



## Research Article

# Analysis on Food Security of Peatland Horticultural Farmer Households in Pontianak

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### ABSTRACT

Food security, denoting the adequacy of food supply in terms of both quantity and quality for individuals within a given state, is a critical aspect of societal well-being. This research focuses on assessing the food security status of households engaged in peatland cultivation in Pontianak, West Kalimantan, Indonesia. The chosen research site, Siantan Hilir, was purposively selected due to its prominence as a hub for horticultural agricultural production within the sub-district. The study encompassed a population of 719 individuals, with a sample size of 42 respondents determined using the *slovin* formula. Primary data was procured through the observation and the administration of questionnaires to farmers, supplemented by secondary data. The findings unveiled a noteworthy trend where the household income of farmers exceeded their expenditures. However, a significant challenge emerged in the form of food expenditure constituting 64.86% of the total expenditures, thereby underscoring potential obstacles to maintaining food security. Furthermore, the moderate categorization of energy adequacy and the stark revelation that 88% of households lacked food security underscored the imperative for enhancements in managing food expenditures and refining consumption patterns in Siantan Hilir.

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## INTRODUCTION

In accordance with the Republic of Indonesia Law No. 18 of 2012 regarding food, the definition of food encompasses all items derived from biological sources, including agricultural products, plantations, forestry, fisheries, livestock, waters, and water—whether processed or unprocessed—intended for human consumption. This encompasses food additives, raw materials, and other substances utilized in the preparation, processing, or production of food and beverages. As posited by Hidayati et al. (2019), food security necessitates comprehensive coverage of availability, distribution, and consumption aspects. It denotes the state of ensuring an adequate and high-quality food supply, both quantitatively and qualitatively, for the nation and its populace (Bulog, 2023).

The establishment of food security hinges upon the household's ability to maintain a sufficient food supply. Consequently, food security is characterized by the fulfillment of food requirements within households, evidenced by the presence of ample and high-quality provisions that are safe, equitable, and economically accessible

(Elfida, 2020). The fulfillment of these requirements involves household expenditures encompassing both food and non-food categories (Nurhasibah, 2021; Utami, 2017). Notably, the extent of a household's food expenditure is intricately linked to its food security status, with a higher proportion of food expenditure indicative of a lower level of household welfare (Praza & Shamadiyah, 2020).

Farmers, as pivotal actors in agriculture, play a vital role in ensuring the adequacy and accessibility of food at national, regional, and household scales. Their significance stems from their dual role as both producers and consumers, underscoring their strategic position in the realm of food security. Essentially, farmers bear the responsibility of meeting their own nutritional requirements (Haryanti K & Rahmawiliyanti, 2015).

Horticulture assumes a pivotal and strategic role in the economic landscape of Pontianak, contributing significantly to the cultivation of vegetables and fruits essential for community consumption (Isnaeni & Ramadhan, 2021; Rahman et al., 2021; Sutariati et al., 2021). Among the horticultural crops with prospective development on peatlands, vegetables stand out. The conversion of peat soil into productive land for horticultural crops, particularly lowland vegetables, holds promise. Despite Siantan Hilir being a focal point for horticultural agricultural production in Pontianak, it grapples with challenges related to the food security of farming households. Specifically, the food-related issues in Siantan Hilir manifest as an unassured food supply for farmer households. This study aims to comprehensively investigate the food security status of horticultural farmer households on peatlands in Pontianak in light of the aforementioned conditions.

## METHOD

This investigation was carried out in Siantan Hilir, situated in the North Pontianak sub-district, Pontianak. The selection of the research site followed a purposive approach, guided by the recognition that Siantan Hilir serves as a focal point for peat horticultural agricultural production in Pontianak, yet grapples with challenges related to the food security of farming households. Employing a quantitative descriptive method, this research utilized proportional random sampling to select respondents (Sugiyono, 2019). The study population comprised 719 farmers, and employing the Slovin formula resulted in a sample size of 42 respondents. Data collection involved observation and the distribution of questionnaires to farmers, followed by data tabulation.

### a. Analysis on Expenditure of Farmer Households

The aggregate household expenditure is calculated by adding together both food and non-food expenditures (Mutawakkil et al., 2021). The expenditure equation for farmer households is expressed in the following formula:

$$TP = Pp + Pn \quad (1)$$

Where:

TP = Total Expenditure of Farmer Households (IDR)

Pp = Food Expenditure (IDR)

Pn = Non-food Expenditure (IDR)

### b. Analysis on the Proportion of Food Expenditure to Total Expenditure of Farmer Households

The food expenditure proportion represents the relationship between the spending on food consumption and the overall household expenditure (Arida et al., 2015). The analysis of household expenditure involved both average figures and percentage analysis. The calculation of the food expenditure as a percentage of the total household expenditure was determined using the following formula.

$$PF = \frac{Pp}{Tp} \times 100\% \quad (2)$$

Where:

PF = Proportion of Food Expenditure (%)

Pp = Food Expenditure (IDR)

TP = Total Expenditure of Farmer Households (IDR)

### c. Analysis on Food Consumption

The quantification of energy derived from food consumption is computed utilizing the following formula:

$$Gej = \left( \frac{Bj}{100} \times \frac{Bddj}{100} \right) \times KGij \quad (3)$$

Where:

- Gej = Energy from food or from food j consumed (kcal)  
 Bj = Weight of food j consumed (grams)  
 Bddj = Percent of the edible material of food j (%)  
 KGij = Specific energy content of food j consumed (kcal)

The assessment of food consumption quantity involves considering both the weight of the consumed food and its nutrient content (Dewi, 2018). These factors serve as indicators to determine if a family's food consumption meets the requirements for a healthy life, as per the Recommended Dietary Allowance (RDA). The quantitative measurement of food consumption employs the parameter of energy adequacy level (TKE), as calculated by the following formula:

$$TKE = \left( \frac{\sum \text{Konsumsi Enerjo}}{\text{AKE yang dianjurkan}} \right) \times 100\% \quad (4)$$

Where:

- TKE = Energy Adequacy Level (%)  
 $\sum$  Energy Consumption = Total energy consumption (kcal)  
 AKE = Energy Adequacy Rate (kcal)

The following is a list of AKE by age group and gender.

**Table 1.** List of AKE by Age Group and Gender

No	Age	AKE (kcal)
1.	<b>Infants/Children</b>	
	0-5 months	550
	6-11 months	800
	1-3 years	1350
	4-6 years	1400
	7-9 years	1650
2.	<b>Male</b>	
	10-12 years	2000
	13-15 years	2400
	16-18 years	2650
	19-29 years	2650
	30-49 years	2550
	50-64 years	2150
	65-80 years	1800
	80+ years	1600
	3.	<b>Female</b>
10-12 years		1900
13-15 years		2050
16-18 years		2100
19-29 years		2250
30-49 years		2150
50-64 years		1800
65-80 years		1550
80+ years		1400
4.	<b>Pregnant</b>	
	First Trimester	+180
	Second Trimester	+300
	Third Trimester	+300
5.	<b>Breastfeeding</b>	
	First of 6 months	+330
	Second of 6 months	+400

Source: Ministry of Health No. 28 of 2019 and Putri I. (2013)

d. Analysis on Food Security of Farmer Households

To measure the food security status of farmer households, a cross-indicator is employed, examining both the proportion of food expenditure and the level of energy sufficiency (Arida et al., 2015). The ensuing table serves as a metric for assessing the extent of food security.

**Table 2.** Measuring the Food Degree of Farmer Households

Energy Adequacy Level	Proportion of Food Expenditure	
	Low ( $\leq 60\%$ of Total Expenditure)	High ( $\geq 60\%$ of Total Expenditure)
Sufficient ( $>80\%$ of energy adequacy)	1. High Food Security	2. Marginal Food Security
Insufficient ( $\leq 80\%$ of energy adequacy)	3. Low Food Security	4. Very Low Food Security

Source: Maxwell and Marisol (2000)

## RESULTS AND DISCUSSION

### 1. Expenditure of Farmer Households

Expenditure of farmer households consists of food and non-food expenditures, then both are summed up to get the total expenditure of the household.

#### a. Food Expenditure of Farmer Households in Siantan Hilir

Food expenditure represents the monthly financial outlay of a household specifically allocated for food. This metric is calculated by aggregating expenses on various food items, encompassing grains, fish, meat, beverages, tubers, vegetables, fruits, nuts, seasonings, oils and fats, eggs and milk, processed foods and beverages, betel nut, and tobacco, expressed in IDR/household/month (Marpaung, 2018).

**Table 3.** Average Expenditure of Farmer Households in Siantan Hilir

No	Food expenditure	Average (IDR/Month)	Percentage (%)
1	Grains	301,929	15.91
2	Tubers	20,357	1.07
3	Fish	288,310	15.20
4	Meat	101,714	5.36
5	Eggs and Milk	61,762	3.25
6	Vegetables	13,952	0.73
7	Nuts	74,810	3.94
8	Fruits	38,286	2.27
9	Oils and Fats	70,833	3.73
10	Beverage Ingredients	44,071	2.32
11	Condiments	36,238	1.91
12	Other consumption	45,571	2.40
13	Processed Food and Beverages	75,214	3.96
14	Tobacco and Betel	57,143	3.01
<b>Total</b>		<b>1,230,190</b>	<b>65.13</b>

Source: Primary data processed, 2022

As indicated by the data presented in Table 3, the average monthly food expenditure for farmer households in Siantan Hilir is IDR 1,230,190. Within this, the highest food expenditure is attributed to the category of grains, totaling IDR 301,929 and constituting 15.91% of the overall food expenditure. The grains category encompasses items such as rice, corn, and flour, with rice commanding the predominant portion of the total food expenditure due to its status as the primary staple in rural households (Emeria, 2023; Sugianto et al., 2019).

Analyzing the dietary patterns in Siantan Hilir reveals a predominant emphasis among farmer households on fulfilling the demand for rice compared to other food categories. These households typically consume between 20 to 30 kilograms of rice per month, priced between IDR 10,000 and IDR 11,000 per kilogram. The substantial consumption of rice underscores its crucial role in satisfying the daily nutritional requirements of farmers, manifesting as a primary focus in their budgetary allocations. Findings from research conducted by Hasniati et al., (2018) further substantiate this trend, highlighting that the proportion of expenditure on food in farmer households in the Gambut Subdistrict exceeds that of non-food expenditure. This underscores the substantial weight of food-related expenses in the budgetary considerations of farmer households within rural settings.

In summary, the data and findings presented emphasize the pivotal role of rice as a staple in the food expenditure of rural farming households (Sugianto et al., 2019). This influence shapes budgetary allocations, underscoring the significance of ensuring an accessible and affordable rice supply for the sustainability of farmer households and broader rural development.

b. Non-food expenditure of farmer households in Siantan Hilir

Non-food expenditure is the expenditure of a household for non-food needs per month.

**Table 4.** The Average Expenditure on Non-Food Products of Farmer Households in Siantan Hilir

No	Non-Food Expenditure	Average (IDR/Month)	Percentage (%)
1	Housing	150,810	7.95
2	<b>Variety of Goods and Services</b>	<b>216,762</b>	<b>11.42</b>
3	Education Costs	183,810	9.69
4	Health Costs	26,595	1.40
5	Clothing	10,643	0.56
6	Durable Goods	5,452	0.28
7	Taxes and Insurance	7,490	0.39
8	Social Needs	64,881	3.42
<b>Total</b>		<b>666,443</b>	<b>34.87</b>

Source: Primary data processed, 2022

Table 4 reveals that the average monthly non-food expenditure for farmer households in Siantan Hilir is IDR 666,443. The primary component of non-food expenditure is the outlay on various goods and services, totaling IDR 216,762 or 11.42% of the total non-food expenditure. This substantial spending in the goods and services category is attributable to the daily necessities used by respondents' family members, including bath soap, laundry soap, toothpaste, toothbrushes, shampoo, and transportation costs. Furthermore, all farmer households possess motorized vehicles, incurring significant expenses for gasoline and maintenance. This aligns with research conducted by Susanti et al. (2015), which asserts that heightened expenditures in non-food categories result from factors beyond food, encompassing costs related to electricity, vehicle fuel, education, and other miscellaneous expenses. The elevated spending in this category is attributed to the necessity and daily use of goods by all households. Additionally, each household typically owns a vehicle, leading to increased expenditures on gasoline for transportation, a sentiment echoed by Akbar et al., (2018), who identify goods and services as the predominant category for expenditure.

The second-highest expenditure, constituting 9.69% of the total non-food expenditure, is attributed to education costs. This category encompasses fees for tuition, miscellaneous charges, books, stationery, and other educational expenses, including school pocket money. The notable proportion of expenditure on education is a consequence of the majority of children within households attending school, resulting in elevated spending on educational needs. This underscores the significance of education as a pivotal priority for rural farming families (Susanti et al., 2015), given its potential to enhance the quality of life and create improved job opportunities in the future (Kodriah, 2019).

2. Proportion of Food Expenditure to Total Expenditure of Farmer Households

Household expenditure refers to the costs borne by households to fulfill the consumption needs of all members within the household (Sutrisma et al., 2022). The expenditures considered in this study pertain to the preceding month. Total household expenditure is categorized into two main types: food expenditure and non-food expenditure (Kalaba et al., 2022). An essential metric for gauging food security involves assessing the proportion of household expenditure allocated to food. This proportion is defined as the ratio between household food expenditure and the overall household expenditure. The correlation between food expenditure and household food security exists in an inversely proportional manner, signifying that a higher proportion of food expenditure corresponds to lower household resilience. A household is deemed food-secure when the proportion of food expenditure is low (Praza & Shamadiyah, 2020). Table 5 presents the details of the proportion of food expenditure in relation to the expenditures of farmer households in Siantan Hilir.

**Table 5.** Proportion of Food Expenditure to Total Expenditure of Farmer Households in Siantan Hilir

Type of Expenditure	Nominal (IDR/Month)	Proportion (%)
Food Expenditure	1,230,190	64.86
Non-food Expenditure	666,443	35.14
<b>Total Expenditure</b>	<b>1,896,633</b>	<b>100</b>

Source: Primary data processed, 2022

According to the data presented in Table 5, the average monthly food expenditure for farmer households in Siantan Hilir is IDR 1,230,190. Among the various food categories, the highest expenditure is observed in the grains category, totaling IDR 301,929 and accounting for 15.91% of the overall food expenditure. This underscores the substantial contribution of the grains category to the overall food expenditure of farmer households in the region. The proportion of food expenditure in relation to the total expenditure of farmer households in Siantan Hilir is detailed as follows:

$$\begin{aligned}
 PF &= \frac{PP}{TP} \times 100\% \\
 &= \frac{1.230.190}{1.896.633} \times 100\% \\
 &= 64,86 \%
 \end{aligned}$$

Through the computations and details presented in Table 5, it is evident that the average total monthly expenditure for farmer households in Siantan Hilir amounts to IDR 1,896,633. This expenditure composition delineates 64.86% allocated to food expenditure and 35.14% to non-food expenditure. This data leads to the inference that the financial outlay on food surpasses that on non-food necessities (Mutawakkil et al., 2021).

Engel's Law posits that as income increases, the proportion of expenditure allocated to food decreases. Conversely, in the context of farmers in Siantan Hilir who possess lower incomes, the proportion of food expenditure exceeds that of non-food expenditure.

The prevalence of food expenditure dominance in the household budgets of farmers in Siantan Hilir, with this percentage falling within the high category, is apparent. This aligns with findings from other studies, indicating a trend where food expenditures tend to outweigh non-food expenditures. Such a pattern signifies that the prosperity level of the respondents' farmer households has not yet attained adequacy (Agustina, 2015). This underscores that the majority of their income is primarily channeled towards meeting food needs to ensure survival and alleviate hunger. Moreover, it is asserted that farmers with higher incomes are likely to experience greater prosperity, given their enhanced capacity to fulfill both food and non-food requirements compared to farmers with lower incomes. As highlighted by Praza and Shamadiyah (2020), the well-being of the population significantly impacts households' ability to access food, consequently influencing the quality and quantity of food consumed.

### 3. Food Consumption

Food consumption refers to the quantity of food and beverages ingested by an individual to satisfy their physiological requirements. Measurement involves determining the daily food requirements for a family in grams, subsequently converting this to energy in kcal (Aziz & Muharni, 2018). The assessment of food consumption quantity encompasses both the volume of food consumed and the nutritional content, providing a gauge of whether family food consumption aligns with the Recommended Dietary Allowance (RDA) for a healthy life.

The determination of a household's food security level is facilitated through the assessment of its energy adequacy level (TKE). A household is deemed food-secure if its energy consumption exceeds 80% of the energy adequacy rate (Arida et al., 2015). Table 6 provides a detailed overview of the actual energy consumption, energy adequacy lift, and energy adequacy level for farmer households in Siantan Hilir.



**Table 6.** Average Actual Energy Consumption, Energy Adequacy Rate, and Energy Adequacy Level of Farmer Households

Description	Energy (Kcal)	
	Individual (kcal/person/day)	Household (kcal/Capita/day)
Actual Energy Consumption	1,851.90	7,407.62
Recommended RDA	2,096.71	8,692.86
TKG (%)	86%	86%

Source: Primary data processed, 2022

Table 6 reveals that the average actual energy consumption per person per day for respondent households is 7,407.62 kcal, which falls below the average Energy Adequacy Rate (AKE) of 8,692.86. This disparity arises due to limited diversity in food consumption, as food items rich in energy, such as nuts, coconut milk, and fatty fruits, are infrequently consumed by respondents. Notably, the study's respondents, with an average age of 47 years for husbands and 44 years for wives, fall within the Adult Labor Force category, influencing dietary patterns that may impact individual energy requirements.

Variations exist in the TKE category among each farmer respondent household in Siantan Hilir, categorized as deficit, deficient, moderate, and good. The subsequent section presents data on the distribution of energy adequacy levels among farmer households in Siantan Hilir.

**Table 7.** Category Distribution of Energy Adequacy Levels of Farmer Households

Category	Nutrition Consumption Level	Energy (kcal/Capita/day)	
		Number of Household	%
Deficit	TKG $\geq$ 100% AKG	7	16.66
Insufficient	TKG 80–99% AKG	6	14.28
Moderate	TKG 70–80% AKG	24	57.14
Good	TKG <70% AKG	5	11.90
<b>Total</b>		<b>42</b>	<b>100</b>

Source: Primary data processed, 2022

Table 7 displays that the predominant category in terms of energy adequacy level is moderate, encompassing 57% of all farmer households in Siantan Hilir. The majority of farmer households fall within the moderate category, signifying an energy adequacy level ranging from 80% to 99% of the Energy Adequacy Rate (AKE). This suggests that most farmers have effectively met their energy requirements. The attainment of energy adequacy in moderate-category households is attributed to the adept regulation of food ingredient compositions by housewives, who are attentive to both the quantity and quality of food served to household members, ensuring the fulfillment of nutritional intake. However, it falls short of being categorized as 'good' as it remains below 100% AKE. This observation aligns with Rahmawati et al., (2020) research, indicating that the majority of farmer households are positioned in the medium category, indicative of their successful fulfillment of energy needs.

The distribution of household energy consumption adequacy categories reflects varying nutritional statuses, encompassing deficit, insufficient, moderate, and good. This divergence arises from distinct consumption patterns observed during field research, with each respondent exhibiting unique dietary habits. The disparities in consumption patterns stem from differing income levels (Arida et al., 2015; Pratama, 2021). When household income is minimal or insufficient, respondents prioritize quantity over quality in their food purchases, often opting for budget-friendly items, resulting in lower energy content. Conversely, higher incomes prompt a greater emphasis on the quality of food products (Minta et al., 2022). This observation aligns with the findings of Zakari et al., (2022), who posit a positive correlation between energy consumption and household food security. Specifically, households with limited incomes, such as farmers, prioritize quantity in their food expenditures, while considerations of food quality are often secondary.

Variations in categories are further attributed to disparities in the composition of household members concerning age and gender. Prastiwi et al., (2022), found in their research that energy consumption exhibits a significant and positive relationship with household food security, underscoring the necessity for farmer households to fulfill their energy requirements to attain food security. The pivotal role of housewives in possessing nutritional knowledge about daily food consumption is crucial for achieving nutritional adequacy and ensuring food security.

#### 4. Food Security of Farmer Households

Examining food security through the lens of consumption gauges each household's capacity to obtain adequate food for all family members, ensuring a healthy life. This research assesses the food security of farmer households in Siantan Hilir by employing a cross-classification approach, considering both the proportion of food expenditure (%) and the Energy Adequacy Level (TKE) expressed as a percentage (%).

**Table 8.** Distribution of Food Security Level of Farmer Households

No	Food Security Category	Proportion of Food Expenditure (%)	Total Proportion of Food Expenditure (%)	Energy Consumption Level (%)	Total Energy Consumption Level (%)	Number of Households	%
1	<b>High Food Security</b> , if Proportion of Food Expenditure is Low ( $\leq 60\%$ ), TKE is Sufficient ( $>80\%$ )	86%	93.83%	57%	58%	6	14%
		95%		59%			
		92%		60%			
		107%		54%			
		93%		60%			
		90%		58%			
2	<b>Marginal Food Security</b> , if Proportion of Food Expenditure is High ( $>60\%$ ), TKE is Fair ( $>80\%$ )	85%	94.83%	65%	68.35%	23	55%
		99%		66%			
		87%		66%			
		97%		66%			
		110%		72%			
		89%		64%			
		91%		71%			
		89%		61%			
		91%		66%			
		96%		72%			
		93%		68%			
		110%		62%			
		94%		65%			
		99%		73%			
		84%		77%			
		83%		64%			
		99%		69%			
		99%		66%			
102%	74%						
97%	65%						
104%	74%						
86%	68%						
97%	78%						
3	<b>Low Food Security</b> , if Proportion of Food Expenditure is Low ( $\leq 60\%$ ), TKE is Insufficient ( $\leq 80\%$ )	52%	68%	58%	57.50%	4	10%
		79%		55%			
		62%		58%			
		79%		59%			
4	<b>Very Low Food Security</b> , if Proportion of Food Expenditure is High ( $>60\%$ ), TKE is Insufficient ( $\leq 80\%$ )	79%	66%	67%	65.11%	9	21%
		74%		68%			
		79%		63%			
		48%		62%			
		52%		66%			
		54%		69%			
		70%		63%			
		69%		63%			
69%	65%						
Total						42	100%

Source: Primary data processed, 2022

Table 8 reveals that the predominant food security status among farmer households in Siantan Hilir is categorized as marginal, constituting the largest percentage at 55%, while households with low food security status represent the smallest percentage at 10% of the total. The findings indicate that the majority of farmer households in Siantan Hilir fall within the marginal food security category. This aligns with the research of, which also identifies the marginal food security category as the most prevalent, accounting for 53%. This implies that



the proportion of food expenditure is high ( $\geq 60\%$ ) relative to total expenditure, and the energy adequacy level is sufficient ( $>80\%$  AKE). The heightened proportion of food expenditure suggests that farmer households in Siantan Hilir prioritize meeting food needs and may encounter challenges in allocating their income effectively. Nonetheless, the energy consumption within this category meets the energy adequacy rate, indicating that the types of food consumed by farmer households with marginal food security in Siantan Hilir are diverse and fulfill nutritional adequacy requirements. The Total Energy Consumption (TKE) exceeds 80% of the recommended nutritional adequacy rate. Farmer households with marginal food security in Siantan Hilir prioritize the consumption of energy-rich foods such as rice, vegetables, meat, eggs, fruits, and nuts, ensuring a sufficient level of energy adequacy (Iskandar, 2012).

The category of marginal food security claims the largest percentage due to the low income of farmer households in Siantan Hilir. This reflects the overall lower welfare level of farmers in this region, positioning their households within the marginal food security category (Dirhamsyah et al., 2016). To improve their food security status, farmer households in Siantan Hilir with marginal food security are advised to enhance their income, as a higher income correlates with a smaller proportion of food expenditure. A reduced proportion of food expenditure, in turn, corresponds to an elevated level of household welfare. This aligns with findings from research conducted by Arida et al., (2015), which indicate that a high proportion of food expenditure leads to lower energy consumption (TKE) in farmer households, resulting in very low food security.

The findings of this study reveal that 88% of farmer households in Siantan Hilir experience food insecurity. This can be attributed to their low-income status, as these households possess limited land, leading to a diminished welfare level. Additionally, these farmer households allocate a substantial portion of their expenditure to food, primarily focusing on achieving fullness rather than considering nutritional content (Marpaung, 2018). Several factors contribute to food insecurity in these households, including a lack of knowledge about the nutritional value of consumed food, heightened levels of rainfall, diseases, and pest attacks. These environmental factors lead to a reduction in vegetable production, limiting the available supply for consumption, as farmers are compelled to sell their produce to fulfill other essential needs. The study conducted by Abdurahman et al., (2013) underscores the influence of farmer household income on overall welfare, emphasizing that a stagnant or decreasing income negatively impacts the welfare and, subsequently, the food security of farmers.

## CONCLUSION

The analysis of food security among horticultural farmer households in Siantan Hilir, Pontianak, reveals that, despite a relatively higher average income compared to expenditures, a notable challenge persists in maintaining food security. The substantial proportion of food expenditure, reaching 64.86% of the total expenditure, underscores this challenge. Moreover, while the overall energy consumption per capita and per household tends to be sufficient, the fact that 88% of households fall into the food-insecure category, with a medium-level energy adequacy, indicates the need for attention to enhance food security. Addressing food expenditure management and consumption patterns is crucial for improving the food security situation in Siantan Hilir.

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