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Analysis of Palm Production Factors and Biodiesel Production Opportunities in Jambi Province

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ABSTRACT

Research using secondary data with a quantitative descriptive analysis method which aims to analyze the land area for oil palm commodities in Jambi Province with the finding of an average calculation result of 6.24%. The average number of oil palm commodity farmers is 5.01%. The average price of palm oil commodities is 4.98%. Then for 1 hectare of oil palm the average production amount is 2.03 tons with a production value of IDR 2,732 (million) per month. Then the average land area of oil palm farmers in Jambi Province is 4 hectares with an income of oil palm farmers of IDR 10,290 (million) per month. Then the biodiesel production is 1,644,885 kg on average year

1. Introduction

Oil palm plants have an important meaning for the development of national plantations. For Indonesia, apart from being able to create employment opportunities that lead to social welfare, it is also a source of foreign exchange earnings for the country. Indonesia is one of the main producers of palm oil (Fauzi, et al, 2007). Indonesia is the largest developing country in the world which is known as an agricultural country rich in natural resources. (Mustari et al, 2020). Currently, the agricultural sector still has the status of a strategic sector because it has a contribution as a provider of food and raw materials that contributes to GDP and earns the country's foreign exchange and absorbs energy (Achmad et al, 2020). During times of economic crisis, the agricultural sector plays an important role in spearheading economic development that can be felt by the entire community. One of the efforts made is to create jobs to achieve equal distribution of income and reduce unemployment (Nawiruddin, 2017).

One way to optimize resources that support development is by identifying the plantation sub-sector that is superior in each region to make it easier to determine what strategies can facilitate its development (Wahyudi et al, 2022). For example, the economic structure of Jambi Province is where the agricultural and plantation sectors have the greatest influence on GRDP, namely 26.76% in 2022. (Mughniyati, 2023).

The leading plantation commodity in Jambi Province is oil palm. Oil palm plantations have long-term prospects and are one of the plantation commodities that play a very important role in the economy of Jambi Province (Saragih et al, 2020). With the existence of palm oil plantations, new employment opportunities are opened in line with the fact that plantation businesses are labor intensive, therefore the development of plantation commodities will also have an impact on

increasing the workforce capacity of the plantation sub-sector. Workforce absorption in the plantation sub-sector experiences an increase every year. In 2021, the working capacity of palm oil commodities will be 311,225 people. Then in 2022 it will increase by 8,802 people or there will be an increase of 2.78%.

In the last 2 years, the contribution of the agricultural sub-sector to GRDP, namely 23.23% in 2021, increased to 26.76% in 2022 and this contribution ranks first in the distribution of PDRB sub-sectors in Jambi Province. This can be seen from the large area planted with palm oil which is more than 56% and it is estimated that demand for palm oil will continue to increase along with the decreasing supply of fossil fuels. Oil palm production in Jambi Province in 2022 will reach 2,298,301 tons with a planting area of 1,100,727 Ha.

This condition has the conclusion that tourism development must receive great attention so that its contribution can be increased so that it needs to be the focus of attention in future plantation development (Haryanti, 2021). Apart from land area, the factors that influence palm oil production in Jambi Province are the number of farmers and the price of palm oil itself. Where the number of oil palm farmers in 2020 was 243,786 and there will be an increase in 2022 to 311,225 people. The land area and number of oil palm farmers in Jambi Province tends to increase, this is greatly influenced by the prevailing price of palm oil in farming communities, which is an average of IDR 1,592 per kg in 2022. Basically, palm oil products are not only used to produce food products but many other products. to become an opportunity for biodiesel energy which is very important for the needs of domestic industry (Hastuti et al, 2018).

Based on the description above, the researcher's aim is firstly how the development of land area, number of farmers and the price of palm oil commodities, secondly how many kg for 1 day of oil palm land, how much land is there for every one oil palm farmer, how much oil palm farmers earn per month and what is the potential of coconut oil? palm oil as raw material for biodiesel in Jambi Province during 2012-2022.

2. Method

The research methodology used in this research is through a quantitative descriptive approach. The quantitative descriptive research method comes from secondary data which is used to research and observe an object of palm oil production in Jambi Province. This description method systematically, factually and precisely analyzes the phenomenon being investigated. (Hardani et al, 2020). The research data source is through publications from the Central Statistics Agency (BPS), the Plantation Service and literature which are relevant to data research in the form of a times series from 2012-2022. This research analysis tool uses a growth rate test formula and a frequency test formula in accordance with the research objectives to be achieved. First, how is the development of land area, number of farmers, and prices of palm oil commodities, second, how many kg for 1 day of oil palm land, how much land is there for each oil palm farmer, how much oil palm farmers earn per month and what is the potential of palm oil as raw material for biodiesel in Jambi Province during 2012-2022.

$$G = \frac{Y_{t-1} - Y_{t-0}}{Y_{t-0}} x100\%$$

$$KG = \frac{1Ha}{X_{kg}}$$

Land Area=Land Area-Number of Farmers
Farmer Income = Price x Production x Land Area
Biodiesel=1kg Biodiesel : 1.046kg Crude Palm Oil

3. Results and Discussion

After t Growth Rate of Oil Palm Land Area in Jambi Province

The area of oil palm land in Jambi Province during 2012-2022 is depicted in the following table:

Table. 1
Growth Rate of Oil Palm Land Area in Jambi Province 2012-2022

Year	Land Area (Ha)	Growth (%)
2012	589.340	-
2013	593.433	0,69
2014	662.846	11,70
2015	689.966	4,09
2016	791.025	14,65
2017	1.039.920	31,46
2018	1.079.334	3,79
2019	1.041.434	(3,51)
2020	1.027.477	(1,34)
2021	1.099.191	6,98
2022	1.100.727	0,14
Average	883.154	6,24

Source: BPS Jambi Province data processed in 2024

Based on table 1, it illustrates that during the 2012-2022 period, the area of oil palm land in Jambi Province tends to fluctuate and tends to increase with an average growth rate for the last 11 years of 6.24%. The highest land area for palm oil production occurred in 2017, namely 31.46%, this was in line with the surge in domestic and global market demand, making it possible for entrepreneurs to expand land. Meanwhile, in 2019 and 2020, the condition of oil palm land area decreased, this was in line with the outbreak of the COVID-19 pandemic which caused people to have to stay at home, resulting in reduced land expansion activities that had been planned.

2. Growth Rate of the Number of Palm Oil Farmers in Jambi Province

The number of farmers is related to the number of workers needed, which influences production results. Labor absorption in this research is the number of farmers who work in the oil palm commodity plantation sector. This sector employs a relatively large number of people so the growth rate of this sector will have a big impact on the economy. The following table shows the number of oil palm farmers in Jambi Province

Table. 2
Growth rate of the number of oil palm farmers in Jambi Province in 2012-2022

Year	Number of Farmers (People)	Growth (%)
2012	186.385	-
2013	187.756	0,74
2014	200.991	7,05
2015	206.787	2,88
2016	210.684	1,88
2017	212.833	1,02
2018	221.711	4,17
2019	228.475	3,05
2020	243.786	6,70

2021	311.225	27,66
2022	311.225	-
Average	229.260	5,01

Source: Jambi Province Central Statistics Agency, data processed in 2024

Based on table 2, the number of oil palm farmers in Jambi Province during the 2012-2022 period was 311,225 people, where over the last 11 years the data shows that the number of oil palm farmers tends to always increase with an average growth rate of 5.01%. Data on the number of oil palm farmers in Jambi Province with the highest growth rate occurring in 2021, namely 27.66%, this figure shows that the policy direction of the plantation service in Jambi Province has increased, plus palm oil derivative products have contributed to the rapid demand for palm oil raw materials in Jambi Province.

3. Growth Rate of Palm Oil Prices in Jambi Province

Price is the value of a good or service in units of money, where the higher the benefit a person feels from a particular good or service, the higher the exchange value of that good or service. Commodity prices are an important indicator in the global economy that influences trade activities, inflation and economic growth in various countries. (Rozalinda, 2017). The following is the growth rate of palm oil commodity prices in Jambi Province in the following table:

Table. 3
Growth rate of palm oil prices in Jambi Province 2012-2022

Year	Palm Oil Price (Rp)	Growth (%)
2012	1.135	-
2013	1.060	(7)
2014	1.368	29
2015	967	(29)
2016	1.307	35
2017	1.481	13
2018	1.307	(12)
2019	1.498	15
2020	1.498	-
2021	1.887	26
2022	1.592	(16)
Average	1.373	4,98

Sumber : Direktorat Jenderal Perkebunan, data diolah 2024.

Based on table 3 above, it can be explained that during the 2012-2022 period or over the last 11 years the average price of palm oil experienced a growth rate of 4.98% per year. From the data obtained, the price of palm oil in Jambi Province is very variable and tends to experience frequent price shocks. One of the causes of price shocks is domestic and global industrial demand which is sometimes unpredictable. The highest growth rate in palm oil prices over the last 11 years in Jambi Province occurred in 2016, namely 35%, but the highest palm oil price value actually occurred in 2021, namely Rp. 1,887 per kg. The high price of palm oil will have an impact on increasing the income of palm oil farmers themselves and will impact people's purchasing power and ultimately increase economic growth.

Meanwhile, in 2015, the price of palm oil experienced a free fall to the level of Rp. 967 per kg with a price growth rate of -29%. This condition occurred due to the decline in demand for palm oil commodities so that the decline in the price of palm oil commodities in the economic market was inevitable.

4. How many kg for 1 day of oil palm land, land area for every one oil palm farmer, monthly income of oil palm farmers and the potential of oil palm as raw material for biodiesel in Jambi Province during 2012-2022

The following are the results of calculating how many Kg for 1 day of oil palm land, land area for every one oil palm farmer, monthly income of oil palm farmers and the potential of oil palm as raw material for biodiesel in Jambi Province during 2012-2022 as in the table below:

Table. 4
Calculation of Kg for 1H of oil palm land, land area for every one oil palm farmer, monthly income of oil palm farmers and the potential of oil palm as raw material for biodiesel in Jambi Province during 2012-2022

Year	∑ 1(HA)/ Production	∑ Price/ Production	∑ Land/ Farmer	∑ Farmer's income / monthly	∑ Production Biodiesel/ Year
2012	2,50	2.837	3	8.969	1.404.053
2013	2,62	2.779	3	8.783	1.483.030
2014	2,37	3.243	3	10.696	1.498.127
2015	2,35	2.270	3	7.575	1.544.229
2016	1,96	2.565	4	9.631	1.480.022
2017	1,08	1.600	5	7.817	1.070.857
2018	1,68	2.196	5	10.693	1.729.142
2019	1,76	2.632	5	11.999	1.744.552
2020	1,89	2.829	4	11.922	1.849.524
2021	2,00	3.780	4	13.352	2.099.258
2022	2,09	3.324	4	11.756	2.190.945
Average	2,03	2.732	4	10.290	1.644.885

Source: BPS, data processed in 2024.

The results of calculations based on the table above show that for 1 hectare of oil palm the average production amount is 2.03 tons with a production value of IDR 2,732 (million) per month. Then, the average land area for oil palm farmers in Jambi Province is 4 hectares, which means that the income of oil palm farmers in Jambi Province is IDR 10,290 (million) per month. Then, for biodiesel production, calculated data was obtained at 1,644,885 kg on average per year, meaning that Jambi Province has quite a big opportunity to produce biodiesel. Biodiesel is a renewable energy for producing solar energy. In the long term, biodiesel can create energy independence for the nation and state. This provides an opportunity for the nation to save the state budget and will directly increase the price of palm oil in the community, ultimately improving the welfare of the people of Jambi Province.

4. Conclusion

Based on the findings of this research, it can be concluded that palm oil production in Jambi Province is that the average land area for palm oil commodities in Jambi Province is 6.24%. The average number of oil palm commodity farmers is 5.01%. The average price of palm oil commodities is 4.98%. Then for 1 hectare of oil palm the average production amount is 2.03 tons with a production value of IDR 2,732 (million) per month. Then the average land area of oil palm farmers in Jambi Province is 4 hectares with an income of oil palm farmers of IDR 10,290 (million) at month. Then the biodiesel production is 1,644,885 kg on average on year

The suggestion of this research is that for production factors such as land area, number of farmers and palm oil prices, it is hoped that the government can maintain the stability of these components through consistent policies through fertilizer subsidies, assistance in replanting palm oil seeds and assistance in socializing the quality of quality palm oil seeds. Then, for the production of biodiesel from palm oil, it is hoped that government policy can be implemented with binding regulations for

existing industry players. Furthermore, palm oil commodity businesses can increase labor absorption, especially in Jambi Province.

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