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FACTORS AFFECTING RICE PRODUCTION
(Case: Purba Ganda Village, Pematang Bandar District, Simalungun Regency)

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Abstract

This study aims to analyze the factors that influence rice production in Purba Ganda Village. The analytical method used is the multiple linear regression analysis method using the SPSS application. The variables used in this study are land area, seeds, fertilizers, pesticides, and labor. The results showed that simultaneously the variables of land area, seeds, fertilizers, pesticides, and labor had a significant effect on rice production in Desa Purba Ganda. These variables are able to explain 99.5% while the remaining 0.5% are other variables not included in the model. Partially, each variable of land area, seeds, fertilizers, pesticides, and labor has a significant effect on rice production in the study area.

Keywords: Production Factors, Rice Farming, Rice Production

1. Introduction

Indonesia as an agricultural country is facing agricultural problems, especially rice food problems. In 1984-1986 there was once self-sufficiency in rice, now it is a rice importing country. This is because domestic rice production is not sufficient to meet the consumption needs of the population, where the increase in production and productivity of rice plants is very slow while the rate of population growth continues to increase (Hasyim, 2007).

Production is the yield of lowland rice obtained during a certain period of time (one growing season) whose amount is expressed in certain units (Hafidh, 2009). Rice production between locations is very diverse and the majority is not optimal. The average yield of rice in the form of dry grain is 4.7 tons/ha, while the potential can reach 6-7 tons/ha (Mafor, 2015). Factors that affect the amount of rice production include land area, seeds, fertilizers, pesticides, and labor (Notarianto, 2011).

The production function is the relationship between the factors of production and the level of production they create. The purpose of production activities is to maximize the amount of output with a certain number of inputs. Furthermore, the production function is also explained by Nicholson (2002), the production function is a function that shows a mathematical relationship between the inputs used to produce a certain level of output.

Agricultural land is a determinant of the influence of agricultural commodity production factors. In general, it is said, the wider the area of land (cultivated/planted), the greater the amount of production produced by the land. According to Mubyarto (1989), land as one of the factors of production which is the factory of agricultural products which has a significant contribution to farming.

Seeds are plant seeds that have been treated so that they can be used as a means of multiplying plants which usually come from the grain of the plant itself. The seeds used will affect the resulting production (Suzana et al., 2011).

Like humans, in addition to consuming basic food nutrients, it is also necessary to consume vitamin nutrients as an addition to staple foods. Plants too, fertilizer is needed as a vitamin nutrient for optimal growth and development. Fertilizers that are often used are organic fertilizers and inorganic fertilizers. According to (Rahim and Diah Retno, 2007), organic fertilizer is fertilizer that comes from the decomposition of parts or residues of plants and animals, for example manure, green manure, compost, cake, guano, and bone meal. Meanwhile, inorganic fertilizers or commonly referred to as artificial fertilizers are fertilizers that have been processed at the factory, such as urea, TSP, and KCL fertilizers.

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Pesticides are needed by plants to prevent and eradicate pests and diseases that attack them. On the one hand, pesticides can benefit farming, but on the other hand pesticides can harm farmers. Pesticides can be a loss for farmers if there is an error in their use, both in terms of method and composition. These losses include environmental pollution, damage to agricultural commodities, poisoning which can result in death for humans and pets (Rahim and Diah Retno, 2007).

Labor is one of the most important factors of production. From a general perspective, the notion of labor concerns humans who are able to work to produce goods and services and have economic value that can be useful for the needs of the community, physically the ability to work is measured by age. Labor production factor is an important production factor and has a great influence on agricultural business activities. The amount of work devoted to each activity is different, where the more labor available and devoted to agricultural business activities, the greater the number of products produced which will have an impact on greater income (Simanjuntak, 1998).

2. Research methods

The research area was set in Purba Ganda Village, Pematang Bandar District, Simalungun Regency. This research area is determined purposively, which means the research area is determined intentionally based on certain considerations such as population characteristics or previously known characteristics.

The method used in sampling is the Simple Random Sampling method. Simple Random Sampling is a technique of taking samples from members of the population which is carried out randomly without regard to the strata that exist in the population.

The data collected in this study consisted of primary data and secondary data. Primary data is a source of data obtained directly from respondents, either by interview, direct observation in the field or filling out questionnaires by respondents. Secondary data is data obtained from other relevant sources such as the Purba Ganda Village Office, the Simalungun Regency Agriculture and Plantation Service, the North Sumatra Statistics Center, the Simalungun Regency Agricultural Extension Agency Office and other related agencies that can support the completeness of the data in this study. .

In general, the analytical tool used in this study is Multiple Linear Regression Analysis. Multiple Linear Regression analysis method to analyze how the influence of land area, seeds, fertilizers, pesticides, and labor on rice production in Purba Ganda Village.

3. Results and Discussion

3.1 Factors Affecting Rice Production

The results of the study on 84 samples of rice farmers showed the factors that influenced rice production in Purbaganda Village. Rice production obtained is influenced by several factors, namely land area (X1), seeds (X2), fertilizers (X3), pesticides (X4), and labor (X5). To test its effect, it can use Multiple Linear Regression analysis with the Ordinary Least Square (OLS) method or the Least Square Method using SPSS 25.0 tool either simultaneously or partially.

a. Simultaneous Test (F Test)

Simultaneous Test (F test) can be seen from Table 1 which shows the significance value of F as follows:

Table 1. Simultaneous Test (Test F) Rice Production

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	258744484.0	5	51748896.79	3146,757	.000b
	Residual	1282722.002	78	16445.154		
	Total	260027206.0	83			

a. Dependent Variable: Production

b. *Predictors*: (Constant), Labor, Pesticide, Fertilizer, Seed, Land Area

The significance of F of 0.000 is smaller than the probability value of 0.05 (0.000 < 0.05). Then H0 is rejected and H1 is accepted, which means that the variables of land area, seeds,

fertilizers, pesticides, and labor simultaneously have a significant effect on rice production.

b. Partial Test (Test – t)

Table 2. Partial Test (T Test) of Rice Production

Model	Unstandardized Coefficients		Standarized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-539.979	158.858		-3.399	.001
Luas Lahan (X1)	3814.395	121.472	.777	31.401	.000
Benih (X2)	29.913	3.938	.154	7.596	.000
Pupuk (X3)	1.270	.355	.035	3.574	.001
Pestisida (X4)	30.193	13.366	.022	2.259	.027
Tenaga Kerja (X5)	12.648	4.943	.048	2.559	.012

a. Dependent Variable: Production

1) Effect of Land Area on Rice Production

The significance value of t variable of land area obtained is 0.000. This shows that the significance value is smaller than the probability value of 0.05 (0.000 < 0.05), it can be concluded that H0 is rejected and H1 is accepted, which means that the variable area of land partially has a significant effect on rice production.

The land area regression coefficient of 3814,395 can be interpreted that there is a direct (positive) relationship between land area and rice production. This means that for every 1 hectare increase in land area, rice production will increase by 3814.395 kg assuming other variables are constant.

2) Effect of Seed on Rice Production

The significance value of the seed variable t obtained is 0.000. This indicates that the significance value is smaller than the probability value of 0.05 (0.000 < 0.05), so it can be concluded that H0 is rejected and H1 is accepted, which means that the seed variable partially has a significant effect on rice production.

Seed regression coefficient of 29,913 can be interpreted that there is a direct (positive) relationship between seeds and rice production. This means that for every 1 kg increase in seed, rice production will increase by 29.913 kg assuming other variables are constant.

Based on the findings in the field that on average, farmers use local seeds or seeds derived from superior seeds used previously in the cultivation process. This of course can affect the yield of rice production in the study area, so that production in the next planting period will decrease. This is in accordance with the opinion of Suzana et al. (2011) which states that the use of good seeds and in accordance with the rules will produce cultivated plants that are both in quality and quantity.

3) Effect of Fertilizer on Rice Production

The significance value of the fertilizer variable t obtained is 0.001. This shows that the significance value is smaller than the probability value of 0.05 (0.001 < 0.05), so it can be

concluded that H0 is rejected and H1 is accepted, which means that the fertilizer variable partially has a significant effect on rice production.

The fertilizer regression coefficient of 1.270 means that there is a direct (positive) relationship between fertilizer and rice production. This means that for every 1 kg increase in fertilizer, rice production will increase by 1.270 kg assuming other variables are constant.

Based on the findings in the field, one of the causes of the decline in rice production in the study area is the reduced use of fertilizers. This is because the provision of subsidized fertilizers is limited and farmers only have little capital to buy fertilizers that are not subsidized. Fertilizer itself plays an important role in increasing the amount of rice production. Thus, if the use of fertilizers is reduced, the rice production produced will decrease.

4) Effect of Pesticides on Rice Production

The significance value of the pesticide variable t obtained is 0.027. This shows that the significance value is smaller than the probability value of 0.05 (0.027 < 0.05), so it can be concluded that H0 is rejected and H1 is accepted, which means that the pesticide variable partially has a significant effect on rice production.

The pesticide regression coefficient of 30.193 can be interpreted that there is a direct (positive) relationship between pesticides and rice production. This means that every 1 liter increase in pesticide will maintain rice production of 30,193 kg assuming other variables are constant.

5) The Effect of Labor on Rice Production

The significance value of the labor variable t obtained is 0.012. This shows that the significance value is smaller than the probability value of 0.05 (0.012 < 0.05), it can be concluded that H0 is rejected and H1 is accepted, which means that the labor variable partially has a significant effect on rice production.

The labor regression coefficient of 12.648 can be interpreted that there is a direct (positive) relationship between labor and rice production. This means that for every increase in labor by 1 HOK, rice production will increase by 12,648 kg assuming other variables are constant.

This is in accordance with Simanjuntak (1998) who said that labor is an important factor of production. The amount of work devoted to each activity is different, where the more labor available and devoted to farming activities, the greater the amount of production produced.

4. Conclusion

Simultaneously, the variables of land area, seeds, fertilizers, pesticides and labor have a significant effect on rice production in Purba Ganda Village. These variables are able to explain 99.5% while the remaining 0.5% are other variables that are not included in the model. Partially, each variable area of land, seeds, fertilizers, pesticides, labor has a significant effect on rice production in the study area.

Reference

Abdulrachman, S., M. J. Mejaya., N. Agustiani., I. Gunawan., P. Sasmita dan A. Guswara 2013. Sistem Tanam Legowo. Balai Penelitian dan Pengembangan Pertanian, Sukamandi.

Anggraini, F., A. Suryanto dan N. Aini. 2013. Sistem Tanam dan Umur Bibit pada Tanaman Padi Sawah (Oryza sativa L.) Varietas INPARI 13. J. Produksi Tanaman. 1 (2): 52 – 60.

Badan Pusat Statistik. 2020. Pematang Bandar Dalam Angka 2020. Badan Pusat Statistik. 2020. Simalungun Dalam Angka 2020.

Badan Pusat Statistik. 2020. Sumatera Utara Dalam Angka 2020.

Bobihoe, J. 2007. Pengelolaan Tanaman Terpadu (PTT) Padi Sawah. Balai Pengkajian Teknologi, Jambi.

BPTP. 2009. Budidaya Tanaman Padi. Badan Ketahan Pangan dan Penyuluhan Pertanian, Aceh.

Hafidh, M. 2009. Pengaruh Tenaga Kerja, Modal, dan Luas Lahan terhadap Produksi Usahatani Padi Sawah (Studi Kasus di Kecamatan Rowosari Kabupaten Kendal). Universitas Negeri Semarang, Semarang. (Skripsi Sarjana Ekonomi).

Hasyim, Hasman. 2007. Analisis Faktor – Faktor yang Mempengaruhi Ketersedian Beras di Sumatera Utara. Tesis: Universitas Sumatera Utara.

Jamilah. 2013. Pengaruh Penyiangan Gulma dan Sistim Tanam Terhadap Pertumbuhan dan Hasil Tanaman Padi Sawah (Oryza sativa L.). J. Agraria. 17 (1): 28 – 35.

Kantor Desa Purba Ganda. 2020.

Karokaro, S., J.E.X. Rogi., D.S. Runtunuwu dan P. Tumewu. 2015. Pengaturan Jarak Tanam Padi (Oryza sativa L.) pada Sistem Tanam Jajar Legowo. J. Universitas Sam Ratulangi. 16 (16): 1 – 7.

Kementrian Pertanian. 2019. Buletin Konsumsi Pangan Volume 10 Nomor 1 Tahun 2019.

Mafor, K.I. 2015. Analisis Faktor Produksi Padi Sawah di Desa Tompasobaru Dua Kecamatan Tompasobaru. J. Universitas Sam Ratulangi. 6 (2): 1 – 11.

Mandry, S.V. 2016. Analisis Kemampuan Permodalan Usahatani Palawija (Ubi Jalar, Kentang) dan Hortikultura (Kubis, Cabai, Jeruk) di Pedesaan. Skripsi: Medan.

Notarianto, Dipo. 2011. Analisis Efisiensi Penggunaan Faktor - Faktor Produksi pada Usahatani Padi Organik dan Padi Anorganik. Universitas Diponegoro, Semarang.

Penyuluh Petani Lapangan Pematang Bandar. 2021.

Rahim, Abdul dan Diah Retno Dwi Hastuti. 2007. Ekonomika Pertanian, Pengantar. Teori dan Kasus: Penebar Swadaya.

Ratih, S.I., S. Karindah dan G. Mudjiono. 2014. Pengaruh Sistem Pengendalian Hama Terpadu dan Konvensional Terhadap Intensitas Serangan Penggerek Batang Padi dan Musuh Alami pada Tanaman Padi. J. HPT. 2 (3): 18 – 27.

Simanjuntak, C.P.S., G. Jonatan dan Meiriani. 2015. Pertumbuhan dan Produksi Padi Sawah pada Beberapa Varietas dan Pemberian Pupuk NPK. J. Online Agroekoteknologi. 3 (4): 1416 – 1424.

Simanjuntak, P.J. 1998. Pengantar Ekonomi Sumberdaya Manusia. Jakarta: FE UI. Sudarman, Ari. 1999. Teori Ekonomi Mikro, Jilid I. BPFE. UGM, Yogyakarta.

Sugiyono. 2001. Metode Penelitian. Bandung: Cv. Alfa Beta.

Sumarno. 2006. Periodisasi Musim Tanam Padi Sebagai Landasan Manajemen Produksi Beras Nasional. Pusat Penelitian dan Pengembangan Tanaman Pangan, Bogor.

Supangat, A. 2010. Statistik dalam Kajian Deskriptif, Inferensi, dan Nonparametrik. Jakarta: Kencana Perdana.