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Farming patterns and factors affecting rice farming income on various types of lebak swamp land in Kalidoni Sub-District, Palembang City

Yunita Yunita*), Trissa Silvian, Dwi Putri Maharani
Department of Agricultural Socioeconomics, Faculty of Agriculture, Universitas Sriwijaya. Jl. Palembang-Indralaya KM 32, Ogan Ilir 30662, South Sumatra, Indonesia
*)Email address: yunita@fp.unsri.ac.id

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ABSTRACT

Rice farming in Indonesia plays a strategic role in ensuring national food security and is a key sector for improving farmers' welfare, especially in rural areas. The study aimed to analyze the factors influencing rice farmers' income based on the typology of lebak swamp land, with a focus on Sungai Selincah Urban Village, Kalidoni Sub-District. The objectives were to describe rice farming patterns based on lebak swamp land typology, to analyze total farming income by land type, and to identify key determinants of income across different land typologies. The research location was selected purposively, and data were collected through a survey of 60 respondents. Data were analyzed using descriptive statistics and multiple linear regression. The results show that rice farming practices vary according to land typology, significantly affecting income levels. Among the three land types, farmers on middle lebak swamp land earned the highest income at 45,627,037 IDR/year (3,802,253 IDR/month), categorized as 'very high'. Farmers on shallow lebak swamp land earned 33,306,153 IDR/year (2,775,512 IDR/month), categorized as 'high'. Meanwhile, those on deep lebak swamp land earned 20,651,753 IDR/year (1,720,979 IDR/month), categorized as 'moderate'. The regression results indicate that land area, production volume, and farming experience positively and significantly affect income ($p<0.05$). Furthermore, compared to deep lebak swamp land (as the reference category), farmers cultivating shallow lebak swamp land and middle lebak swamp land types earned significantly higher income, indicating a substantial income differential across land typologies.

Keywords: farmer welfare, income deteriminants, land typology, lebak swamp land, rice farming

INTRODUCTION

The agricultural sector holds a significant and strategic role in fulfilling the basic needs of the Indonesian population and enhancing the national economy. This aligns with the primary objective of Indonesia's agricultural development, which is to improve farmer welfare and stimulate successful national growth (Utami et al., 2023). As a fundamental human need, food is paramount, alongside clothing and shelter. Indonesia cultivates various staple food crops, including rice, cassava, corn, and sago. Rice is particularly dominant, as it is the primary staple food for the majority of the Indonesian population. Data from the Statistics Indonesia reveal that the mid-2024 population reached 281.603 million, an increase from 278.696 million in 2023. This demographic trend is directly correlated with a rising demand for rice, necessitating a corresponding increase in domestic production to ensure national food security.

To address these challenges, the government has implemented numerous programs aimed at improving the welfare of farmers. A key initiative is the Food Self-Sufficiency Program, which focuses on critical food commodities. Rice is a central component of this program. The objective is to boost national food crop production while simultaneously increasing farmer income (Budiman & Santu, 2024).

The rice harvest area in 2022 was 10.45 million hectares, marking a 0.39% increase from 2021. This yielded 54.75 million tons of unhusked rice (GKG). When converted to milled rice, this amounted to 31.54 million tons, a 0.59% increase compared to 2021 production. The agricultural sector, particularly rice cultivation, provides significant employment opportunities, largely due to Indonesia's favorable climatic conditions. South Sumatra is a major contributor to national rice production. In 2023, the province's 17 regencies collectively produced 2,832,774 tons of rice (Statistics Indonesia, 2023).

Palembang, the capital of South Sumatra, is a key rice-producing region. Out of its 18 sub-districts, 11 are actively engaged in rice farming. Kalidoni sub-district is a significant contributor, and in its Sungai Selincah urban village, most residents are rice farmers who cultivate lebak swamp land. The Lebak swamp land, if managed correctly, has high agricultural potential. Under PP No. 73 of 2013, a swamp is defined as a water body with consistent or seasonal inundation, containing mineral or peat deposits and specific vegetation. Manopo et al. (2024) note that land is an essential resource for farmers to produce staple foods and secure their livelihoods. Lebak swamp land is a suitable environment for rice cultivation due to its unique hydrology, which is influenced by fluctuating water levels from rainfall and nearby rivers.

Indonesia's largest swamp areas are in Papua (7.61 million hectares), Riau (4.91 million hectares), Central Kalimantan (4.11 million hectares), and South Sumatra (3.36 million hectares) (Sulaiman et al., 2018). The lebak swamp land in South Sumatra is typically submerged for more than a month. Based on the height and duration of the inundation, the lebak swamp land is divided into three land typologies, namely bund or shallow lebak swamp land, which is land where the depth of inundation is less than 50 cm and the inundation time is less than 3 months, usually residential areas in the shallow/riddle area, middle lebak swamp land, is a land where the depth of the water inundation is 50- 100 cm and the inundation period is between 3-6 months, and deep lebak swamp land, is a land that is far from In rivers, the depth of the puddle is more than 100 centimeters and the inundation time is more than 6 months (Yuliani et al., 2025). The purpose of this study was to compare the income of rice farmers and analyze the factors that influence it across different lebak swamp land typologies in Sungai Selincah, Kalidoni sub-district.

MATERIALS AND METHODS

Preparation

This study was conducted from January to This study was conducted from January to March 2025 in Sungai Selincah Urban Village, Kalidoni sub-district, Palembang City, South Sumatra. The location was purposively selected due to the predominance of rice farmers cultivating three distinct typologies of lebak swamp land, which were relevant to the objectives of this study.

The areas of tidal swamp and swamp land in South Sumatra are shown in Table 1.

Table 1. Tidal swamp and lebak swamp land area

Province	Tidal Swamp		Swamp Land	
	Minerals (ha)	Peat (ha)	Mineral (ha)	Minerals (ha)
South Sumatra	1.271.478	446.718	690.157	676.399
	Total: 1.718.196		Total: 1.366.556	

Implementation

This study employed a quantitative descriptive–analytical approach. Data were collected through a structured interview-based survey using a validated and reliable questionnaire. The respondents consisted of 60 farmers selected based on land typology. The sampling technique applied was proportional random sampling, and the detailed calculation of the sample size was presented in Table 2.

Table 2. Sample withdrawal method

Land Type	Population	Proportion	Sample
Shallow	180	10%	18
Middle	300	10%	30
Deep	120	10%	12
Total	600		60

Data Analysis

The first research objective was addressed through a systematic description of rice farming patterns on the various lebak swamp land types. For the second objective, the total income was calculated after determining production costs, revenue, and income. A joint cost allocation was performed for farms with multiple activities, using the following formula:

$$\mathbf{TB} = \frac{JB}{TL}\, x\, LM$$

Where:
TB = Allocated joint cost for each farming activity (IDR)
JC = Total joint cost (IDR)
TL = Total land area (ha)
LM = Land area for each farming activity (ha)

Total income was then calculated based on these formulas:
Total Cost (TC)

$$\mathbf{TC = FC + VC}$$

Where:
TC = Total Cost (IDR/ha/season)
FC = Fixed Cost (IDR/ha/season)
VC = Variable Cost (IDR/ha/season)

Total Revenue (TR)

$$\mathbf{TR = Q\ X\ PQ}$$

Where:
TR = Total Revenue (IDR/ha/season)
Q = Production Quantity (kg/ha/season)
PQ = Product Price (IDR/kg)

Net Income

$$\boldsymbol{\pi} = \mathbf{TR - TC}$$

Where:
Π = Net Income (IDR/ha/season)
TR = Total Revenue (IDR/ha/season)
TC = Total Cost (IDR/ha/season)

The third objective was analyzed using multiple linear regression. The model employed to identify the determinants of farmer income was:

$$\mathbf{Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_6D_1 + b_7D_2 + \mathit{e}}$$

Where:
Y = Rice Farmer Income (IDR/ha)
a = *Intercept* atau constant
$b_1 - b_7$ = Regression coefficients
X_1 = Land Area (ha)
X_2 = Rice Production (kg)
X_3 = Farming Experience (years)
X_4 = Age (years)
X_5 = Education (years)
X_6 = Rice selling price (IDR/kg)
D_1 = Dummy variable for shallow lebak swamp land (shallow = 1, otherwise = 0)
D_2 = Dummy for middle lebak swamp land (middle = 1, otherwise = 0)
e = *eror*

RESULTS

Farming Patterns Based on Land Typology in Sungai Selincah Urban Village

Rice farming in the research area had a long history. The agricultural land was composed of lebak swamp land, which was classified into three typologies: shallow, middle, and deep. The Sungai Selincah urban village experiences high tides from December to February. A significant portion of the land was leased, with a common profit-sharing arrangement of a 7:1 ratio based on harvested dry grain.

Lebak swamp land was defined as low-lying land that was seasonally or perennially inundated. In Sungai Selincah, these swamp lands were situated near the Musi River, which contributes to fertile soil despite challenges in water management and drainage. The local community differentiates the lebak land types based on their proximity to the Musi River: "lebak dalam" or deep lebak swamp land was closest to the river, "lebak tengahan" or middle lebak swamp land was near its tributaries, and "lebak dangkal" or shallow lebak swamp land was located farthest from both. Based on field interviews, notable differences in farming practices were observed across these land typologies (Table 3).

Table 3. Differences in Cultivation Techniques

Description	Shallow	Middle	Deep
Planting Time	April (Faster 10-15 Days)	April	April
Land Cultivation	One-time tractor	One-time tractor	Double Tractor
Seed Types	Inpari 30 Ciherang	Inpari 30 Ciherang	Inpari 8

According to Table 3, the planting time for shallow lebak swamp land was typically 10-15 days earlier than that of the middle and deep typologies, where planting schedules were more uniform. Furthermore, land preparation methods vary. Shallow and middle lebak swamp lands generally require a single plowing with a tractor to prepare the soil. In contrast, deep lebak swamp land requires two plowing sessions due to its deeper soil and higher mud content.

Farmers in Sungai Selincah traditionally cultivate rice once a year, although they were currently experimenting with a twice-a-year planting index. Farmers commonly sow seedlings to minimize the risk of crop failure, though some also broadcast seeds directly. While some farmers receive subsidized seeds, others opt for non-subsidized seeds or reuse seeds from previous harvests to reduce costs.

In addition to rice farming, farmers in Sungai Selincah engage in supplementary activities to meet their livelihood needs, including non-rice farming and non-agricultural work. Non-rice farming activities include cultivating bananas, sweet potatoes, and galangal, typically on lands with middle and shallow conditions. These secondary crops were often grown in areas adjacent to or separate from their primary rice plots.

Non-agricultural supplementary work was also common. A significant number of farmers work as construction laborers. Other side jobs include holding leadership positions, such as the Head of the Neighborhood Association (Ketua RT), or working for government agencies like PLN (the state electricity company) or as civil servants. Some farmers also operate small businesses, such as renting out sound systems for events, which creates additional local employment. These supplementary incomes were crucial for supporting their families and reducing their dependence on a single economic sector.

Analysis of Total Income Based on Land Typology

Analysis of Fixed Costs in Rice Farming

This research analyzes total income, which includes both farming and non-farming income. A joint cost approach was employed because certain tools were used for both rice farming and non-farming activities. The fixed costs were presented in Table 4.

Table 4. The average cost of farming

Description	Middle	Shallow	Deep
	Average (IDR/season)	Average (IDR/season)	Average (IDR/season)
Sprayer	113,733	293,333	194,167
Hoe	25,107	65,835	34,072
Machete	27,450	47,861	30,175
Sickle	37,900	49,056	18,167
Tractor	0	0	0
Total		204,190	456,085

Variable Costs of Rice Farming

The variable costs incurred by rice farmers in Sungai Selincah Village include seeds, gasoline, urea fertilizer, NPK fertilizer, pesticide fertilizer, labor, and land rent. The average variable costs for rice farmers in Sungai Selincah Village were detailed in Table 5.

Table 5. Average variable cost of rice farming

Description	Middle	Shallow	Deep
	Average (IDR/season)	Average (IDR/season)	Average (IDR/season)
Seed	355,367	300,833	377,500
Petrol	275,667	266,667	433,333
Urea	308,333	266,667	266,667
NPK	363,967	285,000	250,000
Pesticides	552,667	233,056	211,667
Workforce	2,248,167	1,896,667	1,767,500
Land Lease	2,928,571	2,111,111	650,000
Total		7,032,738	5,360,000

The average variable costs vary depending on the land typology. For middle lebak swamp land, variable costs amount to 8,393,308 IDR per metric ton annually, whereas shallow lebak swamp land costs amount to 8,726,176.00 IDR per metric ton annually, and deep lebak swamp land have significantly lower costs at 4,872,222 IDR per metric ton annually. The lower variable costs in deep lebak swamp land were attributed to farmers using fewer inputs.

Rice Farming Production Costs

The average production costs incurred by farmers in Sungai Selincah Village were presented in Table 6.

Table 6. Average Production Cost of Rice Farming

Description	Middle	Shallow	Deep
	Average (IDR/season)	Average (IDR/season)	Average (IDR/season)
Variable Costs	7,032,738	5,360,000	3,956,667
Fixed Costs	204,190	456,085	276,580
Total	7,236,928	5,816,085	4,233,247

Rice Farming Revenue and Income

The average revenue earned based on the land typology in Sungai Selincah Village was shown in Table 7. Based on Table 7, the average revenue differs across each land typology due to their unique characteristics, which influence the varying needs and production costs incurred by farmers. The highest average revenue was obtained by farmers in middle lebak swamp land, amounting to 28,012,667 IDR per hectare annually, while farmers in shallow lebak swamp land have an average revenue of 20,917,500 IDR per hectare annually, and deep lebak swamp land farmers have the lowest average revenue at 18,854,167 IDR per hectare annually.

Table 7. Average rice farming revenue

Uraian	Middle	Shallow	Deep
Production Quantity (kg/cultivated area/year)	5,003	3,692	3,579
Selling Price (IDR/kg)	5,720	5,767	5,392
Revenue (Rp/cultivated area/year)	28,012,667	20,917,500	18,854,167

The magnitude of a farmer's income was highly dependent on the total revenue from the harvest and the total production costs incurred during the cultivation period. These costs include various components such as labor wages, the purchase of fertilizers and pesticides, and other production inputs, all of which were adjusted to the specific land conditions and crop requirements. The average rice farming income in Sungai Selincah Village was presented in Table 8. The income disparities observed highlight a significant difference among the three land typologies, which could be attributed to variations in the physical characteristics of the land and the production inputs utilized by farmers in each typology. The research findings reveal a notable difference in the average cultivated area across these land typologies. This variation directly influences the difference in farmers' income, as a larger land area corresponds to a greater potential for production. On the other hand, the size of the cultivated land also determines the magnitude of production costs, including labor, farming supplies, and other necessities. A detailed breakdown of the differences in the average cultivated area for rice farmers in Sungai Selincah Village, Kalidoni District, could be seen more clearly in Table 9.

Table 8. Average income of rice farming

Description	Middle	Shallow	Deep
Admission (IDR/cultivated area/year)	28,012,667	20,917,500	18,854,167
Production Cost (IDR/cultivated area/year)	7,236,928	5,816,085	4,233,247
Income (IDR/cultivated area/year)	20,775,739	15,101,415	14,620,920

Table 9. Average cultivated area of rice farmers

Land Type	Average Cultivated Area (Ha)
Middle	2.06
Shallow	1.43
Deep	1.25

Non-Rice Farming Income

Non-rice farming income refers to earnings that farmers generate from agricultural activities other than rice cultivation. Recognizing that rice farmers cannot rely solely on rice harvests as their single source of income, they frequently engage in other farming ventures to meet their families' economic needs. This was particularly crucial in areas like Sungai Selincah Urban Village, where farmers plant rice only once a year, making income from the non-rice sector essential for their sustainable livelihood, as detailed in Table 10.

Table 10. Average income from non-rice farming

Description	Middle	Shallow	Deep
	Average (IDR/year)	Average (IDR/year)	Average (IDR/year)
Laos	9,491,667	6,515,000	0
Banana	4,000,000	0	0
Cassava	6,000,000	4,800,000	0
Fish Farming	40,000,000	0	0
Average	11,898,333	5,657,500	0

Farmers in deep lebak swamp land do not engage in non-rice farming due to frequent flooding in the Sungai Selincah Village area, which makes it difficult to cultivate other crops because of the prevailing natural conditions. In contrast, farmers in middle and shallow lebak swamp land do undertake non-rice farming activities. The average non-rice farming income was 11,898,333 IDR /year for middle lebak swamp land farmers and 5,657,000 IDR/year for shallow lebak swamp land farmers.

Non-farming Income

Non-farming income was what farmers earn from activities outside of rice farming to supplement their household income. In Sungai Selincah Village, this was crucial because rice planting was done only once a year. This extra income helps them meet daily needs and strengthens their financial stability, especially when facing fluctuating rice prices, weather changes, and rising production costs. The average non-farming income for farmers in Sungai Selincah Village was detailed in Table 11.

Table 11. Average non-farm income

Description	Middle	Shallow	Deep
	Average (IDR/year)	Average (IDR/year)	Average (IDR/year)
Laborer	6,987,500	6,750,000	6,000,000
BUMN	57,600,000	0	0
ASN	12,000,000	44,400,000	0
Entrepreneurial	15,000,000	0	0
Total	22,896,875	25,575,000	6,000,000

Total Rice Farmer Income

The total income of rice farmers in Sungai Selincah Village was a combination of income from rice farming, non-rice farming, and non-farming activities. By combining these diverse sources, farmers could better support their livelihoods. Table 12 showed a significant difference in the total income earned by farmers across the different land typologies, indicating that the type of land had a major influence on their overall earnings.

Table 12. Average farmers' income

Business Pattern	Income (IDR/year)
Middle	
Rice Farming	20,775,739
Non-Rice Farming	11,898,333
Non-Farm	22,896,875
Total Income	55,570,947
Shallow	
Rice Farming	15,101,415
Non-Rice Farming	5,657,500
Non-Farm	25,575,000
Total Income	46,333,915
Deep	
Rice Farming	14,620,920
Non-Rice Farming	0
Non-Farm	6,000,000
Total Income	20,620,920

Analysis of Determining Factors for Rice Farming Income

This study analyzes various determinants of rice farming income by involving eight independent variables to be tested. The selection of these variables was based on relevant previous research. The dependent variable (Y) in this study was the income received by rice farmers, while the independent variables (X) include land area, production, farming experience, age, education level, and selling price. In addition, two dummy variables were included: shallow and middle lebak swamp land dummy. As shown in Table 13, the R^2 value of 0.976 indicates that 97.6% of the variation in farmers' income was explained by the variables in the model, while 2.4% was attributed to other factors outside the model.

Table 13. Coefficient of determination (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Esrimate
1	0,988	0,976	0,973	2466117

Table 14. T-test

Model		Unstandarized Coefficients		Standarized Coefficients		
		B	Std. Error	Beta	t	Sig.
1.	(Constant)	-436904.003	5136664.326	.660	-.085	.933
	Land	7498782.215	489994.483	.425	15.304	.000
	Production	1422.583	137.303	-.080	10.361	.000
	Experience	-120790.745	43236.827	.025	-2.794	.007
	Age	32148.740	35265.486	-.052	.921	.366
	Education	-176817.887	82164.221	.019	-2.152	.036
	Selling Price	691.839	877.267	-.018	.789	.434
	Dummy Shallow Lebak Swamp Land	-2624611.971	1033746.893	-.160	-2.539	.014
	Dummy Middle Lebak Swamp Land	-4731288.536	1003938.201		-4.713	.000

To identify the factors determining rice farmer income, a multiple linear regression analysis method was employed using the IBM SPSS application for data processing. Before the regression test, an initial classic assumption test was conducted. This test ensures that the data meets the criteria for a Best Linear Unbiased Estimator (BLUE), which means it was free from multicollinearity and heteroscedasticity and had a normal distribution. By fulfilling these assumptions, the analysis results were considered reliable, accurate, and an objective reflection of the field conditions. Table 14 presented the multiple linear regression equation as followed:

$$Y = -436.904 + 7.498.782\mathbf{X_1} + 1.422.583\ \mathbf{X_2} - 120.790\mathbf{X_3} + 321.487\ \mathbf{X_4} - 176.817\ \mathbf{X_5} + 691.839\ \mathbf{X_6} - 2.624.611\mathbf{D_1} - 4.731.288\mathbf{D_2} + e$$

Based on the regression equation, the constant value for rice farmer income (Y) was -436,904. This implies that if all independent variables were assumed to be zero, the income of rice farmers would be negative, at - 436,904 IDR.

Land area (X1) had a significant positive effect on income (p = 0.000). The positive coefficient of 7,498,782 indicates that a one-unit increase in land area was associated with a 7,498,782 IDR increase in income, all else being equal.

Production (X2) also shows a significant positive effect on income (p=0.000). A one-unit increase in production was associated with a 1,422,583 IDR increase in farmer income.

Experience (X3) had a significant effect (p=0.007), but the negative coefficient of -120,790 suggests that a one-unit increase in experience was associated with a 120,790 IDR decrease in income.

Age (X4) had no statistically significant effect on income (p = 0.366). Although the coefficient was positive, the result was not statistically reliable.

Education (X5) had a significant negative effect on income (p=0.036). The negative coefficient of -176,817 implies that a one-unit increase in education level was associated with a 176,817 IDR decrease in income.

The selling price (X6) had no statistically significant effect on income (p=0.434).

Shallow lebak swamp land dummy (D1) was statistically significant (p=0.014). The negative coefficient of -2,624,611 shows that, all other factors being equal, the income for farmers in shallow lebak swamp land was 2,624,611 IDR lower than for those in deep lebak swamp land.

Middle lebak swamp land dummy (D2) was also statistically significant (p=0.000). The negative coefficient of -4,731,288 indicates that, all other factors held constant, the income for farmers in middle lebak swamp land was 4,731,288 IDR lower than for those in deep lebak swamp land.

DISCUSSION

The findings of this research indicate that lebak swamp land typology has a significant influence on the income level of rice farmers. Farmers cultivating middle lebak swamp land earn the highest total income at 55,570,947 IDR per year, followed by those in shallow lebak swamp land at 46,333,915 IDR, and deep lebak swamp land at 20,620,920 IDR. This income disparity reflects how the biophysical conditions of the land, particularly the duration of water inundation, critically determine the technical efficiency and income opportunities for farmers (Ramadani et al., 2024; Simatupang & Nababan, 2023). Deep lebak swamp land, which have higher water levels, require more intensive land preparation and often reduce the effectiveness of inputs like fertilizers and pesticides (BBSDLP, 2020).

This finding is consistent with Manopo et al. (2024), who emphasized that access to or ownership of more manageable land (such as shallow and middle lebak swamp lands) is a key factor in determining agricultural productivity and income. The distinct characteristics of different lebak swamp land types necessitate varied management strategies, from cultivation techniques and cropping patterns to the production inputs utilized (Sulaiman et al., 2019).

Income from rice farming is not the sole economic source for farmers in Sungai Selincah. They also rely on income from non-rice farming activities (e.g., bananas, cassava, and galangal) and non-farming activities (e.g., construction labor, civil servants, and entrepreneurs). This diversification is not only an economic strategy but also a form of adaptation to agricultural risks such as price fluctuations, extreme weather, and crop failure (Birthal & Hazrana, 2019; Silvian et al, 2025b).

These results reinforce the findings of Mulyana et al. (2023), who showed that modern farmer income is no longer derived exclusively from crop yields but also from other ventures. Their study underscores the importance of supplementary income for maintaining the economic stability of farming households, especially in marginal lands like deep lebak swamps. This suggests that farming households in swamp regions no longer rely entirely on agriculture for their livelihood. This is also reflected in the dual roles of farmers as civil servants, state-owned enterprise employees, and informal business owners. According to Pratiwi et al. (2022), the diversity of income sources is a primary determinant of improved farmer welfare across various rural areas in Indonesia.

The regression analysis reveals that several variables, including land area, production, farming experience, and land typology, have a significant effect on farmer income. Land area has a positive and significant regression coefficient, meaning that a larger cultivated area leads to a greater potential for income increase. This is consistent with Arifin et al. (2022), who found that in a profit-sharing system, the scale of the operation is a crucial determinant of a farmer’s total net income. Production also makes a significant positive contribution to income. Logically, a higher harvest yield per season results in a greater revenue that can be converted into net income, a point also made by Bakari (2019) in his study on paddy farmer income.

Farming experience showed a negative correlation with income. In line with Silvian et al. (2025), a longer period of farming experience does not necessarily lead to higher income. One reason is that experienced farmers may not adopt the latest agricultural technology or modern practices. This can be explained by the innovation adoption approach proposed by Hendrita et al. (2025), which suggests that farmers with longer experience tend to adhere to conventional methods and are less open to agricultural innovations. Conversely, farmers with less experience but with higher education or better access to information tend to be more progressive in managing their farms (Chen & Lu, 2019).

A similar finding was observed for the education variable, which also had a negative effect on income. This may occur when farmers with higher education levels do not fully dedicate their time to farming or treat it only as a part-time activity. This phenomenon has been observed by Pratiwi & Moeis (2022) who noted that as farmers' education levels increase, they are more likely to seek non-agricultural employment that offers a more stable income.

The selling price of rice and the age of the farmer were found to have no significant effect on income. This is interesting, as selling price is typically a key income determinant. However, as Septiadi et al. (2022) suggested, an increase in selling price will not significantly impact income if it is not balanced by the control of production costs. In the context of this study, it can be concluded that farmers' profit margins are quite thin, as increases in selling prices are often accompanied by rising costs for fertilizer, land rent, and labor. Similarly, a farmer's age was not directly related to productivity or farming efficiency. Consistent with Nugraha & Kurnia (2024), younger farmers are generally more open to new technologies,

When evaluating total household income, farmers in deep lebak land arleas are categorized as having a medium income, while those in shallow and middle lebak swamp lands are classified in the high and very high-income brackets, respectively. However, the high proportion of expenditure on food among deep lebak swamp land farmers is an indicator that their welfare remains low (Berliana et al., 2022). This is consistent with Engel's Law, which posits that the higher the proportion of household income spent on food, the lower the household's overall level of welfare.

This finding is further supported by research from Widya (2015) and Yunita et al. (2023), who demonstrated that farming households classified as less prosperous tend to allocate a significant portion of their income to basic food necessities, consequently having limited access to social services such as health, education, and adequate house. The results of this study offer several recommendations for agricultural development policies. First, strategies to increase farmers' income should be tailored to land typologies, as each type has different needs and potentials. For example, deep lebak swamp land requires technological interventions for water control and greater incentives for enterprise diversification.

Second, strengthening farmers' capacity through training in technology, farm management, and financial literacy is essential to help them improve production efficiency and manage income optimally. Third, support for side businesses, both non-rice farming and non-farming activities needs to be expanded. As explained by Rahman & Widiastuti (2020), the success of managing household income among farmers is not only determined by harvest yields but also by their ability to manage and develop other income sources sustainably.

CONCLUSSION

Rice cultivation practices vary according to land typology, reflecting farmers' adaptive strategies to local environmental conditions. These differences influence farming performance and contribute to variations in farmers' income. Furthermore, land characteristics, farming scale, production capacity, and experience play important roles in shaping the economic outcomes of rice farming.

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