

Gender Analysis on Food Consumption Patterns for Enhancing Food Security in Nigeria

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Abstract – Traditionally, there has been a strict division of labor by gender in agriculture in Africa. Men and women participate in agriculture, the task may be gender specific but they are complementary and reciprocal. This article analyses different roles performed by men and women in food conservation strategies for enhancing food security in Nigeria. The study was conducted in two villages each in Kano and Katsina States of Nigeria. A total number of households interviewed in this survey was 282. Food Security Index (Zi) was used to measure the food security status of farming households. Harvard Analysis Framework was used to assess the distinctive gender roles in these communities. The result shows that male farmers were responsible for conducting most of the farming related activities in the study areas, women farmers were responsible for harvesting, pounding and threshing in addition to selecting the varieties. An interesting aspect of the study was the ability of the households to conserve the staple foods throughout the year, which was useful towards enhancing food security and periods of food availability and shortage were also assessed to find out the extent of food security among the household members. Staple foods that are the main sources of carbohydrates were readily available and consumed every day. Protein sources among the foods vary between plant and animal sources. Plant source was consumed every day, while the animal source was consumed occasionally, mostly once or twice a week. Any interventions that focus on promoting access and control of resources in these communities would be instrumental in increasing level of women's productivity in agricultural and related activities.

Keywords – Gender, Feed, Conservation, Food Security.

I. INTRODUCTION

In Nigeria of about 140 million people, men constitute about 50.4% and women 49.6% (NPC, 2006). Both sexes are responsible for producing the nation's food and one of the major problems confronting mankind in recent times is food crisis. Gender has often focuses on the relationship between men and women, their roles, access to and control over resources, division of labour and needs. [2] described gender as a socio-economic parameter that is useful in analyzing the roles, responsibilities, opportunities and constraints of men, women and youth along different ethnic, religion and ecological lines. The term "gender" can also be viewed to economic, social and cultural attributes and opportunities associated with being male or female, [11]. In almost all societies, women and men differ in their activities and undertakings, regarding access to and control over resources and participating in decision-making.

However, despite the continuous increase in the country's population growth rate, male involvement in agriculture continued to decline to about 64% from 2006 while the involvement of female in agriculture was on the increase, rose from 32% in 1995 to 36% in 2006. The implication of this is that, despite the current global food crisis, Nigeria men especially the youth that are supposed to embrace farming are neglecting agriculture and probably migrating from the rural village to the cities in search of white collar jobs, while the women still remain and engaged in agriculture despite their dual roles as farmers and mothers. [9] in their study stated that the role that women play and their position in meeting the challenges of agricultural production and development are quite dominant and prominent. This assertion was confirmed by [6] who reported that women constitute the major actors in all aspects of life.

The concept of gender equality acknowledges that different treatment of women and men sometimes required to achieve sameness of results, because of different life conditions or to compensate for past discrimination. [11] states that gender analysis must take into consideration and address differentials in control over and access to land and other resources. Gender roles may be productive and social in nature. Men and women are affected differently in their operation in factors like markets and socio-cultural environments. Women are more constrained than their male counterparts in terms of access to information technology, inputs, credits, etc. Some crops are even classified as man's crop while others are regarded as woman's crop which has an effect on food production.

In related findings, [7] found that men and women participate in agriculture, the task may be sex specific but they are complementary and reciprocal. Activities such as bush clearing, land preparation, felling of trees, planting of certain crops, hunting, fishing, tending of pasture and care of domestic animals traditionally are often performed by men; whereas, women grow certain crops traditionally,

they are also responsible for hoeing, weeding, harvesting, transportation of harvest from farms to their homes, processing, preservation and marketing of crops. They also participate in the care of domestic animals. In spite the contribution of both sexes in food production; unlike men, women's role in promoting economic growth and social stability continues to be inadequately recognized and under-valued.

Women's role is also very crucial to the overall success of efforts directed towards rural development for increased agricultural productivity. They are more involved in agricultural activities than men especially in sub-Saharan

Africa and provide most labour for a number of agricultural activities. They constitute about 90 percent of the workforce involved in direct arable crop production [9].

II. LITERATURE REVIEW

Women in Africa (including Nigeria) generally play an important role in small-scale traditional agricultural production [1]. Rural women have taken over the production and processing of arable crops and are responsible for as much as 80% of the staple food items. Estimates of women's contribution to the production of food crops range from 30% in the Sudan to 80% in the Congo contributing substantially to national agricultural production and food security. Most farmers in Nigeria operate on the subsistence and smallholder level in an extensive agricultural system; therefore, in the country's food security lie in their hands. Women farmers are the principal labour force on small holder farms and perform the largest share in land preparation, weeding, transporting, processing and marketing of agricultural products. Women therefore contribute greatly to agricultural production in Nigeria as take the lead in most agricultural activities. They make up to 60-80 percent of the labour force. Therefore the significant role they play in meeting the challenges of agricultural production and development are quite dominant and prominent.

Food security as important concept in understanding different gender roles in agricultural and rural development is considered a broad concept that has various definitions. However, all definitions seem to revolve around three pillars, namely the availability, accessibility and nutritional factors of food [5]. Food availability for the farm household means that sufficient food is available for them through self-production. Food availability is crucial, but not sufficient to achieve food security. It matters where the food comes from, when it is available on the market, and whether it supplements or displaces local production. [10]. Food insecurity affects more women than men [5]. [3] argued that despite all the evidence of positive food security and livelihood outcomes for women to have equitable access to land, there is unfinished business in the area of land reform. In many Sub-Saharan African countries, land reforms have consistently failed to develop novel ways of securing women's access to, use of, and control over land. These are often the direct outcomes of gender-biased – or “gender-neutral” – land reforms which fail to take into account the different ways in which women and men access resources, and which therefore fail to level the playing field. In Zimbabwe, for example, customary access to land works reasonably well for married women, but poorly for divorced and single women.

III. METHODOLOGY

Study Areas

This study was conducted in Kano and Katsina States, Nigeria. Kano State is located in the North Western part of

Nigeria on latitude 11° to 34° N and longitude 8° to 34° E, and 472.45 meters above sea level. It has a total land of 20,760 square kilometres and is predominantly inhabited by Hausa and Fulani ethnic groups. Kano is the second largest industrial and commercial centre in Nigeria after Lagos. According to [8] it had a population of 9,383,682, with 4,844,128 males and 4,539,554 females. The ecology is typically that of Sudan Savannah vegetation, with average annual rainfall of 700mm, while the amount and frequency in distribution vary across the state. There is significant variation in temperatures in the state, with minimum of as low as 15°C and maximum of 35°C , in March/April and December/January respectively [8].

Katsina State on the other hand is located on latitude $12^{\circ} 47' 13$ N and longitude $8^{\circ} 4' 41$ E. It covers a total land area of about 23,983 square kilometres, with estimated population of 5,792, 578 people as at 2006. Considering the annual growth rate of 2.5%, the population of the state was projected to be 7,057,694 people by the year (2014) [8]. The climatic condition of the state is characterized by average rainfall of 600mm per annum, with dry wind from January through April. The maximum temperature could be up to 37°C in April.

The major crops grown in the two states are; millet, maize, sorghum, groundnut cowpea, soybean and rice. Other crops like onions, pepper, tomatoes, are grown under irrigation. Two villages, Anadariya and Kofa in Bebeji Local Government Areas (LGA) in the CRP Dryland Systems (CRP DS) sites each in the DSCR sites of Kano and Katsina States respectively, were purposively selected for the survey. These communities were the adopted villages of CRP-DS interventions. Anadariya is located in Longitude $11^{\circ}28'00.3''\text{E}$, Latitude $008^{\circ}26'35.3''\text{N}$. Kofa is located in Longitude $11^{\circ}33'29.2''\text{E}$ and Latitude $008^{\circ}15'55.9''\text{N}$. Ishiyawa is located in Longitude $13^{\circ}03'03.2''\text{E}$ and Latitude $008^{\circ}26'35.3''\text{N}$. Yakubawa is located in Longitude $13^{\circ}04'27.6''\text{E}$ and Latitude $008^{\circ}28'42.4''\text{N}$. Like most of the communities in Northern States, the primary source of their livelihoods is farming, which is supplemented with other sources like trading, handcrafts, livestock rearing and so on.

Sampling Procedure

The sampling procedure for the survey was multistage, in which the first stage involved a purposive selection of the study sites considered as adopted villages in the CRP-DS project. The second stage also involved a purposive selection of the households' participated in CRP-DS related surveys with particular interest to gender perspective in the study sites. The last multisampling stage involved a random selection of the respondents out of those selected purposively.

Sample Size

Number of respondents (Households) varies from one project activity to another, and also from one village to another. This was due to differences in population of the study areas and their involvement in related projects. The total number of households interviewed in this survey was 282; with slightly higher households in Kofa (76) mainly due to population of the area. Yakubawa had the least households (60) mainly due to dispersed nature of their

settlement. As gender inclined survey, females' inclusion also varies from one village to another. Although the ratio of 50 males: 50 females has not been met, but in this survey the proportion of female participation was impressive, with more than 30% in virtually all the villages. The number of respondents selected and interviewed in the study areas is shown in table 1 below:

Table 1. Composition of the respondents involved in the survey:

Study Area	Local Govt. Area	State	Sample Size
Anadariya	Bebeji	Kano	71
Kofa	Bebeji	Kano	76
Ishiyawa	Zango	Katsina	75
Yakubawa	Zango	Katsina	60
		Total	282

Data Collection Exercise

Structured Questionnaire was the main instrument used for data collection. The questionnaires were pre-tested with different participants from those in the adopted villages. The questionnaire comprised of the following sections; general household information, livelihood status and strategies, seed sourcing, household livestock ownership, goat/sheep management practices (breeding, housing, health and general productivity) and food security.

Data Analysis

Descriptive statistics (Mean, frequency, percentages and charts) were used to analyze data related to the demographic characteristics of the respondents.

Most important characteristics considered are; age, gender, primary activity, educational status, farm size.

Food Security Index (Z_i) was used to measure the food security status of farming households. It was measured on the basis of the types of foods consumed on weekly basis and whether the household members had enough food throughout the year, with particular interest to the quality of the food consumed as proclaimed by [5].

The Harvard Analytical Framework was used to demonstrate allocating resources to women as well as men. The framework was used in this survey to collect data at household level. The following Harvard tools were considered in this survey;

Harvard Tool 1: The Activity Profile which identified all relevant productive and reproductive tasks and answered the questions who does what? This activity profile was considered according to gender division of labour. The parameters examined in activity profile are;

- Gender and age denominations. Identified whether adult women, adult men, their children or the elderly carry out an activity.
- Time allocation: Specifying what percentage of time is allocated to each activity.
- Activity locus: Specifying where the activity is performed in order to reveal people's mobility.

Harvard Tool 2: Access and Control Profile – Resources and Benefits. This tool enabled users to list what resources individual use to carry out the tasks. It indicated whether women or men have access to resources, who control their use, and who controls the benefits of a household's use of resources

IV. RESULT AND DISCUSSIONS

Demographic Characteristics of the Households

The measure of the demographic characteristics in this study is important in understanding certain features that are responsible for gender roles in various agricultural activities. Cultural, economic and environmental imperatives have serious effect on the roles of households and individuals in relation to food security and general rural development.

Age of the Households

Age was measured by the age in years of each respondent at the time of study. The basis of classification of age in this study was either a respondent is greater or less than thirty (30) years, which was considered the active age for greater efficiency. The age class of the household members is shown in the table 2

Table 2. Age Distribution of the Households in the Study Areas:

Location	Adult Male ≥ 30 years	Adult Female ≥ 30 years	Youth (Male) ≤ 30 years	Youth (Female) ≤ 30 years	Total
Anadariya	79 (14.2)	58 (10.4)	215 (38.7)	204 (36.7)	556
Kofa	110 (21.2)	75 (14.5)	208 (40.0)	126 (24.3)	519
Ishiyawa	77 (12.6)	73 (12.0)	224 (36.8)	235 (38.6)	609
Yakubawa	68 (15.3)	41 (9.2)	188 (42.3)	147 (33.1)	444
	334	247	835	712	2128

Note : Values in parentheses are percentages.

Despite the differences in the sample sizes among the four (4) locations (study areas), the general overview of the age distribution indicates that there were more household members in Ishiyawa (609), followed by Anadariya (556). Yakubawa which is bordered to Niger Republic, was the

least in the number of household members (444). This may be attributed to harsh conditions of the area and other environmental imperatives associated with boarder settlement. Age of the respondents may have some positive effects to level of productivity of the households.

This can be determined when the data is subjected to further empirical analysis. The discussions that follow would explain the classification of these households on gender composition.

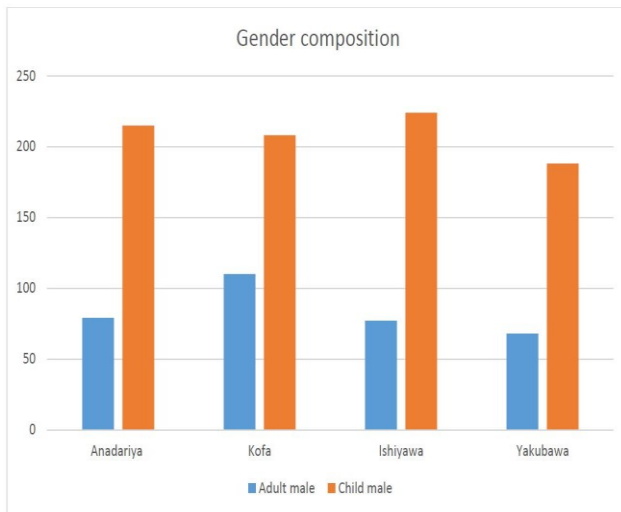


Fig. 1. Gender Composition of Adult and Youth (Male) in the Area of Study.

An important component of this study is to identify the composition of gender in the households. In the study, it was found that there were great disparity in the number of adult and young males in all the locations. In Anadariya more than 30% of the household members were young males (≤ 30 years), whereas 14.2% of the household members were found to be adult males (≥ 30 years). Moreover, there were differences in the gender composition of the household members in Ishiyawa and Yakubawa, with corresponding percentages of 12.6% and 15.3% for adult males, 36.8% and 33.1% for young males respectively. In related findings, the disparity in the percentages of adult males (21.2%) and young males (40.0%) in Kofa was equally high as that of Anadariya, Ishiyawa and Yakubawa.

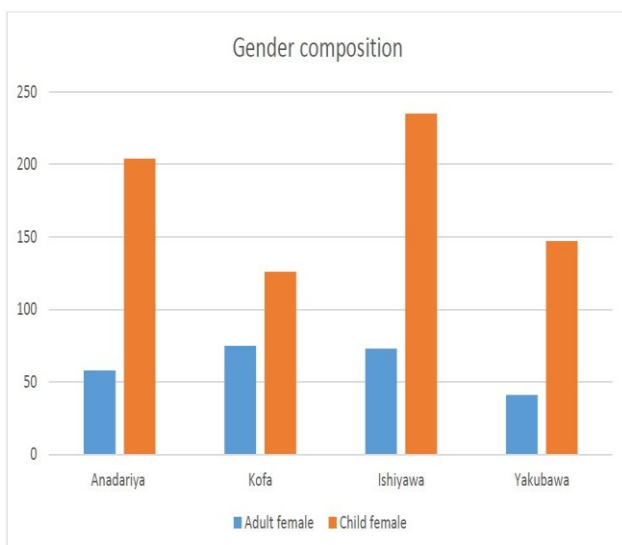


Fig. 2. Gender Composition of Adult and Youth (Females) in the Study Areas.

On the other hand, the results of the gender composition in relation to adult (≥ 30 years) and young (≥ 30 years) females show that there were more young females than the adult females in all the locations. However, the composition varies from one location to another, with less disparity in Kofa (14.5% adult females and 24.3% young females) than the other three locations. It was further indicated that the number of young females was high in Ishiyawa (38.6%), closely followed by Anadariya (36.7%) and Yakubawa (33.1%).

The implications of more young males and females in these locations are increased in the level of productivity and sustainability of the agricultural activities in the area. Ability of the youth to innovate and explore other formal innovations in these locations may likely be high. Use of various modern Information and Communication Technologies to promote both vertical and horizontal information exchange may possibly be high among the youth.

Table 3. Role of Male and Female Farmers in Agricultural Work

Role	Men	Women	When
Preparation of soils	x		May - June
Ploughing	x		May - June
Selection of varieties	x	x	Oct - Dec.
Planning of allocation of land	x		March - April
Use of inorganic fertilizer	x		July - Sept.
Use of manure	x		Feb - May
Weeding	x		June - Sept
Hoeing	x		June - Sept.
Harvesting	x	x	Oct - Dec.
Pounding		x	Oct - Dec.
Threshing		x	Oct - Dec.

Harvard tools 1 for identification of various productive activities was used in table 3 above. Men farmer were responsible for conducting most of the farming related activities in the study areas, except selecting varieties which was also performed by women farmers. This was because most of these varieties were kept at home. Women farmers were responsible for harvesting, pounding and threshing in addition to selecting the varieties. This was slightly different with findings of [7] when compared gender involvement in agricultural production in Nigeria. They argued that activities such as bush clearing, land preparation, felling of trees, planting of certain crops, hunting, fishing, tending of pasture and care of domestic animals traditionally were often performed by men; whereas, women grow certain crops traditionally, they were also responsible for hoeing, weeding, harvesting, transportation of harvest from farms to their homes, processing, preservation and marketing of crops. They also participate in the care of domestic animals.

The time these activities were carried out depends largely on the on-set of the rainfall. Time for most activities overlaps to show that the activities were carried out concurrently. Selecting varieties were normally the first activity after harvesting and threshing to ensure that

varieties with superior qualities were selected (Oct – Dec). Although the on-set of rainfall varies from season to season, but predicted to be in May – June in most areas of Northern Nigeria. Soil preparations were normally just before the rainfalls (May – June) which was followed by ploughing. Planning of allocation of lands in relation to the types of crops to be grown was an earlier activity (March – April). Time for using inorganic fertilizer and manure were entirely different depending on the fertility of the soils and the crops to be grown, but generally the use manure was much earlier, mostly before the rainfalls. Most of the farmers interviewed emphasize the use of other months (January – May/June) for off-farm activities as sources of their livelihoods. However, farmers that are engaged in irrigation farming utilized such times for irrigation activities as other sources of their livelihoods.

Periods of foods availability and scarcity among men and women farmers.



Fig. 5. Food availability in Kofa.

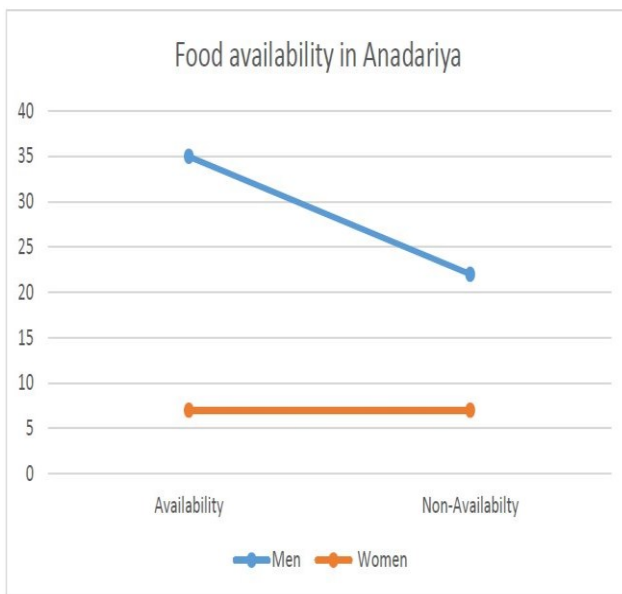


Fig. 3. Food availability in Anadariya.

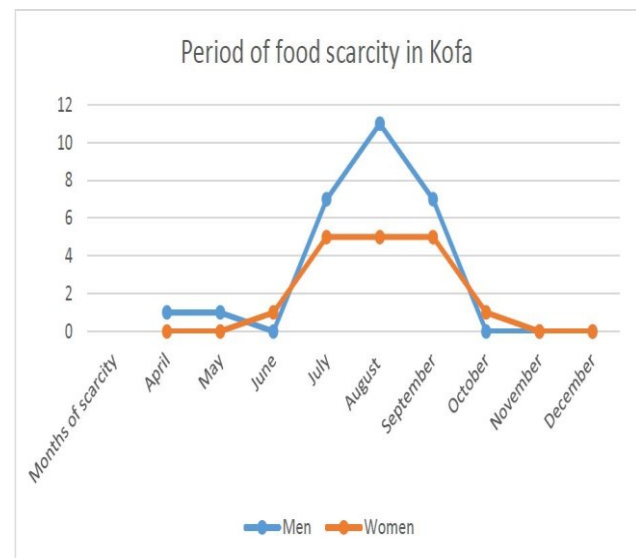


Fig. 6. Period of food scarcity in Kofa

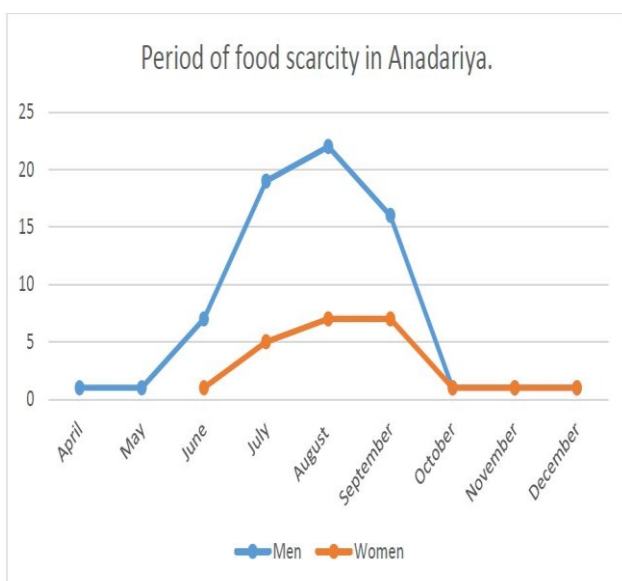


Fig. 4. Period of food scarcity in Anadariya.

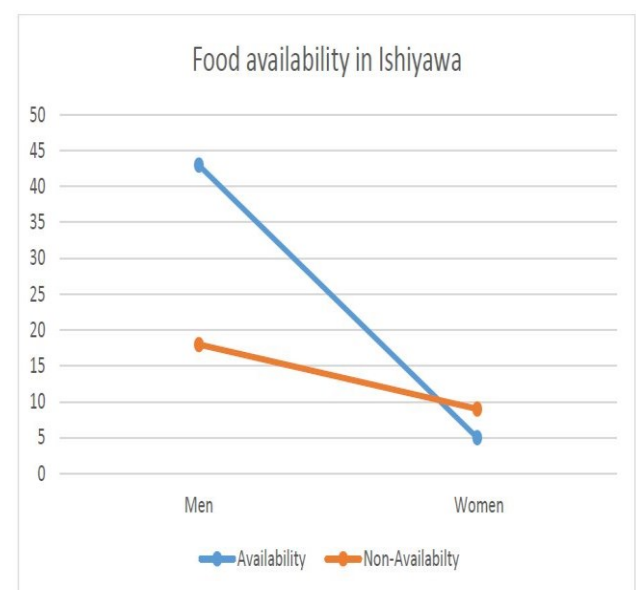


Fig. 7. Food availability in Ishiyawa

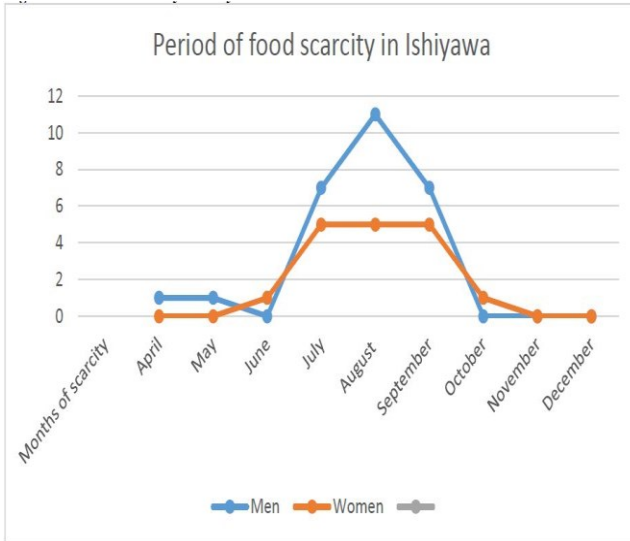


Fig. 8. Period of food scarcity in Ishiyawa.

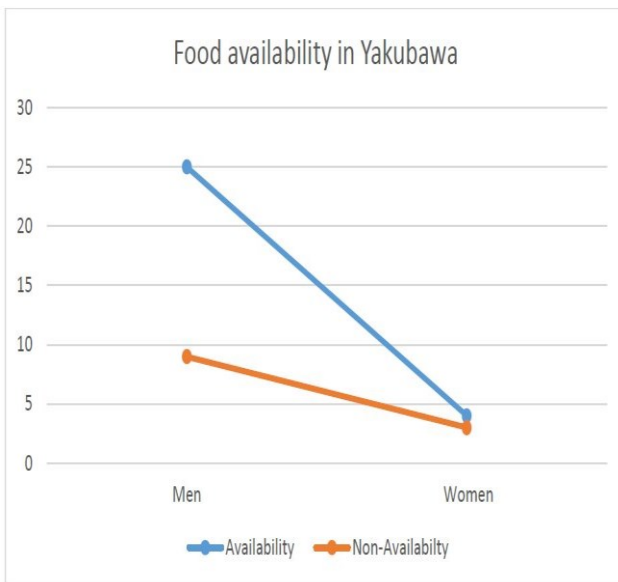


Fig. 9. Food availability in Yakubawa.

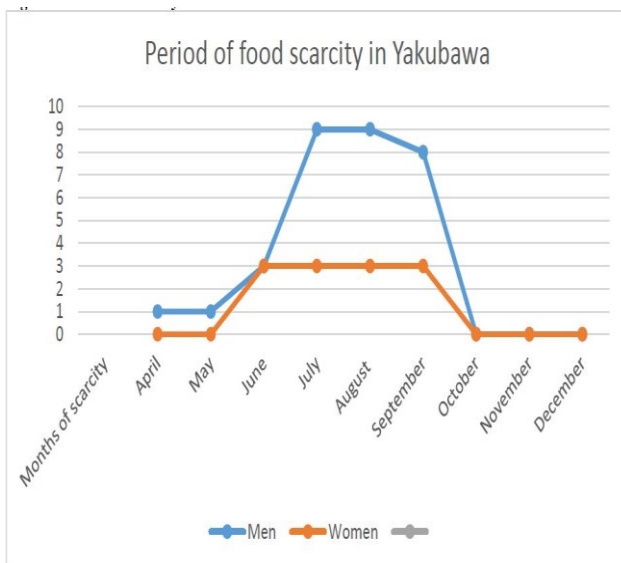


Fig. 10. Period of food scarcity in Yakubawa.

In the study, periods of food availability and shortage were assessed to find out the extent of food security among the household members. In Anadariya 29 farmers (22men and 7women) claimed that food scarcity in July – September. Such lean periods according to them were difficult for feeding themselves and their livestock. However, 42 farmers claimed that they do not have any food problem throughout the season. They mostly keep those for consumption after harvesting. In related development, 60 farmers in Kofa claimed to have sufficient foods throughout the seasons. Thirty three 33 of the men and women farmers had food shortage between July – August. However, the results show that both men and women farmers in Ishiyawa and Yakubawa had more lean periods, with food shortages in July – August. The results indicate that all the communities were food secured, with majority of them conserved the food throughout the year. However, the types of foods available throughout the year were many staple foods (Maize, Sorghum, Millet, Rice and Cowpea). While the storage systems for the vegetable crops were not available for small-holder farmers in these communities.

Although not considered as sufficient to achieve food security, food availability for the households according to World Bank (2001) and (Spielloch (2007) is important and explained sufficient food for the households through self-production.

Food Security

Food security index was used to assess the types of foods consumed and number of times the foods were consumed in a day and within a week. This determined the food availability and quality consumed throughout the year, especially in lean periods.

Table 9. Food consumption among the household members.

Types of foods	Food consumed in the last 24 hours	Food consumed in the last 7 days.
Staples (Millet, Sorghum, maize, rice, Wheat)	Yes	Everyday
Tubers.	No	Twice or once a week .
Vegetables.	Yes	Four times a week
Fruits.	No	Once a week
Beans, peas, nuts.	Yes	Every other day.
Red meat-beef.	No	Once a week
Poultry.	No	Not
Eggs	No	Once a week
Fresh or dried fish	No	Once a week
Milk, cheese, Yoghurt,	No	Once a week
Oils and fats	Yes	Everyday
Sugar, honey.	Yes	Everyday
Condiments (tea, coffee,)	Yes	Everyday

Type of foods consumed differs among household members and was largely determined by sources of income and seasons of availability. Staple foods that are the main sources of carbohydrates were readily available and consumed every day. Protein sources among the foods varies between plant and animal sources. The latter was also classified as staple food and consumed every day, while the former was consumed occasionally, mostly once or twice a week. Other food types, oil and fats, sugar and tea were consumed every day. This was due to low price of such foods and availability. During lean periods the household members emphasized that they relied and consumed more of staple foods as sources of carbohydrates than protein sources.

V. CONCLUSION

This study assessed the gender roles in feed conservation among small-holder farmers in four different communities. The roles of men in agricultural work was high than women, with women involved into domestic activities. An interesting aspect of the study was the ability of the households to conserve the staple foods throughout the year, which was useful towards enhancing food security. However, any interventions that focus on promoting access and control of land and other resources in these communities would be instrumental in increasing level of women's productivity in agricultural and related activities.

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