Jurnal Humaniora

Vol. 9, No. 2 (2025) pp. 465 - 474

http://jurnal.abulyatama.ac.id/index.php/humaniora

p-ISSN: 2684-9275 e-ISSN: 2548-9585

Research Paper

Investigation of Production Factors for Irrigated Rice Fields in Indrapuri District of Aceh Besar Regency

Lolita Sari[1], **Ainal Mardhiah**[1], **Teuku Fadhla**[1]

[1]Faculty of Agriculture, Universitas Abulyatama, Aceh Besar 23372, Indonesia

ainalmardhiah_pertanian@abulyatama.ac.id

https://doi.org/10.30601/humaniora.v%vi%i.7084

Published by Universitas Abulyatama

Artikel Info

Online first: 26/10/2025

Abstract

This study aims to analyze the factors influencing paddy production with an irrigation system in Indrapuri District, Aceh Besar Regency, to determine the impact of irrigation on paddy farming production, and to calculate the income of farmers using irrigation in the Krueng Jreu Sub-watershed. The research method used is a survey method with cluster sampling technique, involving 39 farmer respondents from six villages selected based on their distance from the irrigation canal (near, medium, and far). The data collected consists of primary data obtained thru interviews and questionnaires, as well as secondary data from relevant institutions. Data analysis used a Likert scale to measure farmers' perceptions and multiple linear regression to test the influence of production factors (land area, seed quantity, fertilizer, pesticides, and labor) on paddy production. The research results indicate that irrigation plays an important role in increasing paddy rice production, with adequate water availability having a positive impact on the use of production inputs and harvest yields. Multiple linear regression tests show that the variables of land area, seeds, fertilizer, pesticides, and labor significantly affect production. The average income of farmers utilizing irrigation in the Krueng Jreu Sub-watershed also increased as productivity improved.

Keywords: Factors of production; Rice fields; Irrigation

1. Introduction

Rice (Oryza sativa L) is a major food crop commodity in Indonesia because most of the Indonesian population's staple food is rice. As the population continues to increase, this can lead to food security vulnerability [1]. Rice is a major commodity that serves as a source of carbohydrates for the Indonesian population. Every year, the demand for rice in Indonesia incre-

incases due to the large population growth and the development of the food and feed industries [2]. Rice (Oryza sativa L.) is an annual plant with a round, hollow stem called straw. The leaves are elongated with veins running parallel to the leaf stem. On the main stem and tillers, clumps are formed during the vegetative phase and panicles during the generative phase [3]. Kecamatan Indrapuri It is one of the production sites for paddy rice farming di Aceh Besar that uses irrigation channels sub Das krueng jreu. Most of the population makes a living from rice farming. The produce is usually sold to increase family income. The size of income from rice farming by the population in Kecamatan Indrapuri production acceptance. For more details, revenue and production data can be seen in the following Table:

Table 1. Data on rice farming production in Kecamatan Indrapuri Kabupaten Aceh Besar

Year	Land Area (Ha)	Planted Area (Ha)	Production (Ton)	Revenue (Rp)
2019	1,150	1,100	5,800	1,740,000,000
2020	1,200	1,150	6,200	1,860,000,000
2021	1,250	1,200	6,600	1,980,000,000
2022	1,300	1,250	7,000	2,100,000,000
2023	1,350	1,300	7,500	2,250,000,000
Total	6,250	6,000	33,100	9,930,000,000

Source: Kantor Balai Penyuluhan Pertanian Indrapuri Tahun 2024

Based on **Table 1** above, the data obtained from 2019 to 2023 shows significant development in paddy rice farming in Kecamatan Indrapuri, the area of land used for paddy farming increased from 1,150 hectares in 2019 to 1,350 hectares in 2023. This increase reflects farmers' efforts to optimize land use and increase production capacity. Irrigation network Krueng Jreu is one of the technical irrigation networks located in Kabupaten Aceh Besar and irrigating agricultural land for 6 kecamatan namely Kecamatan Indrapuri, Kecamatan Kuta Malaka, Kecamatan Suka Makmur, Kecamatan Simpang Tiga, Kecamatan Ingin Jaya and Kecamatan Darul Kamal. Irrigation area Krueng Jreu located in koordinat 5°2′ - 5°3′ LU and 95°20′ - 95°27′ BT which borders 3 kecamatan namely, to the north it borders Kecamatan Montasik, To the east, it borders Kecamatan Kuta Cot Glie, to the west it borders Kecamatan Darul Imarah, and to the south it borders Bukit Barisan [4].

It needs to be studied how much income and production is obtained by farmers who use sub-irrigation DAS Krueng Jreu based on farmer responses and to determine the factors influencing irrigated paddy production in Kecamatan Indrapuri. Research objectives to analyze how much income and production farmers using irrigation obtain Krueng Jreu in increasing paddy production in Kecamatan Indrapuri Kabupaten Aceh Besar, and the factors that influence irrigated paddy production.

2. Method

This research was conducted at Kecamatan Indrapuri Kabupaten Aceh Besar. The location determination was done intentionally (purposively). The research object is paddy farmers who use irrigation on sub–DAS Krueng Jreu in Kecamatan Indrapuri Kabupaten Aceh Besar. The scope of this research is limited to the issues of the role, factors influencing production, and income of farmers using irrigation Krueng Jreu in increasing paddy production in Kecamatan Indrapuri Kabupaten Aceh Besar. The population in this study consists of all farmers who use irrigation Kreung Jreu in Kecamatan Indrapuri Kabupaten Aceh Besar namely, 395 rice farmers divided into 6 villages, namely: villages located near irrigation, which include the villages of

Krueng Lamkareung and Riting, village Meunara and Lampanah Dayah which is in the middle of the irrigation, and village Lambunot and Grot Baro far from irrigation. Determining the sample size, 10% of the population of 39 farmers was taken.

Income is the total revenue received by members of society for a specific period in exchange for the factors of production they contribute to forming national product [10]. Income is defined as the fluctuation in a company's assets and liabilities caused by its internal activities, such as the sale of goods [11]. Revenue is the inflow or increase in an entity's assets or the settlement of its liabilities, or a combination of both, during a period, arising from the delivery or production of goods, the provision of services, or other activities that constitute the entity's primary operations [12]. The analysis method used for hypothesis I is Revenue. Revenue is the income earned from the business activities of an individual with the goal of making a profit. Revenue recognition can be carried out when there is a high probability of economic benefits in the future and when it can be measured reliably in the ongoing business [13].

Production is the activity carried out by humans to produce a product, whether goods or services, which is then utilized by consumers [14]. Production is something produced by a company, whether in the form of goods or services, within a specific period of time, which is then calculated as added value for the company [15]. Production is a process where goods or services called inputs are transformed into goods or services called outputs [16]. According to [17], production is an activity that transforms inputs into outputs, encompassing all activities that generate goods or services, as well as other activities that support or assist in producing those goods or services. Multiple linear regression is a statistical method used to analyze the relationship between one dependent variable (Y) and two or more independent variables (X_1, X_2, Xn). The goal is to predict the value of the dependent variable based on the values of its independent variables.

Formula Regresi Linear Berganda

$Y = a + b_1X_1 + b_2X_2 + \ldots\ldots + b_n X_n + e$ .....[18]

Y = Production (Ton)

X_1 = Land Area (Ha)

X_2 = Irrigation Water Availability

X_3 = Seeds (Kg)

X_4 = Labor (HKP)

X_5 = Fertilizer (Kg)

X_6 = Pesticides (Liter)

Eu = standard error

Partial testing or t-testing is the testing of regression coefficients partially, to determine the partial or individual significance of each independent variable on the dependent variable. The hypotheses used in this test are: H0: calculated t ≤ table t, then there is no effect of the dependent variable on the independent variable. H1: calculated t > table t, then there is an effect of the dependent variable on the independent variable [19]. Experiment F is used to determine whether there is an influence of the independent variables on the dependent variable simultaneously. Proof is attempted by comparing the calculated F value (Fhitung) with the F value (Fhitung) and the F table value (Ftabel) at a 5% confidence level and degrees of freedom df = (n-k-1), where n is the number of respondents and k is the number of variables [19]. The coefficient of determination, often symbolized by, essentially measures the extent to which independent variables influence the dependent variable. If the coefficient of determination in the regression model consistently decreases or approaches zero, it means the influence of all independent variables on the

dependent variable is diminishing. Conversely, if the value of R2 approaches 100%, it indicates an increasing influence of all independent variables on the dependent variable [19].

3. Result

3.1 Characteristics of paddy farmers in Kecamatan Indrapuri Kabupaten Aceh Besar

The characteristics of the farmers referred to in this study include age, education, experience, and the number of family dependents. Farmer characteristics are closely related to paddy farming activities.

Tabel 2. Average characteristics of paddy farmers

Characteristics of Farmers	Unit	Average
Age	Year	41,6
Education	Year	10,1
Farming Experience	Year	13,7
Family Dependents	People	3
Land Area	Hectare	0.20

Source: Processed Primary Data, Year 2025

The average age of paddy farmers in Kecamatan Indrapuri Kabupaten Aceh Besar considered to be of working age, which is 41.6 years. The average education level of paddy farmers in Kecamatan Indrapuri Kabupaten Aceh Besar is 10.1 years, which is equivalent to high school. The average experience of paddy farmers in Kecamatan Indrapuri Kabupaten Aceh Besar is 13.7 years, which places them among very experienced farmers in their business. The number of dependents a farmer has in their family, therefore the average number of dependents for rice farmers is 3.2 people. With these dependents, rice farmers can direct their efforts to cultivate their farms while also being responsible for their families' lives. The size of the sample farmers' land area affects the amount of farm income they earn; the larger the farmers' cultivated land area, the higher their production, and consequently, their income also increases [20]. The average size of cultivated land owned by paddy farmers in Kecamatan Indrapuri Kabupaten Aceh Besar is 0,20.

3.2 Production

The production in this research refers to the harvest yield of dry paddy from rice cultivation. The income from farming that is meant is the economic value that is obtained, which is the result of multiplying the entire volume of rice produced by the price that is in effect on the market at the time of the study, The table below shows the average paddy yield from rice cultivation.

Tabel 3. The average production of paddy rice

Description	Unit	Average Rp/UT	Average Kg/Ha
Produksi Gabah	Kg/Ha	2.359	12.000

Source: Processed Primary Data, Year 2025

Based on Table 3 above, the average rice production per farm in the study area is Rp. 2,359, while the average per hectare is 12,000 Kg/Ha.

3.3 Production costs

In this study, production costs refer to all operational expenses incurred during a single growing season, whether in the form of cash payments or non-cash (calculated even if not paid directly). The calculations were based on the actual prices prevailing at the time the research was

conducted. Knowing the amount of production costs is very important as a basis for making farming decisions, as this information can provide an overview of the estimated income earned by farmers. Average production cost per hectare for paddy rice farming in Kecamatan Indrapuri Kabupaten Aceh Besar is Rp. 7,845,416.67, where the largest cost incurred by farmers is for labor, amounting to Rp. 5,130,000.00/Ha. This is followed by the cost of using seeds at Rp. 750,000/Ha, the cost of Urea fertilizer at Rp. 780,000/Ha, the cost of NPK fertilizer at Rp. 900,000/Ha, and the cost of Bayer Pesticide at Rp. 210,000/Ha.

3.4 Value of production

Production value is the gross income obtained from multiplying total production by the selling price prevailing at the time of the study and is expressed in rupiah.

Tabel 4. Average production value in paddy rice farming

Description	Rp/Kg/MT
Total Production	2.359
Selling Price	6.500
Total	15.331.666,67

Source: Processed Primary Data, Year 2025

Table 4 above shows that the prevailing price of unhusked rice at the time of the study was Rp. 6,500/Kg, with an average total production of rice per farming enterprise of 2,359 Kg, resulting in an average production value of Rp. 15,331,666.67/MT.

3.5 Income of paddy farmers

For some residents in Indrapuri District, income from paddy farming is the main source for meeting their living needs and improving family welfare **[21]**. The average paddy rice production per farm is 2,359 Kg, with a value of paddy rice production of approximately Rp.15,331,666 and the cost of paddy rice production at Rp.2,761,861. This represents the production costs incurred during the production process. The amount of income earned by rice farmers in the study area is highly related to the production costs incurred. To prove whether production costs affect the income of these rice farmers, it is calculated using the following formula:

π = TR-TC
= Rp.15.331.666/MT – Rp.2.761.861/MT
= Rp.12.569.806/MT

The total revenue from paddy farming in the study area was Rp. 15,331,666/MT, and the production cost was Rp. 2,761,861/MT, resulting in a net income for paddy farmers of Rp. 12,569,806/MT.

3.6 Factors affecting paddy production in Kecamatan Indrapuri

Based on the analysis of factors influencing paddy farming production using SPSS, the results are as follows: $\ln Y = 3{,}656 - 0{,}061 \ln X_1 + 0{,}034 \ln X_2 + 0{,}039 \ln X_3 + 0{,}509 \ln X_4 + 0{,}165 \ln X_5 - 0{,}030 \ln X_6 + 0{,}445 \ln X_7$. If you look at the regression coefficients and each independent variable (X_1, X_2, X_3, X_4, X_5, X_6, and X_7) in the equation above, it can be interpreted as follows:

a. The constant 3.656 means that if the values of X_1, X_2, X_3, X_4, X_5, and X_6 are 0, then the production (Y) will be 3.656 kg.
b. Under the condition of variable X_1 (Land area). It is negatively correlated with a coefficient value of -0.061, meaning that for every 1% increase in land area, production will decrease by

-0.061%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of -0.534 < the t-table value of 2.024 and a significance value of 0.597 > 0.05, therefore H1 is rejected and H0 is accepted, meaning that land area does not have a significant effect on increasing paddy production.

c. Under the condition of variable X_2 (Availability of Irrigation Water). It is positively correlated but not significantly with a coefficient value of 0.034, meaning that the higher the availability of irrigation water, the production will increase by 0.034%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of 0.121, which is less than the t-table value of 2.024, and a significance value of 0.904, which is greater than 0.05. Therefore, H1 is rejected and H0 is accepted, meaning that the availability of irrigation water does not have a significant effect on increasing paddy production.
d. Under the condition of variable X_3 (Seeds). It is positively correlated but not significant, with a coefficient value of 0.039. The calculated t-value (0.587) is less than the t-table value (2.024), and the significance value (0.561) is greater than 0.05 at a 95% confidence level. Therefore, H1 is rejected and H0 is accepted, meaning it has no effect on paddy production. The seed has a regression coefficient value of 0.039, which means that a 1% increase in seed usage will increase rice production by 0.039%.
e. Under the condition of variable X_4 (Urea Fertilizer). It is positively correlated but not significantly with a coefficient value of 0.509, meaning that for every 1% increase in urea fertilizer, production will increase by 0.509%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of 2.009, which is less than the t-table value of 2.024, and a significance value of 0.054, which is greater than 0.05. Therefore, H1 is rejected and H0 is accepted, indicating that urea fertilizer does not have a significant effect on increasing paddy production.
f. Under the condition of variable X_5 (NPK fertilizer). It is positively correlated but not significant with a coefficient value of 0.165, meaning that for every 1% increase in NPK fertilizer, production will increase by 0.165%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of 0.775, which is less than the t-table value of 2.024, and a significance value of 0.444, which is greater than 0.05. Therefore, H1 is rejected and H0 is accepted, indicating that NPK fertilizer does not have a significant effect on increasing paddy production.
g. Under the condition of variable X_6 (pesticide). It is negatively correlated with a coefficient value of -0.030, meaning that for every 1% increase in pesticide use, production will decrease by -0.030%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of -0.500, which is less than the t-table value of 2.024, and a significance value of 0.620, which is less than 0.05. Therefore, H1 is accepted and H0 is rejected, indicating that pesticide use does not have a significant effect on increasing paddy production.
h. Under the condition of variable X_7 (Labor). It is positively correlated with a coefficient value of 0.445, meaning that for every 1% increase in labor, production will increase by 0.445%, assuming other variables remain constant. The results of the partial t-test analysis at a 95% confidence level show a calculated t-value of 4.261, which is greater than the t-table value of 2.024, and a significance level of 0.000, which is less than 0.05. Therefore, H1 is accepted and H0 is rejected, indicating that variable X_7 (Labor) has a significant effect on increasing paddy production. This means that the quantity or quality of labor has a significant contribution in determining the level of paddy production. Labor may affect various aspects of production,

such as planting speed, pest control, harvesting, and others, which overall increase crop yields.

The positive regression coefficient values in the SPSS output indicate that the independent variables X_2, X_3, X_4, X_5, and X_7 have a positive effect on the dependent variable (Y). This means that an increase in the value of these independent variables will be accompanied by an increase in the value of the dependent variable. Conversely, the independent variables X1 and X6 have a negative effect on the dependent variable (Y).

3.7 Coefficient of determination (R2) and correlation coefficient (R)

Determination analysis in multiple linear regression is used to determine the percentage of the simultaneous contribution of independent variables to the dependent variable. This coefficient indicates the percentage of variation in the independent variable used in the model that can explain the variation in the dependent variable. If R2 equals 0, then there is no contribution of influence from the independent variable on the dependent variable. Conversely, if R2 equals 1, then the percentage of influence contributed by the dependent variable is perfect. From the regression analysis results, the output shows the values of the coefficient of determination and the correlation coefficient, as seen in **Table 5**.

Table 5. Determination coefficient (R_2), correlation coefficient (R) values in the model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.945[a]	.893	.869	.18244	.893	35.914	7	30	.000

a. Predictors: (Constant), Ln_x7, Ln_x2, Ln_x6, Ln_x1, Ln_x3, Ln_x5, Ln_x4

b. Dependent Variable: Ln_y

The R2 test (R square), which is the coefficient of determination, yielded a value of 0.893 or 80.93%. This indicates that the percentage contribution of the independent variables (land area, water availability, seeds, urea fertilizer, NPK fertilizer, pesticides, and labor) to the dependent variable (production) is 80.93%, while the remaining 19.07% is influenced by other factors outside the analyzed model. Correlation analysis is used to determine the relationship between two or more independent variables (X_1, X_2, X_3, X_4, X_5, X_6, and X_7) and the dependent variable (Y) simultaneously. This coefficient indicates the strength of the relationship between the independent variables (X_1, X_2, X_3, X_4, X_5, X_6, and X_7) and the dependent variable (Y) simultaneously. The value of R ranges from 0 to 1; the closer the value is to 0, the weaker the relationship. Based on table 5 above, R, the correlation coefficient, is 0.945a or 90.45%. This indicates a very strong relationship between the independent variables: Land Area (X_1), Irrigation Water Availability (X_2), Seeds (X_3), Urea Fertilizer (X_4), NPK Fertilizer (X_5), Pesticides (X_6), and Labor (X_7) with the dependent variable: paddy field farming production (Y).

3.8 Simultaneous regression coefficient test (F-test)

This test is used to determine whether the independent variables (X_1, X_2, X_3, X_4, X_5, X_6, and X_7) collectively have a significant effect on the dependent variable (Y), or to determine whether the regression model can be used to predict the dependent variable. Significant means that the relationship that occurs can be applied to the population (can be generalized). From the results of the regression analysis output, the F value can be known as shown in table 6 below:

Table 6. Analysis of variance (ANOVA)

ANOVA[a]						
	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.367	7	1.195	35.914	.000[b]
	Residual	.999	30	.033		
	Total	9.366	37			
a. Dependent Variable: Ln_y						
b. Predictors: (Constant), Ln_X_7, Ln_X_2, Ln_X_6, Ln_X_1, Ln_X_3, Ln_X_5, Ln_X_4						

Test the "F" statistic at a significance level using $\alpha = 0.05$ (n-k-l), then the results obtained for Ftable are 2.024 and Fcount is 35.914. Therefore, since Fcount > Ftable (35.914 > 2.024), we accept Ha and reject H0, meaning there is a significant influence of land area (x_1), irrigation water availability (x_2), seeds (x_3), urea fertilizer (X_4), NPK Fertilizer (X_5), pesticides (x_6), and labor (x_7) collectively on paddy farming.

3.9 Partial regression coefficient (t-test)

This test is used to determine whether the independent variables (X_1, X_2, X_3, X_4, X_5, X_6, and X_7) in the regression model have a significant partial effect on the dependent variable (Y). From the regression analysis output, the partial values of each independent variable can be determined. As can be seen in **Table 6** above, the factors of land area (0.597), irrigation water availability (0.904), seeds (0.561), urea fertilizer (0.054), NPK Fertilizer (0.444), and pesticides (0.620) did not have a significant effect on paddy farming, as indicated by the significance value (0.05). Labor (0.000) had a significant effect on paddy farming, as indicated by the significance value (0.05).

4. Discussion

The analysis results show that among various production factors, only labor significantly affects rice farming, while land area, irrigation water availability, seeds, urea fertilizer, NPK fertilizer, and pesticides do not have a significant impact. The average rice production in Indrapuri District reaches 12,000 kg/ha, with farmers earning Rp 12,569,806 per planting season. This proves that the Krueng Jreu irrigation system makes a significant contribution to increasing production yields and farmer welfare. Farmers are advised to focus on labor efficiency through modern cultivation training, the use of agricultural machinery, and planting time management, as well as the use of production inputs with more precise dosages and timing. Maintaining productivity sustainability requires irrigation maintenance of the Krueng Jreu River through the formation of an irrigation management unit to ensure even water distribution, especially during the dry season.

5. Conclusion

Based on the results of multiple linear regression analysis, it shows that the production factors of Land Area (– 0.061), Irrigation Water Availability (0.034), Seeds (0.039), Urea Fertilizer (0.509), NPK Fertilizer (0.165), and Pesticides (– 0.030) do not have a significant effect on paddy farming, as indicated by the significance value (0.05), while Labor (0.445) has a significant effect on paddy farming, as indicated by the significance value of pesticides (0.000) < (0.05). The average paddy yield per hectare in Indrapuri District is 12,000 kg/ha, with the average farmer income reaching Rp 12,569,806 per planting season. This indicates that the Krueng Jreu irrigation system significantly contributes to increasing production yields and farmer welfare.

Acknowledgement

The authors are deeply grateful to the 39 paddy farmer respondents from six villages in Indrapuri District, Aceh Besar Regency, for their participation and cooperation during data collection. We also thank the village officials and local government agencies for their assistance in facilitating this research. Our appreciation extends to all individuals and institutions that provided support and data, making this study possible.

Authors' contributions and responsibilities

Lolita Sari: conceptualization, methodology, writing – original draft, supervision. Ainal Mardhiah: supervision, writing – review & editing. Teuku Fadhla: investigation, formal analysis, visualization.

Funding

This research was self-funded by the author(s) without external financial support.

Availability of data and materials

All data are available from the authors.

Competing interests

The authors declare no competing interest.

Additional information

No additional information from the authors.

References

[1] S. Meliawati, Sutarno, and S. Budiyanto, "Pertumbuhan dan hasil tanaman padi varietas ciherang (Oryza sativa L.) akibat pemberian pembenah tanah pada tiga jenis tanah Growt," *J. Agroeco Sci.*, vol. 2, no. 2, pp. 9–17, 2023, [Online]. Available: https://ejournal2.undip.ac.id/index.php/aesj

[2] N. Marwin, W. A. Zakaria, and S. Situmorang, "Analisis efisiensi produksi dan pendapatan usahatani padi sawah di Kecamatan Balige Kabupaten Toba Samosir," *J. Ilmu-Ilmu Agribisnis*, vol. 8, no. 2, p. 212, 2021, doi: 10.23960/jiia.v9i2.5078.

[3] M. Jonatan and T. B. Ogie, "Pengendalian penyakit menggunakan biopestisida pada tanaman padi (Oryza Sativa L)," *J. Agroteknologi Terap.*, vol. 1, no. 1, pp. 11–13, 2020, [Online]. Available: https://ejournal.unsrat.ac.id/index.php

[4] A. M. Syahrul and I. Ramli, "Evaluasi kinerja sistem irigasi pada daerah irigasi Krueng Jreu Kabupaten Aceh Besar," *J. Tek. Sipil Unaya*, vol. 7, no. 2, pp. 103–112, 2021.

[5] Y. putri Masri and Nuraini Wahyuning Prasodjo, "Strategi penghidupan rumah tangga petani padi sawah di Pedesaan," *J. Sains Komun. dan Pengemb. Masy. [JSKPM]*, vol. 5, no. 5, pp. 669–683, 2021, doi: 10.29244/jskpm.v5i5.881.

[6] P. Ahmad, R. Indriani, and Y. Boekoesoe, "Perbandingan pendapatan padi wasah dari Anjan," *Gorontalo. Univ. Negeri Gorontalo*, 2023.

[7] U. Khasanah, "Pertumbuhan dan hasil padi varietas inpara 1 dan aksesi padi beras hitam serta upaya persilangannya," 2020.

[8] A. Baihaqi, "Analisis efisiensi teknis dan ekonomis usahatani padi sawah sistem tanam jajar legowo di Kecamatan Kramatwatu Kabupaten Serang," pp. 1–23, 2021.

[9] I. Ramli, F. Khairani, F. Fachruddin, and D. S. Jayanti, "Pemetaan kinerja sistem irigasi berbasis webgis pada daerah irigsi Krueng Jreu Kabupaten Aceh Besar," *agriTECH*, vol.

42, no. 2, p. 177, 2022, doi: 10.22146/agritech.64953.
[10] M. S. Argo, F. Tasik, and S. Y. V. . Goni, "Peningkatan pendapatan kesejahteraan keluarga di masa pandemi covid-19 (studi kasus pada penjual makanan di kawasan Boulevard II Kelurahan Sindulang Dua Kecamatan Tuminting Kota Manado)," *J. Ilm. Soc.*, vol. 1, no. 1, pp. 1–10, 2021.
[11] D. Windyanita, M. Cahya, F. N. Khafida, and Y. Yulikasari, "Pengaruh pengakuan pendapatan terhadap laporan laba rugi pada perusahaan depo air minum, Surabaya," *SENTRI J. Ris. Ilm.*, vol. 2, no. 1, pp. 205–210, 2023, doi: 10.55681/sentri.v2i1.449.
[12] C. Ratnasari, W. Pontoh, and R. Lambey, "Evaluasi perlakuan akuntansi pengakuan dan pengukuran pendapatan berdasarkan Psak 23 Pada Pt Aneka Gas Industri, Tbk = Filling Station Manado," *J. Emba J. Ris. Ekon. Manajemen, Bisnis dan Akunt.*, vol. 9, no. 1, pp. 724–736, 2021.
[13] U. Tahu, B. U. Solekah, D. I. Desa, K. E. C. P. Ratu, and K. A. B. W. A. Y. Kanan, "Analisis biaya produksi dan pendapatan pada oleh : aldila gangsar riasih jurusan akuntansi syariah fakultas ekonomi dan bisnis islam institut agama islam negeri (Iain) Metro 1444 H / 2022 M," 2022.
[14] Achmad, Amir, and Azzahrah, "Penerapan manajemen ekonomi islam pada proksi batik labako," *J. Ekon. dan Huk. Islam*, vol. 4, no. 1, p. 15, 2020.
[15] Maesaroh, Furniawan, and T. Agustiara, "Pengaruh biaya bahan baku terhadap volume produksi pada cv.shaniqua marigold bamboo di Rangkasbitung," *E-Journal Stud. Manaj.*, vol. 10, no. 1, pp. 1–8, 2021.
[16] I. Yogatama, "Jurnal teori produksi. Jurnal Teori Produksi.," *J. Teor. Produksi*, vol. 2, no. teori produksi yang diterapkan, pp. 1–19, 2020.
[17] Martha Sinawangresmi Setiasih, M. Wullur, and J. S. B. Sumarauw, "Analisis proses produksi di Cv. Anugerah Persada Teknik, Di Sepanjang, Jawa Timur," *J. EMBA J. Ris. Ekon. Manajemen, Bisnis dan Akunt.*, vol. 11, no. 1, pp. 12–22, 2023, doi: 10.35794/emba.v11i1.45642.
[18] Sudariana and Yoedani, "Analisis statistik regresi linier berganda," *Seniman Trans.*, vol. 2, no. 2, pp. 1–11, 2022.
[19] S. H. SAHIR, *Metodologi penelitian. Medan: Penerbit KBM Indonesia.* 2022.
[20] T. Pakpahan, "Analisis luas lahan minimum untuk peningkatan Universitas Medan area kesejahteraan petani padi sawah, di desa diajukan sebagai salah satu syarat untuk memperoleh gelar sarjana di Program Studi Agribisnis Fakultas Pertanian Universitas Medan Area," 2023.
[21] Mardhiah, A, D. E. Puspita, R. Hayati, M. Mulyadi, and Z. Fuadi, "Hubungan karakteristik sosial ekonomi dengan pendapatan petani pengguna teknologi rice transplanter di Kecamatan Indrapuri Aceh Besar," *J. Hum. J. Ilmu Sos. Ekon. dan Huk.*, vol. 9, no. 1, pp. 194–204, 2025, doi: 10.30601/humaniora.v9i1.5961.