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Assessment of Input Needs of Women Vegetable Farmers in Gwer-East Local Government Area of Benue State, Nigeria

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Abstract:

The study was carried out to assess input needs of women vegetable farmers in Gwer-East Local Government Area of Benue State, Nigeria. Simple random sampling was adopted in selecting 150 respondents. Primary data were collected using structured questionnaire. Data collected were analyzed through descriptive statistics and Logit regression. Results revealed that 66.7% were between 21-40 years, 82.0% were married, 58.0% were farmers with 62.0% having farming experience of at least 10 years, 60.0% acquired secondary school certificate, 51.3% had farm size of between 1.1-2.0 hectares, 55.3% had household size of between 6-10 persons and 37.5 % had an annual income of ₦150,001 and above. 34.0% required improved vegetable seeds 55.3% obtained chemical fertilizers, 65.3% farm inputs were inadequate, 63.3% their inputs priority was adequate agricultural information, 59.3% source their farm inputs from markets, 50.0% extent of access to farm inputs was high, 42.7% extension contact was low, 26.7% low level of education was one of the constraints faced by vegetable women farmers in accessing farm inputs. The result of logit regression analysis showed that number of years spent for formal education was significant at $P<0.5$ and it is recommended that farm inputs particularly improved vegetable seeds should be provided for the vegetable women farmers.

Keywords: Assessment, Input, Needs, Women, Vegetable, Farmers

1. Introduction

Vegetables are edible parts of plant that are eaten raw or cooked. These may by root (carrot), fresh pod (green beans), immature fruit (okra), ripe fruits (tomato), tender leaf (Amaranthus), shoot (bamboo), immature flower (cauliflower), shoot or bulb (onion). On the other hand, inputs are resources needed for production of vegetable, or resources that contribute to the production and delivery of outputs; these include human labour, equipment, energy, information or finance and buildings among others.

These inputs may also include fertilizers, improved variety of seeds and seedlings, feeds, plant protection chemicals, agricultural machinery and equipment and water [1]. In other words, farm inputs are defined as the resources that are used in farm production such as chemicals, equipment, animal feeds and seeds. Successful vegetable farmers do much more than produce vegetables, but also manage money, people and natural resources effectively.

The agricultural sector plays an important role through its impact on one of the oldest economic activities in the world; it gainfully employs over 70% of the world's population. Agriculture is the main source of income for rural households in developing countries and also the main occupation of many women. Worldwide, 72% of all employed women and 90% of all rural women are working in agriculture [2].

Women farmers grow more than half of all the food in developing countries and up to 80% in parts of Africa, generally inform of small-scale crops for household consumption. They are responsible for about 75% of total household food production in Sub-Saharan Africa, 65 percent in Asia and 45 percent in Latin America [3].

Regardless of the level of development achieved by different economies, women play a crucial role in food production and rural development in most countries, yet relative to men, they have less access to productive asset. There is a striking bias in favour of men when it comes to access to ownership of land, agricultural technology, information, training, financial services and all related productive resources [4].

Vegetables (leafy and fruits) are widely cultivated in most parts of Nigeria, as a cheap and reliable source of protein, vitamins, zinc and iron. They constitute between 30 percent and 50 percent of iron and vitamins A in resource poor diet. Vegetable production in Nigeria is characterized by use of crude implements, non-availability of inputs and illiteracy among others [5]. Leafy vegetables are important feature of Nigerian's diet that a traditional meal without it is assumed to be incomplete. In developing countries, the consumption of vegetables is generally lower than the FAO (Food and Agriculture Organization) recommendation of 75kg per year (206g per day per capita) [6].

In Nigeria, vegetable production has been practiced for many decades, providing employment and income for the increasing population especially during the rainy season. However, production is constrained by inadequate infrastructure, inadequate knowledge of agronomic practices [7]. It has been widely demonstrated that rural women, as well as men throughout the world are engaged in a range of productive activities essential to household welfare, agricultural productivity and economic growth. Inaccessibility of farm inputs is one of the primary constraints faced by women vegetable farmers. Nigerian women despite their participation in agricultural development, it has been observed that they are faced with many problems. Women role in agricultural development has been traditionally under-rated owing to the argument that they are not major contributors to development process but rather beneficiaries of development [8].

There are a lot of constraints that women vegetable farmers have encountered due to the prevailing problems of limited information and knowledge. Women vegetable farmers have struggled with labour activities, market-price driven decisions, small-scale production, inadequate capital investments and exploitation by traders which in turn decline the hope of improving their main source of income [9].

2. Materials and Methods

Gwer- East Local Government Area (LGA) is one of the 23 LGAs in Benue State; it was created in 1976 out of Makurdi LGA and derives her name from River Gwer. Gwer-East LGA is bordered by Makurdi LGA in the North, Tarka LGA in the North-East, Gboko and Konshisha LGAs in the East, Otukpo and Obi LGAs in the South-West and Gwer-West LGA in the West. Gwer-East LGA has three districts namely Yonov, Njiriv and Ngyohov and 14 council wards

Gwer-East LGA is endowed with mineral resources which can be affectively tapped by investors. These include salt deposits, which is now locally exploited for local consumption, clay deposits used by the local people for moulding of local pots and other utensils. The LGA headquarters, Aliede is situated at a strategic point, with federal roads leading to North, East and Southern parts of the country. It has a tropical climate with dry season from November/December–March and rainy/wet season from April/May–September/October. The annual rainfall ranges between 1010-1520mm. The relative humidity varies with period of the year. The LGA has an area of 2,294km^2 and a population of 163,637 people [10]. The LGA is situated between longitude 8^o and 9^o east of the Greenwich Meridian. Farming is the main occupation of the people with about 75-80 percent of the people engaged in cultivation of arable crops. The people also involve in petty trading.

Gwer-East LGA land is very fertile; this encourages the production of agricultural produce such as groundnut, maize, yam, soybeans, cassava, rice and citrus which can provide sufficient raw materials for agro-allied industries in the area. The population of the study consists of all the vegetable women farmers in Gwer-East Local Government Area of Benue State. Because of the enormity of the population, three council wards were selected purposively due to intensity of women involvement in vegetable cultivation. The council wards were Ikwe, Mbabur and Mbasombo. In each of the council wards selected, 50 respondents (women vegetable farmers) were selected randomly, making a total of 150 respondents. Primary data were gathered by survey using structured questionnaire through interviews. Data collected were analyzed using descriptive statistics such as mean, frequencies, percentage and Logistic regression.

Logistic Regression

$Z = \text{Log}\ (p/1-p) = \text{log}y = \alpha + B_1X_1 ..... B_n X_n + U_i$

Where

Z= Dependent variables (input needs)

B_1-B_n=Binary constant

Log = Natural log of dependent variables

U_i = Error term

X_1-X_n = Independent variable:

X_1=Age: in years 1, 2, 3, etc

X_2 = Farming experience: in years 1, 2, 3, etc

X_3 = Level of education: number of years spent for education

X_4 = Household size: number 1, 2, 3, etc

X_5 = Farm size: hectares 1, 2, 3, etc

X_6 = Annual income: Naira (₦) 1, 2, 3, etc

3. Results and Discussion

Table 1: *Selected Socio-economic Characteristics of the Respondents.*

Variables	Frequency	Percentage	Mean
Age (Years)			38.55
21-40	100	66.7	
41-60	36	24.0	
60 above	12	8.0	
Lee than 20	2	1.3	
Farming Experience (years)			14.66
Less than 10	93	62.0	
21 and above	36	24.0	
11-15	14	9.3	
16-20	7	4.7	
Household Size			6.83
6-10	83	55.3	
Less than 5	49	32.7	
11-15	15	10.0	
16 and above	3	2.0	
Farm Size			1.81
1.1-2.0	77	51.3	
Less than 1.0	51	34.0	
2.1-3.0	15	10.0	
3.1 and above	7	4.7	
Annual Income			163373.33
150,001 and above	56	37.3	
50,001-100,000	55	36.7	
Less than 50,000	59	19.3	
100,001-150,000	10	6.7	

3.1. Age

Results in Table 1 reveal age in years, those of ages 21-40 66.7%, 41-60 24.0%, 60 years and above 8.0% and less than 21 1.3%. Majority (66.7%) of the respondents were young women between 21-40 years of age. This age category is youth that are very active on farm activities; they are capable of making use of their energy to carry out physical farm activities that are associated with manual labour especially for vegetable crops in Nigeria. Vegetables provide essential nutrients for proper function of the body; more women should be encouraged to go into vegetable production. This implies that vegetable farming in the area is dominated by young women. This finding is similar to [11] and [12] who have reported that young women are actively and highly involved in food production.

According to [13] age is one of the factors that could prevent farming households from reaching their targets. Because younger people may be better adopters of new methods of farming than older people, age also has a positive effect on sustained household food availability. On the contrary, [14] reported that as people get older,

they may be more willing to take risk. However, they work fewer hours and this is likely to affect their vegetable production activities in particular and food security status in general. Younger farmers are expected to work on a more acreage as they are stronger than older farmers.

According to [14], as farmers get older the farm output decreases. This could be why farming activity needs a strong healthy person and older farmers are not easily willing to change to new farming practices that may increase their farm output [15]. On the other hand, [16] disagree, as they believe that older farmers are more food secure than younger farmers. This therefore, implies that the age of the household head can have either a negative or a positive effect on vegetable production and household food security status.

3.2. Farm Experience

Results in Table 1 reveal farming experience; less or equal to 10 years 62.0%, 20 years and above 24.0%, 11-15 years 9.3% and 16-20 years 4.7%. More than half (62.0%) of the respondents had at least 10 years of farming experience. This implies that majority of the respondents were experienced vegetable farmers. Experience is an essential ingredient in farming, the more experience a farmer is the more she/he is able to handle certain agricultural practices like planting depth and time, time to apply fertilizer, time to harvest among others which lead to high yield.

3.3.Years of Formal Education

Results in Table 1 show level of education: secondary education 60.0%, primary education 24.7%, non-formal education 8.0%, and tertiary education 7.3%. A higher (60.0%) proportion of the respondents had secondary education. This implies that with secondary education, the farmers had greater potentials for adoption of improved farm technologies which would lead to higher output of vegetable production in the study area. Education is an important factor among farmers as it facilitates adoption, farmers who are educated read newspapers; listen to radio and other means to obtain information on agricultural innovations and most of them are early adopters.

The influence of education on agricultural production has been an issue of much discussion amongst scholars, the reason being that literate people do monitor their farm/agricultural production than the illiterate people. Food and Agriculture Organization [15] reported that, “lack of education leads to poor productivity, unemployability and low earning capacity, leading directly to poverty and hunger”.

3.4. Household Size

Results in Table 1 show household size, those with household size of between 6-10 55.3%, at least 5 persons 32.7%, 11-15 10.0% and 16 persons and above 2.0%. Majority (55.3%) of the respondents had household size of between 6-10 persons. Having a household size of 6-10 persons would provide labour for the vegetable farmers. Vegetable is a perishable crop which requires many hands in handling it especially during the harvesting stage. This implies that there exists free cheap labour for the women vegetable farmers.

According to [18], a farmer with a large household size could easily participate in an agricultural project while delegating other important activities to other household members and vice versa. [19] Also noted that in the case of large household, each adult household member could be a source of information or a beneficiary of an

agricultural project. Hence, as the household size increases, the likelihood of coming in contact with an agricultural project also increases, thereby increasing agricultural productivity.

3.5.Farm Size

Results in Table 1 show farm size: 1.1-2.0 51.3%, at least 1 hectare 34.0%, 2.1-3.0 10.0% and 3.1 hectares and above 4.7%. A major (51.3%) proportion of the respondents had farm size of 1.1-2.0 hectares. This implies that they were small scale and subsistence farmers. A situation that may not allow them to engage in large scale production, have access to credit facilities or procure large quantity of farm inputs would also be difficult. Furthermore, under traditional and land administration system in Nigeria women do not have the right to inherit land. This makes it very difficult for women to own farmland especially in the villages where land is acquired through inheritance. This confirms [20] which stated that females operated farms have small land to cultivate thus, their farms are very small with a corresponding low outputs.

3.6. Annual Income

Results in Table 1 reveal annual income: ₦150,001 and above 37.3%, ₦50001-100,000 36.7%, less than ₦50,000 19.3% and ₦10001-150,000 6.7%. A reasonable (37.3) proportion of the respondents obtained an annual income of at least ₦150,001 and above. This is an indication that vegetable farmers in the area were peasant farmers with a low annual income. The income levels of the respondents were very low and may not encourage savings among farmers. The income of a farmer is very important in determining the output which is why [21] pointed out that the level of access to farm input depends substantially on a household's income and asset (wealth) status. In this case, there were few households with a high-income level suggesting that many households in the study area are more likely to be able to acquire more farm inputs. In a similar way [22] reported that a weak financial position of local communities also reduces the capacity of communities to acquire modern farm inputs and also participate into development projects.

Table 2: *Distribution of the respondents based on input needs (n=150).*

Inputs required	**Frequency**	**Percentage**
Improved vegetable seeds	51	34.0
Credit facility	32	21.3
Adequate agricultural information	26	17.3
Chemical fertilizers	20	13.3
Agrochemicals	17	11.3
Labour	11	7.3
Storage facilities	9	6.0
Farm tools	7	4.7

***Multiple responses** *

Results in Table 2 show farm input required, improved vegetable seeds, 34.0%; credit facility, 21.3%; adequate agricultural information, 17.3%; agrochemicals, 13.3%; chemical fertilizers, 11.3%; labour, 7.3%; farm tools, 6% and land 4.7%. A reasonable (34.0%) proportion of the respondents required improved vegetable seeds. This implies that farmers have been planting local seeds which does not give them the expected yields, hence the desire to acquire improved vegetable seeds. Farmers have

identified the importance of planting improved vegetable seeds as they obtain higher yield compare to the use of local varieties.

The finding corroborates [19] which reported that most of the women farmers lack farm inputs like improved seeds, fertilizers among others hence stick to local varieties which are not economically efficient but have prominent palatability characteristics. Farm inputs are very important as indicated by [1] that the vital role played by farm inputs for agricultural and industrial development in developing countries is still neglected and accorded a lower status compared to other sectors. In addition, most of the farmers including women vegetable farmers in Nigeria lack access to modern techniques of agricultural production technology and improved varieties [23].

Table 3: *Distribution of the Respondents by Farm Input Priority.*

Farm input priority	**Frequency**	**Percentage**
Improved vegetable seeds	95	63.3
Credit facility	19	12.7
Adequate agricultural information	14	9.3
Agrochemicals	12	8.0
Chemical fertilizers	6	4.0
Farm tools	4	2.7
Total	**150**	**100**

Results in Table 3 reveal farm inputs priority; improved vegetable seeds, 63.3%; credit facility, 12.7%; adequate agricultural information, 9.3%; agrochemicals, 8.0%; chemical fertilizers, 4.0% and farm tools 2.7%. Majority, (63.3%) of the respondents' inputs priority was improved vegetable seeds. Farmers who have planted local varieties of vegetables over the years have discovered that their output was not as high as those who planted the improved ones and they got spoiled easily, these necessitated the use of improved vegetables. Most farmers required improved vegetables seeds to produce good quality vegetables that will be marketed at higher price to earn more income for the family. Improved vegetables are very essential in order to improve the quantity and the quality of vegetable production to earn more income for the individual in particular and the family in general. The finding confirms [24] who observed that in order to provide timely, appropriate and relevant farming puts to farmers, it is necessary to classify their farm input needs. Similarly, several studies like [25; 26; 27; 28] reported that the input needs of farmers differ by type of enterprise practiced and range from how and where to obtain them.

Similarly, [29] reported that the important input needs for women vegetable farmers were pesticide, fertilizer, information needed for pest and diseases management and the best time to plant, planting depth, storage, seed treatment and care for nursery. In contrast, [30] argued that in most parts of Nigeria lack of farm inputs by small-scale farmers is one of the major factors/constraints affecting farmers in their efforts to improve vegetable production.

Table 4: *Distribution of respondents based on source of access to farm inputs.*

Source of inputs	**Frequency**	**Percentage**
Market	92	61.3
Farmers' cooperative society	51	34.0
Extension workers	20	13.3
Neighbours	12	8.0

*****Multiple responses* *****

Results in Table 4 show sources of access to farm inputs market, 61.3%; farmers' cooperative society, 34%; agricultural extension workers, 13.7% and neighbours, 8%. A reasonable (39.3%) proportion of the respondents obtained farm inputs from the market. This indicates that most of the women vegetable farmers in the area used market as their source of farm inputs. Market is one of the places where farmers obtain farm inputs, this is because most of the ADPs (Agricultural Development Project) which used to disburse farm inputs to farmers are not functional and therefore market place is where farmers source or buy farm inputs including chemical fertilizers and farm tools among others.

Farmers require different types of farm inputs for day today agricultural activities. Moreover, the level of farm input needs may differ between people, or a group of people, depending on different factors, such as age, level of education, socio-economic status, types of sources available, level of awareness and ease of use of farm inputs [31]. According to [28] rural farmers are not getting the right farm inputs at the right time, leading to slow and low farm output.

Table 5: *Results of Logistic Regression showing the Socio-economic Factors Affecting Access to Farm Inputs.*

Age	0.12(0.050)
Farm experience	0.13-(0.065)
Number of years spent in formal education	-0.302(4.962)**
Household size	-0.008(0.04)
Farm size	0.230(0.352)
Annual income	0.000(1.763)
Constant	5.216(8.689)
Chi-square	10.504
Homser and Lemeshow Chi-square	12.875

Note: *Values in parentheses represent Wald.*
*** = t-test significant at 5%.*

The results of socio-economic characteristics influencing women's level of access to production inputs is presented in Table 5. The non-significant Horsmer and Lemeshow Chi-square mean that the model is not significantly different. The result also shows that Chi-square test of model significance was significant at 5%. This implies that the socio-economic characteristics included in the model are significantly related to level of access to production inputs. Hence, the Null Hypothesis that socio-economic characteristics do not significantly influence women's access to production inputs was rejected.

Furthermore, the results reveal that only the coefficient of education was significantly related to level of access to production input. The result show that, education was negative (-0.302) and statistically significant at 5% level. This implies that increase in level of education by women vegetable farmers will reduce their probability of having high access to production inputs. This is against the prior expectation of this variable as education is expected to increase more access to inputs especially when the farmers are engaged in other jobs to earn income due to their level of education.

4. Conclusions

Vegetables are very essential for healthy living. The study assessed input needs of women vegetables farmers and identified that the women vegetable farmers' farm input priority was improved vegetable seeds and the farm input most vegetable farmers needed was also improved vegetable seeds followed by credit facility among others. It is recommended that improved vegetable seeds should be provided to the women vegetable farmers.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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