

**FACTORS AFFECTING THE PRODUCTION AND INCOME OF RICE FIELD
FARMING IN PUKDALE VILLAGE, EAST KUPANG DISTRICT, KUPANG REGENCY
(Faktor-Faktor yang Memengaruhi Produksi dan Pendapatan Usaha Tani Sawah di Desa
Pukdale, Kecamatan Kupang Timur, Kabupaten Kupang)**

Rusniati¹, Damianus Adar², Santhy Chamdra³

^{1,2,3}Agribusiness Study Program, Faculty of Agriculture, University of Nusa Cendana

Corresponding Author: rusniatirustam33@gmail.com

Received: 12th June, 2026

Accepted: 17th June, 2026

ABSTRACT

This study aims to: (1) Find out what factors affect production in paddy rice farming in Pukdale Village, East Kupang District, Kupang Regency; and (2) To find out the amount of rice paddy farming income in Pukdale Village, East Kupang District, Kupang Regency. The methods used in this study are quantitative and descriptive methods. Data was obtained through farmer interviews using questionnaires. The data analysis used was multiple linear regression statistical analysis with the Cobb-Douglas production function approach, and income analysis. The results of the study show that the factors that affect the production of paddy rice farming in this study consist of three significant variables, namely land area, seeds, and fertilizer. Meanwhile, the variables of pesticides, labor, age, education level, farming experience, number of family dependents, and informal education did not show a partial significant influence. However, simultaneously, these ten variables have a very significant effect on rice field production. The amount of rice farming income in Pukdale Village during one planting season obtained from the difference between total revenue and total cost is Rp. 1,059,328,285 with an average per farmer of Rp. 17,954,717 or Rp. 14,774,453 per hectare. This shows that income from paddy farming is moderate, supported by the level of production produced so as to contribute to farming income.

Keywords: Rice Field Farming, Factors of Production, Income.

ABSTRAK

Penelitian ini bertujuan untuk: (1) Mengetahui faktor-faktor yang memengaruhi produksi usahatani padi sawah di Desa Pukdale, Kecamatan Kupang Timur, Kabupaten Kupang; dan (2) Mengetahui besarnya pendapatan usahatani padi sawah di Desa Pukdale, Kecamatan Kupang Timur, Kabupaten Kupang. Metode yang digunakan dalam penelitian ini adalah metode kuantitatif dan deskriptif. Data diperoleh melalui wawancara dengan petani menggunakan kuesioner. Analisis data yang digunakan adalah analisis statistik regresi linear berganda dengan pendekatan fungsi produksi Cobb-Douglas, serta analisis pendapatan. Hasil penelitian menunjukkan bahwa faktor-faktor yang memengaruhi produksi usahatani padi sawah dalam penelitian ini terdiri dari tiga variabel yang signifikan, yaitu luas lahan, benih, dan pupuk. Sementara itu, variabel pestisida, tenaga kerja, usia, tingkat pendidikan, pengalaman usahatani, jumlah tanggungan keluarga, dan pendidikan non-formal tidak menunjukkan pengaruh yang signifikan secara parsial. Namun, secara simultan, kesepuluh variabel tersebut memiliki pengaruh yang sangat signifikan terhadap produksi padi sawah. Besarnya pendapatan usahatani padi di Desa Pukdale selama satu musim tanam—yang diperoleh dari selisih antara total penerimaan dan total biaya—adalah Rp1.059.328.285, dengan rata-rata per petani sebesar Rp17.954.717 atau Rp14.774.453 per hektar. Hal ini menunjukkan bahwa pendapatan dari usahatani padi tergolong sedang, yang didukung oleh tingkat produksi yang dihasilkan sehingga berkontribusi terhadap pendapatan usahatani.

Kata kunci: usahatani padi sawah, faktor-faktor produksi, pendapatan

INTRODUCTION

Indonesia is known as a country with great potential in the agricultural sector, considering that most of its population depends on farming activities as the main source of livelihood. The role of this sector is not only important in providing food needs, but also crucial in supporting the community's economy, especially in rural areas that are still dominated by agricultural activities. The agricultural sector is the

most dominant sector compared to other sectors and is able to make a significant contribution to regional income through community activities sourced from the use of their business land (Gita Srihidayati and Suhaeni 2022). Therefore, development in the agricultural sector continues to be pursued to support regional economic growth and maintain food availability for the community.

Indonesia ranks fourth as the world's largest rice producing country after India, China and Bangladesh in 2024. Despite this, there has been a decline in several key indicators of production. The rice harvest area in 2024 was recorded at 10.05 million hectares, a decrease of 167.57 thousand hectares or around 1.64% compared to the rice harvest area in 2023 which reached 10.21 million hectares. The decline also occurred in total rice production, where production in 2024 was 53.14 million tons of milled dry grain (GKG), down by 838.27 thousand tons or 1.55% from the previous year's production which reached 53.98 million tons of GKG. In addition, rice production for the population's food consumption in 2024 was recorded at 30.62 million tons, a decrease of 480.04 thousand tons or 1.54% (bps.go.id 2024).

Rice not only plays a role as a staple food, but is also the main source of income for farmers in various regions, including in East Nusa Tenggara Province (NTT). NTT Province has great potential in the agricultural sector, especially in rice cultivation, although it is faced with challenges such as a dry climate and limited water resources that often hamper the productivity level of paddy fields in the area. Based on data from the Central Statistics Agency (BPS) in 2023 and 2024, total rice production in NTT Province has decreased. In 2023, rice production will reach 766.81 thousand tons of milled dry grain (GKG) with a harvest area of around 184.70 thousand hectares (Ha). However, in 2024, rice production will decrease to 707.79 thousand tons of dry milled grain (GKG) with a reduced harvest area to 168.73 thousand hectares (Ha). This shows a decrease in production of 7.70 percent compared to the previous year. Meanwhile, in terms of productivity in 2023 it was 4.15 tons/ha, and increased to 4.19 tons/ha in 2024 (ntt.bps.go.id n.d.). Despite a relatively small increase in productivity, the increase was still not able to compensate for the decline in harvest area, so total production continued to decline. In addition, the productivity level achieved is still relatively low when compared to the potential yield of Ciherang rice which can reach 8-10 tons/ha (Ministry of Agriculture, 2015). This condition shows that technical efficiency, namely the ability of farmers to optimize the results of the use of available inputs, has not been fully achieved.

East Kupang District is one of the sub-districts in Kupang Regency with an area of 338.60 km² (BPS Kupang Regency). East Kupang District consists of 4 sub-districts and 8 villages, one of which is Pukdale Village. The area of the village is 9.38 km²/sq.km with a percentage of the sub-district area of 5.28% (Kupangkab.bps.go.id 2024). Pukdale Village is also one of the areas that makes a significant contribution with the majority of the population depending on the agricultural sector, especially rice field cultivation. The harvest is not only used for household consumption, but also marketed to increase income and capital for subsequent farming. The level of income of farmers is largely determined by the amount of production and farming costs incurred. However, in practice, farmers still face a number of technical obstacles, including unfavorable land conditions, low seed quality, high fertilizer prices, excessive use of pesticides, and dependence on labor outside the family. In addition, non-technical constraints such as the relatively advanced age of farmers and the level of experience in farming also affect productivity and production results. Therefore, the managerial ability of farmers to manage inputs effectively is an important factor to improve farming efficiency and optimal production yields.

Farming management includes the ability of farmers to choose and manage various production factors optimally so that agricultural production provides better results. Farming management not only focuses on efforts to obtain maximum results from the farming business run, but also aims to increase overall income (Imran et al., 2022).. The main goal of farmers in doing farming is how farmers can benefit from farming and improve family welfare (Septiadi et al. 2021). Thus, paddy farming plays an important role as a source of livelihood and employment for the community, so it requires optimal management with efficient use of production factors.

Production factors are an important component that determines the quantity, efficiency, and sustainability of farming. Optimal use of inputs allows farmers to obtain higher yields and better incomes, so that the ability to manage production factors is the key to success in improving economic welfare. This is in line with Moy et al., (2017) in their research which stated that the economic benefits of a farming are greatly influenced by the amount of production produced, while the production itself

is determined by various factors. Research on factors that affect production is important to find out the extent of the contribution of each factor to agricultural production. This information can be used by farmers as a basis for maintaining the efficiency of the use of production factors and as a consideration in making decisions for optimal farming development. Research on factors that affect production is important to find out the extent of the contribution of each factor to agricultural production. This information can be used by farmers as a basis for maintaining the efficiency of the use of production factors and as a consideration in making decisions for optimal farming development. The objectives of this research are (1) to find out what factors influence production in rice paddy farming in Pukdale Village, East Kupang District, Kupang Regency, and (2) to find out the amount of income from rice paddy farming in Pukdale Village, East Kupang District, Kupang Regency.

RESEARCH METHODS

Place and Time of Research

This research has been carried out in November-December 2025 in Pukdale Village, East Kupang District, Kupang Regency.

Data Collection Methods

The data collection methods in this study include observation, interviews, and documentation, the data sources used are primary data and secondary data. Primary data was obtained through an interview process with farmers or through filling out questionnaires by respondents who were used as samples in the study. Secondary data was obtained from relevant agencies such as village offices, sub-district offices, agriculture offices, and statistics agencies.

Population and Research Sample

According to Sugiyono (2020), purposive sampling is a sample selection technique based on certain considerations or criteria. The number of respondents in this study was determined using the simple random sampling method. Referring to the opinion of Arikunto (2010), if the number is more than 100, then the number of samples taken can be adjusted by 10%, 15%, 20%, 25% or more. Based on these guidelines, this study determined the number of samples to be 10% of the entire population. The total population is 588 farmers in Pukdale Village (East Kupang District in 2024). So that 10% of the number is 58.8, which is then rounded up to 59 respondents.

Data Analysis Methods

- 1) Multiple linear regression analysis is used to answer the first goal, which is to find out what factors affect rice farming production with the following equations (Karmini 2018):

$$\ln Y = \ln A + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + \beta_7 \ln X_7 + \beta_8 \ln X_8 + \beta_9 \ln X_9 + \beta_{10} \ln X_{10} + e$$

Where:

$\ln Y$	= Rice Field Production
$\ln A$	= Konstanta
$\ln$	= Logaritma natural
X_1-X_{10}	= Independent/independent variables
$\beta_1-\beta_5$	= Coeficin
e	= error

Dalam analisis ini yang menjadi variabel dependen (Y) adalah produksi padi sawah sedangkan variabel independen adalah Luas Lahan (X1), Benih (X2), Pupuk (X3), Pestisida (X4), Tenaga Kerja (X5), Umur (X6), Tingkat Pendidikan (X7), Pengalaman Bertani (X8), Jumlah Tanggungan Keluarga (X9), dan Pendidikan Non-formal (X10).

In this analysis, the dependent variable (Y) is paddy rice production while the independent variables are Land Area (X1), Seeds (X2), Fertilizer (X3), Pesticides (X4), Labor (X5), Age (X6), Education Level (X7), Farming Experience (X8), Number of Family Dependents (X9), and Non-formal Education (X10).

- 2) To answer the second research objective, which is to find out the amount of income from rice farming in Pukdale Village, East Kupang District, Kupang Regency, the following income analysis method was used Soekartawi 2002 (in Fuadiha, 2022):

- a) Cost analysis

$$TC = TFC + TVC$$

Where:

TC = Total Cost (Rp)

TFC = Total Fixed Cost (Rp)

TVC = Variable Cost (Rp)

b) Admission analysis

$$TR = P \cdot Q$$

Where:

TR = Total Revenue (Rp)

P = Price (Rp)

Q = Quantity (Rp)

c) Revenue Analysis

$$I = TR - TC$$

Where:

I = Farming Income (Rp)

TR = Total Revenue (Rp)

TC = Total Cost (Rp)

RESULTS AND DISCUSSION

Factors Affecting Rice Farming Production

1) Classic Assumption Test

a) Normality Test

The normality test was carried out to find out whether the residual in the regression model in this study was normally distributed or not. A good regression model is shown by normal distributed data. Normality testing was carried out through graph analysis, namely histograms and Normal Probability Plot (P-Plot) graphs, and using the One-Sample Kolmogorov–Smirnov Test statistical test, with the help of SPSS 27.

- Kolmogorov Smirnov Test

Table 1. Normality Test Results

		Unstandardized Residual
N		59
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.11255555
Most Extreme Differences	Absolute	.062
	Positive	.062
	Negative	-.055
Test Statistic		.062
Asymp. Sig. (2-tailed) ^c		.200 ^d
Monte Carlo Sig. (2-tailed) ^c	Sig.	.821
	99% Confidence Lower Bound	.811
	Interval Upper Bound	.831

Source: SPSS Data Processing Results 27, 2025.

The test criteria show that the data is declared to be normally distributed if the significance value is >0.05 and the Kolmogorov value is calculated $<$ the Kolmogorov table, while the data is declared not normally distributed if the significance value is < 0.05 . Based on the test results contained in Table 1, a significance value of 0.200 (>0.05) was obtained, so it can be concluded that the residual data in the multiple linear regression model is normally distributed and meets the assumption of normality.

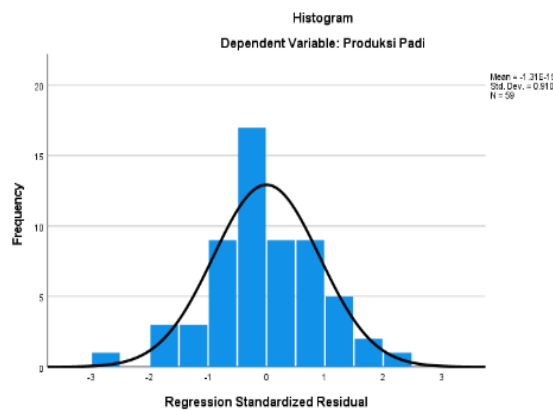


Figure 1. Test Normality with Histogram Graph
Source: SPSS data processing results 27, 2025.

The histogram graph is stated to meet the assumption of normality if the data distribution forms a bell shaped curve and does not show a tendency to the left or right Santoso 2015 (in Nasution et al. 2025). Based on Figure 1. Above, the histogram graph shows a symmetrical bell-shaped pattern, so it can be concluded that the data is normally distributed.

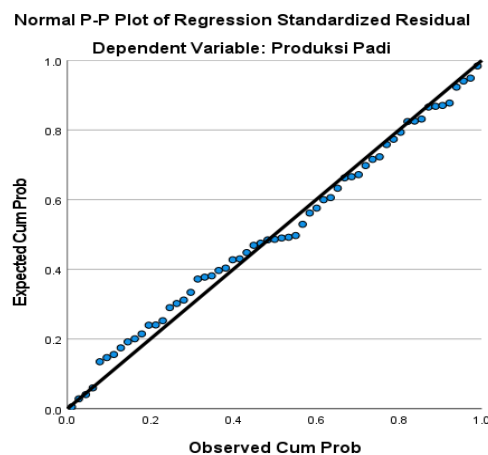


Figure 2. Test Normality with Probability-plot
Graph (P-Plot) Source: SPSS data processing results 27, 2025.

Ghozali 2016 (in Safiih, 2022), explained that data is said to be normally distributed if the distribution of points on the graph follows or is around a diagonal line. On the other hand, if the points spread far from the diagonal line, then the data is declared not to be normally distributed. The P-Plot Graph image above shows the shape of the P-Plot around the diagonal line and follows the direction of the diagonal line. Thus the regression model is normally distributed.

b) Muktilinearity Test

According to Ghozali, 2012 (in Nelci Agustina Asa et al., 2024), multicollinearity is a condition for the existence of a perfect or near-perfect linear relationship between independent variables (X) in a regression model. The regression model is declared free from multicollinearity if the value of variance

inflation factor (VIF) is < 10 and the tolerance value is > 0.10 . On the other hand, if the VIF value is ≥ 10 and/or the tolerance ≤ 0.10 , then the regression model experiences multicollinearity which can interfere with the stability of the regression coefficient and the interpretation of the analysis results.

Table 2. Multicollinearity Test Results

	Model	Collinearity Statistics		The results of the
		Tolerance	VIF	
1	Land Area (Ha)	.129	7.726	
	Seeds (kg)	.119	8.412	
	Fertilizer (kg)	.143	7.006	
	Pesticide (L)	.788	1.269	
	Workforce (HOK)	.192	5.196	
	Age (Years)	.137	7.292	
	Education Level (Year)	.618	1.618	
	Farming Experience (Years)	.168	5.960	
	Number of Family Dependents (People)	.890	1.124	
	Non-Formal Education (times)	.906	1.104	

a. Dependent Variable: Rice Production

Source: SPSS data processing results 27, 2025.

muktilinearity test in the table above show that the VIF value for the ten variables in this study is < 10 and the tolerance value is > 0.10 . Thus, it can be concluded that the data in this study do not cause symptoms of multicollinearity.

c) Heterokedasity Test

Heteroscedasticity is a condition in which the residual variant is not the same for each observation in a regression model. A good regression model is one that is free of heteroscedasticity. In this study, heteroscedasticity testing was carried out using the Glesjer test method by regressing each independent variable to the residual absolute value.

Table 3. Heteroscedasticity Test Results

	Model	B	t	Sig.
1	(Constant)		-.176	.861
	Land Area (Ha)	-.134	-.354	.725
	Seeds (kg)	-.384	-.967	.338
	Fertilizer (kg)	.608	1.679	.100
	Pesticide (L)	-.069	-.449	.656
	Workforce (HOK)	-.064	-.206	.837
	Age (Years)	.010	.027	.978
	Education Level (Year)	-.095	-.546	.588
	Farming Experience (Years)	-.196	-.586	.561
	Number of Family Dependents (People)	.041	.282	.779
	Non-Formal Education (times)	-.028	-.194	.847

a. Dependent Variable: Rice Production

Source: SPSS data processing results 27, 2025.

The basis for making decisions to test heteroscedasticity using the Glycecedasticity Test is that if the significance value (sig.) > 0.05 , then there are no symptoms of heteroscedasticity in the regression model and vice versa, if the significance value (sig.) is < 0.05 , then heteroscedasticity symptoms occur. Table 3 above shows that the significance value of the variables Land Area (X1), Seeds (X2), Fertilizer (X3), Pesticides (X4), Labor (X5), Age (X6), Education Level (X7), Farming Experience (X8), Number of Family Dependents (X9) and Non-Formal Education (X10) is greater than 0.05, which means that there are no symptoms of heteroscedasticity in the regression model.

d) Autocorrelation Test

The autocorrelation test was performed to find out if there was a relationship between the residuals in the sequential observations. A good regression model is one that does not show autocorrelation, so the residual is independent.

Table 4. Autocorrelation Test Results

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.973 ^a	.946	.935	.123725801	2.126

Source: SPSS data processing results 27, 2025.

In this study, the autocorrelation test was carried out using the Durbin–Watson (DW) test. The test criteria state that if the DW value is in the range -2 to $+2$, then the regression model is declared to be autocorrelated. Based on the test results in Table 4, a Durbin–Watson value of 2,126 was obtained which is in this range, so it can be concluded that the regression model does not contain autocorrelation.

2) Determination Efficiency

Test (R2) The determination coefficient (R^2) in regression analysis is used to show the large contribution of the independent variable (X) in explaining the variation in the bound variable (Y).

Table 5. Determination Coefficient Test Results (R2)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.973 ^a	.946	.935	.123725801

Source: SPSS data processing results 27, 2025.

Based on the results of the analysis in Table 5, the R Square value of 0.946 was obtained. This value shows that 94.6% of the variation in paddy rice farming production can be explained by the variables of Land Area (X1), Seeds (X2), Fertilizer (X3), Pesticides (X4), Labor (X5), Age (X6), Education Level (X7), Farming Experience (X8), Number of Family Dependents (X9) and Non-Formal Education (X10). Meanwhile, the remaining 5.4% was influenced by other factors outside the research model.

3) Hypothesis Testing

a) Simultaneous Significance Test (F Test)

The simultaneous test aims to find out whether all independent variables together have a significant influence on the dependent variables of Ghozali 2016 (in Safiih, 2022).

Table 6. Results of the Simultaneous Significance Test (F Test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.889	10	1.289	84.200	.000 ^b
Residual	.735	48	.015		
Total	13.624	58			

Source: SPSS data processing results 27, 2025.

Based on the hypothesis and statistical testing criteria, the results of the F test in Table 6 showed an F value of 84,200 with a significance level of $\alpha = 5\%$ (0.05), and obtained a table F value of 2.03459. Thus, the value of F calculated ($84.200 > F$ table (2.03459)) then H_0 is rejected and H_1 is accepted. This shows that simultaneously the variables of Land Area (X1), Seeds (X2), Fertilizer (X3), Pesticides (X4), Labor (X5), Age (X6), Education Level (X7), Farming Experience (X8), Number of Family Dependents (X9) and Non-Formal Education (X10) have a significant effect on rice production (Y).

b) Partial Significance Test

The t-test is used to determine the significance of the influence of each partially independent variable on the bound variable.

Table 7. Partial Significance Test Results (t-test)

Model	B	t	Sig.
(Constant)	5.707	7.132	.000
Land Area (Ha)	.284	3.510	.001

Seeds (kg)	.332	3.550	.001
Fertilizer (kg)	.356	3.881	.000
Pesticide (L)	.033	.542	.591
Workforce (HOK)	-.016	-.293	.771
Age (Years)	-.076	-.376	.709
Education Level (Year)	-.108	-1.423	.161
Farming Experience (Years)	.024	.333	.740
Number of Family Dependents (People)	.123	1.778	.082
Non-Formal Education (times)	-.163	-1.658	.104

Source: SPSS data processing results 27, 2025.

Based on Table 7 above, it can be seen that the t-value of calculating the land area variable in the analysis results was obtained as 3,510, in the two-tailed significance test with a confidence level of 95% ($\alpha = 0.05$) the table t-value was obtained of 2.01063. Thus, the value of t calculates (3.510) > the t table (2.01063) with a significance value of 0.001 which is smaller than α (0.05), so that H1 is accepted and H0 is rejected. This shows that the land area variable (X1) partially has a significant effect on the production of paddy rice farming (Y). The land area regression coefficient of 0.284 indicates that any 1% increase in land area will increase paddy rice production by 0.284%, assuming other variables in the fixed regression model. The positive coefficient value shows that the land area has a direct relationship with production, where the more land is cultivated, the more rice production tends to increase. The results of this study are in line with Febriyani et al., (2023), who stated that land area has a significant effect on paddy rice production.

The t-value of the seed variable calculation in the analysis results was obtained at 3,550, in the two-tailed significance test with a confidence level of 95% ($\alpha = 0.05$) the table t-value was obtained of 2.01063. Thus, the value of t calculates (3.550) > the t of the table (2.01063) with a significance value of 0.001 which is smaller than α (0.05), so that H1 is accepted and H0 is rejected. This shows that the seed variable (X2) partially has a significant effect on the production of paddy rice farming (Y). The regression coefficient of the seed variable of 0.332 indicates that any increase in seed use by 1% will increase paddy rice production by 0.332%, assuming other variables in the fixed regression model. This condition is in line with the situation at the research site, where the use of seeds that are appropriate and in accordance with cultivation needs plays an important role in increasing rice field production. The results of the study are in line with Herewila, (2020) who stated that seed factors have a real effect on rice field production.

The value of t-calculated fertilizer variables in the analysis results was obtained at 3,881. In the two-tailed significance test with a confidence level of 95% ($\alpha = 0.05$), a table t-value of 2.01063 was obtained. Because the value of t-calculation (3.881) is greater than the t-table (2.01063) and the significance value of 0.000 is smaller than α (0.05), H0 is rejected and H1 is accepted. Thus, the fertilizer variable (X3) partially has a significant influence on the production of paddy rice farming (Y). The regression coefficient of the fertilizer variable of 0.356 indicates that any increase in fertilizer use of 1% will be followed by an increase in paddy rice production by 0.356%, assuming that other variables are considered constant. This finding is in accordance with the conditions at the research site, where the use of adequate fertilizers and according to the needs of the plants also contributes to increasing rice field production. The results of the study are in line with Hewen, (2022) who stated that the amount of fertilizer has a positive and significant effect.

The results of the analysis showed that the t-value of the pesticide variable was 0.542. In the two-way significance test with a confidence level of 95% ($\alpha = 0.05$), the t-value of the table was obtained of 2.01063. Since the calculated t value is smaller than the table t and the significance value is 0.591 (> 0.05), H0 is accepted and H1 is rejected. Thus, the pesticide variable (X4) partially did not have a significant effect on the production of paddy rice farming (Y). This is suspected because pest attacks at the research site are relatively low or still within

control, so the use of pesticides does not provide additional production results. In addition, pesticides generally play a role in controlling pests and diseases to keep production stable, not to directly increase yields. Therefore, differences in pesticide use do not cause a noticeable difference in production.

The results of the analysis showed that the value t of the labor variable calculation was -0.293 . In the two-tailed significance test with a confidence level of 95% ($\alpha = 0.05$), the t -value of the table was obtained of 2.01063, so that the t -value of the calculation was smaller than the t -table with a significance value of 0.771 (> 0.05), which means that H_0 was accepted and H_1 was rejected. Thus, the labor variable (X_5) partially had no significant effect on rice field farming production (Y), although the regression coefficient was negative at -0.16 . In practice, paddy farming activities tend to use uniform techniques and most of the workforce comes from within the family. In addition, farming activities have largely been supported by the use of modern technology, especially in the land preparation stage which generally uses tractors, as well as harvests that have mostly used combine harvesters. This condition causes the addition of labor to not have a real effect on paddy rice production.

The results of the analysis showed that the t -value of the age variable was -0.376 . In the two-tailed significance test with a confidence level of 95% ($\alpha = 0.05$), a table t -value of 2.01063 was obtained. In comparison, the calculated t value is smaller than the t table, and the significance value is 0.709 (> 0.05), so H_0 is accepted and H_1 is rejected. Thus, the age variable (X_6) partially did not have a significant effect on the production of paddy rice farming (Y). This condition can be explained because the age variable better describes the individual characteristics of farmers that do not directly affect the level of production. In addition, in practice, both young and old farmers tend to use the same cultivation techniques and follow the prevailing habits at the research site. Therefore, age does not have a real influence on rice production.

The results of the analysis showed that the t -value of the variable of education level was -1.423 . At a confidence level of 95% ($\alpha = 0.05$), a table t -value of 2.01063 was obtained. In comparison, the calculated t value is smaller than the t table, and the significance value is 0.161 (> 0.05), so H_0 is accepted and H_1 is rejected. Thus, the variable level of education (X_7) partially did not have a significant effect on the production of paddy rice farming (Y). The level of education is part of the socio-economic characteristics of farmers that do not have a direct effect on production. This is also influenced by the conditions where most farmers are members of farmer groups, so that information, knowledge, and cultivation technology can be obtained through group discussion activities. Thus, the difference in formal education level is not an obstacle, so that even farmers with low education are still able to produce relatively the same production. The results of this study are in line with Herewila (2020), who stated that formal education does not have a real effect on paddy rice production.

The results of the above analysis obtained t calculation of the variable of farming experience of 0.333 with a confidence level of 95% ($\alpha = 5\%$ or 0.05) obtained a table t value of 2.01063. When compared, the value of t calculated (0.333) $<$ t of the table (2.01063) means that H_0 is accepted and rejected H_1 . Meanwhile, a sig. value of 0.740 is obtained, which is greater than the value of α of 0.05 ($0.740 > 0.05$). Thus, it can be concluded that the Farming Experience variable (X_8) partially does not have a significant effect on rice field farming production (Y). In practice, the cultivation techniques used by farmers tend to be uniform and have followed hereditary habits, so the difference in the length of experience does not affect the production results. In addition, with farmer groups and extension activities, farmers can share information and knowledge with each other, so that farmers with even a little experience are still able to apply good cultivation techniques and produce relatively the same production. The results of this study are in line with Herewila (2020) who stated that farming experience does not have a real effect on paddy rice production.

The results of the above analysis obtained t calculation of the variable of the number of family dependents of 1,778 with a confidence level of 95% ($\alpha = 5\%$ or 0.05) obtained a table value of 2.01063. When compared, the value of t calculated (1.778) $<$ t table (2.01063) means that H_0 is accepted and rejected H_1 , with a sig. value of 0.082 which is greater than the value

of α of 0.05 ($0.082 > 0.05$). Therefore, it can be concluded that the variable of the number of family dependents (X9) partially does not have a significant effect on the production of paddy rice farming. This happened because at the research site, the average number of dependents of respondents' families was relatively small, which was around 3 people, so the variation in the number of dependents between farmers was not large enough to cause significant differences in production.

The results of the analysis showed that the t-value of the non-formal education variable was -1,658 and the table t-value was 2.01063. When compared, the value of t calculated ($-1.658 < t$ of the table (2.01063) which means that H_0 is accepted and H_1 is rejected with a sig. value of 0.104 which is greater than the value of α of 0.05 ($0.104 > 0.05$). So it can be concluded that the Non-Formal Education variable (X10) partially does not have a significant effect on the

Description	Amount (Rp)	Per Farmer (Rp)	Per Hectare (Rp)
1. Tool shrinkage			
- Hoe	1.441.150	24.426	20.099.72
- Sabit	613.700	10.402	8.559.27
- Sprayer	15.888.750	269.301	221.600.42
Quantity	17.943.600	304.129	250.259.41
2. Land Tax	2.415.500	40.941	33.688
Total	20.359.100	345.069	283.948.40

production of paddy rice farming (Y). This happens because in the research location, the frequency of non-formal education attended by respondent farmers is relatively low and does not vary, where the average farmer only participates in training or counseling activities two to three times a year, so that the impact on increasing rice paddy farming production is relatively limited.

Analysis of the Income of Rice Farmers

1) Production Cost Analysis

a) Fixed Cost

Fixed costs are costs incurred by farmers in paddy rice production activities in Pukdale Village, the amount of which is not affected by the high and low amount of paddy rice production produced. In this study, fixed costs include the cost of depreciation of equipment and land tax costs.

Table 8. Fixed Cost of Rice Field Farming in Pukdale Village, East Kupang District, Kupang Regency

Source: Primary Data Processed, 2025.

The analysis of the data in the table above shows that the total fixed costs which include depreciation of equipment and land taxes in paddy farming activities at the research site are Rp. 20.359.100, with depreciation costs per farmer of Rp. 345.069 each and depreciation costs per hectare of Rp. 283.948.40.

b) Variable Cost

Variable costs are costs incurred by farmers in paddy farming activities, where the amount of costs can vary according to the level or volume of agricultural production. Variable cost components include expenditure on production inputs (seeds, fertilizers, and pesticides), labor wages, rental costs of agricultural equipment (tractors and combine harvesters,) as well as sacks, tarpals and profit-sharing costs between cultivators and landowners.

Table 9. Variable Costs of Rice Field Farming in Pukdale Village, East Kupang District, Kupang Regency

Description	Total Cost (Rp)	Per Farmer (Rp)	Per Hectare (Rp)
Seeds	27.198.000	460.983	379.331
Fertilizer	39.620.365	671.532	552.585
Pesticides	13.912.500	235.805	194.038

Workforce	250.173.000	4.240.220	3.489.163
Rent Alsintan	211.995.000	3.593.136	2.956.695
Revenue Share	123.099.250	2.086.428	1.716.865
Sacks	20.864.500	353.636	290.997
Tarpal	113.200.000	1.918.644	1.578.801
Total	800.062.615	13.560.383	11.158.474

Source: Primary Data Processed, 2025.

Table 9 above, shows that the total variable costs which include the cost of seeds, fertilizers, pesticides, labor, alsintan rental, profit sharing, sack and tarpaulin costs at the research site reached Rp 800.062.615 with an average cost per farmer of Rp 13.560.383 and an average per hectare of Rp 11.158.474

c) Total Production Cost

Production costs are the total expenses borne by farmers during the production process to produce outputs that are ready to be marketed. In paddy farming activities, production costs consist of calculated costs and actual costs that are actually incurred by farmers. The actual costs include the Land and Building Tax (PBB), labor costs, equipment depreciation costs, and production facilities costs such as seeds, fertilizers, and pesticides. In addition, production costs also include the cost of renting agricultural equipment, such as tractors and combine harvesters, as well as the cost of sacks and tarpaulins incurred by farmers during a single growing season and classified as part of variable costs.

Table 10. Total Production Cost of Paddy Rice Farming in Pukdale Village, East Kupang District, Kupang Regency

Description	Total Cost (Rp)	Per Farmer (Rp)	Per Hectare (Rp)
Fixed costs	20.359.100	345.069	283.948.40
Variable costs	800.062.615	13.560.383	11.158.474
Total	820.421.715	13.905.453	11.442.423

Source: Primary Data Processed, 2025.

Table 10 above, shows that the total production cost at the research site reached Rp 820.421.715 with an average cost per farmer of Rp 13.905.453 and an average per hectare of Rp 11.442.423

Analysis of Reception and Income of Paddy Rice Farming

Income is the difference between revenue and all costs incurred by farmers in farming activities. The success rate of farming can be judged by the amount of income obtained by farmers.

Table 11. Income of Rice Field Farming in Pukdale Village, East Kupang District, Kupang Regency

Description	Total Income (Rp)	Per Farmer (Rp)	Per Hectare (Rp)
Reception	1.879.750.000	31.860.169	26.216.876
Production Costs	820.421.715	13.905.453	11.442.423
Income	1.059.328.285	17.954.717	14.774.453

Source: Primary Data Processed, 2025.

Based on the results of the analysis in the table above, it is known that the total income from rice cultivation during one planting season with the selling price of milled dry grains (GKG) ranging from Rp. 6.000 to Rp. 6.500 per kilogram is Rp. 1.879.750.000. The average reception obtained is Rp. 31.860.169 per farmer or Rp. 26.216.876 per hectare. Meanwhile, the total cost of rice field farming in Pukdale Village is Rp. 820.421.715, with an average cost of Rp. 13.905.453 per farmer or Rp. 11.442.423 per hectare. Thus, the income from rice cultivation in Pukdale Village during one planting season is obtained from the difference between total income and total cost of Rp. 1.059.328.285, so that the average income received by farmers is Rp. 17.954.717 per farmer or Rp. 14.774.453 per hectare.

CLOSING

Conclusion

Based on the results of research and discussion on paddy rice farming in Pukdale Village, East Kupang District, Kupang Regency, which has been carried out, it can be concluded as follows.

1. The factors that affect the production of paddy rice farming in this study consist of three significant variables, namely land area, seeds, and fertilizers. Meanwhile, the variables of pesticides, labor, age, education level, farming experience, number of family dependents, and informal education did not show a partial significant influence. However, simultaneously these ten variables have a very significant effect on rice field production.
2. The amount of rice farming income in Pukdale Village during one planting season obtained from the difference between total reception and total cost is Rp. 1,059,328,285 with an average per farmer of Rp. 17,954,717 or Rp. 14,774,453 per hectare. This shows that income from paddy farming is moderate, supported by the level of production produced so as to contribute to farming income.

Suggestions

1. For Farmers

Based on the condition of farmers who have adopted modern agricultural tools, such as tractors for land cultivation and combine harvesters for harvesting, and supported by the average income of farmers in Pukdale Village, East Kupang District, Kupang Regency, paddy rice farming in the region is considered profitable and feasible. With a relatively adequate level of profit, farmers are expected to optimize the use of production factors that have been proven to have a significant impact, namely land area, seeds, and fertilizers, through intensive and efficient land utilization, the use of certified superior seeds, and the application of the right fertilization of doses, time, and types according to technical recommendations. This effort is expected to be able to increase productivity and agricultural yields optimally. Meanwhile, for factors that do not have a statistically significant effect such as pesticides, labor, age, education level, farming experience, number of family dependents, and non-formal education, farmers still need to manage them rationally and efficiently, especially in the use of pesticides and labor, so that there is no waste of production costs and still supports the sustainability of farming.

2. For Local Governments

For local governments, it is recommended to further increase support specifically through several steps, such as providing and ensuring the availability of certified superior seeds and subsidized fertilizers with targeted and timely distribution, improving and building agricultural infrastructure such as irrigation networks and usatan roads, and strengthening farmer group institutions so that they can become centers for information, training, and access to agricultural technology.

3. For the Next Researcher

Further research is needed on other factors that have the potential to have a stronger influence on rice production such as climatic conditions, agricultural technology, and market access. Further research is also expected to use more diverse variables and more in-depth analysis so that the results are more complete and comprehensive.

REFERENCES

- Bps.Go.Id. 2024. "In 2024, the rice harvest area will reach around 10.05 million hectares with rice production of 53.14 million tons of dry milled grain (Gkg)." Bps.Go.Id. Retrieved February 3, 2025 (<https://www.bps.go.id/pressrelease/2025/02/03/2414/pada-2024--luas-panen-padi-mencapai-sekitar-10-05-juta-hektare-dengan-produksi-padi-sebanyak-53-14-juta-ton-gabah-kering-giling--gkg-.html>).
- Febriyani M.S. Harumbaha, Maximillian M.J. Kapa, Selfius P. N. Nainiti. 2023. "Analysis of Production Factors, and Income of Paddy Rice Farming (Case Study in Oesao Village, East Kupang District, Kupang Regency)." Scientific Bulletin Break-Even 24(2):143–49.
- Fuadiha, Nurul. 2022. "Analysis of Rice Farming Income in Wele' Village, Belawa District, Wajo
-
- Rusniati, et al., *Factors Affecting Production and Income* 142

- Regency." 1–64.
- Gita Srihidayati, And Suhaeni. 2022. "Analysis of the Influence of the Agricultural Sector on Economic Growth." *Wildlife* 2(1):21–26. doi: 10.51574/Jip.V2i1.18.
- Herewila, Ernesta Ito Fidelis Klau Kudji. 2020. "Analysis of Income and Factors Affecting Paddy Production in Aeramo Village, Aesesa District, Nagekeo Regency." *Ix*(2).
- Hewen, Natalia Jedo Barek. 2022. *Determinants of Paddy Rice Production in Oesao Village, East Kupang District, Kupang Regency*. Vol. 5.
- Imran, Supriyo, And Ria Indriani. 2022. *Agricultural Production Economics*.
- Karmini. 2018. *Agricultural Production Economics*.
- Kupangkab.Bps.Go.Id. 2024. "East Kupang District in 2024 Figures." *Kupangkab.Bps.Go.Id*. Retrieved September 26, 2024 (<https://Kupangkab.Bps.Go.Id/Id/Publication/2024/09/26/Da470abbca5c2ad954c3b7a9/Kecamatan-Kupang-Timur-Dalam-Angka-2024.Html>).
- Moy, Esterlina, Yosefina Marice Fallo, And Marsianus Falo. 2017. "Factors Influencing the Production of Green Bean Farming in Tunabesi Village, Io Kufeu District, Malacca Regency." *Agrimor* 2(04):50–51. doi: 10.32938/Ag.V2i04.312.
- Nasution, Nurjannah, Nelvia Iryani, Agribusiness Management, Payakumbuh State Agricultural Polytechnic, Limapuluh Kota, Andalas University, and Keywords. 2025. "Pineapple Farmers' Perception of the Influence of Knowledge, Experience and Motivation on Productivity." *Journal of Management and Business Economics* 3(1):33–59. doi: 10.55043/Ekonomipedia.
- Nelci Agustina Asa; Damianus Adar; Alfetri N.P Lango; Johanna Suek. N.D. "Factors Influencing the Demand for Cayenne Pepper (*Capsicum Frutescens*) Case Study: Cayenne Pepper Consumers in Naikoten I Village, Kota Raja District, Kupang City." *Scientific Bulletin Break-even* 25(1):70–80.
- Ntt.Bps.Go.Id. N.D. "Rice Harvest Area, Productivity, and Production by Regency/City in East Nusa Tenggara Province, 2020-2024." *Ntt.Bps.Go.Id*. Retrieved February 12, 2025 (<https://Ntt.Bps.Go.Id/Id/Statistics-Table/3/Wmpank1ybgfjr0poujbkywfiqlbsu3mwvhpovwr6mdkjmwm/Luas-Panen--Produktivitas--Dan-Produksi-Padi-Menurut-Kabupaten-Kota-Di-Provinsi-Nusa-Tenggara-Timur--2024.Html?Year=2024>).
- Safiih, Abdul Rahman. 2022. "The Effect of Compensation and Motivation on Employee Performance at Pt Ampuh Jaya Wicaksana, South Jakarta." *Classical Economic Thought Theory "The Invisible Hand" and Its Relevance to the State Budget in Indonesia* 10(1):258–66.
- Septiadi, Dudi, Rosmilawati Rosmilawati, Abdullah Usman, I. Gusti Lanang Parta Tanaya, And Asri Hidayati. 2021. "Increasing Farmers' Capacity through Farming Bookkeeping Training in Otak Rarangan Village, Wanasaba District, East Lombok Regency." *Journal of Master of Science Education Service* 4(3). doi: 10.29303/jpmppi.V4i3.945.
- Sugiyono. N.D. *Quantitative and Qualitative Research Methodology* (Bandung: Alfabeta, 2013).