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CONTRIBUTION OF AGROECOLOGICAL FARMING SYSTEMS ON HOUSEHOLD FOOD SECURITY AND NUTRITION STATUS IN KARANGURA SUB-COUNTY, KABAROLE DISTRICT



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Contribution of Agroecological Farming Systems on Household Food Security and Nutrition Status in Karangura Sub-County, Kabarole District

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EXECUTIVE SUMMARY

IDP together with KRC-Uganda, and RCA have been supporting farmers in promoting Agroecological practices to enhance their food security and nutrition as one of the ways to promote the production and consumption of healthy food. However, there is no data that indicates the contribution of these agroecological farming practices to household food security and nutrition outcomes. KRC- Uganda worked with IDP and Mountains of the Moon University to conduct a study on the contribution of Agroecological farming practices to nutrition and food security outcomes among households in Karangura sub-county, Kabarole district.

The purpose of this study was to assess the contribution of Agroecological farming systems on household food security and nutrition status in Kabarole district. Specifically, the study aimed at: assessing the level of management and productivity of the farms of IDP supported households in agroecological practices and those that are not IDP supported; determining the Food Consumption Score among IDP supported households in Karangura Sub-county and those that are not; determining the household food security situation of IDP supported households and those that are not and determining the nutrition status of children aged 6-59 months in the IDP supported households and those that are not.

Findings of the study are summarized in the table below.

RESEARCH OBJECTIVE	KEY FINDINGS
1. To assess the level of management and productivity of the farms of IDP supported households and non-IDP supported households.	<ul style="list-style-type: none"> ✓ IDP supported households had better farm management practices; they had a higher reliance on agroecological farming practices (such as mulching, intercropping, protection of farms by trenching/terracing/water infiltration basins, protection of steep parts of farm with grass bands/mulching/lined planting/retention plants grass) than those that did not receive IDP support. ✓ IDP supported households had better farm management practices; they had higher ownership of animals, had more trees on their farms, harvested more water from their roofs, sourced more firewood and animal feed from their own farms than those that did not receive IDP support.
2. To determine the Food Consumption Score among IDP supported households in Karangura Sub-county and those that are not supported by IDP.	<ul style="list-style-type: none"> ✓ There was only a weak correlation between agroecological scores and Food Consumption Scores.

RESEARCH OBJECTIVE	KEY FINDINGS
<p>3. To determine the household food security situation among IDP supported households and non-IDP supported Households.</p>	<p>✓ There was a negligible correlation between agroecological scores and HFIAS</p>
<p>4. To determine the nutrition status of children aged 6-59 months among IDP supported households and non-IDP supported households.</p>	<p>✓ There was a negligible correlation between agroecological scores and nutrition status (WAZ, HAZ and MUAC)</p> <p>✓ To improve nutrition status, the program may need to consider nutrition-sensitive agroecological approaches that promote sustainable agricultural practices.</p>

1.0 INTRODUCTION

1.1 Background

Agroecology has increasingly gained scientific and policy recognition as having potential to address environmental and social issues within food production, including its implications for food security and nutrition particularly in low income countries.¹ Agroecological practices include crop diversification, intercropping, agroforestry, integrating crop and livestock, and soil management measures among others. Most studies (78%) have found positive outcomes in the use of agroecological practices on household food security and nutrition in low and middle-income countries. Some studies have found mixed outcomes regarding food security and nutrition, and a few studies reported negative outcomes. More complex agroecological farming systems that included multiple components (for instance crop diversification, mixed crop-livestock systems and farmer-to-farmer networks) were more likely to have positive food security and nutrition outcomes.²

THE PROBLEM

Kabarole District, in Western Uganda is well known to be the region's food basket (KRC, 2017), and research has shown that it also contributes a bigger proportion of stunted children under 5 years, at 38.7% in 2022 for Tooro region. The same report indicates that only 28% and 33% of children under 5 years in Tooro consumed vitamin A rich and Iron rich foods respectively³. Research conducted by Kabarole Research and Resource Center (KRC- Uganda) indicated that 25.9% of the households in Kabarole have low dietary diversity. Further research by KRC- Uganda showed that 29.5% of women of reproductive age and 25.9% of children 6-59 months consumed 5 or more food groups whereas less than half (22.8%) of the households had kitchen gardens. Tooro region has however continued to export large amounts of food grown on its farms to other Uganda's major cities and neighboring countries, which is a source of income for farming households.

Agroecology proposes a comprehensive answer to addressing challenges of climate change and food insecurity and contributes to the realization of the Right to Food by offering a new basis for sustainable food systems, resilient agricultural livelihoods and good nutrition⁴. IDP together with KRC- Uganda, and RCA have been supporting farmers in promoting agroecological practices to enhance their food security and nutrition as one of the ways to promote the production and consumption of healthy food. However, there is no data that indicates the contribution of these agroecological farming practices to household food security and nutrition outcomes. KRC- Uganda worked with IDP and Mountains of the Moon University to conduct a study on the contribution of Agroecological farming practices to nutrition and food security outcomes among households in Karangura sub-county, Kabarole district.

1 Racheletal2021Canagroecologyimprovefoodsecurityandnutrition_Areview%20(1).pdf

2 [DeSIRA-LIFT-Knowledge-brief4-Scientific-Evidence-for-Agroecology.pdf \(agroecology-coalition.org\)](#)

3 [09_2023UGANDA_DEMOGRAPHIC_AND_HEALTH_SURVEY_\(UDHS\)_2022_KEY_FINDINGS.pdf \(ubos.org\)](#)

4 https://www.actioncontrelafaim.org/wp-content/uploads/2018/02/acf_promotingagroecology_gb.pdf

1.2 Objective of the study

The purpose of this study was to assess the contribution of Agroecological farming systems on household food security and nutrition status in Karangura sub-county, Kabarole district.

1.3 Specific objectives.

1. To assess the level of management and productivity of the farms of IDP supported households in agroecology and non-IDP supported households in Karangura sub-county.
2. To determine the Food Consumption Score among IDP households and non-IDP supported households in Karangura sub-county.
3. To determine the household food security situation of IDP supported households and non-IDP supported households.
4. To determine the nutrition status of children aged 6-59 months in IDP supported households and non-IDP supported households.

1.4 Scope of the study

1.4.1 Geographical scope.

This study was conducted in Karangura sub-county in Kabarole district. Karangura Sub-county lies at the foothills of Mountain Rwenzori with an estimated population of 12,340 people (UBOS, 2019). The people in Karangura Sub-county mainly speak Lhukonzo and Rutooro. Agriculture is the main economic activity of the people in Karangura sub-county with most families (over 80% of the population) in subsistence farming. They mainly depend on production of coffee, bananas, peas, Irish potatoes, garlic and beans.

1.4.2 Content scope.

Conceptually, the study focused on the contribution of Agroecological farming systems on the household's food security and nutrition status in Karangura Sub-county Kabarole District. This was done through assessing households supported by IDP through RCA in agroecological farming systems and those that are not supported by IDP. The household's food consumption score was used as a measure for food security. For the household nutrition status, the study focused on the height for age and weight for age of children aged 6-59 months.

2.0 METHODOLOGY

2.1 Research Design

A cross sectional study design was used. Quantitative methods were used to assess the contribution of Agroecological farming systems on the food security and nutrition status of children aged 6-59 months.

2.2 Data collection methods

Review of project reports and existing literature: This involved the review of project reports and existing relevant literature on trends to assess the contribution of Agroecological farming systems on the household's food security and nutrition status in Karangura Sub-county Kabarole District. The researcher explored the features of the data from the secondary sources to identify literature to inform the report. Other literature included previous project reports of similar interventions from the district and partners implementing livelihood interventions in Kabarole District.

Household survey: Face to face interviews with the sampled households in Karangura Sub-county were employed. This method assessed the level of management and productivity of the farms, household dietary diversity and nutrition status of children aged 6-59 months. Research assistants reached out to the sampled households and conducted interviews in their homes. The household survey questionnaire was designed using kobo toolbox and uploaded on the Tablets for real time submissions of the responses and reduces on the errors during data entry. The children aged 6-59 months were assessed for stunting and wasting using anthropometric measurements; Stunting was assessed using Height for Age Z scores while wasting was assessed using Mid-Upper Arm Circumference.

Semi-structured interviews: Semi structured interviews were used in the study to explore the perceptions of farming households towards practices of agroecology and how it contributes to the household's food security and nutrition status.

2.3 Targeted Population

The study comprised 460 small holder farmers supported by The Association of Rwenzori Community (RCA) under the Mpanga Super Farmers programme (MSFP) with funding from Iles de Paix (IDP) and farmers not supported by any partner. The reason for using these categories of people was to compare the food security and nutrition situation for farmers that practiced agroecology and those that did not. Thus, this population was assumed to have relevant information for the study.

2.4 Sampling

This study was conducted in Karangura sub-county where a total of 460 households had been supported by RCA under the MSFP with funding from IDP to implement agroecological principles. In addition to this population, the researcher considered 460 farmers who were neither supported by the programme nor by any partner. Thus, a total population of 920 households was considered from which the sample was drawn.

Yamané's (1973) formula was adopted to determine the sample size of the study as shown below:

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

Where: n is the sample size,

N is the population size equal to 920

e is the permissible error (0.05).

$$n = 920 / (1 + 920(0.05)^2)$$

$$n = 278$$

Therefore, a total of 278 respondents were considered for the study. Of these, 50% (n=139) were supported by the IDP programme (MSFP) and the other 50% were not supported by the MSFP.

Households selected had a child aged 6-59 months. For households with more than one child aged 6-59 months, the youngest child was considered for the nutrition assessment.

2.5 Inclusion criteria

Households with children under five years in Karangura subcounty that were supported through the IDP Mpanga Super farmer Program in Agroecology and households with children under five years in Karangura sub-county that were not supported through the IDP Mpanga Super farmer Program in Agroecology were included in the study.

2.6 Exclusion Criteria

Households that did not consent to participate in the study were excluded. Households without children under five did not participate in the study. A household that had no adult responsible for caretaking for the children and for responding to the questions in the study were excluded from the study.

2.7 Data Management and Analysis

2.7.1 Quantitative data Analysis.

Experienced research assistants used mobile phones to collect the data. The collected data was downloaded from kobo collect to excel from where it was cleaned and coded. The data cleaning involved checking for accuracy and completeness to establish whether all questions in the questionnaire were answered. The cleaned data was then exported into SPSS version 22 (Statistical Packages for Social Sciences) and Excel Stat where it was analyzed. Both descriptive and inference statistics for the sample were employed to represent the population under study. For the continuous variables like age, the means were generated. Frequency tables, percentages and charts for categorical variables such gender, highest level of education attained, marital status etc were generated. Both tables and charts were interpreted for easy understanding.

2.8 Assignment of agroecological scores

For each agroecological practice, an agroecological scores was assigned to each surveyed household using the following criteria:

- A score of 0 was assigned for 0% implementation of the agroecological practice
- A score of 1 was assigned for 1-25% implementation of the agroecological practice.
- A score of 2 was assigned for 26-50% implementation of the agroecological practice.
- A score of 3 was assigned for 51-79% implementation of the agroecological practice.
- A score of 4 was assigned for 80-100% implementation of the agroecological practice.

3.0 KEY FINDINGS

3.1 Respondents' characteristics

Of all respondents interviewed, majority (60.8%) were female, 88.1% were married, 46.6% had 2 children aged between 6-59 months and (62.6%) had only primary school education (Table 1). Half (50%) of the respondents had received support from IDP/RCA while the other half had not. RCA is a NGO which works in holistic development, economic empowerment and in improving the living conditions in Rwenzori's mountainous rural zones through livelihood improvement, capacity building, conservation, good governance, human rights and child protection. RCA supports farmers directly to improve planning and to increase their productivity, all while respecting the environment by providing technical support to the farmers, organizing knowledge sharing sessions and capacity building workshops, setting up demonstration gardens, distributing learning tools in the methods of integrated farm planning and participatory action-research. In order to create an environment that welcomes a transition to agro-ecology in its region, RCA works with communal authorities in the area to have them consider the needs of small farmers and to support them over the long term. They also educate consumers on the benefits of eating local food that is healthy and free of chemicals.

Table 1: Respondents' characteristics

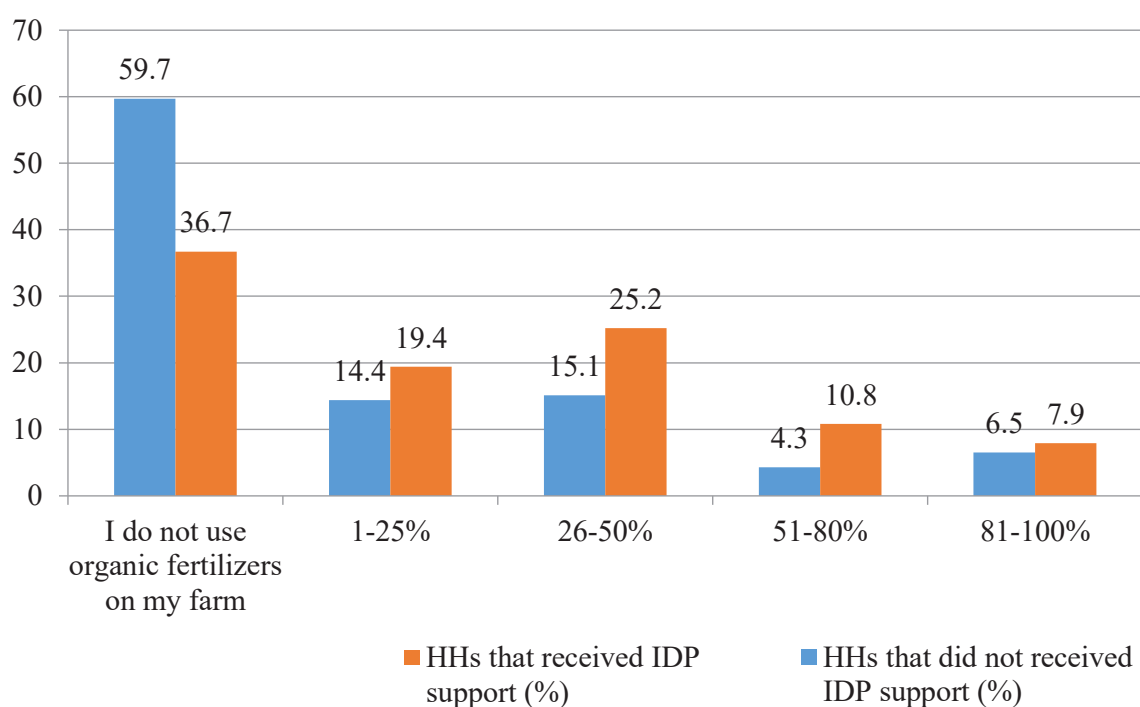
Respondents' characteristics	% of respondents
Gender	
Male	39.2
Female	60.8
Total	100
Marital status	
Married	88.1
Single	5.0
Divorced/Separated	3.6
Widowed	3.2
Total	100
Number of children aged 6-59 months	
0	0
1	32.4
2	46.6
3	15.6
4	5.4
Total	100

Respondents' characteristics	% of respondents
Highest attained education level	
Tertiary training	2.1
Secondary school	19.1
Primary school only	62.6
Informal education/no formal education	16.2
Total	100
Support from IDP/RCA	
Received support from IDP/RCA	50
Never received support from IDP/RCA	50
Total	100

3.2 Use of organic fertilizer on respondents' farms

A higher percentage of households that did not receive IDP support (59.7%) did not use organic fertilizers, whereas 36.7% of agroecological farming households refrained from using them (Table 2). In contrast, households that received IDP support are more likely to adopt extensive organic fertilizer use, with 18.7% applying it to 51-100% of their farm, compared to 10.8% of households that did not receive IDP support. Additionally, households that received IDP support tend to use organic fertilizers more intensively, with 25.2% utilizing them on 26-50% of their farm, surpassing the 15.1% reported by households that did not receive IDP support.

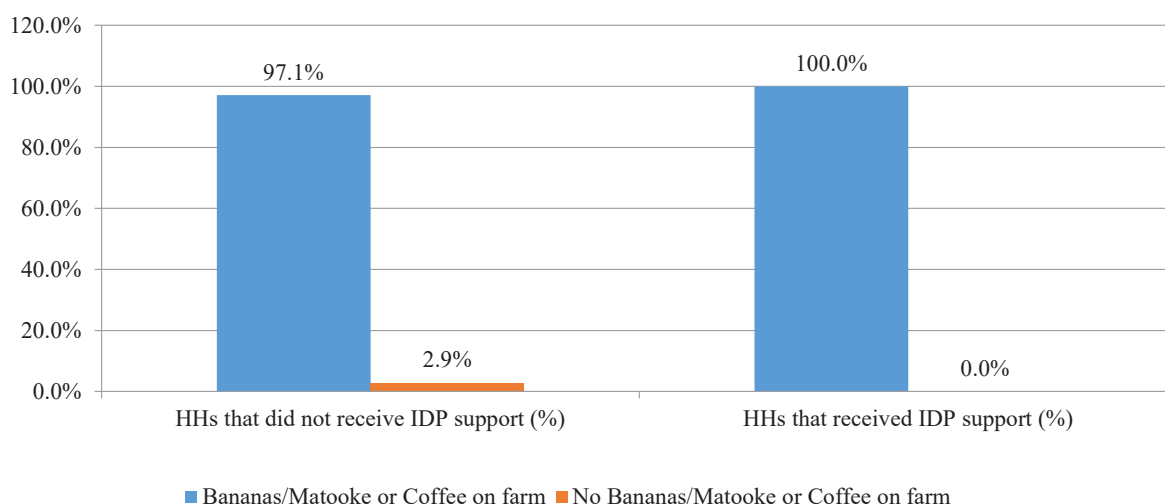
Figure 1: Rate of use of organic fertilizer on respondents' farms



3.3 Bananas/matooke or coffee production

All households that received IDP support practiced agroecological farming (100%) grew bananas/matooke or coffee (Figure 2). A significant majority (97.1%) of households that did not receive IDP support also grew these crops. The presence of bananas/matooke or coffee was highly prevalent among both groups, with a slightly higher rate among households that received IDP support. Bananas/matooke and coffee are common crops in the region, widely cultivated by both households that received IDP support and those that did not received IDP support. Households that received IDP support may be well-suited for these crops, contributing to their widespread adoption.

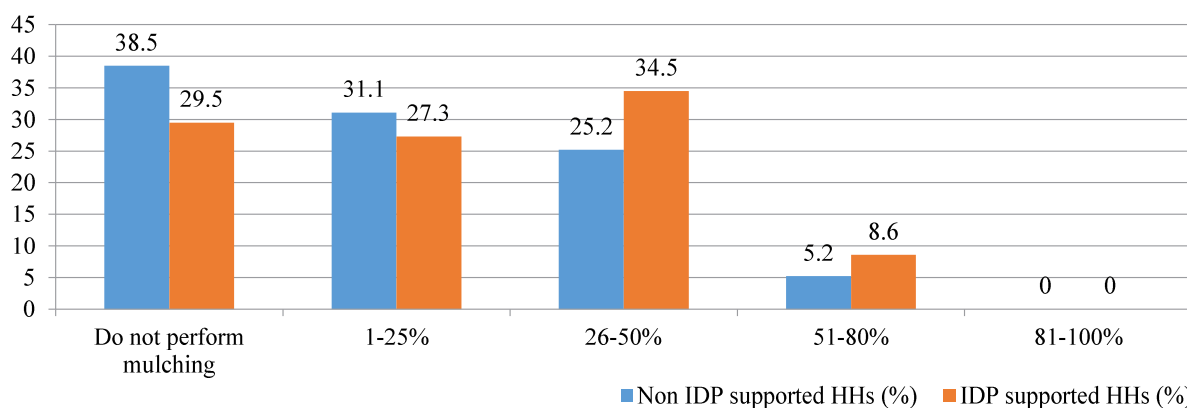
Figure 2: Integration of bananas/matooke or coffee production in farms



3.4 Use of banana/matooke or coffee plant mulch

The results show that households that 38.5% of respondents who did not receive IDP support did not mulch at all, whereas (34.5%) of those that received IDP support tended to mulch moderately (Figure 3). Although both groups had similar percentages of small-scale mulching (1-25%), households that received IDP support were more likely to engage in extensive mulching (51-80%) at 8.6% compared to 5.2% for households that did not receive IDP support. Notably, neither group reported complete mulching (81-100%). These findings suggest the need for more sensitization and training in mulching as an organic farming practice.

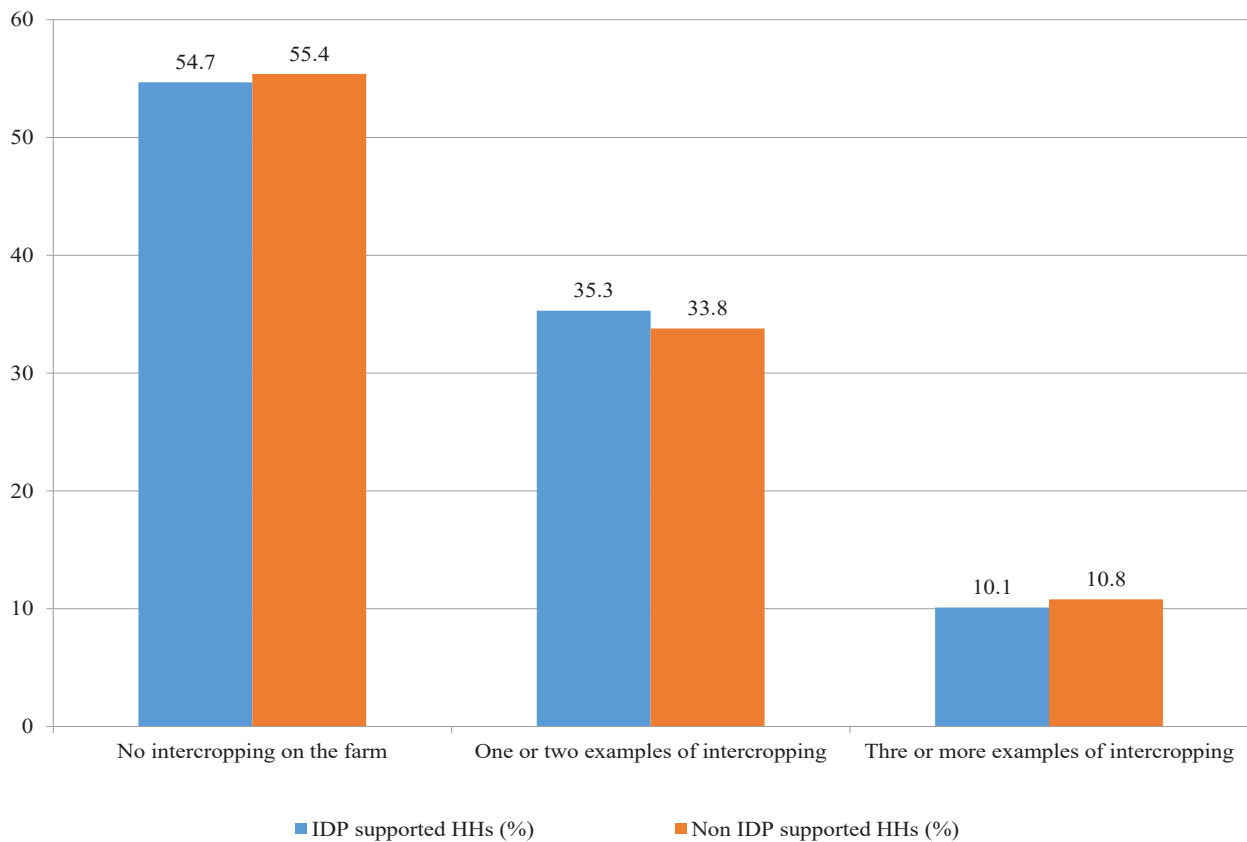
Figure 3: Banana/matooke or coffee plant use among HHs that receive IDP support and those that did not.



3.5 Intercropping among surveyed households

The results indicated that a majority of households, both that received (54.7%) and did not receive (55.4%) IDP support, did not engage in intercropping or have limited examples (one or two) on their farms (Figure 4). However, households that received IDP support slightly edged out households that did not receive IDP support in adopting intercropping, with 35.3% having one or two examples and 10.1% having three or more, compared to 33.8% and 10.8%, respectively. This suggests that IDP support may encourage slightly higher adoption of intercropping, promoting biodiversity and efficient resource use. Overall, there is room for increased adoption of intercropping practices among both groups to enhance farm resilience and productivity.

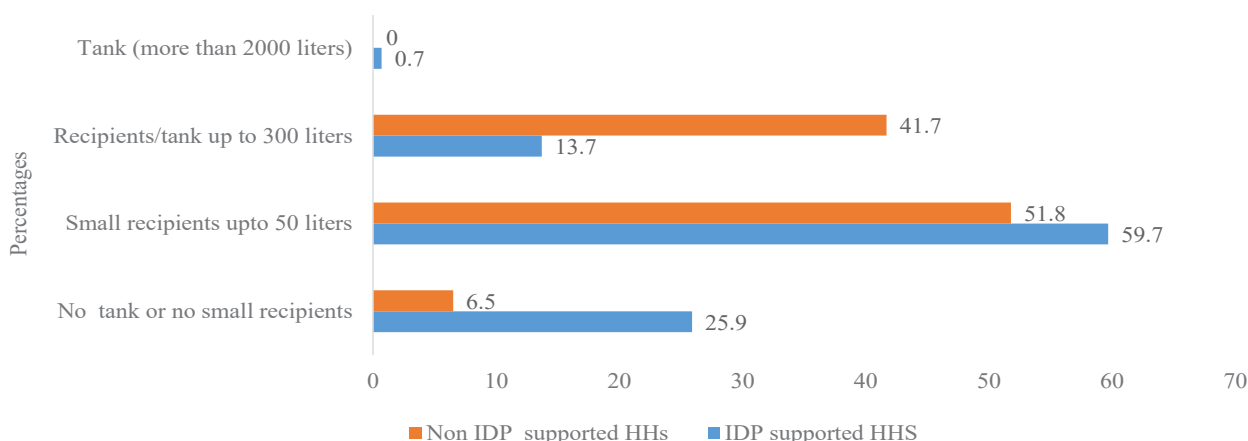
Figure 4: Intercropping among HHs that received IDP support and those that did not



3.6 Size of the tank to capture water from the roof

Households that received IDP support had more water harvesting systems, with 74.4% (59.7% + 13.7% + 0.7%) with some form of water capture, compared to 58.3% (51.8% + 6.5%) of households that did not receive IDP support (Figure 5). Additionally, those that received IDP support tended to have larger water storage capacities, with 13.7% having tanks up to 300 liters and 0.7% having tanks over 2000 liters, whereas households that did not receive IDP support only had none with tanks over 2000 liters, 6.5% with tanks up to 300 liters. This suggests that IDP support promotes water conservation and efficient use of resources. This can be attributed to the trainings in agroecological practices the group that received IDP support from agencies like RCA. However, results highlight the need for more training in water harvesting.

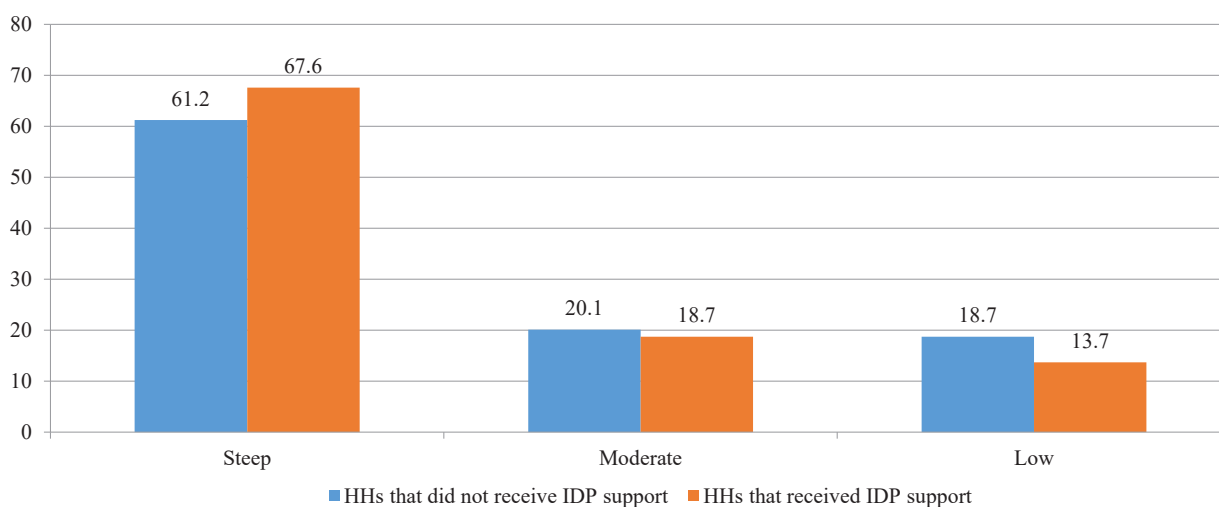
Figure 5: Water tanks/recipients among HHs that received IDP support and those that did not



3.7 Steepness present at respondents' farms

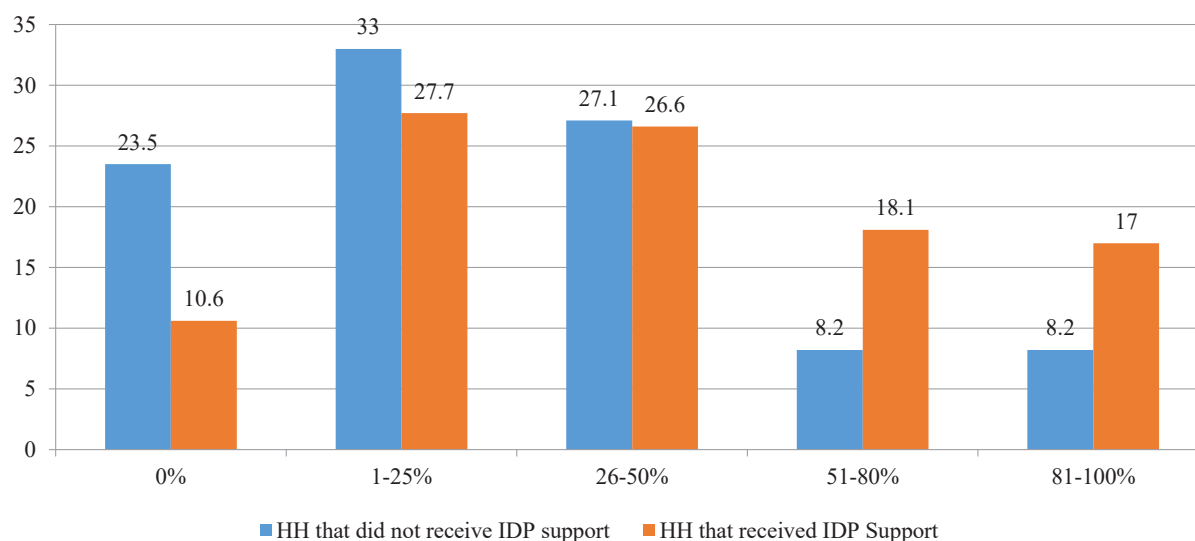
A majority of households in both groups had steep slopes on their farms, with a slightly higher percentage among households that received IDP support (67.6% vs 61.2%) (Figure 6). Households that received IDP support had fewer low-slope areas (13.7% vs 18.7%) and similar moderate-slope areas (18.7% vs 20.1%) compared to those households that did not receive IDP support.

Figure 6: Steepness present at respondents' farms



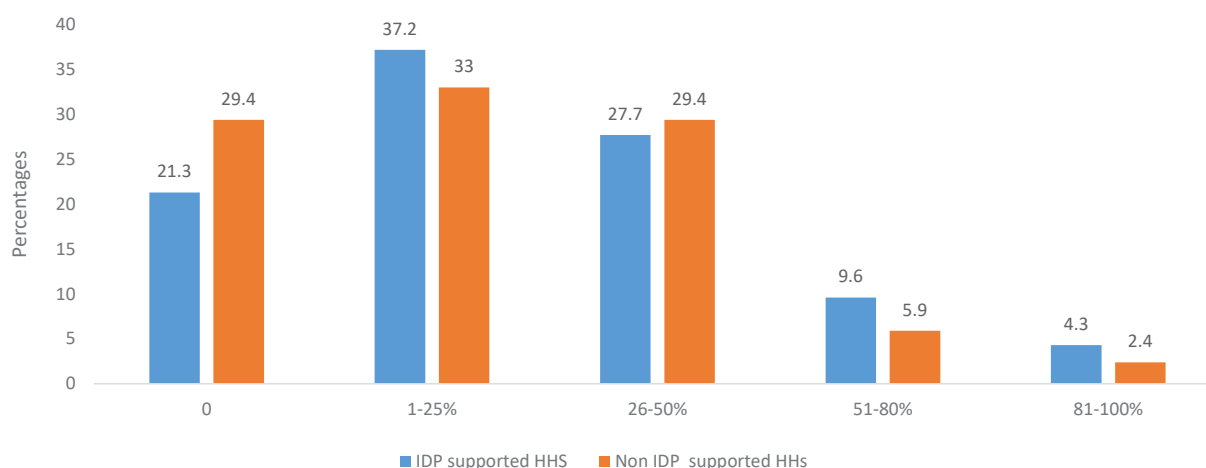
3.8 Protection of farms with trenches

Households that received IDP support had a lower percentage of unprotected steep areas (10.6% vs 23.5%) (Figure 7). A higher percentage of households that received IDP support had extensively protected steep areas (81-100%: 17.0% vs 8.2%). This can be attributed to the trainings in agroecological practices the group that received IDP support from agencies like RCA. However, results highlight the need for more training in agroecological farming practices to increase its coverage. Both groups had similar percentages of partially protected steep areas (1-25% and 26-50%).

Figure 7: Level of farm protection by trenching among HHHs that received IDP support and those that did not


3.9 Extent to which the farms' steep parts are protected by grass bands, mulching, lined planting or retention plants/grass

Findings indicated that households that received IDP support had a lower percentage of unprotected steep areas (21.3% vs 29.4%). Both groups had similar percentages of partially protected steep areas (1-25%, 26-50%) (Figure 8). Households that received IDP support had a slightly higher percentage of extensively protected steep areas (81-100%: 4.3% vs 2.4%). This can be attributed to the trainings in agroecological practices among households that received IDP support from agencies like RCA. However, results highlight the need for more training in protection of steep parts by grass bands, mulching, lined planting and use of retention plant/grass.

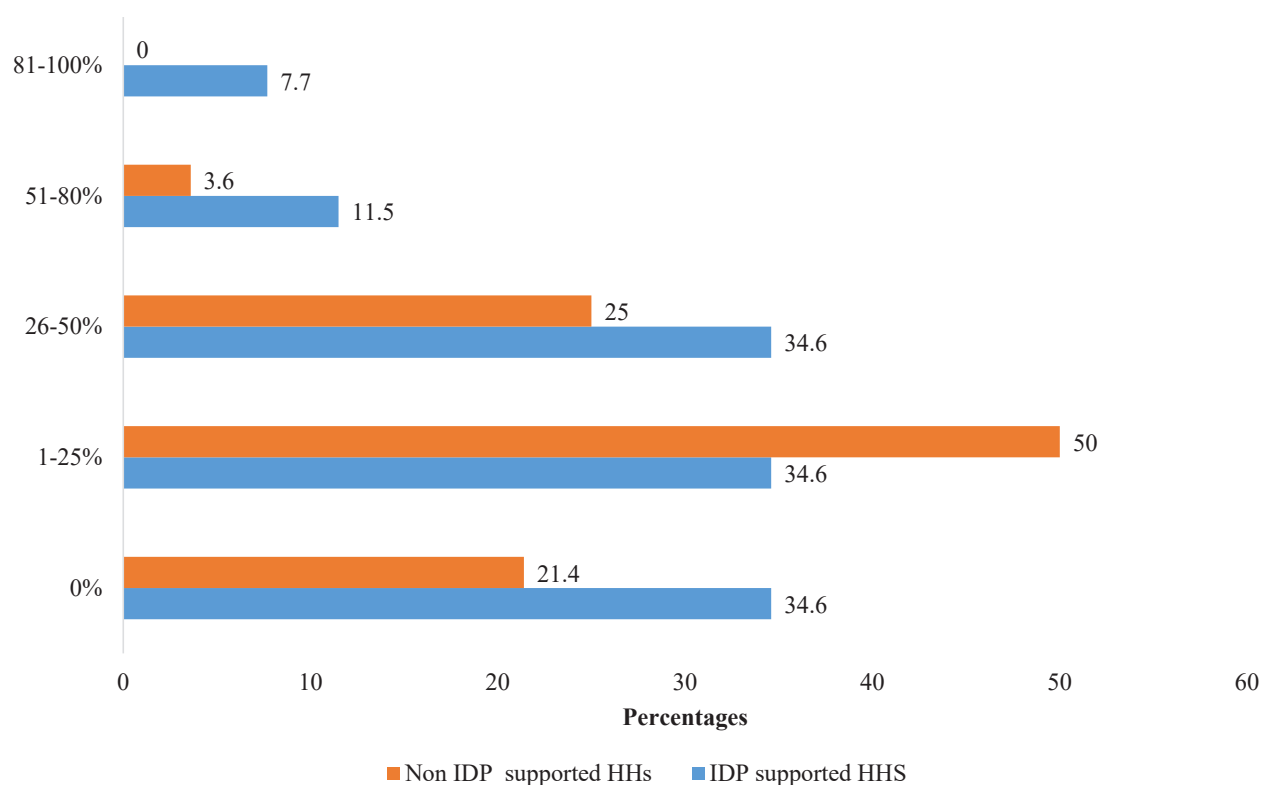
Figure 8: Extent to which farms' steep parts are protected by grass bands, mulching, lined planting or retention plants/grass among HHHs received IDP support and those that did not


3.10 Extent to which farms are protected by trenching or terracing or water infiltration basins

Households that received IDP support had a lower percentage of unprotected moderate slopes (11.5% vs 21.4%) (Figure 9). Both groups had similar percentages of partially protected moderate slopes (1-25% and 26-50%). Households that received IDP support had a higher percentage of extensively protected moderate slopes (51-80%: 11.5% vs 3.6% and 81-100%: 7.7% vs 0%). This can be attributed

to the trainings in agroecological practices the group that received IDP support received from agencies like RCA. However, results highlight the need for more trainings in protection of farms by trenching, terracing or use of water infiltration basins.

Figure 9: Extent to which farms are protected by trenching or terracing or water infiltration basins among HHs that received IDP support and those that did not



3.11 Animal ownership among surveyed respondents

Households that received IDP support differed from those that did not receive IDP support in their livestock composition (Table 6). Households that received IDP support kept more goats, chicken, turkeys and pigs at 64.3%, 67.9%, 91.7% and 100% respectively. Overall, agroecological farming practices promoted diversification, integration, and improved productivity. The higher productivity and diversity among households that received IDP support can be attributed to the trainings in agroecological practices they received from agencies like RCA.

Table 2: Animal ownership among households that received IDP support and those that did not

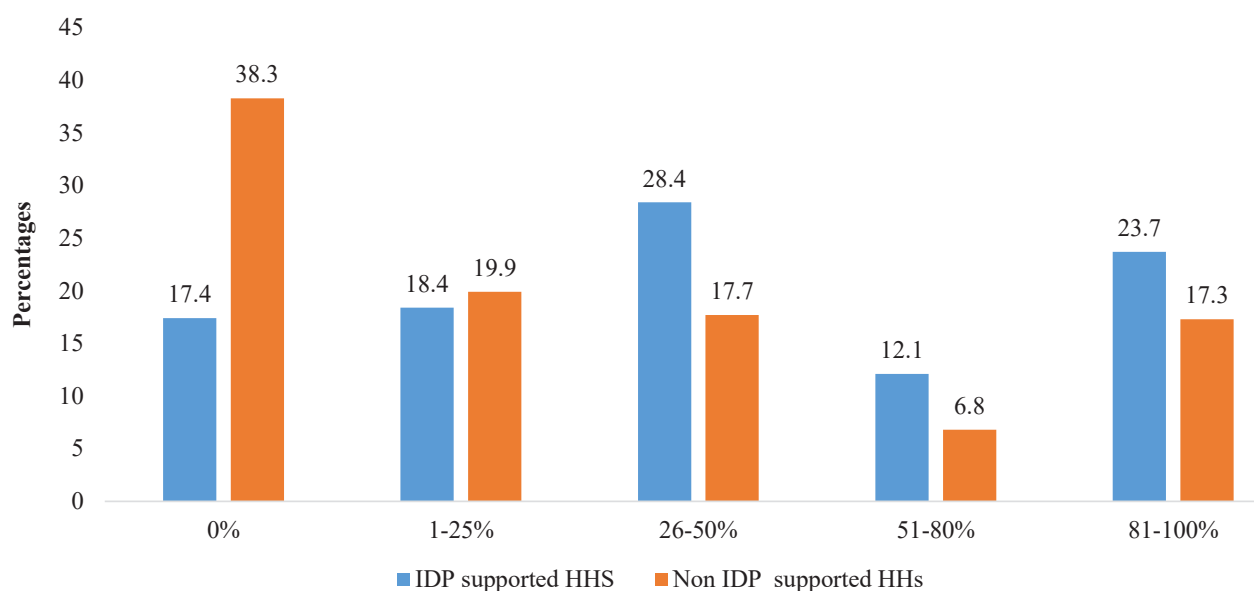
Livestock	N	% HHs that did not receive IDP support	% HHs that received IDP support
Cows	52	55.8	44.2
Calves	13	69.2	30.8
Mature goats	414	35.7	64.3
Kids (small goats)	249	38.2	61.8
Chicken	863	32.1	67.9
Turkeys	12	8.3	91.7
Rabbits	33	72.7	27.3

Livestock	N	% HHS that did not receive IDP support	% HHS that received IDP support
Pigs	18	0.0	100
Piglets	5	20.0	80.0

3.12 Sourcing of animal feed

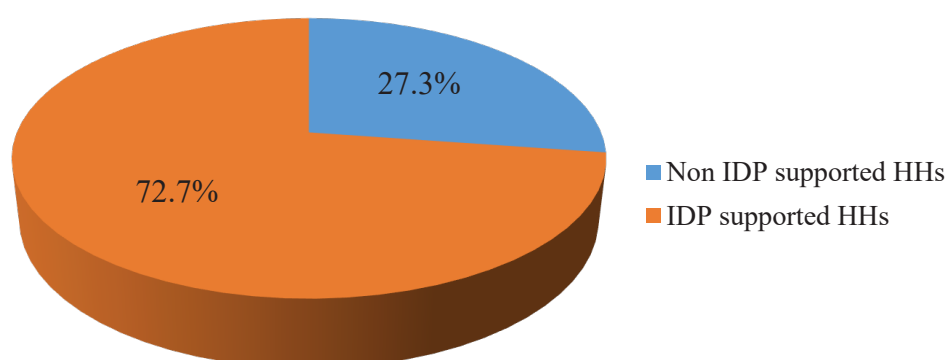
Households that received IDP support exhibited a notable difference in animal feed sourcing compared to those that did not receive IDP support. Households that received IDP support had lesser reliance on external sources, with only 17.4% obtaining no animal feed from their farm compared to 38.3% of households that did not receive IDP support (Figure 10). Households that received IDP support achieved higher self-sufficiency rates, with 64.2% producing 26-100% of their animal feed, compared to 41.8% of those that did not receive IDP support. This indicates that agroecological practices promote local feed production, self-sufficiency, and reduced dependence on external inputs, fostering a more sustainable and resilient food system.

Figure 10: Proportion of animal feed sourced from own farm among HHS that received IDP support and those that did not



3.13 Farms with trees

The study revealed that 72.7% of households that received IDP support had trees on their farms, indicating a strong emphasis on integrating trees into their farming systems (Figure 11). About 27.3% of households that did not receive IDP support did not have trees on their farm, potentially indicating a focus on conventional farming practices or other limitations. Households with low coverage of trees stand risks including: the loss of biodiversity and the breakdown of ecosystem functions that regulate food chains, nutrient cycling, and the incidence and severity of pests, diseases, and weeds.

Figure 11: Proportion HH with trees on their farms among HHs that received IDP support and those that did not


3.14 Sourcing of firewood from own farm

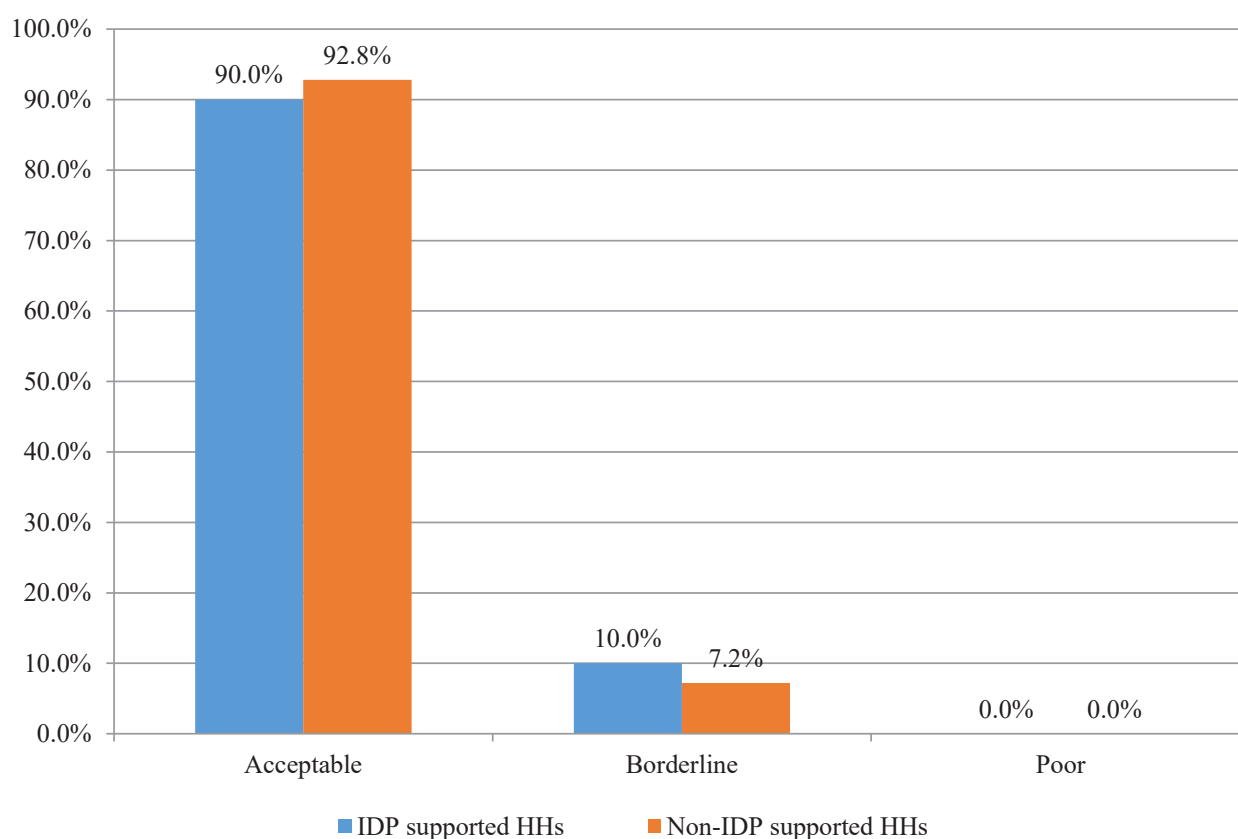
Results showed that households received IDP support exhibited a stronger tendency towards self-sufficiency in firewood sourcing, with 28.8% relying on their own land for 51-100% of their firewood needs, compared to only 10.8% of households that did not receive IDP support (Table 7). In contrast, households that did not receive IDP support relied more heavily on external sources, with 67.6% obtaining only 1-25% of their firewood from their own land. This suggests that agroecological practices promote local resource utilization and reduce dependence on external inputs, fostering a more sustainable and resilient energy strategy. Overall, households that received IDP support demonstrated a greater commitment to self-sufficiency and sustainable energy practices.

Table 3: Proportion of firewood sourced from own land and garden among households that received and that did not

Firewood that comes from your own land and gardens	HHs that did not receive IDP support	HHs that received IDP support
I do not use firewood	5.1	2.9
1-25%	67.6	49.6
26-50%	16.5	18.7
51-80%	7.2	14.4
81-100%	3.6	14.4
TOTAL	100	100

3.15 Food consumption scores among study participants

The Food Consumption Score (FCS) is a complex indicator of a household's food security status, as it considers not only dietary diversity and food frequency but also the relative nutritional importance of different food groups (on the other hand, its use of relatively long, 7 days recall period, might make the data less precise). The study showed similar proportions between those who received IDP support (90%) and those who did not receive IDP support (92.8%), but a slightly higher borderline rate with households that received IDP support (10% vs 7.2%) (Figure 12). While IDP support could have provided essential assistance, it may not necessarily translate to improved household food security, warranting further investigation into the effectiveness of support programs.

Figure 12: FCS' among HHs that received IDP support and those that did not


3.16 Average agroecological scores by idp support status

Households that received IDP support exhibited higher average Agroecological scores (mean = 1.45) compared to those that did not receive IDP support (mean = 1.07) (Table 8).

Table 4: Agroecological scores by IDP support

IDP Support	Min Score	1st Quartile	Median	Mean	3rd Quartile	Max Score
Did not receive IDP support	0.20	0.60	1.00	1.073	1.40	2.80
Received IDP support	0.20	1.00	1.40	1.450	1.80	3.20

3.17 Correlation between average agroecological scores and FCS, HFIAS, WAZ, HAZ & MUAC

A low positive correlation ($r = 0.362$) existed between the Average Agroecological Score and Food Consumption Scores (FCS). Correlation between the Average Agroecological Score and Household Food Insecurity Access Scores (HFIAS), Weight for Age Z-scores (WAZ), Height for Age Z-scores (HAZ) and Mid Upper Arm Circumference (MUAC) was negligible (Table 9). According to Hinkle, Wiersma & Jurs, 2003, correlation between 0.0 to .30 (.00 to -.30) is negligible while correlation between .30 to .50 (-.30 to -.50) is low. While IDP support could have provided essential assistance, it may not necessarily translate to improved household food security and nutrition status, warranting further investigation into the effectiveness of support programs.

Table 5: Correlation between average agroecological scores and FCS, HFIAS, WAZ, HAZ & MUAC

Parameter	Correlation coefficient (r)
FCS	0.362
HFIAS	-0.110
WAZ	0.056
HAZ	0.090
MUAC	-0.014

4.0 CONCLUSIONS

Table 6: Key findings on research objectives

RESEARCH OBJECTIVE	KEY FINDINGS	RECOMMENDATIONS
1. To assess the level of management and productivity of the farms of IDP supported households and those that are not supported by IDP.	<ul style="list-style-type: none"> ✓ IDP supported households had better farm management practices; they had a higher reliance on agroecological farming practices (such as mulching, intercropping, protection of farms by trenching/terracing/water infiltration basins, protection of steep parts of farm with grass bands/mulching/lined planting/retention plants grass) than non-IDP supported households. ✓ IDP supported households had better farm management practices; they had higher ownership of animals, had more trees on their farms, harvested more water from their roofs, sourced more firewood and animal feed from their own farms than those that did not. 	
2. To determine the Food Consumption Score among households among IDP and non-IDP supported households in Karangura Sub-county.	<ul style="list-style-type: none"> ✓ There was only a weak correlation between agroecological scores and FCS ✓ IDP support may not necessarily translate to improved FCS' 	<ul style="list-style-type: none"> ✓ There is need for further implementation and investigation into the effectiveness of support programs on FCS.
3. To determine the household food security situation among IDP and non-IDP supported households.	<ul style="list-style-type: none"> ✓ There was a negligible correlation between agroecological scores and HFIAS ✓ IDP support may not necessarily translate to improved food security 	<ul style="list-style-type: none"> ✓ There is need for further implementation and investigation into the effectiveness of support programs on HFIAS.

RESEARCH OBJECTIVE	KEY FINDINGS	RECOMMENDATIONS
4. To determine the nutrition status of children aged 6-59 months among IDP and non-IDP supported households.	<ul style="list-style-type: none"> ✓ There was a negligible correlation between agroecological scores and nutrition status (WAZ, HAZ and MUAC) ✓ IDP support may not necessarily translate to improved nutrition status 	<ul style="list-style-type: none"> ✓ To improve nutrition status, the program may need to consider nutrition-sensitive agroecological approaches that promote sustainable agricultural practices.

4.1 Proposals for future research

- ✓ Determine the impact of Agroecological practices on nutrition status and HH food security after an extended period of 3-5 years.
- ✓ Establish “qualitative” factors (such as the impact of pesticides on health, the nutritional quality of Agroecological foods, the availability of vegetables throughout the year, the consumption of macronutrients and micronutrients).
- ✓ Explore farmers’ attitudes towards, and perceptions of AE practices.

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6.0 ANNEXES

6.1 Questionnaire to assess the contribution of Agroecological farming systems on household food security and nutrition status in Kabarole district.

S/N	QUESTION	RESPONSE
1.	Name of the data collector	
DEMOGRAPHIC CHARACTERISTICS.		
2.	Name of the parish	1. Kamabale 2. Kibwa 3. Nyakitokoli
3.	Name of the village	
4.	GPS coordinates	
5.	Name of Respondent	
6.	Phone number	
7.	Gender of respondent	1. Male 2. Female
3.	Marital Status	1. Married 2. Single 3. Divorced/Separated 4. Widowed
4.	Age of Respondent (in years)	
5.	Education level of respondent	1. Informal education/No formal Education. 2. Primary school only 3. Secondary school 4. Tertiary training.
6.	Number of persons in the household (<i>Adults and children</i>)	
7.	Number of children aged 6-59 months living in this household.	
8.	What is your major source of household income?	1. Crop farming 2. Animal husbandry 3. Business (Self-employed) 4. Employed (Salary). 5. Mining
9.	Has your household been supported by IDP/RCA	1. Yes 2. No

ASSESSMENT OF FOOD CONSUMPTION SCORE

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night.

How many days over the last 7 days, did most members of your household (50%+) eat the following food items, inside or outside the home? And what was their source? (Use codes below, write 0 if not consumed in the last 7 days).

Note for enumerator: Determine whether the consumption of fish, milk was only in small quantities.

	Foods	Number of days		How was this food acquired?
		Eaten in the past 7 days		Write the main source of these foods consumed over the past 7 days
		If 0 days, do not specify the main source.		
			FCS	
1.	Cereals, grains, roots and tubers, such as: Rice, pasta, bread, sorghum, millet, maize, potato, yam, cassava, white sweet potato, plantain, noodles, bread, porridge, chapati, mandazi, biscuits. Any foods made from millet, sorghum, maize, rice, wheat.	__	FCSStap	__
2.	Pulses/legumes, nuts and seeds, such as: beans, cowpeas, lentils, soy/soy products, pigeon peas, chickpeas, ggroundnuts, or other nuts.	__	FCSPulse	__
3.	Milk and other dairy products, such as: milk, yoghurt, cheese, and other dairy products [Exclude margarine/butter or small amounts of milk for tea/coffee]	__	FCSDairy	__
4.	Meat, fish and eggs, such as: goat, beef, chicken, pork, fish, including canned tuna, insects, escargot, and/or other seafood, eggs (meat and fish consumed in large quantities and not as a condiment)	__	FCSPr	__
5.	Vegetables and leaves, such as: spinach, onion, tomatoes, carrots, peppers, green beans, lettuce, etc	__	FCSVeg	__

6.	Fruits, such as: bananas, apples, lemon, mango, papaya, apricot, peach, etc	__	FCSFruit	__
7.	Oil/fat/butter, such as: vegetable oil, palm oil, shea butter, margarine, and other fats/oil	__	FCSFat	__
8.	Sugar, or sweet, such as: sugar, honey, jam, candy, cookies, pastries, cakes and other sweet (sugary drinks)	__	FCSSugar	__
9.	Condiments / Spices, such as: tea, coffee, cocoa powder, salt, garlic, spices, yeast/baking powder, tomato paste or sauce, and small amounts of meat, fish, milk or other food items consumed as a condiment	__	FCSCond	__
Code book list name: SRF	Food acquisition codes			
	100 = Own production (crops, animal)			
	200 = Fishing / Hunting			
	300 = Gathering			
	400 = Loan			
	500 = Market (purchase with cash)			
	600 = Market (purchase on credit)			
	700 = Begging for food			
	800 = Exchange labor or items for food			
	900 = Gift (food) from family relatives or friends			
	999 = Other			
	1000 = Food aid from civil society, NGOs, government, WFP etc.			
HOUSEHOLD FOOD INSECURITY ACCESS SCALE (HFIAS).				
Respondent for this section: Ask questions to EITHER the person who identifies themselves as the household head; their spouse or both household head and the spouse. However, ask these questions PREFERABLY TO THE WOMAN.				
Explain: "For each of the following questions, think about what happened over the past 4 weeks (30 days). Please answer YES if this has ever happened and NO if it has never happened.				
10.	Over the past 4 weeks, did you or someone else in your household worry that your household would not have enough food?	Yes No		

11.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
12.	Over the past 4 weeks, were you or any household member not able to eat the kinds of foods you preferred because of lack of resources? (e.g. Of preferred foods rice, eggs, milk...).	Yes No
13.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
14.	Over the past 4 weeks, did you or any household member have to eat limited variety of foods due to lack of resources? (e.g. Rice instead of pasta Give examples to indicate monotony)	Yes No
15.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
16.	Over the past 4 weeks, did you or any household member have to eat some foods that you really did not want to eat because (e.g. Eating porridge instead of a meal) of lack of resources to obtain other types of food?	Yes No
17.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
18.	Over the past 4 weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes No
19.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
20.	Over the past 4 weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	Yes No
21.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
22.	Over the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to buy food?	Yes No

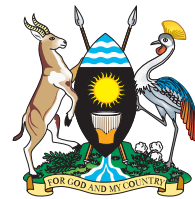
23.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
24.	Over the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes No
25.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
26.	Over the past 4 weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes No
27.	How often did this happen over the past 4 weeks	Rarely (1-2 times) Sometimes (3 to 10 times) Often (more than 10 times)
NUTRITION SCREENING (Children aged 6-59 months)		
28.	Name of the child	
29.	Date of birth of the child	
30.	Age of the child in months.	
31.	Sex of the child	
32.	Weight of the child in Kgs	
33.	Height of the child in centimetres	
34.	Oedema	
35.	MUAC of the child in centimetres	
36.	Has an of the children in this household ever been diagnosed with Malnutrition?	1. Yes 2. No
37.	Were they admitted to any supplementary feeding program?	1. Yes 2. No

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