

Socio-Economic Factors Affecting Rice Farmers' Decisions Using Direct Seed Planting Technology (Tabela) And Without Tools In Ujung Tanah Village, Mare Sub District, Bone District, South Sulawesi

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SOCIO-ECONOMIC FACTORS AFFECTING RICE FARMERS' DECISIONS USING DIRECT SEED PLANTING TECHNOLOGY (TABELA) AND WITHOUT TOOLS IN UJUNG TANAH VILLAGE, MARE SUB DISTRICT, BONE DISTRICT, SOUTH SULAWESI

ABSTRACT

This study analyzes socio-economic factors based on age, education, farming experience, labor, and land area on lowland rice farmers' decision-making using Tabela (direct seed planting) and without tools in Ujung Tanah Village, Mare Sub-District of Bone District, South Sulawesi. This research was conducted in January-December 2020. This research was conducted in Ujung Tanah Village, Mare Sub-District, Bone District. The population in this study were all lowland rice farmers in Ujung Tanah Village, as many as 347 farmers. Determination of the number of samples was carried out in 2 ways, namely the census method for Tabela tool farmers by taking the total population of 15 farmers and for Tabela farmers without tools by taking 10% members of 10 farmer groups with 332 population numbers, determining the sample using the cluster proportional random sampling technique. With 33 farmers, the total of the samples in this study were 48 people. The data method is logistic regression analysis. The results of this study are that the socio-economic factors that influence the decisions of lowland rice farmers in the use of direct seed planting technology (Table Toola), namely the farming experience variable and the land area variable have a negative effect. In contrast, the labor variable has a positive impact.

Keywords: decision; logistic regression analysis; rice farming; socio-economic; tabela.

INTRODUCTION

South Sulawesi (South Sulawesi) is the largest food crop-producing area in Eastern Indonesia. As a national rice barn, South Sulawesi is a potential food crop production, especially in Bone Regency, which is the district with the highest rice production, namely 1,020,365 tons of grain (BPS South Sulawesi 2019), and one of the sub-districts where the community produces lowland rice is Mare District. The total rice production is 1,398,151 tons of grain, with the lowest rice productivity only reaching 5.04. tons/hectare in 2018, when compared to Bone District, which has an average productivity of 5.81 tons/hectare, the productivity of lowland rice in the Mare Sub-District is lower. Ujung Tanah Village is one of the villages whose residents live as rice farmers, with 651 ha, the largest rice field area. Lowland rice farmers in Ujung Tanah Village have been using direct scattering seed technology (without the Tabela tool) and using the direct seed planting tool technology (Tabela tool) in their farming activities.

Many efforts have been made to develop agriculture. Lowland rice production and farmers' incomes continue to increase, creating the jajar legowo system planting pattern using the Tabela tool by providing production facilities for farmers in Ujung Tanah Village. However, many farmers do not want to switch from the planting system without the Tabela tool to the rowing system using the Tabela tool. Factors Affecting Farmers' decision to apply or not apply the Table technology, as an innovation, depends on external and internal factors. External factors come from the external environment, and internal factors come from within the farmers themselves. The adoption of innovation for a farmer is related to internal factors, namely the characteristics of the farmer, namely age, education level, number of family dependents, the intensity of counseling received, and the courage to take risks (Soekarno 2005).

Socio-economic factors that influence the decision to adopt innovation for a farmer are related to internal factors, namely from the farmer's side, including age, education level, farming experience, land area, and labor (Hasyim 2006). Socio-economic status is a condition or position that is socially regulated in a certain place in the structure of society. Determined by the type of farmer's economic activity (Basrowi and Juariyah 2010). This study aimed to analyze the influence of socio-economic factors on the decision-making of lowland rice farmers in using Tables with and without tools in Ujung Tanah Village.

MATERIALS AND METHODS

The research was carried out in Ujung Tanah Village, Mare Sub-District, Bone District, from January to December 2020. The location of the study was determined purposively based on the consideration of the widest rice fields. Determination of the number of samples is carried out in 2 ways, namely the census method for Tabela farmers by taking the total population of 15 farmers and

for Tabela farmers without tools by taking 10% members from 10 farmer groups with 332 population numbers, determining the sample using cluster proportional random sampling technique. With 33 farmers, the total sample used was 48 people. Analysis of the data used is logistic regression analysis. The research hypotheses, namely (1) the variables of education, labor and production results, have a positive effect on the use of the Tabela tool and (2) the variables of age, land area, farming experience, and production costs harm the use of the Tabela tool.

RESULTS AND DISCUSSION

Socio-Economic Factors Influencing Rice Farmers' Decisions in Using Direct Seed Technology

Testing the hypothesis to determine the factors that influence the decision of lowland rice farmers in the use of direct seed planting technology (Table) was carried out using logistic regression analysis. First, the feasibility test of the logistic regression model was carried out by looking at the Hosmer and Lemeshow values to determine the suitability of the model and the Nagelkerke R Square value to measure the model's goodness, then testing the entire model by looking at the Likelihood Ratio value, after that a partial test was carried out to interpret the coefficients.

1. Assessing the Feasibility of the Model (Goodness Of Fit)

The goodness of fit test is used to determine the feasibility of the model by testing the null hypothesis that the empirical data is suitable or following the model (there is no difference between the model and the data so that the model can be said to be fit) (Ghozali 2018) This test can be done by looking at the results of the SPSS output of Hosmer's part and Lemeshow Test and Nagelkerke R Square.

a. Hosmer and Lemeshow Test

Hosmer and Lemeshow Test are used to determine the suitability of the model. If the value of Hosmer and Lemeshow Test 0.1, then the model used is not following the hypothesis. If the value of Hosmer and Lemeshow Test on the SPSS output > 0.1, then the model used is pursuing the hypothesis. The SPSS output display shows that the Hosmer and Lemeshow statistical value is 2.816 with a significant probability of 0.945 (Sig > 0.1). Therefore, the logistic regression model used is appropriate and acceptable because there is no significant difference between the model and the hypothesis that has been made.

b. Determinant Coefficient (Nagelkerke R Square)

Nagelkerke R Square (R²) measures the good or the closeness of the relationship between the dependent and independent variables. The coefficient of determination (Nagelkerke R Square) is 0.897. This value indicates the strength of the model used in the study. The higher the value of R Square, the better and the quality of the advice given. This value can be interpreted that the variation of the dependent variable (farmers' decisions in using direct seed planting technology) can be explained by the independent variables (variables of age, education, farming experience, land area, and labor) of 89.4%. In comparison, the remaining 10.6% is explained by other variables not included in this study.

2. Assessing the Overall Model (Overall Model Fit Test)

Assessing the overall model or testing the significance level of the logistic regression model is carried out using the likelihood ratio test (G-test). Based on the analysis results, it was obtained that Ghitung was 48.499 with a significance value of 0.000 at an error level of 10% or = 0.1 or a 90% confidence level (Table 6). The significance value of Gcount 0.000 is smaller than the whole level used (0.1), so it can be interpreted that age (X1), education (X2), farming experience (X3), land area (X4), and labor (X5). Significant effect on the dependent variable (Farmers' decision making in applying the Taba technology). Therefore the model is stated according to the data and can be used for further analysis.

3. Partial Test (Analysis test)

The partial test, also called the Z/wald test, is used to test independent factors or variables that can significantly affect the dependent variable alone. After re-specifying the model by excluding the variables of production costs and production results, the variables that can be used obtained: age, length of education, farming experience, land area, and labor. The estimation results of the logistic regression model are presented in Table 6.

Table 6. Estimation Results of the Logistics Regression Model

No	Variable	Coefficient	Std. Error	Z.Count	Significance
	Konstanta	15,027	9,428	2,540	0,111
1	X1 (Umur)	-0,049	0,155	0,101	0,751
2	X2 (Pendidikan)	-0,238	0,359	0,437	0,509
3	X3 (Pengalaman Usahatani)	-0,464	0,277	2,808	0,094*
4	X4 (Luas Lahan)	-8,806	4,192	4,414	0,036*
5	X5 (Tenaga Kerja)	15,508	6,185	6,287	0,012*
	Nagelkerke R Square	0,894			
	Likelihood Ratio (LR)	48,499			
	Sig (LR statistik)	0,000			
	Hosmer and Lemeshow	2,816			
	Sig (H and L)	0,945			

Information: * = Real or significant at the 90% confidence level or = 0.1

3 The results of the estimation of the regression coefficient using the logistic model on the five independent variables in Table 6 show three variables that influence the decision of farmers to apply the Taba technology. These variables are farming experience (X3), land area (X4), and labor (X5). Variables that do not affect are age (X1) and education (X2).

a. Age (X1)

19 Data analysis using logistic regression was carried out to determine the opportunities and factors that influence farmers' decisions in using the Taba technology. Through the Wald test (partial), the farmer's significance value was 24 obtained at 0.751. This value is greater than 0.1, which means that the age variable of the farmer has no significant effect on the decision of the rice farmer to use the Taba tool. The facts show that the age of farmers who use the Tabela tool and those who use it without the Tabela tool are generally productive. Because both groups of respondents are included in the criteria of productive age, so the variable age of farmers does not affect rice farmers' decision to use the Taba tool.

When viewed from the age of the respondents, young farmers have the opportunity to use the Taba tool in their farming. Because they have a stronger power compared to older farmers. The provision of tools and the use of the Tabela tools are considered complicated by older farmers. Farmers who are still of productive age, who have not used the Tabela tool, should use the tool to increase productivity and reduce seeds and farm costs. However, the farmer's age cannot be used as a reference for farmers 2 to be able to decide to use the Tabela tool in their farming. This is in line with the research, Wongkar et al. (2016), which states that there is no real relationship between age and adoption of rice cultivation innovations because farmers in the old age group are more oriented to their experience than trying to implement innovations.

b. Length of Formal Education (X2)

A person's level of education can change the mindset reasoning power is better, so that the longer a person receives education, the more rational it will be. In general, farmers with higher education will have a better way of thinking, thus enabling them to act more rationally in managing their farms 4 (Assegaf 2017)

Based on the results of statistical data analysis, through the Wald Test, the significance 26 value of the level of education was obtained at 0.509. This value is greater than 0.1, which means that the level of education does not affect the decision of lowland rice farmers to use the Taba tool. This is because knowledge about the use of the Tabela tool is not taught in formal education. Still, they get wisdom from the head of the farmer group, who has attended the counseling of the Tabela tool. So that farmers prefer to use it without the Tabela tool because using it without the Tabela tool is considered easier.

This is in line with Wijayanti et al. (2016) research that there is an insignificant relationship between formal education and farmers' attitudes towards the Taba system. Likewise with the results of research, Ariyanto et al. (2017) state that there is no relationship between education and the implementation of the Tabela system by farmers in Geragai Subdistrict, Tanjung Jabung Timur District, with the percentage value of education only 32.56%, meaning that most farmers do not obtain Tabela information from schooling. This means that the higher the formal education was taken by the farmer 2 it does not mean that the higher the level of implementation of the Tabela system is. This is not in line with the research of Novita et al. (2016), which states that there 29 a significant relationship between formal education and socio-economic and cultural characteristics with the level of application

of technology for lowland rice farming in swampy swamps in Sekernan District, Muaro Jambi District with a 95% confidence level.

c. Length of Farming Experience (X3)

Based on the results of statistical data analysis, through the Wald test, the significance value of long farming experience is 0.094, which is less than 0.1. This shows that the length of experience in farming has a significant effect on the decisions of rice farmers in using the Table tool. Furthermore, the size of experience in agriculture has a negative regression coefficient (-), meaning that the more experienced rice farmers are, the smaller the decision to use the Table Tool. On the other hand, inexperienced farmers are more likely to decide to use the Tabela tool.

Experience in rice farming is a variable that measures the length of time a farmer has been in running a rice farm. Respondent farmers who have shorter experience are usually more challenged to try new farming patterns, so they want to apply farming patterns using the Table tool. This is different from farmers who have long experience who do not wish to change their farming patterns. The longer the experience of farmers in rice cultivation, the more accustomed farmers are to the method without the Tabela tool, so it isn't easy to accept new approaches that are not necessarily successful if applied. This is also associated with the increasingly proficient farmers in rice farming because they learn from experience so that farmers feel they understand enough how to do rice farming which, according to him, makes it easier for them in terms of planting and can provide maximum production and income. If this happens, farmers feel they do not need new methods or technologies in rice farming.

This is in line with the research of Ismilaili et al. (2015), which states that the experience of farming has a significant effect on the level of adoption of PTT rice innovation. Likewise, Musyarofah's research (2013) says that there is a significant negative effect between farming experience variables and integrated crop management (PTT) by rice farmers in Ciherang Village, Dramaga District, Bogor District, West Java. The researcher concluded that farmers who have longer experience usually do not want to change their farming patterns. This is because the farmer is used to his farming pattern.

d. Land Area (X4)

Based on the results of statistical data analysis, through the Wald Test, the significance value of the land area is a significance value of 0.036, less than 0.1. This shows that the location of farming land has a significant effect on the decision of lowland rice farmers to use the Tabela tool or without the Tabela tool. Furthermore, the variable of land area has a negative regression coefficient (-). Therefore, the wider the area of land cultivated by farmers, the decision to use the Tabela tool tends to be smaller. On the other hand, lowland rice farmers who have narrow land are likely to use the Tabela tool.

The area of land cultivated by lowland rice farmers who use the Taba tool is included in the category of medium arable land area with a percentage of 93%. In contrast to farmers without the Tabela tool, the land area varies from narrow land to large land (Table 5). farmers who have medium ground can decide to use the Table tool. Because when paddy fields are faced with problems with high rainfall, the stagnant water in paddy fields takes a long time to recede, while the condition of the land using the Tabela tool must be moist land or land that is not flooded so that when planting seeds it remains at a constant level. Desired line position.

This is in line with Nurhilal's research (2013) that the factor of land area together has a significant effect on the adoption of direct seed planting technology (Tabela) in Buntu Barana Village, West Suli District, Luwu District. Likewise, with the research results by Payong et al. (2018), the land area factor has a significant effect on the adoption of the jajar legowo system.

e. Labor (X5)

Based on the results of statistical data analysis (through the Wald test), the significance value of labor is 0.012, which is less than 0.1. This shows that work in lowland rice farming significantly affects farmers' decisions to use the Tabela tool or without the Tabela tool. The variable number of workers has a positive regression coefficient (+), meaning that the more available labor is, the greater the farmer's decision to use the Table Tool. On the other hand, the smaller the number of workers public, the less likely the farmer will decide to use the Tabela tool.

The use of labor is one of the factors that determine the success of lowland rice farming management. The labor used by farmers is family labor. The involvement of the workforce in this research, especially in rice planting using the Tabela technology (with and without tools). The results show that using the Tabela tool takes longer than the system without the Tabela tool.

The use of the Tabela tool technology requires greater labor assistance because it is to help the planting be completed quickly and help prepare the seeds and put the seeds in the Tabela tool tube. Meanwhile, without the Tabela tool, farmer skills are needed in estimating the distance between the seeds planted to the soil surface when sown. Labor assistance without the Tabela tool is required if the farmer has a very large area of land, the location of the land is different, and the distance between the fields is far apart.

Efficient use of time and labor in using the table tool is found in the rice plant maintenance stage. Regular spacing makes weed cleaning easier to do without damaging the surrounding plants so that the cleaning and maintenance of rice plants are maximized.

This is in line with the research of Siregar et al. (2015), which states that the factors that influence farmers to switch to the Tabela system are land area, use of labor, and income. The wider the scope of farming land, the probability of farmers' decision to switch to lowland rice farming with the Taba system increases.

CONCLUSIONS AND SUGGESTIONS

Socio-economic factors that influence the decision of lowland rice farmers in the use of direct seed planting technology (Table) are farming experience, land area, and labor. At the same time, age and formal education do not affect farmers' decisions in using Table technology with and without tools. Therefore, it is recommended that all farmers be able to plant rice using the Taba tool by utilizing the available workforce, both family and non-family workers, which is the government's appeal to increase production and productivity of lowland rice in Ujung Tanah Village.

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