

# ANALYSIS OF THE RELATIONSHIP BETWEEN PALM OIL FARMERS' INCOME AND THE WELFARE OF FARMERS IN TEBING TINGGI DISTRICT, WEST TANJUNG JABUNG REGENCY

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## ABSTRACT

This study aims to determine the relationship between farmers' income and the welfare of oil palm farmers in Tebing Tinggi District, West Tanjung Jabung Regency. Data collection using a questionnaire from 96 farmers selected through a simple random method. The measure of income per capita uses BPS, the measure of welfare uses BKKBN and the relationship between income and welfare is analyzed using chi square. The results of the analysis show that differences in income groups cause significant differences in farmer welfare. Income is not the main factor determining welfare but can also be seen from a person's ability to access education, health, or social relations. High income can facilitate the fulfillment of basic needs and improve the quality of life, but if other factors are not met, overall welfare may not be achieved. The results of the study show that most farmers are in the low income group and welfare is in the prosperous family group II, namely farmers who can meet basic family needs such as food, clothing and shelter and psychological needs. Most farmers are in a fairly prosperous condition, but some are included in vulnerable groups that need to be considered through the formulation of development policies in increasing income, education and health subsidies, and increasing access to decent housing.

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**Keywords:** Income, Welfare, Palm Oil

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## INTRODUCTION

Sumatra Island is the center of palm oil plantation production in Indonesia, followed by Kalimantan. Jambi Province is one of the provinces with the largest contribution. The harvested area of palm oil plantations in Jambi Province continues to increase, producing over one million tons annually. This is due to Jambi Province's land being ideal for oil palm cultivation. In terms of production volume, Tanjung Jabung Barat Regency was the largest in 2020, producing 320,455 tons, contributing 21.80% of total production in Jambi Province. Most residents of Tanjung Jabung Barat Regency, specifically in Tebing Tinggi District, cultivate oil palm as a source of income, which contributes to the farmers' well-being.

The increase in productive land area and production is a key factor in the success of oil palm plantation development, and economic growth in Tebing Tinggi District is crucially influenced by the economic growth of oil palm plantations. Farmers' income levels, consumption expenditure, and the exchange rate are all influenced by the economic growth of oil palm plantations. Therefore, any increase in palm oil prices, in particular, will impact farmers' incomes. The income received by oil palm farmers in this case is the profit from their farming business.

The high and low incomes of farmers indirectly affect their welfare. Price fluctuations, both in terms of prices and production costs, will also affect income. The National Population and Family Planning Agency (BKKBN) states that welfare refers to a condition in which a family is able to meet basic needs (clothing, food, shelter), social and psychological needs, and development needs, while also being able to make sustainable contributions to society. Increased income tends to increase an individual's or household's ability to meet basic needs, access health and

education services, and improve the overall standard of living. Higher incomes are also often associated with better access to health services, education, and other public facilities, which contribute to increased welfare. Low-income farmers are expected to experience lower welfare, while high-income farmers are expected to experience higher welfare.

Well-being is a human condition characterized by the ability to meet material needs, achieve respect (esteem), and achieve freedom of choice (Todaro, 2010) in Cahyadi (2017). Welfare itself is measured by a family's ability to meet the needs of food, clothing, and shelter. Improved welfare for farmers is not solely due to agricultural factors, but can also be due to factors other than agriculture. Arifin Sitio (2001) states that well-being can be characterized by the level of real income. If a person's real income increases, the economic well-being of that person or community also increases. To determine whether there is a relationship between income and well-being, an analysis of the relationship between oil palm farmers' income and their well-being in Tebing Tinggi District, West Tanjung Jabung Regency was conducted.

## RESEARCH METHOD

This research was conducted in Tebing Tinggi District, West Tanjung Jabung Regency, from January to February 2023 in Suka Damai, Kelagian, and Purwodadi Villages. The research locations were selected purposively, and the farmers were independent farmers. The research method used was a survey, using a questionnaire as a data collection tool. The Slovin formula was used to determine the sample size, resulting in 96 farmers: 43 in Purwodadi Village, 20 in Suka Damai Village, and 33 in Kelagian Village. Sampling was conducted using the Simple Random Sampling Method using a random number table.

To determine the income of oil palm farming, the Income Analysis method used, according to Suratiyah (2009), is used, which defines income as the difference between revenue and total costs over a one-year period or one production cycle. Income groups are classified using the BPS (2018) classification, which classifies monthly per capita income into three categories: high income (>Rp 3,500,000), medium income (Rp 2,500,000-Rp 3,500,000), and low income (<Rp 2,500,000).

To determine welfare levels, 21 indicators are used, according to the National Population and Family Planning Board (BKKBN) (2011), which defines families based on the concept or approach of family welfare and divides welfare into five levels. To determine the score range, each indicator at each welfare level is given a maximum score of 3 and a minimum score of 1. Therefore:

- if the score is between 6 - <18 = keluarga pra sejahtera
- if the score is between 18 – <36 = keluarga sejahtera I (KS I)
- if the score is between 36 – <42 = keluarga sejahtera II (KS II)
- if the score is between 42 – <57 = keluarga sejahtera III (KS III)
- if the score is between 57 – <63 = keluarga sejahtera III+ (KS III+)

To determine the significance of the relationship between oil palm farmer income and farmer welfare, Chi-square is used which is formulated as follows:

$$\chi^2_c = \sum_{i=0}^n \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

To determine the value of  $E_{ij}$ , it is stated as follows:

$$E_{ij} = \frac{(\text{Total Baris})(\text{Total Kolom})}{\text{Total Keseluruhan}}$$

Keterangan :

- $\chi^2$  = Distribusi Chi-Square  
 C = Degree of Freedom (df/dk)  
 $O_{ij}$  = Nilai Observasi (Pengamatan) ke-i  
 $E_{ij}$  = Nilai Ekspektasi ke-i

Determine the decision-making rule if  $X_{hitung}^2 < X_{tabel}^2$  by looking at the significance level ( $\alpha$ ) = 5% and  $db = (n-1)(k-1)$  then accept  $H_0$  meaning that the difference in income does not cause a significant difference in farmer welfare. If  $X_{hitung}^2 > X_{tabel}^2$  then reject  $H_0$  which means that the difference in income causes a significant difference in farmer welfare.

## RESULTS AND DISCUSSION

Oil palm farmers' income is the total production multiplied by the farmgate price. Oil palm farmers' income is obtained through the sale of fresh fruit (FFB). The price of FFB at the study site varies each month. The lowest price occurred in April 2022 during the second harvest season, at IDR 1,500/kg, and the highest price was in June 2022 during the first harvest season, at IDR 2,471/kg. The average price of FFB in 2022 was IDR 2,124/kg. The average land area in the study area was 3.5 ha per farmer, while the average FFB production was 18,564 kg/ha/year. Oil palm farmers harvest 24 times in one production year, or twice a month. Furthermore, to calculate income, the resulting production was multiplied by the average price for one year. The distribution of income can be seen in Table 14.

**Table 14. Distribution of Frequency of Palm Oil Farmers' Income in the Research Area in 2022**

No.	Penerimaan (Rp/Tahun)	Frekuensi (Orang)	Presentase (%)
1	40.780.800 - 71.495.800	4	4
2	72.495.800 - 102.210.800	22	23
3	103.210.800 - 132.925.800	35	36
4	133.925.800 - 163.640.800	21	22
5	164.640.800 - 194.355.800	7	7
6	195.355.800 - 225.070.800	6	6
7	226.070.800 - 255.785.800	5	5
<b>Jumlah</b>		<b>96</b>	<b>100</b>

Table 14 shows that the average farmer's income in the research area is Rp. 138,006,900/year and the distribution of the highest farm income is in the range of Rp. 103,210,800 - Rp. 132,925,000 with the number of farmers being 36%. The lowest farmer's income is Rp. 40,780,800/year where the income itself is influenced by the land area, the higher the land area the higher the income. The income of oil palm farmers in the research area is greater when compared to research in the same sub-district in a different village, namely Talang Makmur Village, conducted by Eka Nurmawati (2025) where the income in the village is Rp. 86,486,932/year.

## Costs

According to Soekartawi (2002), farming costs are classified into fixed costs and variable costs.

### Fixed Costs

Fixed costs are costs incurred that do not affect the amount of production. Fixed costs include the depreciation of tools such as hoes, machetes, lawn mowers, spray barrels, and dodos.

**Table 15. Details of Fixed Costs of Oil Palm Farmers in the Research Area in 2022**

Biaya Penyusutan	Jumlah Biaya (Rp/Petani/Tahun)	Jumlah Biaya (Rp/Petani/ha/Tahun)
Dodos	19.244	5.730
Egrek	273.422	81.416
Tojok	28.016	8.342
Angkong	99.563	29.646
Parang	17.082	5.086
Cangkul	18.688	5.565
Alat Semprot	75.469	22.472
<b>Jumlah</b>	<b>531.484</b>	<b>158.257</b>

Table 15 shows that the average depreciation cost for equipment paid by oil palm farmers in the study area was IDR 531,484/farmer/year and IDR 158,257/ha/year. The largest depreciation cost is for hoeing, as most oil palm trees are already very tall, requiring higher-than-usual hoeing. This aligns with research by Nuryanti (2017) that indicates that equipment depreciation is a fixed cost expressed in rupiah per production process. The cost is also independent of production volume.

### Variable Costs

The variable costs in this study are fertilizer, pesticides, and labor. Variable costs are those incurred in a single production cycle. Based on the research, the largest variable cost incurred by farmers is fertilizer, specifically Phonsa, Urea, and SP 36. Fertilization is carried out two to three times a year. Details of oil palm farming costs can be seen in Table 16.

**Table 16. Details of Variable Costs of Oil Palm Farmers in the Research Area in 2022**

No	Biaya Variabel	Jumlah Biaya (Rp/Petani/Tahun)	Jumlah (Rp/ha/Tahun)
1	<b>Biaya Pupuk</b>	<b>12.799.828</b>	<b>3.918.707</b>
	Phonska	3.047.578	907.467
	Urea	6.095.156	1.882.025
	SP 36	3.657.094	1.129.215
2	<b>Biaya Obat-obatan</b>	<b>739.063</b>	<b>120.068</b>
	Round Up	287.500	85.608
	Gramaxon	451.563	134.460
3	<b>Biaya Tenaga Kerja</b>	<b>2.046.666</b>	<b>170.556</b>
	TKDK	925.833	274.627
	Pemangkasan	110.000	32.568
	Penyemprotan	194.792	58.002
	Pemupukan	109.375	32.568
	Pemanenan	618.125	151.489
	TKLK	1.120.833	322.196
	Pemangkasan	158.333	46.526
	Penyemprotan	216.667	63.586
	Pemupukan	131.250	39.082
	Pemanenan	614.583	183.002
<b>Jumlah (1+2+3)</b>		<b>15.585.557</b>	<b>4.640.861</b>

Variable costs for oil palm farming in the research area amounted to Rp. 4,640,861/ha/year, which is relatively low compared to the production costs of oil palm farming in East Tanjung Jabung Regency, which amounted to Rp. 18,000,000/ha/year ( Nurilma, 2022 ). Labor costs amounted to Rp. 2,046,666/year, with labor costs outside the family being higher than labor costs within the family. The larger the plot, the higher the costs for fertilizer and pesticides incurred by farmers. Fertilization was mostly carried out by family members, and harvesting was mostly carried out by labor from outside the family. The results of this study are in line with Mustapa's (2013) study, which showed that variable costs incurred consisted of the cost of purchasing seeds, fertilizer, labor wages, and other unforeseen costs. However, in this study, the cost of purchasing seeds was not included because this study did not look at the beginning of the farming business but looked at the last harvest or the last farming activity.

### Income

Income is the difference between farmer revenue and total costs. Average palm oil production in the study area is 35 tons/ha/farmer, sold at 2,124 rupiah/kg.

**Table 17. Total Income of Respondents' Oil Palm Farmers in the Research Area in 2022**

No	Total Pendapatan (Rp/Tahun)	Jumlah (Rp/petani/Thn)	Jumlah (Rp/Kapita/Thn)	Jumlah (Rp/Kapita/bln)
1	Penerimaan (TR)	138.006.900	29.804.553	2.483.463
2	Biaya (TC)			
	Biaya Tetap	531.482	114.520	9.543
	Biaya Variabel	15.585.557	3.357.909	279.826
	Total Biaya	16.117.039	3.472.429	289.369
<b>Pendapatan (PD = TR-TC)</b>		<b>121.889.861</b>	<b>26.332.124</b>	<b>2.194.094</b>

Table 17 shows that the income of farmer respondents in Tebing Tinggi District is IDR 2,194,094/capita/month. Based on the per capita income classification according to the Statistics Indonesia (BPS) (2018), this income falls into the low income category. Furthermore, when compared to palm oil income in East Tanjung Jabung Regency, which is IDR 2,120,335 (Amriadi, 2022), the income from this study is slightly higher and lower than the 2022 minimum wage for West Tanjung Jabung Regency/City of IDR 2,770,606/month. The determining factor in production efficiency is the use of production inputs. This condition is a determinant of farmer income, which in turn determines the welfare of farming households (Nainggolan et al., 2022). Income groups are divided into three groups: high income (> IDR 3,500,000), medium income (between IDR 2,500,000 and IDR 3,500,000), and low income (< IDR 2,500,000/month).

Fixed costs account for a relatively small percentage of total costs. This shows that most costs depend on the level of activity and production volume, reflecting the characteristics of input-intensive farming businesses. The net income obtained is 26,332,124/capita/year, or Rp. 2,194,094/capita/month. The distribution of per capita income according to BPS where the results of the study show that 77% of farmers are in low income as many as 74 respondents while farmers with high income numbered 6 people with a percentage of 6% and farmers with medium income numbered 16 people or 17%. Nainggolan et al., 2019, stated that significant inefficiencies in farming are caused by low farm income. Farm income is insufficient to cover household needs, build capital, expand businesses, or provide savings for farming families.

### Welfare

According to the National Population and Family Planning Agency (BKKBN) (2011), there are three groups of needs that must be met: basic needs, social needs, and development needs. The BKKBN divides family criteria into five levels. Based on field research, it was found that the majority of farmers are at the family welfare level II.

**Table 19. Distribution of Respondent Farmers Based on Welfare Level in the Research Area in 2022**

Tingkat Kesejahteraan	Frekuensi (Orang)	Presentase (%)
Pra Sejahtera	0	0
Keluarga Sejahtera I	11	11
Keluarga Sejahtera II	36	38
Keluarga Sejahtera III	30	31
Keluarga Sejahtera III+	14	15
<b>Jumlah</b>	<b>96</b>	<b>100</b>

Table 19 shows that the average farmer is at welfare level II, with a total of 36 farmers. At this level, the respondent farmers are able to meet basic family needs and psychological needs. Furthermore, the highest welfare level, III+, is represented by 14 farmers. Farmers at welfare levels III and III+ are respondents who can meet everything from basic needs to development needs, such as saving money or goods, making material contributions to social activities, and having members who actively participate in community social groups. Welfare is the sum of the satisfactions a person derives from consuming the income they receive. However, the level of welfare itself is relative, depending on the level of satisfaction derived from consuming that income.

This analysis aligns with welfare economics theory and Amartya Sen's concept of multidimensional poverty, which states that welfare is not solely measured by income but also by a person's capabilities in accessing education, health services, and social participation. The higher a person's level of welfare, the greater the freedom they have to live a life they value.

In a study conducted by Nainggolan and Fitri (2022), the average income of rubber farmers in Sarolangun Regency was recorded at IDR 1,824,000 per month, with an average family size of four. Based on welfare indicators from the Statistics Indonesia (BPS), 58% of these farmers were categorized as prosperous. This finding indicates that despite their relatively moderate income levels, most farmers can still achieve prosperity. In the context of Tebing Tinggi District, welfare is not only measured by income but also by a person's capabilities in accessing education, health services, and social participation. The higher a person's level of welfare, the greater the freedom they have to live a life they value. Therefore, this study can serve as an empirical basis for assessing the role of oil palm farmers' income in improving their welfare.

### The Relationship between Income and Welfare

Therefore, to determine the relationship between oil palm farmers' income and their welfare in Tebing Tinggi District, West Tanjung Jabung Regency, a Chi-Square analysis was used with an  $\alpha$  value of 0.05 and  $n = 96$ . The results of the study show the relationship between oil palm farmers' income and their welfare, as shown in Table 20.

**Tabel 20. The Contingency of the Relationship between Oil Palm Farmers' Income and Farmer Welfare Levels in 2022**

Pendapatan					Total
	KS I	KS II	KS III	KS III+	
<b>Tinggi</b>	2	4	10	8	24
<b>Sedang</b>	2	2	10	7	21
<b>Rendah</b>	6	30	10	5	51
<b>Total</b>	<b>10</b>	<b>36</b>	<b>30</b>	<b>20</b>	<b>96</b>

The results of the cross tabulation in table 20 explain that most of the respondents, namely 36 respondents, are at welfare level II where the indicators are the fulfillment of 6 indicators of KS I or basic needs and 8 indicators of KS II, namely family members generally eat twice a day or more, family members have different clothes for work/school, at home and for traveling, the house occupied by family members has good floors, walls and roofs, if a family member is sick they are taken to health services, couples of childbearing age if they want to use family planning go to contraceptive service facilities and all children aged 7-15 years in the family go to school. Respondents with welfare group I (KS I) amount to 10% of the total, namely those who can fulfill 6 indicators of KS I or the need for housing, clothing and food and most of them are in the low income group. Furthermore, several respondents are also in the low income group with welfare levels of KS III and KS II+ which means that income is not the main factor in the level of farmer welfare.

Overall, the majority of respondents were in the welfare categories KS II (36 people) and KS III (30 people), indicating that the level of community welfare in this study tended to be middle to upper. However, farmer respondents in KS I cannot be ignored. This data suggests that increased income tends to go hand in hand with increased welfare, but not necessarily. A multidimensional approach is still needed to view welfare, not solely from a financial perspective.

The results of the non-parametric statistical test using the chi-square test (Appendix 12) obtained a calculated  $X^2$  value of 24.587 and a table  $X^2$  value of 21.03. Because the calculated  $X^2$  value is greater than the table  $X^2$  value,  $H_0$  is rejected, which states that differences in income groups cause differences in farmer welfare. To determine whether there is a significant relationship, a T-test is needed to determine the Chit value and the correlation coefficient ( $r$ ). The contingency coefficient (Chit) is 0.458, while the  $r$  value is 0.561. Next, a T test was carried out with a calculated  $t$  of 6.57 when compared with the  $t$  table of 1.661, so the calculated  $t > t$  table, which means that  $H_0$  is rejected, where there is a significant relationship between farmer income and the welfare of oil palm farmers. This research is also in line with Nainggolan et al., 2022, which states that high income groups do not always produce high welfare, but there are also low income groups that produce high welfare and vice versa.

Nainggolan, Effran, & Safitri (2024) reported that the average income of rubber farmers in Muara Bulian District was IDR 1,809,315 per month, with 71.08% of farmers categorized as having good welfare based on 8 BPS indicators. The Chi-square test showed a significant relationship between income and welfare ( $X^2=9.275$ ;  $p<0.05$ ). This finding is relevant for a thesis in Tebing Tinggi District, where income also contributes significantly to improving the welfare of farmers in the region.

## CONCLUSION

According to the BPS classification, the majority of oil palm farmers' income falls into the low-income bracket, at 77%. According to the National Population and Family Planning Board (BKKBN), the welfare of oil palm farmers falls into the Welfare II (KS II) category, at 45%. KS II refers to farmers who are able to fulfill 6 indicators of KS I and 8 indicators of KS II. Differences in farmer income groups lead to differences in farmer welfare; in other words, there is a significant relationship between income and farmer welfare.

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