Development of oil palm plantations in the second cycle in Jambi Province: A review of independent palm oil

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Abstract. Sustainability of oil palm plantations continues to be part of government policy. This is because oil palm still contributes to the economy and absorbs labor. The second cycle is the cycle where independent oil palm plantations are replanted in the second cycle of oil palm farms, after 25 years. This cycle is quite a special concern where the government program that requires replanting to be carried out by felling all old plants and then replacing them with new plants will certainly make independent smallholders think twice, especially for those who do not have oil palm plantations of more than 2 ha. There are many challenges and factors that influence the second cycle of oil palm plantations, especially for independent smallholders. These factors affect how plantations develop in the second cycle and subsequent cycles. The purpose of this study was to identify and analyze factors that influence the development of independent smallholder oil palm plantations. The study was taken Merangin and Tanjung Jabung Barat Regencies with a sample of 180 independent smallholders who had plantations in the second cycle. 180 samples were spread across 6 villages, namely 3 villages in Muaro Jambi and 3 villages in Tanjung Jabung Barat. The results of the study explain that there are 5 factors that are closely related to the second cycle of independent smallholder oil palm plantations. There are fertilizer use and avaibility, fresh fruit brunch price, cooperate, government support, and household expenses. These five factors are factors that become obstacles and supports in the second cycle. Identification and analysis of these factors is an appropriate strategy and can be implemented in cases in the field where farmers still maintain oil palm plants over 25 years old. In addition, it can be an appropriate reference for the government to make policies that support the sustainability of independent oil palm plantations.

1. Introduction

Palm oil has become a very important commodity over the last 30 years in Southeast Asia and other parts of the world. As much as a third of the world's oil palm land is managed by smallholders (Adrià Descals et al., 2021; Qaim et al., 2020a). Palm oil is a typical export commodity that is highly integrated into global supply chains, agricultural household

management systems, and risk mitigation strategies are also very different from households growing annual crops for their own consumption or local markets (Marlene Kühling et al., 2022).

This commodity is one of the pillars of the economy for Indonesia, which contributes greatly to foreign exchange earnings and provides employment for the community (E. Meijaard et al., 2018), and reduces poverty among agricultural and non-agricultural households and increases resilience food (Qaim et al., 2020b). Approximately 16.2 million workers are involved in the palm oil industry where 4.2 million direct workers and 12 million indirect workers so the palm oil industry is the foundation of many people's lives.

More than 40% of the total oil palm land in Indonesia is not cultivated by large palm oil companies but by small and medium farmers (Michael Euler et al., 2016). Several studies have shown that smallholders benefit from oil palm cultivation in terms of higher household living standards, as oil palm is more profitable than traditional crops such as rice or rubber (Christoph Kubitza et al., 2018;

Oil palm has the potential to be developed on an area of 51.4 million hectares and has been cultivated in 26 provinces in Indonesia (*Statistik-Kelapa-Sawit-Indonesia-2022*, n.d.) The island of Sumatra is the main location for the domestic production of palm oil and contributes around 80 percent of the national output. The rapid expansion of oil palm plantation areas has substantial socio-economic implications (Michael Euler et al., 2016).

The development stage of oil palm plantations has shifted where people's plantations have dominated the ownership of oil palm plantations. The area of smallholder oil palm plantations reaches 40.79% or 5,896,755 hectares of the total area of oil palm plantations in Indonesia with the number of families involved reaching 6.7 million households

Jambi Province is one of the regions that makes a large contribution from the plantation sector, especially the commodity of palm oil which occupies the top four largest centers of palm oil production along with Riau, North Sumatra, and South Sumatra with a contribution of 7% to total world production (Buku Statistik Perkebunan 2021-2023 Revisi-Compressed, n.d.; Statistik-Kelapa-Sawit-Indonesia-2022, n.d.). Compositionally, the exploitation of oil palm plantations in Jambi Province is dominated by smallholder oil palm plantations which account for 63 percent of the total area of cultivated oil palm land. The remaining land area is cultivated by private plantation companies as much as 35 percent and state plantations by 2 percent (Directorate General of Plantations, 2021).

Jambi Province has nine districts, each of which has oil palm plantation land. Muaro Jambi and Tanjung Jabung Barat districts are one of the centers for oil palm plantations in Jambi Province (Badan Pusat Statistik, 2023)The contribution of land area for the three regencies is

22.55 percent and 9.52 percent respectively of the total area of oil palm plantations in Jambi Province. With successive production proportions reaching 21.31 percent, 10.01 percent as in (Badan Pusat Statistik, 2023).

As is known, oil palm plants have a planting age of economic value between 4 - 25 years. After passing this age limit, usually, the productivity of oil palm plants will decrease. Therefore, it is necessary to carry out activities to develop oil palm plantations in the second cycle (replanting) to maintain and increase productivity and ensure the continuity of the supply of fresh fruit bunches (FFB) for the industry

The development of oil palm plantations in the second cycle is necessary to avoid a decrease in productivity in aging plants. Plants with low productivity tend to have higher production costs than plants with high productivity. Old plants have low productivity so the development of the second cycle is an urgent thing to do.

Further details can be seen through Presidential Decree No. 6 of 2019 concerning the 2019-2024 National Action Plan for Sustainable Oil Palm Plantations. The contents of this Presidential Instruction are aimed at increasing the capacity and capability of smallholders, finalizing land status and legalization, utilizing palm oil as new and renewable energy, increasing diplomacy to achieve sustainable oil palm plantations, and accelerating the achievement of sustainable Indonesian oil palm plantations. One of the contents of the instruction is to assist farmers in order to increase farmers access to funding for the development of gardens in the second cycle stage.

The activity of starting an oil palm plantation business which, at this stage, requires a study of the oil palm plantation development scheme. There are several oil palm plantation development schemes implemented in the field. However, the plantation development target in the second cycle has not yet reached the target. In 2022 the realization of the development of oil palm plantations in Jambi province will only reach 16 percent of the target of 7500 hectares. One of the reasons for this condition is that there are obstacles, especially development patterns or schemes that are not yet inclusive. The development of the second cycle of oil palm plantations in fact in the field there are still many factors that are related to each other. These factors can be obstacles and support for the development of independent oil palm plantations in the second cycle. Studies related to identification and analysis in this case are very necessary so that they can provide a comprehensive analysis. Identification and analysis of factors are also able to provide a picture of the strategy that should be able to become a government policy for the future.

2. Method

2.1 Research Objective

The object of the study was independent oil palm farmers who had oil palm plantations in the second cycle, which means that farmers have replanting. The location of the study was in Muaro Jambi and West Tanjung Jabung Regencies by taking 3 villages in each location. The selection of locations in the two regencies was because the locations were the centers of oil palm production and also the number of damage plant areas that were still large. The research sample consisted of 180 independent farmers by dividing them proportionally, 90 samples in Merangin Regency and 90 samples in West Tanjung Jabung Regency.

2.2 Research Methods

The research data is secondary and primary data. Secondary data is supporting data obtained from the Jambi Province Plantation Service, the Jambi Province Central Statistics Agency, and related agencies. Primary data is obtained from the results of a field survey through a list of questions in the form of a questionnaire and of course also facts obtained from the research location. The data was analyzed using a quantitative description method, namely data is analyzed descriptively using data tabulation tables, graphs and detailed descriptions (Sugiyono, 2016)

3. Results

Oil palm has become a significant source of foreign cash due to its great potential and widespread planting across Indonesia, notably in the districts of Muaro Jambi and Tanjung Jabung Barat, Jambi Province. Many people see this as a good business opportunity, particularly those in the plantation industry. The fact that there are a number of factors that must be taken into account for oil palm farms to be sustainable, however, was not addressed right away. According to the findings of

field studies conducted in two core oil palm areas in Jambi Province, the following factors are crucial to the sustainability of independent smallholders' oil palm plantations in the second cycle:

3.1 Fertilizer Use and Avaibility

For oil palm producers, maintaining oil palm plants is a major challenge. Fertilizer is one of the important production factors in the growth of a plant. Fertilization, which is the process of giving plants nutrients to thrive and generate as much as possible, will cost the same as buying fertilizer (Instrument Standards Implementation Center, 2023). It is important to emphasize both the fertilizer selection and the fertilization procedure. Consideration must be given to the sort of fertilizer used for oil palm plants in order for them to grow and develop in a way that will affect the amount of production that is achieved. The essential components of fertilizer, such as potassium (K), which controls the quality and amount, nitrogen, which is necessary for growth, and phosphorus, which fortifies the stem and roots, all have various advantages for oil palm development. as well as soil nutrients and organic fertilizer that nourishes plants (International Quality, 2023). When choosing fertilizer, the age of the plant is also taken into account. The average age of the plants in Merangin Village is 5.5 years, with a range of 4-6 years. According to data analysis findings, farmers apply seven different kinds of fertilizer, including both organic and non-organic fertilizers. NPK, Urea, KCL, Kisrite, SP36, Ponska, and organic fertilizer—specifically, empty fruit bunches—are examples of non-organic fertilizers. The typical usage of each type of fertilizer is as follows:

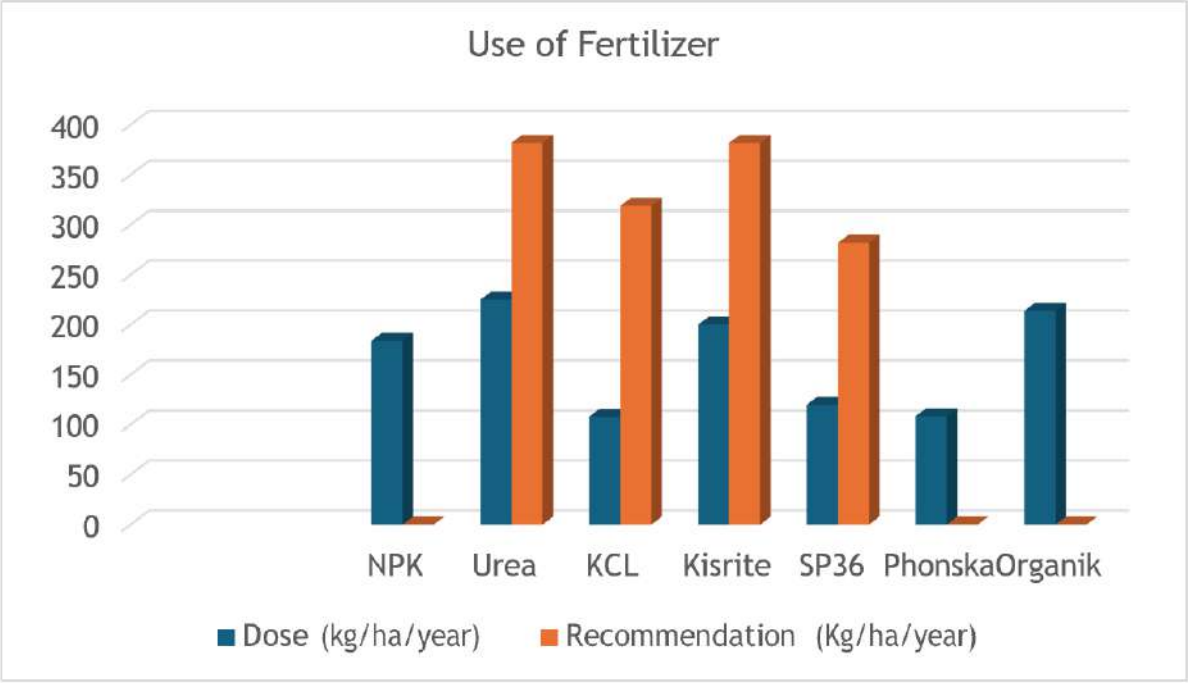

Figure 1. Use of fertilizer Independent Palm Oil Plantations

The picture above shows the use of fertilizer by farmers based on type in Merangin Regency. For the types of fertilizers Urea, KCL, Kisrite and SP36, the use made by farmers is not in accordance with the recommendations that should be made. The average use of urea fertilizer is

225.5kg/ha/year. KCL amounted to 100kg/ha/yr, Kisrite amounted to 198 kg/ha/yr and SP36 amounted to 125 kg/ha/yr. Meanwhile, the recommended recommendations for plant ages between 5-8 years are urea 379.5 kg/ha/year, KCL 241.5 kg/ha/year, Kisrite 345 kg/ha/year, SP36 241.5 kg/ha /yr (PPKS Medan, 2022). This also applies to the West Tanjung Jabung Regency area. Most farmers do not fertilize according to the recommendations they should.

Fertilizer should be applied three to four times a year at the recommended rate; this treatment will affect output. Independent farmers actually only fertilize twice a year using fertilizer that does not meet recommended standards. The scarcity of fertilizer in the region is one of the challenges farmers encounter. The quantity and quality of fertilizer are especially crucial since farmers are afraid of the spread of low-quality fertilizer, which sells for high prices under the same brand but is actually "fake" or of inferior quality. Farmers are reluctant to purchase genuinely high-quality fertilizer, such as that produced by private or state-owned firms. There is no denying that fertilizer is being sold for a very high price. Naturally, this will have an impact on costs, and for independent farmers with only 2–4 hectares of oil palm land, their income is insufficient to pay for the upkeep of their crops. Independent farmers typically can't achieve short-term financial independence (Diana Chalil & Riantri Barus, 2024).

There is no longer a subsidized fertilizer scheme available to oil palm farmers. The Ministry of Agriculture Regulation number 1 of 2024, which states that the supply of subsidized fertilizer is given priority for food and horticultural crops while there are no plantation crops, particularly oil palm, is the reason for this.

Figure 2. Oil palm plant development both with and without fertilizer

The growth of oil palm trees will be impacted by fertilizer use during maintenance. Figure 2 illustrates the disparity in oil palm plant development. The picture on the left uses fertilizer in accordance with guidelines and at a regular frequency (three times a year), whereas the image on the right displays oil palm growth that deviates from these guidelines. Although some farmers at this test site managed their plantations very well, such as applying fertilizer three times a year in accordance with instructions, the typical oil palm plant at this area had small growth. (Figure 2). One issue that frequently arises in the realm of oil palm farming is the availability and use of fertilizer (Fauzia et al., n.d.). Farmers themselves must undoubtedly be concerned about this, in

addition to other stakeholders. Policies that assist independent oil palm smallholders should be taken into consideration by stakeholders.

3.2 Fresh Fruit Brunch Price

The selling price of fresh fruit bunches is a determining factor in the amount of farmer income in addition to production costs. The provisions issued by the plantation service for selling prices have not been implemented in their entirety. This case occurs in most independent farmers due to sales village trader.

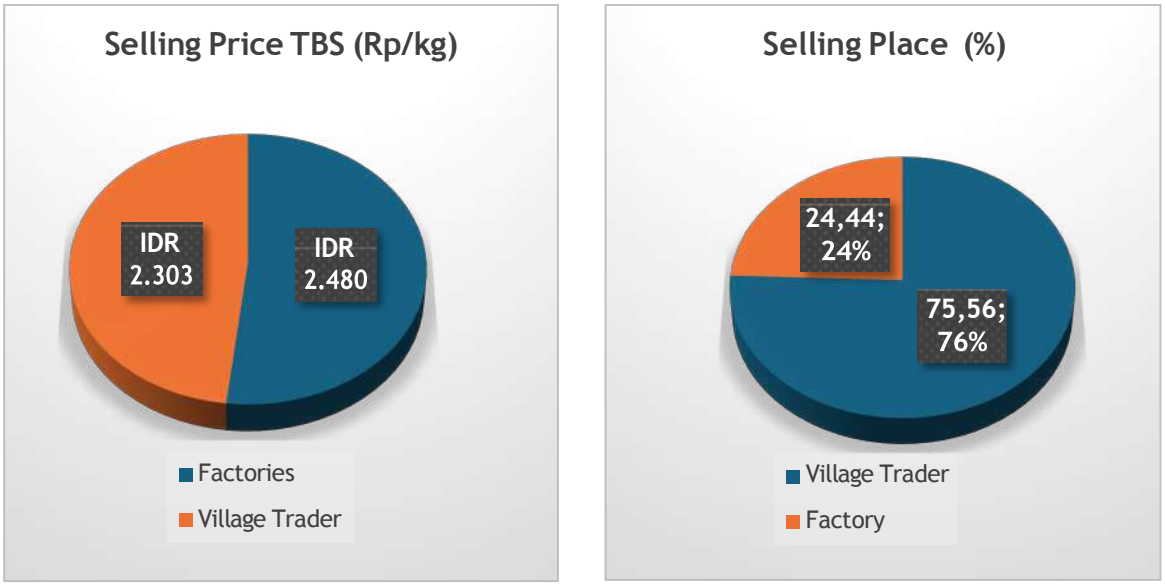

Figure 3. Selling Price and Selling Place

Figure 3 shows that farmers receive a different selling price for FFB. The average price for farmers selling to village traders is IDR 2,303/kg, but the average price for farmers selling to factory is IDR 2,480/kg. IDR 177/kg is the difference. The price differential reflects the expenses borne by the collecting traders, including labor costs for field weighing, loading charges for FFB, transportation costs, and middlemen's own profits (Prastya et al., 2018). For some farmers, the presence of middlemen has had a positive impact on them even though prices are set by collecting traders. In contrast to farmers who sell to factories, they get a better price and it is in line with the price issued by the Jambi Province Plantation Service.

Actually, 75.56% of farmers sell to collectors, with the remaining 24.44% selling FFB to companies. The majority of independent oil palm producers nearly always have this issue. (Figure 3). The existence of village traders is an alternative for farmers to be able to sell FFB and of course get financial loans. This condition makes farmers unable to determine the selling price of FFB. This is inversely proportional to farmers who sell to factories because generally farmers will receive better prices.(Yanita et al., n.d.).

3.3 Cooperate

Institutions are an important part of the development of independent oil palm plantations and their sustainability. Active and transparent institutions have a positive impact not only on farmers but also on the sustainability of the institution itself (Derita Ndraha & Hutabarat, 2014). The presence of these oil palm farmer institutions has a big impact because if there are farmer

institutions, government initiatives will be available. The BPDPKS (Fund management organization for palm oil plantations) replanting initiative is one of them. When the plants are more than 25 years old, farmers will undoubtedly have to replant them. BPDPKS announced a policy to offer IDR 30,000,000 per hectare per farmer as financial aid for replanting. An oil palm institution or oil palm farmer cooperative is one of the prerequisites and processes for this help. (Yanita et al., n.d.;Brilliant Thesalonich Panggabean et al., 2023; Manurung et al., 2015)

This institution should be a place for farmers not only to get assistance from either the government or the private sector, but the existence of the institution should be a forum for the development of sustainable oil palm plantations (Derita Ndraha & Hutabarat, 2014; Juraemi, n.d.) Cooperation is an important part in the development of the second cycle of oil palm plantations. Farmers, government, factories and village traders are part of the oil palm circle. of course it is not easy to implement this in the field.

3.4 Government Support

It is imperative that the government play a role and provide support in the development of second cycle oil palm plantations. In actuality, farmers face a variety of challenges in the field, such as prices that are frequently lower than the declines of related agencies. The availability of very high-quality non-subsidized fertilizers, as well as extensions related to ISO certification and other matters.tself (Chalil & Barus, 2020; Yanita & Ningsih, 2021). Government assistance is not limited to material or capital problems. Independent oil palm farmers are frequently confronted with uncertain circumstances, particularly for small farmers. This is related to prices, and many small farmers are dependent on local traders. The supply of subsidized fertilizer is no longer found in the field due to the implementation of ministerial order number 1 of 2024, so that small farmers are unable to fertilize according to existing recommendations, having an influence on palm oil production.

3.5 Income Farming and Household Expenses

Since oil palm is the primary source of income for independent farmers, it plays a significant role in the lives of farmers' households. The area of land, production, and agricultural expenses will all affect oil palm revenue. If they take good care of their property, farmers who grow oil palm in multiple locations rather than just one would undoubtedly earn more money. However, it will undoubtedly be compared to the revenue received by farmers with modest land (2–4 ha). The monthly distribution of oil palm farmer income for each hectare is displayed below.

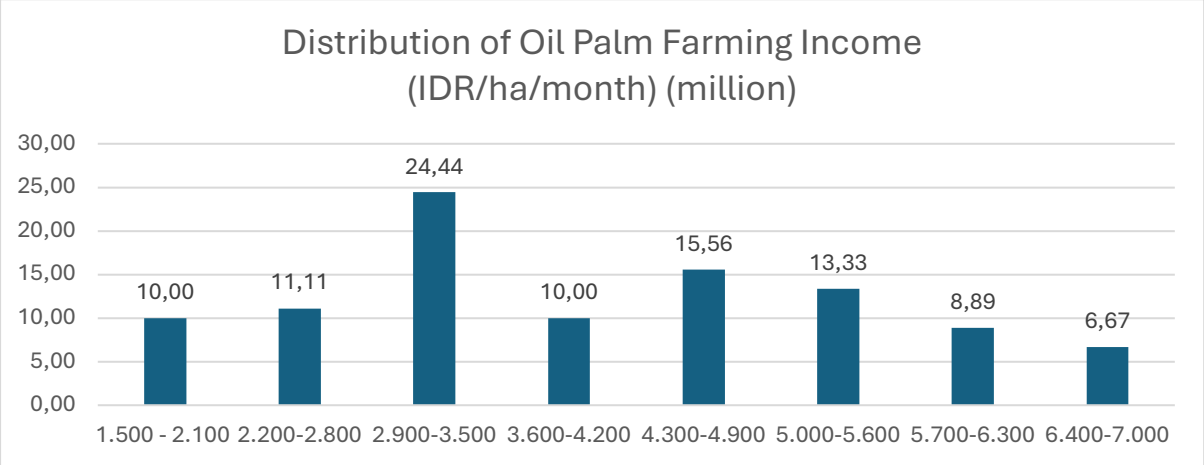

Figure 4. Distribution of Oil Palm Farming Income

It is evident that the largest farm income is between IDR 2.9 and 3.5 million per hectare per month, with an average revenue of IDR 3.1 per hectare per month and an average land area of 3.2 ha. Farmers thus earn IDR 10.2 each month, or 122.8 per year. This revenue will also be influenced by the price of TBS; if TBS prices rise, so will the profits from oil palm cultivation. As income rises, farmers actually adopt a new consumption pattern, increasing their level of spending like food, clothes, and housing expenses will rise for households. Numerous individuals will purchase four-wheeled autos. Farmers are said to be prevented from saving money as a result of this. Spending by households on housing, clothes, and food will rise. Many of them will even purchase four-wheeled cars. It is believed that this prevents farmers from saving as much money as they would if they were to replant oil palm crops. Additional study findings indicate that household expenses IDR 2,6/month and household Income IDR 3,2/month. In reality, most farmers are unable to save money because when the price of fresh fruit bunches increases, farmers tend to increase their consumption (Yanita et al., 2021). The household consumption patterns of oil palm farmers still show high farmer consumption costs for food, clothing and shelter. The tendency of farmers to consume consumptive spending means that the maintenance of oil palm plantations is not accommodated well, high fertilizer prices make farmers not fertilize properly. In this way, farmers are required to be able to manage and manage household expenses without neglecting the sustainability of their oil palm plantations

4. Conclusion and Recomendation

4.1 Conclusion

There are many variables that influence the to plantation palm oil development the second cycle in Jambi Province. For smallholder among the most important variables are Fertilizer use and Avaibility, Fresh Brunch Price, Cooperate, Goverment Support, Household Spending. These five factors are considered quite important in the development of second cycle oil palm plantations. Even though it is seen that the actors in oil palm plantations (farmers) are considered to have a prosperous life and are able to manage oil palm plantations with promising results, there are many challenges faced by the farmers themselves in the field so this cannot be the task of just one or two parties but becomes attention to all parties

4.2 Recomendation

The study of supportive and inhibiting variables is critical in formulating the stratgy for the plantation palm oil second cycle for independent farmers. The analysis of supportive and inhibiting variables is critical in formulating the strategy for constructing second-cycle oil palm farms for independent farmers. This also supports the sustainability of oil palm plantation both in Jambi Province and Indonesian

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