Readiness of oil palm smallholders in facing oil palm replanting in North Sumatra

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Readiness of oil palm smallholders in facing oil palm replanting in North Sumatra

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Abstract. This study aimed to determine the development of smallholder oil palm plantations and the performance of smallholder oil palm plantations, and to study the readiness of smallholders in facing the oil palm replanting (rejuvenation). Samples were taken using purposive sampling technique. The method used was qualitative method with descriptive approach. Data filtering instruments used was in-depth observation, documentation and interview. This study showed that there were actions to show readiness that had been done by oil palm smallholders in facing oil palm replanting, those were: by having another plantation area in rejuvenated (replanted) area, by having other jobs and other incomes. The impact was that there was a period of non-productive oil palm and farmers’ income was no longer there.

Keywords: replanting, readiness, oil palm

1. Introduction

Oil palm is one of the plants that produce vegetable oil that will be used as raw material in the food industry, oil industry, and biofuel industry [1]. Oil palm development in Indonesia began in 1970 and experienced rapid growth, especially in the 1980 [2]. Indonesia's palm oil production in 2015 was recorded at 31.28 million tons. This production comes from 11.3 million ha of oil palm plantation area of which 50.77% was cultivated by private companies (PBS), 37.45% was cultivated by the people (PR) and the rest was cultivated by large state-owned plantations (PBN). The palm oil production centers in Indonesia based on the average data for the years 2012-2016 were Riau, North Sumatra, Central Kalimantan, South Sumatra, Jambi and West Kalimantan Provinces. Based on the data, Indonesia was the largest palm oil producer in ASEAN and in the world, and at the same time became the largest exporter country [3]. One of the oil palm production centers in Indonesia was North Sumatra Province. Based on the ownership, oil palm plantations in North Sumatra Province was divided into government/BUMN property, owned by private companies, and owned by the smallholders. BPS data showed that the oil palm plantations in North Sumatra Province were 50% managed by the private sector, 30% by the smallholders and 20% by the Government [4]. Based on these data, it was seen that smallholder oil palm plantations had an important role in the development of oil palm plantations in North Sumatra in the future. However, in recent years there had been an increasing concern about the sustainability of oil palm development, especially on the increasing total area and production of oil palm in Indonesia.
The sustainability problem due to the fact that most of the oil palm plantations, especially those are managed by smallholders, has entered an age of declining productivity. This issue results in the problem of competitiveness of the national palm oil industry in the future. With the passage of time during the development of oil palm, it turns out that several development areas in North Sumatra have entered the economic threshold and have to rejuvenate oil palm plants. In accordance with the decision of the director general of plantations, rejuvenation is an effort to develop plantations by replacing old/unproductive plants with new crops, both in whole and in stages, including the handling of plantation risks such as those affected by regional spatial arrangements, forest areas and unity hydrological peat [5].

Oil palm plantation development in Indonesia and Malaysia has been strong in recent decades, and broadly applied financing schemes and policies regarding export taxes and subsidies have played a fundamental role in this. However, the outcomes of these policies and financing schemes have not always benefited smallholders, local communities or the environment [6-9]. Replanting programs at several oil palm plantation center locations were very urgently to do. At the plantations managed by large companies, the rejuvenation program was well planned, both technically and financially. However, a very different thing happened to plantations managed by smallholder farmers whose were not ready to carry out rejuvenation activities.

Rejuvenation activities on smallholder oil palm plantations faced various problems, such as: lack of funds for rejuvenation activities, lack of farmer savings, loss of income in the unproductive period, and a quite high rejuvenation costs. These conditions had an impact on farmers not being able to continue to maintain the sustainability of their oil palm plantations when the plants had reached the unproductive age that would ultimately affect the cycle of sustainable income of smallholders. Explained that one of the objectives of oil palm rejuvenation was to increase the productivity of oil palm plants, the effort was considered very effective to increase production, especially in Indonesia [10]. This study aimed to identify and comprehend the profile of smallholder oil palm plantations in North Sumatra Province, to determine the performance of smallholder oil palm plantations, and to identify the readiness of smallholder oil palm farmers in facing plantation rejuvenation (replanting) activities.

2. Materials and methods

This research was conducted in several districts that happened to be centers of smallholder oil palm plantations in North Sumatra Province. The reason for selecting North Sumatra as the research location was because North Sumatra was one of the centers of smallholder oil palm plantations. This research was conducted from May to July 2018. To achieve the research objectives, the overall research used research and development (R&D) methods [11]. To get the data that will be used in developing the applied material, surveys and interviews were conducted on smallholder oil palm plantations in the districts/cities which were the centers of smallholder oil palm plantations, and a review of secondary data was done to strengthen primary data analysis. This study used a survey method. Determination of the sample was done by random sampling. Random sampling is a technique that gives an equal opportunity for each member in the population to be picked as a sample [12-13]. Primary data was data and information obtained directly from resource persons/respondents, including: farmers, banks, regional government officials, related agencies/bodies of Bappeda (Badan Perencanaan Daerah or Regional Planning Office) and other associations. Data collection was carried out through “in-depth Interview” using questionnaires, discussion guidance, and interview guidance as well as through the mechanism of focus group discussions. Secondary data was data and information obtained from documents/publications/research reports from agencies/bodies, and other supporting data sources. Then the data was analyzed through the percentage tabulation process.
3. Results and Discussion

3.1. Profile of the smallholder palm oil plantation in North Sumatra Province

North Sumatra is one of the plantation centers in Indonesia. The most important plantation commodities from North Sumatra today includes oil palm, rubber, coffee, cocoa and tobacco. Even in Bremen, Germany, Deli tobacco is very popular. The total area of smallholder oil palm plantations in North Sumatra in 2016 amounted to 417,809 ha with a production of 5,775,631.82 tons of fresh fruit bunches (FFB). Asahan District was the center of smallholder oil palm plantations in North Sumatra. In this area there were 72,935 ha of smallholder oil palm plantations or 18% of the entire smallholder oil palm plantations of North Sumatra [14]. Total production and productivity of smallholder palm oil plantations in North Sumatra can be seen in the Figure 1a and 1b.

![Palm Oil Production (Ton)](image1a)

**Figure 1a.** Total production of smallholder palm oil plantations in North Sumatra

![Oil Palm Productivity Per Year (Ton/ha)](image1b)

**Figure 1b.** Total productivity of smallholder palm oil plantations in North Sumatra

The Plantation Office of North Sumatra Province stated that the total area of unproductive smallholder oil palm plantations in the area increased. As vast as 70 thousand hectares of smallholder oil palm plantation area in North Sumatra were not productive anymore and needed to be rejuvenated. Of the 1.2 million hectares of oil palm plantations in North Sumatra, 418 thousand hectares (or 43%) were smallholder oil palm plantations.

3.2. Farmer exchange rates

Farmer exchange rate (NTP), obtained from the ratio of the price index received by farmers to the price index paid by farmers (in percentage), is an indicator to determine the level of purchasing power of farmers in rural areas. The value of NTP also shows the term of trade of agricultural products with
consumed goods and services as well as for production costs. The higher the NTP, the stronger the level of purchasing power of the farmers. During 2017, farmer exchange rates in North Sumatra generally decreased by 2.38%, from 101.56 (2016) to 99.14. One of the causes of this decline was the decline in the exchange rate of the farmers' smallholder plantation sub-sector into 0.95%. Meanwhile, specifically for the exchange rate of farmers in the smallholder plantation sub-sector in 2016 amounted to 99.47 and in 2017 it was 98.53 [15]. This condition was different with the exchange rate of the plantation sub-sector farmers that occurred in Indonesia. The exchange rate of farmers in the plantation sub-sector in Indonesia has increased from 99.29 (2016) to 100.38 in (2017) [16].

3.3. Profile of respondents of oil palm farmers gender

Smallholder oil palm plantations were owned by male farmers. Oil palm plantations owned by women farmers were plantations inherited from their husbands. Characteristics of respondents by gender, can be seen in the Table 1.

| Sex            | Total | Percentage |
|----------------|-------|------------|
| Female         | 31    | 32.50      |
| Male           | 89    | 67.50      |
| Total          | 120   | 100        |

3.4. Age

Age distribution of the respondents was on 29-72 years. Most farmers were 40-49 years old; based on the results of the study, it reached 27.42%. Characteristics of respondents by age can be seen in the Table 2.

| Age (Years) | Total | Percentage |
|-------------|-------|------------|
| < 30        | 4     | 4.23       |
| 30 – 39     | 21    | 17.74      |
| 40 – 49     | 33    | 27.42      |
| 50 – 59     | 29    | 24.19      |
| 60 – 69     | 27    | 22.58      |
| ≥ 70        | 6     | 4.84       |
| Total       | 120   | 100        |

3.5. Education level

In general, farmers had a low level of education, because of economic constraint factor, the low access to schools that were far from home, and the low awareness of parents to send their children to a more advanced level of education. More than 50 percent of farmers finished their education at elementary and junior high school levels only. Characteristics of respondents by education level, can be seen in the Table 3.

| Education level               | Total | Percentage |
|-------------------------------|-------|------------|
| Never Attended/Not finished   | 2     | 1.61       |
| Elementary School             | 48    | 40.32      |
| Junior High School            | 23    | 19.35      |
| Senior High School            | 33    | 27.42      |
| University                    | 14    | 11.29      |
| Total                         | 120   | 100        |

There were also those who had never attended formal educations, but most farmers were able to write, read and speak Bahasa Indonesia. Low educated farmers in general were old farmers, while
young adult farmers and middle-aged farmers generally got a level of education of high school or even university. Farmers at the research location had education levels ranging from those who had never attended formal education to those who went to universities. One way to change someone’s potential into real ability was through education and training [17]. Manoppo’s research results showed that the level of education also determined a person’s ability to digest the information provided related to the quality of work in conducting farming: highly educated farmers were better in managing oil palm cultivation towards agribusiness. Therefore, the formal education attended by farmers was very important because it would affect behavior, both in terms of mindset, action and the ability to implement new innovations in the form of behavior change. The education obtained was very important to provide knowledge and skills so that it was useful in life [18].

3.6. Total of family members
The large number of family members led to a big amount of expenditures. Besides, the presence of unemployed family members added burdens to the family. High expenditure and low income affected farmers’ welfare. This would reduce the possibility of setting aside income for the family's future savings. Most of farmers had a large number of family dependents (33.87 percent), where each farmer had 3-4 dependents, consisted of their wives and children. In general, farmers did not join the family planning program and their children had married and were not dependent on the family. Characteristics of respondents based on number of dependents can be seen in the Table 4.

| Number of Family Dependents | Total | Percentage |
|-----------------------------|-------|------------|
| 1 - 2                       | 31    | 25.81      |
| 3 - 4                       | 41    | 33.87      |
| 5 - 6                       | 39    | 32.26      |
| 7 - 8                       | 10    | 8.06       |
| Total                       | 120   | 100        |

3.7. Total land area
The land area owned by farmers varies, but most farmers (79.52 %) had a land area smaller than 5 hectares. The average land area owned by oil palm farmers was 3.76 Ha per person. Nevertheless, there were 20.98 % of farmers who had developed their oil palm farming so that they had more than 5 hectares of plantation area. The oil palm area was not far from the farmer's house and/or also united with the farmer's yard. Farmers leave only a small area for backyard. Total land area owned by farmers can be seen in the Table 5.

| Total Land Area (Ha) | Total | Percentage |
|----------------------|-------|------------|
| 0 - 2                | 60    | 50.00      |
| 3 - 5                | 35    | 29.03      |
| 6 - 8                | 17    | 14.52      |
| 9 - 11               | 4     | 3.23       |
| 11                   | 4     | 3.23       |
| Total                | 120   | 100        |

3.8. Production and productivity of smallholder oil palm plantation
The production of smallholder oil palm farmers ranges from 400-15.000 Kg. This difference in production due to the difference in the total area of land owned by smallholders. Most farmers have a land area below 5 hectares. Meanwhile, only a small portion has a land area of more than 5 hectares. The average production produced by oil palm farmers per Ha is 1.062 Kg / Ha. The value of this
productivity was still lower than the productivity obtained by smallholder oil palm farmers in Meranti Village, Pelalawan District, Riau Province (1,193 Kg /Ha).

3.9. Readiness of Farmers Facing Palm Oil Replanting

The readiness that had been done by the oil palm farmers to deal with the rejuvenation of the garden was different from those of big plantations. The preparation of the rejuvenation of the farmers was planned to be personal so every farmer has his own kind of readiness. However, farmers did not close themselves to receive assistance in this rejuvenation activity, whether given by the government or the company. The case with farmers in Desa Raya Jaya, Jambi where the rejuvenation process was partnering with large companies around the plantation [19,20]. The readiness that is intended here is the readiness made by farmers if their oil palm plantations are remodeled and farmers still have to fulfill their daily needs that are not reduced. As for the reasons palm oil farmers were ready to do plantation rejuvenation (replanting), namely: 1. Already had another oil palm plantation : One of the preparations that had been done by oil palm farmers was by having another oil palm plantation to replace the oil palm plantation that would be replanted. Having an oil palm plantation for more than two hectares was considered as a success of farmers in living their lives so far because the success of each person was different. There were 83% of farmers who had other oil palm plantations. This was because the age of oil palm plantations owned by farmers varied. 2. Having savings: Savings have become a necessity for everyone because savings is an asset that will be used in the future. At this time oil palm farmers who were doing replanting were in difficult times to meet their daily needs. Some of them already had other oil palm plantations as a way to prepare for plant rejuvenation (replanting). There were also oil palm farmers who did not have other oil palm plantations, so they used savings to keep meeting their daily needs. This savings was obtained from the yields of oil palm plantations or from other jobs other than farming. 3. Had other work/income sources : Aside from having other oil palm plantations and also saving, there was still the readiness of oil palm farmers to face plant rejuvenation, namely other income. As a person who really should be able to think creatively in order to be able to meet their life needs, a smallholder should look for other ways to keep earning money even though his oil palm plantation had been replanted. Other jobs were indeed one option to continue to be able to meet the growing needs of life while the main income was no longer there. Indeed, everyone should had the expertise and creativity to get extra income to meet their life needs, especially in this increasingly modern era where the needs of life were increasing and the school fees were expensive. There were 90% of farmers had side jobs other than farming. Meanwhile, about 45% of farmer households had working family members.

3.10. Unreadiness of Smallholders in Facing Oil Palm Rejuvenation (Replanting)

The reasons for the oil palm smallholders not ready to do the replanting were: a. Economic problems of child dependents. Economic problems had become a problem because a considerable amount of money was needed to meet the daily needs, not to mention the school fees for the children. The expenditures were not only covered the meal costs but also for the children’s cost of education. b. High replanting cost. It was commonly known that to do oil palm replanting a high amount of money was required. Since the oil palm plantation was privately owned by the farmers, the oil palm farmers must do their own replanting. c. Still have debts, and d. Smallholder farmer was not able to access credit to banks. This condition was supported in accordance with the publication in xinhuanet which stated that one of the major problems was that many of growers did not have certificates of their lands which was necessary to receive financial support from banks [21, 22]. Based on the results of research conducted by CIFOR, smallholders missing out on potential income from oil palm production and smallholders have difficulty accessing capital from banks when needed because the banks have no third-party guarantor. In this case, smallholders cannot meet the standard cost of replanting [23].
4. Conclusions

The readiness of smallholder oil palm farmer that was done by each farmer was certainly different because the replanted oil palm plantation was privately owned by the farmer, not by a company. The decision to be ready or not to be ready to do replanting was a personal decision of the owner. The total area owned by farmers significantly affected the ability of farmers to set aside funds for savings to cope with the situation due to replanting. The household economy of the farmers would be disrupted when their oil palm plantations had entered the rejuvenation period and reduced their household income.

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