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The influence of land tenure status on the income of Inpago Unsoed-1 rice farmers in Central Java Province

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Abstract. Land is an asset for farmers in running their farming business. There are three land tenure statuses that apply in Indonesia, namely the cultivator owner, tenant, and the trapper (profit sharing). This study aims to determine whether there is an effect of land tenure on the income of Inpago Unsoed-1 rice farmers in Central Java. This study used the survey method by taking primary data using a questionnaire that had been prepared, while secondary data was obtained from related agencies. The research was carried out in Central Java Province with selected districts being Banyumas, Cilacap and Purbalingga Regencies. The research area was determined purposively with the consideration that the three districts are the Inpago Unsoed-1 rice development area in Central Java. The sampling method was carried out by nonprobability sampling, namely purposive sampling, with a total of 60 Inpago UNSOED rice farmers. The study was conducted from December 2019 to March 2020. The data analysis used is descriptive analysis and one-way variance analysis (one-way ANOVA) using Microsoft Excel. The results showed that land ownership had a significant effect on the income of Inpago Unsoed-1 rice farmers in Central Java. The results showed that tenant farmers have higher incomes than owner farmers.

1 Introduction

Land is a very vital production factor for farmers. Land has a broader meaning than land because land itself is one aspect of land [1]. Agricultural land is one of the factors that affect the size of production and income earned by farmers. Land tenure in Indonesia is grouped into two major groups, namely owned and rent [2]. The division of land ownership status in Indonesia is the same as the division of land ownership status in Nigeria, which is divided into land rights, leased land, and communal [3]. There, land ownership is also divided into 3, namely property rights, leased land, and communal land rent consists of rent, profit sharing, pawning, and others. Owned land is a form of permanent use rights and can be passed down from generation to generation to heirs in the future [4], while land rent is a form of land tenure that uses other people's land and then pays the rent according to the agreement. Mudakir [5] revealed that land tenure status is divided into three parts, namely owner operator, cash tenant and share tenant. Different land tenure status will determine the level of farming diversity, including different levels of land productivity, income, and expenditure [6].

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Most rural household incomes come from farming activities that require land as the main production factor [7]. In general, the area of land ownership will reflect the level of welfare of farmers. The level of welfare of farmers themselves can be measured by the size of the income earned by farmers. Research conducted by[7][8] shows that land tenure is related to the time spent by farmers for land management and the income earned by farmers. [9] conducted a study on "Impacts of land ownership on the economic performance and viability of rice farming in Thailand". The results showed that narrow land ownership resulted in small farmers' yields, while large land ownership helped reduce farmers' informal debt. Another research related to land tenure status is a study conducted by [10], this study examines the "Effect of Status Land Control on Rainfed Rice Production in Banyumas Regency". The results showed that the amount of rainfed lowland rice production in Banyumas Regency showed a significant difference between non-owner farmers and land-owning farmers. Non-owner farmers get a higher average yield than farmers who own rainfed rice fields in Banyumas Regency."

Inpago Unsoed-1 rice is a cross of Menthik fragrant rice and upland rice, this rice has the privilege of being able to grow in dry land and paddy fields.[11] states that Inpago Unsoed-1 rice is a new variety that has been recognized as a national superior rice variety by the Ministry of Agriculture of the Republic of Indonesia based on Decree No. 3165/Kpts/SR.120/7/2011 dated July 4, 2011. Developments in the Central Java Province include, among others, the districts of Banyumas, Purbalingga, and Cilacap [11]. The land used to grow Inpago Unsoed-1 rice in Central Java Province is mostly paddy fields. Some of these lands are owned by farmers but some are leased land. This study aims to determine the effect of land tenure on the income of Inpago Unsoed-1 rice farmers in Central Java Province.

2 Research methodology

The research was conducted in Central Java Province, while the research areas were Banyumas Regency, Purbalingga Regency, and Cilacap Regency. The research area was determined purposively with the consideration that the three districts are the Inpago Unsoed-1 rice development areas in Central Java Province [11].

This study uses a survey method with primary data collection using a questionnaire that has been prepared, while secondary data is obtained from the relevant agencies. The sampling method was carried out by non-probability sampling, namely purposive sampling with the consideration that the district is an Inpago Unsoed-1 rice development area in Central Java Province. The number of farmers who planted Padi Inpago Unsoed-1 in the Regencies of Banyumas, Cilacap, and Purbalingga were 60 farmers, so all of them were taken as respondents. The land tenure status of respondents is shown in Table 1.

Table 1. Distribution of respondent farmers based on land tenure status

Farmer Category	Number of people	Percentage (%)
Farmer Owner	30	50
Rent Farmer	30	50
Sum	60	100

2.1 Data analysis

Analysis of the data used in this study is one-way analysis of variance (One-way ANOVA) using Microsoft Excel Ms 365 ver.2205 application. Analysis of variance has advantages in terms of the ability to compare between variables [10]. The research analysis is shows in Table 2. In this study, an ANOVA test will be carried out using one factor, the aim is to test

whether there is a significant difference in the average income between the status of land ownership rights and tenure status of leased land. The hypothesis in this study is that the average income of farmers with land tenure status with ownership status is different. Statistically, the hypothesis can be formulated as follows:

$$Ho: \mu_1 = \mu_2$$
$$H1: \mu_1 \neq \mu_2$$

Information:

μ_1 = Average of land tenure income
μ_2 = Average of land rent income

Table 2. Research Analysis.

Respondent	Land Tenure Status	
	Owned Land	**Land for Rent**
Farmer 1	Y_{11}	Y_{12}
Farmer 2	Y_{21}	Y_{22}
Farmer 3	Y_{31}	Y_{32}
……..		
Farmer N	Y_{n1}	Y_{n2}
Sum	Y.1	Y.2

Source: [8]

The steps of analysis [16]:

1. Correction Factor (FK)

$$FK = \frac{G^2}{n} = \frac{\Sigma Y_{ij}^2}{t.r} \quad (1)$$

2. General Square Sum (JKU)

$$JKU = \sum_{i=1}^{n} Y_{ij}^2 - FK = (Y_{11})^2 + (Y_{12})^2 + (Y_{13})^2 + \ldots + (Y_{ij})^2 - FK \quad (2)$$

3. The number of squares of treatment (JKP)

$$JKP = \frac{\sum_{i=1}^{t} Y_i^2}{r_i} - FK \quad (3)$$

4. Sum of Squared Error (JKG)

$$JKG = JKU - JKP \quad (4)$$

5. Middle Square of Treatment (KTP)

$$KTP = \frac{JKP}{db\ Treatment} = \frac{JKP}{t-1} \quad (5)$$

6. Middle Square Error (KTG)

$$KTG = \frac{JKG}{db\ Galat} = \frac{JKG}{t-1} \quad (6)$$

7. F-Count Treatment

$$F_{Count} = \frac{KTP}{KTG} \quad (7)$$

The F-Count value obtained from the ANOVA analysis was compared with the F-Crit. The decision-making criteria are:

1) If F- Count > F-Crit; then H0 is rejected and H1is accepted, it's meaning the income of the land rent is different from the income of the land tenure

2) If F-Count < F- Crit; then H0 accepted and H1 is rejected, it's meaning the income of the land rent and land tenure farmer is the same

3 Result and discussion

3.1 Characteristics of Respondent Farmers

Characteristics of respondent farmers include farmer's age, education, number of family dependents. The characteristics of the respondent farmers used to see the socio-economic conditions of the farmers. A detailed explanation of the characteristics of the respondents is presented in the Figure 1 and Figure 2.

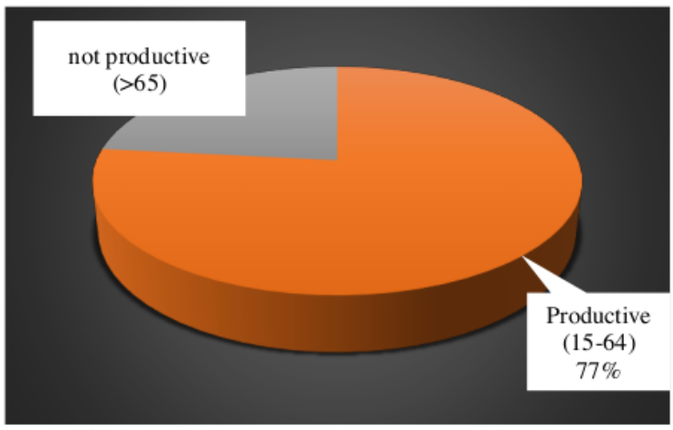

Fig. 1. Inpago Unsoed-1 farmers with land ownership status by age.

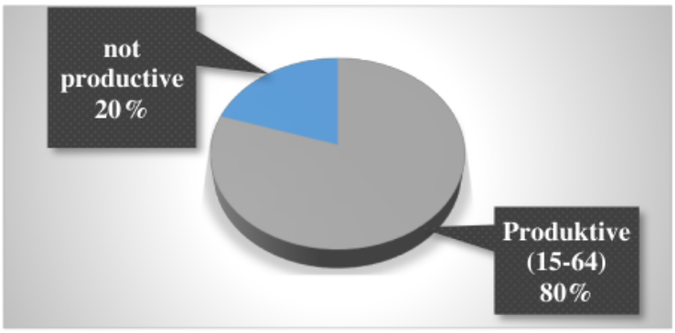

Fig. 2. Inpago Unsoed-1 Farmers with leased land ownership status by age

Figure 1. shows that the age of Inpago Unsoed-1 farmers with land ownership status is mostly in the productive age category as much as 77%, and the rest (23%) are included in the unproductive group. Figure 2. shows that 80% of Inpago Unsoed-1 farmers with leased land ownership status are in the productive age group and 20% are in the unproductive age category. According to Law no. 13 of 2003, the productive age is 15-64 years old [12]. The age of the farmer will affect work productivity or its role in making decisions from various alternative jobs that are carried out [6]. The age of the farmer has a relationship with the farmer's ability to work. If viewed from a physical point of view, the older a person's age after passing a certain age limit, the less his ability to work.

The level of education will affect a person's way of thinking and acting [12]. The education level of Inpago Unsoed-1 farmers with land ownership status is shown in Figure 3. The average education level of Inpago Unsoed-1 farmers with land ownership status is

elementary school. The highest education level of Inpago Unsoed-1 farmers with land ownership status is graduate.

The education level of Inpago Unsoed-1 farmers with leased land ownership status is shown in Figure 4. The majority farmers' education is elementary school, as much as 80%. This shows that the education of Inpago Unsoed-1 rices farmers, both owners and tenants, is in the low category. The level of education will affect the mindset and understanding of farmers. The higher the education level, the wider the mindset as well as the understanding, the hope is that farmers will be fast and responsive in dealing with their business problems. This is related to the managerial ability of farmers.

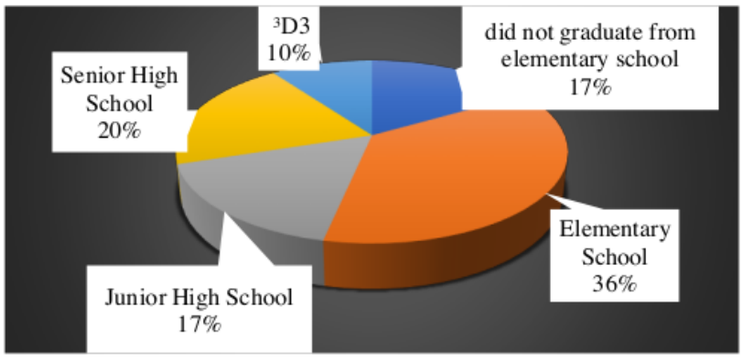

Fig. 3. Inpago Unsoed-1 farmers with land ownership status based on education

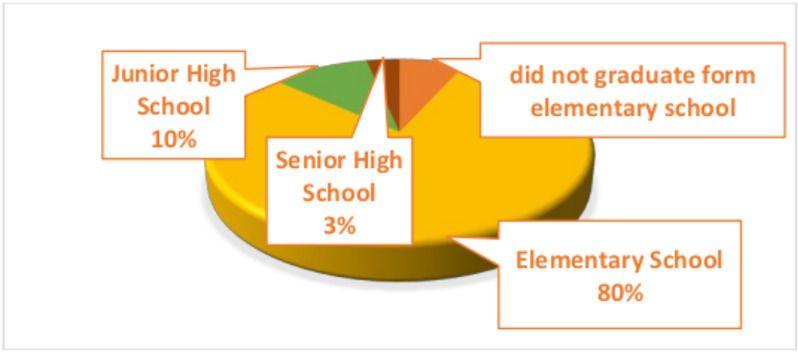

Fig. 4. Inpago Unsoed-1 Farmers with Land Ownership Status based on Education

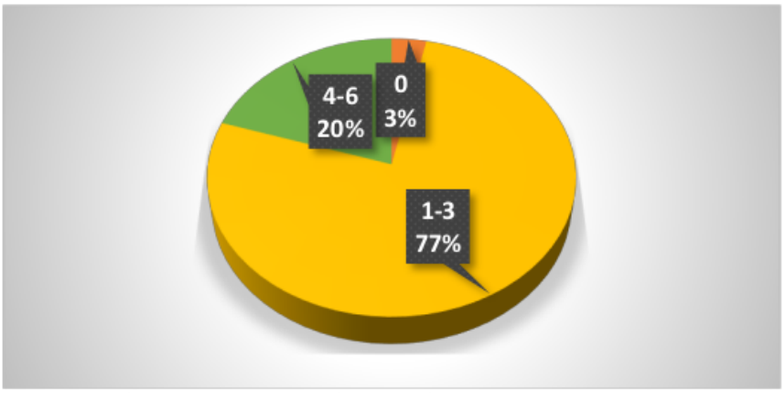

Fig. 5. Dependents of Inpago Unsoed-1 farming families with land ownership status

Family dependents are family members whose living expenses are borne by the farmer [12]. The more dependents the farmer's family has, the greater the farmer's expenditure, but

the family's responsibilities are also related to labor in the family that can be used to help with farming activities. The dependents of Inpago Unsoed-1 farming families as owners and tenants are presented in Figure 5 and Figure 6. The dependents of Inpago Unsoed-1 farming families as owners are at most 6 people while for tenant farmers the family dependents are at most 5 people.

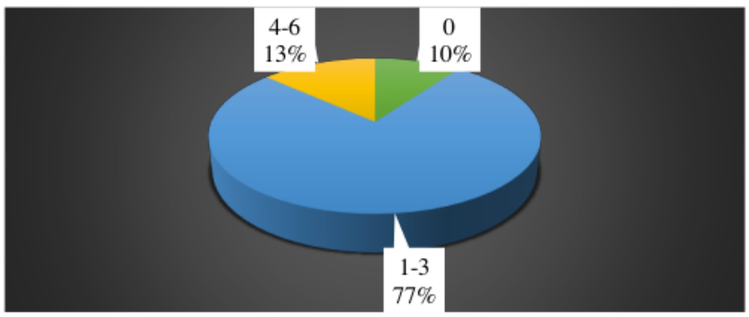

Fig. 6. Dependents of Inpago Unsoed-1 farming families with land ownership status

3.2 The Influence of Land Tenure Status on the Income of Paddy Farmers Inpago Unsoed-1

The results of the One-Way ANOVA test analysis of the effect of land tenure status on the income of Inpago Unsoed-1 rice farmers are presented in Table 3. The results of the analysis show that the F-count value (=17.81) is greater than the F-table (= 4.01). it means that H0 is rejected and H1 is accepted, and the income of the land rent is different from the income of the land tenure. The results of the analysis show that the average income of Inpago Unsoed-1 farmers in Central Java Province shows a significant difference with a significance level of 5% (P-value < 0.05) between those cultivated by the owner farmers (ownership status of land tenure) and tenant farmers (rental land tenure status). The results of this study are in line with the results of studies [12] and [10].

Table 3. Results of One-way ANOVA test analysis.

SUMMARY						
Groups	***Count***	***Sum***	***Average***	***Variance***		
Owned Land	30	3.61E+08	12,042,073	5.15E+13		
Land for Rent	30	6.61E+08	22,033,285	1.174E+14		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.5E+15	1	1.5E+15	17.81	8.69E-05	4.01
Within Groups	4.88E+15	58	8.41E+13			
Total	**6.37E+15**	**59**				

Part of the household income of farmers comes from farming activities that require land as the main production factor. Ownership of extensive land will reflect the level of welfare of farmers [7]. The larger the area of land owned, the greater the income earned by farmers. Land has an important role in the household life of farmers, and land is also synonymous with the social status of farmers in the community. Farmers who own large areas of land usually have a high social status in the community. In general, the land owned by farmers is an inheritance obtained from their parents, but some are obtained by buying. The average land area of Inpago Unsoed-1 farmers as owners is 0.30 ha, while for Inpago Unsoed-1 farmers as tenants the average land area is 0.31 ha. The average land rental fee that must be paid by farmers is IDR 6,502,877.64/ha/year.

Land tenure status will affect operational costs for lowland rice [4]. Land tenure status will also indirectly affect the yield of paddy fields. According to [4] owned land farmers usually do not consider the costs incurred because they do not pay land rent but only pay taxes. Owned land is more profitable than leased land. Tenant farmers will try to cultivate their land to produce large production so that the rental costs that have been incurred can be paid and so that they can obtain profits that will be used to finance the needs of their family life. The results showed that the income of Inpago Unsoed-1 farmers as owners earned an income of IDR 12,042,073 while the income of Inpago Unsoed-1 farmers as tenants earned IDR 22,033,285. The results of this study are in accordance with the results of the study [6] [13] [14]. Tenant farmers earn higher incomes than owner farmers because tenant farmers bear their own losses, so tenant farmers must strive to increase crop productivity so that they can obtain greater yields to cover large production costs because there are rental costs in their production expenses. Tenant farmers get higher income than owner farmers because they can optimize their resource, so the production are optimal. This shows that the use of land rent farmers' resources is more efficient than the use of owner farmers' resources. The results of this study contradict the research on the Impacts of land tenure security on yield and technical efficiency of maize farmers in Rwanda [15].

4 Conclusion

Land tenure status affects the average income received by Inpago Unsoed-1 rice farmers. The average income of farmers with land rent status is higher than that of owner farmers.

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