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The Effect of Intensification of Rainfed Paddy Rice on Rainfed Paddy Rice Production in Martapura District, East OKU Regency

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A B S T R A C T

This study aims to analyze the effect of the intensification of rainfed lowland rice on rainfed lowland rice production in Martapura Sub-District, East OKU Regency. The type of research used in this study is a quantitative descriptive method. The data analysis used in this study is multiple regression analysis. The results showed that the rainfed lowland rice intensification program in Martapura Sub-District, East Ogan Komering Ulu Regency, partially and simultaneously affected lowland rice production. Variables use of high-yielding seeds (X1), use of dolomite (X2), use of urea fertilizer (X3), use of NPK fertilizer (X4), use of liquid organic fertilizer (X5), use of pesticides (X6) and labor (X7) have a positive effect and significant effect on lowland rice production in Martapura District, East Ogan Komering Ulu Regency. The variable that has the most influence on lowland rice production in Martapura Sub-District, East Ogan Komering Ulu Regency, is the use of superior seeds with an expected value of the partial regression coefficient (beta coefficient) of 3.099.

1. INTRODUCTION

1.1. Research Background

Agriculture is a sector that the Indonesian government might utilize to boost the economy. Because Indonesia is known as an agricultural nation, which is a nation with a big number of agricultural-related occupations [1]. Nonetheless, the management and current procedures in the agriculture sector indicate that there are still issues. Poor farmer well-being is one of the most significant issues in Indonesian agriculture. The average per capita income in the agriculture sector is significantly lower than the average per capita income in other industries, especially manufacturing and services. Thus, agriculture is no longer an appealing business sector.

The development of the food crop sector is one of the key strategies in spurring economic growth in the future [2]. In addition to acting as a large source of foreign exchange, it is also a source of life for most of the Indonesian population. Along with the increasing population in Indonesia, there has been a concern about "food insecurity" in the future. In addition, with the increasing level of education and welfare of the community, there is also an increase in per-capita consumption for various types of food crops. As a result, Indonesia needs additional food availability to compensate for the population growth rate, which is still quite high.

Related to this, one of the government's efforts to increase rice harvest productivity in Indonesia is through an agricultural intensification program, so the government issued a Regulation of the Minister of Agriculture of the Republic of Indonesia Number 56 / Permentan / Rc.040 / 11/2016 concerning Guidelines for the Development of Agricultural Areas, then in various regions in Indonesia create agricultural intensification programs to increase crop productivity to meet food needs every year experienced an increase [3].

Agricultural intensification is a government program to increase crop productivity in Indonesia through the best management of existing agricultural land to increase agricultural yields [4]. To support the agricultural intensification program, the first is the establishment of GAPOKTAN (Farmer Group Association) in the farmer business group. There is a cooperative that aims to provide savings and loans funds to members, and as a forum for agricultural intensification programs, secondly the use of agricultural technology, so the government provides facilities in the form of tractor machines, machines for planting, and machines for harvesting, thirdly providing counselling on the

correct farming techniques, The fourth provides fertilizer subsidies for members of the farmer group, the fifth provides superior seeds, the sixth builds partnerships for the distribution of harvest yield.

The purpose of agricultural intensification is to encourage an increase in the income and standard of living of farmers to meet domestic food needs to strengthen food security [5], the implementation of planting area plans and production estimates of intensification of food crops, plantations, fisheries and superior commodities as well as the income of their respective farming businesses, and the realization of policy formulations and operational steps in the implementation of agricultural intensification [6].

One of the areas implementing the agricultural intensification program is Ogan Komering Ulu Timur Regency. This district is an area with potential in the agricultural sector which has a fairly large irrigated area East OKU Regency as an area with great potential in the primary sector of agriculture and plantations, has a development in the number of agricultural land areas that continues to increase. In 2020 the area of rice planting land in East OKU Regency amounted to 175,311.30 hectares, increasing to 181,796.96 ha in 2021. This data shows how rural the area in Ogan Komering Ulu Timur district is. The abundance of rice fields that are the superior potential of the village needs to be improved in a clearer direction with this potential, Ogan Komering Ulu Timur Regency is very suitable for implementing agricultural intensification programs.

Martapura District, East OKU Regency's crop productivity is still low and uneven. In addition, the per capita income of farmers and farm laborers per month is below the poverty line. Martapura District, East OKU Regency farmers still experience various problems. Related to this, it demands improvements to be made, hoping to make the agricultural sector a great opportunity. Therefore, guided by the Ogan Komering Ulu Timur Regent Regulation Number 45 of 2016 concerning Guidelines for Agricultural Intensification of Ogan Komering Ulu Timur Regency in 2016/2017, the Ogan Komering Ulu Timur Regency government has made various programs to increase the productivity of agricultural products in Ogan Komering Ulu Timur Regency, which aims to increase rice yields, so as to prosper farmers in Ogan Komering Ulu Timur.

Table 1. Rice Planting Area Detailed by Subdistrict in East OKU Regency 2018 – 2021

No	Regency	Planting Area (Ha)			
		2018	2019	2020	2021
1	Martapura	5,030.00	3.675.00	5.310.60	5.890,70
2	Mayang Flower	5.705.30	1.459.90	2.414.80	2.917.86
3	Jaya Pura	4.215.80	2.184.60	3.403.30	3.983.70
4	Buay Peliung Leaders	11.632.10	8.026.20	10.944.10	11,123.50
5	Buay Madang	14.348.50	14.092.70	13.231.70	13.971.95
6	Buay Madang East	19.773.40	21.161.20	17.141.50	17.889.70
7	BP Nation King	10.137.20	9.133.70	9.567.10	10.036.40
8	Madang Tribe II	10.697.50	9.515.50	12.155.60	12.859.80
9	Madang Tribe III	2.507.50	3.796.40	4.744.40	5.121.30
10	Madang Tribe I	14.370.70	16.100.90	15.881.20	16.002.20
11	Belitang Madang Raya	9.423.40	8.722.50	8.900.00	9.120.00
12	Belitang	11.111.40	11.388.30	10.926.60	10.926.60
13	Belitang Jaya	2.645.70	2.157.40	2.414.70	2.414.70
14	Belitang III	5.956.40	5.630.70	5.052.00	5.052.00
15	Belitang II	6.492.80	4.399.00	6.824.80	6.824.80
16	Belitang Mulya	6.225.90	5.804.60	6.322.40	6.322.40
17	Semendawai Tribe III	12.237.40	8.634.20	13.453.60	13.453.60
18	Semendawai East	7.985.80	6.297.60	9.447.40	9.447.40
19	Cempaka	10.863.90	10.591.70	10.224.60	11.008.35
20	Semendawai West	9.335.20	7.085.90	6.950.90	7.430.00
	OKU East	182,713.9	159,858.2	175,311.3	181.796.96

Source: East OKU District Agriculture Office, 2022

The Agricultural Intensification Program was created as a policy innovation from the Agriculture Office of Ogan Komering Ulu Timur Regency to increase the productivity of farmers' harvests in Ogan Komering Ulu Timur Regency to meet domestic food needs to strengthen food security. Martapura District is one of the districts whose rice crop productivity is still low compared to other districts, ranging from 5-5.5 tons/ha in 2021. Agriculture in the Martapura sub-district plays an important role for the survival of the community as well as a source of economic support which can undoubtedly affect the food security of the people of Martapura District itself.

Efforts to increase agricultural output in Martapura District, one of which is by improving the quality of human resources, in this case, the quality of farmers. The quality of farmers can be improved through agricultural intensification programs by providing training and knowledge on good planting procedures through containers called Poktan (Farmer Groups) spread across each village. Training activities in the agricultural intensification program implemented in East OKU Regency include the use of superior seeds, tillage using dolomite, use of urea fertilizer, the use of NPK fertilizer, the use of liquid organic fertilizers, and the use of effective and efficient pesticides to increase rice production in Martapura District and to meet domestic food needs to strengthen food security.

In addition to providing training, the East OKU Agriculture Office, through intensification activities, supports this food estate, also assists in production facilities in the form of tillage costs, dolomite / agricultural lime, rice seeds, herbicides, artificial fertilizers (Urea and NPK), and Liquid Organic Fertilizers / Biofertilizers. Where the assistance of this production facility is given to farmers who are members of existing farmer groups.

Table 2. Location and Productivity of Agricultural Intensification Program in Improving Food *Security (Food Estate*) Martapura district in 2020-2021

No	Village	Farmer Groups	Broad Land (Ha)	Produtivity	
				2020	2021
1	Veteran Jaya	Prosperous Shoots	15	4.5	9.6
2	Veteran Jaya	Cadets of Peasants	15	4.8	8.6
3	Veteran Jaya	Love to Prosper	18	5	8.6
4	Veteran Jaya	Tani Maju	17	5	8.8
5	Cape Kemala West	Sri Fortune	15	6	8.1
6	Cape Kemala West	Sari Challenger	18	5.6	8.3
7	Cape Kemala West	Kemala Sari	15	6.4	8.5
8	Cape Kemala	Kemala tani	15	5.7	8.3
9	Cape Kemala	Kampung Sawah Indah	15	5.9	8.3
10	Bukit Sari	Young shoots	6	6	9.6
11	Bukit Sari	Young Rays	15	5,8	9.6
12	Bukit Sari	Prosperous Rice Fields	16	5.7	9.6
13	Bukit Sari	Sekar Arum	15	5.8	11.2
14	Bukit Sari	Punjul Sari	15	6	10.7
15	Bukit Sari	Blooming Sari	17	6.1	8.9
16	Bukit Sari	Forward Works	15	6	9.6
17	Martapura Hamlet	Mekar Jaya	15	5.5	8.5
18	Martapura Hamlet	Sido Emerges New	16	6	8
19	Martapura Hamlet	Sido Appears	15	6	8.3
20	Martapura Hamlet	Young shoots	18	5.5	8.4
21	Martapura Hamlet	Blooming Sari	15	5.5	8.5
22	Kotabaru	Mutual Aid	18	6	8.6
23	Kotabaru	Karang Anyar Jaya 2	18	6.5	8.7
24	Kotabaru	Move Forward Together	15	6.3	8.9
25	Kotabaru West	Sari Makmur	15	5.5	8.6
26	Kotabaru South	Blooming Sari	8	4	5.5
27	Kotabaru South	Venture Works	15	4.5	6
28	Pakusengkunyit	Works by Mulya	15	4.7	9.9
29	Pakusengkunyit	Prosperous Business	15	5.5	7.6
30	Terukis Rahayu	The Work of Peasant Youth	15	5.1	8.6
31	Terukis Rahayu	Tani Maju Works	15	5.2	8.5
	Sum	10 Villages	470 ha	166.3	268.9
	Average			5.36	8.6

Source: OKUT District Agriculture Office 2022

Based on Table 1.2. In 2021 the rice productivity of farmers before the agricultural intensification program was held at 5.36 tons; in 2021, it increased to 8.6 tons. With the implementation of this program, it is hoped that it can improve food *security (Food Estate*) of Martapura District in 2021.

Based on the above problems, it is necessary to conduct a study on the effect of the intensification of rainfed paddy rice on rainfed paddy rice production in Martapura District, East OKU Regency.

2. METHODS

The type of research used in this study is a quantitative descriptive method. The data obtained from the study population sample are analyzed using the statistical method and then interpreted. The types and sources of data used in this study are primary data, namely research data sources obtained directly from the original source (not through intermediaries). Researchers specifically collect primary data to answer research questions. In this study, the data was taken based on interviews or interviews with respondents. Secondary data is a source of research data obtained by researchers indirectly through intermediary media or obtained and recorded by other parties. In this study, the sampling technique was random, also known as probability sampling. The population and samples are rice farmers who are members of farmer groups participating in the rice intensification program in Martapura District. The farmer group in question is a farmer group that is still active in rice farming both on their own land and leased land from land owners in Martapura District, Ogan Komering Ulu Timur Regency. Data was collected through primary data and secondary data. Primary data are obtained through questionnaires. Secondary data were obtained through literature studies, relevant agencies in the study. Primary data were disseminated through questionnaires to rice farmers and with in-person interviews. The withdrawal of the example is carried out using the Slovin Formula as follows:

$$n = \frac{N}{1 + N.e^2}$$

Information:
n : Sample size
N : Population size
E^2 : Error margin (10% or 0.1)

Based on calculations using the Slovin formula, the number of samples in this study was 78 paddy rice farmers. The data analysis used in this study is multiple regression analysis. In the processing of data analysis using the SPSS application.

Table 3. Data on Rice Paddy Farmers in Martapura District, East OKU Regency

No.	Farmer Group Name	Number of Paddy Rice Farmers (People)
1	Blooming Sari	18
2	Sido Appears	23
3	Sri Fortune	31
4	Young shoots	19
5	Young Rays	28
6	Prosperous Rice Fields	21
7	Karang Anyar Jaya 2	22
8	Forward Works	15
9	Move Forward Together	18
10	Blooming Sari	29
11	Sekar Arum	35
12	Punjul Sari	26
13	Kemala Tani 2	22
14	Sari Challenger	24
15	Kemala Sari 1	26
	Sum	357

3. RESULT AND DISCUSSION

3.1. General State of the Research Area

Martapura Subdistrict is the capital of Ogan Komering Ulu Timur Regency. From a geographical point of view, Martapura District is a non-coastal area with an area height of less than 500 m from sea level. The Martapura Subdistrict is directly adjacent to the surrounding autonomous region. Buay Pemuka Peliung District borders the east, the west is bordered by Jayapura District, while the north is bordered by OKU Regency, and the south is bordered by Lampung Province. Based on Ministerial Regulation No.137 of 2017, Martapura District has an area of 102.16 km2. The area is divided into 7 villages and 9 villages. 1 Kelurahan and 3 villages among them have more than 10% of the total area of the sub-district, namely Veteran Jaya Village, Kota Baru Village, Keromongan, and South New City. The other two villages, namely Perjaya and Sukomulyo villages, have an area of 5-10 percent of the total sub-district area. Meanwhile, the other 10 villages/kelurahan have less than 5% of the total area of the sub-district.

3.2. Social and People's Welfare

The quality of the population is one of the mirrors of the social situation and welfare of the people in an area. One of the improvements in the population's quality is supported by the existence of adequate educational and health facilities and facilities in the region. Based on the results of the Village Potential Data Collection (PODES), in 2019 there were already 30 elementary schools in Martapura District spread across almost all villages/ kelurahan. However, the number of secondary and vocational education facilities is still relatively low. While colleges there are only 1. In terms of health facilities, within the Martapura District area there are 1 hospital, 7 polyclinics/treatment centers, 2 health centers without hospitalization, which are actively serving the community.

Meanwhile, in terms of medicines, there are already 7 pharmacies spread across several villages in Martapura District. In addition to education and health, the social state and welfare of the people are also reflected in housing indicators. Based on the 2019 PODES data collection results, most villagers/villages in Martapura District use 3 kg of LPG gas for cooking fuel. Meanwhile, the majority of drinking water sources come from well water. Regarding sanitation, most villagers/villages in Martapura District have their own latrine facilities.

Agriculture is a leading sector in Ogan Komering Ulu Timur Regency whose production activities are spread almost throughout the district including Martapura District. Based on data from Horticultural Agricultural Statistics - BPS, there are vegetable crops in the form of chilies and tomatoes produced in the Martapura District area. In addition to vegetables, there are several biopharmaceutical plants in the district, such as ginger, laos, kencur, and turmeric. Also, some ornamental plants such as orchids and roses are cultivated by farmers in Martapura District. Not only horticulture in the Martapura District area there is also a plantation area which is one of the forums for the economic activity of several communities. Plantation crops found in Martapura District are coconut, oil palm, rubber, coffee, and cocoa. Of the several types of plantation crops planted, the most cultivated type in Martapura District is Karet. The area of rubber plants in Martapura District in 2019 reached 1,387 ha with a production of 235.40 tons. In 2020 the area of rice planting land in East OKU Regency of 175,311.30 ha rose to 181,796.96 ha in 2021.

3.3. Identity of An Example Farmer

3.1.1. Gender

The identity of respondents by gender can be described in table and the following graph:

Table 4. Respondent's Identity By Gender

Gender	Frequency	Percentage (%)
Men	76	97.44
Woman	2	2.56
Total	78	100

Sumber: Primary data treated, 2022

Table 4 shows that out of 78 respondents observed, it is known that 76 respondents were male (97.4%) 2 respondents were female (2.56%).

3.3.2. Age of Sample Farmers

The age of sample farmers who do paddy rice farming in Martapura District, Ogan Komering Ulu Timur Regency varies,

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ranging from 20-85 years. For more details about the age of farmers, examples are presented in Table 5. Based on calculations using the Slovin formula, the number of samples in this study was 78 paddy rice farmers. The data analysis used in this study is multiple regression analysis. In the processing of data analysis using the SPSS application.

Based on Table 5 above the age of farmers, the dominating example is the age group of 41-50 years, which is 24 people or 30.77%.

Table 5. Farmer Identity Example Based on Age Group

No.	Farmer's Age (Years)	Number (People)	Percentage (%)
1	20-30	3	3.85
2	31-40	17	21.79
3	41-50	22	28.21
4	51-60	24	30.77
5	61-70	5	6.41
6	71-85	7	8.97
Sum		78	100

Source: Processed Data, 2022.

3.3.3. Sample Farmer Land Area

From the results of the study for land area divided by land area less than one (<1) hectare and one (1) hectare, the following data on the land area of farmer examples can be seen in the Table 7.

Table 6. Characteristics of Sample Farmers Based on Land Area

No	Land Area (Ha)	Sum	Percentage (%)
1.	<1	23	29.49
2.	1	55	70.51
Sum		83	100

Source: Processed Data, 2022.

From table 6, it can be seen that most of the sample farmers for rice paddy farmers are the most on the land area of farming more than 1 hectare with a total of 55 people with a percentage of 55%. Meanwhile, farmers for example the area of farmland with an area of less than one hectare amounted to 23 people with a percentage of 29.49%. The land owned by each farmer is generally used entirely to grow paddy rice.

3.4. Analysis of the Effect of Intensification of Rainfed Rice on Rainfed Rice Production in Martapura District, East OKU Regency

This study included a number of tests, including normality tests, multicollinearity tests, and heteroskedasticity tests, to evaluate whether there were departures from conventional assumptions. The significance of the Kolmogorov-Smirnov test for normalcy produced asymptotic values. The sig (2-tailed) was 0.569 > 0.050, indicating that the data in the study followed a normal distribution. All variables passed the multicollinearity test with a Tolerance value more than 0.1 and a VIF value of less than 10, indicating that there was no multicollinearity in the regression model. The heteroskedasticity test utilizing a scatter plot diagram reveals that the points are dispersed arbitrarily and do not create a distinct or regular pattern. This indicates that the disruptor error has the same variance (homoskedasticity), hence heteroskedasticity does not exist in the estimated regression model.

Hypothesis test or statistical test or also called first order test, which consists of coefficient of determination or also called R^2, F-test or also called simultaneous test, and t-test or individual test The results of statistical tests can be seen in Table 7.

Table 7. Regression Analysis Results of Factors Affecting Rice Production in Martapura District, Ogan Komering Ulu Timur Regency

Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
Constant	2.686	0.164		16.382	.000
High-yielding Seeds (X_1)	2.671	0.156	3.099	17.128	.000**
Use of Dolomite (X_2)	.151	0.110	-0.029	2.381	.002**
Urea Fertilizer (X3)	.001	0.001	-0.024	2.078	.004**
NPK fertilizer (X_4)	.080	0.001	-0.003	1.910	.003***
Liquid Organic Fertilizer (X_5)	.004	0.029	0.004	1.745	.003***
Pesticides (X_6)	5.220	0.294	1.040	17.786	.000**
R. Square		0.998			
Adjust R. Square		0,997			
F Count		5.0533			0. 000***
F Table		2.23			
t Table 1 %		1.66660			
t Table 5 %		1.99394			

Source: Primary Data Analysis, 2022.

Information:

= Noticeable effect on 99% confidence level

** = Has a noticeable effect on the 95% confidence level

ns = No real effect

The degree of significance is the level of trust. In this study, using a significance level of 0.05 (5%) means that the level of trust or the level of truth is 95%, and the error level is 5%. If you look back at the form of the equation after drawing a natural logarithm and a multiple linear regression equation.

$$Y= 2.686+ 2,71LnX\ 1+_{0.151}\ LnX_2+ 0.001\ LnX_3+ 0.080\ LnX_4+ 0.004\ LnX_5+ 5,220\ LnX_6$$

Such multiple linear regression equations can be interpreted as follows:

1. Superior Seeds are dummy variables, where the use of superior seeds = 1 and local = 0. Dummy variables are variables used to quantify qualitative variables. Dummy variables are categorical variables that are thought to have an influence on continuous variables. In this study where the superior seed variable is a dummy variable that has a significant effect on α=5%, where the coefficient value of 2,671 means that if the seeds used by farmers to carry out rice farming activities are superior seeds, it will be different from the use of local seeds of 2,671 units.

2. The variable regression coefficient of dolomite use of 0.151 indicates that every 1% increase in dolomite fertilizer will increase production by 0.151 %.

3. The variable regression coefficient of dolomite use of 0.151 indicates that every 1% increase in dolomite fertilizer will increase production by 0.151%.

4. The variable regression coefficient of urea fertilizer use of 0.001 indicates that every 1% increase in dolomite fertilizer will increase production by 0.001 %.

5. The variable regression coefficient of NPK fertilizer use of 0.080 indicates that every 1% increase in the amount of NPK fertilizer will increase production by 0.080 %.

6. The variable regression coefficient of liquid organic fertilizer use of 0.004 indicates that every 1% increase in liquid organic fertilizer will increase production by 0.004%. 7. A variable regression coefficient of 5,220 indicates that every 1% increase in the amount of pesticides will increase the amount of production by 5,220%. 8. The variable regression coefficient of labor of 1,431 indicates that any 1% increase in the number of workers will increase production by 1,431 %.

The results of the F test showed the effects of simultaneous testing of all conjecture parameters at a confidence level of 95%, indicating that the F value of the F table > F count (5.0533> 2.330). It can be said that free variables which include the use of superior seeds (X1), the use of dolomite (X2), the use of urea fertilizer (X3), the use of NPK fertilizer (X4), the use of liquid organic fertilizers (X5), the use of pesticides (X6) and labor (X7) together have a real effect on rice production in Martapura District, Ogan Komering Ulu Timur Regency. The t test results showed that the variables of land area, number of seeds, labor and pesticides individually significantly affected paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency. Meanwhile, the fertilizer variable does not affect paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency.

The use of superior seeds has a t count value > t table, which is 17,786 > 1.99394 which means that the land area has a real effect on paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency at a 95% confidence level. This is following the opinion [7], which states that the use of high-yielding rice varieties, responsive to fertilization and resistant to major disease pests accompanied by improved irrigation and cultivation techniques has been shown to increase productivity, production efficiency, and food adequacy.

One of the agricultural intensification programs in Martapura District, East OKU Regency, is the provision of counseling to farmers through Gapoktan. With the farmer group meeting, the chairperson can lead and provide new information obtained from extension workers and other people. The farmer group meeting is also very supportive of meeting all members to exchange ideas, opinions and be able to solve problems in their farming business. In addition, with regular farmer group meetings with extension workers, farmers can have broader knowledge to apply new technologies or innovations such as the use of new superior varieties of paddy rice. In addition to receiving material assistance and technical support, farmers must also have knowledge and skills in applying new technologies. Therefore, agricultural extension workers of East OKU Regency are required to provide direct assistance to farmers, both in regular meetings and in the field.

The results of this study align with the research [8] which states that seed variables influence production. Seeds play an important role in supporting successful production. Then the research conducted by [9] that technological innovations that contribute quite dominantly to the increase in rice production, partially superior seeds contribute approximately 20 percent, but if integrated with fertilizers and irrigation, the contribution reaches 75 percent to increase production. In line with the research [10] that seeds have a significant real effect on rice production. According to Ref. [11], high production is obtained using good, quality and superior seeds.

The dolomite fertilizer variable has a calculated t value > t table of 2,381>1.99394, meaning dolomite fertilisation significantly affects paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency at a 95% confidence level. According to Ref. [12], adding dolomite 2-4 tons / ha can increase the soil pH between 1-2, so that the soil can reach a pH of 5.29–6.29, which will be ideal for the development of paddy rice plants. Farmers on old rice fields do not use dolomite fertilizer for their rice fields because old rice fields do not contain high levels of soil acid. This study's results align with the research conducted by[13] which states that the application of dolomite fertilizer can reduce soil acid levels and increase paddy rice's growth and production.

These results are in line with the research [14], dan [15] that dolomite fertilizer has a real effect on paddy rice production. Fertilizer is an important element in increasing paddy rice production. The application of fertilizer with the right composition by farmers in Martapura District, Ogan Komering Ulu Timur Regency, increases paddy rice production. The use of fertilizers used according to dosage results in increased productivity per unit of land and increased production.

The urea fertilizer variable has a calculated t value > t table, which is 2,078>1.99394 which means that urea fertilizer significantly affects paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency at a 95% confidence level.[16], To increase productivity can be implemented in various ways, one of which is by using more intensive fertilizers on rice plants. According to [17], Urea fertilizer helps the growth of rice plants to be better because it will reduce competition between the plants themselves and weeds so that plants get nutrients, sunlight and the scope of growth**.** One of the agricultural intensification activities carried out in Martapura District is advising farmers to compensate urea fertilizer with other fertilizers such as organic fertilizers so that the growth process and production results are good. In addition to the appeal of farmers' knowledge about the dosage of urea fertilizer use, it is also one of the materials given during counseling because the use

of excessive amounts of urea fertilizer will actually cause plants to wilt easily, build up concentrations of toxic salts in the soil so that there is an imbalance in soil chemistry which in the end can affect rice production[18]. This study's results align with the research [19], dan [20] that urea fertilizer noticeably affects rice production.

The NPK fertilizer variable has a positive and significant effect on paddy rice production with a real level of 1 percent The value of the NPK fertilizer coefficient is 0.004. The figure explains that if the addition of NPK fertilizer is 1 percent assuming other inputs remain, production can still be increased by 0.004 percent. The recommended dose of NPK fertilizer for paddy rice plants is 300 Kg/Ha[21]. Conditions in the field prove that the use of NPK fertilizer by paddy rice farmers is not fully in accordance with the recommendations where several farmers have met the dose of NPK fertilizer use. However, respondent farmers' average use of NPK fertilizer is 155 kg.

The use of NPK fertilizer is already significant but can still be increased according to the recommendations for use so that the increase in production can increase. NPK fertilizer is a type of fertilizer consisting of three elements, namely element N which plays a role in making plants greener, accelerating plant growth (height, number of saplings, number of branches), increasing the protein content of the crop, spurring root growth, forming a good root system, flowers, fruits increase plant resistance to pest attacks. The application of NPK fertilizers that have a significant influence on production is in line with research conducted by[22]. Penelitian [23] dan [24] states that paddy rice production is influenced by two fertilizers: Urea and NPK.

Liquid organic fertilizer has a calculated value of > t table, which is 1,745 > 1.66660 which means that liquid organic fertilizer significantly affects paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency, at a 99% confidence level. Pesticides have an elasticity value of 0.004 which means that if pesticides are added by 1%, then there is an increase in paddy rice production by 0.004%, assuming that other variables are considered zero or constant.

Ref. [25] states that adding liquid organic fertilizer can increase rice yields. Applying liquid organic fertilizer at the right dose can increase the availability of nutrients in the soil, so it will affect crop production. The application of liquid organic fertilizer that has a significant influence on production is in line with the research conducted by [26]

Pesticides have a t count value > t table which is 17,786 > 1,991 which means that pesticides have a real effect on paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency at a confidence level of 95%. Pesticides have an elasticity value of 5,220 which means that if pesticides are added by 1%, there is an increase in paddy rice production by 5,220% assuming that other variables are considered zero or constant. The role of pesticides in paddy rice production is different from other inputs. Pesticides do not increase production but save production from pest and disease attacks. The relationship with increasing production occurs because healthy plants will be more responsive to nutrient absorption so that paddy rice production increases.

The labor variable has a positive and significant effect on rice production in Martapura District, East OKU Regency, which means that if the workforce is larger, the greater the productivity will be obtained. The input coefficient of production on the labor production factor is 1, 431. This means that if there is an increase in labor by 1% then there is a tendency that rice production can be increased by 1,431%. The trend that occurs today, people who do rice farming are mostly elderly people while the younger generation is more interested in working in industry or migrating to big cities. If this happens continuously, it can threaten rice production in the future, especially in Central Java. The development direction of East OKU Regency, the food crop agriculture sector, is still one of the sectors expected to absorb and provide job opportunities for the workforce of East OKU Regency. Therefore, in the future, there is a need for breakthroughs to be able to attract young workers, to want to enter the agricultural business. Thus, the farm sector can become one of the sectors in East OKU Regency that can absorb quite a lot of labour, and on the other hand rice production can be increased because the addition of labor within a specific limit will have a positive impact on increasing production, and regional stability. These findings are in line with [27] which found that the number of workers had a noticeable influence on the production of rice farming. Nevertheless, it is different from the findings [28] that the number of workers does not have a significant influence on rice production in East Java.

The standard value of the partial regression coefficient (beta coefficient) is the use of superior seeds with a value of 3,099 which means that the use of superior seeds has the greatest influence in paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency. The area of land cultivated not only directly affects production. Superior seeds will also affect the farm management system, which will then affect the use of technology, capital and other production factors, ultimately affecting production.

Adjusted R Square value of 0.998. The Adj R2 value means that 99.8% of paddy rice production in Martapura District, Ogan Komering Ulu Timur Regency, can be explained by the free variables described in the model, such as the use of superior seeds (X1), the use of dolomite (X2), the use of urea fertilizer (X3), the use of NPK fertilizer (X4), the use of liquid organic fertilizer (X5), the use of pesticides (X6) and labor (X7). Meanwhile, the remaining 0.2% is explained by other variables outside the study, such as weather, climate, farming experience, farmer age, technology and others.

4. CONCLUSION

The rainfed paddy rice enhancement scheme in Martapura District, Ogan Komering Ulu Timur Regency, influences paddy rice production partially and simultaneously. The variables of using superior seeds (X1), dolomite (X2), urea fertilizer (X3), NPK fertilizer (X4), liquid organic fertilizers (X5), pesticides (X6), and labor (X7) have a good and significant effect on rice paddy productivity in the Martapura District of the Ogan Komering Ulu Timur Regency. Using excellent seeds with a standard value of partial regression coefficient (beta coefficient) of 3,099 has the greatest influence on paddy rice output in Martapura District, Ogan Komering Ulu Timur Regency. The production of paddy rice farming businesses in Martapura District, Ogan Komering Ulu Timur Regency, is influenced by land area, number of seeds, fertilizers and pesticides; therefore, farmers in Martapura District, Ogan Komering Ulu Timur Regency are advised to optimize their use of the land area, number of seeds, fertilizers, and pesticides in order to increase their production. Based on the description above, the following recommendations can be made based on the findings of this

study: Farmers in Martapura District, Ogan Komering Ulu Timur Regency are advised to optimize the use of land area, a number of seeds, fertilizers, and pesticides in order to increase paddy rice production.

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