



Income Analysis of Switching Paddy Farming to Maize in Wakadia Village, Watopute District, Muna Regency

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Abstract

This study aims to determine how the income of farming switch from field rice to hybrid corn. This research was conducted from December 2023 to July 2024 in Wakadia Village, Watopute Sub-district, Muna Regency The population in the study were all farmers who switched their farms from field rice to hybrid corn in Wakadia Village, totaling 165 people. Determination of the sample was determined by simple random sampling technique using the slovin formula, the sample in this study amounted to 60 respondents. The research used t test analysis tool. The results showed that hybrid corn farming income was greater than farming income from paddy fields, there was a significant difference in farmers' income before and after switching from paddy fields to hybrid corn.

Keywords: Income; Farming.

INTRODUCTION

The main agricultural crop in Indonesia is rice, which is a food crop that produces rice as a staple food source for most Indonesians. Rice is the most widely planted crop by Indonesian farmers. Rice is the staple food for most Indonesians, with more than 95 percent of the population consuming rice every day. Other types of food that are staple foods for some households in Indonesia are tubers, corn, sago, and bananas. However, some of these staple foods have not been able to replace the dominance of rice as the staple food of the population.

Corn is one of the most important food crops besides rice and wheat, corn is often used as an alternative food source and even some people in some regions in Indonesia make corn as a staple food.



Rice is the main food source crop for people in Indonesia, where the majority of Indonesian farmers cultivate rice plants. Rice is the main food crop commodity that is at the heart of farmers in Indonesia. The potential of natural resources in Southeast Sulawesi is still quite a lot that has not been utilized optimally. Development policy in the agricultural sector in Southeast Sulawesi is focused on efforts to optimally utilize land resources to support productive and sustainable agricultural businesses. As it is known that most of the population in Southeast Sulawesi is engaged in the agricultural sector so that the need for land resources continues to increase.

Muna Regency is one of the regencies in Southeast Sulawesi where the agricultural sector is well known in terms of fisheries, plantations, forestry and agriculture itself. The dominant agricultural sectors are corn, peanuts, rice and vegetables. Many people think that Muna Regency is a dry area that is not suitable for rice cultivation, but in fact there are several sub-districts that cultivate rice plants, one of which is Watopute sub-district.

The amount of paddy rice production in Muna district in 2017 produced 3,076.60 tons while in 2021 it produced 3,365.15 tons with a total increase in presentation of 9%, while hybrid corn production in 2017 produced 3,365.15 tons and in 2021 produced 14,984.64 tons with a total increase in presentation of 59%. Seeing corn production increase by 59% while paddy rice production only by 9% makes farmers switch to corn farming. This is due to the lack of adequate trained personnel, unfavorable service provision, the complicated farming system in which farmers operate and the inability of farmers to anticipate it (Kormawa et al., 2001).

METHOD

This research was conducted from December 2023 to July 2024 in Wakadia Village, Watopute District, Muna Regency. The population in this study were farmers who switched farms as many as 60 people. The type of data used in the research is primary data by conducting direct interviews with farmers in Wakadia village. Data collection techniques in the study used interview techniques, documentation and literature.

The data analysis used in this study is a T-test analysis to test whether there is a significant difference between the two groups of data to be tested.

$$t = \frac{X_1 - X_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}}$$

Description:

t Calculated t value

$\bar{X}_1$ = Average income before switching

- $\bar{X}_2$ = Average income after receiving the switch
 S_1 = Standard deviation before switching farms
 S_2 = Standard deviation after switching farms
 n_t = Number of samples before treatment
 2 = Number of samples after treatment
 r = Correlation

➤ RESULTS AND DISCUSSION

Respondent Overview

The general description of the respondents is a description of the identity of the respondents observed in this study including: Education level, farming experience, land area.

Table 1 Classification of education level, farming experience, land size.

No.	Age	Number of respondents	presentation
1	SD	19	32
2	SMP	29	48
3	HIGH SCHOOL	12	20
	Total	60	100
No.	Farming experience	Number of respondents	presentation
1	5-10	22	37
2	>10	38	63
	Total	60	100
No.	Land area	Number of respondents	presentation
1	<0.5 (narrow land)	0	0
2	0.5-2 (Medium land)	60	100
3	>2 (Large Land)	0	0
	Total	60	100

From table 1 above, it can be seen that the level of education of the respondents mostly took formal junior high school education, namely 29 respondents with a percentage of 48% followed by elementary school as many as 19 respondents with a percentage of 32% and the last is SMA \ as many as 12 respondents with a percentage of 20% which shows that the education of farmers in Wakadia village is still low.

It shows that the experience of respondent farmers in Wakadia Village is quite experienced

at 37% and experienced at 63%, so it can be said that respondent farmers are experienced and have the knowledge to increase their farm production. The amount of experience in farming will affect the skills of maintaining and managing farms run by respondent farmers. Experience in business will always bring changes for farmers in managing their farms.

Based on the data in Table 1, it can be said that respondent farmers in Wakadia Village, Watopute Sub-district, have shifted their farming from field rice farming to hybrid corn farming.

Price, Cost, Total Production, Revenue and Income on Farms

There are several factors of farm income that occur in Wakadia Village, Watopute District, namely:

1. Price

Price is an exchange rate that is equated with using or other goods for the benefits obtained from a good or service for a person or group at a certain time. Prices in farming are very important for the continuity of the farm because if a price increases, the farm will increase and vice versa if the price of a farm decreases, the farmers will divert their farms to other farms.

Table 2 Farm price classification of field rice and hybrid maize in Wakadia Village

No.	Type of plant	Price(Rp)
1	Paddy lading	6.000
2	Hybrid corn	4.500

Table 2 states that the price of field rice is higher than the price of hybrid maize, which makes people reluctant to switch because the price of rice is higher, but if the price is higher but the amount of production is small then the price will not make people prosperous.

2. Production cost

Cost is the result of all economic inputs required and can be estimated to produce a product or value expressed in money in satrupiah (Rp). The cost required is a necessary and predictable sacrifice, where the costs used can be ascertained at the time of implementation, and can be measured and must be able to calculate the amount and expressed in money at the time of calculation.

Table 3 Total production costs in ading rice farming and hybrid corn farming

No.	Total Cost	Field Rice Farming	Hybrid Maize Farming
	Fixed Cost	32.610.000	7.630.000

Variable Cost	54.425.096	142.197.159
Total Cost	87.035.098	249.829.159

From Table 3 it can be seen that from the average fixed and variable costs, the average total cost of farming field rice of IDR 87,035,098 is smaller than the average hybrid maize farm of IDR 249,829,159. Although production costs are more in maize farming, this is covered by the amount of maize production which is greater than the amount of field rice production.

3. Production Quantity

The amount of production is a measure to determine the size of the income earned by farmers in farming. the amount of production produced by farmers in one harvest season will affect income.

Table 4 Total Production of Field Rice and Hybrid Maize in Wakadia Village

No.	Type of plant	Production				
		Total (Ton)	Productivity (Ton/Ha)	Highest (tons)	Lowest (Ton)	Average (Tons)
1	Paddy lading	31.945	0,40	0,89	0,25	0,43
2	Hybrid corn	207.956	3,00	8,45	1,32	3,45

The high and low production obtained by farmers depends on the size of the land area used by farmers and the combination of the use of several inputs used by farmers, but not all land areas produce high production because it is also influenced by the planting distance used by farmers.

4. Reception

Revenue or gross income is the entire income obtained from farming results during a certain period. Acceptance of field rice and hybrid corn farming is obtained from total production multiplied by the price per kilogram. The revenue earned by farmers in Wakadia Village, Watopute Sub-district can be seen in Table 5.

Table 5 Average Revenue of Field Rice and Hybrid Maize in Wakadia Village, Watopute Sub-district, Muna District, Year 2023

No.	Type of Farm	Average revenue	
	Field Rice	Production Quantity	532
		Price	6.433

		Reception	3.422.356
	Hybrid Corn	Production Quantity	2.905
		Price	4.500
		Reception	13.072.500

Based on Table 5, it can be seen that the revenue is obtained from the results of the amount of production multiplied by the price. The average acceptance of paddy farming is Rp 3,422,356/Ha/growing season, while the average acceptance of hybrid maize farming is Rp 13,072,500. This shows that the acceptance of hybrid maize farming is greater than paddy farming, the amount of acceptance of hybrid maize is caused by the high amount of production.

5. Revenue

The size of the income received by farmers depends on the size of the revenue obtained by farmers. The size of the income received is a measure of the success of farming that farmers manage. Income is the difference between receipts minus the costs incurred by respondents both rice farmers and hybrid corn farmers in one harvest season. The average revenue, average cost and average income of respondents of lading rice and hybrid corn farmers in Wakadia Village can be seen in Table 6.

Table 6 Average Income of Field Rice and Hybrid Maize in Wakadia Village, Watopute Sub-district, Muna District, Year 2023

No.	Cost Type	Average Income	
		Field Rice	Hybrid Corn
	Farm Costs	1.104.772	2.110.995
	Farm Revenue	3.422.356	13.072.500
	Revenue	2.317.584	10.961.204

The data in Table 6 shows that the average farm income of field rice is 2,317,584 Rp/Ha/growing season while the average income of hybrid corn is 10,961,204 Rp/Ha/growing season, so from the above observations it can be seen that the income of corn farmers is greater than that of field rice farmers.

Differences in Rice Farming Income Before Switching and Hybrid Maize Farming Income After Switching in Wakadia Village

The difference in income is the amount of income received from farming during a certain

period, be it daily, weekly, monthly or yearly.

1. Farm Costs

Farming costs are all expenses used in farming. Farming costs can be divided into two, namely fixed costs and variable costs. Fixed costs are costs whose amount does not depend on the size of the production to be produced, while variable costs are costs whose size is influenced by the volume of production (Ibrahim *et al.*, 2021). The fixed and variable costs of farming field rice before switching to hybrid maize farming in Wakadia Village, Watopute Sub-district, Muna Regency can be seen in Table 7.

Table 7 Average Cost, Total Production, Revenue and Income of Field Rice and Hybrid Maize Farming in Wakadia Village, Watopute Sub-district, Muna District, Year 2023

No.	Cost Type	Average (IDR/Ha)		Difference in increase (Rp)
		Before switching	After switching	
1	Fixed costs	561.382	1.071.926	510.544
2	Variable cost	543.390	1.039.069	495.679
3	Total cost	1.104.772	2.110.995	1.006.223
4	Production	532	2.905	2.373
5	Price	6.433	4.500	1.933
6	Total revenue	3.422.356	13.072.500	9.650.144
7	Revenue	2.317.584	10.961.204	8.643.620

Based on Table 7, it can be seen that the average total cost of farming field rice is IDR 1,104,772/Ha/planting season, while the average total cost of farming hybrid maize after the switch is IDR 2,110,995/Ha/planting season. This shows that the total cost of hybrid maize farming is greater than the total cost of field rice. The factor causing the high total cost of hybrid maize farming is due to the increased use of fixed costs in the farm.

Farm revenue is obtained from production (kg) multiplied by the selling price (IDR). Table 7 shows that the average farm revenue before the switch was lower than the revenue after the switch to hybrid maize farming. The main factors for this difference are the unit price and the amount of production received by each farmer, where the amount of farm production before the switch was lower than the farm production after the switch, although the selling price was higher before the switch.

The increase in farm income is influenced by the high yield of farm production after

receiving. This result is in line with the research of Iski *et al.* (2016) which shows that the transition of previously unproductive farms to productive farms is able to increase farm production so as to increase income.

2. Income Differences

To determine the real level and critical value, the real level in the analysis of income differences (*paired sample t-test*) is 5% or 0.05 and the degree of freedom or df is 59. By making a combination of df = 59 and the real level of 0.05, the critical value of the t test obtained is 2.001.

For income differences, based on the farm income data described above, it can be seen that the income of hybrid maize is greater than that of field rice. To see more clearly the difference in farm income between field rice and corn, it can be seen in Table 8.

Table 8 Results of T-test Analysis of Farm Income in Wakadia Village, Watopute District, Muna Regency, Year 2023

Average income (IDR/Ha)	Before switching to hybrid maize farming	After switching to hybrid maize farming
	2.317.584	10.961.204

titung= 13.834

t_{tabel} = 2.001

Sig 0.000

Table 8 shows that there are differences in farm income before and after the switch. The income after switching to hybrid maize farming is greater than the income before switching to hybrid maize farming. This can be seen from the results of the t-test where the t-count is 13.834 and the t-table is 2.001, thus the value of $t_{hitung} > t_{tabel}$ which means H_0 is rejected and H_1 , accepted and also the significance value of $t < 0.05$, so there is a significant difference in farm income before and after switching farms.

Basically, there are differences in farm income in the research location before and after switching. With the average income of farmers who switched farms amounting to IDR 10,961,204 IDR/ha, while farmers who did not switch farms amounted to IDR 2,317,584 IDR/ha, there was a significant difference. The cause of the significant difference between income in farming field rice and hybrid corn is the higher production amount of hybrid corn with a difference of 2,373 Kg/Ha and it can increase farmers' income.



CONCLUSION

The average production of field rice farming in Wakadia Village, Watopute Sub-district, Muna Regency is 532 Kg/Ha and the average production of hybrid corn farming is 2,905 Kg/Ha. The average income of hybrid corn farmers in Wakadia Village, Watopute Sub-district, Muna Regency is IDR 10,961,204/Ha and the average income of field rice is IDR 2,317,584/Ha.

The income of hybrid maize farming is greater than the income of field rice farming, there is a significant difference in farmers' income before and after switching from field rice to hybrid maize.

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