Sustainability of livelihoods through Urban Agriculture: Gender dimensions in Accra, Ghana

¹Adeoti A.I, ²Oladele O.I, ³Cofie O.

¹Department of Agricultural Economics, University of Ibdan Nigeria ²Department of Agricultural Economics and Extension, North-West University, Mafikeng Campus, South Africa. ³International Water Management Institute PMB CT 112, Cantonments, Accra, Ghana

Abstract: This paper examines the sustainability of livelihoods through Urban Agriculture: Gender dimensions in Accra, Ghana. The population used for the study was the vegetable producers within and around Accra, Ghana. A mix of sampling techniques was followed in choosing UA producers. While a random sampling technique was employed in choosing male UA producers, all female producers who were willing to be interviewed were chosen. In all, 92 male producers and 8 female producers gave consistent responses that were analyzed. The results show that the mean age for male producers is 39.4 years. Female producers are more elderly with a mean age of 49.8 years. The mean year of schooling is 6.4 years for male producers and 7.1 years for female producers. While all the households are involved in irrigated farming, only 13% male and 25% female managed farms practiced irrigated farming alone. The majority of the male and female farmers indicated that high contribution of urban agriculture to their livelihoods. Farm size and access to credit were significant determinants of income from urban agriculture among the respondents.

[Adeoti A.I, Oladele O.I, Cofie O. **Sustainability of livelihoods through Urban Agriculture: Gender dimensions in Accra, Ghana.** Life Science Journal. 2011;8(2):840-848] (ISSN:1097-8135). <u>http://www.lifesciencesite.com</u>.

Keywords: Urban agriculture, gender, livelihoods, assets, income, resource use

Introduction

The modernization of West Africa since colonial rule has attracted large numbers of people from rural to urban areas. In Ghana, despite persistent economic growth, food insecurity and unemployment remain pressing problems in the country and in many parts of Africa (UN Habitat, 2006; Mougeot, 2005), especially in and around the major urban centres (Satterthwaite, 1999). Urban statistics from the Food and Agriculture Organisation (FAO, 2001; 2004) estimate that approximately 800 million people are unable to obtain an adequate and secure supply of food year round. The FAO (2002) suggest about 33% of people in sub-Saharan Africa is undernourished and United Nations (United Nations, 2005; UN-Habitat, 2006) reports that the percentage of urban residents in Sub-Saharan Africa is expected to rise from 39.7 to 53.5% between 2005 and 2030. This will bring new and severe challenges for assuring household food security and access to basic services (Klemesu, 2000; Haddad et al., 1998). Against this backdrop, urban agriculture (UA), or food production conducted in or around urban regions, seems to provide a realistic and pragmatic solution (Mougeot, 2001; 2005; Pothukuchi and Kaufman, 1999). For example, reports indicate that urban agriculture is an important source of food throughout developingcountry food systems and a critical food security strategy for poor urban households (Mougeot, 2000; Nugent, 2000; Klemesu and Maxwell, 2000). Urban

agriculture may improve household nutrition as it provides a source of fresh, locally grown crops that increase the micronutrients in poor households' diets (Maxwell, 2001; FAO, 2001) and it can increase household incomes (see Smit, 1996; Sanyal, 1985; Sabates et al., 2001; Henn, 2002; IFPRI, 2002). Urban agriculture has been defined in various ways by different organizations (UNDP, 1996; FAO-COAG, 1999; Rabinovitch et al., 1997). According to Nugent (1997), urban agriculture is defined as food production occurring within the confines of cities. It uses resources, products and services found in and around the urban area and often supplies resources, products and services to that area. This production takes place in backyards, rooftops, community vegetables, fruit gardens and unused or public spaces. There are two major categories of urban agriculture in Accra: backyard gardening and open space farming. Backyard gardening takes place in and around homes (estimated to bout 50-70ha distributed over 80,000 tiny backyards) (Obuobie et al., 2006). Open-space farming in Accra is estimated to take place on about 680 ha are under maize, 47ha under vegetables (rain fed) and 251 ha under mixed cerealvegetable systems. Of this, irrigated vegetable production is extended to 100 ha in the dry season. (Obuobie et al., 2006). The estimated 1000 vegetable farmers produce exotic vegetables, like lettuce, cabbage, spring onions, cucumber, green pepper and cauliflower, or the more traditional vegetables as

tomatoes, okra, eggplant (aubergine) and hot pepper. Plot sizes range between 0.01-0.02 ha per farmer, and reach 20 ha in periurban areas. (Obuobie et al., 2006) Other components of urban and periurban agriculture in Accra are livestock, poultry, floriculture and mushroom.

The incorporation of gender considerations in urban farming is increasing and indeed there have been advances over the last decade in the understanding of both men and women experiences with family in the cities-around the world. There is a move away from the so called 'urban farmer' an undifferentiated masculine, normalized urban dweller who engaged in agriculture. Instead, there is greater recognition that people's experiences with urban agriculture cannot be easily standardized and that gender neutrality does not necessarily capture the breadth of such experiences (Feldstein et al., 1989).

According to Woroniuk et al (1997), gender as analytical category is meant to capture the complex set of social processes that are inextricable linked with power relations. Gender is the socially constructed roles and relationship between men and women in a given culture or location and the societal structures that support them. To understand the role that gender plays in urban vegetable production in Ghana, a pilot appraisal was conducted among vegetable farmers and traders in Obuobie et al., 2006 reported that in Accra, Kumasi, Tamale and Takoradi most vegetable retailers are women, while openspace farmers in the cities are often in 9 of 10 cases men. In peri-urban areas and urban household backyard gardening, on the other hand, the situation can be different. Studying gender and urban agriculture in Ghana, Danso et al. (2004) pointed that 1) Farming and non-farming households in Accra had divers socio-economic characteristics, access to productive resources is not gender biased as about 70% of land used in the urban area of Accra belong to the government in which case access depend on lobbying strategies and Males dominate urban farming because of the arduous nature, of the work whereas women dominate marketing because marketing appears to be profitable with less risk. Several studies have document the practice of UA, and lack details and analysis of outcomes of the practices (Mougeot, 1999).Further, only few studies have attempted to consider the gender concerns in UA particularly in Africa. In addition, gender issues in UA is linked with the livelihood framework and examines the welfare impact of UA. With the persistence of the observed gender differences in Accra, absence of empirical facts of the livelihood outcomes makes it difficult to incorporate gender concerns into UA policy and programming agendas.

To explore the interaction between gender, UA and sustainable livelihoods among practitioners, the DFID livelihood framework was modified for use in this study. The livelihood approach focuses on people's lives rather than on resources or defined project outputs. The application of livelihood approach in UA will focus on the income generating activities within an UA enterprise and the diversification of these activities (production, marketing and both) as determined by the quantities and quality of assets available to them, risks implication of different options and as affected by the institutional regulatory framework within the social system where they operate.

Materials and Methods

This study was carried out in Accra, the administrative and economic capital of Ghana. It is located in the southern part of Ghana. Mega-Accra has a population of 2,909,643 according to the 2000 population and housing census Accra lies in the coastal savannah zone with low annual rainfall averaging 810mm. Irrigated vegetable production takes place in and around the city. Major sites for the production of vegetables are La. Dzorwulu, Marine Drive and Korle-bu (Obuobie et al., 2006). These areas account for about 135 ha representing 83% of the cultivated irrigated vegetable area in Accra. The population used for the study was the vegetable producers within and around Accra, Ghana. A mix of sampling techniques was followed in choosing UA producers. While a random sampling technique was employed in choosing male UA producers, all female producers who were willing to be interviewed were chosen. In all, 92 male producers and 8 female producers gave consistent responses that were analyzed. Primary data sources were used for this study. The instrument for collecting the data were structured questionnaires, administered by trained enumerators. The data collected included the socioeconomic characteristics of UA producers. These included characteristics such as gender, family size, educational status, age of household head, primary occupation, marital status and farming experience. Farm characteristics collected included irrigation facility, land ownership, farm size and type of crops grown. Additional information was obtained on access to assets and decision making on UA outcomes. The data collected for this study were analyzed using descriptive statistics to summarize the socio-economic characteristics of farm households, (which include age, educational levels, sex, family size amongst others), and for farm characteristics such as (farm size, labor use, land ownership etc.) and also for roles of both male and female farmers.

The T-test was employed to test for difference in the level of significance between male and female practitioners of UA. Cost and returns analysis show the profitability of UA producers. A regression analysis was conducted using the Ordinary Least Square (OLS) estimation procedure to isolate the factors that affect the income made from urban agriculture. These factors are the household socioeconomic characteristics and asset endowment, farm characteristics and institutional factors .Factors hypothesized in this study are the farmer's age, years of schooling, household size, farm size, number of extension visit, access to credit, membership of farmer's cooperative or social associations and accessibility to water.

Results

The results from the study were organized and presented in tables as follows. Table 1presents livelihood activities of producers, Table 2, number of extension visits per year, Table 3 access to household assets used in productive activities, Table 4 farm assets of UA producers and Table 5 mean values of cost of inputs used per farm of UA producers. Others are Table 6 showing total labour used in standard-days, Table 7, cost and revenue of UA producers per year in US \$, Table 8 food security status among male and female farmers, Table 9 human capital development and empowerment among UA producers, while Table 10 and 11 presented farm asset acquisition and improvement from UA income and determinants of income from UA respectively.

Table 1: Livelihood activities of producers

	Male		Female	
Livelihood activities	Frequency	Percentage	Frequency	Percentage
Irrigated vegetable farming only	12	13.0	2	25
Rainfed and irrigated vegetable farming	20	21.7	-	-
Artisan and irrigated vegetable farming	10	10.8	1	12.5
Trading and irrigated vegetable farming	38	41.3	3	37.5
Civil service and irrigated vegetable farming	4	4.3	-	-
Studying and irrigated vegetable farming	7	7.6	2	25
Total	92	100	8	100

Table 2: Number of Extension Visits Per Year

Number	Male		Female	
	Frequency	Percentage	Frequency	Percentage
None	52	56.5	4	50
1	6	6.5	1	12.5
2	14	15.3	1	12.5
3	5	5.4	0	-
>4	15	16.3	2	25
Total	92	100	8	100

Household Assets	Household assets of UA producers		Household assets used for UA	
	Male	Female	Male	Female
Telephone	57 (61.9%)	3 (37.5%)	29 (31.5%)	2 (25%)
Car	1 (1.0%)	-	1 (1.0%)	-
Bicycle	35 (38.0%)	-	14 (15.2%)	-
Rain tank	3 (3.2%)	2 (25%)	-	-
Livestock	1 (1.0%)	-	-	-
Total number of households	92	8	92	8

Figures in parentheses are in percentages

Farm assets	Male	Female		
	Frequency	Percentage	Frequency	Percentage
Hoes	87	94.5	7	87.5
Cutlass	79	85.8	8	100
Shovel	30	32.6	-	-
Pickaxe	13	14.1	-	-
Watering can	77	83.7	2	25
Sprayer	29	31.5	1	12.5
Water pump	4	4.3	-	-
Rake	19	20.6	1	12.5

Table 4: Farm assets of UA producers

Table 5: Mean values of cost of inputs used per farm of UA producers

Inputs	Male	Female	T-statistics
Seeds(\$)			
Lettuce	36.7	31.1	3.5 (0.006)
Cabbage	27.0	-	-
Spring Onions	65.1	-	-
Chemical(\$)			
Herbicide	74.5	-	-
Pesticide	11.8	8.1	5.7 (0.001)
Fungicide	44.8	11.7	22.9 (0.001)
NPK	11.9	5.8	8.9 (0.001)
Urea	9.1	3.0	-
Manure	20.1	5.2	-
Labour(Std)	120.9	105.1	2.4(0.020)

Table 6: Total labour used in standard-days

Farm Activity	Farm	Male		Female		Children	
	Manager	Number	Mean(Std	Number	Mean(Stdda	Number	Mean(Std
			days)		ys)		days)
Land clearing	24	24	30.7	2	15.7	3	9
Land prep.	24	22	20.9	1	27	-	-
Nursery	2.4	4	4.2	-	-	-	-
Sowing	9	3	39	-	-	-	-
Transplanting	3.4	14	32.1	-	-	-	-
Thinning	7.3	-	-	-	-	-	-
Weeding	17	15	36.8	1	18	-	-
Irrigation	4	3	57.5	-	-	-	-
Fert. appl.	4	-	-	-	-	-	-
Pest control	4.8	2	10.5	-	-	-	-
Harvesting	10.7	-	-	-	-	-	-

Table 7: Cost and revenue of UA producers per year in US \$

	Male Managed Farm			Fema	1	
	Total	Total	Gross	Total	Total	Gross
	Cost	Revenue	Margin	Cost	Revenue	margin
Per farm	222	763	540	113	470	356
Per hectare	435	1,496	1,061	471	1,958	1,487

able 8. 1000 see	unity status among mate a	ind remaie farmers			
Number of	food Male		Female		
deficit days	Before UA	After UA	Before UA	After UA	
None	48	55	3	5	
1	15	24	-	2	
2	17	15	5	1	
3	12	-	-	-	

 Table 8: Food security status among male and female farmers

Table 9: Human capital development and empowerment among UA Producers

Indicator	Male		Female	
	Before	After	Before	After
Pay school fees	11(12)	59(64)	2(25)	8(100)
Send children for higher education	-	9(10)	-	3(38)
Pay for health services	29(32)	77(84)	3(38)	7(88)
Join more social associations	3(2)	4(4)	1(13)	5(63)
Participate in community development activities	9(10)	25(27)	2(25)	4(50)
Start another business	-	-	1(13)	-
Feel more respected	13(14)	38(41)	-	-
Figures in parenthesis are percentages				

Table 10: Farm asset acquisition and improvement from UA income

Type of Asset	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Bought additional hoes	68	73.91	7	87.5
Bought additional cutlass	52	56.52	5	62.5
Bought additional shovel	17	18.48	-	-
Bought additional pick axe	9	9.78	-	-
Bought additional watering can	55	59.78	1	12.5
Bought additional Knapsack sprayer	21	22.83	-	-
Dug well	3	3.26	-	-

Table 11: Determinants of income from UA

Variables	Coefficient	Standard Error
Constant	5.568***	0.465
Age of farm manager	0.007	0.005
Years of schooling of farm manager	0.003	0.019
Gender	0.079	0.316
Household size	-0.020	0.046
Farm size	0.746***	0.192
Number of extension visit	-0.043	0.033
Access to credit	2.083**	0.844
Membership of farmer's association	0.067	0.177
$R^2 = 0.469$		
F ratio =3.038 ***		

Discussion

Socio-economic and Demographic Characteristics of Producers

About 92% of market-oriented vegetable producers were males while 8% were females. This reflects the dominance of men in vegetable production in Ghana. Similar finding were reported by Obuobie et al. (2006). According to key informants, this pattern is due more to the culture of the people where men are expected to bring food home. Besides, it is believed that vegetable production demands more physical strength that men can provide. The age distribution reveals that about 30% of male producers were within the age range of 41 and 50 years which represents the highest percentage. The mean age for male producers is 39.4 years. Female producers are more elderly with a mean age of 49.8 years and with the highest percentage within the age range of 41 and 50. This shows that vegetable production is carried out mostly by young men in their economically active years. It revealed that while the highest percentage of male producers do not have more than three years of formal education, female producers have more years of schooling. The mean year of schooling is 6.4 years for male producers and 7.1 years for female producers. Although the years of schooling were not significantly different, about 14% of male and 12% of female producers have no formal schooling while only one of the male producers spent over 12 years in school. The result shows that the highly educated do not participate in urban vegetable production. Obosu-Mensah (1999), Danso et al, (2002), Keraita, (2002) and Ladapo and Oladele (2011) reported that 23% of urban farmers interviewed lack formal education, a greater number had primary (33%) or secondary (37%) education while 6% had tertiary education. They concluded that people of all educational backgrounds are involved in urban farming in Accra Also, results on the demographic characteristics of the producers shows that 75% of managers of male managed farms and 67% of female managed farms are married. There is none that is single in female managed farms. It means that young unmarried women do not find it an attractive option as a livelihood activity. However, among male producers, there are singles. The household sizes are larger among the female managed farms. This may be due to the fact that the female farmers are older and have more children. About 50% of female managed farms and 38% of male managed farms have household size between 5 to 8 children. Only 2.3% of male headed farms have household size beyond 8. About 39% of male farmers and 62% of female farmers have over 12 years of experience. Generally, the farmers are well experienced. Almost half of male producers and and two-thirds of the female producers belonged to farmers cooperative association). It shows that the number outside the association is large among male producers. The most common reason given for nonparticipation is that they cannot identify benefits derived from it. More farmers need to be encouraged to join the farmers' association for effective and coordinated efforts to influence their productive activities and also policy.

Household Livelihood Activities

Table 1 shows other livelihood activities engaged in by the various farm households. While all the households are involved in irrigated farming, only 13% male and 25% female managed farms practiced irrigated farming alone. Others combined it with rainfed farming and also trading. It should be noted that artisans, students and civil servants also practiced irrigated vegetable production. This shows that vegetable production is an important source of income to a large variety of households. While few depend on it solely, it supplements income for the larger group. Among male and female farmers, the highest number combined vegetable production with trading.

Access to Credit and Extension Visits

The main source of capital for 99% and 100% of male and female producers respectively; is personal. Only 1% of male producers obtain credit from money lenders and Esusu/ROSCAS. None of the producers obtained credit from formal sources. Limited financial resources have negative implication for the commercialization of UA and economies of scale. About half of all the farmers irrespective of gender were not visited by extension agents in a year. However, it is interesting to note that about 25% of female and 16% of male producers were visited for at least four times in a year. This shows that although, extension agents visit some farms irrespective of gender, they are a select few. An expanded programme that caters for all is required to increase productivity and income of farmers.

Asset endowment and control by UA producers

Table 3 shows the asset endowments of households of producers and those employed in UA. Assets such as telephone are higher among male producers. None of the household of female producers has means of transport such as car and bicycle. Only 1% of male producers have livestock while none of the female producers have. The asset endowments of these producers reveal that the proportions of male and female farmers that have access to household assets for UA are less than those than own these assets. Only four of these assets are used in their productive activities, these are telephone, car and bicycles and land. These are required for transportation, access to information and land for cultivation. Only two women have access to telephone for their activities while none can access car, vehicle and land. While the numbers of those who use household assets are few, female producers fare worse.

In households of male managed farm, decisions on the use of telephone, car and bicycle is taken by men. In households of female managed farms, decisions are taken by the women with respect to the use of telephones only. In general, joint decisions are not common in these households. It is clear that in households of female managed farms, women have more bargaining power and are active in decision making than in households of male managed farms. Table 5 shows farmers access to farm assets and it reveals that irrespective of gender, farmers have the needed basic implements for cultivation. Female managed farms lack capital intensive farm assets like water pump and sprayer. Inadequate capital by these female farmers explains their inability to purchase these assets. In male managed farm households, the percentage of men with control on telephone, car and bicycle are 69.8%,100% and 69.2% while the others are jointly controlled for the married. It shows that assets that can be used for communication and transportation are mostly controlled by men in these households. In female managed farm household, all the farmers have control over telephones only.

Male farmers cultivated a wider variety of crops as compared to women. Crops cultivated by male farmers include lettuce, cabbage, spring onions. Others on smaller scale are cucumber, cauliflower, sweet pepper, okro and maize. Female farmers cultivated lettuce and okro. Occasionally, they also cultivate pepper. Both cultivate lettuce while only male managed farms cultivate cabbage and spring onions. This shows difference in cropping mix and crop diversification. Farmers explained that the difference in cropping is due to the labour requirement and the fact that it is strenuous cultivating those crops. Moreover, since female rely on hired labor for many of the tasks, it will require more capital to cultivate those crops. They have therefore limited themselves to few crops which their resource endowments can successfully cultivate. It should also be noted that while male managed farms have between 2 to 3 plots, female managed farms have only one plot. This also reduces their ability to diversify. There are no cultural constraints to the type of crops cultivated by gender; the main constraint is the farm manager's asset endowments.

Resource-use levels of UA producers

Irrespective of the crop mix, as revealed in table 6, both male and female producers used all inputs except herbicide. Herbicide is used by male managed farms to overcome weeds in addition to manual weeding but female use manual weeding only. It is clear that the resource-use per farm of male managed farms is significantly higher than those of female managed farms. This is so because of the difference in farm sizes. Although, farmers have scattered plots, the mean farm size is 0.51ha for male and 0.24ha for female. The total labor used by farms includes family and hired labor. The division of tasks according to gender is presented in table 6. Almost all farm operations are carried out by men in both male and female managed farms in addition to the farm manager. In female farms, land clearing, land preparation and weeding is done by few women while only one of the female farmers uses children for land clearing. None of the producers employ adult

female or children for their farm operations. Irrigation is the most labor intensive task and is mainly carried out by men, even on female managed farms.

The economics of vegetable production shows the gross margin per farm in table 7. The costs and revenue per farm and per hectare for male differs from that of female farmers. The total cost of production and revenue per farm is higher on male managed farms while it is the opposite on the per hectare basis.. The difference in gross margin per farm is by 34 percent and is significant at t=1.979(0.061). However, on the per hectare basis, the difference is by 29 percent with the female managed farms having higher gross margin which is significantly different at t=1.825(0.099). This reveals that female managed farms are as profitable as male managed farms. The difference in their gross margin is due to the scale of their operation. It should be noted that only 8 farms are female managed. Although not disaggregated, Zigah (2005); states that an average farmer obtains about 447 US \$ as the net margin after the dry season and Drechsel et al(2006) stated that the net revenue per farm per year is between 400-800 US \$.

The decision on the use of income from UA vegetable is taken mostly by the male farmers themselves, which represent 92% of our sample. The female farmers that are married agreed that they consult their husbands at the different stages of farm production and therefore also involve them in deciding on the income. It should be noted that 75% of the female farmers are married while others are widowed. It is therefore reasonable to believe that in view of the cultural setting in Ghana, the female farmers will take decisions jointly with their husbands while the widowed take decisions on their own. Figures on Table 8 show that the number of households with food deficit days per week reduced after engaging in urban vegetable production. This is observed in households of both male and female vegetable producers. It is understandable that some households have food deficit days because of the many channels of expenditure of these farmers. However, none of the households have more than two food deficit days in a week. In all, it reveals that UA enhanced availability, accessibility has and sustainability of food in the households of practitioners.

Table 9 shows that among male producers, the highest percentage increase was recorded for farmers who improved on school fees payment and payment for health care services. UA also increased the number of those that participate in community development. In all, a greater number became empowered. For female producers, a similar pattern was observed (Table 10). In addition, more female farmers joined social associations. Engaging in urban vegetable production improves their human and social capital. While the degree differs, it is important that an increasing number are improving their welfare. As shown in table 11, a large percentage was able to increase their farm assets from the income from their UA productive activities. Essentially, they have invested in the purchase of additional farm implements like hoes, cutlasses and watering cans. This is similar for both male and female managed farms. On male managed farms, about one-fifth purchased knapsack sprayer and shovel while 3.26% dug well. None of the female-managed farm was able to do this because of the capital outlay required for these items. However, it is notable that income from UA enabled some farmers to acquire such capital intensive items and improved on their farm activities.

Impact of contribution of UA income to household income

The income made from UA is influenced by factors such as the household socio-economic characteristics and asset endowment. farm characteristics and institutional factors .Factors hypothesized in this study are the farmer's age, years of schooling, household size, farm size, number of extension visit, access to credit, membership of farmer's cooperative or social associations and accessibility to water. The table 12 reveals that all the hypothesized variables have positive relationship with amount of income from UA except household size and number of extension visit. However, the two variables are not significant. A possible reason for this is that the size of farm manager's household does not affect the supply of labor to the farm. Farmers essentially use their own labor and hired labour. Also, the number of extension visits do not account for the quality of extension services rendered which may have more implication on farmer's income. The positive sign reveal that a unit increase in any of these variables will increase income by the size of the coefficient. Only farm size and access to credit were significant. It means to increase income from vegetable production, farm sizes need to be increased and efforts should be made to increase farmer's access to production credit.

Further analysis was conducted to examine the proportion of income from UA to household income. For all producers, the mean proportion is 0.81.This reveals that about 80% of the incomes of households of sampled farms come from UA. The importance of UA in their livelihood is also emphasized by the fact that 71% of all producers

explained that their main source of livelihood is UA while other activities are minor. Disaggregating by gender, the mean proportion is 0.82 and 0.78 for male and female producers respectively. This shows that irrespective of gender, UA is the main livelihood activity and major source of income into the households of the sampled producers. This underscores the importance of UA in the livelihood of urban farmers. The incorporation of gender considerations in urban farming is increasing and indeed there have been advances over the last decade in the understanding of both men and women experiences with family in the cities-around the world In Accra, the pattern of gender involvement shows that male producers are younger and less educated than female producers. While all the households are involved in irrigated farming, the proportion of male managed farm is low to female managed farms practicing irrigated farming alone. The majority of the male and female farmers indicated that high contribution of urban agriculture to their livelihoods. Farm size and access to credit were significant determinants of income from urban agriculture among the respondents. It is important that policy recommendations on urban agriculture should take into cognizance these significant variables in order to ensure that the needs of producers are met.

Acknowledgement

This study was carried out within the frame of the Cities Farming for the Future (CFF) programme of the International Network of Resource Centres on Urban Agriculture and Food Security (*RUAF Foundation*). The authors acknowledge the financial support from DGIS and IDRC As well as the contribution of local partners to CFF implementation in Accra.

Corresponding Author:

O.I Oladele, Department of Agricultural Economics and Extension North West University – Mafikeng Campus, Private BagX2046, Mmabatho, South Africa E-mail: oladimeji.oladele.nwu.ac.za

References

- Danso G., Cofie O., Annang L., Obuobie E. and Keraita B. 2004 Gender and Urban Agriculture: The case of Accra, Ghana. Paper presented at the RUAF/IWMI/ Urban Harvest Woman Feeding Cities Workshop on *Gender Main streaming in Urban Food Production and Food Security*. 20-23 September, 2004. Accra, Ghana
- DfID (Department for International Development). 1999. Background Briefing. November 9.

- 3. FAO-COAG (1999): The "COAG Paper". Report of the COAG Secretariat to the COAG. FAO, Rome.
- 4. FAO. 2001. Urban agriculture and peri-urban agriculture: A briefing guide for successful implementation of urban agriculture and perurban agriculture in developing countries and countries of transition, FAO, Rome, Italy.
- 5. FAO. 2004. The state of food insecurity in the world. Monitoring progress towards the World Food Summit and Millennium Development Goals. Rome. Italy
- 6. Henn, P. 2002. User benefits of urban agriculture in Havana, Cuba: An Application of the Contingent Valuation Method. Retrieved from http://www.cityfarmer.org/havanaBenefit.html on September 23, 2006.
- Mougeot, L.J.A. 2001. Urban agriculture: Definition, presence, potential and risks. In Nico Barker, Marielle Dubbelling, Sabine Gindel, Ulrich Sabel-Koschella and Henk de Zeeuw (eds), *Growing cities, growing food-Urban agriculture on the policy agenda*. DSE, Eurasburg, Germany. pp 1-42.
- 8. IFPRI. 2002. The Accra urban food and nutrition study. *IFPRI Issue Brief No.9*. Addendum, IFPRI, Washington DC, USA.
- Klemesu, MA. 2000. Urban agriculture and food security, nutrition and health. In Nico Barker, Marielle Dubbelling, Sabine Gindel, Ulrich Sabel-Koschella and Henk de Zeeuw (eds.), *Growing cities, growing food-Urban agriculture on the policy agenda*. DSE, Eurasburg, Germany, pp.99-118.
- Ladapo M.A and Oladele O.I. Effect of Knowledge, Attitude and Constraints on Postharvest losses among plantain farmers and wholesalers in south-western Nigeria. Life Science Journal. 2011;8(2):476-482] <u>http://www.lifesciencesite.com</u>.
- 11. Maxwell, D.G. 2001. The importance of urban agriculture to food and nutrition. Annotated biography, ETC-RUAF, CTA Publishers, Wageningen, Netherlands.
- 12. Mougeot, L.J.A. 2005. Introduction. In Mougeot, LJA (ed), AGROPOLIS: *The social, political and environmental dimensions of urban agriculture*, Earthscan, London, UK.
- Haddad, L., Ruel, M., Garrett, J. 1998. Growing urban poverty and undernutrition and some urban facts of life: Implications for research and policy. Washington, DC. International Food Policy Research Institute.
- 14. Maxwell, 2001; Maxwell, D.G, Wiebe, K. 1999. Land tenure and food security: exploring

dynamic linkages. *Development and Change* **30** (4), pp 825-849.

- 15. Mougeot, L.J.A. 2000. Achieving urban food and nutrition security in developing countries: The hidden significance of urban agriculture. IFPRI, brief paper number 6, 2000. Retrieved from http://www.ifpri.org on September 23rd, 2006.
- 16. Nugent, R. 2000. The impact of urban agriculture on the household and local economies. In Nico Barker, Marielle Dubbelling, Sabine Gindel, Ulrich Sabel-Koschella and Henk de Zeeuw (eds.), *Growing cities, growing food-Urban agriculture on the policy agenda*. DSE, Eurasburg, Germany, pp 67-97.
- 17. Obuobie,E; Keraita B; Danso G; Amoah P, Cofie O, Rashid-Sally and Drechsel P (2006): Irrigated Urban Vegetable Production in Ghana.
- Pothukuchi, K., Kaufman, J.L. 1999. Placing the food system on the urban agenda: the role of municipal institutions. *Agriculture and Human Values*, 16 (2), pp 213-224.
- Sabates, R., Gould, B.W., Villarreal, H.J. 2001. Household composition and food expenditures: a cross-country comparison. *Food Policy*, 26, pp. 571-586.
- Sanyal, B. 1985. Urban agriculture: Who cultivates and why? *Food and Nutrition Bulletin*, 7 (3), pp. 15-25.
- 21. UNDP. 1996. Urban agriculture-food jobs and sustainable cities. United Nations Development Programme. New York.USA.
- 22. Satterthwaite, D. 1999. *The Earthscan Reader in Sustainable Cities*. Earthscan, London, UK
- 23. UNDP (1996): Urban Agriculture: Food, Jobs and Sustainable Cities. United Nations Development Program, Publication Series for Habitat II, Volume One. UNDP, New York.
- 24. United Nations. 2005. World urbanization prospects: the 2005 revision: United Nations, New York, USA.
- 25. UN-Habitat. 2006. *The State of the World's Cities*, 2006/7.United Nations Center for Human Settlements, Nairobi, Kenya.

6/10/2011