

## **Analysis of Access and Use of Agro – Input of Maize and Telfaria among Male and Female Farmers in Akwa-Ibom State, Nigeria**

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### **Abstract**

Farmers' capacity to greater uptake of technologies depends on their access and utilization of productive resources. Analysis of access and utilization of agro-inputs of maize and telferia vegetable among male and female farmers was conducted in Akwa Ibom State, Nigeria. Multi-staged sampling procedure was used to select 144 respondents (72males and 72females) for the study. Data were collected with the aid of structured questionnaire. Descriptive statistics were used for data analysis while Bivariate correlation analysis was used to test the hypothesis. Findings on the pattern of access and use of agro-input of maize and telferia vegetable revealed that though both genders have the same level of access to production inputs, male farmers have higher level of input utilization than the females. Both male and female farmers had access to eleven (11) out of the fifteen (15) farm input listed. Male farmers made effective use of ten (10) while female farmers made effective use of eight (8) out of the fifteen (15) listed inputs. There was a significant difference in level of access and utilization of farm inputs among male and female farmers in the study area. Technical efficiency on utilization of agricultural inputs of the farmers especially the female farmers must be improved; therefore Agricultural Development Program through their extension service unit should further train the farmers on resources utilization and farm management skills which will enable farmers to maximally utilize their inputs focusing on efficiency as their goal.

**Keywords:** gender, access and utilization, agro input, Akwa Ibom State, ADP.

### **Introduction**

The role of gender in agriculture cannot be overemphasized due to the pervasiveness of gender stratification in the distribution of production resources, information and even access to appropriate technologies. Gender analysis of farmers is an issue of great importance because it is

significant not only to total subsistence food output in which they predominate but also to performance of cash crop, land, mainly managed by men (Simonyan, Umoren and Okoye, 2011). Gender focuses on the relationship between men and women, their roles, access to and control over resources, division of labour and needs. Gender affects the distribution of resources and nature of utilization in both agricultural and non-agricultural inputs. Gender differences in resource control, assets ownership, income earning, consumption and expenditure have been identified as important factors in household food security especially among arable crop farmers (Owotoki, 2013), (Umeh, 2016). Despite improvement in building women's capacities, gender gap in entitlements, the resources which women and men can command through available legal means, continue to persist among maize and vegetable farmers. Aladetoyin (2015) posited that grains and vegetable is one of the most important crops grown by farmers in recent time. It serves as a source of livelihood to many farmers as more and more people are buying carrots, tomatoes, pumpkin and other green vegetables. Vegetable forms a most valuable part of our diet and are used to increase the quality of our soup. They play an important role in maintaining general good health owing to the presence of mineral elements and vitamins. However, proper gender integration plan in access and utilization of inputs in the field of vegetable production will not only improve the nutritional requirement for masses but can also meet the challenge of adequate food supply to the growing population in Nigeria.

Furthermore, there is an increasing recognition that ownership, access and, control over agricultural resources constitutes critical elements in the determination of the well-being of maize and vegetable farm households. Farmers' capacity to employ improved technology and investment depends on their access to productive resources. Both men and women contribute significantly to agricultural production yet, their access to these agricultural resources differs as they are challenged by different constraints (FAO, 2013). What are the factors affecting access and utilization of farm inputs by gender in the study area, better understanding of these barriers can help to enhance higher production of these crops and redirect policy and programme focus on this global issue. Hence this study conducted analysis of access and utilization of agro-input of maize and telferia vegetable among male and female farmers in Akwa Ibom State, Nigeria. Specifically, the study ascertained input need of maize and Telferia vegetable crop, ascertained level of access and utilization as well as identified factors affecting access and utilization of maize and Telferia vegetable farm inputs among the farmers.

### **Hypothesis**

**H0<sub>1</sub>:** There is no significant relationship in the level of access and utilization of maize and Telferia vegetable crop among male and female farmers in the study area.

### **Methodology**

The study was conducted in Akwa Ibom State. Akwa Ibom State is located in the coastal South-South region of Nigeria. The region is popularly called the Niger Delta region or the oil rich region of Nigeria. The state is located between latitudes 4°32<sup>1</sup> and 5°33<sup>1</sup> north and longitudes 7°5<sup>1</sup> and 8°25<sup>1</sup> east. It has a total land area of areas of 7,246km. It is bordered on the east by Cross River State, on the west by Rivers State and Abia State, and on the South by the Atlantic Ocean. Akwa Ibom State has a population of about 3,902,051 (NPC, 2006). The state has a tropical climate while farming and trading are major occupations of the people.

Multi-stage sampling procedure was used for selection of sample size for the study. Firstly, from the three (3) agricultural zones in the State, Eket agricultural zone was purposefully selected for the study, Eket Local Government Area was further purposefully selected out of 15 LGAs in Eket agricultural zone for proximity to the researcher and thoroughness of the work. Eket LGA is made up of three (3) clans namely Afaha, Idua and Eket Offiong clans. The three clans were purposively selected because they are core producers of maize and vegetable. Thirdly, three (3) communities were randomly selected from each of the clan making nine (9) communities. Fourthly, sixteen (16) farmers comprising of 8 male farmers and 8 female farmers were randomly selected in each of the community making it one hundred and forty-four (144) respondents for the study.

### Data Analysis

1. To accomplish objectives **one and two**, descriptive statistics such as frequencies, percentages and mean were employed to analyze the socio-economic characteristics of the farmers. The Socio-economic factors to be considered are age, educational level, marital status, household size, farming experience, Membership of cooperative societies, extension contact and access to credit facilities.
2. Objective **three** which is to examine the level of use of input by farmers in the study area was achieved using mean. 5-Point Likert rating scale of very high (5), high (4), moderate (3), low (2). Very low (1) were used to obtain the mean. Variables with mean score of 3.0 (which is the average mean score of the likert level) and above imply that they are positive and have high level of use by farmers while factors with mean score of less than 3.0 are negative and rarely used by farmers.
3. Objective **four** which is to ascertain constraints to access and utilization of maize and Telferia vegetable farm inputs among farmers by gender in the study area was achieved using mean count. 4-Point Likert rating scale of strongly agree (4), agree (3), disagree (2), strongly disagree (1) was used to obtain the mean. Variables with mean score of 2.5 (which is the average mean score of the likert level) and above imply that they are considered as constraints while factors with mean score of less than 2.5 are negative and rarely considered as constraints.

### Hypothesis

**H<sub>01</sub>** was tested using Bivariate correlation analysis.

1. **H<sub>01</sub>: There is no significant relationship in the level of access and utilization of maize and Telferia vegetable crop among farmers by gender in the study area.**

The hypothesis was tested using bivariate Pearson's Product Moment Correlation Coefficient (PPMCC) and the t-test for test of significance relationship. This model was used to test the relationship between two variables drawn from the same population. The PPMCC is expressed thus;

$$\text{PPMCC } (r) = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{((n\sum X^2) - (\sum X^2)) (n\sum Y^2) - (n\sum Y)^2}}$$

Where,

r = correlation coefficient

Y = dependent variable (mean)

X = independent variable (mean)

n = sample size

In order to test for the level of significance between the dependent and independent variables, t-test of significance was carried out. The model is expressed as;

$$t = \frac{r \times \sqrt{n-2}}{1-r^2}$$

Where,

r = correlation coefficient

n = sample size

## Results and Discussion

### Socioeconomic characteristics

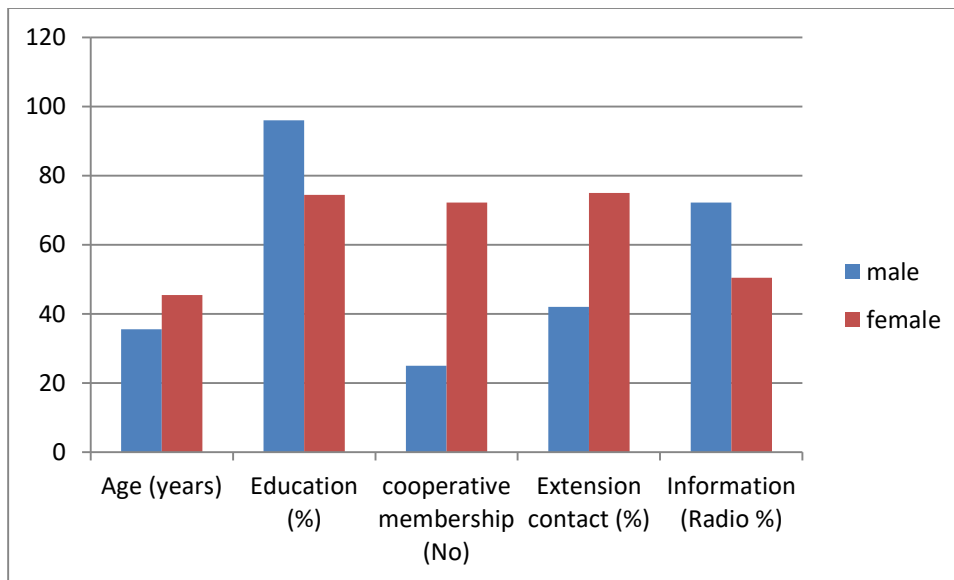
Result presented in fig 1 shows that the mean age for the male and female farmers studied is 35.5 years and 45.5 years respectively. There is appreciable level of literacy among the farmers as 96% of male farmers and 74.4% of female farmers have formal education. Both genders have about 18years farming experience while 70.83% of the female farmers are members of comparative societies unlike the males where only 25% are cooperators. 75% of the female and 42% of the male farmers have contact with extension twice monthly while majority (72.22% for males and 50.4% for females) of the respondents had access to agricultural information through the radio.

Farmers in the study area were young and in their productive and active age group and have significant influence on the decision making process of farmers with respect to adoption of improved farming technologies and other production-related decisions. In agreement, Olakunle (2014) opined that age of farmers has a positive effect on technical inefficiency because old people are less energetic and less receptive to agricultural innovations and hence develops inefficient production routines and practices. The result also shows that the male maize and telferia vegetable farmers were slightly younger than the females. This may be because cultivation of maize and telferia crops is viewed as age long feminine practice therefore dominated by mostly women. There is appreciable level of literacy in the study area. This implies that learned people are involved in farming. It is assumed that high literacy level may influence adoptions of innovations that are related to modern farming, this will enhance their access to information. Nwachukwu (2005) agreed that the level of education one has will affect the way one receives and utilities the message. Higher percentage of the males is educated.

The involvement of more women in cooperative activities may be attributed to their being more gregarious in nature as well as their ability to organize themselves much more easily than males. Furthermore, the benefits that accrue to members of a cooperative society which include economic of scales, access to agricultural information and credit may also be an inducement to membership of a cooperative society. The female farmers therefore have an advantage in this regard. In agreement to this result, Umeh, Nzeako and Ikoro (2016) agreed that by permitting women and men farmers, or women only, to join together as a cooperative, individuals are better able to acquire inputs, production services, and marketing for their produce.

The study found that extension contacts in the study areas were adequate and the farmers were able to access information on inputs and innovations for crop production. However, the female farmers had higher contact with extension than the males showing that the female farmers are actively involved in farming in the study area. the result also disagree with Anaglo *et al* (2014) that established a significant relationship between gender and smallholder farmers' access to agricultural information through Agricultural Extension Officers (AEAs) who also posited that extension services are more available to men and the wealthier farmers than women.

The results have shown that farmers (both male and female) mostly receive information on agricultural inputs through radio broadcasts. This is likely due to the fact that after farm work, most farmers have more time to listen to radio while doing their house chores. This agrees with Anaglo *et al* (2014) who also reported a significant relationship between gender and access to agricultural information through radio, on the contrary, he observed that male farmers had more access to radio information than the female farmers. Radio broadcasts of agricultural information especially; availability of inputs should be encouraged.



**Fig 1: Socioeconomic Characteristics of the Farmers by Gender**

### Farm input need by farmers for production of maize and telferia vegetable

Results on Farm input need by farmers for production of Maize and Telferia Vegetable were presented in Fig 2.

**Maize:** findings shows that the male farmers indicated their need for improved varieties yellow maize (72.22%) and local variety of maize (100%) while the females indicated their need for improved varieties yellow maize (55.55%) and improved varieties white maize (83.33%). The difference among gender in need for specific varieties of maize might be because of yield, taste and market value.

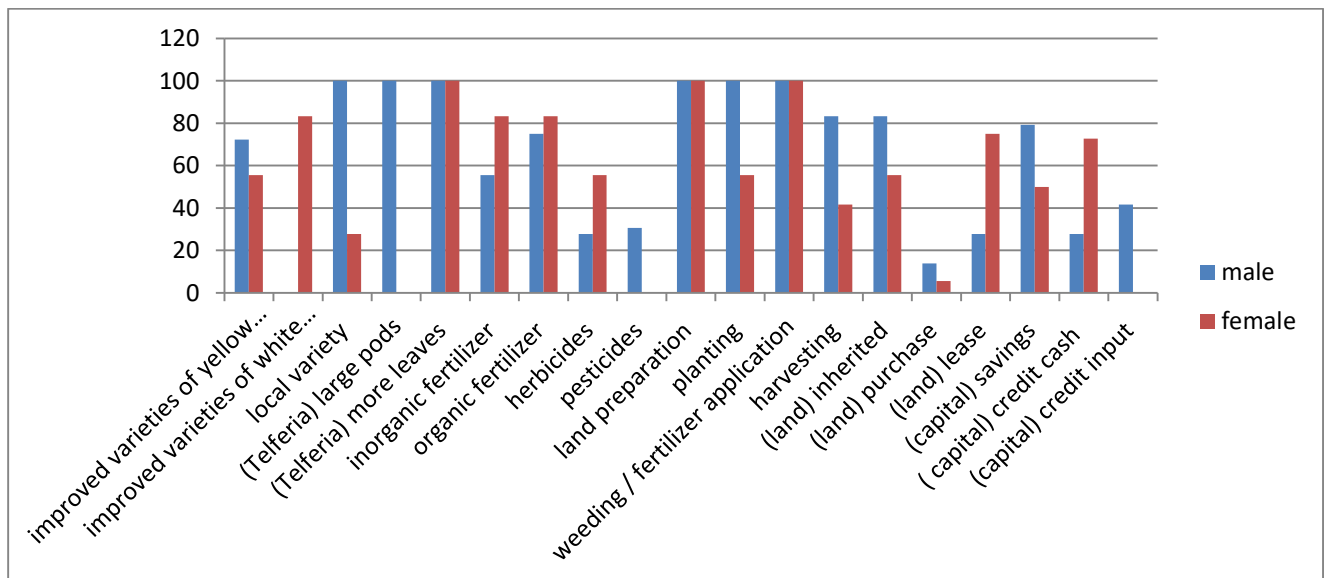
**Telferia vegetable:** the results further show that the male farmers indicated their need for both large pods telferia vegetable (100%) and more leaves telferia vegetable (100%) while the females

indicated their need for only more leaves telfaria vegetable (100%). The female farmers' preferred more leaves telfaria vegetable because they mostly engaged in sale of "ugu" leaves.

**Fertilizer/ agrochemicals:** records from Table 4.2 show that most (55.56%) of the male farmers need inorganic fertilizer (NPK 15:15:15) but do not require much application of herbicides agrochemical (72.22%) and pesticides agrochemical (69.44%) for their telfaria and maize production. On the other hand, majority (83.33%) of the females indicated that they also need inorganic fertilizer (NPK 15:15:15) as well as herbicides (83.33%) and pesticides (55.56%) agrochemicals. The choice of herbicides and pesticides agrochemicals by the female farmers may be because they are mostly into production of telfaria leaf vegetables for sale.

**Land/land preparation:** findings from Fig 2 further show that majority (83.33%) of the male farmers are land owners through inheritance while they require labour for all the land preparation processes listed. Results for the females farmers on this show that majority (75%) of them procure land through lease/hire. They also need labour for all the land preparation processes listed except harvesting labour (58.33%). This implies that access and ownership to land was dependent on gender in favour of the male farmer. Respondents indicated that the male inheritance system does not allow females to inherit land because these lands may be transferred to other families when the female goes out to marry from another family. This result agreed with Anaglo et al (2014) that men are given preference over women in accessing land in such patrilineal systems.

**Capital:** One of the basic resources necessary for any meaningful agricultural production by smallholder farmers is capital. From Fig.2, the major source of finance for the male farmers is personal savings (79.17%) while (27.78%) of them indicate that they need more access to credit. On the contrary, majority (72.78%) of the females' indicate that they need credit for their farm production while their main (50%) source of finance is personal savings. This implies that the need for credit cuts across both gender but the female farmers need more credit to boost their production. Earlier findings also confirm that the females are more involved and have higher land area for maize and telfaria production than the male farmers.





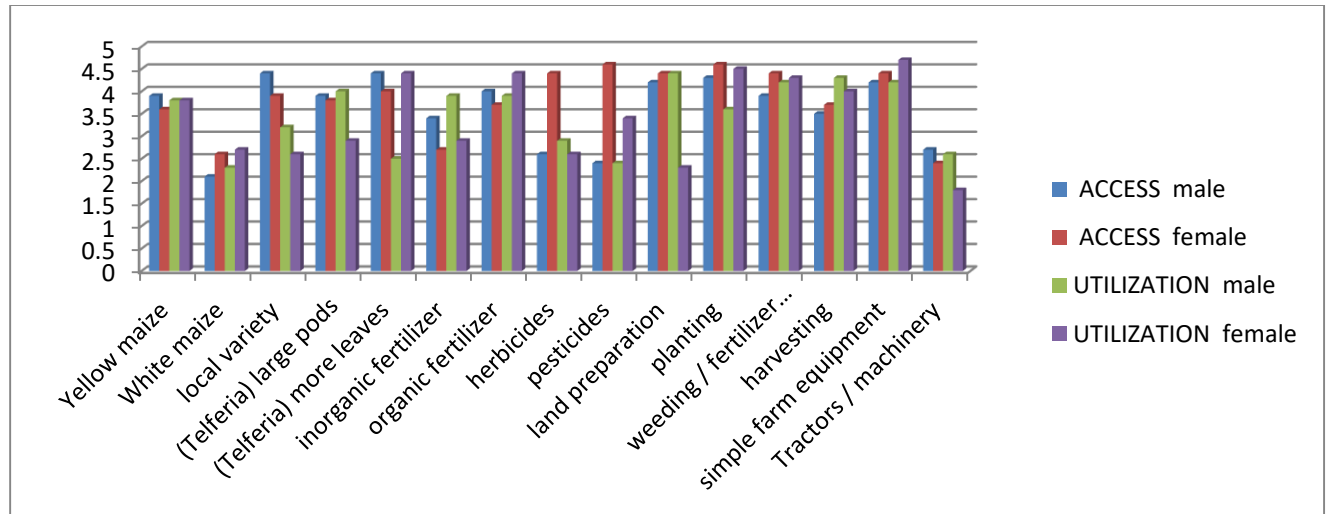
## **Fig 2: Farm Input Need of Farmers for Production of Maize and Telferia Vegetable by Gender**

### **Access and utilization of maize and telferia vegetable farm inputs**

Access and utilization of resources for maize and telfaria production was analyzed and presented in Fig 3. The results show that the male farmers had access to eleven (11) while they make effective use of ten (10) out of the fifteen (15) farm input listed for maize and Telfaria production. Also, the results shows that female farmers have access to eleven (11) while they made effective use of eight (8) out of out of the fifteen (15) farm input listed for maize and Telfaria production in the study area.

The results imply that both genders have the same level of access to agricultural inputs in the study area though at different degrees. Particularly, it has been observed that generally most of the male and female farmers in the study area have access to labour. Contrary observations have been made about men having more access to labour than females by the FAO (2011) indicating that female-headed households face more severe labour constraints than male headed households.

However, the results revealed that the male farmers have higher input utilization level than the female counterparts. Early results from the study indicate that the female farmers have higher farm size, the same level of access to inputs with the males yet, lower level of utilization of input. This result in agreement confirms FAO (2011) observation that there is a wide gender gap in agricultural technologies uptake including improved plant varieties and animal breeds. These gaps lead to gender inequalities in adoption of new technologies. This implies that to enhance production of maize and telfaria vegetables in the study area, the technical efficiency on utilization of agricultural inputs of the female farmers must be improved. Contrary to this result, Okoye (2014) on gender and resource use efficiency in cocoyam production in Anambra State, observed that male farmers underutilized fertilizer and over utilized other inputs in production while female farmers over utilized all the inputs. These results may also be crop specific but. Tavya *et. al.* (2013) agreed that technological innovation if properly understood from the gender perspective can foster increase in agricultural productivity. Therefore, empowering the rural women will enable them take greater control of their own lives and put more efforts on agricultural activities, as their male counterparts.



**Fig 3: Access and utilization of maize and Telferia vegetable farm inputs**

### Factors affecting access and utilization of maize and telferia vegetable farm inputs

The results from Fig 4 show that major factors are poor understanding of technology ( $m=3.1$ ), level of education ( $m=3.0$ ) and poor access to information (ICTs) ( $m=2.9$ ) for the male farmers while major challenges to access of inputs for the female farmers are poor income ( $m=3.6$ ), level of education ( $m=3.4$ ) and poor access to information (ICTs) ( $m=3.1$ ).

Challenges of access to information (ICTs) cuts across both gender. Apart from radio where men and women have major access, there was no or very little access to other ICTs in the study area. Even though ICTs play important roles in transferring information, smallholder farmers and rural women in particular face barriers in accessing ICTs because of their limited education, financial and time constraints (Best and Maier, 2015). Using radio in the study area does not necessarily depend on educational levels because most of the local radio stations transmit information in the local languages. Some of the radio stations that broadcast a lot of agricultural programmes include Akwa Ibom broadcasting cooperation (AKBC) and Heritage Radio, in most cases, where smallholders have access to some of these ICTs, they use them for social purposes more than assessing agricultural information. In assessing information in cassava value chains, Anaglo (2011), observed that actors in the value chain only used mobile phones to call and converse with family and friends, watching Ghanaian and Nigerian films and soccer on the TV and listening to music and political issues on the radio. It is therefore the responsibility of the extension agents to advise farmers on the use of these gadgets to assess agricultural information which will go a long way to improve a lot of farming practices of our farmers.



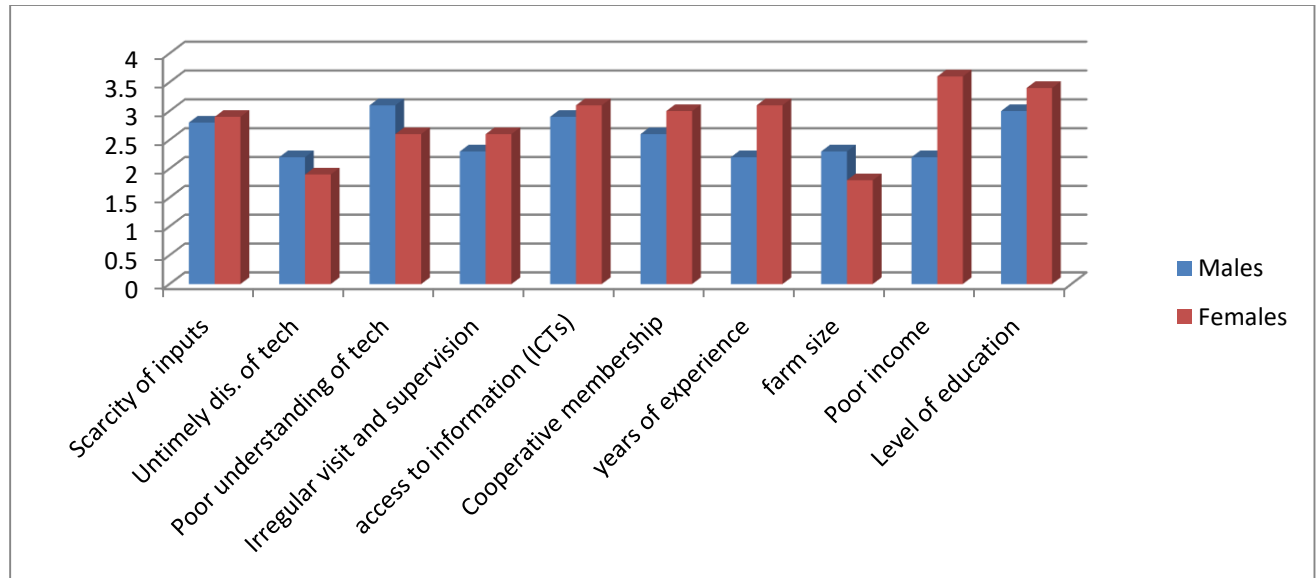


Fig 4: Factors Affecting Access to Maize and Telferia Vegetable Farm Inputs

#### Relationship in the level of access and utilization of maize and telferia vegetable crop among farmers

The Bivariate correlation analysis showing relationship between level of access and utilization of farm inputs in the study area is presented in Table 1. The result shows high positive relationship between level of access and utilization of farm inputs in the study area. The coefficient was significant at 1% level. This implies that there is a positive and strong relationship between level of access and utilization of farm inputs in the study area. This conformed to the apriori expectation that access enhances and ensures utilization of inputs by the farmers.

**Table 1: Bivariate Correlation Analysis of the Relationship between Level of Access and Utilization of Farm Inputs in the Study Area.**

	Correlation coefficient	Access to inputs	Utilization of inputs
access	Pearson Correlation	1	.734
	Sig. (2-tailed)		.000
	N	140	140
use	Pearson Correlation	.734	1

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Sig. (2-tailed)	.000	
N	144	144

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\*\* . Correlation is significant at  $P < 0.05$  level (2-tailed).

## Conclusion

Gender differences and peculiarities in resource control, utilization, assets ownership, income earning, consumption and expenditure have been identified as important factors in household food security especially among arable crop farmers. Findings from this study showed the pattern of access and use of agro-input of maize and telferia vegetable among male and female farmers in Eket agricultural zone of Akwa Ibom State. The findings show that the female farmers dominated cultivation of maize and telferia vegetable in the study area and evaluation of the input need of the farmers show that the male farmers indicated higher need for improved varieties yellow maize, local variety of maize, large pods telfaria vegetable and more leaves telfaria vegetable while the females indicated their need for improved varieties yellow maize, improved varieties white maize and only more leaves telfaria vegetable because they mostly engaged in sale of “ugu” leaves as means of livelihood.

The study also revealed that though both genders have the same level of access to production inputs of maize and telferia vegetable, the male farmers have higher level of input utilization than the females. This result in confirms the observation that there is a wide gender gap in agricultural technologies uptake. Generally, effective access and utilization of maize and telfaria vegetables input is affected by access to information (ICTs) and poor income among farmers. To enhance production of maize and telfaria vegetables in the study area, the technical efficiency on utilization of agricultural inputs of the farmers especially, the female farmers must be improved.

## RECOMMENDATION

Based on the principal findings of this study the following recommendations were made:

1. Agricultural Development Program through their extension service unit should train the farmers on resources utilization and farm management skills which will enable the farmers to maximally utilize their variable inputs focusing on efficiency as their goal.
2. Women farmers are dominant in cultivation of maize and telfaria vegetables, more attention should be paid to reduce cultural barriers that make them have less access to land.

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