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Comparative Analysis of Production and Farming Income Organic and Non-Organic Cashew in Lakudo District Central Buton Regency

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Abstract

This study aims to find out: The amount of production and income of organic cashew farmers and non-organic cashew farming and determine the comparison of production and income of organic cashew farmers and non-organic cashew farming in Lakudo District, Central Buton Regency. The population in the study is all farmers who cultivate organic and non-organic cashew farming in Lakudo District. Sample determination was determined by proportional stratified random sampling, the sample in this study was 49 respondents.The analysis was carried out using the concepts of income and t-test. The results of the study show that (1) The total average income of organic cashew farming is Rp.763,278/ha in one year, with an average production of 113.7 kg/year, with an average revenue of Rp.1,364,444 and an average production cost of organic cashew farming of Rp.601,167 in one year. Meanwhile, non-organic cashew farming has an average income of Rp.4,285,413/ha in one year, with an average production of 462.3 kg/year, with an average revenue of Rp.5,547,273 and an average production cost of non-organic cashew farming of Rp.2,581,487 in one year. (2) There is a significant difference between organic cashew farming income and non-organic cashew farming income, this is seen from the calculation results of the independent Sample T-test where the t-count value is 2.601>2.011 t-table, then H0 is rejected and H1 is accepted.

Keywords: Farming, Cashew, Production and Income.

INTRODUCTION

Indonesia is a country rich in natural resources. One of the natural resources owned is diverse agriculture (Ola *et al*., 2010). Cashew commodity (*Anacardium occidentale,* L) is one of the

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many agricultural commodities that have good prospects in its development which is able to fill market opportunities in Indonesia and abroad (Ihsan *et al*., 2023). Cashew is one of the industrial plants that has a fairly high selling value in the market, especially in the nut or kernel which is the main product in the processing industry (Asni, 2016).

According to Indonesian Plantation Statistics data on cashew commodities in 2018-2020, there are 6 provinces that are the largest cashew producing areas in Indonesia with a total contribution of 93.27% to total Indonesian cashew production. The largest cashew producer in Indonesia is East Nusa Tenggara Province with an average production of 49,042 tons and a contribution of 35.37%. Furthermore, Southeast Sulawesi Province with an average production of 27,955 tons and a contribution of 26.35%. This illustrates that Southeast Sulawesi Province is the second largest cashew producer in Indonesia (Ihsan *et al*., 2023).

Cashew in Southeast Sulawesi has become the foundation of people living in rural areas in fulfilling their survival, and making a *better living*. As a commercial commodity, cashew produced by farmers in Southeast Sulawesi is intended to meet the raw material needs of downstream industries. The cashew plantation area in Southeast Sulawesi reached 115,848 ha of the total cashew land in Indonesia of 48,160,000. Total production in 2022 was 36,284.96 tons (BPS Southeast Sulawesi, 2023).

Cashew centers in Southeast Sulawesi are Central Buton Regency and Muna Regency. The following is data on cashew farming in Lakudo District, Central Buton Regency based on data from the Southeast Sulawesi Plantation and Horticulture Office:

Table 1 Cashew Farming Data Lakudo District

No.	Year	Area (Ha)	Production (Ton)	Productivity (Kg/Ha)
1	2019	3.747	821	375,4
2	2020	3.735	821	359
3	2021	3.787	479	242,2
4	2022	3.643	165,8	80,9

Source: Southeast Sulawesi Plantation and Horticulture Agency 2023

Cashew farming is also like a business in general that has many risks such as production risk and price risk (Alfian *et al*., 2020). According to *Webster's Third New International Dictionary* in (Soekartawi *et al*., 1993) risk is a situation where the chance of loss is known in advance (Amri, 2016). Cashew producing farmers in Central Buton Regency have problems from cashew processing, namely farmers are not familiar with the appropriate technology of "cashew

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pengacipan" (the process of separating cashew nuts from the logs), limited capital and labor. When the harvest season arrives, cashew farmers are not only pressed for various needs (so they need to sell cashews immediately), but also lack l a b o r , because all labor is absorbed in cashew picking and drying activities. The implication is that farmers are forced to sell cashew logs at low prices (Alfian *et al*., 2020).

Based on initial observations and interviews conducted by researchers to one of the cashew farmers, he said that the prospects for cashew farming in Lakudo District are divided into two, namely organic farming and inorganic farming. One of the villages that has prospects for organic farming in Lakudo Sub-district is Moko Village. Moko Village is also included in the 1,000 Organic Villages program on the cashew plantation commodity. In addition, one of the villages that cultivates cashew farming inorganically in Lakudo District is Metere village. This is because cashew farmers in Metere Village use inorganic fertilizers in the cashew cultivation process such as urea fertilizer, KCL and others. Although Lakudo Sub-district in Central Buton Regency has a large cashew land and there are two types of cashew farming, the comparison of production and income between organic and non-organic cashew farming is not yet known in order to find out which type of farming can be more profitable for cashew farmers. Comparison of production and income between organic and non-organic cashew farming can be seen from production costs, revenue and income, the orientation of cashew farmers in Lakudo District is still subsystem, namely only to meet family food needs.

For farmers it is important to know the exact comparison of organic and non-organic cashew farming income as an evaluation material and future development of organic cashew farming in Lakudo District, Central Buton Regency. It is seen that organic and non-organic cashew farming in Lakudo District, Central Buton Regency consists of organic farms and non-organic farms, but the comparison of production and income of organic and non-organic farms is not yet known. Through comparative analysis of production and income, it is hoped that it can help farmers to see what type of cashew farming can provide benefits and be more profitable.

Based on the background explanation above, the researcher is interested in conducting research with the title "Comparative Analysis of Production and Income of Organic and Non-Organic Cashew Farming in Lakudo District, Central Buton Regency".

METHOD

The population in this study were all farmers who cultivated organic cashew and non-organic cashew trees in Lakudo District, Central Buton Regency, totaling 490 farmers. The method used in determining the sample is a *proportionally stratified* sampling method from each element

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of the population that is sampled and sampling is done randomly (*proportional stratified random sampling*). From a total of 490 farmers who cultivate cashew, 49 were taken as a sample of respondents in this study. Of the sample, 22 farmers cultivated non-organic cashew and 27 farmers cultivated organic cashew. Data collection techniques were carried out by observation, structured interviews, and documentation. Data analysis techniques used in this study are:

1. *Revenue* analysis, according to Suratiyah (2006) in general, the calculation of *total revenue* (*TR*) is the multiplication of the amount of production (Y) with the selling price (Py) and is expressed by the following formula:

   TR = Y x Py

   Where:

   TR Revenue (Rp)
   Y Total Production (kg)
   Py Selling Price(Rp)
2. Cost Analysis, according to Suratiyah (2006) to calculate the amount of total *cost* (*total cost*) obtained by summing up *fixed costs* with *variable* costs with the formula:

   TC = FC+VC

   Where:

   TC *Total Cost* (Rp)
   FC= *Fixed Cost* (Rp)
   VC Non-Fixed *Cost/Variable Cost* (Rp)
3. Revenue Analysis, according to Sukartawi (2016) Revenue is the difference between revenue (TR) and total costs (TC) and is expressed by the formula:

   Pd = TR - TC

   Where:

   Pd = Income (Rp)
   TR = Total *Revenue* (Rp)
   TC = *Total Cost* (Rp)
4. According to Alansa *et al* (2022) to determine the difference in production and income of organic and non-organic cashews, an analysis of the mean difference test between organic and non-organic cashew farming income was used. The test was carried out using an *independent sample t-test,* to determine whether there was a significant difference between organic and non-organic cashew farming income. By using the following formula:

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$$t - hitung = \frac{X_1 - X_2}{\sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1+n_2-2}} \times \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

Where:

X1= Average organic cashew farming income

X2= Average non-organic cashew farm income

n1= Number of organic cashew farming samples

n2= Number of samples of non-organic cashew farms

S12= Variance of organic cashew farming income

S22= Variance of non-organic cashew farming income

Hypothesis:

H0 : There is no difference in the income of organic cashew farming and non-organic cashew farming.

H1 : There is a difference in the income of organic cashew farming and non-organic cashew farming.

Decision-making criteria:

a. If t-count ≤ t-table, then H0 is accepted H1 is rejected.
b. If t-count ≥ t-table, then H0 is rejected H1 is accepted.

RESULTS AND DISCUSSION

Farm Characteristics

For more details on the characteristics of organic and non-organic cashew farming, it can be described as follows:

1. Land area is an important production factor that affects the amount of farm production. In this study, the land area of organic cashew farmers from 27 respondents was recorded at 27.7 ha, with details of 1 respondent owning 0.7 ha, 1 respondent owning 3 ha, 1 respondent owning 2 ha, 4 respondents owning 0.5 ha, and 20 respondents owning 1 ha. Meanwhile, the land area of non-organic cashew farmers from 22 respondents amounted to 22.5 ha, with details of 1 respondent owning 1.5 ha, 1 respondent owning 3 ha, 2 respondents owning 2 ha, 8 respondents owning 0.5 ha, and 10 respondents owning 1 ha.
2. The age of cashew trees is the age of the plant since it was planted until the research was conducted, with a production life of up to 50 years and peak production at the age of 25-30 years (Pranowo and Purwanto, 2011). In this study, organic cashew trees from 27 respondents were dominated by ages 20-30 years (16 respondents) and 35-45 years (11

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respondents). Meanwhile, non-organic cashew trees from 22 respondents were dominated by ages 30-45 years (13 respondents) and 15-25 years (9 respondents).

Farm Income Analysis

1. Farm Costs

Farming costs play an important role in cashew farming decision making. The amount of costs used for cashew farming can determine the amount of farmer income.

Table 2 Production Costs of Organic and Non-Organic Cashew Farming in Lakudo District, Central Buton Regency

Total Cost				Average Cost	
No.	**Description**	**Organic**	**Non-Organic**	**Organic**	**Non-Organic**
1.	Fixed Cost				
	Machete	426.976	323.006	15.814	14.682
	Tembilang	338.690	247.500	12.544	11.250
	Plastic bucket	333.333	290.417	12.346	13.201
	Tarpaulin	492.500	450.000	18.241	20.455
Total Fixed Cost		1.591.500	1.310.923	58.944	59.587
2.	Variable Cost				
	Labor				
	Land clearing	14.640.000	11.250.000	542.222	511.564
	Spraying	-	930.000	-	42.273
	Fertilizer				
	Urea	-	3.520.000	-	160.000
	KCL	-	3.910.000	-	177.727
	TSP	-	4.200.000	-	190.909
	Pesticides				
	Vigor	-	2.640.000	-	120.000
Total Variable Cost		14.640.000	26.450.000	542.222	1.202.273
Total Farm Cost		16.231.500	27.760.923	601.167	1.261.860

Source: Primary Data Processed, 2024.

Fixed costs are a type of cost that will not change in *total cost*, along with the rise and fall of products produced or activities carried out in connection with the manufacturing process

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(Kurniawan, 2017). Table 2 shows that the largest fixed cost in organic cashew farming for one harvest season is the cost of tarpaulin at Rp. 492,500, while the smallest cost is a plastic bucket at Rp. 333,333. In non-organic cashew farming, the largest fixed cost is also a tarpaulin of Rp. 450,000, while the smallest cost is tembilang of Rp. 247,500. Tarpaulins are an important tool in the cultivation of organic and non-organic cashew farming. Agricultural inputs such as machetes, tembilang, plastic buckets, and tarpaulins are on average purchased by farmers with their own capital, and input costs are influenced by the usability and intensity of use in farming.

Kurniawan (2017) states that variable costs are a type of *cost* that will change in total cost, along with the rise and fall of products produced or activities carried out in connection with the manufacturing process in an equal proportion. Table 2 shows that the variable costs incurred by organic cashew farmers in Lakudo District in one growing season is the cost of land clearing labor which is Rp. 14,640,000. While the largest variable cost incurred by non-organic cashew farmers in Lakudo District is the cost of land clearing amounting to Rp. 11,250,000 and the smallest variable cost incurred by non-organic cashew farmers in one growing season is the cost of spraying amounting to Rp. 930,000.

2. Farm Revenue

The details of organic and non-organic cashew farming revenues can be seen in Table 3.

Table 3 Revenue of Organic and Non-Organic Cashew Farming in Lakudo District, Central Buton Regency

Plant Type				Average	
No.	**Description**	**Organic**	**Non-Organic**	**Organic**	**Non-Organic**
1.	Production (Kg)	3.070	10.170	113,7	462,3
2.	Price (Rp/Kg)	324.000	264.000	12.000	12.000
Total Revenue		36.840.000	122.040.000	1.364.444	5.547.273

Source: Primary Data Processed, 2024.

Production in this study refers to the physical amount of organic and non-organic cashew farming products. Based on Table 3, the average organic cashew production in one harvest season was 113.7 kg/year, while non-organic cashew production reached 462.3 kg/year. In Lakudo sub-district, non-organic cashew production is greater than organic, mainly due to the use of chemical fertilizers (Urea, KCL, TSP) and Vigor insecticide by non-organic farmers. This factor is the main cause of the difference in production between organic and non-organic cashew farming.

Price is the exchange rate in rupiah obtained from the sale of cashew products, an

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important factor in determining the amount of farmer revenue. Research shows that the selling price of organic and non-organic cashews in Lakudo District is Rp. 12,000/kg for logs. Based on Table 3, the average receipt of organic cashew farming in one year amounted to Rp. 1,364,444 with an average production of 113.7 kg/year, while the receipt of non-organic cashew farming reached Rp. 5,547,273 with an average production of 462.3 kg/year.

3. Farm Income

The results of research conducted in Lakudo District obtained the total income of organic and non-organic cashew farming as in Table 4.

Table 4 Organic and Non-Organic Cashew Farming Income in Lakudo District, Central Buton Regency

Plant Type			
No.	**Description**	**Organic**	**Non-Organic**
1.	Farm Revenue (IDR/year)	1.364.444	5.547.273
2.	Total Farming Costs (IDR/year)	601.167	1.261.860
	Total Revenue	763.278	4.285.413

Source: Primary Data Processed.

Based on Table 4, the average revenue of organic cashew farming in Lakudo District is Rp. 1,364,444 per harvest season with production costs of Rp. 601,167, so that the average income of organic farmers reaches Rp. 763,278 per hectare. Meanwhile, the average revenue of non-organic cashew farming is Rp. 5,547,273 per year with production costs of Rp. 1,261,860, resulting in an average income of Rp. 4,285,413 per hectare. This shows that farmers' income is very positive and can contribute to improving the welfare of the community.

Mean Difference Test

The results of the T-test on the average production and income data in this study can be seen in the following table.

Table 5 Differential Test Results of Average Organic and Non-Organic Cashew Production

Group Statistics					
	Type	**N**	***Mean***	***Std. Deviation***	***Std. Error Mean***
Cashew production	Non-Organic	22	462,3	608,5	129,7
	Organic	27	113,7	37,7	7,25

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Source: Primary Data Processed

Based on table 5, the average (*mean*) value of non-organic cashew farm production is 462.3 kg and organic cashew farm production is 113.7 kg, the production value shows that non-organic cashew farm production is greater than organic cashew farm production. Furthermore, to prove whether there is a *significant* difference or not between organic and non-organic cashew farming production, it can be seen in the following table (*Independent Sample t-test*):

Table 6 Calculation Results of Differential Test of Average Production of Organic and Non-Organic Cashew Farms

Independent Samples Test								
		Levene's Test for Equality of Variances		***t-test for Equality of Means***				
						Significance		***Mean Difference***
		F	**Sig.**	**T**	**df**	***One-Sided p***	***Two-Sided p***	
Cashew Production	*Equal variances assumed*	8.901	.005	2,977	47	.002	.005	348,6
	Equal variances not assumed			2,683	21.131	.007	.014	348,6

Source: Primary Data Processed 2024

From Table 6. obtained the results of the average difference test or the t-value for farm production with *equal variances assumed* is 2.977 where the t-count value of 2.977> 2.011 t-table. Then H0 is rejected and H1 is accepted, meaning that there is a *significant* difference between non-organic and organic cashew farm production, while the value of 2.011 is obtained from the t-table value by looking at df 47 with a significant α 0.05.

Table 7 Differential Test Results of Average Organic and Non-Organic Cashew Farming Income

Group Statistics					
	Type	**N**	***Mean***	***Std. Deviation***	***Std. Error Mean***
Cashew Income	Non-Organic	22	4.285.412	7.037.919	1.500.489
	Organic	27	763.277	418.580	80.555

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Based on table 7, the average value (*mean*) of income on organic cashew farming is Rp. 763,277 and on non-organic cashew farming income Rp. 4,285,412, the income value shows that non-organic cashew farming income is greater than organic cashew farming income. Furthermore, to prove whether there is a *significant* difference or not between organic and non-organic cashew farming income, it can be seen in the following table (*Independent Sample t-test*):

Table 8 Calculation Results of Differential Test of Average Farm Income Organic and Non-Organic Cashew

Independent Samples Test

Uraian		*Levene's Test for Equality of Variances*		*t-test for Equality of Means*				
						Significance		
		F	Sig.	t	df	*One-Sided p*	*Two-Sided p*	*Mean Difference*
Pendapatan Jambu Mete	*Equal variances assumed*	9.085	.004	2.601	47	.006	.012	3.522.134
	Equal variances not assumed			2.344	21.121	.014	.029	3.522.134

From Table 8. obtained the results of the average difference test or the t-value for farm income with *equal variances assumed* is 2.601 where the t-count value of 2.601> 2.011 t-table. Then H0 is rejected and H1 is accepted, meaning that there is a *significant* difference between organic and non-organic cashew farm income, while the value of 2.011 is obtained from the t-table value by looking at df 47 with a significant α 0.05.

The difference in the average income of organic cashew farming with non-organic cashew farming income is due to differences in the average revenue and the average total production costs incurred for these farming activities. Where the average receipt of organic cashew farming is smaller than the receipt of non-organic cashew farming.

CONCLUSION

Based on the results and discussion, conclusions can be obtained that can answer the question of problem formulation is the average income of respondents of organic cashew farming of Rp. 763,278 per year with an average amount of organic cashew production of 113.7kg while the average income of respondents of non-organic cashew farming of Rp. 4,285,413 per year with an average amount of non-organic cashew production of 462.3kg.

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There is a *significant* difference between organic and non-organic cashew farming income obtained from the *Independent Sample t- test* results. This means that non-organic cashew farming provides a higher income difference than organic cashew.

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