



## THE EFFECT OF AGRICULTURAL EXPLANATION ON RICE PRODUCTIVITY (*Oryza sativa* L.) (Case: Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency)

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### Abstract

*The purpose of this study was to determine the implementation of the agricultural extension program in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency. This study aims to determine the effect of agricultural extension factors on lowland rice productivity in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency. The analytical method used in this research is descriptive method and multiple linear regression analysis method using SPSS 17. Determination of the research location is done purposively. The sampling technique used is simple random sampling method with a total sample of 52 respondents. This research was conducted in 2018. The results show that the characteristics of the most respondents are in the age group 51-55 years where the percentage is 37%, the education of the most respondents is at the elementary education level where the percentage is 37%, length of farming The highest number is in the group 21-25 where the percentage is 35%. The implementation of the agricultural extension program in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency is quite good. Educational factors, length of time in farming, extension programs and competency of extension workers have a significant effect on productivity in the research area.*

Keywords: Agricultural extension, Productivity, Extension program, Competence of the instructor.

### 1. Introduction

Agricultural extension is defined as non-formal education aimed at farmers and their families with short-term goals to change behavior including attitudes, actions and knowledge towards a better direction, as well as long-term goals to improve the welfare of the Indonesian people (Sastratmadja, 2016).

Rice is the most important food crop in the world after wheat and corn. Rice is a very important food crop because rice is still used as a staple food for most of the world's population, especially Asia until now. Rice is a strategic commodity in Indonesia because rice has a great influence on economic and political stability (Herawati, 2012).

Agricultural extension in Indonesia has had a long history, which began in the early 20th century during the colonial period. Counseling stems from the need to increase agricultural output, both for colonial purposes and to meet indigenous needs. Counseling is also based on the fact that there is a large gap between the practices of farmers on the one hand and the existence of more advanced technologies on the other. The need for increased agricultural production is calculated to be fulfilled if the advanced technologies found by experts can be practiced by farmers as primary producers (Slamet, 2003).

The main task of the Agricultural Extension Officer is to provide counseling, then in the extension it can be divided into, preparing, implementing, developing, evaluating and reporting extension activities. Each PPL staff is expected to show good performance in carrying out extension tasks so that the objectives of agricultural extension activities can be realized which in turn can support the success of agricultural development. The success of the Agricultural Instructor does not depend solely on the technicality of the Agricultural

Instructor but is a combination of all aspects ranging from the implementation of the main tasks and functions of the Agricultural Extension Officer, institutions, extension methods used, as well as the condition of farmer groups (Kapantow et al, 2011).

The program to increase production is intended to achieve self-sufficiency and national food security, especially rice; increase the volume of exports of agricultural products, as well as import substitution; providing raw materials for the processing industry and realizing food and nutrition diversification (Andi, 2014).

Agricultural extension plays an important role for agricultural development, because extension is one of the efforts to empower farmers and other agricultural business actors to increase productivity, income and welfare without compromising environmental sustainability. Therefore, agricultural extension activities must be able to accommodate the aspirations and active roles of farmers and other agricultural business actors through a participatory approach (Hasan et al, 2016).

## **2. Research methods**

The method of determining the research area was carried out purposively, namely in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency, with the consideration that this area has rice productivity which tends to increase every year and this area is one of the areas fostered by agricultural extension workers who have received awards. as an exemplary 2015 THLTBPP (Employee Daily Self-help Agricultural Extension Worker)

The population in this study were lowland rice farmers in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency, who were members of the Bakti Farmers Group based on information obtained from agricultural extension workers in Kerapuh Village as many as 105 people. Determination of the sample was determined by the Simple Random Sampling Method with the sample size calculated by the Slovin Method so that 52 samples of farmers were obtained.

The data collected in this study consisted of primary data and secondary data. Primary data was obtained from interviews with farmers using a list of questions (questionnaires) that had been prepared in advance. Secondary data was obtained from related agencies such as the Agricultural Extension Agency (BPP), the Central Statistics Agency (BPS), and other agencies related to research.

To solve the problem (1) is analyzed using descriptive analysis, namely by looking at the implementation of agricultural extension activities in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency. To solve the problem (2) analyzed using Multiple Linear Regression Analysis and Scoring.

### 3. Results and Discussion

#### 3.1 The Influence of Agricultural Extension Factors on Rice Paddy Productivity in Kerapuh Village.

##### 3.1.1 Classical Assumption Test

The classical assumption test is carried out to provide certainty that the regression equation obtained is fixed in the estimate, unbiased and consistent. An equation model must be free from symptoms of normality, heteroscedasticity and multicollinearity.

##### 1. Normality test

Normality test is performed to see if the error term is normally distributed or not. The test was carried out using the Kolmogorov Smirnov test.

Table 1. Normality Assumption Test Results.

No.	Uji	Sig.
1	Kolmogorov-Smirnov	0.773

The significance value in the test is 0.773. This value is greater than the value of  $\alpha$ , so H0 is accepted and H1 is rejected. So it can be concluded that there is no violation of the normality assumption in the model used in this study.

##### 2. Heteroscedasticity

The heretoscedasticity test was carried out using the Glacier test. A significance value greater than 0.05 indicates that the model does not violate the heteroscedasticity assumption. The test results can be seen in the following table.

Table 2. Heteroscedasticity Assumption Test Results.

No.	Variabel Bebas	Sig.
1.	Pendidikan	0.727
2.	Lama Berusahatani	0.788
3.	Program Penyuluhan	0.062
4.	Kompetensi Penyuluh	0.805

The significance value of the independent variable is greater than the value of  $\alpha = 0.05$ . This shows that there is no violation of the assumption of heteroscedasticity.

##### 3. Multicollinearity Test

The multicollinearity test was detected by looking at the Tolerance and VIF values. Tolerance values 0.1 and VIF 10, indicating that there is no multicollinearity violation. The test results can be seen in the following table.

Table 3. Multicollinearity Assumption Test Results.

No.	Variabel Bebas	Tolerance	VIF
1.	Pendidikan	0.335	2.986
2.	Lama Berusahatani	0.375	2.668
3.	Program Penyuluhan	0.946	1.057
4.	Kompetensi Penyuluh	0.314	3.184

The Tolerance value of the independent variable is greater than 0.1 and the VIF value is less than 10. It can be concluded that this assumption is met or there is no multicollinearity.

### 3.1.2 Model Fit Test (Test Goodness of Fit)

To see the effect of education, length of farming, extension program and competency of assisted village instructors on lowland rice productivity, it can be seen in the following table.

#### 1. Coefficient of Determination Test (R Square)

The coefficient of determination (R Square) is used to measure how much the independent variable's ability to explain the variation of the dependent variable is. From the results of data processing obtained results as shown in the table.

Table 4. Coefficient of Determination Test (R Square).

Model	R Square
1 Regression	0.828

The value of R Square is 0.828. This means that 82.8% of lowland rice productivity can be explained by the variables of education, length of farming, extension programs and competence of extension workers. While the remaining 17.7% is explained by other variables that are not included in the model.

#### 2. Simultaneous test (f-statistic test)

The f test is used to see whether the independent variables simultaneously affect the dependent variable. From the results of data processing, obtained results such as tables.

Table 5. Simultaneous Test (Test F).

Model	Signifikansi	( $\alpha$ )
1 Regression	0.000	0.05

The significance value  $< (0.000 < 0.05)$ , meaning that the hypothesis obtained is that H1 is accepted, where simultaneously the variables are education, length of farming, extension program and competency of extension workers. The assisted villages have a significant effect on the productivity of lowland rice.

#### 3. Partial Test (t Test – Statistics)

The t test is used to show whether partially (individually) independent variables have an effect on the dependent variable. From the results of data processing, the results obtained as shown in the table.

Table 6. Partial Test (t test).

Model	B	Sig.	( $\alpha$ )
(Constant)	5414.903	0.000	0.05
Pendidikan	11.993	0.032	0.05
Lama berusaha tani	9.410	0.001	0.05
Program penyuluhan	57.995	0.007	0.05
Kompetensi penyuluh	118.724	0.002	0.05

In this section, the values of the coefficients  $b_0$  and  $b_1$ , t arithmetic and the level of

significance, from the table above, are obtained as follows.

$$Y = 5414,903 + 11,993 X1 + 9,410 X2 + 57,995 X3 + 118,724 X4$$

Where: Y = Productivity (Kg/Ha)

X1 = Education (Year)

X2 = Oldfarming (Year)

X3 = Programcounseling (Scoring)

X4 = Competence of the instructor (Scoring)

The estimation results show that education partially has a significant effect on the productivity dependent variable, the length of farming partially has a significant effect on the productivity variable, the extension program partially has a significant effect on the productivity variable, the competence variable of the extension worker partially has a significant effect on the productivity variable.

#### 4. Conclusion

Variables of education, length of farming, extension program and competence of extension workers simultaneously have a significant effect on rice productivity in Kerapuh Village, Dolok Masihul District, Serdang Bedagai Regency.

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