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Food Security of Households of the Members of Women Farmer Group in Dry Land Area of Central Lombok

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Abstract: This study aims to analyze the level of food security among farming households that are members of KWT in Central Lombok Regency, which is dominated by dryland agroecosystems. This study uses the Share of Household Consumption Expenditure spending on Food (SHEoF) approach to measure the economic dimension of food security and the Household Food Insecurity Access Scale (HFIAS) to assess food access based on household experience. The SHEoF analysis results show that 45% of households are in the food secure, 31% are moderately food secure, and 24% are food insecure, with no households found to be food insecure. The results of the measurement based on the HFIAS score show that 89% of households are moderately food secure, 11% are food secure, and there are no households with vulnerable or insecure food security levels. These results indicate that KWT member households are able to meet their basic food needs.

Keywords: Household Food Security, Dry Land, Women Farmers Group, SHEoF, HFIAS.

Introduction

Food security is a strategic issue for Indonesia as a country with a population of 280 million people. Food security depends not only on production availability, but also on accessibility, utilization, and stability of food for all households (BPN, 2018). Although known as an agricultural country, Indonesia still faces challenges in food security. The 2022 Global Food Security Index ranks Indonesia 63rd out of 113 countries (Siahaan, 2024). In West Nusa Tenggara Province (NTB), the 2024 food security score was recorded at 78.44 and in Central Lombok Regency at 79.50 (DKP, 2023). This shows that the issues of food availability and access still need to be addressed.

Central Lombok Regency is an area dominated by dryland agroecosystems (Mandalika et al., 2023) and is vulnerable to drought, water scarcity, and declining productivity (Hermawan et al., 2024). The decline in food production in NTB in 2024 was also influenced by El Niño and a decrease in harvest area (BPS, 2024). These conditions can have a direct impact on the food security of farming households.

In the context of farming households, women play an important role in production, processing, distribution, and meeting the nutritional needs of their families (Yulati et al., 2015). Women's contribution to the agricultural workforce reaches 40% globally (Palacios-Lopez et al., 2017), and their role is crucial in food availability, access, and utilization (Hayati & Lanuhu, 2021). However, women's participation in activities that improve household food security is still not optimal (Johnston et al., 2015).

Local institutions such as KWT, Women's Cooperatives, BUMDes, and PKK can play a role in increasing household capacity through Sustainable Food Garden (P2L) programs. However, women's activity in these institutions is not always directly proportional to their participation in meeting household needs (Barrios et al., 2025).

Research by Barrios et al. (2025) shows that women often experience time constraints because they have to balance productive activities and domestic work. The double burden, as emphasized by Doss et al. (2018), is a major obstacle to women's participation in food security activities. In addition, gender norms and social rules that limit women's roles in public activities further narrow their space for participation (Winarti et al., 2025).

Previous studies have discussed the food security of dryland farmer households (Septiadi & Yusuf, 2023; Suparmin, 2015), but few have specifically examined the food security of female farmer households who are members of KWT, particularly in Central Lombok Regency, which is dominated by dryland.

Therefore, this study aims to analyze the food security of farming households who are members of

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KWT on drylands in Central Lombok Regency using the Share of Household Consumption Expenditure spent on Food (SHEoF) and Household Food Insecurity Access Scale (HFIAS) approaches to obtain more detailed results related to the food security of dryland farming households. The results of this study are expected to form the basis for formulating strategies for women's empowerment and strengthening household food security in dryland agricultural areas in a more inclusive and sustainable manner.

Method

This study uses a quantitative approach with a survey method. The unit of analysis in this study is dryland farming households in Central Lombok Regency, which is one of the regencies with the largest dryland area in the province of NTB. The research area was determined using purposive sampling, i.e., based on specific considerations. First, the research locations were selected based on the topographical characteristics of the area, representing the northern, central, and southern parts of Central Lombok Regency. Second, the research locations were selected based on the largest area of dry land in order to represent the conditions and management of dry land in the region. Based on these two considerations, the researchers determined three research locations, i.e., North Batukliang Subdistrict representing the northern region, West Praya Subdistrict representing the central region, and Pujut Subdistrict representing the southern region. The population in this study consisted of female farming households who were members of KWT in selected villages in Central Lombok Regency, which had been determined as the research locations. The sample size in this study was 100 respondents, determined using the Slovin formula. The data used in this study were quantitative and qualitative data sourced from primary and secondary data. The analysis tools used were SHEoF and HFIAS analyses.

Share of Household Consumption Expenditure spent on Food (SHEoF)

Expenditures on food and non-food consumption are routine expenditures made by farmers, which can be seen from total expenditures (Nugraha et al., 2023). To obtain the total household expenditure of farmers, the two types of expenditure, i.e. food and non-food expenditure (Martadona & Ieovita, 2021), are added together using the following formula:

TP = Pp + Pn

Eksplanation:

TP = Total household expenditure (Rp/month)

Pp = Food expenditure (Rp/month)

Pn = Non-food expenditure (Rp/month)

One of the tools that can be used to analyze household food security is by measuring the Proportion of Household Consumption Expenditure on Food using the SHEoF indicator, also known as the Engel Ratio (Nugraha et al., 2023). The SHEoF indicator is generally calculated at the household level due to the availability of official microdata from the Household Budget Survey (HBS), which is nationally representative (Marchetti & Secondi, 2022). This indicator is important in measuring household food security, because the poorer and more vulnerable a household is, the greater the proportion of income allocated to food, while this ratio tends to decrease as income levels increase (Marchetti & Secondi, 2022).

To measure household food security using SHEoF, use the following formula:

$$SHEoF = \frac{Xjf}{Xoj} \times 100$$

Description:

SHEoF = Proportion of Household Consumption Expenditure on Food (%)

Xjf = Household expenditure on food (Rp/month)

Xoj = Total household expenditure (Rp/month)

There are several ways to interpret the SHEoF indicator with the aim of linking food expenditure to food security. One standard that can be used is the Integrated Food Security Phase Classification introduced by the Food Security and Nutrition Analysis Unit of the FAO (IPC, 2021). The IPC proposes classifying the SHEof indicator into four groups, namely:

1. Food secure if SHEoF < 40%
2. Moderately food secure if 40% ≤ SHEoF < 50%
3. Food insecure if 50% ≤ SHEoF < 70%
4. Severely food insecure if SHEoF ≥ 70%.

Household Food Insecurity Access Scale (HFIAS)

To measure the dimension of household food security access more comprehensively, this study also used the HFIAS instrument developed by Food and Nutrition Technical Assistance (FANTA) (Nkoko et al., 2024). The Household Food Insecurity Access Scale (HFIAS) instrument was used to measure the level of household food security in terms of food access.

HFIAS was developed by FANTA as a measuring tool that assesses households' experiences in facing difficulties in obtaining food during the last 30 days. Through nine main questions, HFIAS describes the level of concern, the quality of food consumed, and the decrease in food consumption due to resource constraints. Thus, the HFIAS indirectly measures the dimension of food utilization as defined by the FAO, which includes adequate energy and nutrient intake,

food consumption diversity, and health conditions that affect nutrient absorption. This is measured by questions about the consumption of undesirable or less diverse foods, which can provide an indirect indication of a decline in consumption quality.

The HFIAS measurement consists of nine main questions representing three domains of food security, i.e.

1. Concerns about household food availability.
2. Decline in food consumption quality (variety and food preferences).
3. Decrease in food consumption quantity and physical consequences of food shortages.

Each question is followed by a frequency question categorized into three scales, namely:

- Never : 0 times
- Rarely : 1–2 times
- Sometimes : 3–10 times
- Often : >10 times

Each answer is scored as follows:

- Never = 0
- Rarely = 1
- Sometimes = 2
- Often = 3

Next, the scores from the nine questions are added together to obtain the total HFIAS score for the household, with a range of values between 0 and 27. A higher score indicates a lower level of food security or a higher level of food insecurity (Nkoko et al., 2024).

The classification of food insecurity levels based on HFIAS scores is carried out using the following four categories (Nkoko et al., 2024):

- 0–1 : Food secure
- 2–7 : Moderately food secu
- 8–14 : Food insecure
- 15–27 : Severely food insecure

The use of HFIAS in this study aims to provide a more in-depth picture of household food security levels, not only from an expenditure (economic) perspective, but also from a psychosocial perspective and the direct experiences of households in accessing food. The HFIAS instrument has been widely used in various studies and is considered valid for local and global contexts, including in rural and agricultural areas (Nkoko et al., 2024).

The data collected from the HFIAS responses were analyzed descriptively and quantitatively to determine the proportion of households based on their level of food insecurity. This analysis complements economic indicators such as the proportion of food expenditure (SHEoF) and total household expenditure, resulting in a more holistic and accurate picture of household food security.

Result and Discussion

The food security of farming households that are members of KWT in Central Lombok Regency was comprehensively analyzed using two main indicators, i.e., SHEoF and HFIAS. These two indicators were chosen because they are able to represent the dimensions of food security from an economic perspective, consumption behavior, and the subjective experiences of households in accessing food. The discussion of food security in this study is based on the FAO framework, which divides food security into three main dimensions, i.e., food availability, food access, and food utilization. These three dimensions are interrelated, especially in the context of dryland farming households that are structurally vulnerable to climate and economic fluctuations.

Share of Household Consumption Expenditure spent on Food (SHEoF)

SHEoF reflects the proportion of household expenditure allocated to food needs. The higher the SHEoF percentage, the higher the risk of food insecurity because most of the income is used to buy food, while the space for non-food expenditures such as education, health, and productive investment becomes limited (Hasanah et al., 2023).

Based on Table 1, the total household expenditure of KWT members in Central Lombok Regency in 2025 reached IDR 3,560,256 per month, with food expenditure amounting to IDR 1,527,002 (42.89%) and non-food expenditure amounting to IDR 2,033,254 (57.11%). Based on the analysis results, rice is the main commodity with an expenditure allocation of Rp 430,650 (12.10%), followed by fish/shrimp/squid/shellfish at Rp 128,890 (3.62%), meat at Rp 121,170 (3.40%), and eggs and milk at Rp 83,020 (2.33%). Other commodities such as vegetables, fruits, nuts, oil, and spices have a smaller percentage but still contribute to household food diversification. This shows that KWT member households are able to meet their basic nutritional needs through a combination of carbohydrate sources, animal protein, vegetables, and fruits, which are important indicators of food security. Meanwhile, non-food expenditures are dominated by education at Rp 1,032,900 (29.01%), followed by housing and household facilities, clothing, communication services, taxes, ceremonial needs, and other expenditures.

Table 1. Household Expenditures of KWT Members in Central Lombok Regency in 2025

No	Description	Expenditure (Rp/Month)	Percentage (%)
1	Food Expenditure		
	Rice	430.650	12,10
	Tubers	32.500	0,91
	Fish/Shrimp/Squid/Shellfish	128.890	3,62
	Tofu and Tempeh	82.930	2,33
	Meat	121.170	3,40
	Eggs and Milk	83.020	2,33
	Vegetables	78.660	2,21
	Nuts	46.080	1,29
	Fruits	114.010	3,20
	Oil & Coconut	53.840	1,51
	Beverage Ingredients	72.800	2,04
	Spices	93.600	2,63
	Other Consumption	188.852	5,31
	Total Food Expenditure	1.527.002	42,89
2	Non-Food Expenditure		
	Housing and Household Facilities	248.703	6,99
	Miscellaneous Commodities and Services	126.403	3,55
	Clothing, Footwear, and Headwear	171.290	4,81
	Education	1.032.900	29,01
	Taxes, Levies, and Insurance	147.126	4,13
	Mobile Phone Credit and Internet	163.400	4,59
	Party and Ceremony Needs	143.121	4,02
	Other Expenses	311.301	0,01
Total Non-Food Expenses		2.033.254	57.11
Total Expenses		3.560.256	100.00

This expenditure structure shows that households not only focus on food security but also pay attention to the welfare of family members through investment in education and other household needs. This combination indicates the ability of households to allocate income evenly between food and non-food items, which is an indicator of moderate to high food security.

An analysis of food security based on the SHEoF values shows that 45 households are classified as food secure, 31 households are classified as moderately food secure, 24 households are classified as food insecure, and no households are classified as food insecure. These results indicate that the majority of KWT member households are in a fairly stable condition and are able to meet their food needs without sacrificing important non-food needs. This condition also reflects the success of KWT's institutional intervention in increasing food self-sufficiency through food diversification and the utilization of home gardens. The diverse distribution of SHEoF scores shows that although most households are food secure, 24% of households fall into the food insecure, indicating vulnerability to economic shocks or crop failures. This shows that involvement in KWT can reduce vulnerability, but additional efforts are still needed, such as increasing technical capacity in agriculture, access to capital, and diversification of household food sources. The results of this study are in line with the findings of Hasanah et al. (2023), which show that dryland farming households tend to allocate 40–50% of their income to food, placing them in the moderate food security.

Table 2. Food Security Analysis based on SHEoF values in Central Lombok Regency 20255

Food security level	SHEoF Value	Number of households	Percentage (%)
Food secure	< 40%	45	45
Moderately food secure	40% ≤ SHEoF < 50%	31	31
Food insecure	50% ≤ SHEoF < 70%	24	24
Severely food insecure	≥ 70%.	0	0
Total		100	100

Source: Processed primary data (2025).

Household Food Insecurity Access Scale (HFIAS)

HFIAS is a measurement tool used to assess household access to food from the perspective of subjective experiences of food insecurity. In this study, HFIAS serves as a direct indicator of household food conditions based on farmers' experiences of food access, in addition to food expenditure indicators such as SHEoF.

Based on Table 3, the first question, "Households are concerned that food supplies are insufficient," shows a rare dominance. This indicates that the majority of households have a relatively high level of certainty regarding food availability. The second question, which assesses the inability of households to consume the types of food they want due to resource constraints, also shows a rare dominance. These results indicate that there are limitations in food variety for some households, although these limitations are limited and do not significantly threaten food security.

The third question regarding food consumption with limited variety due to resource constraints shows that most households have never experienced this. The fourth question about being forced to consume unwanted foods due to resource constraints shows a rare dominance. These two questions confirm that the majority of households are still able to maintain their food preferences well, even though some experience occasional limitations.

Table 3. HFIAS scores for households of WFG members in Central Lombok Regency

No.	Statement	Score									
		Never		Rarely		Sometimes		Often		Total	
		Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
1.	Worried that food supplies are insufficient.	36	36	41	41	23	23	0	0	100	100
2.	Unable to consume desired types of food due to limited resources.	27	27	39	39	34	34	0	0	100	100
3.	Only able to consume food with limited variety due to limited resources.	44	44	40	40	16	16	0	0	100	100
4.	Forced to consume unwanted food due to limited resources.	33	33	58	58	9	9	0	0	100	100
5.	Consuming smaller portions of food than needed due to limited food supplies	92	92	8	8	0	0	0	0	100	100
6.	Reducing the frequency of meals per day due to food limitations.	100	0	0	0	0	0	0	0	100	100
7.	Ever had no food at all in the household.	100	0	0	0	0	0	0	0	100	100
8.	Ever gone to bed hungry due to lack of food.	100	0	0	0	0	0	0	0	100	100
9.	Ever gone without food for a full day and night due to lack of food?	100	0	0	0	0	0	0	0	100	100

Source: Processed primary data (2025).

The fifth question, which assessed food portion reduction due to food constraints, showed that 92% of households never experienced this. The sixth and seventh questions regarding reduced meal frequency and lack of food in households showed that none of the respondents experienced these problems. This indicates that food availability at the household level is fairly secure, so the risk of extreme hunger is relatively low. Questions 8–9 on the HFIAS assess household experiences related to extreme food limitations, which include lack of food in the household and going to bed hungry. Based on the survey data, no households experienced these conditions, so there was no extreme hunger or food shortages.

The results of this study are in line with Melaku & Workicho (2015), which show that affirmative answers appear more frequently on HFIAS items that reflect mild to moderate food insecurity symptoms, such as concerns about food supplies or limited food variety, while severe food insecurity symptoms rarely occur. Furthermore, Melaku & Workicho (2015) emphasize that households more often report mild limitations, while reducing meal frequency or going without food for a whole day occurs very rarely.

Based on food security analysis using the HFIAS score in Table 3, the majority of households (89%) are classified as moderately food secure, while 11% are classified as food secure. No households are classified as food insecure or not food secure. Thus, based on the HFIAS score, it is known that the majority of households are in a relatively secure food security situation. These results are in line with the research by Melaku & Workicho (2015), which found that households tend to experience mild food insecurity, and the majority of households are still able to maintain adequate food availability and quality.

Table 4. Food Security Levels of WFG Member Households Based on HFIAS Scores in Central Lombok Regency

Food security level	HFIAS score	Number of households	Percentage (%)
Food secure	0-1	11	11
Moderately food secure	2-7	89	89
Food insecure	8-14	0	0
Severely food insecure	15-27	0	0
Total		100	100

Source: Processed primary data (2025).

These HFIAS results are in line with the findings of the previous SHEoF analysis, in which most households were classified as food secure. This reinforces that the two indicators complement each other, with SHEoF providing an overview of household expenditure on food, while HFIAS assesses households' actual experience in accessing food. The combination of these two indicators shows that KWT member households in Central Lombok Regency have relatively good food security, both in terms of economic and physical access to food, as well as in terms of experience in accessing food, even though some households still experience minor limitations in food variety.

These results are consistent with previous research by Coates et al. (2017), which shows that HFIAS is effective in identifying household experiences related to food constraints, including in dryland and food-insecure areas. Furthermore, Hasanah et al. (2024) emphasize that dryland farmer households who are members of farmer groups or local institutions have more stable access to food compared to non-member

households, highlighting the important role of KWT in strengthening household food security through social, economic, and local food production mechanisms.

Analysis Food Security in Farming Households Based on SHEoF and HFIAS

In general, the food security status of dryland farming households is classified as moderately food secure. This is in line with the findings of Hasanah et al. (2024), who found that although most dryland farming households are food secure, there are still households that experience vulnerability due to income variability and production fluctuations (Hasanah et al., 2024).

Table 5. Food security levels of farmer households who are members of WFG on dryland in Central Lombok Regency

No	Food Security Level.	SHEoF	HFIAS
1	Food secure	45	11
2	Moderately food secure	31	89
3	Food insecure	24	0
4	Severely food insecure	0	0
Total		100	100

Source: Primary data processed (2025).

The SHEoF and HFIAS indicators complement each other in describing household food security conditions. This relationship confirms that food security is not only determined by household economic capacity, but also by households' actual experiences in accessing and consuming food. Table 5 shows that 24% of households are classified as food insecure based on SHEoF, while no households are classified as food insecure or food vulnerable based on HFIAS. This finding indicates that households experiencing pressure on food expenditure have not yet experienced a complete disruption in food access or consumption.

Conversely, the proportion of households classified as sufficiently food secure based on HFIAS reached 89%, much higher than the SHEoF result of 31%. This condition indicates that most households are still able to maintain stable food consumption even though they are economically at a lower level of food security.

The difference in results between the two indicators shows that there is a difference between economic pressure and the experience of food insecurity. Households identified as economically vulnerable based on SHEoF still have the capacity to maintain access to food, so they are not yet reflected as food insecure based on HFIAS.

This relationship confirms that pressure on food expenditure has not yet had a direct impact on experiences of food insecurity, meaning that household food security in the study area remains at a relatively stable level.

Conclusion

The food security of farming households of the members of KWT on dry land in Central Lombok Regency is at a fairly secure level. Based on the SHEoF analysis, households are classified as Food Secure, while based on the HFIAS analysis, households are classified as Moderately Food Secure. These results indicate that the majority of households are able to meet their basic food needs and allocate their income evenly between food and non-food items, but still have hidden vulnerabilities in terms of food availability, access, and utilization.

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