

Contribution of backyard farming to food and income Security: Case of Kampala Metropolitan

MACKLEAN KIRUNGI¹, GODFREY SSEREMBA², KATARIMPIKA JOAB TUGUME³, MARIUS FLAVIAN MURONGO⁴, JOSEPH SSEKANDI⁵, TEDSON JULIUS MWINE⁶

ABSTRACT

Food insecurity, poverty, environmental degradation and climatic change are some of the major challenges facing the world. The urban poor are among Ugandans facing food insecurity and malnutrition due to several causes such as job insecurity, low wages and limited farming opportunities. Agriculture has been reported as the biggest contributor to poverty reduction and food security. This study aimed at estimating the contribution of backyard farming to household food provision and income and the sustainability of such practice in Kampala Metropolitan. The study was conducted in the urban (<10km) and peri-urban areas (10-20Km) area of Kampala metropolitan area. The study found that Backyard farming significantly affected household food consumption scores, coping strategy index and income but not household dietary diversity scores (HDDS). However, these benefits were found to accrue less among the poor and less privileged.

Keywords: Coping strategy index; income levels; farming families; urban poor; smallholder farmers

¹Faculty of Agriculture, Uganda Martyrs University, P.O. Box, 5498 Kampala, Uganda

²National Coffee Research Institute, Kituza, P.O. Box 4, Mukono, Uganda

³Department of Agricultural Production, School of Agricultural Sciences, College of Agricultural and Environmental sciences, Makerere University P.O. Box 7062, Kampala, Uganda

⁴Ministry of Agriculture Animal industry and Fisheries, P.O. Box 102, Entebbe, Uganda

*Corresponding author: gsseremba16@gmail.com; gsseremba@umu.ac.ug

Introduction

Food insecurity, poverty, environmental degradation and climatic change are some of the challenges facing the world today. One of the consequences to these challenges is rapid rate of migration from rural to urban areas (UNAPCAEM, 2012). There is need to support and empower livelihood strategies like urban farming that the urban poor have developed to survive (Badami & Ramankutty, 2015). In Uganda, poverty and food insecurity have been increasing since early 2000s due to increasing food prices (Sabit et al, 2014). Despite a widely-held view of food self-sufficiency and abundant natural resources to produce adequate food for the entire population, current trends indicate that many households and specific segments of Uganda's population suffer from food insecurity and high levels of malnutrition (MAAIF/MOH, 2005; UDHS, 2016). The urban poor are among Ugandans facing food insecurity and malnutrition due to (several causes such as) unemployment and underemployment associated with low wages and limited farming opportunities (Brown, 2013). It was reported that 24% of the children in urban areas are malnourished while 47.2% were anemic (UBOS and CF, 2017).

Agriculture has been reported as the biggest contributor to poverty reduction and food security (Smith and Rowe, 2001; World Bank, 2016). Backyard gardens also referred to as kitchen gardens are known to contribute to food security in many parts of the world especially where land is scarce and meaningful employment is not readily available (Smith, and Rowe, 2009; Mohammad et al., 2017). Though this kind of agriculture contributes less to national production, in Uganda it contributes about 25% to household economic well-being of the people in the city and the surrounding areas (Sabit et al., 2014). It plays an important role in providing access to nutrient-dense foods such as highly perishable vegetables that cannot be readily transported from rural locations. However, the agricultural policies have tended to focus on rural households

(NAP, 2013). Urban farming in Kampala metropolitan is mainly practiced from backyards due to limitations of land (Soniia.,2003). Inadequate research has been done to evaluate the impact of urban backyard farming on food security and income in Kampala Metropolitan area. This study was aimed at estimating the contribution of backyard farming to household food provisioning and income of households in Kampala Metropolitan area. Specifically, the study analyzed food consumption scores, household dietary diversity scores and coping strategy indices for peri-urban farmers practicing backyard farming.

Materials & Methods

Survey

The study was conducted in the urban (<10km) and peri-urban areas (10-20Km) of Kampala metropolitan and included divisions of, Kawempe, Nakawa and Kasangati Town council. The sample population comprised of one hundred and three (103) households practicing backyard farming and 97 households that never practiced backyard farming (97).15 Key informant interviews were conducted to provide in depth information on the topic of the study. The snowball method was used to select households practicing backyard farming while random sampling was used to select non-practicing households. Data was collected through use of a semi-structured questionnaire and interview guide for key informants. Data was collected on indicators of food security and income variables. The parameters measured included food consumption scores, dietary diversity scores and coping strategy options.

Data analysis

The contribution of backyard farming to household food security was done through analysis of food consumption scores (FCS), household dietary diversity scores (HDDS) and coping strategy

index (CSI). These variables were measured and compared for households practicing backyard farming and those that do not. The food consumption scores (FCS) were computed from the number of days a particular food group was consumed in a week before the survey, (Maxwell et al., 2013; Vhurumuku., 2014). All the food items were grouped into specific food groups that included; pulses, cereals tubers, vegetables, fruit, meat and fish, milk, oil, sugar and condiments). All consumption frequencies of food items of the same group were summed up and the value of each food group above 7 was recorded as 7. The value obtained for each food group was later multiplied by its weights (Appendix 1). The new weights obtained from food groups were summed up to give food consumption scores for each household. Using thresholds for FCS (Vhurumuku., 2012), households were further disaggregated into those with Poor FCS, Borderline FCS and Acceptable FCS. HDDS was computed basing on 12 food groups that were re-grouped into 7 food groups (1. Cereals, roots and tubers, 2. Pulses and Legumes, 4. Fruits, 5. Meats, Fish, Sea foods and eggs, 6. Dairy products and 7. Oils and fats). For each food group a new binomial variable was created with two possible values that is; Yes=1 if the household consumed that specific food group and 0-No=0: if a household did not consume that food group. Using IFPRI thresholds, households were further categorized as having good dietary diversity score (HDDS=6+), medium dietary diversity score (HDDS= 4.5-6) and low dietary diversity score (<4.5) (Vhurumuku, 2014).

Coping Strategy Index was computed from specific coping strategies that were being employed by households (Maxwell et al., 2003). The coping strategies (CS) assessed in this study include relying on less expensive but less preferred foods, borrowing food or relying on friends. Additionally, the study assessed buying food on credit, sending members to eat

elsewhere, sending household members to beg, and limiting portion size at mealtime. Other CS considered are restricting meals for adults in order for children to eat, feed working members of the household at the expense of non-working members. Reducing the number of meals per day, skipping meals the entire day, and selling household items to purchase food were assessed. The relative frequency of each coping strategy used by the household (row score) was multiplied by the corresponding weight column score (Maxwell et al., 2003). The product of the frequency of a coping strategy and its corresponding weight were summed up across all coping strategies to give a coping strategy index (CSI). The mean FCS, HDDS and CSI were computed and compared between practicing and non-practicing households in urban and peri-urban areas. Analysis of variance (ANOVA) and Chi-square were used to establish whether there was a difference in FCS, HDDS and CSI between backyard practicing and non-practicing households.

Financial access to food was also evaluated by analysis of income and purchasing power of households. Households were classified according to poverty rating scale (Purchasing power parity-PPP) as poor, moderately poor, moderately rich and better off. The distribution of different income groups was compared between practicing and non-practicing households. ANOVA was used to test whether there was significant difference in incomes of those practicing backyard farming and those not practicing. The coping strategy indices of the different income groups were compared to establish the impact of income on food security.

Results

Effect of backyard farming on food security indicators

Backyard farming was found to have a significant effect on major food security indicators. It significantly affected food consumption scores (FCS) and coping strategy index (CSI) ($P < 0.05$). However, Household dietary diversity score (HDDS) was not affected by the backyard farming practice. (Table 1). Though both practicing and non-practicing households have acceptable FCS and good dietary diversity scores (HDDS), households practicing backyard farming find it easier to meet their household food needs compared to non-practicing households. Households practicing backyard farming had relatively higher food consumption scores (FCS) and a lower Coping strategy index (CSI). The average FCS was 76.9 ± 1.5 for those practicing backyard farming compared to 72.6 ± 1.4 for non-practicing households. The average CSI was 10.6 ± 1.1 compared to 18.7 ± 1.6 among non-practicing households.

There was also a significant difference in FCS&CSI between the urban & peri-urban households (table 2). Households living in Urban areas had relatively higher FCS (75.7 ± 1.6) and higher CSI (21.2 ± 1.7) while the peri-urban households had relatively lower FCS (74.3 ± 1.3) and CSI (10.7 ± 1.1) Both urban & peri-urban households have good dietary diversity scores (6.5 ± 0.1 & 6.7 ± 0.1). Generally, majority of the households were coping better in times of food shortage as 54.4% of the households had $CSI \leq 10$ and only 14.9% having $CSI > 30$ (Table 3). CSI was higher among the extremely poor (42.2%) and moderately poor (21.4%). The moderately rich and better off households had relatively a lower CSI (0-10) thus they find it easier to cope with food shortage (Table 3).

Table 1: ANOVA of food security indicators of households practicing backyard farming and non-practicing Households

Food security indicators	Sources of variance	Sum of Squares	df	Mean Square	Sig
FCS	Between Groups	900.2	1	900.15	.037*
	Within Groups	40512.4	198	204.61	
	Total	41412.6	199		
CSI	Between Groups	3204.08	1	3204.1	.000**
	Within Groups	36775.7	198	185.73	
	Total	39979.8	199		
HDDS	Between Groups	1.346	1	1.346	.071
	Within Groups	80.654	198	.407	
	Total	82.000	199		

*significant **highly significant

Table 2: Household characteristics and food security indicators

Household Characteristic	N	Food security indicators		
		FCS	CSI	HDDS
Backyard farming	103	76.9 ± 1.5	10.6±1.1	6.7±0.1
NoBackyard farming	96	72.6 ±1.4	18.7±1.6	6.6±0.1
Urban	73	75.7 ±1.6	21.2±1.7	6.5±0.1
Peri-Urban	127	74.3 ±1.3	10.7±1.1	6.7±0.1

Table 3: Relationship between coping strategy index and income of the household

CSI	Income/poverty category				Total
	Extreme poor	Moderate poor	Moderate rich	Better off	
0-10	2(28.6%)	18(32.1)	46(59.7)	40(72.7)	106
11-20	0	16(28.6)	11(14.3)	8(14.6)	35
21-30	2(28.6%)	10 (17.9)	9(11.7)	4(7.3)	25
>30	3(42.9%)	12 (21.4)	11(14.3)	3(5.5)	29
Total	7	56	77	55	195

Effect of Backyard farming on income security

Majority of household were classified as moderately rich or better off (67.7%). Only 32.3% of the surveyed households were classified as moderately poor while 3.6% were extremely poor. There was a strong association between backyard farming and the monthly income earned by the household (Plate 1A). Incomes from backyard farming varied within households practicing backyard farming. Income from backyard farming activities ranged from Ugx. 10,000-2,000,000 and averaged at Ugx.442,051. However only 15.4% earned Ugx >700,000 (Table 4). The study found 51.0% of the households practicing backyard farming earned monthly income greater than Ugx.1, 000,000 compared to only 4.3% households not practicing backyard farming. Majority of non-practicing households (48.3%) earned monthly income ranging from 200000-400000 compared to 12% of backyard farming households earning income in the same range. There was a variation in incomes of urban and per-urban households. Peri-urban households earn relatively more income (Ugx.938991.94) compared to Ugx. 740211.27 for urban households. Income from backyard farming activities ranged from Ugx. 10,000-2,000,000 and averaged at Ugx.442,051.

However only 15.4% earned Ugx >700,000 (Table 4). Based on the poverty status of the household, the study found 50% of the households practicing backyard farming better off compared to only 4.3% households not practicing. 36.3% of the moderately rich households practiced backyard farming while 43.0% of the moderately rich households never practiced backyard farming. (Plate 1B). Majority of the moderately rich households were in the urban area (44%) while 37.1% moderately rich households in the peri urban. The study found 33.1% were better off households in the peri-urban area compared to only 19% of the households in the urban. Also, the extremely poor and moderately poor were more in the urban area (37.0%) than (29.8%) in the peri-urban environment (Plate 1C).

Table 4: Estimated monthly incomes from backyard farming activities.

Income	Frequency	Percentage	Cumulative %
0-100000	15	19.2	19.2
110000-200000	9	11.5	30.8
210000-300000	10	12.8	43.6
310000-400000	10	12.8	56.4
410000-500000	12	15.4	71.4
510000-600000	9	11.5	83.3
610000-700000	1	1.3	84.6
>700000	12	15.4	100.0
Total	7	100.0	

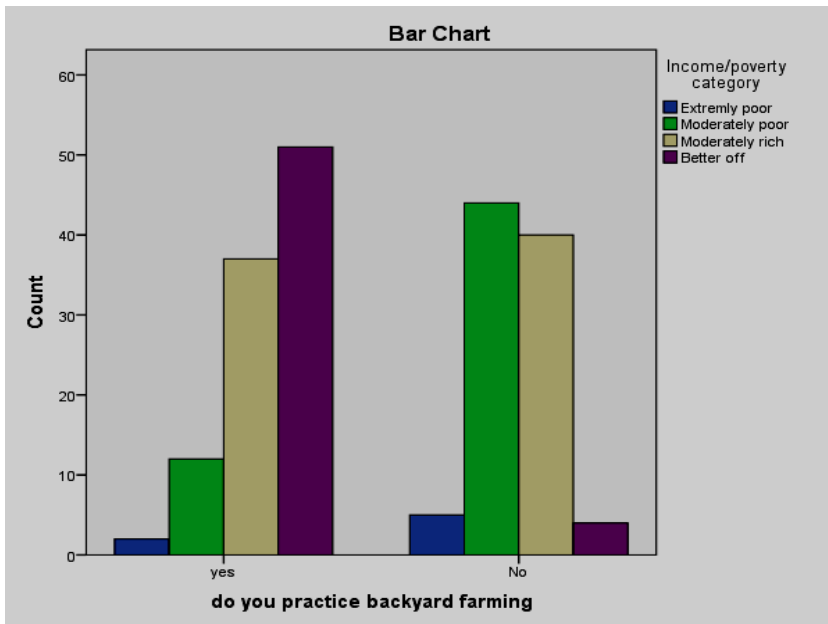
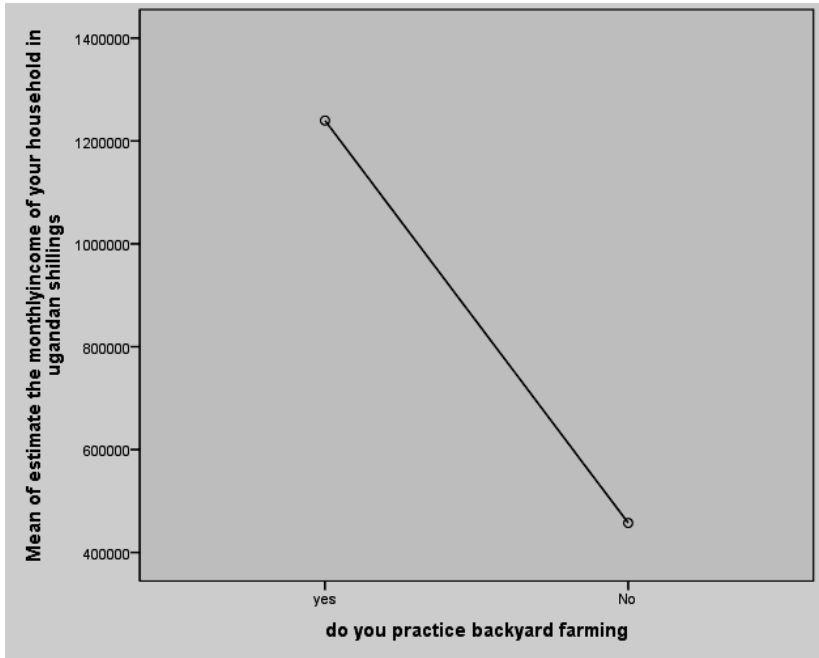


Plate 1: Shows effect of backyard farming on incomes. A-Average monthly incomes, B- Income distribution between practicing and non-practicing households and C- Income distribution by physical location of households

Discussion

Both practicing and non-practicing households had good food security status based on food consumption score, household dietary diversity and coping strategy index. This can be explained by the reduced food prices in the market following the bumper harvest (WFP, 2018). Prices of staple foods were lower than that in previous years. According to Auma (2015) access to cheaper food options discourages urban population from engaging in backyard farming since they feel a sense of food security. However, households practicing backyard farming had better food consumption scores and coping strategy index compared to their non-practicing counterparts indicating that backyard farming had effect on food security. The relatively higher coping strategy index among non-backyard farming households points to the fact that they had periods of shortage hence they had no stable access to food stuffs. The higher coping strategy index values for urban households compared to peri-urban households can be attributed to limited opportunities for backyard farming and thus limited stability in accessing food. This implies that backyard farming if supported in urban areas can maintain the growth of food production and safeguard against interferences in food supply (Zezza and Tasciotti 2010).

The relatively good FCS, HDDS of the majority of households can be explained by the fact that most households had incomes which enabled them to access food through the market. Wandera (2015) also reported that a sack gardening farmer earning \$275 a month from training farmers, sale of seedlings and vegetables which is equivalent ~ Ugx. 1,000,000 based on the current exchange rate.

While backyard farming contributes to income both directly and as consumer surplus, these accrued less to the urban poor. This is a worrying situation since the urban poor are the most vulnerable to food and income security. Olivier (2015) observed that such benefits did not accrue to the urban poor of Cape town due to resource limitation, tenure insecurity and patriarchy.

Conclusion

Backyard farming significantly contributes to food security and income of households in urban and peri-urban areas of Kampala. It improves food consumption scores and stabilises food supply. Backyard farming did not significantly alter household dietary diversity scores. There was a strong association between backyard farming and the monthly income earned by the households in Kampala Metropolitan. These findings strengthen the argument for the promotion of urban agriculture as a tool to enhance food security and ameliorate poverty. However, benefits of backyard farming accrue more to the moderately rich and well-off households than the vulnerable poor.

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Conflict of interest

The authors declared that they have no conflict of interest.

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