



ADOPTION OF IMPROVED CULTIVATION PRACTICES IN *Gnetum africanum*: A TEST CROP FOR OWNERSHIP OF LAND

Augustine J. Udoh and Emem Inyang

Department of Agricultural Economics and Extension, University of Uyo, Uyo Akwa Ibom State, Nigeria

E-Mail: augtine@yahoo.com

ABSTRACT

In Nigeria, the agricultural extension service has remained a significant public service institution with a broad range of responsibilities for agriculture and rural development. Akwa Ibom Agricultural Development Programme (AKADEP) instituted in 1988 with a major function of disseminating improved agricultural practices reaches out to 626, 446 farm families in Akwa Ibom State of Nigeria. A study was undertaken with AKADEP farmers and Non-AKADEP farmers to assess the adoption of improved methods of cultivating *G. africanum* (Afang) in Akwa Ibom State. Three of the zones Uyo, Ikot Ekepen and Etinan were purposively selected to take part in the study due to exposure of the farmers to the *G. africanum* improved practices (time of planting, method of planting, planting distance, etc.). From the zonal offices a list of AKADEP women farmers cultivating *G. africanum* was obtained and a list of Non-AKADEP women farmers in the area was constructed. Fifty AKADEP farmers were randomly selected from the list of 230 and 50 from Non - AKADEP farmers randomly selected from a list of 128 to take part in the study. Data for the study were obtained by use of a structured schedule and were analyzed with appropriate statistical tools. The study reveals that both the AKADEP and Non-AKADEP *G. africanum* farmers are mostly married. The plot size of their farms allocated for cultivation of *G. africanum* ranged from 800 – 3500 m² and most of the farmers have been farming for 11 - 20 years. The household size of the respondents ranged from 3 - 12 indicating a high rate of dependency ratio. The study reveals that the extent of adoption of improved *G. africanum* cultivation practices by the farmers were high. The study also shows that the method of propagation had a significant influence on the adoption of *G. africanum* cultivation between the two groups of farmers. The study also reveals that there was no tenure restriction on planting the crop on rented land since it is a vegetable crop. Over 50% of the respondents had the crop for over 5 years on the land. There is a strong indication that cultivation of *G. africanum* by the women has been associated with improved household income and fundamentally to permanently ownership of land.

Keywords: *G. africanum*, extension service, cultivation, adoption, ownership, land.

INTRODUCTION

In Nigeria, the agricultural extension service has remained a significant public service institution with a broad range of responsibilities for agricultural and rural development (Modo *et al.*, 1997, Idachaba, 2000). Akwa Ibom Agricultural Development Programme (AKADEP), a public institution covers six agricultural zones and reaches out to 626, 446 farm families in Akwa Ibom State of Nigeria. AKADEP was instituted in 1988 with a major function of disseminating improved agricultural practices. The area that improved practices are conducted include: crops, livestock, agroforestry, pest control etc. But one of the vegetable crops that AKADEP disseminates improved practices to the farmers is *G. africanum* cultivation, viz.: site selection, time of planting, method of planting, planting distance and time of harvesting.

However, a lot of other prominent vegetables, *Pterocarpus, santalinooides* (Mkpa), (Odurukwe *et al.*, 1995), *Gongronema latifolium* (Utasi) and *Piper guinensis* (Odusa) are still collected in the wild state for consumption. Similarly, (Olasantan, 2001) and (Isong *et al.*, 1999) assert that the plant, *G. africanum* is still growing and harvested from the wild. *Gnetum africanum* is an African indigenous crop mainly collected for its leaves. Locally, *Gnetum* has several names with

reference to ethnic groups that consume it. For instance, the Ibibios and Efiks call it 'Afang', in Ikoma of Cross River State, it is called 'Nkani', in Igbo it is called 'Ogazi', in the Anglophone Cameroon, it is called 'Eru', and in the Francophone Cameroon it is known as 'Okok'. *Gnetum africanum* is an all season vegetable, very popular and important leafy vegetable mostly sought after by the people of the southeastern zone of Nigeria. The nutritional value of *Gnetum africanum* leaves is high and it is a source of protein (about 30% of dry weight), (Isong *et al.*, 1999).

The cultivation of *Gnetum africanum* on-farm and on homestead was introduced to farmers in 1995 by AKADEP. The improved practices recommended to farmers include: site selection, land preparation, time of planting, method of planting by seeds, vines, roots and planting distance of 1m x 1m in alley cropping and 4.5cm apart in hedge row and time of harvesting.

Women are directly involved in vegetable production and marketing for income food and health care for their families (Udoh, 1999). Though women are constrained to owning land, they are not when it comes to collecting fuel wood and non-timber forest products (NTFPs) from the land. In customary land tenureship and inheritance, land usually belongs to and is managed by a patrilineal group such that women are secondary



users, for instance, as daughters, sisters, wives, or mothers.

According to Toulmin and Quan (2000), the question remains on how best to improve women's position in relation to land and the extent to which this should be through formal legal changes or broader measures. However, it is becoming a consensus in development literature that women are vital force to reckon with in agriculture (Pieda, 2002; Ndaeyo *et al.*, 1999; Udoh, 1999; Hemmings, 1982; Michaelwait, 1974). Ayoola (2000) found that men and women are directly affected in their operations in socio-cultural environment specifically, that women are more constrained than their men counterparts in terms of land ownership. Since land is a basic factor available for sustainable investment in agriculture, it is logical according to Saito (1994) that the potentials of women will be more valuably tapped if they have access to the land that they cultivate.

This study therefore sought to establish if AKADEP and Non-AKADEP farmers in Akwa Ibom State adopted the recommended improved practices in *G. africanum* cultivation and to establish a benchmark through the cultivation of Afang for proper access, acquisition and ownership of land by women in Akwa Ibom State of Nigeria.

This study is significant because women plant vegetables and also market them. Cultivating Afang (*Gnetum africanum*) just like other vegetables crops can pave a way for permanent ownership of land by women. There are no tenure restrictions on planting Afang on rented land since it is a vegetable crop. The advantage here, for women is that of cropping the rented land longer than a year to enable the women maximize their venture on the land. The life span of *G. africanum* is estimated at about 10 years with 3-4 harvests per year.

METHODOLOGY

This work was conducted in Akwa Ibom State (Latitude 4° 30' and 5° 53' N and Longitude 7° 25' and 5° 25' E) in the Southern Zone of Nigeria. The State is subdivided into six agricultural zones by the Akwa Ibom State Government and the Ministry of Agriculture and Natural Resources. Three zones: Uyo, Ikot Ekpene and Etinan were purposively selected to take part in the study due to exposure of the farmers to *G. africanum* improved practices. A list of *G. africanum* farmers was obtained from the zonal offices of AKADEP and a list of Non-AKADEP *G. africanum* farmers constructed from the area. From a list of 230 AKADEP farmers, 50 were randomly selected and 50 non-AKADEP farmers also randomly selected from a list of 128 to take part in the study. A structured schedule was designed with the

objective of the study in mind and pre-tested on twenty *G. africanum* farmers who did not take part in the study. The reliability test was ascertained by using the split-half reliability test giving a reliability coefficient (r) of 7.32. A modified structure schedule was then administered on the main respondents of the study. Questions were asked on the following areas: The Farmers' socioeconomic profile; sources of awareness and demonstration on improved practices of *Gnetum africanum*. How did you know about the demonstration? What methods are you using in propagating *G. africanum* (by seed, by vine, by root, etc)? Do you have any problems on land acquisition for planting *G. africanum*? How do you acquire land for cultivating *G. africanum*? How many times a year do you harvest the leaves of *G. africanum* from your plots? What marketing options do you adopt for the *G. africanum* leaves? What do you think will make your cultivating the crops more lucrative and sustainable? The data obtained were subjected to appropriate descriptive and inferential statistics.

RESULTS AND DISCUSSIONS

Farmers' profile

The socioeconomic profile of the *G. africanum* farmers from the area of study is as shown in Table-1. One hundred percent of the respondent's farmers were female and 66 and 56% of the AKADEP and Non-AKADEP farmers were between the ages of 20 - 40 years, respectively. Most of the respondents were married. Besides, all had household size ranging from less than 5 to more than 10 children depicting a high dependency ratio. While a majority of both groups had received formal education to at least the primary school level, none among the Non-AKADEP farmers attained the tertiary level of education. Over 70% of both groups of respondents depended on farming and cultivating *G. africanum* with staple crops like cassava (*Manihot esculenta*, Crantz), maize (*Zea mays* L.) and other vegetables like water leaf (*Talinum triangulare* L.). About 28 and 22% of the two categories of farmers were engaged in trading and other off-farm employment. Though the farmers cultivate other crops, the size of plot of land allocated to *G. africanum* cultivation ranged between 800 to more than 3500m². However, 50 and 64% of the respective categories of farmers allocated 800 - 1000 m² of land to cultivating the vegetable crop. About an equal proportion of 40 and 38% of the AKADEP and Non-AKADEP farmers earned income . N11, 000 - N20, 000 from *G. africanum* cultivation. Only 4% of the AKADEP farmers earned an income of more than N20, 000 from the crop.



www.arpnjournals.com

Table-1. Profile of *G. africanum* farmers.

Variables	AKADEP Farmers (N = 50)		Non-AKADEP Farmers (N = 50)	
	No.	%	No.	%
Age (years)				
20 - 30	5	10	8	16
31 - 40	28	56	20	40
41 - 50	16	32	19	38
>50	1	2	6	6
Total	50	100	50	100
Marital status				
Married	40	80	38	76
Single	10	20	12	24
Total	50	100	50	100
House hold size (hhs)				
Less than 5	13	26	9	18
5 - 7	18	36	25	50
8 - 10	10	20	13	26
>10	9	18	3	6
Total	50	100	50	100
Educational level				
No formal education	7	14	5	10
Primary education	33	66	38	76
Secondary education	8	16	7	14
Tertiary education	2	4	0	0
Total	50	100	50	100
Occupation				
Farming	36	72	39	78
Trading	10	20	9	18
Others	4	8	2	4
Total	50	100	50	100
Size of plot (m²)				
800 - 1,000	25	50	32	64
2,000 - 3,000	16	32	13	26
>3,000	9	18	5	10
Total	50	100	50	100
Annual income (₦)				
5,000 - 10,000	28	56	31	62
11, 000 - 15,000	16	32	15	30
16,000 - 20,000	4	8	4	8
> 20,000	2	4	0	0
Total	50	100	50	100



Method of planting

The recommended method of planting *G. africanum* is by roots, vines and seeds. The first two methods are widely adopted by all the respondents. These methods involve planting directly in the filed-plot while planting by seed requires a nursery operation before transplanting. Table-2 shows that there is a significant and positive relationship between method of planting and adoption of recommended practices in *G. africanum* cultivation between the two groups of farmers.

Besides the recommended methods of planting, transplanting *G. africanum* from the wild to the farm was

practiced by 100% of both categories of farmers. The method is enhanced because farmers realize that once the wild *G. africanum* is transplanted to their plots such plant becomes their personal farm crop. The farmers also appreciate having the crop handy in their plots instead of moving from place to place in the bush searching for *G. africanum*. Therefore, the age-long method of harvesting *G. africanum* from the wild state is gradually giving way to both homestead and farm cultivation of *G. africanum* and therefore sustainability of the crop.

Table-2. Correlation between improved practices and adoption.

Improve practices	AKADEP N = 50	Non-AKADEP N= 50
Method of planting	0.79**	0.76**
Time of planting	0.65*	0.56*
Planting distance	0.72**	0.58*
Method of harvesting	0.82*	0.78*

Source: Computed from field work, 2006.

* Significant at 0.05 level of probability.

** Significant at 0.01 level of probability.

Time of planting

One hundred percent (100%) of both categories of respondents started planting *G. africanum* in their farm plots between March and April at the beginning of the rains. The study shows a significant correlation between time of planting and adoption among the two groups of farmers. The relationship between the two groups in adoption of improved practices in *G. africanum* cultivation in general and in time of planting in particular reveals the level of involvement by women in cultivation of vegetables and the potentials the crop has for acquisition and ownership of land by women.

Planting distance

The recommended planting distance of *G. africanum* is 1m x 1m in alley cropping, the correlation between planting distance and adoption for the AKADEP farmers and the Non-AKADEP farmers are 0.72 and 0.58 respectively. The AKADEP farmers plant their crops in rows even in intercropping practice. Therefore, adopting the planting of *G. africanum* in rows of 1m x1m is a regular practice in their cropping systems.

Method of harvesting

Harvesting of *G. africanum* leaves is done manually. The first year of planting only one harvest is feasible. But in subsequent years 3 - 4 harvests are feasible. Harvesting is done by removing the exuberant side shoots with hand. Again, the method of harvesting, *G. africanum* is similar to harvesting of *Telfaria occidentalis* and other vegetables; therefore, there is a high correlation

between the method of harvesting and adoption between the two groups of farmers.

Acquisition and ownership of land

In Akwa Ibom State, land is acquired through inheritance, purchase, gift and pledging. For 90% of the cases, acquisition through inheritance solely applies to the male folk. But Udosen (2002) observed that while 40% of the female folk in Akwa Ibom State acquired land through purchase only 9.33% of the male folk acquired land through purchase. In this study, while 41 and 34% of AKADEP and Non-AKADEP farmers obtained the land they cultivated through purchase, only 6 and 12% of the respective groups obtained land through inheritance. The rest of the respective groups obtained land through pledges and gift (Table-3).

The few that got land through inheritance did so from their parents or through their uncles. The offers according to the affected respondents were made to them while their parents were still alive and resolved through their family norms that on no account should the pieces of land be reclaimed from them by any male child. Diallo (2002) in his work affirmed that in the rice-growing region, land "heritage goes straight to women and is transmitted from mother to daughter". Cases where daughters inherited land from their mothers in Akwa Ibom State are also evident but insignificant. However, recent trends through women social groups, female education and property right demands by female children may evolve a popular state of land inheritance through their parents. But most of all, women farmers are empowered through their social groups to purchase land for farming purposes. The



growing interest in land acquisition by women is clearly evident in the number of women cultivating *G. africanum* in the area. Finally, 100% of the respondents in both

groups declared their willingness to own land permanently and use it for economic purposes.

Table-3. Method of acquisition of land.

Mode of acquisition	AKADEP N = 50		NON-AKADEP N = 50	
	Inheritance	3	6.0	6
Purchase	41	82.0	34	68.0
Pledge	5	10.0	8	16.0
Gift	1	2.0	2	4.0
Total	50	100	50	50

Source: Field survey, 2006.

CONCLUSIONS AND POLICY IMPLICATIONS

G. africanum has been harvested from the wild state for generations. Among other vegetables harvested from the wild, AKADEP, a public institution disseminating improved agricultural practices to farmers has recommended method of planting, time of planting and method of harvesting *G. africanum* to the farmers in Akwa Ibom State. Generally, it is women who cultivate vegetable and market them, therefore, both AKADEP and Non-AKADEP women farmers took part in the study to assess the correlation between the improve practices and adoption. Women farmers are constrained to ownership of land for their agricultural production. However, cultivating *G. africanum* has shown that women can keep a farmland on purchase for more than five years. It is also evident that if family and communal norms are modified women will become permanent land owners like their male counterparts. But there are strong communal and family ties with land in the southeastern zone of Nigeria. For women to have access to land and own such permanently for agricultural production there must be a forum at the rural and communal levels to educate and empower women on permanent ownership of land.

The study also shows that the farmers had no problem in marketing their products. This could be a related factor to adopting the recommended practices in cultivating *G. africanum*. Both categories of farmers relied solely on family labour. In all stages of cultivating and maintaining the crop, non-seemed to pose a problem to the women, for example from planting to harvesting.

RECOMMENDATIONS

The following recommendations are made:

- Training and workshop should be organized for women cultivating *G. africanum*;
- Since *G. africanum* is a perennial crop and the leaves are available round the year, a marketing structure should be developed to ensure stable price for the women; and

- Studies should be carried out on women social groups in the rural communities and how to assist them to empower their members to acquire and own land permanently.

REFERENCES

- Ayoola J. B. 2000. Gender perspective in participatory rural appraisal (PRA). Activities of Cooperative Extension Centre (CEC), University of Agriculture, Makurdi, Nigeria.
- Diallo A. 2002. Women and land issues in Burkina Faso. Communication at the workshop organized by Pan African Programme on Land and Resource Rights (PPLRR), Cairo, March 25-26.
- Hemmings E. 1982. Women and work in Africa. International Development and Education of Women's Economics Roles, Boulder.
- Idachaba F. S. 2000. Topical issues in Nigerian Agriculture. Department of Agric. Economics, University of Ibadan, Nigeria.
- Isong E.U., Adewusi S. A. R., Nkanga E. U., Umoh E. E. and Offiong E. E. 1999. Nutrition and phytochemical studies of three varieties of *Gnetum africanum* ('afang'). Food Chemistry. 64(4): 489-493.
- Michelwait D. R. 1974. Women African Development. Economic Commission for Africa, Addis Ababa.
- Modo I. V. O., Udoh A. J. and Omokere F. 1997. Modern trends in agricultural extension approaches: Examples from Nigeria. Nig. Southeast Jour. of Agric. Economics and Ext. 1(1): 75-79.
- Ndaeyo N. U., Ekpo T. U. U. and Udoh A. J. 1999. Vegetable production in Akwa Ibom State, Nigeria: Gender participation, potentials and constraints. Nig.



www.arpnjournals.com

Southeast Jour. of Agric. Economics and Ext. 3(1): 27-37.

Odurukwe S. O., Anuebunwa E. O., Iloka A. W., Udealor A and Ibedu M, A. (Eds). 1995. Indigenous fallow and multi-purpose tree and shrub species in the farming systems of Southeast Zone of Nigeria. National Root Crops Research Institute (NCRI), Umudike, Nigeria.

Olasantan F. O. 2001. Tropical vegetables and spices: potential value and contributions to sustainable agriculture in Nigeria. *Outlook on Agriculture*. 30(1): 55-67.

Pieda D. T. Z. 2002. Women in agriculture: a baseline review. National Development Plan (DP) Gender Equality Unit. Department of Justice, Equality and Law Reform, Dublin, Report (Interim).

Saito A. K. 1994. Raising the productivity of women farmers in Sub-Saharan Africa. World Bank Discussion paper No. 230, Africa Technical Department Series. World Bank, Washington, D.C, USA.

Toulmin C. and Quan J. F. 2000. Evolving land right policy and tenure in Africa. DFID/IIED/NRI, London. pp. 1-25.

Udoh A. J. 1999. Urban farming Women's self reliance in the 21st century. *Nig. Southeast Jour. of Agric. Economics and Ext.* 3(1): 48-51.

Udosen U. E. 2002. Gender position on land tenureship in Akwa Ibom State, Unpublished B.Sc. Dissertation. Dept. of Agric. Economics and Extension, University of Uyo, Uyo, Nigeria.