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# KEPOK BANANA FARMING IN ENGGANO ISLAND

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***ABSTRACT***

*As one of the most remote areas in Indonesia and located in Bengkulu Province, Enggano Island has great potential in the agricultural sector. In the last decade, this Island is well known as kepok banana production center in Bengkulu. This research aims to find out the factors that affect the production of kepok banana farming, calculate the farming income, and analyze the level of kepok banana farming efficiency. The research was conducted in Enggano Island, North Bengkulu Regency, Bengkulu Province. 80 farmers from two villages (Meok and Banjarsari) were chosen as the respondents by Cochran's sampling method. To analyze the factors affecting banana production, this research used the production functions of the Cobb-Douglas. The results showed that seeds and herbicides had a significant effect on kepok banana production. The results show that the income received by kepok banana farmers in Enggano Island is IDR 34,412,814.22 per hectare per year or the equivalent of IDR 2,867,734.52 per hectare per month. The R/C ratio is 9.35. This means that every IDR 1.00 incurred will result in receipts of IDR 9.35. The R/C ratio is more than 1, which means that the kepok bananas farming in Enggano Island, North Bengkulu Regency, Bengkulu Province is efficient. Farmers can increase the productivity of their farming business by increasing the optimal use of seed and herb control to achieve maximum profits. Then, the government should improve transportation facilities and infrastructure to Enggano Island so that the marketing system can run smoothly.*

***Keywords:*** *determinant factors, kepok banana farming, income, efficiency*

## INTRODUCTION

The World Food Organization (FAO) confirms that bananas are the fourth most important food commodity in the world after rice, wheat, and milk (FAO, 2024). Based on BPS data for 2023, Indonesian banana production will reach 9.24 million tonnes in 2022 (BPS, 2023). Indonesia is the third largest producer in the world after India (34.52 million tonnes) and China (11.77 million tonnes) (Widi, 2024). Widi further wrote that the world banana market value in 2024 will reach 140.84 billion US dollars. The destination countries for Indonesian banana exports are Malaysia, Singapore, and China. BPS (2023) explains that over the last five years, Indonesian banana production has continued to increase. National banana production in 2022 will be much higher than production in 2018 which was only 7.26 million tons. One type of banana that is very popular in Indonesia is the kepok banana.

Banana production continues to be developed in Indonesia, one of which is in Bengkulu Province. This is shown by the continued increase in banana harvest area per year. In 2015, the banana planting area was still around 425 hectares with a total production of 23,988 tons, then in 2016, the harvest area increased to 1,196 hectares with a total production of 531,809 tons. In 2016, Indonesian banana production reached 7,007,117 tons with a planting area of 85,324 hectares (BPS Provinsi Bengkulu, 2017). In 2022, banana production in Bengkulu Province was the largest production of all types of fruit, namely 91,550 tons (BPS, 2023). The area that is the center of banana production in Bengkulu Province is North Bengkulu Regency with a total production of 74 thousand tons (BPS Provinsi Bengkulu, 2023).

The main contributor to banana production in North Bengkulu Regency is Enggano District. Enggano District, which is entirely in Enggano Island, is capable of producing 615,280 quintals or around 61.5 thousand tons of bananas in 2022 (BPS Kabupaten Bengkulu Utara, 2024). Enggano Island is one of the most remote areas in Indonesia. It is located in North Bengkulu Regency, Bengkulu Province. The people depend on their livelihood from fisheries and agricultural sectors. In the last two decades, Enggano Island has been well known as the center of kepok banana farming. The modes of transportation used in Enggano Island are very limited. There is no

public transportation on the island, and there are only ferries and pioneer boats that serve crossings to the main mainland (Sumatra Island), precisely at Pulau Baai Harbor, Bengkulu City, with a travel time of approximately 12 hours. If the weather is bad, no ships will leave or arrive. This condition will usually have an impact on reducing the prices of agricultural commodities in Enggano Island, including the price of kapok bananas. Table 1 presents the amount of kepok banana production in Enggano Island, Enggano District, North Bengkulu Regency, Bengkulu Province.

Table 1. Land area, production, and productivity of kepok banana in North Bengkulu Regency

| No | Sub-Regency | Production (Ton) |
|---|---|---|
| 1 | Enggano | 61,528 |
| 2 | Padang Jaya | 4,896 |
| 3 | Arma Jaya | 4,795 |
| 4 | Air Padang | 602 |
| 5 | Giri Mulya | 539 |

Source: BPS Kabupaten Bengkulu Utara (2024)

However, the high production and productivity of kepok bananas do not necessarily guarantee high income for farmers from this farming business, because the income of the kepok banana farming is influenced by the quantity and price level of production inputs used, the price of the farm's production output, and the number of bananas that can be marketed (Abdulloh, et al., 2019; Ton, et al., 2018).

To increase maximum banana production, the production factors must also be used optimally and efficiently. In increasing agricultural production, it is also necessary to increase the use of production factors. If the use of production factors is too large, it will cause large costs and will affect the level of profit that farmers will receive. Based on the study of the problems above, the researcher aims to analyze the factors that influence production, calculate income, and measure the efficiency of kepok banana farming in Enggano Island, North Bengkulu Regency, Bengkulu Province.

## METHOD

The research was conducted in Enggano Island, Enggano Sub-Regency, North Bengkulu Regency, Bengkulu Province. The research location was determined purposively because Enggano Island has the highest contribution to kepok banana production in Bengkulu Province. Meanwhile, the respondents of the research are banana farmers in Enggano Island. Respondents to the research were collected from two villages, namely Meok Village and Banjarsari Village. These two villages are banana production centers in Enggano Island. Sampling was carried out using simple random sampling. The simple random sampling method is defined as a sampling technique in which each sample to be taken from a population has an equal chance of being selected (Sugiyono, 2022). Samples were taken using Chochran's formula with a tolerable sampling error of 10% (Sugden, et al., 2000). Based on the calculation results, the number of samples in this study is 80 banana farmers. To obtain samples in each village, proportional sampling was carried out referring to Nazir's formula (Nazir, 2013), so the sample distribution obtained was 49 farmers from Banjarsari Village and 31 respondents from Meok Village.

*Cobb Douglas Production Function Analysis*

The Cobb-Douglas function is transformed into linear regression form, then the production function model can be written as follows (Gujarati, 2004; Soekartawi, 1995):

$$\boldsymbol{Ln\ Y = Ln\ a + b_1 Lh + b_2 LnB + b_3 LnG + b_4 LnTK + u}$$

Where Y is banana production (Bunch/Ha/Year), Lh is the land farming area (Ha/Year), B is the number of seedlings (Stem/Ha/ Year), G is herbicide (Lt/Ha/Year), TK is the labor (HOK/Ha/Year), a is a constant, $b_1$, $b_2$, $b_3$, and $b_4$, are regression coefficients, and u is the error term.

The statistical significance tests carried out in this research are the F-test and T-test. The F statistical test is used to determine the influence of production factors together on production. The formulation of the hypothesis is as follows:

$H_o : \beta i = 0$

$H_a : \beta i \neq 0$

Where bi is the regression coefficient of the independent variable, and Sbi is the standard error. The criterion is if $T_{test} \leq T_{table}$ or $-T_{test} \geq -T_{table,}$ so $H_o$ is accepted, which means, partially, the production factor variables do not have a significant effect on banana production. If $T_{test} > T_{table}$ or $-T_{test} < -T_{table}$, so $H_o$ is rejected, which means, partially, production factor variables have a significant effect on banana production.

*Analysis of Farming Income*

Farmers' total income is approximated using the equation (Suratiyah, 2006):

TR = Y x Py

TC = TFC + TVC

Pd = TR – TC

Where TR is total revenue (IDR/Year), Y is the production (Bunch/Ha/Year), Py is banana price (IDR/Bunch), TC is total cost (IDR/Ha/Year), TFC is total fixed cost (IDR/Ha/Year), TVC is total variable cost (IDR/Year), and Pd is Income (IDR/Ha/Year).

*Farming Efficiency Analysis*

Analysis of farming efficiency uses the Return Cost Ratio (R/C ratio), which is a comparison between the amount of revenue and the total costs incurred in the farming business (Suratiyah, 2006). This approach was used by some previous researchers (Mulyo, et al., 2017 and Abdulloh, et al., 2019).

$$\text{R/C Ratio} = \frac{Total\ Revenue\ (\text{IDR})}{Total\ Cost\ (\text{IDR})}$$

The criteria: If the R/C Ratio > 1, farming is efficient and profitable, and worth continuing. If the R/C < 1, Farming is inefficient and unprofitable. If the R/C Ratio = 1, the farming business is at the break-even point (not experiencing profits or losses) (Suratiyah, 2006).

## RESULTS AND DISCUSSION

*Use of Production Inputs in Kepok Banana Farming*

The production inputs used in kepok banana farming activities in Enggano Island are land, banana seedlings, herbicides, and labor. The amount of production input used is presented in Table 2.

Table 2. The average use of production inputs of kepok banana farming in Enggano Island

| No | Production Inputs | Mean | Mean (per Ha) |
|---|---|---|---|
| 1 | Land Area (Ha) | 2.46 | 1.00 |
| 2 | Banana seedlings (Stems) | 817.54 | 332.33 |
| 3 | Herbicide (Litre) | 15.18 | 6.17 |
| 4 | Labor (Working day) | 113.17 | 46.00 |

Source: Primary data processed (2024)

Land is a medium for growing plants and plays a role as a production factor in farming. In simple terms, it can be stated that farming with a narrow area will be easier to manage compared to relatively large areas of land. However, farming with a larger planting area will generally produce more production. The research results show that the total land area production factor of the 80 respondents of kepok banana farmers in Enggano Island is 196.8 Ha, so the average area of kepok banana harvest is 2.46 Ha. From an average land area of 2.46 Ha, the average number of banana seedlings used by the farmers is 817.54 trees, or equal to 332.33 stems of kepok banana seedlings per hectare. This number of seedlings is less than what it should be. Kepok bananas can be planted within a planting distance of 3.5 m x 3.5 m, so the seedlings planted can reach 900 stems per hectare (Riyadi, 2022).

The results of interviews with farmers prove that the presence of wild grass around banana trees is quite disturbing, so the need for weed poison (herbicide) is quite high. The average use of herbicides is 15.18 Lt/Year or equal to 6.17 Lt/Ha/Year. In one year, the frequency of herbicide use is three times spraying, so that in one spraying the amount of herbicide use is 2.06 Lt/Ha. The herbicide used is the Gramaxone type.

The labor used in the production of kepok bananas comes from labor within the family and outside the family. Where the labor used is female and male labor. The average use of labor is 113.17 HOK. It is equal to 46 labor/Ha/Year. In this research, the majority of workers used are male workers, because banana farming is still perceived as a farming business that requires a lot of energy. Almost all communities in Enggano Island have their banana plantations, and use more labor within the family than labor outside the family. 66% of kepok banana farming in Enggano Island uses family labor, and 94% of them are male workers. One of the causes of the high use of labor in the family is the difficulty of finding paid labor because most people are also busy with the same farming activities.

*Factors Affecting Kepok Banana Farming Production*

This analysis aims to determine the influence of each production input factor as an independent variable on the production results of kepok banana plants as the dependent variable. The production measured in this research is the production of kepok bananas in the form of fruit bunches. To analyze the factors that influence kepok banana production, the research conducted a regression on the variables land area (Lh),

number of seedlings (B), amount of herbicide (G), number of workers (TK), and banana production (Y). For estimating the influence of the use of production factors on kepok banana production in Enggano Island, Enggano District, North Bengkulu Regency, Bengkulu Province, this research used the Cobb-Douglas production function.

Based on the results of the Cobb-Douglas analysis, the following regression equation is obtained:

Ln Y = Ln 1.944 + 0.323 Ln Lh + 0.653 Ln B + 0.265 Ln G + 0.906 Ln TK

The value of $F_{Test}$ (150.261) > $F_{Tab}$ (2.49), then $H_o$ is rejected, this means that all independent variables (land area, number of seeds, number of herbicides, and number of workers) simultaneously have a significant effect on banana production kepok. Furthermore, the coefficient of determination value reflects how much variation in the dependent variable can be explained by the independent variable. The $R^2$ value is 0.8891, this figure shows that the dependent variable, namely kepok banana production, can be explained by the independent variables (land area, seeds, herbicides, and labor) amounting to 88.91%, while the remaining 11.09% is explained by variations in other variables outside the research model.

Table 3. Estimated Results of Factors Affecting Kepok Bananas Production in Enggano Island

| Independent Variables | ES | Coefficient of Regression | Standard Error | $T_{Test}$ |
|---|---|---|---|---|
| Land area (Lh) | + | 0.323 | 0.197 | 1.637 |
| Seedlings (B) | + | 0.653 | 0.103 | 6.347* |
| Herbicide (G) | + | 0.265 | 0.944 | 2.806* |
| Labor (TK) | + | 0.906 | 0.165 | 0.550 |
| Constanta | | 1.944 | | |
| $F_{Test}$ | | 150.261 | | |
| $F_{Tab}$ | | 2.490 | | |
| $T_{Tab}$ | | 1.992 | | |
| $R^2$ | | 0.889 | | |

Source: Primary data processed (2024)
ES: Expected sign of variables
Note: * is Significant at the level of 95%

The results of the regression analysis show that the land area variable (Lh) has a $T_{Hit}$ value of 1.637. This value is smaller than the $T_{Tab}$ value (1.992) at the 95% confidence level, so $H_o$ is accepted and $H_a$ is rejected. This means that the land area production factor has no significant influence on kepok banana production. The regression coefficient value of the land area production factor is positive, namely 0.323. This indicates that land use by farmers is still not optimal and can still be utilized, but the impact is not significant. The results of this research are in line with research by Palipada (2017) which states that statistically land area has no significant effect on the production of ambon banana, and this condition is caused by land use that is not yet optimal (Palipada, 2017). Palipada took the research in South Sulawesi, Indonesia.

The second variable is the number of seedlings used in kapok banana farming. This variable has a $T_{Hit}$ value is 6.347. This value is greater than $T_{Tab}$ (1.992) at the 95% confidence level, so $H_o$ is rejected and $H_a$ is accepted. This means that seed production factors have a statistically significant effect on kepok banana production in Enggano Island. The regression coefficient value of the seed production factor is positive, namely 0.653 (real at $\alpha = 0.05$), which means that every additional seed of 1 unit will increase the production of kepok bananas by 0.653 units. Further use of seeds can be implemented to increase production levels. According to the Indonesian Biotechnology and Bioindustry Research Center, kepok bananas, which have a larger stature, can be planted at a spacing of 3 meters x 3 meters with a population of 1100 trees per hectare. In Enggano Island, the average farmer still uses a planting distance of 6 meters x 6 meters with an average number of seeds per hectare of 363 plants. The results of this research are in line with Palipada (2017) which shows that seed variables statistically have a significant effect on banana production (Palipada, 2017). Palipada also concluded that adding seeds to the ambon banana farming business could be done to increase production.

The next variable that also has a significant effect is the use of herbicides. The research results show that the herbicide variable

(G) has a $T_{Hit}$ value of 2.806, greater than the $T_{Tab}$ value of 1.992 at the 95% confidence level, so $H_o$ is rejected and $H_a$ is accepted. This means that herbicide factors have a significant effect on kepok banana production. The regression coefficient value of herbicide factors is positive (0.265) and significant at $\alpha = 0.05$. From these results, it can be interpreted that for every additional use of herbicide by 1 unit, it will cause an increase in kepok banana production of 0.265 units. The addition of herbicide variables can still be done to increase production. The land in the research area comes from cleared forest land, so weeds quickly grow and are very numerous. In this situation, the herbicide dosage farmers have used so far is still not optimal for controlling these weeds. The farmers in Enggano Island mostly used gramoxone by Syngenta. In a normal condition, the recommended use of gramoxone in banana farming is 4 liters per hectare (Syngenta, 2023). It is expected that the addition of herbicides can eradicate weeds so that banana trees can be more productive. However, the use of chemical or synthetic herbicides will promote higher aquatic risks, air pollution, and hazardous exposure to human health resulting in the emergence of cancer and neurobiological dysfunctions (Bruhl, et al., 2023).

The last independent variable analyzed is labor use. The labor variable (TK) has a $T_{Hit}$ value of 0.5502, smaller than $T_{Tab}$ (1.992), at the 95% confidence level, then $H_o$ is accepted and $H_a$ is rejected. These results indicate that the labor production factor does not have a significant effect on kepok banana production. The regression coefficient value of the labor production factor is positive, namely 0.906. Based on these results, it can be assumed that an increase in the labor variable can drive an increase in production, but the increase will not be significant. Palipada (2017) research results prove that the labor variable also does not statistically have a significant effect on production. However, the results of Palipada's study showed negative regression coefficient results. This situation explains that the use of labor in ambon banana farming in South Sulawesi is excessive.

*Cost of production*

Costs are several sacrifices calculated to finance farming activities which include variable costs and fixed costs. Variable costs such as production facilities, labor costs, and fixed costs such as equipment depreciation costs and land taxes. The total cost of production facilities consisting of purchasing seeds and herbicides is IDR 3,818,820.00 per farm per year or the equivalent of IDR 1,552,365.85 per hectare per year. The costs of production facilities are presented in Table 4.

Table 4. The input cost of kepok banana farming in Enggano Island

| Cost items | Number of Use | Item Price (IDR/unit) | Average cost (IDR/Year) | Average cost (IDR/Ha/Year) |
|---|---|---|---|---|
| Seedlings (Stems) | 817.54 | 3,000.00 | 2,452,620.00 | 997,000.00 |
| Herbicide (Litre) | 15.18 | 90,000.00 | 1,366,200.00 | 555,365.85 |
| Total | | | 3,818,820.00 | 1,552,365.85 |

Source: Primary data processed (2024)

These seeds were obtained from outside Enggano Island. The first banana seeds were obtained by buying them from a seed seller. At the time of first planting (2018), the price of banana seeds was IDR 3,000.00 per stem. Currently (2024) the purchase price for Kepok banana seeds has reached IDR 6,000.00 per stem. Seedlings are only purchased at the beginning when the first planting is done. Furthermore, banana plant seeds come from saplings that grow around the main banana plant. To purchase the first seeds, the average kepok banana farmer in Enggano Island spends IDR 2,452,620.00 per farm per year, or the equivalent of IDR 997,000 per hectare per year. Farmers in Enggano Island focus on eradicating grass around Kepok banana plants during the maintenance period. The herbicide used by farmers is the Gramaxone type herbicide. Spraying is carried out twice a year. To purchase herbicides, the average cost that Kapok banana farmers in Enggano Island have to pay is IDR 1,366,200.00 per farm per year, or the equivalent of IDR 555,365.85 per hectare per year. The herbicide price that farmers have to pay is IDR 90,000.00 per liter.

Table 5. The labor use of kepok banana farming in Enggano Island (on a working day)

| Farming activities | Within Family | | Outside Family | | Total |
|---|---|---|---|---|---|
| | Men | Women | Men | Women | |

| | | | | | |
|---|---|---|---|---|---|
| Land preparation | 22.13 | - | 12.50 | - | 34.63 |
| Planting | 20.62 | 1.81 | 10.18 | - | 32.61 |
| Weeding | 8.12 | - | - | - | 8.12 |
| Spraying | 6.36 | - | - | - | 6.36 |
| Harvesting | 12.71 | 2.80 | 15.94 | - | 31.45 |
| Total labor use | 69.94 | 4.61 | 38.62 | 0 | 113.17 |

Source: Primary data processed (2024)

Labor costs are costs incurred for workers who are utilized in handling all production activity processes. Labor costs are obtained by multiplying the amount of labor used (days worked) by labor wages per day worked. The use of labor in Kepok banana farming is in Table 5, while labor costs are presented in Table 6.

Labor is a very determining production factor in farming. Additional labor can shorten working time. The more and faster a job can be done, the higher production will be, and income is expected to increase. The labor used in kapok banana farming in Enggano Island is divided into five parts, namely land preparation, planting, weeding, spraying, and harvesting. The labor used in kepok banana farming comes from labor within the family and labor outside the family. The workforce most often used comes from within the family, namely 69.94 HOK or almost 62% (Table 5). Endarwasih (2013) also proved that farming in Senduro District is mostly carried out by family workers (Endarwasih, 2013). Utilizing family members as labor can save cash expenditure on labor wages. On the contrary, research in Lumajang Regency explained that agung banana farming used more outside-family labor than within the family (Wardhani, et al., 2023).

The highest amount of labor used was in land preparation activities, with a total labor use of 34.63 HOK. In preparing the land, farmers who have just opened new land will start by clearing the land from the remaining large trees, this requires quite a long time with quite a large number of people. Land preparation activities also require additional labor from outside the family. This activity is entirely carried out by male workers. The majority of workers in kepok banana farming in Enggano Island are men. There are few female workers. Female workers are generally required to be involved in planting and harvesting activities. Utami (2009) also revealed that most farming activities utilize male workers. In Utami's research, female workers were only needed when weeding grass and weeds.

Table 6. The labor cost of kepok banana farming in Enggano Island

| Farming activities | Working day | Working day (per Ha) | Total (IDR) | Total (IDR/Ha) |
|---|---|---|---|---|
| Land preparation | 34.63 | 14.08 | 1,904,650.00 | 774,247.97 |
| Planting | 32.61 | 13.26 | 1,793,550.00 | 729,085.37 |
| Weeding | 8.12 | 3.34 | 446,600.00 | 181,544.72 |
| Spraying | 6.36 | 2.59 | 349,800.00 | 142,195.12 |
| Harvesting | 31.45 | 12.78 | 1,729,750.00 | 703,150.41 |
| Total labor cost | 113.17 | 46.05 | 6,224,350.00 | 2,530,223.59 |

Source: Primary data processed (2024)

Table 6 shows that the farming costs calculated for the use of labor are IDR 6,224,350.00 or the equivalent of IDR 2,530,223.59 per hectare. The average daily wage for farm laborers in Enggano Island is IDR 55,000. The largest labor costs come from land preparation and planting activities. However, planting costs are only incurred during the first planting period. In the second year and beyond, there are no planting costs. In this research, the planting cost and cost of seedlings used were calculated to represent the situation of the first investment. The use of within-family labor was also calculated to inform the cost of farming labor.

Average variable costs are costs that, large or small, can affect the production volume. Variable costs include production material costs and labor costs. The variable costs incurred in one kepok banana farming production cycle consist of the costs of purchasing banana seedlings, purchasing herbicides, and labor costs. The average variable costs incurred by kepok banana producers in Enggano Island are in Table 7. The total variable costs are IDR 10,043,170.00 or the equivalent of IDR 4,082,589.44 per hectare. The largest proportion of costs is the cost of labor wages which reaches 61.98% of the total variable costs, while the smallest proportion is the cost of herbicides, which is 13.60%. In Lumajang, the highest variable cost came from fertilizers, almost 50% of the total cost (Wardhani, et al., 2023). Meanwhile, there are no farmers in Enggano Island that use fertilizers.

Fixed costs are costs whose value does not depend on changes in production quantities, for

example, equipment depreciation costs and land taxes. The average fixed costs incurred by kepok banana farmers are in Table 7. Land tax is the cost incurred to pay the annual tax on land ownership by farmers to the government in rupiah per year. The average tax cost incurred by farmers in a year in Enggano Island is IDR 6,489/year. This cost is only 7.05% of the total fixed costs that must be incurred by kepok banana farmers. Furthermore, the equipment used by farmers in a farming activity is usually not used up in one farming operation. Therefore, depreciation costs need to be calculated for these tools. The tools used in kepok banana farming are cleaver, sickles, hand sprayers, and machetes. The depreciation value of the equipment is the value contained in the entire equipment by looking at the number of items, initial price, final value, and economic life. The average depreciation cost for kepok banana farming is IDR 85,506 or 92.95% of the total fixed costs that must be incurred by kepok banana farmers in Enggano Island. The total fixed costs of kepok banana farming in Enggano Island are IDR 91,995.

Table 7. The variable and fixed cost of kepok banana farming in Enggano Island

| Cost items | Average cost (IDR/Year) | Average cost (IDR/Ha/Year) | Percentage (%) |
|---|---|---|---|
| Variable cost (VC) | | | |
| Seedlings | 2,452,620.00 | 997,000.00 | 24.42 |
| Herbicide | 1,366,200.00 | 555,365.85 | 13.60 |
| Labor | 6,224,350.00 | 2,530,223.59 | 61.98 |
| Total variable cost | 10,043,170.00 | 4,082,589.44 | 100.00 |
| | | | |
| Fixed cost (FC) | | | |
| Land tax | 6,489.00 | 2,637.80 | 7.05 |
| Depreciation | 85,506.00 | 34,758.54 | 92.95 |
| Total fixed cost | 91,995.00 | 37,396.34 | 100.00 |
| Total Cost (TC) | 10,135,165.00 | 4,119,985.78 | |

Source: Primary data processed (2024)

Table 7 shows that the total costs incurred by kapok banana farmers in Enggano Island are IDR 10,135,165.00 per year, or the equivalent of IDR 4,119,985.78 per hectare per year. This total cost value takes into account depreciation costs and labor costs in the family. If this is not taken into account, the costs that kepok banana farmers in Enggano Island must incur are IDR 5.942,920.00 per year, or the equivalent of IDR 2,415,821.14 per hectare per year. The dominant composition of family labor use in banana farming makes a significant difference between the two calculations.

*Kepok banana farming income*

The total revenue of kepok banana farming in Enggano Island is the multiplication of the production number of kepok bananas and the selling price of kepok bananas. The number of kapok bananas sold was measured in bunches (the unit commonly used in the research location). Banana trade in Enggano Island never uses kilograms, so production data in kilograms is not available. The production data, selling prices, revenues, total costs, income, and efficiency are presented in Table 8.

Table 8. The total revenue of kepok banana farming in Enggano Island

| Revenue indicators | Average (Farming/Year) | Average (Ha/Year) |
|---|---|---|
| Production (Bunches) | 1,184.88 | 481.66 |
| Selling price (IDR/Bunch) | 80,000.00 | 80,000.00 |
| Total revenue (IDR/Year) | 94,790,400.00 | 38,532,800.00 |
| Total cost (TC) (IDR) | 10,135,165.00 | 4,119,985.78 |
| Total cost without depreciation and paid labor (IDR) | 5.942,920.00 | 2,415,821.14 |
| Income (B = TR-TC) (IDR) | 84,655,235.00 | 34,412,814.22 |
| Income without depreciation and paid labor (IDR) | 88,847,480.00 | 36,116,978.86 |
| Efficiency (R/C ratio = TR/TC) | 9.35 | 9.35 |
| Efficiency (without depreciation and paid labor) | 15.95 | 15.95 |

Source: Primary data processed (2024)

Table 8 shows that the production of kepok bananas in Enggano Island is 1,184.88 bunches per farm per year or the equivalent of 481.66 bunches per hectare per year. If converted into kilograms, the average weight per bunch is 18.5 kilograms (Antarlina, et al., 2005), then the total production is 21.9 tons per farm per year or the equivalent of 8.9 tons per hectare per year. The amount of production produced by kapok banana farmers in Enggano Island is still smaller than the productivity it should be, namely 20-30 tons per hectare per year (Riyadi, 2022). One of the causes of the low productivity of kepok bananas in Enggano Island is the spacing of plants so the number of banana seeds planted is not optimal. Currently, the number of seeds planted in one hectare of land is 332 banana stems. Preferably, one hectare of land can be planted up to 900 banana trees with a spacing of 3.5 m x 3.5 m (Riyadi, 2022), and 2000 stems with a planting distance of 2.5 m x 2.5 m (Surya, 2022). This shows that the number of seeds planted by kapok banana farmers in Enggano Island can still be increased.

The price of kepok bananas in Enggano Island ranges from IDR 60,000 to IDR 110,000 per bunch. The price of bananas usually depends on the size and harvest season. In the dry season, the price of bananas per bunch can reach IDR 110,000. The average price of kapok bananas received by farmers is IDR 80,000 per bunch. At this price level, the average total revenue obtained by Kepok banana farmers in Enggano Island is IDR 38,532,800.00 per hectare per year or approximately IDR 3.2 million per hectare per month. If the average farmer has a planting area of 2.46 hectares, the total revenue earned can reach IDR 7.9 million per farm per month.

Moreover, the income received by kepok banana farmers in Enggano Island is IDR 84,655,235.00 per farm per year, or the equivalent of IDR 34,412,814.22 per hectare per year. In one month, farmers can earn farming profits of IDR 2,867,734.52 per hectare. The profit value of farming is a profit value that considers depreciation costs and labor wages in the family. If these two cost components are not considered, then the farming income obtained in a month reaches IDR 3,009,748.23 per hectare or the equivalent of IDR 7,403,956.67 per farm. With such large farming profits, kepok banana farmers in Enggano Island are reluctant to plant other crops, including oil palm. Another reason is that maintaining banana plants is simpler than oil palm, so the costs involved also tend to be less.

The efficiency of kepok banana farming in Enggano Island is a comparison of revenue with the total costs incurred by farmers. The R/C ratio value for real costs (costs that do not take into account family labor wages and depreciation costs) is 15.95. This means that every IDR 1.00 of real cost incurred will result in receipts of IDR 15.95. Meanwhile, the R/C ratio value for the calculated costs is 9.35. If R/C is greater than 1, then farming is efficient and feasible and provides benefits for Kepok banana farming in Enggano Island. The results of this research are in line with research by Mulyo et al (2017) conducted in the border area of Sebatik Island, North Kalimantan, which shows that banana farming on Sebatik Island has an R/C ratio of 8.87 (Mulyo, et al., 2017). This research also follows another kepok banana farming study in Bangun Raja Village which showed that the efficiency level was 14.9 (Abdulloh, et al., 2019).

## CONCLUSIONS

From the research results, several points can be concluded that the use of seedlings and herbicide variables have a significant effect on kepok banana production in Enggano Island, North Bengkulu Regency, while the land area and labor variables have no significant effect on kepok banana production in Enggano Island, North Bengkulu Regency. Furthermore, kepok banana farming in Enggano Island is profitable and efficient.

Farmers can increase the productivity of their farming business by increasing the optimal use of seed and weed control poisons to achieve maximum profits, but they still need to understand the limitations and consider the negative impact on nature. It can be avoided by implementing good agricultural practices. Moreover, the government should improve transportation facilities and infrastructure to Enggano Island so that the marketing system can run smoothly to avoid price fluctuations.

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