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The Common Food storage and environmental practices affecting the Dimensions of the Food security of The People in Adjumani district: A case study of Ciforo Sub County in Uganda

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Abstract: This study was conducted to understand the influence of the common food storage and environmental practices affecting the dimensions of the food security of the people in Adjumani district. The study covered a sample of 150 respondents who are farmers and the data were collected through a questionnaire and personal interview using both probability and non-probability sampling technique. Designing field data recording sheets was done before data collection and data collection was done with appropriate quality control. Data analysis was done using Statistical Package for Social Scientists. The results indicated that the people of Ciforo sub- county, Adjumani district have poor food storage system where the majority 73% (see table 1) store their food reserve in the huts in which they sleep forcing them to sell off the food reserve and the majority 58% of the farmers produce less than 1 ton of food per year on average (See table 3). This indicates that the farmers have poor food levels where the average majority 61.67% of the respondents disagreed that their households have food availability, food stability, ability to access and utilize appropriate levels of food in their households from April to June every year (see table 2). Based on these findings the study recommended that sensitization of the community about poor storage facilities leading to post harvest losses affecting food levels. Government should also enact laws and policies at national level to make agriculture attractive to farmers by revamping cooperatives that should provide support for post-harvest management.
Keywords: Food storage, Dimensions, Food security, people, Ciforo, Post Harvest Losses and farmers.

INTRODUCTION

Nearly 240 million people in sub-Saharan Africa or one person in every four, lack adequate food for a healthy and active life, and record food prices and drought are pushing more people into poverty and hunger [1]. The variability of food production in Africa suggests the continuing vulnerability of agriculture sector, particularly food production to infestation by insect pests, diseases and the tragic destruction caused by war and civil strife. In high rainfall, high productivity zones food insecurity is associated with extreme and increasing pressure on land, fragmentation of holdings and declining soil fertility. In low rainfall and drought prone areas overgrazing and shifting cultivation on increasingly marginal lands continue to undermine an already fragile ecological balance. Food insecurity has also been aggravated by the fact that runaway urbanization has been putting pressure on the domestic food system. Macroeconomic policies and incentives, research, extension and support services have not responded adequately to the requirements of the small holder African farmers and pastoralists. Any adverse movement in any one or more of these variables will adversely affect the food security of a household.

The share of Ugandans suffering from food insecurity measured in terms of caloric intake is alarmingly high with low rates of income poverty [2]. Household food security also varies across regions, agro-ecological zones and districts. Many of the factors underlying food insecurity are most severe in northern Uganda. Majority of the population is poor. These people cannot access enough nutritious food to live a healthy and active life and are continually forced to skip meals and cut portion sizes. Housing is much more rudimentary in the north with more than half living in huts with thatched roofs and earth floors. Sanitation is much poorer than elsewhere in the country with almost a quarter of households devoid of toilet facilities and forced to defecate in the bush. Of course both factors are an indicator of poverty but poor quality housing, sanitation and social life practice of having no pit latrine and defecating in the bush can also lead to

disease, a leading cause of malnutrition and food insecurity [3].

Despite the challenges mentioned in the previous paragraph that is being faced generally in Uganda, especially in northern Uganda, there is adequate food that is being produced in Adjumani district. There is variation in utilization of the food that is produced from one household to another depending on the storage facilities and social life of the people in a household or family.

This research particularly aims to tackle community social life issue of food storage practices which affect food security and the findings can add value to tackling the social life challenge associated with securing food and nutrition security for the farmers. Poor storage practices leads to post harvest losses and early sale of agriculture products. Research in the community's agriculture product storage practices of the people of Adjumani has significant role to play to address household food security through enacting bylaw and sensitization of the community by Government in Adjumani and Uganda as whole. This research should stimulate discussion with stakeholders and the general public during the policy or community bylaw formulation in Adjumani. This research makes recommendations for policy and prompt discussion of where research and innovation can contribute most to solving the community's poor food storage practices, including providing underpinning evidence for sub county bylaw, district ordinance or policy development in Ciforo Sub- county, Adjumani district or in Uganda as a whole respectively.

A lot of work has been done in the area of food security although the conceptualization of food security has developed in recent decades. The concept has been traced from food availability notion to issues of entitlements to yet another paradigm on political failure as the cause of food insecurity. Initially the focus was mainly on food availability at national or international level, faulting agricultural underproduction and other supply side factors. This focused mainly on promoting national self-sufficiency which produced a marked response in increased global cereal production. Attention then shifted to the household and individual level, more so after the food crises that characterized Africa in the 1980s [4].

A lot has also been done in the production aspects of food, there are many factors that leads to adequate production of food like adequate rainfall that comes in two seasons, natural soil fertility, use of improved agriculture inputs like seeds, improved technology for land opening, weeding, harvesting and pest and disease control. Research has also been done in causes of household food insecurity, for example, vulnerability of agriculture particularly food production to infestation by insects pests and the tragic destruction caused by war and civil strife. In high rainfall, high productivity zones food insecurity is associated with extreme and increasing pressure on land, fragmentation of holdings and declining soil fertility. In low rainfall and drought prone areas overgrazing and shifting cultivation on increasingly marginal lands continue to undermine an already fragile ecological balance. Food insecurity has also been aggravated by the fact that runaway urbanization has been putting pressure on the domestic food system. Macroeconomic policies and incentives, research, extension and support services have not responded adequately to the requirements of the small holder African farmer and pastoralists.

A lot has also been done on determinants of household food availability which depends on many other variables that includes net food production, land, labor, capital, knowledge and technology, food produce, food supply in market, cash flow from rent income, wages, profits from sale of enterprises or sale of assets, debts and other liabilities, net stock, net receipt in kind, gifts, credits and transfers from Government and other internal and external donors. Any adverse movement in any one or more of these variables will adversely affect the food security of a house hold [5].This research however will focus only on the food storage practices of the people how it relates to household food levels. The research intends to determine whether the food storage practices of the people have positive, negative or no relationship at all to food levels in Ciforo Sub- county, Adjumani district.

Amartya [6] noted that the persistence of extensive hunger in a world of unprecedented prosperity is one of the worst. Massive endemic hunger causes great misery in many parts of the world, debilitating hundreds of millions and killing a sizeable proportion of them. The African food output has declined and the prevalence of poverty in Africa puts it in a very vulnerable situation. Most of the world's poorest countries are in Africa and many of these face chronic food insecurity.

Ntozi [7] noted that the share of Ugandans suffering from food insecurity measured in terms of caloric intake is alarmingly high with low rates of income poverty. The food insecurity problems in Uganda are attributed to reduced yields, limited adoption of modern agriculture practices, rapid population growth, poor and insufficient storage facilities, inadequate social and food policies, poor distribution methods and unbalanced diet. The food security situation in Adjumani is further complicated by the refugees from South Sudan, prevalent crop pests and diseases, practices of traditional agricultural production methods

It is estimated that the lack of adequate and effective storage in Africa results in one-fourth of all food produced being lost due to spoilage, insects and rodents. What is not lost but consumed suffers significant nutritional decline and what is not lost but sold is generally at depressed market prices due to excess supply in the market on a seasonal basis and decreased quality of the product due to poor storage. We know that simple storage bins are a more cost effective alternative than increasing crop yields as a way to enhance food security. Currently, for most of Africa, the primary crop storage facility is still the home. The seasonality of food production and in particular crops with synchronous maturity are a particular problem for small scale farmers whose inadequate storage facilities force them either to sell the crop when prices are low or assume the risk of high storage loss. Farmers will not produce more if the results of increased production do not result in any perceived gains. Improved access to storage facilities directly influences agricultural production decisions and improve household food dimensions which indicates food security status of the farmers [8].

Several recent UN agency and other reports conclude that even if practical steps are taken now to try to mitigate the effects of climate change, the world will become increasingly food insecure over the next few decades. Climate change as a result of environmental destruction will exacerbate existing threats to food security [9]. Rains are no longer reliable and comes in erratic ways as a result of damage of the environment by farmers for example bush burning which destroys the biomass and increase greenhouse gases in the atmosphere. The rains are either too much leading to floods or inadequate leading to drought and all these are effects due to damage caused by human beings on the environment for example bush burning which destroys the biomass and hay for livestock leading to destruction of exposed crops in the field by stray animals [9].

In addition, a United Nations Environment Programme (UNEP) report predicts that up to 25% of the world's food production is likely to be lost by 2050, as a result of "environmental breakdowns" [10]. These breakdowns include accelerated threats from invasive insects, diseases and weeds, which are projected to reduce yields by up to 6% worldwide, as well as increased water scarcity, which is projected to reduce crop yields by up to 12% worldwide [10]. These examples are included in the pathway of, increased frequency and intensity of extreme climatic events such as heat waves, droughts, desertification, storms, cyclones, hurricanes, floods; Sea-level rise and flooding of coastal lands, leading to salination and or contamination of water, agricultural lands and food; Hygiene and sanitation problems leading to increased burden of infectious disease; Reduced forest productivity; Proliferation of pest species, plant and livestock diseases [9].

MATERIALS AND METHODS

Research design

This is a case study research design where sample of the household in Ciforo Sub county, Adjumani district was studied intensively by conducting personal interview using questionnaire and structured interview to collect primary data from household heads or their spouses to provide a numeric explanation of the relationship between social life, storage and timing of sale of food produced and food security of the people [11].Concurrent procedures of converged quantitative and qualitative data was used in the study in order to provide a comprehensive analysis of the research problem [11].The case study was not generalized but used to determine the present situation and make practical improvement on food security in Ciforo Sub-county, Adjumani district.

Area of study

The survey was carried out in Ciforo Sub-county, Adjumani district. Adjumani district planning unit [12] reported that the district has nine Sub-counties and a town council and there are fifty four parishes and two hundred and fourteen villages.

The district is located in North Western Uganda lying between latitude 32^{o} 4^{1} and $39^{o}37^{1}$north and longitude $31^{o}21^{1}$and 32^{o} east. The district is bordered by Sudan in the North East, the Nile in the West and Amuru in the South East. The district covers an area of 3128km^2, 28% of which is covered by water that includes river Nile and many streams. Other geographical feature includes highlands, undulating land rocks and forests. Savannah woodlands and grasslands of 0.5-2 meters height cover the remaining part of the district. Overall the district has moderate climatic condition. The district receives between 750-1500mm of rainfall annually. Rainfall season is described as unreliable and occurs between April- June and August- November with peak rainfall in May. Dry and windy conditions are experienced between December and March. The annual mean temperature ranges from 19^{o}c to 36^{o}c [13].

The district lies in a livelihood zone of cassava, sorghum, Simsim, livestock and fishing zone. The main economic activities in the region are agriculture (crop farming and livestock keeping), fishing and trading in various commodities. The Land is available for both crop and livestock farming. Households obtain a bigger fractions of food they need from own production. The Road access is poor with 99 percent murrum. Every village is served with a small scale markets that operates daily, weekly or monthly. Adjumani soils were formed as a result of geological and weathering processes. They are mainly

hydromorphic soils characterized by undifferentiated river alluvium dominated by grey and yellow sandy clays. Although all soils in the district are generally fertile, Itirikwa sub-county has the richest soils. The forest cover in Adjumani is poor. The Central forests reserves in the District are covered with tropical high forests, woodlands, grasslands some bush lands and wetlands and impediments [14].

Study population

The 2002 Population and Housing Census established the district's total population (East Moyo County) at 201,493, of which 50.4% were female and 49.6% were male. The refugee population from Sudan constituted 25.1% of the overall population (50,556). Ciforo Sub- County has 8135 households with a total population of 42237 people of which 21163 are males and 21074 are females. The Uganda poverty status report [15] indicates that majority of farmers (82%) depended on subsistence farming and 3 percent depended on business enterprise. Subsistence farming by 2002 was more predominant (93%) in rural area compared to (7%) in urban area [14]. There are approximately 28,746 crop farmers in the district; 50.2 percent of the working population. Over 80percent of the District's population is involved in crop production and only using 8 percent of the arable land. This means the 92 percent of the arable land is still untapped and thus offering potential for Commercial farming.

The current climatic condition in the District favours growth of food crops such as Cassava, sweet potatoes, sorghum, simsim and soya beans, cotton, upland rice, maize, groundnuts and soya beans. These crops if grown on large scale can offer a big commercial opportunity for the district that can be exported to South Sudan and the neighboring district. The major crops grown in Adjumani District were cassava, Sweet potatoes, simsim, maize, groundnuts and sorghum in that order and Ciforo has 22714 plots of crop [14].

The population that will be studied consists of all age groups but the majorities are in their youthful years and their occupation is farming. The majority of them practice subsistence farming and are mainly Christians with very few Muslims. The population distribution is sparse with average land holding of 2.5 acres per house hold. The average family size is 5 persons per house hold and average with an annual income per capita of 500$.

Sample Size

A total of 150 farmers were interviewed for the study. The questionnaires were administered over a period of two weeks. The sample 150 farmers were determined assuming that the social life and economic aspect of time frame for sale of food produce of the farmers were normally distributed.

The number150 farmers were determined based on the standard formulae [16].

$$n=4pq/l^2$$

Where,
n= sample size
P=prevalence of model market oriented farmers, food security farmers and farmers who have not received any support (farmers).

$$q=l-p$$
$$l = \text{error}$$

Since prevalence of farmers is not known it will be set at 50%. The allowable error or precision will be put at 8.16% for the farmers [16].

Farmers

$$n= \frac{4x0.5x0.5}{0.0816x0.0816}$$

n= 150

Sampling Technique

Both probability and non-probability sampling techniques was used. One hundred fifty farmers in total were studied in the Sub County. The one hundred and fifty farmers were equally distributed in the five parishes of the Sub County. Thirty farmers were interviewed per parish. All the five parishes were selected using non probability sampling method because the sub county has five parishes and all were selected without chance and studied [17]. Three villages were selected per parish by simple random probability sampling method wereeach village in the parish had an equal chance of inclusion in the sample and in each village ten farmers were interviewed. To make representative sample all the names of the villages were written on a piece of paper rolled and put in a box and shaken and it was picked with replacement, if same name was picked twice the other was ignored [17]. Non probability sampling method of accidental/convenience method was used to select the names of farmers interviewed at the village level. "A convenience sample is one that is simply available to the researcher by virtue of its accessibility and for identification and selection of information rich cases for the most effective use of limited resources" [18]. This technique raised questions of representatives but the technique was deemed most fitting where chances presented themselves to gather data from a convenience sample in an opportunity too good to be lost.

Data Collection methods and instruments
Questionnaire and interview of key informants

The instruments used for data collection was questionnaire and personal interview of key informants administered by the researcher and research assistants.

Questionnaires were used as instrument for data collection because it covered a large number of the respondents and was relatively cheap. Personal interview of key informants using structured interview was also used as respondents gave accurate information with good response rate and was completed immediately [17] The 150 questionnaire was designed for market oriented model farmers and other farmers who have not received any support from any organization. All the farmers were visited in their farms or homes. On each visit a formal introduction was presented and the purpose of visit explained to respondents before interviewing them using open and closed ended questions. Questionnaires were administered in Madi (local language) and English. The questions were read and interpreted in Madi language for the respondents who did not know English language and those who knew English language answered the questions under the supervision of the researcher. The structured interview was conducted for 15 local council one chairpersons who were part of the 150 respondents. The duration of administering questionnaire was 2 weeks.

Data management, processing and analysis

In this study, we consider a farmer as food secure in a given time if it always has enough food to provide to its members in a day for the entire period. Otherwise, the farmer is considered as food insecure.

Designing field data recording sheets was done before data collection and data collection was done with appropriate quality control [17]. Data was stored by the researcher during the period of data collection and then transported for analysis by the researcher. Completed questionnaire was edited to correct all possible errors during data collection. The data was converted to suitable formats, merging data originally entered in different files and producing various summaries and conversions from raw field measurements for example information on quantities of food items were recorded in local measures then converted to standard measures of shillings, kilograms and liters before analysis. Checking of raw data was done for accuracy. Coding of open ended responses was also done [17]. The cleaned raw data was parsed, recoded and reformatted for analysis. The final dataset was copied from the Interim Data worksheet to the Final Data worksheet. The data was entered in statistical package for social scientists and summarized into frequency distribution and percentages tables, graphs and pie chart diagrams and organization of computer files was done and data files were backed up.

Ethical considerations

The information given in the questionnaire was confidential that is the name of respondent did not appear on the questionnaire and the rights of the respondents were respected and were not forced to give information for the purpose of this research. Their consent was sought first for their right to decide free of pressure and in fully informed manner and they were first explained the social aspect of the research project. The risk and benefits of participating in this research was explained to the respondents. The research team was fully disclosed to the respondents and maintained high integrity to ensure that the research process and the researcher's findings are trustworthy and valid [19].

Limitations of the study

This research was designed as a survey study. It involved 150 participants and was conducted within a tight timeframe. In particular, it was beyond the scope of the research to discuss the full breadth of issues relating to food security in depth. It only concentrated on social life issues and period of sale of food affecting household food security. In this context, findings should be viewed as indicative rather than providing definitive answers [19]. The survey study provides a starting point for future dialogue in this area of relationship of social life to household food security, rather than a blueprint.

The thematic and methodological challenges identified during the research exemplify multi-dimensional nature of food security issues. However, the range of social life issues identified and the recommendations to household food insecurity are not intended to be exhaustive and may not address all the situations that may arise in the different regional, national and local contexts.

While a great deal of attention was directed during the research to the multiple strategies of the communities social life affecting household and individual food insecurity the research have not sought to address crisis situations, such as climate disasters or war-provoked famines despite their importance, soil degradation poor quality inputs and technology. They do not appear due to the limited time frame of the research.

RESULTS AND DISCUSSION

Inadequate food storage system for example huts

Two farmers gave their views as follows:

A respondent commented that "there is poor storage for the farm produce during pumper harvest period and poor markets" (Toloro village, 11th June 2016, Akuku Simon) [20] and another respondent added that "farmers usually use huts as store and sell balance of farm produce cheaply during pumper harvest as food is plenty and lack storage and use the money to buy expensive items" (Opejo village, Guma Stephen, 11th June 2016) [21].

The storage facilities used by the farmers in Ciforo Sub-county, Adjumani district is majorly hut 73% which they at the same time use for sleeping (see

Table-1 below). The farmers store the food in the huts in which they sleep attracting rats, chicken to waste the food further reducing the size. The huts itself are small besides being risky to fire outbreak making it not enough to accommodate both humans and crop produce. There are also no cooperatives to collect, bulk and sell farmers produce. These force farmers to sell their food reserve cheaply at harvest time leading to poor food dimensions and food insecurity in the household especially during April to June period as shown in Table-2 where average majority 61.67% totally disagreed that their households have food availability, food stability, ability to access and utilize appropriate levels of food in their households from April to June every year because they have poor storage system (see Table-1) and produce less than 1 ton of food per year on average (See Table 3). This inadequacy of storage facilities within the community according to WFP and UBOS [3] compel farmers to sell their produce immediately after harvest.

Table-1: shows frequency distribution and percentage of storage facilities used by the farmers

	Storage type	**Frequency**	**Percent**
Valid	Granary	3	2
	Hut constructed for storage purposes only	27	18
	Store food produce in the hut where I sleep	110	73
	Total	140	93
Missing	0	10	7
Total		**150**	**100**

Source: Researcher

The table above shows that 73% of the farmers store their food in the huts in which they sleep in and only 18% constructs huts for storage purpose and 2% store their produce in the granary and 7% did not respond to the question. Mccarney [8] noted that the lack of adequate and effective storage in Africa results in one-fourth of all food produced being lost due to spoilage, insects and rodents. What is not lost but consumed suffers significant nutritional decline and what is not lost but sold is generally at depressed market prices due to excess supply in the market on a seasonal basis and decreased quality of the product due to poor storage.

Currently, for most of Africa, the primary crop storage facility is still the home. The seasonality of food production and in particular crops with synchronous maturity are a particular problem for small scale farmers whose inadequate storage facilities force them either to sell the crop when prices are low or assume the risk of high storage loss. Farmers will not produce more and sell of food reserve cheaply if the results of increased production do not result in any perceived gains. This has led to the poor food dimension of the farmers in Ciforo Sub-county, Adjumani district from April to June as shown in Table-2 below.

Table-2: shows percentage of dimension of the food security of the people from April to June in Ciforo Sub-County, Adjumani district n=150

Dimensions	**SA**	**AG**	**DA**	**SD**	**TA**	**TDA**
Food availability "I have Sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports, commercial aid programs, or food stocks are consistently available to individuals or within their reach especially from April to June.",	10.67	18.67	58.67	12.00	29.34	70.67
Food access "My house hold have adequate assets or incomes to produce, purchase, or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition from April to June every year	6.00	29.33	44.67	20.00	35.33	55.33
Food stability "My households have ability to access and utilize appropriate levels of nutritious food from April to June every year"	5.33	43.33	42.67	8.67	48.66	57.33
Food utilization" Food is properly used by my house hold; proper food processing and storage techniques are used; adequate knowledge of nutrition and child care techniques exist and are applied; and adequate health and sanitation services exist every year."	4.00	32.67	35.33	28.00	36.67	63.33
Average					**37.5**	**61.67**

Source: Researcher

Key: SA Strongly Agree, AG Agree, DA Disagree, SD Strongly Disagree, TDA Total disagreement, TAG Total Agreement

This Table above has clearly shown that the majority 70.67% of the farmers totally disagreed that they do not have sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports, commercial aid programs, or food stocks that are consistently available to individuals or within their reach especially from April to June of a year, the majority 55.33% have also totally disagreed that theirhousehold have adequate assets or incomes to produce, purchase, or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level, and the majority 57.33% of the respondents have totally disagreed that their households have ability to access and utilize appropriate levels of nutritious food especially from April to June of a year and in food utilization dimension the majority of the respondents 63.33% have totally disagreed that food is properly used by their house hold; proper food processing and storage techniques are used; adequate knowledge of nutrition and child care techniques exist and are applied; and adequate health and sanitation services exist. In summary the average majority 61.67% of the respondents disagreed that their households have food availability, food stability, ability to access and utilize appropriate levels of food in their households from April to June every year

The implication of this result is that the people in Ciforo Sub- County, Adjumani district have poor food dimensions systems from April to June every year, which disagrees with what Jason [1] reported that food security exists when all people at all times (all year round) have both physical and economic access, availability, stability and utilization to sufficient food to meet their dietary needs for a productive and healthy life.

Table-3: shows frequency and percentages of tonnage of yield of the farm produce

Quantity	Frequency	Percent
0-1tone	87	58
1.1-3 tons	16	10.7
3.1-9 tones	39	26
10-20 tones	8	5.3
Total	**150**	**100**

Source: Researcher

The majority of the farmers 58% got below 1 tons of food produce in a year followed by 26% of the farmers who got between 3-9 tones of farm produce in a year and only 5.3% got between 10 to 20 tons of farm produce in a year. This is as a result of subsistence nature of their farming system. The 1 ton of food produced when stored and used for household consumption only could be enough to feed all 5.5 household members in a year but the food reserve is sold and used to meet medical bills, pay school fee or tuition, leisure and meet traditional and other cultural obligations. This cause the food reserve to be deficient to meet household needs in a year resulting to cyclical food insecurity from April to June every year.

FAO [22] reported that improved productivity of agricultural resources through sustainable intensification plays a key role in increasing food availability, stability and improving food security and nutrition. Productivity growth in small family farms contributes to more inclusive growth, not only by reducing the prices of staple foods but also by improving access to food. The problems come in the aspects of storage and usage of the food production at house hold level.

The poor food dimensions of the community in Ciforo Sub-county, Adjumani district is due to poor storage facilities for example huts, overpopulation in the household, lack of money to purchase food, extravagancy, lack of knowledge on appropriate food preparation methods poor total crop harvest, alcoholism, and disease [23]. This has led to the transitory food insecurity which Gary et al., [24] noted is divided into two sub-categories: cyclical food security and temporary food insecurity. The Cyclical (or seasonal) food insecurity that the people of Ciforo Sub-county, Adjumani district experience occurs on a routine or predictable basis from April to June every year, for example, the 'lean season' that occurs in the period just before the harvest.

Bush burning

A respondent commented that "when all grass is burnt it is only cassava stalk, vegetables in swampy area, cow peas and sweet potatoes that remain in the garden and stray animals go and destroy them especially in January and February every year causing food insecurity between April to June" ***(****Onigo village, Inyani Pius, 9th June 2016) [20].*

It has become a culture to burn bush in Adjumani, when the bush are burnt it leaves bear land, all the crops in the field are exposed, nutrient in the dry grass is burnt, greenhouse gasses for example carbon in the stratosphere is increased. This leads to reduction in soil fertility, destruction of hay, exposure of cassava, vegetables in swampy area, cow peas and sweet potatoes in gardens for destruction by animals and yet these are food reserves in the garden. This leads to depletion of the food reserve in the gardens for example cassava, vegetables in swampy areas, cow peas and

sweet potatoes by the stray animals and wild fire itself. The wild fire also burns huts in which harvested food is stored. Theses cause food insecurity in the households as these crops are food reserve in the garden and the burnt huts also contain food reserve leading to cyclical food insecurity in Ciforo Sub-county, Adjumani district. Straying of livestock for example cattle, goats and sheep

A farmer gave his view on stray animals as follows:

A respondent said that livestock are left to stray especially during dry season without herdsmen and they end up in gardens and destroy crops which act as food reserve. The animals are also sometimes stolen as they are left to move alone (Opejo central village, 11th June 2016, Guma Stephen) [21].

The people in Madi sub region are lazy in grazing animals and leave the animals to stray and destroy the environment. The animals are environmental nuisance themselves. The farmers leave their livestock to stray without being followed by herdsmen and they end up being stolen by thieves or in gardens where they destroy field crops. The stray animals also destroy vegetation in swamps and destroy the grass thatched houses as they are left to stray without herdsmen. Water for drinking in the remote areas are got from the swamps and the water source are contaminated by these animals and these cause water born infection to humans who drink water from such water sources. Infection of humans with water born disease leads to increase in cost of treatment and reduces manpower for agriculture production. This leads to food insecurity among the community members in Ciforo Sub-county, Adjumani district.

CONCLUSION

The people in Ciforo Sub-county, Adjumani district have poor food storage facilities where they use the huts for sleeping to store their farm produce. This attracts rats in the huts which destroy the food produce and they transmit diseases to humans as well. The poor storage facility force farmers to sell off the food stock for consumption leading to poor food security levels from April to June every year as they do not have sufficient quantities of appropriate, necessary types of food from food stocks and domestic production that are consistently available to individuals or within their reach, inadequate assets or incomes to produce, purchase, or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level, don't have ability to access and utilize appropriate levels of nutritious food over time and the available food is poorly used by their house hold; poor storage techniques are used; inadequate knowledge of nutrition and child care techniques exist and are applied.

It has become a culture to burn bush in Adjumani, when the bush are burnt it leaves bear land, all the crops in the field are exposed, nutrient in the dry grass is burnt, green house gasses for example carbon in the stratosphere is increased. This leads to reduction in soil fertility, destruction of animal feed, exposure of cassava, vegetables in swampy area, cow peas and sweet potatoes in gardens for destruction by animals and yet these are food reserves in the garden.This leads to depletion of the food reserve in the gardens for example cassava, vegetables in swampy areas, cow peas and sweet potatoes by the stray animals and wild fire itself. The wild fire also burns huts in which harvested food is stored.

Stray animals, during dry season the people in Ciforo Sub-county, Adjumani district, the farmers leave the animals to stray as they have no hay to eat as a result of being burnt by wild bushfire. They end up destroying the crops in the field which are food reserve. The animals themselves move and become environmental menus and end up being stolen as there are no herds men following them causing more food insecurity.

This means that they have inadequate food availability, food access, food stability and food utilization within the households in the community more specifically from April to June every year and has agreed with the observe cyclical food insecurity which occurs in Ciforo Sub-county, Adjumani district from April to June every year.

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