

AN ANALYSIS OF WOMEN FARMERS' ACCESS TO AGRICULTURAL PRODUCTIVE RESOURCES IN ADAMAWA STATE, NIGERIA.

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Abstract

Women are key players in the Nigerian agrarian economy. However, their access and control over productive resources is greatly constrained due to inequalities constructed by patriarchal norms. This paper evaluates the access of women to farming inputs in Adamawa state, Nigeria. Primary data were obtained from a survey of 106 women farmers from the Adamawa Agricultural Development Zones through multistage and random sampling techniques. The data were analyzed with both descriptive and multiple regression analyses. The results indicated that majority (66%) of the women farmers cultivate between one and two hectares while 33% farmed between 2.1 and 6 hectares due to lack of personal land. Majority (82%) do not benefit from agricultural loan due to lack of collateral while 71% used personal savings as their sole capital, 15% borrowed from friends and relations. Most women farmers (82%) do not have contact with extension agents while only 37% are members of cooperatives. The results of the multiple regression analysis indicated that the double log function gave the best fit with R^2 of 55% (significant at 1%). Five variables were significant as follows; farm size (at 1%), Seed (at 1%), fertilizer (at 1%), insecticides (at 5%), and farming experience (at 1%). The institutional constraints facing women farmers include difficulties in accessing land and other inputs, marginalization in credit facilities and neglect in extension services. The paper advocated for equal access to productive farming resources and gender sensitive agricultural policies.

Keywords: *Women farmers, gender, agricultural inputs, access, productive resources*

Background to the Study

Women make major contributions to crop production. They provide up to 90% of the labour used in rice cultivation in southeast Asia. In sub-Saharan Africa, they produce up to 80% of basic foodstuffs for both the household and sale (FAO, 2009). Women activities in agriculture according to Olayide *et al.* (1980) can be categorized into four as follows. a) Cultivation which involves planting or seeding, input supply, such as fertilizer, watering, feeding livestock, spraying, thinning and supplying; weeding and tending or culturing; b) Harvesting which includes gathering, threshing, cleaning, transporting and storing; c) Distribution which involves transporting to farm gate or local markets, concentrating, equalizing/sorting/grading and merchandising) and Alimentation which involves processing for time utility, packaging and preparing into various forms of food items or ready-to-consume dishes.

The contribution of women farmers cannot be overemphasized especially in the developing countries. The continent of Africa for example has been referred to as the area of female farming per excellence. Compared with other regions of the world including Europe, Asia and the Far East, women in Africa are more involved in agriculture. In addition to farm activities, they are also occupied with fulfilling biologically and socially imposed functions such as child bearing, child rearing and home making.

It has been estimated that women farmers consist of one fourth of the world's population and are an essential resource base for agriculture (Serres, 2009). Their marginalization as producers however has caused a significant loss for development in farming and as well in rural society. Their limited access to resources and policy-making processes is a substantial detriment to generating solutions for food security. They often lack the necessary training and little access to information. Against this background, this paper aims at evaluating the access of women farmers to agricultural productive resources in Adamawa state, Nigeria.

Brief Review of Literature on Women's access to agricultural productive resource

FAO (1996) survey on extension services in 115 countries showed that women received only two to ten percent of all extension contacts and only five percent of extension resources. Access to appropriate information may have a significant impact on agricultural productivity. A study in Tanzania (FAO, 1996) found that extension workers assumed that all adult women are married and that their husbands would pass on advice to them but it was found that many of the women were single and head of households and even when they are married, the husband did not pass on the information. According to Doss (1999), decision about technology adoption is affected by access to land and the security of land tenure. Individuals with unsecure tenure will generally be less likely to invest in new technologies that require complementary immobile inputs. In some culture, women may obtain access to land through a male relative, which may also entail limitations on the uses of the land. In some, women cannot inherit land e.g. among the Beti of Southern Cameroon. These women are granted plots by their husbands, but cannot plant cash crops on them. It was known that regardless of how access to land is gained, women tend to have smaller land holdings than men; moreover, their holdings may be less fertile and more distant from home.

Global Food Policy Report (2012) highlighted the need to close the gender gap in access to agricultural resources, education, extension, financial services and labour markets, to invest in labour-saving and productivity-enhancing technologies and infrastructure to free woman's time for more productive activities; and to facilitate their participation in flexible, efficient, and fair rural labour markets. Enete and Amusa(2010) reported that the major problems facing women farmers include techno-institutional constraints, socio-personal constraints and economics/financial constraints. However, the study by Adebayo and Anyanwu in Nigeria (2012) showed that despite the little access they have to productive resources, women farmers are technically more efficient than the male farmers with the mean technical efficiency of 0.85 and 0.83 for women and men farmers respectively.

Methodology

The study was conducted in Adamawa state in the north-eastern part of Nigeria. The area lies between latitude 7^o and 11^o north of the equator and longitudes 11^o and 14^o east of the Greenwich meridian (Adebayo, 1999). It shares boundary with Taraba state in the south and west, Gombe state in its north-west and the Borno state to the north. The state has an international boundary with the republic of Cameroon along the eastern border. The state has a total land area of about 38,741 kilometers square with a total population of 3,178,950 (NPC, 2006) and 21 local government areas. It has a tropical climate marked by dry and rainy seasons. The rainy season starts in April and ends in October while dry season starts from November to March.

Sampling procedure and Data collection

All the four zones of Adamawa Agricultural Development programme were included with one local government area selected from each zone. In all, 106 female farmers were sampled using random sampling technique. Structured questionnaires were administered to the respondents. The primary data collected include the socioeconomic and demographic status of the respondent such as age, educational qualification, marital status, farming experience, sources of finance and so on. In addition, farm level production data were also collected including, the amount of productive resources used, the output realized, problems encountered and other variables.

Method of Data analysis

The Data for the study were analyzed using both descriptive and inferential statistics. Descriptive statistics involves the use of frequency counts, percentage and means while the inferential statistics involves the use of Multiple Regression Model. The model in the general form is stated thus:

$$Q = f(X_1, X_2, X_3, X_4, \dots, X_{12}, U)$$

Where

Q = Output of food crop farmers in grain equivalent.

X₁ = Farm size in hectare.

X₂ = Amount of seed in grain equivalent.

X₃ = Amount of fertilizer use in kg.

X₄ = Hired labor in Man days

X₅ = Family labor in Man days

X₆ = Herbicides use in liters

X₇ = Insecticides in liters.

X₈ = Age of the respondents in years.

X₉ = Marital status.

X₁₀ = Educational background.

X₁₁ = Farming experience.

X₁₂ = Family size.

Four functional forms were tried while the double-log gave the best fit.

1. Linear function:

$$Q = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + \dots + B_{12} X_{12} + U_i$$

2. Exponential function

$$L_N Q = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + \dots + B_{12} X_{12} + U_i$$

3. Semi log function:

$$Q = B_0 + B_1 L_n X_1 + B_2 L_n X_2 + \dots + B_{12} L_n X_{12} + U_i$$

4. Double log function:

$$L_n Q = B_0 + B_1 L_n X_1 + B_2 L_n X_2 + \dots + B_{12} L_n X_{12} + U_i$$

Results and Discussion

a. Dominant Socioeconomic Characteristics of Respondents

The dominant socio-economic characteristics of the women farmers are shown in Table 1. The result revealed that majority (67%) of the women farmers are between age 31 and 50 years. This result indicates that majority are in their active age and are therefore expected to be agile and be able to cope with the rigors of farming. Most of the women farmers are also married, which shows that they would be responsible.

Their educational level reveals that that most (58%) of the farmers are either not educated or has primary school education. Education is seen not only as an instrument of empowerment but as an indication of the value society assigns to men (Adebayo, Moses and Olawoye, 2010; IFAD, 2003) As women's status increases, so do the benefits to the society. Women education also has impact on child's nutrition. It was also said that countries that have closed the gender gap in education have experienced the fastest economic growth.

In addition, education enhances the ability of farmers to acquire accurate information, evaluate new production processes and use agricultural inputs and practices efficiently. According to Berger et al. (1984) better educated farmers are twice as likely to be in contact with agricultural extension agents. Intermediate and higher education in agriculture according to FAO(1997) are, and will continue to be, of critical importance in bringing about sustainable agricultural growth and national development (FAO, 1997) Education improves farmers' abilities to innovate and make accurate agricultural decisions, yet fewer females than males are literates or attend school in developing Countries, especially in rural areas. The household size of the respondents indicates that 34% have 5-7 people in their households according to the same table. This may have positive implication for family labour or on the other hand, many mouths to feed. Fifty nine percent of the women farmers have farming as their major occupation while others combine farming with other occupations.

Table 2: Women Farmers' Access to Resources

Variable	Frequency	Percentage
Land Ownership: Husband and Others	73	69
Experience (years): >5 years	93	87.7
Farm Size (Ha): ≤ 2 Hectares	70	66
Use of fertilizer (bag):None	36	34
Source of Capital: Personal Savings	84	71

Source: Field Survey, 2010

Table 1 Dominant Socio economic Characteristics of Respondents

Variable	Frequency	Percentage
Age: 31 -50	71	67
Marital Status: Married	69	65
Educational level: None and Primary	62	58
Household Size: 5-7	36	34
Primary Occupation: Farming	63	59

Source: Field Survey, 2010

B. Access to Agricultural Productive Resources

Most of the women farmers (69%) got their farmlands from their husbands and other relatives as shown in Table 2. The same Table shows that 66% of the women farmers cultivate about 2 or less hectares of farm which shows that majority are small scale farmers.

According to Aspen (2009) African women do not have the same rights as men to own and access land. Women hold less productive land, are excluded from cooperatives, and hold few leadership positions. They are often constrained by lack of access to labor, land, and inputs. Doss (1999) after 25 years of research on gender issues in African agriculture declared that 'gender matters' and that gender affects farmers' access to labour, land and other agricultural inputs.

If farmers lack secure tenure, they may be reluctant to adopt technology. A woman who obtains land through marriage may hesitate to invest in it when she perceives her marriage as precarious. Also, without secured tenure, credit cannot be obtained. The lack of formal titles to land has been considered an impediment to smallholder's access to credit in Zambia. In some places, most of the land is registered in the names of men. Land ownership and tenancy rights are important criteria for the selection of clients by extensions services in some places.

Farmers with access to land, preferably title to land, are generally said to be more willing to invest in innovations because they have no fear of losing their investment through the loss of access to land. Women land/holdings tends to be smaller and of lower quality than those of men if they have land at all. Women's limited control of land has important consequences for their ability to maintain and expand production as well as their access to extension services. The same table indicates that 89% of the respondents have at least five years of experience in farming. This shows that they are experienced and are therefore expected to be receptive to innovation other things being equal.

Table 2 also indicates that 34% of the respondents did not use fertilizer on their farms. There may be several reasons for this. The commodity may either be very scarce or not supplied on time. Women have no cash to purchase this important input. Farmers with secured tenured and more access to credit are more likely to use fertilizer. Moreover, 71% of the women farmers used their personal savings for their farm activities. Often, credit is a prerequisite for adoption of hybrid seeds and fertilizer. A farmer's ability to obtain credit may be correlated with access or tenure to land or ability to repay the loan. Large scale male farmers who produce a surplus for sale may have better access to credit than small-scale farmers regardless of their tenure status. Women are however regarded as producing for home.

As revealed in Table 3, majority of women farmers have no access to agricultural loans or credit. Credit is one of the most urgent needs of the small-scale farmer. Lacking access to credit, women face tremendous difficulties in purchasing inputs or hiring additional labour. At times formal laws and regulations prohibit a married woman's access to credit without her husband's signature. Even informal norms of organizations that provide credit may prevent women from independently obtain it. Perception that women are not 'real' farmers but only helpers on family farms, may also limit their access to resources

According to Okojie *et al.* (2010) rural women find it difficult to borrow from banks because they do not have bank accounts, have no collateral and most do not know the procedure for accessing bank loans. The same Table 3 shows that 82% of the respondents had no access to extension services. According to Berger *et al.* (1984) restriction to extension programme is because of the following: no title to land, limited cash incomes, dual household and productive responsibilities which limit their time and no formal education. In addition, the political structures of villages and nations being dominated by men result in an unequal distribution of resources and influence in favor of male farmers even when women play significant agricultural roles. Moreover, historically, extension strategies for women focused essentially on women's reproductive, child care and home maker activities.

Realizing the importance of women in agriculture however, Nwachukwu (2005) suggested that there is the need to develop programme centered on women's needs and constraints and as well raise awareness of gender issues as an integral part of pragmatic research, extension and development work in agriculture. Ogawa (2010) also submitted that, in order for women farmers to benefit from extension services like their men counterparts, an understanding of the working of gender relations needs to be incorporated into its methodological deliberation.

Furthermore, about 66% of the farmers rarely or never had access to tractor hiring services. Most women are small scale farmers so; they may rely on hand-held hoes and cutlasses for most of their farm works. At most, they make use of animal traction.

Cooperative is a self help organization. Affiliation with such can be an avenue, through which credit can be provided. When women are excluded either officially or de facto, and access is tied to membership, they may be disadvantaged, just because of their gender.

Table 3 Access to Agricultural Services

Variable	Frequency	Percentage
Agricultural loan: No access	86	82
Extension Services: No access	87	82
Tractor Hiring Services: Rare access and never	69	66.2
Cooperative Membership: Non members	68	63

Source: Field Survey, 2010.

c. Result of the Multiple Regression Analysis

The multiple regression analysis was used to examine the critical factors affecting the women farmers output. The Double- Log function evolved as the model with the best fit based on economic, statistical and econometric criteria. The result is presented in Table 4.

The R^2 for the model was about 55% meaning that 55% of the variability in the women farmers' output was accounted for by the variables included in the model. It was also significant at 1% level. Five variables were significant out of the twelve included in the model. These include farm size (X_1), seed (X_2), fertilizer (X_3), experience (X_{11}) which are highly significant at 1% each while insecticide (X_7) was significant at 5%. The various coefficients also represent the elasticity of the function. Farm size however has the highest elasticity.

Table 4: Result of the Double log multiple regression model

Variable	Coefficient	T-Value
Constant	3.66	7.25***
LX ₁	0.59	4.15***
LnX ₂	0.174	2.56***
LnX ₃	0.0603	2.91***
LnX ₄	0.0025	0.09
LnX ₅	- 0.0332	-1.81
LnX ₆	0.0098	0.48
LnX ₇	-0.0434	-2.30**
LnX ₈	- 0.678	-1.82
LnX ₉	- 0.0194	-0.65
LnX ₁₀	- 0.0108	-0.54
LnX ₁₁	0.326	2.86***
LnX ₁₂	- 0.112	-0.88

Source: Field survey, 2010

Figures in parenthesis are t value *** Significant at 1%, ** significant at 5%

Table 5: Most Dominant Challenges of Women Farmers

Challenges	Frequency	Percentage
1. Inadequate and high cost of input	36	25.53
2. Inadequate capital/finance	33	23.26
3. Destruction from pests and animals	15	10.64
4. Lack of support from government	11	7.80

Source: Field survey, 2010

The four most dominant constraints being faced by the women farmers are stated in Table 5. The top on the list is inadequate and high cost of farm input. This is followed by inadequate capital. Since the women farmers can hardly be qualified for farm credit based on their lack of collateral, it is difficult for them to purchase some of the important farm inputs such as fertilizer, improved seed and hire tractor. No wonder, many did not even use fertilizer on their farms. Another constraint is destruction from pests and animals and lack of support from the government.

Recommendations

The study analyzed women farmers' access to agricultural productive resources. Based on the findings, the following recommendations are proffered:

- Women farmers should be allowed to have equal access to productive farming resources as their men counterparts.
- The bottlenecks for collecting agricultural loans should be removed. Credit/Loans should be provided to women farmers without collateral e.g. there should be group lending using women's social capital.
- Women education should be accorded a high priority to enhance their status.
- Governments and NGOs should create awareness on the contribution of women to agricultural production through data collection and gender disaggregation of agricultural data.
- Agricultural research and extension should be reorientated by being gender responsive. i.e. in- calculating

the needs of women farmers to produce gender appropriate information and train more women in agricultural extension.

- There should be gender sensitive agricultural policy and women should also be involved in planning and policy making process. This will go a long way in ensuring sustainable development.

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