

## **Factors Influencing Public Decision-Making in Oil Palm Replanting Program in Sekadau District**

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### **ABSTRACT**

*Considering that oil palm plants are no longer productive, replanting needs to be carried out immediately by Sekadau district farmers. For oil palm plantation farmers in Sekadau Regency, there is a dilemma in deciding to participate in this program. This research aims to find out what factors influence oil palm farmers in Sekadau Regency to carry out replanting using a quantitative descriptive approach to see the community's response to the technology provided by the government for replanting oil palm. The number of samples used in this research was 100 respondents determined by purposive sampling. The data analysis method used is logistic regression analysis. The results of this research show that the variables of land area, farmer's income level, availability of rock from the government, and age of the oil palm have a significance value of less than 0.05, which means that these variables have a strong influence on farmers' attitudes in making decisions to carry out oil palm rejuvenation activities. The percentage of decisions made by oil palm farmers to carry out replanting activities is 62.8%, where on average farmers agree to rejuvenate oil palm even though many requirements must be met..*

**Keywords:** *Farmer Decisions, Palm Oil, Replanting Program*

#### **How to cite?**

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### **INTRODUCTION**

Palm oil has an important role as one of the country's foreign exchange contributors from the plantation sector. In its development, the area of oil palm plantations is expanding every year. One of the important activities in cultivation activities that farmers rarely pay attention to is replanting activities. (Ambarwati et al, 2021).

This replanting program must be well planned, especially for public oil palm plantations. In general, there are four types of oil palm rejuvenation systems, namely simultaneous collapse systems, underplanting systems, gradual rejuvenation systems, and intercropping systems. (Anggreany et al., 2016 In an effort to maintain the role of oil palm in a sustainable manner, the government is trying to develop oil palm plantations owned by the people (Gurusinga et al., 2022).

The government has established a policy on raising funds for oil palm plantations as mandated in article 93 of Law No. 39 of 2014 on plantations. As an implementation step, Government Regulation (PP) No. 24 of 2015 concerning the Collection of Plantation Funds and Presidential Regulation No. 61 of 2015 and Presidential Regulation No. 24 of 2016 concerning the Collection and Use of Oil Palm Plantation Funds (Ministry of Agriculture, 2016).

Support for oil palm development is provided through the Oil Palm Plantation Fund Management Agency (BPDPKS) to publics who are members of farmer groups, farmer groups, local union, and other public institutions.

These policies include replanting oil palm plants with the category of plants aged 25 years, and independent plants that use non-superior seeds even though they have not yet entered the age of 25 years, human resource development, and assistance with facilities and infrastructure. The activity integrates all aspects in the development of oil palm plantations in order to increase the productivity of oil palm owned by public plantations. (Nasution & Kusbiantoro, 2022 (Sapitri et al., 2014).

Sekadau Regency is one of the districts that has extensive potential for public oil palm plantations. Most of the public oil palm plants in Sekadau Regency have passed their productive age with production starting to decline. This condition will have implications for decreasing farmers' income, while replanting requires relatively large funds for farmers and limited capital owned. Given the age of oil palm that has entered an unproductive period, oil palm replanting needs to be carried out immediately by Sekadau district farmers at this time should have been carried out as a whole, but only a small number of farmers have done it. This can be caused by differences in farmers' perceptions that affect the level of readiness of farmers to decide on oil palm replanting when the age of oil palm plants is no longer productive.

Another problem faced by farmers today is that replanting techniques are an innovation for farmers and there are many requirements that must be met by farmers to participate in oil palm replanting programs. For oil palm plantation farmers in Sekadau District, there is a dilemma in making decisions to join this program. On the one hand, oil palm replanting is one of the important factors to develop productivity, because oil palm plantation replanting is a necessity that needs to be done because the existing oil palm trees that are 25-30 years old are no longer productive and the yield is decreasing every month. On the other hand, further thought is needed after rejuvenation is carried out related to income as long as the plant is in a position that has not yet produced. In keeping oil palm plants productive, replanting or rejuvenation of oil palm plants is carried out. Therefore, it is necessary to conduct a study on the factors that influence the decision making of farmers in the oil palm replanting program with the aim of becoming a reference for farmers and local governments so that the replanting program in Sekadau Regency can run smoothly.

## **METHODS**

This type of research uses quantitative research, which describes quantitative data obtained regarding the state of subjects or phenomena of a population. Quantitative research with a descriptive approach was conducted to analyze what factors affect independent oil palm using existing variables. This research method uses the case study method, which is a method carried out by looking directly at the field, because case studies are methods that explain research on a particular object during a certain period of time or phenomena and events found in a place that is not necessarily the same as other regions. The research was carried out in Sekadau District, more precisely in Belitang District, Belitang Hilir and Belitang Hulu Districts with the consideration that these Districts have oil palm with an old age of over 25 years and will be carried out in May-October 2023 (Sugiyono, 2017).

The data analysis used in this study was logistic linear regression and used a minimum sample of 100 respondents. Logit analysis is used to predict the likelihood of dependent variables. The odds or odds range between 0 and 1. Zero means not replanting and one means replanting (Alawite & Imun, 2022).

The logit regression equation is:

$$Li = Ln\left(\frac{Y_i}{1 - Y_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \dots\dots\dots (1)$$

Where

- $Ln Y$  : Farmer decision making
- $\beta_1 - \beta_6$  : Regression coefficient parameter vector
- $X_1$  : Land Area
- $X_2$  : Education Level,
- $X_3$  : Farmer's income level,
- $X_4$  : Long time trying farming,
- $X_5$  : Availability of help and
- $X_6$  : Age of oil palm.
- $E$  : Random error

Table 1. Justification of factors affecting replanting

Variable	Information
<b>Land</b>	The area of land owned and managed by farmers and their families
<b>Education Level</b>	Duration of formal education taken by oil palm farmers both from elementary school to college.
<b>Income level</b>	The level of income is the result obtained by oil palm farmers and the amount of income depends on the volume obtained from the oil palm business activities.
<b>Long time of farming</b>	The length of farming is related to the experience experienced by oil palm farmers, the longer the farmer in doing oil palm farming, the more experienced the farmer will be in managing his farm.
<b>Availability of help</b>	The availability of types of production facilities is a support in the implementation of oil palm replanting because production facilities are needed such as certified palm seeds, fertilizers, tools, and others.
<b>Age of oil palm</b>	FFB production produced will continue to grow with age and will reach optimal production when the plant is 9 – 15 years old, and after that the FFB production produced will begin to decline. Generally, oil palm plants will optimally produce FFB until the age of 20 – 25 years. So, it can be said that the biggest factor that affects FFB fluctuations produced by oil palm plants is the age of the plant.

## RESULTS AND DISCUSSION

### Logistic Regression Analysis

#### Pseudo R Square

Pseudo R Square is used to see the ability of the variables age, number of dependents, experience in rubber farming, initial capital of rubber farming, education and income of rubber farmers in explaining the dependent variable, used the values of Cox & Snell R Square and Nagelkerke R Square. These values are also called Pseudo R-Square or if in linear regression (OLS) better known as R-Square. Pseudo R<sup>2</sup> uses the maximum likelihood estimate value or commonly called pseudo-R Square. The characteristic is that the closer to 100 values on Pseudo R<sup>2</sup> marked on the Nagelkerke R Square value, the better the model is formed / Fit with the better data (Junaidi, 2015).

Table 2. Summary Table

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	36.838a	.592	.757

Remarks: Data processed, 2023

In this study table 1 shows the value of Nagelkerke R Square of 0.757, which shows that the ability of variables of land area, education level, income level, length of farming, availability of assistance and age of oil palm in explaining the dependent variable is 0.757 or 75.7% and there are  $100\% - 75.7\% = 24.3\%$  other factors outside the model that explain the dependent variable (farmers' decision to rejuvenate oil palms).

### Model Due Diligence

Model feasibility test using Hosmer and Lemeshow Test is a Goodness of fit test (GoF), which is a test to determine whether the model formed is appropriate or not. It is appropriate if there is no significant difference between the model and its observation value.

Table 3. Hosmer and Lemeshow Test Table

Step	Chi-square	Df	Sig.
1	7.041	8	.532

Remarks: Data processed, 2023

Based on table 2 the table Chi-Square value for DF 5 (Number of variables-1) at a significance level of 0.05 is 11.070. Since the Chi-Square value in the Hosmer and Lameslow Test table counts  $7.041 < \text{Chi-Square table } 11.070$  or significance values of  $0.532 > 0.05$  indicates that there is no significant difference between the model and its observation value or receiving H0 which means the model is sufficient to explain the data.

### Analysis of Factors Influencing Oil Palm Publics' Decision to Replant

To see the factors influence oil palm farmers in Sekadau District in carrying out replanting activities, you can use the Wald test table which has been analyzed using logit regression.

Table 4. Wald Test Table

Step 1	B	S.E.	Wald	Df	Sig.	Exp(B)
X1	143	198	.688	1	.000	.288
X2	-.186	.190	.961	1	.327	.830
X3	.129	.000	1.693	1	.013	1.000
X4	.224	.183	1.491	1	.222	.799
X5(1)	.226	.962	.055	1	.003	1.254
X6	.350	.234	2.227	1	.015	1.419
Constant	-4.764	4.359	1.194	1	.274	.009

Remarks: Data processed, 2023

In this study, the variables of land area, level of education, availability of aid and age of oil palm have a P Value of the Wald Test (sig) of  $< 0.05$ , meaning that each variable has a significant partial probability of farmers' decision to rejuvenate oil palms oil palm. The land area has a sig wald value of  $0.000 < 0.05$  which means that it has a significant partial probability of the decision to rejuvenate oil palms. The education level has a sig wald value of  $0.327 > 0.05$  which means that it does not have a significant partial probability of farmers' decision to replant oil palm. The income level has a sig wald value of  $0.013 < 0.05$  which means that it has a significant partial probability of the decision of farmers to replant oil palm. The length of farming has a sig wald value of  $0.222 > 0.05$  means that it does not have a significant partial probability of the decision of farmers to replant oil palm. The availability of aid has a sig wald value of  $0.003 < 0.05$  which has a significant partial probability of farmers' decision to replant oil palm. The age of oil palm plants has a sig wald value of  $0.015 < 0.05$  which has a significant partial probability of farmers' decision to replant oil palm.

### **Land Area**

The variable land area (X1) has a sig value of  $0.000 < \alpha 0.05$ , this shows that the variable land area has a probability to influence farmers in the decision of oil palm farmers to replant in Sekadau Regency. It can be concluded that the wider a person's oil palm plantation is, it will affect his decision to replant.

The variable land area with an OR (Odds Ratio) value of 0.288 means that the wider the plantation owned by farmers has a chance of 0.288 times replanting compared to farmers who have a narrow garden area. The B value is positive which means that the land area has a good relationship with the decision of farmers to replant oil palm, the regression coefficient value is marked positive which means that if there is an increase in land area by 1 hectare, it will increase the probability or opportunity for oil palm farmers in Sekadau Regency to replant.

### **Income Level**

The variable income level (X3) has a sig value of  $0.013 < \alpha 0.05$ , this shows that the variable income level has a probability to influence oil palm farmers in making replanting decisions in Sekadau District. It can be concluded that the higher the income generated by farmers, it will affect their decision to rejuvenate oil palms. (Syakir et al., 2020)

The variable income level with an OR (Odds Ratio) value of 1,000 means that the higher the income generated by oil palm head farmers has a 1,000 chance of replanting compared to farmers who have a low-income level. The B value is positive which means that the level of income obtained by oil palm farmers has a positive relationship with the decision of farmers to replant oil palm, the value of the regression coefficient which is marked positive means that if there is an increase in the income level of oil palm farmers by Rp. 1,000,000, it will increase the probability or opportunity for oil palm farmers in Sekadau District to replant.

### **Availability of Help**

The aid availability variable (X5) has a sig value of  $0.003 < \alpha 0.05$ , this shows that the aid availability variable has a probability to influence oil palm farmers in making replanting decisions in Sekadau District. It can be concluded that the more assistance available to support replanting activities, it will influence the decision of farmers to replant. The variable availability of assistance with an OR (Odds Ratio) value of 1,254 means that if there is additional assistance provided by the government, oil palm farmers in Sekadau District have a chance of 1,254 times replanting compared to no assistance provided by the government. The value of the regression coefficient is positive, which means that the availability of assistance received by oil palm farmers has a positive relationship with farmers' decisions in carrying out oil palm replanting activities, if there is an addition of 1 assistance in terms of seeds or civing tools, it will increase the probability of oil palm farmers in Sekadau District to rejuvenate oil palms.

### **Palm Oil Age**

The oil palm age variable (X6) has a sig value of  $0.015 < \alpha 0.05$ , this shows that the oil palm age variable has a probability to influence oil palm farmers in making replanting decisions in Sekadau District. It can be concluded that the older the age of oil palm on farmers' land, it will affect the decision of farmers to rejuvenate oil palms. The variable age of oil palm with an OR (Odds Ratio) value of 1,419 means that if the age of oil palm is getting older and no longer productive, oil palm farmers in Sekadau District have a chance of 1,254 times replanting compared to the young and productive age of oil palm. The regression coefficient value is positive, which means that the older the oil palm

owned by farmers, the higher the probability of carrying out oil palm replanting activities in Sekadau District.

## CONCLUSION

The conclusion that can be drawn in this study is the level of decision making of farmers in replanting oil palm in Sekadau Regency is caused by several factors, namely: the area of land owned by each farmer, the level of income of oil palm farmers which serves to support replanting activities to buy seeds and other production facilities then the availability of assistance from the government in the form of seeds and heavy equipment to reduce costs Issued by oil palm farmers and the last age of oil palm, the older the age of oil palm owned by farmers until it is no longer productive, it will increase the chances of oil palm farmers in Sekadau Regency carrying out replanting activities.

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