RELATIONSHIP BETWEEN FARMERS' CHARACTERISTICS AND ORGANIC FARMING SYSTEM IMPLEMENTATION OF PADDY RICE WITH FARMERS' INCOME

Siti Aisyah, Achmad Faqih, Suharni, Sunani, Indra Lesmana, Abdul Rochman
Faculty of Agricultur, Universitas Swadaya Gunung Jati, Indonesia
Email: siti.aisyahagri@ugj.ac.id, achmad.faqih@ugj.ac.id

ABSTRACT

Agriculture is an important sector in the national economy, therefore the development priority is placed on development in the economic sector with an emphasis on the agricultural sector. Income in farming activities generally cannot be stable from time to time. The objectives of this study include (1) to determine the relationship between farmer characteristics and farmer income in farmer groups BPP Plumbon District, (2) to determine the relationship between the implementation of organic rice farming systems and farmer income in farmer groups BPP Plumbon District, (3) To determine the relationship between the characteristics of farmers and the implementation of organic rice farming systems with farmers' income in the BPP Farmer Group, Plumbon District. The research design used in this study was a quantitative research with a descriptive survey research technique. The results showed that: (1) there was a moderate relationship between farmer characteristics and farmer income in the BPP Farmer Group in Plumbon District, namely 0,703, (2) there is a moderate relationship between the application of organic rice farming systems and farmers' income in the BPP Farmer Group in Plumbon District, namely 0.643, (3) there is a significant relationship between farmer characteristics and the application of organic farming systems to farmer incomes. Based on the output that $t_{arithmetic}$ X1 = 7.551 and X2 = 5.252> t_{table} which is 1.998.

INTRODUCTION

Development in developing countries generally focuses on the agricultural sector in order to improve the quality of food and to meet food needs. The concept of development does not only focus on increasing product productivity but also pays attention to the balance of nature, product quality and safety (Rivai & Anugrah, 2011). The success of agricultural development will be realized if the basic conditions can be met. The basic requirements are (1) a market for agricultural products, (2) ever-changing technology, (3) the availability of local production facilities and equipment, (4) production incentives for farmers, and (5) transportation.

Development agriculture, especially food crop agriculture, aims to strengthen self-sufficiency food, increasing farmers' income, improving people's nutrition and expanding employment opportunities while maintaining the preservation of natural resources. Level The welfare of organic rice farmers can be described by the income earned. According to Maramba (2018) amount of income is influenced by complex factors namely internal factors and external factors. The internal factors consist of age, level education, and the area of land owned by farmers. The external factor is the availability of facilities production and capital. The capital referred to includes costs for purchasing fertilizers and seeds.

Lowland rice (Oryza Sativa) is one of the rice-producing plants that is widely needed by the community for basic/daily needs, almost all farmers in Plumbon District plant rice and is

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one of the leading commodities. Every cultivator of lowland rice plants is always faced with various obstacles, such as pests and diseases that can reduce the quality and quantity of the results. Therefore, the government and related institutions are always trying to develop technology so that the quantity and quality of rice yields are as expected *(Arham et al.*, 2019). The principles of cultivation based on pest control, use of compost, integrated resource management and attention to environmental sustainability need to be applied in the concept of development in the agricultural sector. It is intended that agricultural development can be feasible economically, socially and sustainably in the future (Wihardjaka, 2018).

The application of organic rice farming systems is influenced by the characteristics of farmers which include age, income and education. Age is an individual's age from birth to birthday. The more mature, the level of maturity and strength of a person will be more mature in thinking and working (Fauzia et al., 2018). Thus income in farming activities generally can not be stable from time to time. For a farmer who manages his farm, he will receive good income in the form of compensation for services in the form of wages as labor, wages as managers, and profit (net profit) for the risks of his farming.

Plumbon District, Cirebon Regency, where the majority of the population work as farmers, but some work as traders. The village government directs its residents to engage in agricultural agribusiness because it can be profitable, besides having the basic potential. Farmer groups in BPP Plumbon District, Cirebon Regency receive a program to implement organic rice farming systems on a regular basis so as to improve the characteristics of farmers.

The challenges faced by farmer groups in BPP Plumbon District show that income is still low, so farmers while waiting for the harvest do work or make crafts that can generate income every day. The purpose of this study includes (1) to find outthe relationship between farmer characteristics and farmer income in farmer groups BPP Plumbon District, (2) To determine the relationship between the implementation of organic rice farming systems and farmers' income in farmer groups BPP Plumbon District, (3) To determine the relationship between farmer characteristics and the application of agricultural systems organic paddy rice with farmers' income in the BPP Farmer Group, Plumbon District.

RESEARCH METHOD

The research was conducted at the BPP Farmer Group, Plumbon District, Cirebon Regency. The time of the research was carried out from March 2023 to May 2023. Respondents in this study were all farmers who used organic farming systems in farmer groups in BPP Plumbon District who planted 65 farmers of paddy rice. The research used was a survey method using a correlational descriptive approach, namely research aimed at explaining between two variables, namely the independent variable and the dependent variable (Notoatmodjo, 2013). The research variables consist of farmer characteristics (X1), organic farming systems (X2) and farmer income (Y).

The type of data in this study uses primary data and secondary data. Data collection techniques in this study include observation, interviews and questionnaires (questionnaire). According to (Sugiyono, 2019)To determine the relationship between the characteristics of farmers and the organic farming system as the independent variable with farmer income as the dependent variable, the rank Spearman (rs) correlation coefficient test was used.

RESULTS AND DISCUSSION
Characteristics of Farmers

Characteristics of farmers are factors related to the level of participation that comes from the farmers themselves (Putri et al., 2015). Socioeconomic characteristics. These include: age, income, education, experience and family responsibilities. Characteristics will be able to influence a person's actions in carrying out an activity. In this case the activity in question is the participation of farmers in developing farming, with the characteristics of these farmers it is hoped that it can affect the work productivity of farmers and achieve the goals set in developing organic rice (Maluhima et al., 2019). Each farmer has different characteristics as a driving force in taking action, just like organic rice farmers who have the determination to continue to choose to develop organic rice to meet their daily needs. This will have an impact on the income received by farmers. The decrease in the amount of family income will then affect farmers in further farming financing (Priono et al., 2021).

Based on the results of data analysis, it shows that the variable characteristics of farmers in the BPP Farmer group in Plumbon District with the highest percentage is 56.92%, with 37 people in the criteria of quite a lot, while the lowest percentage is 9.23% or as many as 6 people in the criteria of a little. The average for the respondents' answers to the characteristics of farmers in the criteria is quite a lot with a percentage of 75%. The results of the criteria for farmer characteristics can be seen in Table 1.

Table 1. Results of Farmer Characteristic Criteria

Presentation intervals	Category	Frequency	Percentage	Average
82-100	Lots	22	33%	75%
63-81	Pretty much	37	56.92%	
44-62	A little	6	9.23%	
25-43	The least	0		

Source: Primary Data Analysis (2023)

Application of Organic Farming Systems

The organic farming system is an integrated production management system that avoids the use of artificial fertilizers, pesticides and genetically engineered products, reduces air, soil and water pollution (Rachma and Umam, 2020). Changes in lifestyle and perspective of the Indonesian people towards agricultural products that are increasingly concerned about nutritional value, taste and product safety can increase the prospects for organic farming in the future (Awani, 2008). This is because organic farming systems can provide products that are free from inorganic chemical residues originating from the use of pesticides and chemical fertilizers. The role of organic agriculture in production, processing, distribution and consumption aims to preserve and improve the health of ecosystems and organisms, from the smallest in the soil to humans. In particular, organic agriculture is intended to produce high-quality, nutritious food that supports the maintenance of health and well-being (Purwantini and Sunarsih, 2020).

Based on the results of data analysis, it shows that the variable Application of Organic Farming Systems in the BPP Farmer Group in Plumbon District with the highest percentage is 69.23%, with 45 people in the criteria of quite a lot, while the lowest percentage is 3.07% or as many as 2 people in the criteria of a little. The average for respondents' answers to indicators of implementing organic farming systems in the criteria is quite a lot with a percentage of 78%. Results of variable level Application of Organic Farming Systems can be seen in Table 2.

Table 2. Results of the Implementation of Organic Farming Systems

Presentation intervals	Category	Frequency	Percentage	Average

82-100	Lots	18	27.69%	78%
63-81	Pretty much	45	69.23%	
44-62	A little	2	3.07%	
25-43	The least	0		

Source: Primary Data Analysis (2023)

Income Analysis of Organic Rice Farming at BPP Plumbon District

Farmer's income is the amount of revenue after deducting all input values or production costs, whether actually paid or calculated. Farmer's income is also the difference between revenue and all costs incurred, if the value of the difference is positive, it can be said that farming is profitable (Kadek et al., 2019). Farm income is analyzed using the concept of income on cash costs and income on total costs.

Based on the data analysis of farming costs, it can be seen that rice farming is IDR.3,889,891 variable costs IDR. 7,469,619, the total costs incurred by organic rice farmers in the planting season for the April-June 2017 period obtained an average of Rp11,359,510 per hectare. Business revenue is the result obtained from business activities through the calculation of the selling price with the number of harvests produced, rice farming harvests 3,000 kg, the price agreed upon by the farmers is IDR 10,000. Farming income obtained by Rp.30,000,000. The R/C ratio value obtained was 2.64 indicating that out of the costs incurred in the amount of IDR. 9,783,174, revenues of 3.07 times would be obtained. An R/C ratio value of more than 1 indicates that organic rice farming is feasible to develop because the organic farming system is a way of farming or processing agricultural products without involving artificial chemicals, such as chemical fertilizers, chemical pesticides, and body regulators.

Organic farming is equated with traditional farming, sustainable farming, harmony farming and natural farming (Prajatino et al., 2021). The main goal of organic farming is to improve and fertilize land conditions and maintain the balance of the ecosystem. According to Rusiyah et al., (2012) another advantage of organic farming is that organic farming is an agricultural system in harmony with nature so it will not damage the environment. This is because organic farming combines traditional farming systems and wisdom with agricultural science that continues to grow.

As for the nutritional content in organic rice, it is higher than inorganic rice. This is in line with research Ar-Rozi et al., (2020) that organic rice is a healthy food because the production process does not use synthetic materials that are harmful to human health.

Relationship between Farmer Characteristics and Application of Organic Paddy Rice Farming Systems with Farmer Income

The relationship between farmer characteristics and the implementation of organic rice farming systems with farmer income was tested using the Spearman Rank correlation coefficient analysis method. This study uses the dependent variable (variable Y), namely farmer income and the independent variable (variable X), namely the characteristics of farmers and the application of organic rice farming systems.

Based on the analysis of the calculation results of Spearman's rank correlation coefficient, it shows that there is a significant and moderate correlation between farmer characteristics and the application of lowland rice organic farming systems to farmer income. Based on the output above, it is known that N or the amount of research data is 65, then the sig.(2-tailed) value is 0.000, as the basis for the decision above, it can be concluded that there is a significant relationship between farmer characteristics and farmer income.

This is in line with research Burano and Siska (2019)shows that farmer characteristics affect the income of lowland rice farmers in Nagari Batu Malang which is shown from the results of the analysis where the $t_{arithmetic}$ value (17.135) > t_{table} (1.990). The results of data analysis on the relationship between farmer characteristics and farmer income can be seen in Table 3.

Table 3. Results of data analysis on the relationship between farmer characteristics and farmer income

			Characteristics of Farmers	Farmers' income
Spearman's rho	Characteristics of Farmers	Correlation Coefficient	1,000	,703**
		Sig. (2-tailed)	.	,000
		N	65	65
	Farmers' income	Correlation Coefficient	,703**	1,000
		Sig. (2-tailed)	,000	.
		N	65	65
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Primary Data Analysis (2023)

Furthermore, from the results of the analysis it is known that the Correlation Coefficient is 0.703, so this value indicates a moderate relationship between farmer characteristics and farmer income. Based on the output of the implementation of the organic farming system it is known that N or the amount of research data is 65, then the sig.(2-tailed) value is 0.000 which is less than 0.05 as the basis for the decision above, it can be concluded that there is a significant relationship between the application organic farming system and farmer income. Furthermore, from the output above it is known that the Correlation Coefficient is 0.643, so this value indicates a moderate relationship between the application of organic farming systems and farmer income.

This is consistent with the results of the study Hartati (2020) shows the percentage distribution of organic rice farming income is at a low level of inequality and the overall distribution of income received by organic rice farmers is good or even. The good economic condition of organic rice farmers indicates an improvement in farmer welfare. Welfare itself is an indication of individual income and people's purchasing power (Yanti et al., 2022). The results of data analysis on the relationship between the application of lowland rice organic farming systems and farmer income can be seen in Table 4.

Table 4. The Relationship between the Implementation of Organic Paddy Rice Farming Systems and Farmer Income

correlations				
			Application of Organic Farming Systems	Farmers' income
Spearman's rho	Application of Organic Farming Systems	Correlation Coefficient	1,000	,643**
		Sig. (2-tailed)	.	,000
		N	65	65
	Farmers' income	Correlation Coefficient	,643**	1,000
		Sig. (2-tailed)	,000	.

correlations		
N	65	65

**. Correlation is significant at the 0.01 level (2-tailed)
Source: Primary Data Analysis (2023)

Based on the results of the analysis, it is known that the value of t count is 7.551 for X1 and 5.252 for X2, while for t_{table} 1.998 $t_{arithmetic} > t \alpha/n(n-2)$. This shows that there is a real relationship between the characteristics of farmers and the application of organic farming systems with farmers' income. The relationship between farmer characteristics and the implementation of organic rice farming systems with farmer income can be seen in Table 5.

Table 5. Relationship between Farmer Characteristics and Application of Organic Paddy Rice Farming Systems with Farmer Income

Coefficientsa					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	std. Error	Beta		
1 (Constant)	-30,578	8,663		-3,530	,001
x1	,858	, 114	,589	7,551	,000
x2	,542	, 103	,410	5,252	,000

a. Dependent Variables: y

Source: Primary Data Analysis (2023)

The development of organic farming is expected to be able to increase production yields and economic income for organic rice farmers. This is in line with research Rosyida et al., (2021) the level of adoption of farmer innovations and characteristics of farmers affect farmers' income. In essence, the farmer's income, which consists of various businesses that he does as income from farming, where the workforce comes from his own family, can be calculated as a variable cost of production (Yanti et al., 2022). The transition from inorganic farmers to organic farmers provides great environmental, health, social and economic benefits. Organic farming can also strengthen local dependency, create jobs and increase economic sustainability in rural areas. It can also improve the quality of life of farmers by reducing exposure to hazardous chemicals and increasing the sustainability of natural resources (Mayrowani, 2012).

CONCLUSION

Based on the results of the research that the researchers have done, it can be concluded as follows: (1) there is a moderate relationship between farmer characteristics and farmer income in the BPP Farmer Group in Plumbon District, which is equal to 0.703, (2) there is a moderate relationship between the implementation of organic rice farming systems and farmers' income in the BPP farmer group in Plumbon District, which is 0.643, and (3) there is a significant relationship between the characteristics of farmers and the application of organic farming systems to farmers' income. Based on the output that $t_{arithmetic}$ X1 = 7.551 and X2 = 5.252 > t_{table} which is 1.998.

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