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ECONOMIC EFFICIENCY TO USE OF INPUT (SUBSIDIZED FERTILIZER) IN RICE FARMING IN MUSI RAWAS REGENCY (Case Study of Sentra Beras Sub-district)

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ABSTRACT
This research aims to find out how the use of inputs affects the results of lowland rice production and analyze the economic efficiency of using subsidized fertilizers. This research was conducted in three sub-districts which are rice centers in Musi Rawas Regency, namely Purwodadi, Tugu Mulyo and Muara Beliti sub-districts. The research sample was 150 farmers spread across the three sub-districts. Data collection used primary and secondary data. Data analysis used multiple linear regression and Marginal Product Value. The research results show that the factors that influence rice production results are labor and urea fertilizer, while seed factors, phonska fertilizer, and pesticides do not affect rice production. The results of calculating the economic efficiency of subsidized fertilizer, namely urea fertilizer, have the value that the efficiency index value NPMx/Px > 1, namely 8.10. This means that the use of subsidized urea fertilizer is not efficient, and Phonska fertilizer has an efficiency index value of NPMx/Px > 1, namely 3.22. This means that the use of subsidized Phonska fertilizer is not yet efficient.

INTRODUCTION

One of the largest rice producing provinces in Indonesia is South Sumatra. The average production in South Sumatra is 5 tons/ha. The total production and area of 13 regencies and 4 cities in South Sumatra are shown below.

Table 1. Rice area, production and productivity by districts/cities in South Sumatra Province in 2023

Districts/Cities	Land Area (Ha)	Production (Ton)	Productivity (Ton/Ha)
Banyuasin	177,667	920,413	5.2
Empat Lawang	10,416	50,708	4.9
Lahat	13,410	68,922	5.1
Lubuk Linggau	1,265	6,679	5.3
Muara Enim	11,528	58,789	5.1
Musi Banyuasin	26,671	43,115	5.4
Musi Rawas	18,686	107,355	5.7
Musi Rawas Utara	2,687	11,976	4.5
Ogan Ilir	21,654	101,395	4.7
Ogan Komering Ilir	90,098	525,900	5.8
Ogan Komering Ulu	2,946	13,956	4.7
Ogan Komering Ulu Selatan	7,899	47,059	6.0
Ogan Komering Ulu Timur	106,700	716,876	6.7
Pagar Alam	3,582	18,709	5.2
Palembang	3,098	15,299	4.9
Pali	5,801	25,465	4.4
Prabumulih	36	159	4.4
Sumatera Selatan	**504,143**	**2,832,774**	**5.6**

Source: BPS South Sumatra Province. 2024

Musi Rawas Regency is one of the regions located in South Sumatra Province. This region is an area where the majority of the population earns their living as rice farmers. A large land area will affect the amount of production produced. The following is the land area and rice production in Musi Rawas Regency.

Table 2. Land area and amount of rice production in Musi Rawas Regency.

Years	Land Area (Ha)	Production (Ton)
2018	24.368,45	122.214,04
2019	21.935,15	103.511,64
2020	22.883,82	123.933,68
2021	20.352,72	120.025,94
2022	17.987,67	100.005,52
2023	18.686,00	107.355,00

Source: BPS South Sumatra Province. 2024

Based on the table above, it shows the amount of land area and rice production in Musi Rawas Regency which experienced increases and decreases in production. The highest rice production occurred in 2020 amounting to 123,933.68 tons with a land area of 22,883.82 Ha. Meanwhile, the lowest production occurred in 2022 amounting to 100,005.52 tons. However, in 2023

there will be an increase in output of 107,355.00 tons. This shows that the level of agricultural production is not only determined by the size of the land area but also by the level of use of production factors.

The other factors of production such as seeds, fertilisers, pesticides and labour. One way to improve production outcomes is to optimise the use of production factors. In this study, the researchers specifically discussed the production factors of land area, seeds, fertiliser, pesticides and labour. One of the efforts to increase rice production is the development of the seed sector (Rigi et.al.2019). In addition, the use of fertilizer production factors that are appropriate to the nutrients and the use of pesticides that are not excessive will affect production outcomes. Labour is also an important determinant, in the agricultural sector the use of labour is expressed by the amount of labour used, which is the amount of effective labour (Wulan.2022), (Maulia.Et.al, 2023).

Rice is a food crop that is a basic need for society. The rice production produced is of course inseparable from care and maintenance as well as the use of fertilizer, one of which is fertilizer. Fertilizer is one of the main needs in fulfilling nutrition for rice plants. The need for fertilizer is increasing, not only that, the increasingly expensive price of fertilizer makes it increasingly difficult for farmers to run their farming businesses. The existence of a subsidized fertilizer policy from the government makes things easier for farmers, so far subsidized fertilizer has helped farmers in meeting their fertilizer needs (Muzdalifah.2011), (Larasati.2022), (Alamri.2022).

The Ministry of Agriculture, through Minister of Agriculture Regulation (Permentan) Number 01 of 2024 concerning Amendments to Minister of Agriculture Regulation Number 10 of 2022, determines the allocation of subsidized fertilizer at 9.55 million tons or a double increase from the previous one which was set at 4.7 million tons. Referring to this regulation, the allocation of subsidized fertilizer for South Sumatra Province has also increased for both urea and NPK types. In detail, the previous allocation for South Sumatra consisted of 72,752 tonnes of urea and 69,452 tonnes of NPK. Meanwhile, according to what is stated in the new Minister of Agriculture, the allocation of subsidized fertilizer in South Sumatra has increased to 124,356 tons of urea, and 148,476 tons of NPK (Puspita. I.H. 2024). The increasing need for fertilizer means farmers need a large supply of fertilizer. This means that fertilizer is one of the supporting factors for food crop production so its existence and use have a very strategic position (Larasati, 2022).

Musi Rawas Regency is one of the Rice Center Regencies in South Sumatra Province. The areas that are rice centers in Musi Rawas Regency are Muara Beliti District, Tugumulyo District, and Purwodadi District. Regarding the provision of subsidized fertilizer, Musi Rawas district also received an allocation of subsidized fertilizer with 15,763 tons of Urea fertilizer and 7,419 tons of NPK fertilizer. This subsidized fertilizer not only makes it easier for

farmers to use fertilizer but also saves production costs in farming. To increase the production and productivity of rice plants, the use of fertilizer must be managed appropriately. The economic efficiency of using subsidized fertilizer aims to maximize production by saving production costs. On the other hand, the picture of subsidized fertilizer in Musi Rawas Regency is still a question mark as to whether it is sufficient for farmers' needs in their farming business. Apart from that, subsidized fertilizer prices are not suitable for farmers.

Many previous studies also examined the economic efficiency of farming. Some of them, namely (Umaroh, 2019), stated that one way to assess the success of farming is to measure the relative economic efficiency of farming. From the research results, there is a difference between small farmers who manage land area ≤ 0.41 ha more efficiently compared to large farmers who manage > 0.41 ha. The results of this research indicate that lowland rice farming in Sindangsari Village, Banjarsari District, Ciamis Regency has not provided the maximum level of profit to producers or farmers. According to (Hardiyanto, 2021), maximum profit is achieved if the farming management conditions are economically efficient. According to (Wahyuningsih, 2018) states that the level of allocation of use of production factors by farmers influences the amount of production produced, and the level of productivity, and can provide an overview of the level of economic efficiency achieved by farmers. According to (Rais, 2021) states that efficient use of production inputs (subsidized fertilizer) is very necessary so that the resulting production reaches maximum value.

Economically, the use of land area production factors, organic fertilizer, and urea fertilizer in lowland rice farming in Gunungsari Village, Sadananya District, Ciamis Regency is not yet efficient, while seed production factors, NPK fertilizer, labor, and pesticides are inefficient (Khoerunnisa, 2021). According to Iskandar (2022), production is closely related to efficiency, because the measure of efficiency is how effectively a combination of inputs is used to produce output. According to (Melese, et al, 2019) knowledge regarding the level of economic efficiency of rice production and the things that underlie it, can help see opportunities to increase rice production and productivity. Based on previous research regarding the economic efficiency of farming, it is important to know how the use of inputs affects the results of lowland rice production and analyze the economic efficiency of the use of rice farming inputs in Musi Rawas Regency.

RESEARCH METHODS

This research was conducted in Musi Rawas Regency which is located in three sub-districts, namely Purwodadi District, Tugumulyo District, and Muara Beliti District. These three sub-districts were chosen based on the consideration that these sub-districts are rice center sub-districts. Determining respondents used the purposive sampling method, namely taking samples that were

selected by considering certain criteria in the research. 1) Farmers with a minimum land area of 0.5 Ha. 2) Farmers who use subsidized fertilizer in lowland rice farming activities. The research sample consisted of 150 rice farmers from three sub-districts in Musi Rawas Regency.

Method of Collecting Data

The data used in this research are primary and secondary data. Primary data was obtained from rice farmers who used subsidised fertiliser. Secondary data were obtained from BPS, sub-district agricultural extension centres and other data related to the research. Survey techniques were used to collect data in this research, namely through direct observation and interviews with farmers. (Aprianti et al, 2020). (Cahyaningsih, et al, 2023).

Data Analysis Method

The analysis used in this research uses multiple regression analysis with a production function approach, which explains cause and effect relationships. Multiple regression analysis functions to determine the influence of production factors (land area, seeds, urea fertilizer, NPK fertilizer, pesticides, and labor) on lowland rice production results in three sub-districts, namely Muara Beliti Sub-district, Tugumulyo Sub-district, and Purwodadi Sub-district. the research connecting variable X to variable Y with the following equation (Suciaty 2019), (Hardiyanto, 2021):

$$Y = b_0 X_1^{b1} X_2^{b2} X_3^{b3} \ldots\ldots\ldots\ldots\ldots\ldots e^{\mu}$$

This production function will then be converted into a multiple linear function by transforming the equation into a natural logarithm (Ln) (Lutfiah, 2017). Then the production function equation will be as follows:

$$\text{Ln } Y = \text{Ln } b_0 + b_1 \text{ Ln } X1 + b_2 \text{ Ln } X2 + b_3 \text{ Ln } X3 + b_4 \text{ Ln } X4 + b_5 \text{ Ln } X5 + b_6 \text{ Ln } X6 + e\mu$$

where:

Y: Total production of lowland rice farming (kg)
B_0 : Constant/intercept
X1: Land area (ha)
X2: Seeds (kg)
X3: Urea Fertilizer (kg)
X4: NPK Fertilizer (kg)
X5: Pesticides (liter)
X6: Labor (HOK)
b_1- b_6 : Coefficient X1 - X6
μ : Error

To determine the extent to which the regression model used is accurate in representing groups of data resulting from direct observations at the research site, a coefficient of determination (R2) is needed. The greater the value of the coefficient of determination (closer to 1), the higher the accuracy of the variables being tested. The coefficient of determination can be formulated mathematically as follows (A. Lutfiah, 2017):

$$R^2 = \frac{bi \, \Sigma \, Xi \, Yi}{\Sigma \, yi^2}$$

where :

R^2 = Coefficient of determination

bi = Regression coefficient of the ith variable

xi = Deviation value of the i-th variable from its average value (xi – x)

yi = Deviation value of the i-th variable from its average value (yi – $\bar{y}$)

yi^2 = Squared deviation of a variable from the average value

The R^2 value ranges between 0 and 1, namely $0 > R^2 > 1$. If $R^2 = 0$, there is no relationship between variable X and variable Y. If $R^2 = 1$, then the regression model has perfect accuracy in predicting variable Y (rice production results). The greater the value of the coefficient of determination obtained, the greater the possibility that the regression analysis model used is more accurate in predicting the influence of variable X (land area, seeds, urea fertilizer, NPK fertilizer, pesticides, and labor) on variable Y (rice production results ricefield).

Furthermore, the research carried out can be completed by analyzing the economic efficiency index. The economic efficiency index is a test of the level of economic efficiency in the use of production factors, which is carried out by comparing the marginal (NPM) with the price of production factors (Px), which is the cost sacrificed per unit. Economic efficiency can be measured using the following formula:

$$\frac{NPMx1}{Px1} = \frac{NPMx2}{Px2} = \frac{NPMx3}{Px3} = \frac{NPMx4}{Px4} = \frac{NPMx5}{Px5} = \frac{NPMx6}{Px6} = 1$$

The equations of marginal product values (NPM) (Lutfiah., 2017) and (Wahyuningsih, 2018) are the following:

$$NPMxi = bi \, . \, \frac{\bar{Y}}{x1} \, . \, Hy$$

where :

NPMxi = Marginal product value of the i-th factor of production

bi = production elasticity/regression coefficient of the i-th factor of production

$\bar{Y}$ = average production of lowland rice

xi = average use of the i-th factor of production

Hy = selling price of lowland rice output

Pxi = price of the i-th factor of production

The criteria used for the level of economic efficiency (Wahyuningsih, 2018), (Siallagan, et al. 2013) include the following:

EP = $\frac{NPMx}{Px}$ = 1 , This means that the use of fertiliser is efficient.

EP = $\frac{NPMx}{Px}$ > 1, This means that fertiliser use is not yet efficient and needs to be increased.

EP = $\frac{NPMx}{Px}$ <1, This means that fertiliser use is inefficient and needs to be reduced.

RESULTS AND DISCUSSION

Characteristics of Rice Farmers in Musi Rawas Regency

The characteristics of the rice farmers surveyed are an illustration of the identity of rice farmers in Musi Rawas Regency who use subsidised fertiliser. The identity characteristics of rice farmers in Musi Rawas Regency studied in this research are: age, education level, number of dependents in the family, and farming experience. The characteristics of rice farmers in Musi Rawas Regency are shown in Table 2:

Table 3. Characteristics of Rice Farmers in Musi Rawas Regency

Information	Average
Age (years)	51
Education (years)	9
Work experience (years)	27
Number of family members)	2

Source : Primary data after processing, 2024

Based on Table 3 above, the average age of farmers is 51 years, which is still considered a productive age. Rice farmers who are still in their productive years will have an impact on their physical condition, healthy energy and enthusiasm for work. According to Hardiyanto (2021), farmers of productive age still have the physical and mental strength to manage their farming business. The average education level of rice farmers is 9 years or high school. This shows that rice farmers in Musi Rawas Regency have a relatively high level of education. Higher levels of education generally have a mindset that is more open to accepting new innovations (Gusti.2021). The average experience of the farmers is 27 years. This shows that rice farmers in North Musi Rawas Regency have a very long experience in practicing their profession as rice farmers. According to Hardiyanto (2021), farmers with long experience will have good knowledge of cultivation techniques. Based on Table 2 above, the average number of family members is 2. The number of dependents of rice farmers will influence the needs of the family. The number of dependents plays a role in rice farming. According to Iskandar (2022), a small number of family members will obviously cause more costs for farmers. Many family workers are used in the rice farming process, but on the other hand, with limited conditions,

more workers from outside the family are used and the costs involved are also high.

Multicollinearity test

The multicollinearity test was performed to determine whether the independent variables are linearly related. The presence of multicollinearity can be determined from the tolerance and VIF values. If the tolerance value obtained is > 0.10 and the VIF value is < 10.00, it can be concluded that there are no symptoms of multicollinearity in the production function model used. The test results show that there are no symptoms of multicollinearity in the production function model used. This means that there is no correlation between the independent variables in this research. This can be seen from the tolerance value for each independent variable > 0.10, namely seeds (0.626), labour (0.657), urea fertiliser (0.566), phonska fertiliser (0.539), and pesticides (0.923).

Autocorrelation Test

The autocorrelation test is used to determine whether there is a correlation between a set of observations used in the research model. Symptoms of autocorrelation can be identified using the Durbin-Watson (Dw) test, where if the Dw value is between dU and (4-dU) then H0 is accepted and H1 is rejected. This means that there is no autocorrelation in the model used. From the results of the autocorrelation test carried out, the Durbin Watson value was 1.787, where this value was greater than the upper limit (dU), namely 1.664, and less than (4-dU), namely (4- 1.8032) = 2.213. It can therefore be concluded that there is no evidence of autocorrelation in the regression model used.

Heteroscedasticity Test

The heteroscedasticity test aims to see whether, in the regression model, there is an inequality in the variance of the residuals from one observation to another. If the variance of the residual from one observation to another is constant, this is called homoscedasticity. To find out if there is heteroscedasticity, you can use the Glejser test by looking at the Sig value obtained for the variables. If the Sig. > 0.05, then the model used does not show signs of heteroscedasticity. Based on the results of the Glejser test, it was found that the values of the independent variables used in the form of seeds, labour, urea fertiliser, phonska fertiliser and pesticides have a Sig. > 0.05, i.e. 0.169; 0.414; 0.499; 0.177; 0.475 respectively, so it can be concluded that the regression model used is free from symptoms of heteroscedasticity.

Analysis of input use in rice production in Musi Rawas Regency

The analysis of input use in rice production in this research uses multiple linear regression analysis of the Cobb-Douglas production function model. The analysis of factors influencing production states how the independent variable influences the dependent variable. Here, the dependent variable (Y) is rice production and the independent variable (X) is the factors used in rice farming in Musi Rawas Regency. The variable X consists of the variables seed, labour, urea fertilizer, phonska fertilizer and pesticide. The results of the estimation of rice production factors in the study area can be seen in the following table:

Table 4. Results of estimation of production factors on production functions in rice farming in Musi Rawas Regency

Model	Coefficients	Std. Error	t Statistic	Sig
Constant	-4.198	1.094	-3.838	0.000
Ln_Seed	-.020	.101	-.197	0.844
Ln_Labour	.571	.068	8.357	0.000
Ln_Urea	.233	.061	3.844	0.000
Ln_Phonska	-.086	.068	1.272	0.205
Ln_Pesticides	-.038	.030	-1.271	0.206
R squared	0.553			
Adjusted R Square	0.537			

Source : Primary data after processing, 2024

Based on the results of the analysis in the table above, the results of the analysis using SPSS can be seen as an adjusted R square value of 0.537. This means that 53% of the variation in the level of rice production in Musi Rawas Regency is influenced by the production factors in the form of seed, labour, urea fertilizer, phonska fertilizer and pesticides included in the model used in the research. Meanwhile, the remaining 47% is influenced by other factors not included in the model used. The Sig value used in this research, Sig < α (0.05), shows significant results at the 95% confidence level.

Based on the results of the above analysis, it shows that the Sig value of the seed production factor is (0.844), the Sig value. Labour (0.000), Sig value. Urea fertiliser (0.000), Sig value. Phonska fertiliser (0.205) and Sig. Pesticides (0.206) at the 95% confidence level. This can be interpreted individually to mean that the production factors of labour and urea fertilizer have a significant effect on rice production. On the other hand, seed, phonska fertilizer and pesticides do not have a significant effect on pado production in Musi Rawas Regency. The findings are in line with (Hartina.2018), (Rahma.2020) who state that seeds

do not have a significant impact due to the lack of public understanding in choosing good seeds and the lack of knowledge of the community in maintaining the seeds they own.

Seed is an important determinant of success in rice production. Therefore, the selection of rice seeds to be used must be careful and thorough in order to achieve maximum production. The rice seed production factor has a Sig. (0.844), which means that seeds have no real effect on rice production. This is because the rice seeds used by farmers in Musi Rawas Regency do not vary. The results of this research are in line with research (Hartina, 2018) that the more seeds are used for food, the less rice production is produced in lowland rice farming, especially if the varieties used are not good and the method of planting rice seeds is not appropriate, especially if the tabla method (direct planting of seeds) is used.

Labour in this study has a coefficient value of 0.571, which means that every 10% increase in the value of labour will increase rice production by 5.71%. The results of the analysis show that labour has a real impact on production factors in Musi Rawas Regency. This is because the more optimal the use of labour, the more rice plants will be nurtured and grow well. As a result, the rice will produce more and more rice grains. The results of this research are in line with the research conducted by Sidauruk (2019), (Sinaga.2019), (Cordanis.2020), which stated that the use of individual labour production factors has a significant effect on the production of organic rice farming in Simbur Naik village, Muara Sabak Timur sub-district. East Tanjung Jabung District. Other research by Umaroh (2019), (Syathori.2020) states that individual labour production factors have a substantial impact on lowland rice farming in Banjarsari sub-district, Ciamis Regency.

Urea fertiliser has a regression coefficient value of 0.233. This means that if urea fertiliser is increased by 10%, rice production will increase by 2.33%. The significance value of urea fertiliser is 0.000 < α (0.05). This means that urea fertilizer has a significant effect on rice production in Musi Rawas Regency. Urea fertiliser contains 46% nitrogen elements, which are very important for plant growth. The results of this research are consistent with the research (Sinaga, 2019), (Oktavia. 2019), (Lybaws. 2017) that urea fertilizer has a real effect on lowland rice production in jangkat sub-district, Merangin Regency, Jambi Province.

Phonska fertiliser has a coefficient value of -0.086. This value can be interpreted to mean that the addition of 10% Phonska fertilizer does not increase rice production. The significance level for Phonska fertilizer is 0.205 > α (0.05), which means that Phonska fertilizer has no significant effect on rice production in Musi Rawas Regency. This is because the subsidised fertiliser did

not arrive on time. When farmers need fertiliser to feed their crops, it is not yet available. So farmers are forced to buy unsubsidised fertiliser at relatively high prices compared to subsidised fertiliser. This is in line with research (Sidauruk.2019), which shows that Phonska fertiliser has no real effect on rice cultivation. According to (Asmiat.2020), Phonska fertiliser has no significant effect on plant height. This is thought to be due to the genes of the plant itself, so the dose of Phonska fertilizer applied has no effect on plant height. Plant height is a genetic trait, but differences in the plant height of a variety compared to its description are also influenced by environmental factors and the ability of a variety to utilise water and nutrients during its growth.

Pesticides in this study have a significance value of 0.206 > α (0.05), which means that pesticides have no real effect on rice production in Musi Rawas Regency. The results of this research are consistent with (Hartina.2018), (Nurwansyah.2021), (Wulan.2022) that the more pesticides are used, the more rice production is produced in lowland rice farming because pesticides contain hazardous chemicals that can be absorbed. The presence of rice plants can disrupt the development of rice grain content in paddy fields.

Economic efficiency of using subsidised urea fertilizer in Musi Rawas Regency

The research results show that the average use of urea fertilizer in Musi Rawas Regency is 153 kg/farmer. The average rice production is 1,365 kg/farmer with a rice selling price of Rp. 11,403/kg and the regression coefficient value for urea fertilizer is 0.61. The results of the calculations to test the level of economic efficiency of using urea fertiliser in Musi Rawas Regency can be seen in Table 2 below:

Table 5. Calculation results of the economic efficiency of using urea fertilizer in Musi Rawas Regency.

Description of economic efficiency calculations	Calculation Results
Urea fertiliser regression coefficient	0,23
Average rice production (kg)	1.365
Average urea fertiliser use (kg)	153
NPMx	23.720
Selling price of rice (Hy)	11.403
Price of urea fertiliser (Rp)	2.930
NPMx/Px	8.10

Source : Primary data after processing, 2024

Based on the results of the above analysis, the efficiency index value NPMx/Px > 1 is 8.10. This means that the use of subsidised urea fertiliser is not efficient. The use of subsidised urea fertiliser needs to be increased in order to

achieve economic efficiency levels. The results of this research are in line with the research by (Lybaws.2017), which states that the use of urea fertilizer in rice cultivation needs to be increased in order to achieve economic efficiency. Another research by (Hamdan.2012) states that urea fertilizer is not economically efficient, so there is a need to increase the amount of fertilizer.

Economic efficiency of using subsidised phonska fertilizer in Musi Rawas Regency

The research results show that the average use of Phonska fertilizer in Musi Rawas Regency is 135 kg/farmer. The average rice production is 1,365 kg/farmer with a rice selling price of Rp. 11,403/kg and the regression coefficient value for Phonska fertilizer is 3.22. The results of the calculations to test the level of economic efficiency of using Phonska fertilizer in Musi Rawas Regency can be seen in Table 5 below:

Tabel 6. Calculation results of the economic efficiency of using phonska fertilizer in Musi Rawas Regency.

Description of economic efficiency calculations	Calculation Results
Phonska fertiliser regression coefficient	0,086
Average rice production (kg)	1365
Average Phonska fertiliser use (kg)	135
NPMx	9954
Selling price of rice (Hy)	11403
Price of Phonska fertiliser (Rp)	3089
NPMx/Px	3.22

Source : Primary data after processing, 2024

Based on the results of the above analysis, the results of NPMx/Px > 1 are 3.22. This means that the use of subsidised Phonska fertiliser is not yet efficient. The use of subsidised Phonska fertiliser needs to be increased to reach economic efficiency levels. This is in line with the study (Aprilia.2018), which states that phonska fertilizer is not yet efficient due to the fact that the maximum use of phonska fertilizer in agriculture has not been achieved. In addition, the use of phonska fertiliser by farmers is less than optimal, which is not in line with the dosage or rate recommended for farming.

CONCLUSIONS AND POLICY IMPLICATIONS

Conclusions

Based on the regression results obtained, the production factors for rice farming in Musi Rawas Regency are seed, labour, urea fertilizer, phonska fertilizer and pesticides. The factors that influence rice production are labour and urea fertilizer, while seeds, phonska fertilizer and pesticides do not influence rice production.

The results of calculating the economic efficiency of subsidised fertiliser, namely urea fertiliser, have the value that the efficiency index value NPMx/Px > 1, namely 8.10. This means that the use of subsidised urea fertiliser is not efficient, and Phonska fertiliser has an efficiency index value of NPMx/Px > 1, namely 3.22. This means that the use of subsidised Phonska fertiliser is still not efficient.

Suggestion

Based on the results and discussion of the research carried out, it is recommended that it would be better to increase the use of subsidised fertilizer inputs, both in terms of the amount of fertilizer available in distributors' shops and the amount received by rice farmers. In this way, economic efficiency in rice production will be achieved.

REFERENCES

Asmiat, Radian & Astina. 2020. Pengaruh Pupuk Phonska Terhadap Pertumbuhan dan Hasil Padi Inpara 3 di Tanah Aluvial. *Jurnal Sains Pertanian Equator. 2(1): 1-14*

Aprianti, A.,Trisna,I,N dan A.Y.Isyanto. 2020. Analisis Efisiensi Teknis Usahatani Padi Sawah di Desa Ciganjeng Kecamatan Padaherang Kabupaten Pangandaran. *Jurnal Ilmiah Mahasiswa Agroinfo Galuh. 7 (3). 759 – 769.*

Aprilia. I., Edy Prasetyo dan Bambang Mulyatno S. 2018. Analisis Efisiensi Ekonomi Penggunaan Faktor Produksi Pada Usahatani Semangka Merah dan Semangka Kuning di Gapoktan Ngudi Santoso Kabupaten Pati. *Jurnal Agribisnis dan Sosial Ekonomi Pertanian. 3 (1) : 442-448*

Alamri. M.H. Asda. R. Yanti.S. 2022. Analisis Faktor-Faktor Produksi Terhadap Produksi Padi di Kecamatan Bintauna Kabupaten Bolaang Mongondow Utara. *Jurnal AGRINESIA. 6(3): 240-249*

BPS. 2024. *Luas produksi Padi Sumatera Selatan*. Sumatera Selatan.

Cahyaningsih, A.F., Endang,S.R dan Kusnandar. 2023. Economics Efficiency Of Cassava Farming. Agricultural and Resource Economics: *International Scientifics E-Journal. 9(3): 29-48*

Cordanis.A.P.,Paulus.E.S., Ronaldo.D.P. 2020. Efisiensi Usahatani Jagung di Kecamatan Amabi Oefeto Timur Kabupaten Kupang. *Jurnal Ilmu Pertanian dan Lingkungan. 1(1): 23-31*

Effendi, R. 2024. Kabar Pusri. *Petani Dapat Penambahan Alokasi Pupuk Bersubsidi* https://www.pusri.co.id/id/news/detail/petani-dapat-penambahan-alokasi-pupuk-bersubsidi .Di download pada tanggal 7 September. Pukul 19.15 WIB

Gusti. I. Siwi. G. Agus. S. 2021. Pengaruh Umur, Tingkat Pendidikan dan Lama Bertani Terhadap Pengetahuan Petani Mengenai Manfaat dan Cara Penggunaan Kartu Tani di Kecamatan Parakan. *Jurnal Litbang Provinsi Jawa Tengah. 19(2): 209-221*

Hardiyanto, T. 2021. Analisis Efisiensi Ekonomi dan produksi Optimal Usahatani Cabai (Capsicum Annum L) sebagai Upaya Peningkatan Pendapatan petani (Studi Kasus di Desa mukti Kecamatan Kawali Kabupaten Ciamis). *Jurnal Agribisnis dan Teknologi Pangan. 1(2):96-108.*

Hamdan. 2012. *Analisis Efisiensi Penggunaan Faktor Produksi pada Usahatani Padi Sawah di Bengkulu*. Balai Pengkajian Teknologi Pertanian Bengkulu, Bengkulu.

Hartina. Muhammad Akib T. Yusna. I. 2018. Pengaruh Faktor Produksi Terhadap Produksi Ushatani Padi Sawah di Desa SAnggi-SAnggi Kecamatan Palangga Kabupaten Konawa Selatan. *Jurnal Agribisnis dan Ilmu Sosial Ekonomi Pertanian. 3 (1): 1 - 6*

Iskandar, M.J., Rini Endang, P dan Dwi. H. Ningsih. 2022. Efisiensi Ekonomi Usahatani Padi Model Corporate Farming di Jawa Tengah. *Journal of Agribusiness Science and Rural Development. 2(2): 15-22*

Khoerunisa, Trisna, I, A.Y.Isyanto. 2021. Efisiensi Ekonomi Penggunaan Input Usahatani Padi Sawah Pada Lahan Irigasi Pedesaan (Suatu Kasus Desa Gunungsari Kecamatan Sadananya Kabupaten Ciamis). *Jurnal Ilmiah Mahasisa Agroinfo Galuh. 8(1). 31 - 39*

Larasati,A,.M.Antoni dan Lifianthi. 2022. Penggunaan Pupuk Subsidi dalam Menekan Biaya Produksi dan Pengaruhnya Terhadap Pendapatan Petani di Kecmaatan Tanjung Lago. *Jurnal Ilmiah Akuntansi dan Keuangan. 4(10). 4463-4471*

Lutfiah, A., Mukson dan A. Setiado. 2017. Analisis Efisiensi Ekonomi Penggunaan Faktor-Faktor Produksi Pada Usahtaani Ketela Pohon di Kecamatan Tlogowungu Kabupaten Pati. *Jurnal Sosial Ekonomi Pertanian. 1(2): 146-154).*

Lybaws. 2017. Analisis Efisiensi Ekonomi Penggunaan Faktor-Faktor Produksi pada Usahatani Padi Ladang di Kecamatan Pauh Kabupaten Sarolangun. *Jurnal Ilmiah Sosio Ekonomika Bisnis. Fakultas Pertanian. Universitas Jambi.*

Melese, T., Alemu, M., Mitiku, A., & Kedir, N. 2019. Economic efficiency of smallholder farmers in rice production: the case of Guraferda Woreda, southern nations nationalities people's region, Ethiopia. *International Journal of Agriculture Innovations and Research, 8(2), 151-167.*

Muzdalifah. 2011. Analisis Produksi dan Efisiensi Usahatani Padi di Kabupaten Banjar. *Jurnal Agribisnis Pedesaan (04) 01 : 256-266.*

Maulia.T, Rifki.F. Putri.C.C. Tumiar.S. M. Taufik.R. 2023. Analisis Kelayakan Pupuk Bersubsidi Untuk Petani Padi (Studi Kasus Dusun VIII desa Pematang Setrak Kecamatan Teluk Mengkudu). *Journal of Laguna Geography. 1 (2): 16-23*

Nurwansyah. I. Mais.I. Farizah. D.A. 2021. Analisis Efisiensi ALokatif Penggunaan Unsur Produksi Usahatani Padi Sawah Tadah Hujan (Studi Kasus di Desa Limampoccoe, KEcamatan Cenranna, Kabupaten Maros). *Jurnal Ilmiah Agribisnis. 4(2): 160-169*

Oktavia. 2019. Analisis Efisiensi Ekonomi Penggunaan Faktor-Faktor Produksi pada Usahatani Padi Sawah di Kecamatan Jangkat Kabupaten Merangin Provinsi Jambi. *Jurnal Ilmiah Sosio Ekonomika Bisnis 22 (2) : 69-80.*

Puspita.I.H. 2024. *Alokasi Pupuk Subsidi Ditambah, Segini Rincian untuk Sumsel Tahun 2024*. https://sumatra.bisnis.com/read/20240508/534/1763928/alokasi-pupuk-subsidi-ditambah-segini-rincian-untuk-sumsel-tahun-2024. Di download tanggal 28 Agustus 2024. Pukul 11.12 WIB.

Rais, Yusriadi, Nurhaedah. 2021. The Effect of Subsidized Fertilizer Use on Farmer Effectiveness in Tosalamae Farmer Group, Pinrang Regency. *Jurnal Geografia. 19(3). 334-344*

Rigi,N.,Raessi,S., dan Azhari. 2019. Analisis Evektifitas Kebijakan Pupuk Bersubsidi Bagi Petani Padi di Nagari Cupak Kecamatan Gunung Talang Kabupaten Solok. *JOSETA: Journal of Socio-Economics on Tropical Agriculture. 1(3): 7-83*

Rahma.A. Salamun.P. Muhammad.H. M. Dinar dan Mustari. 2020. Pengaruh Luas Lahan, Tenaga Kerja, Bibit dan Pupuk Terhadap Produksi Cengkeh di Desa Seppong Kecamatan Tammerodo Kabupaten Majene. *Jurnal Ekonomi, Sosial dan Humaniora. 2 (5): 34-43*

Suciaty, T., Yayat. 2019. Analisis Efisiensi Ekonomi Penggunaan Faktor-Faktor Produksi Pada Usahatani Kedelai (Studi Kasus di desa Bantarwaru Kecamatan Gantar Kabupaten Indramayu). *Jurnal Ekonomi Pertanian dan Agribisnis (JEPA). 3(4). 663-670.*

Siallagan,J.O.,Diana Chalil dan M. Jufri. 2013. Analisis Efisiensi Penggunaan Pupuk Bersubsidi Pada Tanaman Padi Sawah. *Journal of Agriculture and Agribusiness Socieconomics. 2(4): 1-10*

Sinaga, L. 2019. Analisis Efisiensi Faktor-Faktor Produksi Usahatani Padi Sawah dalam Program Upsus Pajale di Kecamatan Sekernan Kabupaten Muaro Jambi. *Jurnal Ilmiah Sosio Ekonomika Bisnis 22 (2) : 89-100*

Sidauruk, F. 2019. Analisis Efisiensi Ekonomis Penggunaan Faktor Produksi Usahatani Padi Organik di Desa Simbur Naik Kecamatan Muara Sabak Kabupaten Tanjung Jabung Timur. *Jurnal Ilmiah Sosio Ekonomika Bisnis 22 (2) : 36-46.*

Syathori. A.D. 2020. Faktor-Faktor Yang Mempengaruhi Produksi Usahtani Tanaman Tebu di Desa Majangtengah Kecamatan Dampit Kabupaten Malang. *Jurnal Agriekstensia. 19 (2); 95-103*

Umaroh dan Trisna. 2019. Analisis Efisiensi Ekonomi Relatif Usahatani Padi Sawah Berdasarkan Luas Lahan Sawah di Desa Sindangsari Kecamatan Banjarsari Kabupaten Ciamis. *Jurnal Ilmiah Mahasisa Agroinfo Galuh. 6(1). 13-21*

Wahyuningsih, A., BM.Setiawan.,B.A. Kristanto. 2018. Efisiensi Ekonomi Penggunaan Faktor-Faktor Produksi Pendapatan Usahatani Jagung Hibrida dan Jagung Lokal dai Kecamatan Kemusu, Kabupaten Boyolai. *Jurnal Agrisocionomics. 2(1): 1-13.*

Wulan. S. Ria.I. Irwan. B. 2022. Pengaruh Penggunaan Faktor-Faktor Produksi Terhadap Produksi Usahatani Padi Sawah di Desa Bulotalangi Kecamatan Bulango Timur. *Jurnal AGRINESIA 6(2): 118-125*