Fixed cost				
1	Wok	1	20	600,000	12,000,000
2	machete	2	20	175,000	70 00,000
3	Bamboo	2	20	10,000	400,000
4	Talia Rapiah	2	20	25,000	1,000,000
5	Ax	1	20	150,000	3,000,000
6	Print Tool	30	20	5,000	3,000,000
7	jerry can	8	20	10,000	1,600,000
8	Bucket	3	20	53,000	3,200,000
9	Filter	2	20	20,000	800,000
10	Dipper	1	20	15,000	300,000
11	Basin	1	2 0	25,000	500,000
12	Stirrer	1	20	30,000	600,000
13	Pakola	1	20	15,000	300,000
14	Bag	1	20	8,000	160,000

	Amount	52	280		33,860,000
	Amount of Average Cost				2,418,571
II.	Variable cost				
1	Packaging	-	20	8,000	160,000
2	Rent Aren	2 btg	7	50,000	700,000
3	Transportation / Fuel	72 liter	20	10,000	14,000,000
4	Ginger (kg)	2 Kg	20	25,000	1,000,000
5	Coconut (Fruit)	20 biji	B 20	5,000	2,000,000
6	Pecan (kg)	3 Kg	20	17,000	1,000,000
	Amount		127		18,860,000
	Amount of Average Cost				3,144,000
	Total number				52,720,000

The table above shows that the equipment costs included in the fixed expenses used by palm sugar farmers start from the tapping process to produce palm sugar, namely frying pans, machetes, axes and others. By showing the accumulated costs incurred by farmers with a volume or number of farmers 20 people as much as Rp. 33,860,000/year. The average price per person is Rp. 2,418,571/year. The raw materials and transportation costs are included in the list of non-fixed expenses with a total cost of Rp. 18,860,000/year, with an average price per person of Rp.3,144,000/year. So it can be concluded that the total cost of palm sugar management is Rp. 52,720,000 /year.

The costs incurred are used as operational costs to earn income. The net income of the printed sugar business results from receipts from the sale of printed sugar products after deducting the total cost. The price of printed sugar is between Rp. 20,000-25,000\ pack. Each farmer's income is 12,925,000 on average per year; there are differences in the payment of each farmer due to different production. This is influenced by the fact that the amount of shell sugar production per day is small because the juice produced is also tiny, indicating that the more the number of products made is less. The price is low, and the total number of recipients producers receive is also getting smaller.

B. Reception

Revenue is the amount of money received from the sale of the resulting product, where the product obtained is multiplied by the selling price prevailing at that time. This can be seen in Table 2.

Table 2. Revenue on Palm Sugar Farmers' Income Analysis in Sangtandung Village, Luwu Regency

Number Respondent	Product (Kg/year)	Unit price (Rp)	Admissions (Rp/year)
1	800	20.000	16,000.000
2	600	20.000	12,000.000
3	400	20.000	8,000.000
4	750	20.000	14,000.000
5	600	20.000	12,000.000
6	400	25.000	10,000.000
7	680	25.000	15,000.000
8	600	25.000	15,000.000
9	700	25.000	17,500.000
10	400	25.000	10,000.000
11	800	20.000	16,000.000
12	700	20.000	14,000.000
13	400	20.000	8,000.000
14	600	20.000	12,000.000
15	600	25.000	15,000.000
16	400	25.000	10,000.000
17	700	20.000	14,000.000
18	700	20.000	14,000.000
19	600	20.000	12,000.000
20	700	20.000	14,000.000
Tptal	12,000		258,500.000
Average	600		12,925.000

The table above shows that the total revenue is Rp. 258,500,000, with a palm sugar production of 20,000, - 25,000 per pack in a year at the prevailing prices. For the average income of each farmer, as much as Rp. 12,925,000.

C.Revenue

Income is significant because income is the object of sugar palm sap processing activities in Sangtandung Village, Luwu Regency. Income is the amount of money received by each respondent after deducting expenses. For details, see Table 11 below.

Table 3. Palm Sugar Business Income in Sangtandung Village, Luwu Regency.

	Total Expenses (Rp/year)	Admissions (Rp/year)	Income (Rp/year)
Total	Rp. 52,720,000	Rp 258,500.000	Rp. 205,780,000
Average	Rp. 2,636.000\person	Rp 12,925.000/person	Rp.10,289.000 \person

The table above shows that the average cost is Rp. 10,289,000, - with an average total income of Rp. 12,925,000, - and expenses of Rp. 2,636,000. So the average monthly income is 500,000/per person.

IV. CONCLUSION

The conclusion that can be drawn from the results of research conducted in Sangtandung Village, Luwu Regency, is that the total costs incurred by the community in making palm sugar are 52,720,000, with the average cost incurred by each farmer for palm sugar products are 2,636. .000\ years. This research suggests that palm sugar business farmers improve their skills in making palm sugar and using processing technology so that the quality of this palm sugar can last a long time. Palm sugar producers should carry out record management regarding all costs incurred and revenues earned. This is done to determine the income made and avoid losses in the palm sugar business.

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