
The Ability of Independent Farmers to Meet the Needs of Life during Replanting

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ABSTRACT

The cultivation of oil palm has enhanced welfare and food security for economically disadvantaged families in Indonesia. In Riau Province, the majority of farms are owned by independent smallholders. The land area with old or damaged crops constitutes 43.38% of the total area. Smallholders must undertake replanting to prevent a decline in productivity and income. The research aims are: 1) to describe oil palm replanting in the Tapung Sub-District of Kampar Regency, and 2) to analyze the revenue of smallholders. 3) Forecasting the impact of smallholder income on home living expenses during the replanting phase. This research was conducted using descriptive and quantitative methods. The findings indicated a replanting area of 1.96 hectares for the oil palm field. Before replanting, the income from palm oil farming was IDR 4,229,530 per month. Following replanting, when crops had failed to produce, smallholders' revenue amounted to IDR 1,239,486 per month derived from the cultivation of food crops, specifically maize, chile, and peanuts. The monthly household expenses amount to IDR 2,613,542, with income from horticultural or food plant cultivation contributing 47.42 percent. It signifies the usage of palm oil land prior to agricultural yield as a policy under scrutiny for its impact on household income.

Keywords: Replanting, smallholder, palm oil,

INTRODUCTION

In Riau Province, oil palm plantations are dispersed throughout the district. In Riau Province, there are 251 oil palm plantations in the district. Seven hundred eleven heads of families [1]. Kampar Regency is the largest oil palm area, encompassing 97,749 thousand hectares, with a production of 189,663 thousand tons and a

productivity rate of 2,575 tons per hectare. Kampar Regency has enacted multiple policies aimed at expediting regional development. The development policy is part of the regional development program, which encompasses short, medium, and long-term development strategies. These policies influence economic development,

mitigate income inequality, expand employment opportunities, and alleviate poverty.

In Kampar Regency, infrastructure development significantly enhances the added value of the agricultural sector. In 2022, the agricultural sector in Kampar Regency experienced a gross domestic product growth rate of 14.49 percent, which increased to 15.57 percent in 2023. The factors of road infrastructure, irrigation, and market conditions collectively exert a positive and significant influence on the added value of the agricultural sector [2], [3].

Tapung District hosts the largest oil palm plantation in Kampar Regency, accounting for 27.91% of the total oil palm land area. It has the highest number of plasma farmers and contributed the third largest production of 33,689 tons in 2022. Residents of Tapung District depend on oil palm cultivation as their primary source of household income. Oil palm plantations contribute positively to the economy by alleviating poverty among smallholders [4], [5], [6], [7], [8]. The oil palm

plants in Tapung District have exceeded their economic lifespan of 25 years, reaching 36 years of age. Older oil palm plants exhibit suboptimal production levels, which can adversely affect farmers due to the disproportionate relationship between incurred labor and costs versus the income generated. The productivity level of Tapung District is 2,296 Kg/Ha. The low productivity is attributed to the presence of old or damaged plants, which account for 11,839 hectares, or 43.38% of the total oil palm area. This condition necessitates that farmers replant to enhance the productivity of oil palm plants and their income [9].

Smallholders encounter a financial dilemma regarding the expenses associated with replanting and the maintenance costs during the immature phase of oil palm plantations, alongside household expenditures. This study seeks to: 1) describe oil palm replanting in Tapung District, Kampar Regency; 2) analyze smallholder income levels; and 3) predict the contribution of smallholder oil palm income to household living expenses during the replanting period.

MATERIALS AND METHODS

This investigation employs both primary and secondary data. Secondary data was acquired from the Riau Provincial Plantation Office, the Directorate General of Indonesian Plantations, and the Central Statistics Agency. Concurrently, primary data was collected in the field by a survey method involving interviews with respondent farmers, utilizing a structured questionnaire. This study's scope and limits are confined to oil palm income and its distribution from oil palm cultivation. The examined oil palm commodity is farmed by individual smallholders. The vulnerable period examined in this study spans from June 2024 to May 2025.

The study was performed in two communities inside the Tapung District of Kampar Regency. The selection of places is conducted intentionally. This research focuses on independent smallholders who have undertaken replanting, specifically the replacement of old or damaged oil palm plants with new ones. To

address the initial purpose, the subsequent data is utilized:

1. Data on the identities of smallholders encompasses their names, ages, education, experience in oil palm cultivation, and the number of family dependents.
2. The data on oil palm cultivation encompasses the age of the oil palm, production, and the seedlings that were employed.
3. Area of land ownership (Ha)
4. The replanted area of oil palm land (Ha)
5. Production of palm oil and non-palm oil (Ton/Ha)
6. Selling price of oil palm and non-oil palm (Rp)
7. Income sources beyond oil palm plantations
8. Variable expenses associated with oil palm plants and external oil palm plantations
9. Fixed expenses for oil palm farms and non-oil palm plantations (Rp)
10. Comprehensive expenses of oil palm crops versus non-oil palm plantations

11. Aggregate revenue from oil palm plantations and external sources (Rp)

12. Additional Pertinent Data Required for the Research. To determine the revenue of smallholders for the secondary objective, utilize the equation provided below:

$$\dot{y} = TR - TC$$

$$TR = P * Q$$

Where:

$\dot{y}$ = Revenue (IDR/Ha/Year)

TR = Total Revenue (IDR/Ha/Year)

P = Price (IDR/Kg)

Q = Production (Kg/Ha/Year)

TC = Total Cost (IDR/Ha/Year) Results and Discussion

The third objective is to predict the contribution of palm oil income to household expenditure assuming another ceteris paribus is to look at the percentage of palm oil income to the total household expenditure of smallholder farmers.

RESULTS AND DISCUSSION

The greatest oil palm land is located in Tapung District, which is one of the oil palm producing districts in Kampar Regency. Since 1983, Tapung District has engaged in oil palm cultivation and serves as a region for transmigrant farmers. The objective of smallholders to optimize land utilization, provided that oil palm is not cultivated in a monoculture system, is to generate increased income to satisfy familial demands.

This activity enhances economic stability and ensures reliable access to food and non-food items. Independent smallholders are diversifying commercial crops alongside oil palm plantations that have not yet yielded viable alternative revenue sources. Table 1 illustrates the performance of oil palm cultivation following replanting since 2020.

Table 1. Palm Oil Cultivation Performance After Replanting Since 2020

No	Characteristics	Average
1	Land Area (Ha)	2,96
2	Smallholder (people)	40
3	Plant (years)	1,9
4	Planting distance (meter)	8 x 9
5	Type seeds	-
6	Total crops (plant/Ha)	142
7	Fertilizer (per years)	2 steps
8	Herbicide (per Tahun)	2 steps
9	Pruning (per Tahun)	0

According to Table 1, rejuvenated oil palm plants have a lifespan of one year and six months. The mean area of farmland possessed by farmers is 2.96 hectares. This planting distance yields a density of 142 trees per hectare. Plant maintenance in oil palm commodities is typically classified into two categories: plants that are not producing or not producing, abbreviated as TBM, and producing/maturing crops, abbreviated as TM. This is done annually [10], [11].

The TBM in oil palm refers to the pre-

harvest phase, spanning from planting to the initial harvest, which lasts 30 to 36 months. The TBM phase for oil palm cultivation includes TBM 0, which indicates that the area has been cleared, ground cover beans have been sown, and oil palm has been cultivated at each stake. TBM 1: established in Year I (0-12 months) TBM 2: established in Year II (13-24 months) TBM 3: established in Year III (25-30 or 36 months) The objective of TBM maintenance is to achieve uniformity in crop development, productivity, and

high yield [12].

Moreover, trimming or harvesting is prohibited throughout the non-productive phase (TBM) up to six months before to the initial harvest. Generally, 24 months post-planting, laborers should refrain from cutting or extracting the rhizomes at this juncture. Small farmers require trimming to remove dead and unproductive plants.

Table 2 presents the expenses associated with oil palm cultivation prior to replanting. The analysis of oil palm farming revenue indicates that external labor costs are 45.63 percent of the overall expenses incurred. The revenue from oil palm cultivation at the current price is IDR 69,087,705 per farmer or IDR 18,271,129 per hectare. The monthly income of smallholders is IDR 4,229,530 prior to replanting. Simultaneously, the average household spending is Rp2,613,542. Following replanting, smallholders derive no income from oil palm agriculture. Consequently, they finance household expenses by utilizing unproductive oil palm land. Smallholder farmers use commercial or

food crops to diversify their revenue streams.

In several developing nations, the promotion of food or cash crops in low-income regions is extensively utilized as a tactic for poverty reduction for various causes [13]. The cultivation of food crops can promote the adoption of yield enhancement technologies (e.g., advanced fertilizers, pesticides, and seeds), agronomic practices (e.g., integrated pest management, soil testing, and formula fertilization), and improve smallholder access to credit training and agricultural counseling. Secondly, the supplementary income generated from the production of food or cash crops enables farmers to enhance the nutrition, health, and educational circumstances of their family members. Third, the cultivation of food or other commercial crops can expedite investment in rural infrastructure and public services (e.g., roads, bridges, electricity grids, and telephones) by commercializing crop production and upgrading agricultural systems [14].

Table 2. Calculation of Smallholder Oil Palm Income Before Replanting

No	Information	Before Replanting	
		Every farmer	Ha
1	Income		
	Production (Kg)	54.701	14.466
	Price (IDR)	1.263	1.263
	Total Revenue (IDR)	69.087.363	18.271.129
2	Fees Paid (IDR)		
	Fertilizer	7.426.354	1.963.994
	Herbicide	1.593.645	421.459
	Work outside the family	8.276.279	2.188.768
	Other costs	842.396	222.782
	Total Cost	18.138.675	4.797.005
3	Unpaid Fees (IDR)		
	Depreciation Costs	193.502	51.174
	Total Cost	193.502	51.174
4	Total Cost (2+3) (IDR)	18.332.177	4.848.179
	Income (IDR/years) (1-4)	50.775.186	13.492.536

Independent smallholders cultivate commercial crops with an intercropping system. They grow corn, chili peppers, and peanuts. Generally, intercropping aims to produce more production per

unit of land area than monoculture crops [15], [16]. Intercropping is also beneficial for lowering the risk of crop failure due to pest attacks [17]. Smallholders earn income two to three times a year

by cultivating commercial crops.

Intercropping plants are beneficial for farmers in meeting their household expenses. Based on the calculation results, the income of small farmers amounted to IDR 1,239,486/month. Other income outside farming is considered *ceteris paribus*. Thus, if the needs of small farmers per month are IDR 2,613,542, the intercropping business can contribute 47.42 percent.

CONCLUSION

Smallholder oil palm income can contribute to household expenditure during the replanting period by around 47.42%, *ceteris paribus*. The rest of the farmers need intercropping activities, both

This study implies that farmers should not delay the implementation of replanting. Small farmers replant by utilizing their resources. Small farmers should look for other alternatives. The source of revenue to meet the needs of the oil palm replanted has not yielded results. The loss and decrease in smallholder income due to replanting will lead to the emergence of new revenues for smallholders which will later affect their welfare.

food crops and commercial crops. The use of oil palm stand land before harvest is one of the policies considered as a contributor to household income.

ACKNOWLEDGEMENTS

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