



Theme: Innovations for Sustainable Development in a Changing World

Title: Assessment of Household Food Security in Kikonoka Village, Bulyango Sub-County, Hoima District, Uganda

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Abstract

Household food security remains a major rural development concern because food production does not necessarily guarantee stable access to adequate and nutritious diets. This study assessed household food security in Kikonoka Village, Bulyango Sub-County, Hoima District, Uganda, focusing on food availability, household food expenditure, and seasonal shortages. A cross-sectional mixed-methods design was employed. Quantitative data were collected from 90 households selected through simple random sampling, while qualitative evidence was obtained from 10 purposively selected key informants. Quantitative data were summarized using frequencies and percentages, and qualitative data were analyzed thematically. The findings showed that 83.2% of households reported sufficient food availability for most of the year, while 16.8% experienced seasonal shortages. In addition, 46.3% reported increased expenditure on food, particularly during periods of scarcity and rising market prices. The findings indicate that household food security in Kikonoka is relatively adequate in periods of production but remains vulnerable to seasonal instability, limited storage, low incomes, and restricted dietary diversity. The study contributes localized evidence by interpreting these conditions through the food security dimensions of availability, access, utilization, and stability and through Sen's production, trade, labour, and transfer entitlements. It recommends context-specific investment in climate-resilient production, storage, crop diversification, livelihood diversification, nutrition education, and community grain banks.

Keywords: Household food security; seasonal food shortages; dietary diversity; subsistence agriculture; rural Uganda



1. Introduction

Food security is a multidimensional development concern that extends beyond the physical production of food to include people's economic and social ability to obtain, use, and retain adequate food over time. Recent global evidence shows that high food prices, climate-related shocks, and economic pressures continue to undermine access to nutritious diets, with rural and low-income households particularly exposed to these pressures (FAO, IFAD, UNICEF, WFP, & WHO, 2025). The four commonly applied dimensions—availability, access, utilization, and stability are therefore useful for distinguishing between having food in a household or community and having reliable access to adequate and nutritious food throughout the year.

In Uganda, the food security of rural households is closely connected to smallholder agriculture, market participation, livelihood diversification, and the seasonal nature of food production. Recent Ugandan studies demonstrate that crop diversity and market engagement can complement each other in improving dietary diversity and food security among small-scale farm households (Morrissey et al., 2024). Similarly, national panel evidence indicates that greater farm production diversity is associated with improved household dietary and nutrition outcomes (Sekabira et al., 2022). Evidence from Northern Uganda also shows that rural diets may remain dominated by cereals, roots, and tubers, while nutritional knowledge and household characteristics influence dietary diversity (Kollesuah et al., 2023).

Seasonality is particularly important in farming communities. A cohort study in Kapchorwa District found that dietary diversity among women varied across agricultural seasons and that poorer rural households were more affected by seasonal constraints on food availability and access (Jordan et al., 2022). Research in rural northern Uganda similarly found that food security, dietary diversity, and coping strategies are interconnected, with households relying on strategies such as reducing portions and consuming less preferred foods during periods of food insecurity (Elo et al., 2023). These studies demonstrate the need to examine food security at localized levels because the pathways linking production, income, markets, storage, and diet differ across communities.

Kikonoka Village in Bulyango Sub-County, Hoima District, is predominantly characterized by rain-fed subsistence agriculture. Households rely on crops such as maize, cassava, beans, bananas, and sweet potatoes for food and income. However, local production is vulnerable to climatic fluctuations, pests and diseases, declining soil fertility, and inadequate storage. These conditions may create periods in which households have adequate food following harvest but experience shortages or increased market dependence later in the agricultural cycle.

Despite the importance of subsistence agriculture to livelihoods in Kikonoka, there is limited localized empirical evidence on how household food availability, food expenditure, seasonal shortages, and dietary diversity interact in the village. The present study therefore assesses household food security in



Kikonoka Village, with particular attention to food availability, household expenditure on food, and seasonal food security challenges.

2. Problem Statement

Rural households in Uganda continue to face food security challenges despite their substantial dependence on agriculture. In communities such as Kikonoka Village, household food production is exposed to climatic variability, pest and disease pressure, post-harvest losses, limited storage facilities, and weak access to productive resources. These constraints can generate a gap between food availability immediately after harvest and stable access to food across the year.

The problem is not only whether households produce food, but also whether they can maintain access to adequate food when own production declines and market prices rise. This concern is consistent with recent evidence showing that market engagement, crop diversity, and household characteristics jointly influence food security among smallholder households in Uganda (Morrissey et al., 2024). Likewise, research in Northern Uganda indicates that rural dietary diversity remains constrained by limited consumption of several food groups and by differences in nutritional knowledge and household characteristics (Kolliessuah et al., 2023).

Although national and regional studies provide important evidence, such findings cannot automatically explain the particular food security dynamics of Kikonoka Village. Localized evidence is required to determine whether households experience shortages, how expenditure changes during scarcity, and which household and community mechanisms sustain food access. Without such evidence, interventions may remain generic rather than addressing the specific pathways through which households in Kikonoka become vulnerable. This study therefore assesses the current state of household food security in Kikonoka Village, Bulyango Sub-County, Hoima District.

3. Theoretical Review

3.1 Food Security Framework

The study uses the food security framework to examine four connected dimensions: availability, access, utilization, and stability. Food availability concerns the physical presence of sufficient food from own production, markets, or other sources. Food access concerns the economic and social ability to obtain food through production, purchase, exchange, labour, or transfers. Food utilization concerns the nutritional quality, safety, preparation, and biological use of food. Stability concerns whether availability and access can be maintained over time, including during seasonal, climatic, or economic shocks.



The framework is useful in Kikonoka because the presence of staple foods does not necessarily mean that households enjoy stable food security. A household may produce maize, cassava, beans, bananas, or sweet potatoes and still face reduced access to food when stocks decline, prices increase, or climatic conditions reduce production. The framework therefore allows the study to distinguish between production-related availability and longer-term access, utilization, and stability.

3.2 Sen's Entitlement Theory

Sen's Entitlement Theory explains food insecurity through people's command over food rather than food availability alone (Sen, 1981). The theory identifies production entitlements, trade entitlements, labour entitlements, and transfer entitlements as important pathways through which households obtain food. For Kikonoka households, production entitlement is reflected in the ability to grow food; trade entitlement in the ability to purchase food using income from agricultural or other activities; labour entitlement in the ability to obtain food through paid work; and transfer entitlement in access to social support or other transfers.

The theory is particularly relevant to the study because the results show that some households depend on own production while others purchase food when production is inadequate. The finding that 46.3% of respondents reported increased food expenditure during periods of scarcity suggests that purchasing power is an important component of food access. Sen's theory therefore helps interpret food expenditure not merely as a household budget issue but as an indicator of the strength or weakness of household trade and labour entitlements.

3.3 Integrated Theoretical Application

The two frameworks are integrated rather than treated as separate descriptive theories. The food security framework identifies the dimensions of the outcome, while Sen's theory explains the mechanisms through which households command food. Thus, seasonal production affects availability and stability; household income and market prices affect access through trade and labour entitlements; dietary diversity reflects utilization; and social support may strengthen transfer entitlements during periods of scarcity.



Conceptual integration of the two theoretical lenses

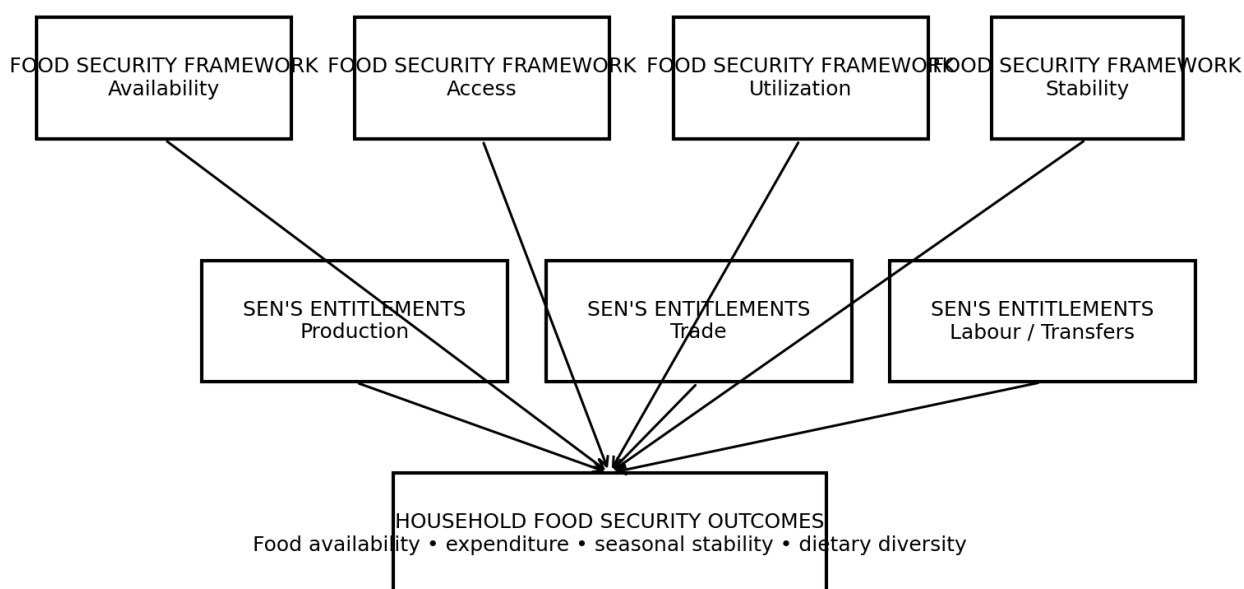


Figure 1. Integrated conceptual framework linking food security dimensions and Sen's entitlements to household food security outcomes.

Theoretical lens	Analytical dimension	Evidence in Kikonoka	Interpretation
Food Security Framework	Availability	83.2% reported food availability for most of the year	Own production supports physical food availability for most households.
Food Security Framework	Access	46.3% reported increased food expenditure	Scarcity and price changes can reduce economic access, especially for households dependent on purchases.
Food Security Framework	Utilization	Qualitative evidence indicated limited dietary diversity	Staple-food availability does not necessarily ensure nutritionally diverse diets.
Food Security Framework	Stability	16.8% reported seasonal shortages	Food security is vulnerable to dry periods and fluctuations in production.



Sen's Theory	Production entitlement	Dependence on rain-fed subsistence agriculture	Household command over food is partly determined by production capacity.
Sen's Theory	Trade/labour entitlements	Increased expenditure and dependence on market purchases during scarcity	Income and purchasing power influence the ability to acquire food.
Sen's Theory	Transfer entitlement	Community and social support discussed as potential coping mechanisms	Transfers can strengthen food access where production and income are inadequate.

4. Literature Review

Recent literature reinforces the multidimensional nature of household food security. The 2025 State of Food Security and Nutrition in the World emphasizes that persistent food price inflation can weaken purchasing power and access to healthy diets, particularly among low-income and rural populations (FAO, IFAD, UNICEF, WFP, & WHO, 2025). This is relevant to Kikonoka because increased food expenditure during scarcity may reflect reduced purchasing power rather than improved food access.

Evidence from Uganda shows that the relationship between agricultural production and food security is not simply a matter of producing more of one crop. Morrissey et al. (2024), using national panel survey data, found that both market engagement and on-farm crop diversity were positively associated with dietary diversity and food security. Their findings support the argument that households may need both production diversity and effective market participation to maintain food access.

Sekabira et al. (2022) similarly found that crop and animal species diversity were associated with household dietary and nutrition outcomes in Uganda. The implication for Kikonoka is that crop diversification should not be presented only as a production strategy; it can also function as a pathway to household dietary improvement. This strengthens the rationale for linking diversification recommendations directly to the observed concern about limited dietary diversity.

Seasonal changes in food access are also documented in Uganda. Jordan et al. (2022) found that rural women in Kapchorwa were more affected by seasonal limitations in food availability and access and recommended stronger links among market participation, agricultural production, food storage, and dietary intake. This provides a useful comparative basis for interpreting the seasonal shortages reported in Kikonoka.

Elolu et al. (2023) reported that household food security, child dietary diversity, and coping strategies were interconnected among rural households in Kileleshwa District. Their findings showed that food



insecurity was accompanied by coping strategies such as reducing meal portions, reducing meal frequency, and consuming less preferred foods. Although the Kikonoka study did not quantify these coping strategies, the qualitative finding of seasonal shortages and limited dietary diversity is consistent with the broader Ugandan evidence that seasonal food insecurity can affect diet quality.

Kolliesuah et al. (2023) found that rural households in Northern Uganda had lower dietary diversity than urban households and that diets were dominated by starchy cereals and roots and tubers. Nutritional knowledge was also a positive predictor of dietary diversity in rural areas. This supports the inclusion of nutrition education in the Kikonoka recommendations, while also demonstrating that food availability alone cannot be equated with nutritional adequacy.

Nabuuma et al. (2024) further demonstrate the importance of contextualized food-based strategies in rural farming households in Central Uganda. Their work emphasizes that food-based interventions must be adapted to local production systems, dietary patterns, and implementation realities. This supports the present study's emphasis on localized rather than generic recommendations.

The literature therefore points to four interacting issues relevant to Kikonoka: agricultural production determines an important part of food availability; market and income conditions influence access; dietary diversity determines whether available food translates into adequate nutrition; and seasonality determines stability. The specific contribution of the present study is to provide village-level evidence on these issues and interpret them jointly using the Food Security Framework and Sen's Entitlement Theory.

5. Methodology

The study employed a cross-sectional mixed-methods design combining a household survey with key informant interviews. The mixed-methods approach was retained because the household survey provides measurable evidence on food availability and expenditure, while key informant accounts provide contextual explanations of seasonal shortages, production constraints, and household coping conditions.

The target population comprised 150 households. Ninety households were selected using simple random sampling. Ten key informants—including local leaders, agricultural extension workers, women representatives, and experienced farmers—were purposively selected because of their knowledge of local food security conditions.

Quantitative data were collected using a structured questionnaire administered to household respondents. Qualitative data were obtained through semi-structured key informant interviews focusing on food availability, expenditure on food, seasonal shortages, and coping strategies. The instruments



were pre-tested for clarity and consistency. Informed consent, confidentiality, anonymity, and voluntary participation were observed.

Quantitative data were entered and analyzed using SPSS version 25. Frequencies and percentages were used to summarize the available household-level responses. Qualitative interview material was transcribed, coded, and analyzed thematically. Because the present manuscript did not include the raw household-level dataset, no new inferential statistics have been introduced into the revised results; adding regression or cross-tabulation without the underlying observations would risk fabricating or misrepresenting results.

6. Results

6.1 Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	34	37.8
Gender	Female	56	62.2
Age	Below 20 years	19	21.1
Age	21–30 years	34	37.8
Age	31–40 years	26	28.9
Age	41–50 years	6	6.7
Age	Above 51 years	5	5.5
Education	No formal education	10	11.1
Education	Primary education	24	26.7
Education	Secondary education	40	44.4
Education	Tertiary education	16	17.8

Source: Field Data (2026).

Female respondents constituted 62.2% of the sample, while males constituted 37.8%. The largest age category was 21–30 years (37.8%), followed by 31–40 years (28.9%). In terms of education, 44.4% had secondary education, 26.7% had primary education, 17.8% had tertiary education, and 11.1% had no formal education. The profile indicates substantial participation of women and economically active adults in the household survey.



6.2 Household Food Availability

Response	Frequency	Percentage (%)
Yes	75	83.2
No	15	16.8
Total	90	100

Source: Field Data (2026).

Most respondents (83.2%) reported sufficient food availability for most of the year, while 16.8% reported seasonal shortages. The finding should not be interpreted as evidence that all households were food secure in the broader sense, because the measure captures reported availability rather than the full set of access, utilization, and stability dimensions. Key informants attributed shortages to erratic rainfall, pests and diseases, inadequate storage, and low household income. Thus, the relatively high availability figure coexists with important vulnerabilities in stability and access.

6.3 Household Expenditure on Food

Household food expenditure	Percentage (%)
Increased food expenditure	46.3
Reduced food expenditure	28.3
No change in expenditure	25.4
Total	100

Source: Field Data (2026).

Nearly half of respondents (46.3%) reported increased expenditure on food. The increase was associated with periods of scarcity and rising market prices. Respondents who reported reduced expenditure mainly relied on food produced on their farms. Qualitative evidence further indicated that limited income and seasonal fluctuations constrained dietary diversity.

6.4 Analytical Interpretation of the Findings

The results reveal an important distinction between food availability and overall food security. The 83.2% availability figure suggests that own production provides a substantial food base for most households, but the 16.8% experiencing seasonal shortages demonstrates that this base is not fully stable. The 46.3% reporting increased food expenditure further indicates that households may shift from production-based access to market-based access when own supplies decline.

Viewed through Sen's Entitlement Theory, households with sufficient productive capacity have stronger production entitlements during periods of adequate harvest. During scarcity, however,



households increasingly depend on trade and labour entitlements because food must be purchased or obtained through income-generating activities. Where income is low and food prices rise, these entitlements become weaker. Community support and collective storage can therefore function as transfer or community-based mechanisms that reduce vulnerability.

The evidence on dietary diversity adds a utilization dimension. Although staple foods such as maize, cassava, beans, bananas, and sweet potatoes are available, the qualitative findings indicate limited access to diverse nutrient-rich foods. Thus, increasing the volume of staple production alone may not fully resolve household food and nutrition insecurity.

7. Discussion

7.1 Food Availability and Stability

The finding that 83.2% of respondents reported food availability for most of the year suggests that subsistence agriculture remains an important production entitlement in Kikonoka. However, the 16.8% reporting seasonal shortages demonstrates that availability is not stable across the agricultural cycle. This distinction is consistent with the Food Security Framework, which treats stability as a separate dimension from availability.

The finding also corresponds with evidence from Kapchorwa, where seasonal variation affected rural women's food availability and access (Jordan et al., 2022). In Kikonoka, the key informant evidence attributes shortages to rainfall variability, pests and diseases, poor storage, and low incomes. These factors operate at different points in the food system: climate and pests affect production, storage affects the duration of availability, and income affects the ability to compensate for production deficits.

7.2 Food Access, Expenditure and Entitlements

The 46.3% reporting increased food expenditure is analytically important because it indicates a shift in the pathway through which food is obtained. When own production is insufficient, households may rely more heavily on market purchases. Under Sen's framework, this reflects the strength of trade entitlement and, indirectly, labour entitlement because purchasing power depends on income.

This interpretation is supported by recent Ugandan evidence showing that market engagement is positively associated with dietary diversity and that both market participation and crop diversity can contribute to food security (Morrissey et al., 2024). The implication is that Kikonoka households should not be viewed solely as producers; their food security also depends on their ability to participate in markets on favourable terms.



7.3 Dietary Diversity and Food Utilization

The qualitative evidence that households depend heavily on staple foods while experiencing limited dietary diversity suggests a utilization challenge. This is consistent with evidence from Northern Uganda showing that rural diets are dominated by starchy cereals and roots and tubers and that nutrition knowledge is associated with dietary diversity (Kolliesuah et al., 2023). Similarly, national Ugandan evidence indicates that crop production diversity can improve household dietary and nutrition outcomes (Sekabira et al., 2022).

The Kikonoka findings therefore support a shift from a narrow food-security strategy focused on increasing staple production toward a food-system approach that combines production diversity, nutrition education, market access, and household purchasing power. Nabuuma et al. (2024) similarly emphasize the need for contextualized food-based strategies in rural farming communities.

7.4 Gender and Youth Participation

Women constituted 62.2% of respondents, highlighting their prominent participation in household food production and management. This finding should be interpreted cautiously: the sample composition demonstrates substantial participation of women but does not, by itself, establish that gender causes better or worse food security. Nevertheless, it supports the importance of gender-responsive programming because women's access to land, inputs, finance, information, and decision-making can affect household food systems.

The age profile also shows substantial participation of younger adults, with 37.8% aged 21–30 years and 28.9% aged 31–40 years. This suggests an opportunity to connect food-security interventions with youth-oriented agricultural enterprise, technology adoption, and livelihood diversification. However, the study did not directly measure the relationship between age and food security, so this interpretation is presented as an implication rather than a statistical association.

7.5 Contribution of the Study

The main contribution of the study is its localized evidence on how food availability, expenditure, and seasonal shortages coexist within a rural farming community. Rather than treating the 83.2% availability figure as evidence of complete food security, the study shows that availability must be considered alongside access, utilization, and stability. The integration of Sen's entitlement categories further explains why households may remain vulnerable even where food is produced locally.

8. Conclusion

Household food security in Kikonoka Village is substantially supported by subsistence agriculture but remains vulnerable to seasonal, economic, and environmental shocks. Although 83.2% of respondents reported sufficient food availability for most of the year, 16.8% experienced seasonal shortages, while



46.3% reported increased expenditure on food. These findings indicate that food availability is relatively strong for many households but does not necessarily translate into stable economic access or adequate dietary diversity.

The integrated application of the Food Security Framework and Sen's Entitlement Theory shows that household food security depends on both the availability of food and households' ability to command that food through production, markets, labour, and social support. Seasonal production fluctuations weaken stability, while rising prices and limited income constrain trade entitlements. Limited dietary diversity further demonstrates that the utilization dimension requires attention alongside production.

The study therefore concludes that sustainable food security in Kikonoka requires a coordinated approach that strengthens resilient production, storage, purchasing power, dietary diversity, and household capacity to withstand seasonal shocks.

9. Recommendations

Seasonal shortages and weak stability: Local authorities and development partners should support household and community storage systems, including improved drying, hermetic storage where appropriate, and community grain banks, because 16.8% of households reported seasonal shortages and key informants identified poor storage as a constraint.

Increased food expenditure and weak economic access: Livelihood diversification, savings groups, market-linkage initiatives, and appropriate income-generating activities should be strengthened because 46.3% of respondents reported increased food expenditure during scarcity.

Limited dietary diversity: Agricultural extension should promote diversified production of legumes, vegetables, fruits, and other locally suitable nutrient-rich foods, accompanied by practical nutrition education. This recommendation responds directly to the qualitative evidence of limited dietary diversity.

Climate and production vulnerability: Extension services should promote climate-resilient production practices, soil fertility management, water-conserving techniques, and context-appropriate technologies because erratic rainfall, pests, and diseases were identified by key informants as drivers of shortages.

Women's role in household food systems: Gender-responsive interventions should improve women's access to productive resources, agricultural training, finance, and decision-making opportunities, given that women represented 62.2% of survey respondents and play a central role in household food management.



Youth participation: Agricultural and rural enterprise programmes should deliberately include young adults through skills development, technology access, market-oriented production, and livelihood diversification, reflecting the substantial representation of respondents aged 21–40 years.

Evidence for future programming: Future studies should collect household-level measures such as household dietary diversity scores, months of adequate household food provisioning, food insecurity experience measures, household income, farm size, crop diversity, and market access so that predictors of food insecurity can be tested using cross-tabulations and multivariable models.

10. Limitations and Future Research

The cross-sectional design provides a snapshot of household food security and cannot establish causal relationships. The quantitative analysis in the available manuscript is also descriptive. Although inferential analysis such as cross-tabulation or regression could strengthen the paper, such analyses require the raw household-level dataset and clearly coded variables. They have therefore not been fabricated or inferred from aggregate percentages. Future research should collect standardized food-security and dietary-diversity measures and apply appropriate inferential models to identify predictors of seasonal food insecurity.

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