

## **THE LEVEL OF FARMERS' KNOWLEDGE ABOUT PADDY FIELD MULTIFUNCTION AND THE WILLINGNESS TO MAINTAIN PADDY FIELD OWNERSHIP IN YOGYAKARTA-MAGELANG CORRIDOR**

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### **ABSTRACT**

This research aims to know the level of farmers' knowledge about multifunction of paddy field, to know the willingness of farmers to retain the ownership of paddy fields, to identify the factors that affect farmers' knowledge about multifunction of paddy field and the willingness of farmers to maintain paddy fields also to know the effect of it. This research is a survey and the number of samples is done proportionally, while making respondents conducted randomly. This research used the analysis of frequencies tables, ordinal regression analysis, and a simple linear regression analysis. The results showed that the level of farmer knowledge is moderate. The level of farmers' willing to maintain the ownership of paddy field is moderate. The factors that affect the level of farmers' knowledge about multifunction of paddy field is farmers' income, frequency of agricultural extension, education, farmers main reason for farming, and participation in farmer groups. The factor that influence the willingness of farmers to maintain the ownership were age, education, paddy field distance, frequency of farmers to follow agricultural extension, and participation in a group of farmers. The influence of farmers' knowledge about multifunction of paddy field toward farmers willing to maintain the ownership of fields is low.

**Keywords:** Farmer, Maintain, Multifunction, Paddy Field

### **1. INTRODUCTION**

The development of Yogyakarta City and Magelang City has had a major impact on the transformation of the territory in the Yogyakarta - Magelang Corridor. Along the road between Yogyakarta and Magelang has been a phenomena of land conversion from agricultural land, especially paddy field to non-agricultural. In fact, on one side of the area in the corridor is a fertile agricultural area and supported by adequate irrigation channels. Changes in land use which occurred along the Yogyakarta-Magelang corridor do not just happen as simple as we see, but through complex processes and influenced by the distinctive causal factors either internal

(individual family farming) or by external factors (family farming environment and location of paddy field).

Researchers argue that the occurrence of land conversion along the Yogyakarta - Magelang corridor will continue to occur and will not be controlled until there are clear and firm regulation on the protection of agricultural land. But not only that, the low knowledge of farmers about paddy field multifunction will affect the decision of farmers to not maintain their paddy field ownership. The low decision of the farmers influenced by the low knowledge level of paddy field multifunction and influenced by the ratio of land rent.

Sudirman (2012) assumes that the low value of agricultural land is due to the multifunctional assessment of agricultural land, which is still done with the market paddy approach, has not taken into account the value of the multifunction of agricultural land with a un-market approach, especially environmental services produced. In fact, the ratio of land rent to agriculture is very different from the use for industry, housing, tourism, and production forests.

The occurrence of the conversion of agricultural land to un-agricultural land can result in loss of food production and reduced availability of food of the region, disturbed and even disconnected farming sustainability and income of farmers resulting in loss of agricultural employment for farmers (Sudirman, 2012). But despite the negative impacts of land conversion, there is still a positive impact of agricultural land conversion. Sudirman (2012) reveals examples of the positive impacts of land conversion, namely (a) increasing the value of agricultural land properties around it as a logical consequence of the increase in land paddy, (b) increasing the value of land rent from paddy fields to constructed land, (c) increased business opportunities and employment opportunities in the un-agricultural sector.

Based on the explanation of the problem that has been described above, then this study aims to (1) to know the level of knowledge of farmers about paddy field multifunction in the Yogyakarta - Magelang corridor, (2) to know the farmers 'willing to maintain the ownership of paddy fields in the Yogyakarta-Magelang corridor, (3) to identify the factors that affecting the farmers' knowledge about paddy field multifunction and farmers willing to maintain the paddy fields in the Yogyakarta - Magelang corridor, (4) to know the effect of farmers 'knowledge of paddy field multifunction towards farmers' willing to maintain the ownership of paddy fields in the Yogyakarta-Magelang corridor.

## **2. METHOD**

The basic method of this research is survey. The tool used in this study is a questionnaire that is divided into four groups of questions. The groups of questions are about the characteristics of farmers, the characteristics of paddy fields, farmers 'knowledge of paddy field multifunction, and

questions about farmers' willing to maintain the paddy field ownership. This research is a kind of descriptive analytical research that is describe each variable one by one. This method aims to collect information in an actual and detailed things.

The study was conducted in the corridor or along the road between Yogyakarta City and Magelang City. The basis of the selection of research sites is the existence of the phenomenon of paddy fields are confined buildings and the number of land conversion that occurred. Another consideration is the rapid development of the city of Magelang and the split road between the city of Yogyakarta and the city of Magelang. The existence of the city of Yogyakarta as a strategic city and has grown longer than the city of Magelang is also one of the basic selection of this corridor studied. The length of the road between Yogyakarta - Magelang is 47 km which stretches between two provinces, namely Central Java Province and Daerah Istimewa Yogyakarta.

The sample is part of the population that can be represent the population. Farmers who own the paddy fields in the Yogyakarta-Magelang corridor are the population. Farmer-owned paddy fields in the Yogyakarta-Magelang corridor are divided into 3 (three) zones. Based on these conditions, the sampling amount from each zone in each research zone is done proportionally, while the respondent's is randomly.

The first objective in this research is to know the level of knowledge of farmers about paddy field multifunction and the factors that influence it. To know the level of knowledge of farmers about paddy field multifunction, used Likert scale. In Likert scale, the measured variable is split into sub-variables and sub-variables are translated into measurable indicators. These indicators can be used as a starting point to create a research instrument in the form of questions or statements that need to be answered by the respondent (Ridwan, 2008 in Sudrajat, 2013).

Any alternate response on a likert scale is weighted. For a positive statement the answer is very know given a score of 5, to know given a score of 4, to hesitate given a score of 3, to not know given a score of 2, and to very not know given the score 1. As for the negative question is the opposite score of positive. The calculation of the score is done with two kinds of scores, namely the largest score per-respondent can be given by a respondent, and the total score of the total respondents. Scores given on the answers for each item are then summed (Sudrajat, 2013). To accomplish the analysis in statistics, there are conversion of scale values from ordinal scale to interval scale.

To know the factors that influence the level of knowledge of farmers about paddy field multifunction, as well as factors affecting the willingness of farmers to maintain the paddy field ownership done by ordinal regression analysis. Ordinal regression analysis is used to measure the

influence between more than one predictor variable (independent variable) to the dependent variable scaled ordinal data. The ordinal regression formula used in this study is

$$f(x)=\log(x/(1-x))\dots\dots\dots(1)$$

The fourth objective of this study is to examine the effect of farmers' knowledge on paddy field multifunction toward farmers' willing to maintain paddy field ownership. To answer the fourth goal, a simple linear regression analysis is used. The simple linear regression analysis formula is

$$Y= a + bX\dots\dots\dots(2)$$

Explanation:

Y= the farmers' willing to maintain the ownership of paddy fields

A= constants

B= regression coefficient

X= knowledge of farmers on multifunctionality of paddy field

### **3. RESULTS AND DISCUSSION**

Multifunctionality of paddy fields in this study are divided into four groups of functions, namely economic functions, social functions, positive functions for the environment, and negative function for the environment. The economic functions of paddy fields referred to in this study are food producers, sources of Locally Generated Revenue (PAD) based on land tax, sources of PAD based on other taxes, and sources of income. The paddy field's social functions are to provide job opportunities, prevent urbanization, the means of growing sense of togetherness (mutual cooperation), refreshing and landscape facilities, tourism facilities, and as a means of education. All functions incorporated in social and economic functions are categorized as a function of paddy field for humans.

The positive function of paddy field for the environment referred in this research is the function of paddy fields to reduce the chance of flooding, reduce the chances of erosion, reduce the chance of landslides, maintain water circulation balance, reduce air pollution due to industrial pollution, and reduce environmental pollution based on organic fertilizer return on paddy fields and means of maintaining biodiversity.

Negative function of paddy field for environment referred in this research is global warming based on greenhouse effect, water contamination based on chemical usage, soil contamination

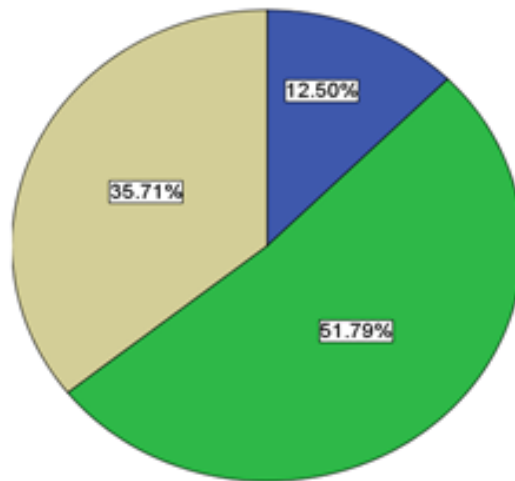
based on chemical usage, reducing certain type of biodiversity, and silting of river and irrigation channel due to puddling during the processing activity of soil.

Based on Table 1 it can be seen that in the positive function of paddy fields, farmers have a tendency of low and medium knowledge. Only 16.1% of farmers are well aware of the positive function of paddy fields for the environment. However, unlike farmers' knowledge about the positive function of paddy fields for the environment, in the negative function of paddy fields for the environment most of the farmers know in the medium category. This is very worrying, because the farmers themselves have not much to know the positive function of paddy fields. This results in the farmers' ignorance of these functions.

**Table 1: Percentage of Farmers' Knowledge About Paddy field Field Multifunction**

Classification	Percentage of Farmers' Knowledge About Paddy field Field Multifunction (%)			
	Possitive for Environment	Negative for environment	Social	Economy
Low	41,1	19,6	5,4	3,6
Medium	42,9	66,1	44,6	30,4
High	16,1	14,3	50,0	66,1
Total	100	100	100	100

In contrast to the function of paddy field for the environment, the function of paddy fields for humans on social and economic aspects is more known than the function of paddy field for the environment. Farmers' knowledge of both functions tends to be high. This is related to the benefits that can be felt directly and can be known by farmers. The results of this study support the results of research conducted by Rahmanto, et al (2006) and Sormin (2012) that the most familiar functions of farmers are the functions which are related to social and economic aspects. There are needs to be strengthening on the function of paddy field for the environment so that the knowledge of farmers can be comprehensive. Generally based on Figure 1 it can be seen that the knowledge of farmers about multifunctionality of paddy fields is low with a percentage of 51.79%. This is interesting because it has logical consequences with farmers' knowledge about the function of paddy fields partially. However, only 12.50% of farmers are aware of multifunctionality of paddy fields in the low category.



**Figure 1: Farmers Knowledge Level About Paddy field Field Multifunction**

(Blue=Low, Green=Medium, Grey=High)

In addition to the description of the level of knowledge of farmers associated with multifunction of paddy field, there is also an analysis that can determine the factors that affect farmers' knowledge about multifunctionality of paddy fields. Based on the result of ordinal regression analysis which has been tested its feasibility using Goodness of Fit, Pseudo R Square, and Test of Pararell Lines, there are five factors influencing farmer's knowledge about multifunctional paddy field in corridor of Yogyakarta-Magelang.

The results of the analysis shown in Table 2, showed that the factors of farmer education, farmers' income from farming products, the frequency of farmers following agricultural counseling in the last year, the main reason for farmers and farmers' participation in a farmer group are the factors that influence farmers' multifunctional paddy fields in the intercity corridor of Yogyakarta-Magelang. The influence of these five factors can be said to be significant because the value of Sig. it is below the value of 0.05 or a confidence level above 95%.

**Table 2: Parameter Estimates (Factors Affecting Farmer's Knowledge of Paddy field Field Multifunction)**

Factor	Estimate	Wald	Sig.
Education	.171	3.702	.054
Farmer Income	1.741E-6	4.379	.036
Frequency of Counseling	2.028	8.342	.004
Farming Reason (Second Job)	1.975	4.294	.038
Farming Reason (Primary Job)	0 <sup>a</sup>	0	0
Do not join any farmer group	2.024	4.003	.045
Join the farmer group	0 <sup>a</sup>	0	0

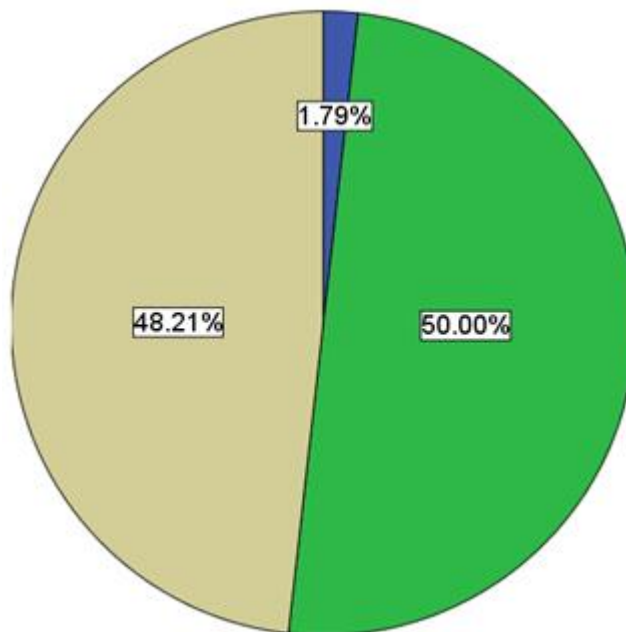
This is unique to two factors that influence farmers' knowledge of multifunctionality of paddy fields. Logically farmers who make farming as the main livelihood will know more about multifunction from paddy fields, but it turns out that farmers who make farming as an additional activity are farmers who know more multifunctional paddy fields. The same is true of farmers' participation in farmer groups. Farmers who do not participate in a farmer group are more aware of multifunctional paddy fields than farmers participating in farmer groups. In addition to the knowledge of farmers about multifunctionality of paddy fields, in this study also examined farmers' willing to maintain the ownership of paddy fields. In this study, the farmers' willing to maintain the ownership of paddy field is divided into three groups of farmers' behavior to maintain the ownership of paddy fields. The first behavior is the behavior of farmers to the family associated with his willing to defend the paddy fields. The second behavior is the behavior of farmers to paddy fields, and the third behavior is the behavior of farmers to other farmers. Differences in the behavior of farmers related to their willing to maintain the paddy fields are needed to know in more detail the behavior of farmers in maintaining the ownership of paddy fields.

Based on Table 3 it can be seen that the farmers who want to maintain the ownership of paddy fields based on their behavior to the family is high. The farmer always reminds the family members not to sell the land, to increase the production, the paddy field will be inherited and so on. The farmers' willing to retain land ownership is also reflected in the behavior of farmers to paddy fields. Although the value is not as high as the behavior of farmers to the family, but the behavior of farmers to paddy fields also have a high tendency.

**Table 3: Percentage of Farmers' Willing Maintain Ownership of Paddy Fields**

Classification	Percentage of Farmers' Willing Maintain Ownership of Paddy Fields (%)		
	Behavior to the Family	Behavior to the paddy fields	Behavior to other farmer
Low	0,0	3,6	28,6
Medium	16,1	42,9	28,6
High	83,9	53,6	42,9
Total	100	100	100

Similarly, the behavior of farmers to other farmers, the farmers always remind other farmers not to sell the land, not to build buildings on paddy fields and disappointed if other farmers sell the land and build a buildings in the paddy fields. Although the value is lower than farmer behavior on family and paddy field but tends to high value. Overall, the farmers' willingness to maintain the ownership of paddy fields as shown in Figure 2 is moderately high with percentages reaching 50% (moderate) and 48.21% (high). Only 1.79% of farmers have a low willing to defend the land.



**Figure 2: Farmer's Willing to Maintain Ownership of Paddy Fields**

(Blue=Low, Green=Medium, Grey=High)



Based on Table 4, the factors that influence farmers' willing to maintain paddy field ownership are frequency of agricultural counseling which followed by farmers in the past year, farmer age, farmer education, land distance, and participation in farmer groups.

**Table 4: Parameter Estimates (Factors Affecting Farmer's Willing Maintain Ownership of Paddy Fields)**

Factor	Estimate	Wald	Sig.
Frequency of Counseling	2.221	5.692	.017
Age	-.095	3.855	.050
Education	.385	5.642	.018
Distance from Yogyakarta	-3.158	5.204	.023
Distance from Magelang	-3.070	5.285	.022
Follow the Farmer Gorup	2.880	3.776	.052
Unfollow the Farmer Group	0 <sup>a</sup>	0	0

There are negative effects of age and distance of paddy fields from Yogyakarta and Magelang. The younger of the farmers, the more they want to keep the land. The closer the paddy field to the area of Yogyakarta City or Magelang City, the higher farmers willing to maintain ownership of paddy fields. The most important thing in this research is to know the influence of farmer knowledge about multifunctionality of paddy field to farmer willing to retain the ownership of paddy field. Based on the overall results of calculations and test results, then in the regression model to influence the knowledge of farmers about multifunctionality of paddy field towards the willingness of farmers to maintain the ownership of paddy fields is

$$Y=32,138+0,294X+e.....(3)$$

The Y in the regression formula is the willingness of farmers to maintain the ownership of paddy fields. The value of 32.138 is the value that means the constant. X in the regression formula is the knowledge of farmers about multifunctionality of paddy fields with coefficient value of 0.294. Things to note is the value of R Square of 0.296. Based on the correlation analysis, the value of 0.296 is included on the effect of low category. Although the model is considered feasible and has a significant influence, but the correlation value is only 0.296 which means only 29.6% influence the farmer's knowledge about multifunctionality of paddy field against farmer's willingness to retain the ownership of paddy field.

#### **4. CONCLUSION**

Based on factors that have affected the farmers' willingness to maintain the paddy field ownership and farmers' knowledge of paddy field multifunction that extension activities are effective to encourage farmers to increase yields, increase farmers' knowledge of multifunctionality of paddy fields, and prevent farmers' willing not maintain the ownership of paddy fields. The government also needs to strengthen farmer groups that have been formed to promote the use of organic fertilizers. It needs a preventive effort that touches farmers to try to use organic fertilizer. The government needs to provide subsidies to farmer groups so that farmers will and always use organic fertilizer. Although the knowledge of farmers on multifunctional paddy fields has a low effect but it is worth noting, because it involves aspects of vulnerability and food security in Indonesia.

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