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Changes in Subsidized Fertilizer Policy on Factors of Production and Farm Income of Red Chili (*Capsicum Annuum* L) in Cianjur Regency

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Abstract: Changes in subsidized fertilizer policies are felt to have a direct effect on the use of production factors and the income of red chili farmers. Data from the Central Statistics Agency for 2022 shows a decrease in the harvested area of 1,380 Ha (58%) and production of 13,830.8 tons (53%) of red chilies in Cianjur Regency. This is the basis for research whether the decline in production is one of the impacts of changes in subsidized fertilizers. The research method is descriptive verification, the analysis technique used is multiple linear regression. The number of samples taken is 75 red chili farmers in Cipanas District. Subsidized fertilizer policy is one of the government policies in an effort to improve the economy of the farming community. However, these policy changes can have a significant impact on production factors and farmer incomes. This study reveals that changes in subsidized fertilizer policies have a significant effect on the income of red chili farmers. Changes in the policy of reducing the type of fertilizer and the allocation of fertilizer subsidies by 10% reduced farmers' income by 4.68%. Factors of Production affect the Income of Red Chili Farmers where changes in the use of factors of production after Minister of Agriculture No. 10 of 2022 where the type of fertilizer and the dosage of subsidized fertilizers change results in reduced farmer income. This study concludes that the income of red chili farmers is significantly influenced by production factors. After the enactment of the Minister of Agriculture, every change in the use of production factors by 10% in Production Factors contributed to an increase in farmers' income by 3.16%.

Keywords: *Capsicum Annuum* L, subsidized fertilizer, factor of production, farmer income

INTRODUCTION

Red chilies are one of the strategic commodities in Indonesia, and are included in staple and important ingredients (bakpoting) because they are needed by households (Supriadi & Sejati, 2018).

Red chili cultivation is a type of business that has the potential to generate high economic profits. However, the success of this business is also heavily influenced by the high risk of crop failure and the perishability of red chilies. This can have a significant impact on farmer production and income. In addition, there are various factors that influence the success of red chili cultivation, namely internal and external. (Irawan, 2022)

Fertilizer has an important role as a factor of production that determines the success of farming, together with land, labor, and capital. Fertilizer also serves as a source of nutrition for red chili plants, which contributes to their growth and production. However, the need for fertilizer continues to increase over time, while the higher price of fertilizer becomes an obstacle for farmers in carrying out their cultivation.(Larasati et al., 2022) . After the Covid-19 Pandemic and the conflict between Russia and Ukraine, Russia, as one of the main fertilizer producing countries, experienced global supply disruptions, which resulted in an increase in fertilizer prices. The increase in prices was due to disruptions in the supply of potassium, ammonia, urea and other soil nutrients. In addition, rising natural gas and coal prices forced some fertilizer producers to reduce their production, limiting the availability of fertilizer.

In order to maintain adequate fertilizer production and supply, it is very important to have accurate information about future fertilizer requirements. Thus, projected fertilizer needs are important in achieving sustainable food self-sufficiency. Fertilizer policy programs that have been carried out by Indonesia over the last four decades have been very comprehensive and support this goal.

The fertilizer industry in Indonesia has been built with a production capacity that exceeds domestic demand. State-owned companies, such as PT Pupuk Indonesia, control the industry with the aim of supporting the agricultural sector throughout the country. Even so, the fertilizer subsidy policy is still a problem that has not been completely and permanently resolved.. The impact of this policy has two different sides. On the one hand, the fertilizer subsidy policy has had a positive impact by increasing national economic growth and the welfare of farmers. However, on the other hand, this policy also had a negative impact on the state's fiscal. (Susilowati, 2018)**.**

As data obtained from the 2022 Seed Bank and Farmer Technology Association (AB2TI), PT. Pupuk Indonesia, fertilizer subsidies Rp. 24,000,000,000,000 a year with the use of fertilizer per Ha 500 kg (10 sacks), the price of subsidized fertilizer is Rp. 125,000 and not subsidized Rp. 500,000, -, then the amount of the subsidy = 375,000/bag (50kg). Subsidies per Ha = 375,000x 10 = 3,750,000. Total area of 10,500,000,000 Ha. Then the amount of the subsidy should be = 3,750,000 x 10,500,000,000 = 393,750,000,000,000 (three hundred ninety three quartlion seven hundred and fifty trillion) the amount of the subsidy is only Rp. 24,000,000,000,000. Not far. This is because subsidized fertilizers are always lacking. In responding to these problems, the Ministry of Agriculture changed policies related to fertilizer subsidies through changes to the Regulation of the Minister of Agriculture. Initially, in Regulation of the Minister of Agriculture No. 41 of 2021, subsidized fertilizers consist of inorganic and organic fertilizers, including Urea, SP36, ZA, and NPK. However, with the issuance of Minister of Agriculture Regulation No. 10 of 2022, the fertilizer subsidy policy focuses only on Urea and NPK Fertilizers in accordance with Article 2 of the regulation.

As a result of the global problems mentioned above, some farmers in Indonesia are considering switching to plants that require less fertilizer or reducing the area of land to be planted. However, there are concerns that this reduced use of fertilizers could hurt crop yields, as crop experts predict. Especially in developing countries like Indonesia, production disruptions are more risky because farmers have limited financial resources for production costs. The fertilizer crisis is even more worrying because it can hamper food production. If this problem is not addressed urgently and the fertilizer trade is disrupted, we will face serious food supply problems in the coming years.

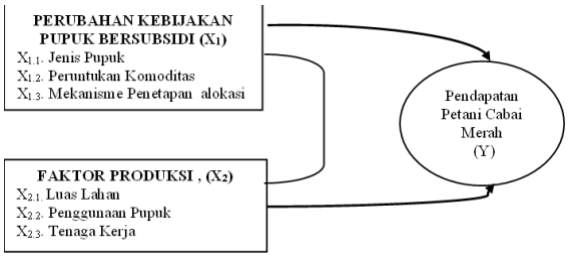
Based on Cianjur Regency data in 2022 figures, Red Chili Harvested Area in 2021 was 2,387 Ha. There was a decrease in the harvested area of 1,380 hectares or 58% of the harvested area in 2021, while production decreased by 13,830.8 tons or 53%.

Subsidized fertilizer is one of the government's policies in increasing agricultural production in Indonesia. However, changes to subsidized fertilizer policies can have an impact on production factors and farmer incomes. The change in subsidized fertilizer policy, from reducing the type of fertilizer that is subsidized, the allocation of subsidized fertilizer commodities, and the mechanism for implementing subsidized fertilizer allocation, is felt to have a direct effect on the production costs of red chili cultivation carried out by farmers. Production costs refer to expenses that must be borne by a farmer in carrying out the production process and converting it into products that are ready to be sold or used. (Hernanto, 2004).

Agriculture requires several important elements, including land, labor, and capital. In addition, the use of fertilizers, seeds and medicines is also a key factor in the agricultural production process (Soekartawi, 1995) The way farmers manage these factors is very important. If it is used improperly, production is low and costs are high. As a result, farmers' income is also low. Many farmers do not really understand how to use production factors efficiently because of a lack of knowledge.

Menurut Sukirno, (2000). The production function is the relationship between the factors of production and the production results produced. Factors of production such as land, labor, and capital are used to produce the final output or product. The production function is a way of showing how the output of production depends on the factors of production used. This function describes the relationship between output or production results with inputs or factors of production.

Total income consists of gross income, which is the total value of the production of agricultural commodities, and net income. In this situation, there was a decrease in harvested area of 1,380 Ha or 58% compared to the previous year, while production decreased by 13,830.8 Tons or 53%. From this theory, the following framework is obtained:



Picture 3. Framework of thingking

Hipotesis

H1 = Subsidized fertilizer policy changes have a significant impact/influence on the income of Big Red Chili farmers.

H2 = Changes in the use of production factors have a significant impact/influence on the income of red chili farmers.

H3 = Changes in subsidized fertilizer policies and production factors simultaneously have a significant effect on the income of red chili farmers

METHODS

Researchers in this study used descriptive and verification methods. The analytical technique used in this study was multiple linear regression to investigate the extent to which independent variables, such as changes in subsidized fertilizer policies and red chili production factors, to changes in the dependent variable, namely the income of red chili farmers . Hypothesis t test and Coefficient of determination test (R2).

The population in this study were farmers who carried out farming before and after the implementation of the new fertilizer subsidy policy (Permentan No. 10 of 2022). The population size based on subsidized fertilizer E-RDKK data for 2022 in Cipanas District, Cimacan Village is 300 people. The sampling technique was carried out by purposive sampling, used in a sampling method based on certain characteristics (Sugiyono, 2016). The number of samples taken were 75 red chili farmers in Cipanas District.

Observations, interviews, and questionnaires were used in data collection techniques for farmers. Then the ordinal data is converted into a scale using the Successive Interval Method (MSI). Data analysis was performed using SPSS software. The research location is in Cipanas Ciajur, which is a vegetable and red chili producing area. This research involves farmers who are still farming before and after the implementation of the new fertilizer subsidy policy (Permentan No. 10 of 2022) starting from October 1, 2022. The time of research is March 2023 to June 2023.

Validity is a measure of the validity of the measurement instrument. Construct validity is used to test the measuring instrument used. Reliability indicates the consistency of measurements from different respondents. Alpha Cronbach reliability coefficient is used to measure the reliability of the questionnaire. The reliability coefficient ≥ 0.700 indicates sufficient reliability (Sarwono, 2007).

RESULT AND DISCUSSION

The validity test conducted on all questions in the questionnaire was found to be valid. That is, all statements in the questionnaire show a significant correlation with the variables being measured. In the analysis, the correlation value of r for each question exceeds the correlation value of 0.227. So based on the results of the analysis and the provisions it was concluded that all questionnaires can be used.

Reliability test is used to ensure the reliability of the data obtained. In this study, the Cronbach Alpha (α) method was used. If the value of α is greater than 0.70, then the questionnaire is considered reliable.(Ghozali, 2006).

The results of the analysis show that all variables have a value of α above 0.70. This shows that the questionnaire has a good level of consistency or reliability. Thus, the items in the questionnaire can be trusted and are suitable for use

Based on the normality analysis, it was found that the Kolmogorov-Smirnov significance value was 0.76, so it can be said that the data is normal. In addition, all independent variables in the regression model show a tolerance value that is greater than 0.1 and a VIF value that is less than 10. This confirms that there is no multicollinearity problem between the independent variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	10.292	5.441		1.892	.063		
	X1	.468	.083	.501	5.651	.000	.956	1.047
	X2	.319	.078	.362	4.080	.000	.956	1.047

a. Dependent Variable: Y

Besides that, statistically, there are no independent variables that have a significant influence on the absolute dependent variable (Abs). The probability of significance for the variable X1 is 0.521 and for the variable X2 is 0.833, both of which are greater than 0.05. Therefore, it can be concluded that the regression model does not show any heteroscedasticity in the data:

$$Y = 10{,}292 + 0{,}501\ X_1 + 0{,}362\ X_2 + \varepsilon$$

The results of the regression equation show that changes in subsidized fertilizer policies (X1) and production factors (X2) have a significant effect on red chili farmer income (Y1)..

1. The regression coefficient for the variable Subsidized Fertilizer Policy Change (X1) is 0.501, with a significance <0.05 and a positive sign (+). This shows that an increase in subsidized fertilizer policies will increase the income of red chili farmers.
2. The regression coefficient for the Production Factor variable (X2) is 0.362, with a significance <0.05 and a positive sign (+). This shows that increasing production factors will increase the income of red chili farmers.

Thus, it can be concluded that changes in subsidized fertilizer policies (X1) and production factors (X2) have a positive effect on red chili farmer income (Y). The dominant factor affecting the income of red chili farmers is the Subsidized Fertilizer Policy Change, which is indicated by the largest regression coefficient of 0.501.

Subsidized fertilizer policy changes have a significant effect on rice farming income. The regression coefficient is 0.468 which means that a change in subsidized fertilizer policy by reducing the amount and type of fertilizer by 10% will reduce the income of red chili farmers by 4.68%.

Production factors have a significant influence on the income of red chili farmers. In other words, based on the regression coefficient of 0.316, which means that every time there is a change in the decrease in the use of production factors by 10%, income will decrease by 3.16%.

Based on the results of the F model test, the F value of 30.501 is greater than the F table value of 3.112 with a significance level of 0.000 or less than 0.05. This shows that simultaneously, the variable Changes in Subsidized Fertilizer Policy and Factors of Production have a significant effect on Red Chili Farmers' Income.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.677[a]	.459	.444	3.548

a. Predictors: (Constant), Production factor, subsidized fertilizer policy changes.

Based on the test results of the coefficient of determination, the Adjusted R^2 value was found to be 0.444. This figure indicates that approximately 44.4% of the variation in Red Chili Farmers' Income can be explained by a combination of the Subsidized Fertilizer Policy Changes and Factors of Production variables in this study. Meanwhile, the remaining 55.6% is a variation explained by other factors not included in the model being studied.

DISCUSSION

Respondents' responses to the variables proposed in the questionnaire. Respondents' answers to changes in subsidized fertilizer policies, namely with an average number of 3.34, are included in the medium category, while respondents' answers to production factors, namely with an average number of 3.46, are included in the High category, which is in the range of values 3.41 - 4. 20. As well as respondents' answers to the income of red chili farmers with an average number of 3.43 included in the High category which is in the range of values 3.41 - 4.20.

Subsidized Fertilizer Policy Changes have an effect on Red Chili Farmers' Income.

This study reveals that changes in subsidized fertilizer policies have a significant effect on the income of red chili farmers. Changes in the policy of reducing the type of fertilizer and the allocation of fertilizer subsidies by 10% reduced farmers' income by 4.68%.

. The research findings support the concept of agricultural economics which states that fertilizer subsidies can have a positive impact on farmers' income. Fertilizer subsidies are a form of government intervention aimed at increasing the availability of fertilizer at affordable prices for farmers. In this context, agricultural economic theory suggests that the use of adequate fertilizers can increase crop productivity and yields. With the change in subsidized fertilizer policy, an increase in fertilizer subsidies will encourage farmers to use fertilizer in greater quantities. This has the potential to increase plant productivity, especially in red chili commodities. The increase in red chili farmers' income in response to an increase in fertilizer subsidies is also in accordance with economic theory which explains that an increase in agricultural inputs, such as fertilizer, can have a positive impact on farmer output and income.

The Influence of Production Factors on the Income of Red Chili Farmers.

This study concludes that the income of red chili farmers is significantly influenced by production factors. After the enactment of the Minister of Agriculture, every change in the use of production factors by 10% in Production Factors contributed to an increase in farmers' income by 3.16%. These results indicate that the higher the production, the income of farmers is increasing. In this context, it can be seen that there is an increasing return to scale, in which an increase in production by increasing the use of Production Factors results in higher income growth than an increase in input units.

However, after the implementation of the subsidized fertilizer policy No. 10 of 2022, there has been a decline in farmer income due to a reduction in the types of fertilizers, commodity allocation, and fertilizer allocation. Farmers' income has decreased by 4.68% from the level of income before the implementation of the policy. Analysis of the coefficient of determination, namely 44.4%, the variability of Red Chili Farmers' Income can be explained by the variables Changes in Subsidized Fertilizer Policy and Factors of Production. The rest, namely 55.6%, is a factor that has not been studied

The results of this study are strengthened by the results of previous studies Fajar & Pratama, (2023) , which states that the Minister of Agriculture Regulation No. 10 of 2022 needs to be reviewed because it has an impact on reducing farmer productivity. Increasing the burden of planting capital of farmers. Decreased income of farmers.

CONCLUSION

Based on the results of the above research it can be concluded that:

1. The subsidized fertilizer policy is one of the government policies in an effort to improve the economy of the farming community. However, these policy changes can have a significant impact on production factors and farmer incomes. This study reveals that changes in subsidized fertilizer policies have a significant effect on the income of red chili farmers. Changes in the policy of reducing the type of fertilizer and the allocation of fertilizer subsidies by 10% reduced farmers' income by 4.68%.
2. Production factors affect the income of red chili farmers where changes in the use of production factors after Minister of Agriculture No. 10 of 2022 where the type of fertilizer and the dosage of subsidized fertilizers change results in reduced farmer income. This study concludes that the income of red chili farmers is significantly influenced by production factors. After the enactment of the Minister of Agriculture, every change in the use of factors of production by 10% in Production Factors contributes to an increase in farmers' income by 3.16%.

REFERENCES

Fajar, A., & Pratama, A. (2023). *ANALISIS EVALUASI KEBIJAKAN PERMENTAN NO . 10 TAHUN KABUPATEN LAMPUNG TENGAH*.

Ghozali, I. (2006). *Aplikasi Analisis Multivariate dengan Program SPSS. Edisi Keempat*. Badan Penerbit Universitas Diponegoro.

Hernanto, F. (2004). *Ilmu Usahatani*. Penebar Swadaya.

Irawan, W. (2022). *Analisis Risiko Harga Cabai Merah Keriting Di Kabupaten Cianjur Provinsi Jawa Barat*. Journal of Agribusiness Science and Rural Development,

Larasati, A., Antoni, M., & Lifianthi, L. (2022). *Penggunaan pupuk subsidi dalam menekan biaya produksi dan pengaruhnya terhadap pendapatan petani di kecamatan Tanjung Lago*. Fair Value: Jurnal Ilmiah Akuntansi Dan Keuangan,

Nauly, D. (2019). *Dampak Kebijakan Subsidi Pupuk Dan Harga Pembelian Pemerintah Terhadap Kesejahteraan Produsen Dan Konsumen Beras Di Indonesia*. Jurnal AGROSAINS Dan TEKNOLOGI,.

Sarwono, J. (2007). *Analisa Jalur Untuk Riset Bisnis*. Penerbit Andi.

Soekartawi. (1995). *Analisis Usaha Tani*. UII Pres.

Sugiyono. (2016). *METODE PENELITIAN Kuantitatif, Kualitatif, dan R&D* (cet ke-23). Alfabeta.

Sukirno, S. (2000). *Makroekonomi modern*. PT Raja Drafindo Persada.

Sumarni, N., & Muharam, A. (2005). *Budidaya Tanaman Cabai Merah (Panduan Teknis PTT Cabai Merah No.2)*. BALAI PENELITIAN TANAMAN SAYURAN.

Supriadi, H., & Sejati, W. (2018). Perdagangan Antarpulau Komoditas Cabai di Indonesia: Dinamika Produksi dan Stabilitas Harga. *Analisis Kebijakan Pertanian*, *16*, 111. https://doi.org/10.21082/akp.v16n2.2018.111-129

Susilowati, S. H. (2018). Urgensi dan Opsi Perubahan Kebijakan Subsidi Pupuk. *Analisis Kebijakan Pertanian*, *14*(2), 163. https://doi.org/10.21082/akp.v14n2.2016.163-185