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CONTRIBUTIONS OF LEAFY VEGETABLE FARMING TO HOUSEHOLD FOOD SECURITY AMONG RURAL WOMEN IN IGABI LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT

Leafy vegetables are good sources of minerals and important component of food security. This study assessed the contributions of leafy vegetable farming to household food security status among rural women in Igabi Local Government Area (LGA). From the twelve (12) wards in Igabi LGA, five (5) wards were purposefully selected; twenty rural women were sampled from each ward to give a total of one hundred respondents. Primary data were collected through the use of structured questionnaires. Descriptive statistics was used to achieve the objectives, while Chi-square was used to test the hypotheses. Household Food Insecurity Access Scale (HFIAS) (Fanta scale) was used to determine the household food security status. The mean age was 37 years, 34.0% of the respondents had secondary school education, majority (67.0%) of the respondents sourced for capital through personal savings, while most (64.0%) of the respondents acquired land by inheritance. The main constraint in leafy vegetable farming is lack of viable seed (94.0%). Results revealed that majority (85.0%) of the respondents were mildly food insecure. Chi-square analysis revealed that age (χ^2= 83.119 p=0.001), household size (χ^2= 28.117, p=0.000) and farm mechanization (χ^2=4.691, p=0.02) were significant to household food security status. This study recommends that mechanized farming system should be put into consideration through both government and community efforts to reduce drudgery and enhance availability of leafy vegetables all year round. It will also increase the level of productivity and boost farm output which in turn will enhance household food security status.

Keywords: Leafy vegetable, farming, household food security,rural women

Introduction

Africafaces the challenge of low food productivity due to a number of factors, including poor uptake ofmodern technologies, and high incidences of poverty culminating in the prevalence of an undernourishedpopulation among others (Otsuka *et al.,* 2017).Agriculture in Nigeria has been the most important sector of the economy from history and serves as a good standpoint of rural employment, food and fibre productions (Oni, 2018).According to Food and Agriculture Organization (FAO) (2016), food security is when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.The main goal of food security is for individuals to be able to obtain adequate food needed at all times, and to be able to utilize the food to meet the body needs. Fresh leafy vegetables make up an

essentialpart of human diet; they provide fiber, trace minerals, vitamins, carbohydrates and proteins.

Leafy vegetableis used by most people in preparing foods and salads, they are plants or plant parts usually eaten with main meal and are commonly salted, boiled or used as desserts and have been a major component for human diets,and surplus vegetables from the farm usually find ready market, which has the potential of providing a valuable source of family income to the farmer (Oyeniran, 2018). Many of these vegetables share similar farming practices and it is not uncommon to see several of these vegetables planted on the same farm land, as very small areas of land can yield large volumes of produce, so long as the plants are provided with adequate water, nutrients, and adequate pest and disease management in the field is guaranteed, Some of the leafy vegetables cultivated in Nigeria are *Cochorus, Talinum triagulae*, *Cellosia, Amarnatus*, Lettuce, and Cabbage (Kochlar, 2016; Sharon, 2018; Damisa, 2017).

In Nigeria, leafy vegetable has a very high demand and is mostly available all year round (FAO, 2017). Even though they are not the major source of energy, they are much-needed minerals and vitamins providing flavor and serve as a source of taste, thus increasing the appetite of the consumer. Barley (2020) emphasized that leafy vegetable farming is a form of intensive agriculture and form products of herbaceous plants.Varieties of leafy vegetables are grown all year round for family need and women have played major roles in its productive activities for which they carryout substantial volume of work (John, 2015).

Women play key roles in agricultural activitiesespecially in leafy vegetable farming and as a result, they are vital components for the growth and development of the community, yet the enormous contribution of women in agricultural production continues to be unrecognized compared to activities undertaken by men in the field becausemost rural women are illiterates, unskilled and traditionally bound. Some of the activities performed by women include; land clearing,planting, weeding, fertilizer application, harrowing, harvesting, winnowing, pre and post-harvest produce handling (Women of Work (WOW), 2016; Prince, *et al* 2020). Rural women participation in the sector of leafy vegetable is very important as they play varied roles as agricultural laborers and household heads or as managers of their various household activities.If the needed effort would be put in place to enhance improved participation of rural women in vegetable farming, it would help them to be able to meet the household food security challenge and also cater for other various needs of the householdsespecially during the dry season farming. Faraja (2018) emphasized that despite rural women's lack of skills, they are still primarily responsible for vegetable farming in their households.

The country's populations are dependent on the ability of rural women to fulfill their multiple roles as farmers, mothers, cooks, housekeepers, healthcare provider's water carriers, and fuel gatherers, food processors, produce vendors, artisan and more. When rural women are too exhausted to work well, food production suffers thereby contributing to food insecurity, hunger and malnutrition.The paper assessed the contributions of leafy vegetable farming to household food security status among rural women in Igabi LGA of Kaduna with the objectives of describing the socio-economic characteristics of rural women, identifying the

types of leafy vegetables available in the study area,determine the food security status of rural women and examining the constraints of leafy vegetable farming.The study proffer two hypotheses which stated there is no significant relationship between the selected socio-economic characteristics and household food security status and no significant relationship between the constraints against leafy vegetable farming and household food security status.

Materials and Methods

Study Area

The study was carried out in Igabi Local Government Area (LGA) of Kaduna State. The annual rainfall decreases from South to the North (1152mm to 635mm). The raining season usually commences in April in the Southern parts and June in the Northern part. Other crops cultivated in Igabi LGA include; maize, millet, yam, ginger, cassava and sorghum, beans, rice and sugar cane, while animals such as; cattle, goat, sheep, poultry, and pig are also reared. The LGA has thirteen districts namely; Igabi, Rigachikun, Rigasa, Kwarau, Farakwai, Zongonaya, Afaka, SabonBirni, Fan Shanu, Gwaraji, Kerawa, Jaji and Kwaro. The people are also into various livelihood activities such as; weaving, netting, making of soap, making of cooked foods and making of hair (NPC, 2006).

Sampling Procedure

Multistage sampling techniques were used for the study. The first stage was the purposive selection of five districts, out of the thirteen (13) districts in the Local Government because of the predominance of leafy vegetable farmers. The second stage is a random selection of five (5) villages from the five districts. The final stage is the purposive selection of twenty (20) women in leafy vegetable farming from each village to make a total of one hundred (100) respondents.

Data Collection

Primary data were used for the study and were collected through the use of structured questionnaires. Interview was conducted for illiterate famers who can neither read nor write. Descriptive statistic was used to describe the socio economic characteristics of the respondents, while Chi-square analysis was used to test the hypotheses.

To determine the household food security status, the Household Food Insecurity Access Scale (HFIAS) (FANTA scale) of the United Nations (2007) was captured on 3-point-likert scale statements in order of Rarely, Sometimes and Often which attracted the score of 1, 2 and 3 respectively. A summation of scores for each respondent was determined. To know the food security status of rural women, nine questions were asked and responses of ‘Yes or No’ were obtained. A summation of score for each respondent was determined. The maximum score was 27 and the minimum score was 0. The higher the score, the more food insecurity (access) the lower the score, the less food insecurity (access) a household experienced. The households were grouped into three levels of food insecurity (access) Food Secure = < 9, Mildly Food Insecure = 10 – 18, and Severely Food Insecure = 19-27.

Results and Discussion

Socio- economic characteristics of the respondents

The result showed that, the mean age of the respondents is about 37 years. This implied that majority of the respondents were in their youthful age, strong and energetic to carry out livelihood activities that can improve their standard of living. This is in line with the

findings of Musa, (2014) who stated that, most rural women in their youthful age support their households through participation in farming activities. Result in Table 1 indicated that 34.0% of the respondents had secondary school education, this may enhance their accessibility to information and knowledge especially on leafy vegetable farming. Most (58.0%) of the respondents were Muslims, out of which only few (15.0%) were in purdah. This implied that the respondent's had the opportunity of interacting with people, religion is no longer constituting a barrier to empowering rural women unlike before, and now, rural women gets access to necessary information that empowers them in their leafy vegetable farming and enhance household food security.

Result in Table 1 further revealed that some(34.0%) of the respondents had average household size of 6-10 members, this implied that with large families, it is likely to have reduced cost of labour and cost of production in leafy vegetable farming (Adesina *et al.*, 2014). Majority of the respondents were into other livelihood activities such as trading (60.0%), tailoring (28.0%) and livestock farming (12.0 %), this may help them to augment for leafy vegetables especially during the off season. It was revealedthat some (39.0%) of the respondents belongs to religious group, while 28.0% and 24.0% of the respondents belongs to co-operative society and micro-finance society respectively. The respondents affirmed that they usually have access to credit facilities and other forms of help from their various groups. This result is in line with the findings of Laugren (2002) that religious group assist farmers with finance. Table 1 showed that majority (67.0%) of the respondents' source for capital through personal savings, while few (18.0% and 15.0%) of the respondents source their capital from friends and family and also co-operative society respectively. Furthermore, Table 1 also revealed that majority (64.0%) of the respondents acquired land by inheritance, while some (18.0%) of the respondents purchased land, few (9.0%) of the respondents rented the land, (6.0%) of the respondents got the land from gift.

Table 1: Distribution of respondents based on their socio- economic characteristics

Variables	Frequency	Percentage	
Age Group			
21-30	18	18.0	
31-40	19	19.0	
41-50	20	20.0	
51 and above	43	43.0	Mean age = 37
Educational level			
Non-formal education	21	21.0	
Quranic education	15	15.0	
Primary education	9	9.0	
Secondary education	34	34.0	
Tertiary education	21	21.0	
Religion			
Christianity	42	42.0	
Islam	58	58.0	

Purdah			
Yes	15	15	
No	18	18	
Household size			
1-5	24	24.0	
6-10	37	37.0	
11-15	24	24.0	
16 and above	15	15.0	Average 6-10
Other income generating activities			
Trading	60	60.0	
Livestock farming	12	12.0	
Tailoring	28	28.0	
Monthly income			
₦20, 000 and below	22	22.0	
₦21, 000 and ₦30,000	33	33.0	
₦31, 000 and ₦40,000	36	36.0	
₦41, 000 and ₦50,000	9	9.0	
Membership in organization			
Religion group	39	39.0	
Work group	9	9.0	
Cooperative society	28	28.0	
Farmers club	24	24.0	
Source of capital			
Personal saving	67	67.0	
Friends and family	18	18.0	
Cooperative society	15	15.0	

Source: Field survey, 2023

Distribution of respondents based on types of leafy vegetable grown

Result inTable 2 showed the types of leafy vegetable grown by rural women. Majority (100.0%) the respondents were into farming of spinach, most (88.0%) of the respondents was into lettuce farming. Table 2 showed that (82.0%) of the respondents are into waterleaf farming and some (73.0%) of the rural women are into scent leaf, most (61.0%) of the respondents involved into thyme leaf farming, some (58.0%) planted kenaf, most (57.0%) of the respondents were involved in *chocorus* farming, some (46.0%) involved into curry leaf farming while few (37.0%) plant only miracle leaf. Most of the respondents were into leafy vegetable farming not just for food but also for medicinal purposes which also assist their household to generate income.

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Table 2: Distribution of respondents based on types of leafy vegetables

Types of Leafy Vegetable	* Frequency yes	No
Chocorus	57 (57.0)	43 (43.0)
Waterleaf	58 (58.0)	42 (42.0)
Lettuce	88(88.0)	18 (18.0)
Spinach	100 (100.0)	0.0 (0.0)
Ugwu	85 (85.0)	15 (15.0)
Bitter leaf	37 (37.0)	63 (63.0)
Miracle leaf	46 (46.0)	54 (54.0)
Curry leaf	61 (61.0)	39 (39.0)
Thyme leaf	73 (73.0)	27 (27.0)
Scent leaf	63 (63.0)	37 (37.0)

Source: Field survey, 2023 *Multiple responses
Figures in Parentheses are Percentages

Distribution of respondents based on household food insecurity status

The Household Food Insecurity Access Scale (HFIAS) (FANTA Scale) was used to categorize household food security status. Table 3a showed that majority (91.0%) of the respondents worry that their household would not have enough food to eat, and this happened sometimes and rarely only, about (72.0%) of the respondents agreed that members will not be able to eat the kind of foods they preferred because of inadequate resources. Majority (70.0%) of the respondents had to eat a limited variety of foods due to inadequate resources and member have to eat fewer meals in a day because there was not enough food, this also happened sometimes, and rarely, (67.0%) of the respondents have to eat some foods that they really did not want to eat because of inadequate resources to obtain other types of food, and (64.0%) of the family member have to eat a smaller meal than needed because there was not enough food, while (50.8%) had to eat some foods that they really did not want to eat because of inadequate resources to obtain other types of food. This implies that the severe problems facing household food security of the respondents is worry that household may not have enough food to eat daily.

Table 3a: Distribution of the respondents based on their food insecurity access scale (HIAS)

Household Food Security Questions	Yes	No	Rarely	Sometimes	Often
In the past four weeks, did you worry that your household would not have enough food to eat?	91(91.0)	9(9.0)			
How often did this happen?			42(42.0)	58(58.0)	

In the past four weeks, were you or any household member not able to eat the kind of foods you preferred because of a lack of resources?	73(73.0)	27(27.0)			
How often did this happen?			36(36.0)	61(61.0)	3(3.0)
In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	70(70.0)	30(30.0)			
How often did this happen?			30(30.0)	67(67.0)	3(3.0)
In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	67(67.0)	33(33.0)			
How often did this happen?			39(39.0)	55(55.0)	6(6.0)
In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	64(64.0)	36(36.0)			
How often did this happen?			39(39.0)	52(52.0)	16(13.3)
In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	70(70.0)	30(30.0)			
How often did this happen?			39(39.0)	61(61.0)	
In the past four weeks was where ever no food to eat of any kind in your household because of lack of resources to get food	55(55.0)	45(45.0)			
How often do this happen			91(91.0)	9(9.0)	
In the past four weeks, did you or any of your household members go to sleep at night hungry because there was no food	49(49.0)	51(51.0)			
How often do this happen			63(63.0)	37(37.0)	
In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food	55(55.0)	45(45.5)			
How often do this happen			51(51.0)	49(49.0)	

Household food insecurity access scale (HFIAS)

The Household Food Insecurity Access Scale as revealed in Table 3b showed that majority (85.0%) of the respondent were mildly food insecure, (14.0%) of the respondents were food secured. This implied that majority of the respondents need to put in more efforts to be food secure because at the moment they are on the borderline and any little thing can give a push to the severely food insecure.

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3b: Distribution of the respondents based on Household Food Security Status

Household Food Security Status	Frequency	Percentage
Food secure	14	14.0
Mildly food insecure	85	85.0
Severely food insecure	1	1.0
Total	100	100

Source: Field survey, 2023

Distribution of Respondents' based on the Constraints in leafy vegetable farming

Results in Table 4 showed the ranking of some constraints facing the respondents with regards to leafy vegetable farming. The most consistent constraints in leafy vegetable farming were lack of viable seed (94.0%) and unpredictable rainfall (94.0%). Getting seeds from a reliable source is essential to successful vegetable farming.Diseases and pests (91.0%) also constitute constraintsto leafy vegetable farming as many farmers may not be conversant with the preventive herbicides and pesticides to prevent pest and diseases. Other constraints include security and kidnapping issues (85.0%),high cost of labour (82%),and poor farm mechanization system (79.0%) respectively.

Table 4: Distribution of Respondent based on constraints in leafy vegetables farming

Constraints	Frequency *	Percentage
Unpredictable rainfall	**94**	**94**
Lack of seed	**94**	**94**
Bad road network/cost of transportation	**91**	**91**
Disease/Pest	**91**	**91**
Insecurity/kidnapping issues	**85**	**85**
High cost of labour	**82**	**82**
Farm mechanization	**79**	**79**
High cost of land	**73**	**73**

Source: Field survey, 2023 *Multiple responses

Test of hypotheses

Chi square analysis between socio-economic characteristics and household food security.

Among the selected socio-economic characteristics, Chi-square analysis revealed that age (χ^2= 83.119 p=0.001) and household size (χ^2= 28.117, p=0.000), were significant to household food security status of the respondents. Therefore, the null hypothesis which stated that there is no significant relationship between selected socio-economic characteristics and household food security status is hereby rejected. This implied that age is one of the fulcrums of agricultural production, age play a vital bigger role in leafy vegetable farming because most of the respondents were young, agile, very strong and have the strength to carry out various

operations/activities in leafy vegetable farming respectively. This is similar with findings of (Aji, 2016) who confirmed that young rural women who are within their active age mostly dominated farming of leafy vegetables than young men. Furthermore, large household size increase level of production of leafy vegetable farming, their level of household size give rise to more food production, usually because the labour is readily available. According to Joseph, 2017 who confirmed that farm families with large household sizes can increase level of income of farmers, and also boost farming activities in Nigeria.

Table 5. Chi-square Analysis on the selected Socio-economic Characteristics and household food security status.

Variables	χ^2	df	P-value	Remark
Actual Age	83.119	46	0.001	**S**
Religion	2.499	**2**	0.287	**NS**
Purdah	3.114	**2**	0.211	**NS**
Household size	28.117	**4**	0.000	**S**

Source: Field survey, 2023

Chi square analysis between constraints against leafy vegetable farming and household food security status.

Among the selected constraints, Chi-square analysis revealedthat lack of viable seeds (χ^2=2.691, p=0.01) and farm mechanization (χ^2=4.691, p=0.02) were significant to household food security status. The null hypothesis which stated that there is no significant relationship between constraints to leafy vegetable and household food security status is hereby rejected. The use of farm machineries save time and also increase level production through the adoption of modern machine that will operate significantly in the farm. The various challenges facing Nigeria towards ensuring food security include; lack of farm machinery, disease/pest, lack of seed, and cost of land, (Bilyaminu, 2019). These posed various challenges to farming output and also threaten adequate household food security.

Table 6:Chi-square Analysis on the Constraints to leafy vegetable farming and food security status

Variables	χ^2	Df	P-value	Remark
Lack of seed	2.126	**2**	0.010	**S**
Farm mechanization	4.691	**2**	0.020	**S**

Conclusion and Recommendations

The study assessed the contributions of leafy vegetable farming to household food security status among rural women in Igabi LGA. The mean age of the respondents was 37 years. The main constraint in leafy vegetable farming were lack of viable seeds and unpredictable rainfall. There were significant relationships between age, household size, farm mechanization, and household food security status. It is hereby recommended that efforts should be put in place to make viable seeds available to the rural women to enhance increased level of production of leafy

vegetables and its good contributions to households' food security. Then, mechanized farming system should be put into consideration, through both government and community efforts to reduce drudgery and enhance availability of leafy vegetables all year round.

References

Adesina, D., Mujawanmariya, E., and Karimov, A. (2014).Principles and Practices Horticulture Crops in the Tropic Training Manual, Katsina State.

Aji, A. (2016). Yield, bulb size distribution and storability of onion (*Allium cepa*) under different levels of N fertilization and irrigation regime.*TropicalAgriculture*,**77**(3):143145p

Barley, L. H. (2020). Principle of vegetable Cultivation: Discovery Publishing House, New Delhi – 1100 02, P2; 2020. ISBN: 01-7141 – 4898.

Bilyaminu, A. (2019). Analysis of Spinach production in some selected local government areas of Kano State, Nigeria. In. Karl B and Dimitrios P.ed. Proceedings of the 3rd International Network for Economic Research (INFER) Symposium on Agri-Tech Economics for Sustainable Futures.Held on 21st – 22nd September 2020, at Harper Adams University, Newport, United Kingdom.

Damisa, A. (2017). Women participation in Agricultural Production: A probit analysis. *Journal of Applied Sciences*, 7(3): 412 – 413.

Food and Agricultural Organization (FAO), (2016). Migration, Agriculture and Climate Change. Reducing vulnerabilities and enhancing resilience. *Food and Agricultural Organization of the United Nations, Rome, Italy*.

Food and Agricultural Organization (FAO), (2017).Agricultural and Development Economics Division. June 2006. Retrieved June 8, 2023

Faraja, M. (2018). Vegetable production and Household poverty reduction in Ludewa District: A dissertation Submitted in partial fulfillment of the requirement for the degree of Master of Science in Development Policy (M.Sc. DP) of Mzumbe. University Mzumbe.

John, O.I. (2018). Food Insecurity in Nigeria: Way Forward. Department of Economics University of Jos, Plateau State, Nigeria.*International Multi-Disciplinary Journal*, 7 (4): 26-35.

Joseph, B. (2017). Economic analysis of tomato production in Fagge Local Government, Kano state, Nigeria.*Journal of Economics and Development Studies*, 6(2):98-104.

Kochlar, S. L. (2016). Tropical Crop (2nd edition) The Interstate Printers and Publishers Incorporation. U.S.A.

Laugren, B. (2002). "Socio-economic Factors Affecting the Adoption of Ginger Farming Innovations in Kaduna State Agricultural Development Project (KADP) Zone II" Samaru-Kataf.Unpublished M.Sc. Thesis, AbubakarTafawa Balewa University, Bauchi pp 45-68.

Musa, M. (2014). Leafy vegetable Sp*ecies*, In Plant Resources of Tropical Africa 2. Vegetables PROTA Foundation, Backhugs Publishers, Leiden, Netherlands/ICTA, Wageningen, Netherland, 154–163.

National Population Commission (NPC) (2006) Population Census of Federal Republic of Nigeria: Analytical Report. Available online at: http://www.population.gov.ng/

index.php/state-population (accessed January 10 2023)

Oni, N. (2018). Preservation Responsibilities of Homemakers in Processing, Storage and Preservation of pepper (capsicum species) in Southern Nigeria, *African Journal of Teacher Education*, 1(1): 185-114.

Otsuka, A. Larson, D, and Hazell, M. (2009). Gender Issues in Agriculture and Rural Development in Nigeria: The Role of Women. *Humanity & Social Sciences Journal*, 4 (1):19-30.

Oyeniran. J, O. (2018). Report of Nationally Coordinated Research Project on fruit and vegetables in Nigeria, Proc. Nat. Workshop on improved packaging and storing system for fruits and vegetable in Nigeria. Ilorin, Nigeria.

Prince, N. S, Bushra T, Abdul, H. B, Qazi, B. A. (2020).Role of rural women in agriculture Kanak valley Bolochistan. AERU, Quetta Staff Paper No. 91-1.

Sharon, B. H. (2018). "Rural women and food security. Food and Agricultural Organization participation in panel discussion on the occasion of the International Day of Rural Women held in New York. Pp 12 – 30. Retrieved on 23-3-2023.

United Nations Agency for International Development (USAID) 2007. Household Food Insecurity Access Scale (HFIAS) for measurement of Household Food Access: Indicator Guide (v.3). Washington D.C. *Food and Nutrition Technical Assistance Project*, Academy for Educational Development

Women of Work (WOW, 2017).Rural women and food security in Asia and the Pacific:Prospects and paradoxes Rap Publication 2005/30 Food and Agriculture.An Overview. Pp 201-221.