Jurnal Ilmiah Pertanian dan Peternakan (JIPPER)
ISSN 3031-5883, Vol 3, No 2, 2026, 59-71 https://doi.org/10.35912/jipper.v3i2.5930

Analysis of Food Security of Rubber Farmers in Lubuk Raja District, Ogan Komering Ulu Regency

Amel Permatasari[1] , Munajat Munajat[2*], Yetty Oktarina[3]
Universitas Baturaja, Sumatera Selatan, Indonesia[1,2,3]
munajat.ub@gmail.com[1]

Article History:
Received on 05 December 2025
1st Revision on 19 December 2025
2nd Revision on 24 December 2025
3rd Revision on 10 January 2026
Accepted on 19 January 2026

Abstract
Purpose: This study aims to analyze the level of household food security among rubber farmers in Lubuk Raja District, Ogan Komering Ulu Regency, using the proportion of food expenditure as an indicator of food security.
Methodology/Approach: A survey method was employed in January 2024. The population consisted of 300 rubber farmers owning approximately 1 hectare of land. Using the Slovin formula with a 10% margin of error, 70 respondents were selected through simple random sampling.
Results: The findings show that the average monthly food expenditure of rubber farmer households was IDR. 1,328,204, while non-food expenditure averaged IDR. 1,434,749, resulting in a total household expenditure of IDR. 2,762,953 per month. The proportion of food expenditure reached 48.07%, which is below the 60% threshold commonly used to indicate food security.
Conclusions: Rubber farmer households in Lubuk Raja District can be classified as food secure, as reflected by their relatively low proportion of food expenditure. Despite fluctuations in rubber prices, the structure of household income and expenditure indicates adequate access to food.
Limitations: his study is limited to the use of food expenditure proportion as the sole indicator of food security and focuses only on rubber farmers with 1-hectare land ownership in a single district.
Contributions: This research contributes empirical evidence on household food security conditions among rubber farmers in rural Indonesia and provides useful insights for policymakers in designing targeted agricultural and food security programs, particularly in regions highly dependent on plantation commodities.

Keywords: *Food Expenditure, Food Security, Non-Food Expenditure*

How to Cite: Permatasari, A., Munajat, M., Oktarina, Y. (2026). Analysis of Food Security of Rubber Farmers in Lubuk Raja District, Ogan Komering Ulu Regency. *Jurnal Ilmiah Pertanian dan Peternakan*, 3(2), 59-71.

1. Introduction

Food security is a condition of fulfilling food for the country down to the individual, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, evenly distributed, and affordable and does not conflict with religion, beliefs, and culture of the community, to be able to live healthy, active, and productively in a sustainable manner (Sulistiyo, 2025). Food security problems do not only occur in Indonesia, all countries in the world also experience food security problems, therefore, the Food and Agriculture Organization (FAO) always provides the latest information on food conditions in various countries. FAO supports the development of government and community capacity in facing the challenges of food and nutrition security (Berek, 2018).

Food security is a fundamental pillar of national development because it determines the ability of individuals and households to live healthy, active, and productive lives (Munajat, Sari, & Sari, 2026). In Indonesia, food security is defined as a condition in which food needs are fulfilled from the national level down to individuals, reflected in the availability of sufficient food in quantity and quality, safe, nutritious, diverse, evenly distributed, affordable, and consistent with community values, religion, and culture (Amalia, Maria, & Fitrianitha, 2024). This concept indicates that food security is not limited to food production alone, but also includes accessibility, affordability, utilization, and sustainability (Sutrisno, Duwi, Anita, Eksa, & Jenny Yudha, 2024). Therefore, strengthening food security remains one of the major priorities of many developing countries, including Indonesia (Khalfaoui, Goodell, Mefteh-Wali, Chishti, & Gozgor, 2024).

Globally, food security has become an increasingly complex issue due to population growth, climate change, economic instability, and fluctuations in agricultural commodity prices (Almughni, Kusumawardani, & Rohman, 2025). Population expansion increases pressure on food demand and resource availability, while climate change disrupts agricultural productivity through droughts, floods, and temperature variability (Kondo & Tambudzai, 2025). At the same time, economic shocks and commodity price volatility reduce household purchasing power, particularly in developing countries (Nguyen, Randall, & Lewis, 2024). The Food and Agriculture Organization continuously provides updated information and technical support to help governments and communities address food and nutrition security challenges (Matthew, Nwobueze, & Onwuzor, 2023). Through various programs, FAO encourages capacity building, sustainable agricultural development, and resilience among vulnerable rural households (Berek, 2018). These efforts demonstrate that food security is a multidimensional challenge requiring coordinated actions across sectors.

In Indonesia, food insecurity is closely associated with poverty, especially in rural and agriculture-dependent areas. Households with unstable incomes often experience difficulties in maintaining consistent access to nutritious food (Mutale, Dai, Chen, & Maulu, 2025). South Sumatra Province is one of the regions where poverty remains relatively high compared to other provinces on Sumatra Island. Statistical reports indicate that South Sumatra ranked among the ten poorest provinces in Indonesia, while extreme poverty increased from 3.14% in 2021 to 3.19% in 2022 (Putri & Dewi, 2025). This condition suggests that many rural households still face economic vulnerability, which may directly affect their household food security status.

South Sumatra Province is one of the provinces with a relatively high poverty rate compared to other provinces on the island of Sumatra. Statistical data shows that the increase in the number of poor people places South Sumatra in the 10th poorest province in Indonesia (Pratama, 2015). Meanwhile, in the Sumatra region, South Sumatra is ranked third, the poverty rate in 2022 in South Sumatra is said to have increased compared to 2021. In 2021, extreme poverty in South Sumatra was recorded at 3.14 percent, while in 2022 it increased to 3.19 percent. Statistical data shows that the poverty rate remains high in rural areas. One of these is OKU Regency (Murendo, Chirongwe, & Sisito, 2022). One way to reduce the poverty rate is by targeting the development of the 2020-2024 National Medium-Term Development Plan to create an independent, advanced, just, and prosperous Indonesian society through accelerated development in various sectors. Development is expected to be based on competitive advantages in various regions supported by quality and competitive human resources (Arham & Hatu, 2020).

One of the districts contributing significantly to the rural economy of South Sumatra is Ogan Komering Ulu Regency, where agricultural development continues to be a strategic priority. Among the agricultural subsectors, plantation commodities particularly rubber play a dominant role in employment generation and regional income. Natural rubber has long been recognized as one of the main export-oriented commodities and a source of livelihood for many smallholder farmers. According to regional statistics, Ogan Komering Ulu Regency possesses extensive smallholder rubber plantation areas, making the sector highly significant for local economic sustainability (Shiba, Aliber, & Zantsi, 2025).

Within the regency, Lubuk Raja District is one of the important centers of rubber production, where the majority of residents depend on rubber farming as their primary occupation (Laila, Yulius, & Mirza, 2017). Household income in this area is therefore strongly influenced by rubber productivity and market prices. However, rubber farmers often face several structural constraints, including low commodity prices, dependence on intermediaries, limited bargaining power, and seasonal productivity declines caused by dry weather conditions (Saadah & Agustiyara, 2022). Farmers in many villages reportedly sell latex through middlemen who determine prices, reducing the income received by producers. The prolonged decline in rubber prices since 2014 has further weakened farmers' purchasing power and household welfare (Ngkolu, Paranoan, Indriasari, & Usman, 2026).

For households that rely heavily on a single commodity, income shocks can directly affect their ability to secure food. When commodity prices fall, families may reduce food quantity, dietary diversity, or nutritional quality in order to meet other urgent expenses such as education, transportation, fuel, and health costs. In this context, analyzing household expenditure patterns becomes highly relevant because the proportion of food expenditure can reflect the economic condition and food security level of a household (Manyullei & Arundhana, 2021). Generally, households allocating a high share of total expenditure to food are considered more vulnerable, while lower food expenditure shares indicate better welfare and stronger food security conditions (Ngkolu et al., 2026).

Previous studies have shown that food security among farming households is influenced by income level, price stability, production performance, and access to resources (Irwan, Zusmelia, Virginia, Amelia, & Siahaan, 2022). Found that environmental and economic factors significantly affect the food security of rubber farmer households (Murendo et al., 2022). Likewise, household purchasing power and income diversification are important determinants of resilience during periods of commodity price decline (Mulamba, 2022). Despite the importance of the issue, empirical studies focusing specifically on the food security condition of rubber farmers in Lubuk Raja District remain limited (Nugraha, Ekowati, & Gayatri, 2023).

Considering the strategic role of rubber farming in the local economy and the vulnerability caused by fluctuating prices, it is important to assess whether rubber farmer households in Lubuk Raja District are able to maintain adequate food security (Kalaba et al., 2022). Therefore, this study aims to analyze the level of household food security among rubber farmers in Lubuk Raja District, Ogan Komering Ulu Regency, using the proportion of food expenditure as an indicator. The findings are expected to provide useful evidence for policymakers in designing targeted rural development, agricultural support, and food security programs for plantation-based communities.

Table 1. Rubber plantation area in OKU Regency, 2022

Subdistrict	Rubber (Hectares)		
	2019	2020	2021
Lengkiti	9,820	9,820	9,868
Termite Crocodile Shape	5,360	5,360	5,530
Donation	2,840	2,840	2,825
Semidang Aji	4,790	4,790	4,769
Ulu Ogan	660	660	635
Muara Jaya	840	840	873
Review	10,670	7,100	7,146
Lubuk Batang	12,060	12,060	12,059
Ray of Review	9,250	9,250	9,345
mortgage	-	3,540	3,693
East Baturaja	2,200	2,260	2,305
King's Pool	11,250	11,250	11,325
West Baturaja	2,230	2,230	2,134
OKU	72,030	72,000	72,471

2. Literature Review and Hypothesis Development

2.1 Literature Review

Development in OKU Regency is still directed at agricultural development, especially rubber plantations. The average population in OKU Regency works in the agricultural and plantation sectors. The large potential of natural rubber commodities in OKU Regency makes it one of the mainstay commodities for export. In OKU Regency, the plantation sector is one part of the agricultural sector that plays an important role in contributing to regional income in OKU Regency. Several types of plantation commodities that are superior to those cultivated in South Sumatra Province are rubber (Yusuf & Sulaiman, 2012)**.** OKU Regency is one of the regions in South Sumatra Province that has quite extensive smallholder rubber plantations, namely Ogan Komering Ulu Regency, which reaches 72,471.00 (H_a) or 9.2% of the total smallholder rubber plantations in South Sumatra Province (Laila et al., 2017)**.**

Household food security is closely related to the economic capacity of families to obtain sufficient and nutritious food on a continuous basis. In rural agricultural communities, household income generally depends on farming activities, commodity prices, land ownership, and productivity levels. For farming households whose livelihoods are concentrated in one commodity, income instability may directly affect purchasing power and food consumption patterns. Therefore, food security among farming households is often assessed through household expenditure behavior, especially the proportion allocated to food needs (Rachman & Ariani, 2002). In Ogan Komering Ulu Regency, agricultural development remains an important economic driver, particularly through plantation commodities such as rubber. Rubber farming contributes significantly to employment opportunities and rural household income. The extensive area of smallholder rubber plantations indicates that many households rely on rubber as their primary source of livelihood. Consequently, fluctuations in rubber prices and productivity have direct implications for household welfare, including their ability to meet food needs.

Lubuk Raja District is one of the districts in OKU Regency where the majority of the population lives and works in the agricultural sector. The people of Lubuk Raja District cultivate rubber as their primary crop. As the primary crop cultivated, dependence on income from rubber sales significantly affects the amount of income received by farmers from running rubber farming activities. Based on the data in Table 1.1, Lubuk Raja District is the district with the second largest land area in OKU Regency after Lubuk Batang, namely 11,325 hectares with the first largest production volume of 27,920 tons. This figure indicates that the average community in Lubuk Raja District, the majority of farmers rely on rubber plantations to meet their daily needs (Tabah Rizki & Ak, 2025). Lubuk Raja District is one of the strategic rubber-producing areas where most residents depend on rubber cultivation. However, farmers in this area face several constraints, such as low market prices, dependence on middlemen, limited bargaining power, and productivity declines during dry seasons. These challenges may reduce household income and weaken access to food. According to Kusrini and Kurniati (2025), low commodity prices and production inefficiencies often reduce the quality of agricultural outputs and farmer welfare.

Three potential rubber farming villages in Lubuk Raja District are Baturaden, Batumarta I, and Lubuk Banjar. The residents of these three villages are primarily rubber farmers. A preliminary survey at the research site revealed that the main obstacle faced by rubber farmers in Lubuk Raja District is the low price of rubber. Based on information obtained, farmers in these three areas do not have an auction market, so they sell their rubber through middlemen, who determine the price. The current price of rubber in Lubuk Raja District is around IDR. 8,000 per kilogram. This price determines the amount of income received by farmers and affects their income from rubber farming activities. Furthermore, the low price of rubber also makes it difficult for farmers to maintain their crops, resulting in low quality rubber latex (Irawan, Sihombing, & Irnad, 2025). Another obstacle, according to rubber farmers in Lubuk Raja District, is the dry season, which causes a decline in rubber productivity. The impact of the decline in rubber prices since 2014 has been felt deeply by farmers, as it directly impacted their incomes. Until now, rubber farmers had relied solely on rubber plantations to meet their family's needs, particularly food.

Food is the most basic need for a nation's human resources, food is also a basic need for rubber farmers to be able to survive facing low rubber prices. To achieve food security, it is necessary to have food available in sufficient quantity and quality, distributed at affordable prices and safe for consumption for every citizen to support their daily activities at all times. Food security is defined as access for every household or individual to obtain food at any time for healthy living needs (Rachman & Ariani, 2002). Then developed by including components of food acceptance requirements according to local values or culture.

Meanwhile, based on Law No. 7 of 1996 concerning food, household food security is defined as the condition of fulfilling food for households which is reflected in the availability of sufficient food, both in quantity and quality, safe, equitable and affordable (Purwanti, Putritamara, & Nugroho, 2026). States that food security is the ability of a household to meet the food needs of household members in quantity, quality, and variety according to local culture (own production or purchase) from time to time in order to live healthily. The food and non-food conditions of the residents of Lubuk Raja District, the majority of whom grow rubber, are certainly interesting to study further, whether they have met the food security standards in Indonesia. Based on the description above, it is interesting to conduct a study on the analysis of food security of rubber farmers in Lubuk Raja District, OKU Regency (Akbar, 2023).

Food expenditure proportion is widely used as an indicator of household food security. The basic assumption is that lower-income households tend to spend a larger share of their total expenditure on food, while more prosperous households allocate a smaller proportion to food and a larger share to non-food needs such as education, health, housing, and transportation. Thus, a lower food expenditure share generally reflects stronger purchasing power and better welfare conditions (Ningsih & Sustiyana, 2022).

Previous studies commonly classify households as food secure when the proportion of food expenditure is below 60% of total household expenditure, while households spending more than 60% are categorized as more vulnerable to food insecurity (Aprilia, 2021). This threshold has been widely applied in rural household studies because it captures the relationship between income, consumption behavior, and economic resilience. In addition, Alta et al. (2023) found that higher household income improves accessibility to better-quality food and enhances food security conditions.

For rubber farmer households in Lubuk Raja District, dependence on a single plantation commodity creates potential vulnerability, especially when rubber prices decline. Nevertheless, if households are still able to allocate a relatively lower share of expenditure to food and maintain spending on non-food necessities, this may indicate that their economic condition remains stable and food needs are adequately fulfilled. Therefore, analyzing the proportion of food expenditure provides a practical approach to understanding their food security status (Mulamba, 2022).

2.2 Hypothesis Development

Food security at the household level is commonly associated with the ability of a family to obtain sufficient, nutritious, and affordable food on a sustainable basis. In agricultural communities, this condition is strongly influenced by income stability, commodity prices, and expenditure patterns. For farming households that depend on a single commodity, fluctuations in production or selling prices may directly affect their purchasing power and food consumption behavior. Therefore, household expenditure allocation has become one of the most widely used indicators for evaluating food security status (Rachman & Ariani, 2002).

One practical indicator frequently used in empirical studies is the proportion of food expenditure to total household expenditure. According to Engel's law, lower-income households tend to allocate a larger share of their total spending to food, while higher-income households usually spend proportionally less on food and more on non-food needs such as education, health, transportation, and housing. Consequently, a lower food expenditure proportion reflects stronger economic welfare and better household resilience in meeting basic needs (Alta et al., 2023).

Several previous studies have applied a benchmark of 60% of total household expenditure to classify food security conditions. Households with food expenditure shares below 60% are generally categorized as food secure, while those spending above 60% are considered more vulnerable to food insecurity because most of their resources are concentrated on basic consumption needs (Manyullei & Arundhana, 2021). This approach is relevant in rural farming areas where income levels often fluctuate according to harvest outcomes and market prices.

For rubber farmer households in Lubuk Raja District, household welfare is highly dependent on rubber farming income. Although farmers face challenges such as declining rubber prices, limited market access, dependence on intermediaries, and seasonal productivity constraints, households that are still able to maintain lower food expenditure proportions may indicate stronger adaptive capacity and sufficient access to food. In contrast, if most household expenditure is concentrated on food needs, this may signal economic pressure and vulnerability (Annisa & Analisa, 2025).

Moreover, previous findings suggest that households with higher income accessibility tend to consume better quality food and maintain more balanced expenditure structures. Wahyuni, Nuraeni, and Amri (2026) reported that increased household income improves access to diverse and nutritious food, thereby strengthening food security. This supports the assumption that if rubber farmers in Lubuk Raja District can allocate substantial resources to non-food needs while maintaining moderate food spending, their households may be considered economically stable and food secure (Darojat, Antriyandarti, & Irawan, 2025). Based on the theoretical perspective, previous empirical evidence, and the socioeconomic characteristics of rubber farmer households in the study area, this research formulates the following hypothesis:

H_1: Rubber farmer households in Lubuk Raja District, Ogan Komering Ulu Regency, are categorized as food secure because the proportion of food expenditure is less than 60% of total household expenditure

3. Research methodology

This study employed a quantitative survey approach to analyze the level of household food security among rubber farmers in Lubuk Raja District. A survey method is considered appropriate because it enables researchers to collect structured primary data directly from respondents regarding income, expenditure, and household consumption behavior. Survey-based research is widely used in agricultural and socio-economic studies because it allows systematic measurement of household conditions and facilitates descriptive as well as comparative analysis (Kuantitatif, 2016).

3.1 Research Location and Time

The research was conducted in Lubuk Raja District, Ogan Komering Ulu Regency, South Sumatra Province, Indonesia, in January 2024. This area was puIDRosively selected because the majority of residents depend on rubber farming as their primary livelihood, making it relevant for examining household food security under plantation-based economic conditions. In addition, Lubuk Raja District is recognized as one of the major rubber-producing areas in the regency.

3.2 Population and Sample

The population of this study consisted of 300 rubber farmers who owned approximately one hectare of rubber plantation land. These farmers represented smallholder households whose income was largely dependent on rubber production. To determine the sample size, the study used the Slovin formula, which is commonly applied when the population size is known and the researcher intends to determine a representative sample with a tolerable margin of error (Kuantitatif, 2016). The method used in this study was a survey of rubber farmers in Lubuk Raja District, Ogan Komering Ulu Regency, using a questionnaire as a sampling tool from a population. The study was conducted in January 2024. With a population of 300 rubber farmers with the criteria of 1 hectare of land area, 90 farmers were selected for a specific puIDRose, with the population size. To determine the sample size, the Slovin formula is used, namely:

$$n = \frac{N}{1+(Ne^2)} \quad (1)$$

Where :

N = Sample size

N = Population size

E = Sampling error that can still be tolerated is 10%

By using the Slovin formula above, the number of samples obtained is:

$$n = \frac{90}{1+(90)0{,}05)^2}$$
$$n = \frac{90}{1+0{,}225}$$
$$n = \frac{90}{1{,}225}$$
$$n = 70$$

So the sample size obtained was 70 samples which were determined using the simple random sampling technique by compiling a sampling frame then determining the number of samples then determining the sampling determination tool, namely by drawing lots of names which were previously the population.To answer the first research question, the analytical method used in this study is to analyze the level of household food security using food consumption indicators. The formula for calculating food consumption refers to (Purwaningsih et al., 2010) with the following formula:

$$PPP = \frac{PP}{PP} \; x \; 100\% \quad (2)$$

Where :

PPP : Share of Food Expenditure (%)

PP : Food Expenditure (IDR/Year)

TP : Total Household Expenditure (IDR/Year)

The calculation of non-food expenditure can be formulated as follows:

$$PNP = TP - PP \quad (3)$$

Where :

PNP : Non-Food Expenditure

TP : Total Household Expenditure (IDR/Year)

PP : Food Expenditure (IDR/Year)

3.3 Data Analysis Technique

The collected data were analyzed using descriptive quantitative analysis. The analysis focused on calculating average food expenditure, non-food expenditure, total household expenditure, and the proportion of food expenditure. Results were then inteIDRreted based on established food security classification criteria. Descriptive analysis is appropriate for summarizing household economic behavior and identifying welfare patterns within the study population (Kuantitatif, 2016).

3.4 Validity of the Method

Using expenditure proportion as an indicator of food security is particularly suitable for rural agricultural households because it captures actual economic behavior and reflects household resilience under fluctuating commodity income conditions. Since rubber farmer households are highly dependent on market prices, expenditure structure provides a practical and measurable basis for evaluating their food security status.

4. Results and Discussion

4.1 Average Food Expenditure of Rubber Farming Households in Lubuk Batang Lama District

Based on the results of research in Lubuk Raja District, the average food expenditure of rubber farmer households is IDR. 1,328,204 per month. Carbohydrate needs can generally be met from rice, corn, wheat, and tubers. Meanwhile, in terms of percentage, the average household expenditure of rubber

farmers in Lubuk Raja District is dominated by rice needs, amounting to almost 90% of the four types of carbohydrate foods. This is in line with the Government's Food Security Program which has not been able to replace rice as a staple food compared to other types of staple foods such as corn, tubers, and wheat in research (Arham & Hatu, 2020).

Table 2. Household food expenditure of rubber farmers in Lubuk Raja District in 2023

Food Expenditure	Average Expenditure (IDR/month)	Percentage (%)
Rice	521,320.00	39.24
Soya bean	87,900.00	6.61
tubers	47,870.00	3.60
Corn	42,032.00	3.16
Sugar	76,550.00	5.76
Onion	182,562.00	13.74
Egg	93,700.00	7.05
Beef	58,560.00	4.40
Chicken meat	60,820,000	4.57
Chilli	156,890.00	11.81
Total	1,328,204.00	100

The average food expenditure of rubber farmer households in Lubuk Raja District to meet protein needs is still relatively low, namely 18.3% of the total average food expenditure. Meanwhile, the average food expenditure to meet vegetable needs is only 10.12%. Based on Table 2, the average largest expenditure incurred on food expenditure of rubber farmer households in Lubuk Raja District is rice expenditure, which is an average of IDR. 521,320 per month or 39.24 percent of the total food expenditure of rubber farmer households in Lubuk Raja District. Meanwhile, the lowest average household food expenditure is corn expenditure, which is an average of IDR. 42,032 per month or 3.16 percent of the total average food expenditure of rubber farmer households in Lubuk Raja District. The low income of farming families will have an impact on reducing opportunities to obtain good quality food. The higher the income of a household, the greater the level of accessibility in obtaining good food (Khalfaoui et al., 2024).

4.2 Average Non-Food Expenditure of Rubber Farming Households in Lubuk Batang Lama District

Based on the results of research in Lubuk Raja District, it is known that the average non-food expenditure of rubber farming households is IDR 1,434,749.00 per month, which can be seen in Table 3 below:

Table 3. Non-Food expenditures of rubber farmer households in Lubuk Raja District in 2023

Food Expenditure	Average Expenditure (IDR/month)	Percentage (%)
Health	86,120.00	6.00
Education	477,920.00	33.31
Social Fund	57,870.00	4,033
Electricity	132,032.00	9.20
LPG gas	126,150.00	8.79
fuel	282,702.00	19.70
Clothes PDAM	83,960.00 57,960.00	5.85 4.03
Household needs	130,035.00	9.06
Total	1,434,749.00	100

Based on the research results, non-food expenditure in rubber farming households in Lubuk Raja District is as follows:

$$TP = Total\ Food\ Expenditure + Total\ Non - Food\ Expenditure \quad (4)$$
$$TP = IDR.1{,}328{,}204 + IDR.1{,}434{,}749.-$$
$$TP = IDR.2{,}762{,}953$$
$$PNP = TP - PP$$
$$PNP = IDR.2{,}762{,}953 - IDR.1{,}328{,}204$$
$$PNP = IDR.1{,}434{,}749.-$$

Where:

PP : Food Expenditure
PNP : Non-Food Expenditure
TP : Total Household Expenditure (IDR/Year)

It can be seen that the total non-food expenditure is IDR. 1,434,749.- which is obtained from subtracting the total of all household expenses of rubber farmers from the total non-food expenditure. In the table it can be seen that the largest percentage of expenditure is education at 33.31%, where all family members on average still send their children to school, which every day there are expenses for school fees, namely pocket money, which the majority of each household has more than one child to support school. While the smallest percentage is the type of PDAM expenditure of 4.03%, one of the factors is that the average household uses wells as a source of water to meet household needs, so that few rubber farmer households use PDAM services. It can be concluded that farmers' food expenditure in Lubuk Raja District is lower than non-food expenditure (1,328,204 < 1,434,749) where households with low food or high non-food expenditure indicate that the household is classified as prosperous, because one indicator of welfare is seen from the side of food or non-food expenditure.

4.3 Analysis of the Level of Food Security of Rubber Farming Households Example

From the results of research conducted in Lubuk Raja District, the average household food expenditure of rubber farmers was IDR. 1,328,204 per month and the total average household expenditure of rubber farmers was IDR. 2,762,953 per month. Therefore, to analyze the level of food security of rubber farmer households, the following formula can be used (Alta et al., 2023):

$$PPP = \frac{PP}{PP}\ x\ 100\% \quad (5)$$
$$PPP = IDR.1{,}328{,}204\ /\ IDR.2{,}762{,}953\ x\ 100\%$$
$$PPP = 48.07\%$$

Based on the formula calculation, the Household Food Security Level of Rubber Farmers in Lubuk Batang Lama Village is 48.07% of total household expenditure. Based on the food security category, Lubuk Raja District is included in Food Security because the proportion of food expenditure is <60% (Agustina et al., 2015) . The average value of household food expenditure of rubber farmers in Lubuk Raja District is smaller than the average household non-food expenditure.

5. Conclusions

5.1 Conclusion

This study aimed to analyze the household food security level of rubber farmers in Lubuk Raja District using the proportion of food expenditure as the main indicator. Based on the survey results, the average monthly food expenditure of rubber farmer households was IDR. 1,328,204, while average non-food expenditure reached IDR. 1,434,749, resulting in a total average household expenditure of IDR. 2,762,953 per month. These findings indicate that household spending on non-food needs was higher than spending on food, suggesting that respondents had sufficient economic capacity to allocate income beyond basic consumption needs.

The calculated proportion of food expenditure was 48.07% of total household expenditure. Since this figure is below the commonly used threshold of 60%, rubber farmer households in Lubuk Raja District can be classified as food secure. This result implies that households were able to meet their food needs without allocating the majority of their total expenditure to food purchases. A lower food expenditure share is commonly associated with stronger purchasing power, better access to food, and improved household welfare conditions.

The findings also demonstrate that despite challenges such as declining rubber prices, seasonal productivity constraints, and dependence on middlemen, rubber farmer households were still capable of maintaining balanced expenditure structures. This suggests the presence of adaptive economic behavior, such as efficient budget allocation, prioritization of essential needs, and possibly supplementary income sources outside rubber farming. In rural agricultural communities, such adaptive strategies are important in maintaining food access during periods of commodity market instability

Another notable finding is the high proportion of non-food expenditure allocated to education. This indicates that farmer households not only focus on immediate consumption needs but also invest in long-term human capital development. Educational spending reflects household aspirations for social mobility and better economic opportunities for future generations. Therefore, food security in this context should be understood not merely as the ability to purchase food, but also as the capacity to sustain broader welfare objectives

In conclusion, rubber farmer households in Lubuk Raja District have generally achieved a food secure status based on the proportion of food expenditure approach. However, food security is multidimensional and should not be measured solely through expenditure indicators. Future studies are recommended to incoIDRorate additional variables such as calorie adequacy, dietary diversity, nutritional intake, income diversification, and vulnerability to future economic shocks. These broader indicators would provide a more comprehensive understanding of household food security in plantation-based rural communities.

Based on this, the results of the study indicate that the share of food expenditure of rubber farmers in Lubuk Raja, Ogan Komering Ulu Regency has almost approached the ideal percentage of food security, namely 48.07%. Thus, it can be said that the average level of food security of rubber farmer households in Lubuk Raja District has met the criteria for a food secure area with the average condition of rubber farmer income of IDR. 2,762,953,-/month.

5.2 Research Limitations

This study is limited to using the proportion of food expenditure as the sole indicator of household food security. While this method is effective for assessing economic access to food, it does not account for other dimensions of food security such as nutritional adequacy, food utilization, and the safety of food consumed. The focus of the study was on rubber farmers with land ownership of approximately 1 hectare in Lubuk Raja District. As a result, the findings may not be generalizable to other districts or to farmers with different land sizes or agricultural practices. The study was conducted in a single district in Ogan Komering Ulu Regency, which may limit the regional applicability of the results. The findings may not fully reflect the broader socio-economic conditions and food security dynamics across different rural regions in Indonesia. The study was conducted at one point in time (January 2024), which limits its ability to capture seasonal fluctuations in food security or the long-term impacts of changes in rubber prices or other agricultural factors.

5.3 Suggestions and Directions for Future Research

Future studies should consider incoIDRorating additional indicators of food security, such as dietary diversity, nutritional intake, and food safety, to provide a more comprehensive assessment of household food security. Expanding the study to include other agricultural commodities beyond rubber could provide insights into the food security conditions of households dependent on different sources of income. A longitudinal study that tracks changes in food security over time, particularly in response to fluctuating commodity prices (like rubber) or external shocks (such as natural disasters or economic

downturns), would provide a deeper understanding of the dynamics of food security in rural farming households. Future research could explore the role of community-based initiatives and government policies in enhancing food security, particularly in areas where agricultural production is vulnerable to external factors like climate change or market volatility. A comparative study involving other regions with different agricultural commodities or socio-economic conditions would help to identify the factors that influence food security at a broader scale across Indonesia.

Acknowledgments

The authors would like to express their sincere gratitude to the Postgraduate Program of Baturaja University for providing academic support, guidance, and institutional facilities throughout the completion of this research. Special appreciation is extended to the local government authorities and agricultural stakeholders in Lubuk Raja District for their assistance, cooperation, and valuable information during the field data collection process. The authors are also deeply grateful to all rubber farmer respondents who willingly participated in this study and shared their time, experiences, and household data, which were essential to the success of this research. Furthermore, the authors appreciate colleagues, reviewers, and editors of the *Jurnal Ilmiah Pertanian dan Peternakan (JIPPER)* for their constructive comments and suggestions that helped improve the quality of this manuscript. Any remaining errors or shortcomings remain the sole responsibility of the authors.

Author Contributions

AP contributed to the conceptualization of the study, development of the research framework, field data collection, questionnaire administration, data tabulation, statistical analysis, inteIDRretation of findings, and preparation of the original manuscript draft. M contributed to research supervision, methodology design, validation of analytical procedures, review of literature, critical revision of the manuscript, coordination of the submission process, and correspondence with the journal as the corresponding author. YO contributed to data verification, inteIDRretation of results, manuscript editing, language improvement, formatting of tables and references, and final review of the manuscript. All authors discussed the results, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

References

Akbar, A. (2023). *Peningkatan Ketahanan Pangan Pada Masa Pandemi Covid-19 Melalui Strategi Pengalokasian Anggaran Pemerintah*. Universitas Hasanuddin.

Almughni, M. A. A., Kusumawardani, D., & Rohman, M. S. (2025). Food security, agricultural investment, and climate change: A global empirical analysis. *Journal of Food Technology Research, 12*(4), 324-334. doi:https://doi.org/10.18488/jftr.v12i4.4627

Alta, A., Prabowo, A., Firdaus, A. H., Murwani, A., Fauzi, A. N., Arifin, B., . . . Budiman, I. (2023). *Memodernisasi Pertanian Indonesia*: PT. RajaGrafindo Persada-Murai Kencana.

Amalia, S., Maria, S., & Fitrianitha, D. (2024). The Dynamics of Food security in Indonesia: A Study on the Availability, Affordability, and Utilization of Food in Districts and Cities with the Lowest Index in 2022. *International Journal of Economics (IJEC), 3*(2). doi:10.55299/ijec.v3i2.1022

Annisa, F. N., & Analisa, W. (2025). Analysis of the Impact of Rubber Latex Price Decline on the Welfare of the Community in Surulangun Village, Rawas Ulu Subdistrict, Indonesia. *Jurnal Riset Perkebunan, 6*(2), 56-64. doi:https://doi.org/10.25077/jrp.6.2.56-64.2025

Aprilia, S. (2021). Upaya kebijakan ketahanan pangan Qatar dalam menghadapi embargo Arab Saudi 2017-2019. doi:http://digilib.unila.ac.id/id/eprint/60723

Arham, M. A., & Hatu, R. (2020). Does village fund transfer address the issue of inequality and poverty? A lesson from Indonesia. *Journal of Asian Finance, Economics and Business, 7*(10), 433-442. doi:doi:10.13106/jafeb.2020.vol7.no10.433

Berek, R. B. (2018). Peran Food And Agriculture Organization (FAO) Dalam Meningkatkan Ketahanan Pangan di Provinsi Nusa Tenggara Timur Melalui Program Pertanian Konservasi. *Global Political Studies Journal, 2*(2), 161-176. doi:https://doi.org/10.34010/gpsjournal.v2i2.2029

Darojat, N. I., Antriyandarti, E., & Irawan, E. (2025). Analisis Ketahanan Pangan Rumah Tangga Petani Berdasarkan Proporsi Pengeluaran Pangan dan Konsumsi Energi di Kabupaten Semarang. *Paradigma Agribisnis, 7*(2), 139-150. doi:https://jurnal.fp.umi.ac.id/index.php/agricentra/index

Irawan, A., Sihombing, D. R., & Irnad, I. (2025). The influence of market risk on the economic well-being of smallholder rubber farming households. *Journal of Agribusiness in Developing and Emerging Economies*, 1-21. doi:https://doi.org/10.1108/JADEE-09-2024-0284

Irwan, I., Zusmelia, Z., Virginia, D., Amelia, A., & Siahaan, K. W. A. (2022). Resilience of Rubber Farmers' Households Due to Aslide Disaster in the Danau Village, Nalo District, Tantan Merangin Jambi Province. *International Journal of Multidisciplinary: Applied Business and Education Research, 3*(12), 2686-2691. doi:http://dx.doi.org/10.11594/ijmaber.03.12.20

Kalaba, Y., Erny, Damayanti, L., Akrab, A., Yusuf, R., Nurdin, M., & Walalangi, J. (2022). *Analysis of household food security based on the share of food expenditure in central Sulawesi Indonesia*. Paper presented at the IOP conference series: Earth and environmental science.

Khalfaoui, R., Goodell, J. W., Mefteh-Wali, S., Chishti, M. Z., & Gozgor, G. (2024). Impact of climate risk shocks on global food and agricultural markets: A multiscale and tail connectedness analysis. *International Review of Financial Analysis, 93*, 103206. doi:https://doi.org/10.1016/j.irfa.2024.103206

Kondo, T., & Tambudzai, Z. (2025). The nexus between agricultural exports and food security in Zimbabwe. *Annals of Management and Organization Research, 7*(1), 17-30. doi:10.35912/amor.v7i1.2630

Kuantitatif, P. P. (2016). *Metode penelitian kunatitatif kualitatif dan R&D*.

Kusrini, N., & Kurniati, D. (2025). Comparison of Income of Independent Rubber and Palm Oil Farming in Kenaman Village, Sekayam District, Sanggau Regency. *Jurnal Dinamika Sosial Ekonomi, 26*(1), 31-45. doi:https://doi.org/10.31315/jdse.v26i1.14756

Laila, H., Yulius, A. D., & Mirza, A. (2017). Effect of different rubber market system on farmer's income in South Sumatra Province, Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences, 71*(11), 257-262. doi:https://doi.org/10.18551/rjoas.2017-11.33

Manyullei, S., & Arundhana, A. I. (2021). Analysis of household food security based on the proportion of food expenditures and energy consumption in flood-prone areas in Wajo district. *Open Access Macedonian Journal of Medical Sciences, 9*(E), 241-245. doi:https://doi.org/10.3889/oamjms.2021.5874

Matthew, U. J., Nwobueze, C. C., & Onwuzor, O. A. (2023). Perception of violence and food security in Emohua Local Government Area of Rivers State, Nigeria. *Journal of Social, Humanity, and Education, 4*(1), 35-47. doi:10.35912/jshe.v4i1.1370

Mulamba, K. C. (2022). Relationship between households' share of food expenditure and income across South African districts: a multilevel regression analysis. *Humanities and Social Sciences Communications, 9*(1), 428. doi:https://doi.org/10.1057/s41599-022-01454-4

Munajat, M., Sari, F. P., & Sari, Y. (2026). Strategies for Developing Millennial Farmers to Support Food Security. *Annals of Human Resource Management Research, 5*(4), 403-421. doi:10.35912/ahrmr.v5i4.3793

Murendo, C., Chirongwe, G., & Sisito, G. (2022). Food expenditure shares and income elasticities in Zimbabwe: Accounting for gender and poverty differences. *Cogent Economics & Finance, 10*(1), 2101241. doi:https://doi.org/10.1080/23322039.2022.2101241

Mutale, B., Dai, S., Chen, Z., & Maulu, S. (2025). Enhancing food security amid climate change: assessing impacts and developing adaptive strategies. *Cogent Food & Agriculture, 11*(1), 2519800. doi:https://doi.org/10.1080/23311932.2025.2519800

Ngkolu, E. M., Paranoan, S., Indriasari, R., & Usman, E. (2026). Fluctuation in the Income of Rubber Farmers in Tingkea'o Village: The Contribution of Production Costs and Selling Price. *Jurnal Ilmiah Global Education, 7*(1), 121-131. doi:https://doi.org/10.55681/jige.v7i1.4948

Nguyen, H., Randall, M., & Lewis, A. (2024). Factors affecting crop prices in the context of climate change—A review. *Agriculture, 14*(1), 135. doi:https://doi.org/10.3390/agriculture14010135

Ningsih, K., & Sustiyana, S. (2022). Analisis ketahanan pangan rumah tangga petani pada masa pandemi covid-19 melalui berusahatani dari rumah (farm from home). *SEPA: Jurnal Sosial*

Ekonomi Pertanian dan Agribisnis, *19*(1), 114-126. doi:https://doi.org/10.20961/sepa.v19i1.55830

Nugraha, F. A., Ekowati, T., & Gayatri, S. (2023). Study on food security among farm households participating in the Sustainable Food Yard (SFY) program in Semarang City. *Agric*, *35*(2), 237-250. doi:https://doi.org/10.24246/agric.2023.v35.i2.p237-250

Pratama, Y. C. (2015). Analysis of factors affecting poverty in Indonesia. *Essence*, *4*(2). doi:https://doi.org/10.15408/ess.v4i2.1966

Purwanti, T. S., Putritamara, J. A., & Nugroho, A. (2026). *Women Empowerment dalam Peternakan: Langkah Menuju Subjective Well-Being dan Pembangunan Berkelanjutan*: Universitas Brawijaya Press.

Putri, R. A., & Dewi, D. D. (2025). The Effect of Mean Years of Schooling, Open Unemployment Rate and Poverty on the Human Development Index in Java Island 2015-2024. *Journal of Tourism Economics and Policy*, *5*(4), 875-889. doi:https://doi.org/10.38142/jtep.v5i4.1701

Rachman, H. P., & Ariani, M. (2002). *Food security: concept, measurement and strategy*. Paper presented at the Forum Penelitian Agroekonomi (Indonesia).

Saadah, M., & Agustiyara, A. (2022). What can rubber farmers and institutions do for supply chain networks: the political economy analysis. *Jurnal Borneo Administrator*, *18*(2), 171-186. doi:https://doi.org/10.24258/jba.v18i2.902

Shiba, W. T., Aliber, M., & Zantsi, S. (2025). Rural household food expenditure and agriculture: comparison of agricultural and non-agricultural households in South Africa. *Development in Practice*, 1-13. doi:https://doi.org/10.1080/09614524.2025.2555319

Sulistiyo, H. (2025). *koordinasi lintas sektor dalam menjaga ketahanan pangan di kabupaten tasikmalaya*. Institut Pemerintahan Dalam Negeri.

Sutrisno, E., Duwi, S., Anita, R., Eksa, R., & Jenny Yudha, U. (2024). Study on the utilization of village funds to support food security in Glagah Lamongan District, East Java. *Journal of Indigenous Culture, Tourism, and Language*, *1*(1), 15-24. doi:10.35912/jictl.v1i1.1734

Tabah Rizki, S., & Ak, M. (2025). AKUNTANSI HIJAU. *Isu Riset Akuntansi Kontemporer: Perspektif Multidisipliner dalam Dunia Akuntansi*, 37. doi:https://doi.org/10.1108/JADEE-09-2024-0284

Wahyuni, R., Nuraeni, N., & Amri, A. A. (2026). Nilai tukar dan tingkat kesejahteraan rumahtangga petani karet di Kabupaten Bulukumba (Studi Kasus di Desa Bontominasa, Kecamatan Bulukumpa). *Agricentra: Jurnal Sains Agribisnis*, *2*(1), 041-051. doi:https://doi.org/10.33096/agricentra.v2i1.828

Yusuf, M., & Sulaiman, J. (2012). Productivity and social economic conditions of rubber smallholder's in kabupaten Banyuasin, South Sumatra Province. *Journal of Economics, Business, and Accountancy Ventura*, *15*(3), 403-408. doi:https://doi.org/10.14414/jebav.v15i2.110