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Motives of cultivating traditional leafy vegetables in Tamale Metropolis

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Abstract— *Although, there are several researches in Ghana's agricultural sector, little has been done on the investigation of the motives of traditional leafy vegetable production in Ghana. This present study assessed the motive of traditional leafy vegetable crop production in the Northern region of Ghana using cross-sectional data. A simple random sampling technique was used to select 334 peri-urban and urban farming communities in the Tamale Metropolis. A questionnaire was administered to the respondents and data collected were analyzed using Chi-square test, percentage and frequencies. The results indicate that the motives for traditional leafy vegetable production were very similar for both peri-urban and urban farming communities. The main motive for traditional leafy vegetable production was statistically significant for cash income [χ^2 (1, N=334) = 3.755, p < 0.050], and employment [χ^2 (1, N=334) = 13.135, p < 0.001], statistically insignificant for manure [χ^2 (1, N=334) = 1.064, p < 0.302] and food/subsistence [χ^2 (1, N=334) = 3.755, p < 0.059]. Given that traditional leafy vegetable production is a good source of income generation, government should encourage the youth to participate in agricultural activities through the provision of incentives and ready market.*

Keywords—Leafy vegetable, Motives, Peri-urban, Urban, and Tamale.

I. INTRODUCTION

According to the World Health Organization, the sub-Saharan Africa regions have less than a mean consumption of micronutrients per day. The low consumption of vegetables lead to micronutrients deficiencies, high vulnerability to disease and high mortality rates among children (Seidu *et al.*, 2012). Against this backdrop, the cultivation of vegetables has been promoted by the World Health Orgnaization and the Food and Agricultural organization respectively (WHO/FAO, 2003). In Ghana, urban vegetable farming dates back to the arrival of Europeans. Vegetables were grown in the gardens created around the castles and forts along Ghana's coast from the 16th century onwards (Anyane, 1963). Before the Second World War, the raising of European type vegetables was confined mainly to Agricultural Stations and a few private individual. During the war, however farms in neighborhood of Accra and other urban centers were encouraged to grow vegetables which were required in large quantities by the armed forces. Vegetable farms were also established by the then Development of Agriculture at Kpeve, Komenda and Abakrampa. However the industry faded out after the war and it was not until the latter part of 1959 that producers were again organized to form co-operative societies to produce to meet the demand in Accra.

Vegetables are the succulent edible plant parts that may be eaten as supplementary food or side dishes in raw state or in the cooked form. They may be sweet, aromatic, bitter, hot and tasteless and sometimes require salting and considerable seasoning to render them more tasty and acceptable. Vegetables are cheap to grow and act as a quick source of income to many rural women (Ijeomah *et al.*, 2012). They are very good sources of vitamins, minerals (potassium, sodium, calcium, iron, zinc and phosphorus), dietary fibre and water to aid digestion (WHO/FAO, 2003). The fiber content of vegetables generally adds to bulk of the food which prevents us from frequent hunger (Norman, 1992). Vegetables also contain many phyto-chemicals which are needed for health promotion and disease prevention. Vegetables are consumed in very small quantities and are used in almost every meal or used alone as salad or as a side dish with main meal (Ijeomah *et al.*, 2012).

Although, exotic vegetables like lettuce, spring onion and cabbage are not regarded as part of the traditional Ghanaian diet, recent evidence shows that the consumption of these crops is increasing among urban dwellers. For example, more than 200,000 urban dwellers eat them daily in cities, towns, and in canteens and restaurants (Obuobie et al., 2006). The vegetables are also a preferred cash crop because of their potential for lifting poor farmers out of poverty. Nugent (2000) reported that urban agriculture can meet large parts of the urban demand for certain kinds of food such as fresh vegetables, poultry, potatoes, milk, fish and eggs. More than 15 types of vegetables are cultivated in Ghana. The most commonly grown urban vegetables are the most perishable (leafy) ones such as *Amaranthus dubius*, *Corchorus olitorius*, and *Hibiscus sabdariffa*, which have to be produced in market proximity as long as cold transport is lacking (Mahama *et al.*, 2006). Residents

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of Northern Ghana consume significant quantities of green leafy vegetables gathered from their surroundings or farms (Amaglo & Nyarko, 2012). The motives for the cultivation of traditional leafy vegetables include income generation and employment (Schippers, 2002).

Several studies have documented the microbial analysis of leaf vegetables (Fuseini *et al.,* 2017), the profitability of non-traditional vegetable production in Northern region of Ghana (Al-hassan, 2008), and small scale irrigation and rural poverty reduction in the Upper East Region of Ghana (Adam *et al.,* 2016). Yet, there is no accessible empirical literature on the motives of cultivating traditional leafy vegetables in the Tamale metropolis. In view of this, it is unlikely that the Ghana government's objective of providing one village one dam policy will succeed unless positive steps are taken to adequately know the purpose of participation in vegetable production. The lack of empirical studies on this important subject matter makes it difficult for policy makers in Ghana to evaluate their agrarian policy for attaining poverty reduction. The critical research questions that require empirical investigation is *what are the purposes of cultivating traditional leafy vegetables in the Tamale Metropolis?*

Several attempts have been made by successive governments and other development partners to improve the productivity of vegetable farmers in an effort to reduce poverty in the region through small scale irrigation schemes, dug-outs and others. These interventions have contributed to the improvement in the production and supply of vegetables in the area. The improvement in the supply however is faced with a challenge of marketing. There is no clear vegetable marketing arrangement put in place and persons in these businesses are at a fix as to the most effective and efficient marketing channels and strategies to employ. Despite the many challenges and constraints, many are currently into it with many others providing valuable services to its running. Information from the study can guide investors, service providers and other players to the business to take informed decisions on their levels of involvement in those vegetable marketing related ventures.

II. MATERIALS AND METHOD

The study was undertaken in the Tamale Metropolis. Tamale Metropolis lies between latitude 9° 16' and 9° 34' North and longitude 0° 36' and 0° 57' West. The Metropolis occupies approximately 750 km^2 with mean temperature of 27.9°C. Average monthly temperatures vary by 5.5°C. The annual precipitation averages 1090 mm (42.9 inches). On average there are 97 days per year with more than 0.1 mm (0.004 in) of rainfall. The driest weather is in December when an average of 3 mm (0.1 in) of rainfall occurs. The wettest weather is in September when an average of 231 mm (9.1 in) of rainfall occurs. On the average there are 2723 hours of sunshine per year (Meteorological Service Department of Tamale, 2015).

Data was gathered from 334 leafy vegetable farmers in the Tamale Metropolis. A simple random sampling technique was used to select pri-urban and urban leafy vegetables. The list of vegetable farmers was obtained from vegetable farmers association. A structured questionnaire was used to gather data from the producers. The questionnaire had closed-ended questions and open-ended questions. Data on social, economic and demographic characteristics of the sample were collected particularly on age of the respondent, residential status, years of education, and years of vegetable production, extension service contact and reasons for cultivating vegetables. Data on farm features included farm size, input used, quantity of agro-chemicals used, outputs, etc. Finally, data collection covered areas such as input and output prices, availability and access to resources such as credit, labour, land, water, etc. The data obtained was subjected to descriptive statistics test and Chi-square analysis using Statistical Package for Social Sciences (SPSS Version 16.0).

III. RESULTS

Bio data of respondents

Table 1 shows that gender was statistically significant χ^2 (1, N=389) = 7.781, p = 0.005 for peri-urban and urban farming communities. The vegetable industry is dominated by male (65%). This might be largely attributed to women's inability to own land in the study area. This finding is similar to the conclusion by Drechsel and Karg (2013) that women's participation in agricultural production is related to lack of access to farm land. Whereas 70% versus 30% of males were in peri-urban and urban respectively, 71% versus 39% of females were in peri-urban and urban communities. The results also indicate that 78% versus 22% of farmers are 41+ in peri-urban and urban communities, respectively. The bivariate analysis shows that age was statistical significant χ^2 (2, N=334) = 21.921, p = 0.027 different for peri-urban and urban farmers. This means that the proportion of elderly peri-urban farmers who are engaged in vegetable farming are more than those who are in urban communities. The Chi-square results show that there was a statistically significant difference in the level of education between peri-urban and urban vegetable farmers χ^2 (4, N=334) = 18.448, p = 0.003. In terms of education of farmers, the results show that more urban farmers (65%) have tertiary education compared with peri-urban farmers (35%).

For the types of vegetables sold, the bivariate result indicates no statistically significant χ^2 (2, N=334) = 11.548, p = 0.503 difference between peri-urban and urban communities. The field findings indicate that 55% and

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45% of peri-urban and urban farmers sold both indigenous and exotic vegetables, respectively. Additionally, there was a statistically significant difference between peri-urban and urban farmers vegetable sales point χ^2 (3, N=334) = 31.078, p = 0.001.

The results indicate that 70% of peri-urban farmers and 30% of urban farmers sold vegetables at the farm gate. This means that most farmers prefer to sell at the farm gate compared to other means of selling vegetables probably due to transport cost and other reasons. The supply of vegetables is irregular for peri-urban farmers (76%) compared with 24% of urban farmers due to lack of streams and dams.

Table.1: Characteristics of peri-urban and urban farmers

Variables		Peri Urban		Urban		District		χ^2 test
		Freq	%	Freq	%	Freq	%	
Gender	Male	151	70.0	65	30.0	216	100.0	χ^2 = 7.781 df = 1 p = 0.005
	Female	82	69.5	36	30.5	118	100.0	
Age	20-30	14	41.2	20	58.8	34	100.0	χ^2 = 21.921 df = 2 p = 0.027
	31-40	22	46.8	25	53.2	47	100.0	
	41+	197	77.9	56	22.1	253	100.0	
Educational level	No formal	91	64.5	50	35.5	141	100.0	χ^2 = 18.448 df = 4 p = 0.503
	Primary	40	88.9	5	11.1	45	100.0	
	JHS	69	82.1	15	17.9	84	100.0	
	SHS	27	57.4	20	42.6	47	100.0	
	Tertiary	6	35.3	11	64.7	17	100.0	
Type of vegetable sold	Indigenous	54	78.3	15	21.7	69	100.0	χ^2 = 11.548 df = 2 p = 0.503
	Exotic	97	82.9	20	17.1	117	100.0	
	Both	82	55.4	66	44.6	148	100.0	
Vegetable source	Farm gate	85	70.2	36	29.8	121	100.0	χ^2 = 31.078 df = 3 p = 0.503
	Wholesales	58	72.5	22	27.5	80	100.0	
	Retailers	68	68.7	31	31.3	99	100.0	
	Other sources	22	64.7	12	35.3	34	100.0	
Frequency of market supply	Regular	124	65.3	66	34.7	190	100.0	χ^2=22.252 df=1 p = 0.016
	Irregular	109	75.7	35	24.3	144	100.0	

Source: Field survey, 2018.

Motives of traditional leafy vegetable production and sale

Generally, the purposes for leafy vegetable production were very similar with the main ones being for cash income, food, employment and manure for farm land. Others purposes for leafy vegetable production include medicinal preparation. The purpose for traditional leafy vegetable production by farmers in peri-urban and urban farming communities were statistically significant for cash income [χ^2 (1, N=334) = 3.755, p < 0.050], and employment [χ^2 (1, N=334) = 13.135, p < 0.001]. The findings show that 62% of peri-urban farmers and 38% of urban farmers cultivate traditional leafy vegetables for cash income. This means that vegetable production is one major source of income for farmers, aside the rearing of livestock. The findings indicate that 58% of peri-urban farmers and 42% of urban farmers are engaged in leafy vegetable production as a major means of employment. This suggests that vegetable production can be consciously targeted by the government of Ghana as a mechanism of providing the teaming unemployed youth through irrigation schemes and other support systems including input supply. This will help reduce the high rate of graduate unemployment as well as curtail the migration of the youth to Asia and Europe for greener pastures.

The findings did not find any statistical significant difference in the production of leafy vegetables for manure [χ^2 (1, N=334) = 1.064, p < 0.302] and food/subsistence reasons [χ^2 (1, N=334) = 3.755, p < 0.059]. The results indicate that 72% and 28% of peri-urban and urban farmers produce leafy vegetables for food/subsistence respectively, while 78% and 22% of peri-urban and urban farmers produce leafy vegetable for manure, respectively.

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Table.2: Motives of cultivating leafy vegetables

Variables		Peri-urban		Urban		District		χ^2 test
		Freq.	%	Freq.	%	Freq.	%	
Food/ subsistence	Yes	178	71.8	70	28.2	248	100.0	$\chi^2 = 3.755$ df=1 p = 0.059
	No	55	64.0	31	36.0	86	100.0	
Employment	Yes	104	57.5	77	42.5	181	100.0	$\chi^2 = 13.135$ df=1 p = 0.001
	No	129	84.3	24	15.7	153	100.0	
Income	Yes	148	62.4	89	37.6	237	100.0	$\chi^2 = 3.752$ df=1 p = 0.050
	No	85	87.6	12	12.4	97	100.0	
Medicine preparation	Yes	108	61.0	69	39.0	177	100.0	$\chi^2 = 73.340$ df=1 p = 0.641
	No	125	79.6	32	20.4	157	100.0	
Manure	Yes	198	78.0	56	22.0	254	100.0	$\chi^2 = 1.064$ df=1 p = 0.302
	No	35	43.8	45	56.3	80	100.0	

Source: Field survey, 2018.

IV. CONCLUSION

The study revealed the motives of cultivating traditional leafy vegetables by peri-urban and urban farming communities in the Northern Region of Ghana. These motives include cash income, food/subsistence, manure and employment generation. The study alludes that traditional vegetable production is capable of attracting more energetic youth to increase vegetable crops in the metropolis' market. Vegetable farming in the urban communities and peri-urban communities is small due to land scarcity and lack of dry season water in dams and streams located in the Metropolis. The recommendation is that mechanisms should be put in place by the government of Ghana to ensure that the teaming unemployed youth are induced to venture in this business.

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REFERENCES

[1] Adam, N. J., Al-hassan, S. & Akolgo, D. A. (2016). Small scale irrigation and rural poverty reduction in the Upper East Region of Ghana. African Journal of Science and Research, Vol. 5 (2), 38-42.

[2] Al-hassan, S. (2008). Technical efficiency of rice farmers in northern Ghana. AERC Research Paper 178.

[3] Amagloh, F. K., & Nyarko, E. S. (2012). Mineral nutrient content of commonly consumed leafy vegetables in Northern Ghana. *African Journal of Food, Agriculture, Nutrition and Development, Vol. 12(5)*, 6397-6408.

[4] Anyane, S. La. (1963). Vegetable gardening in Accra. The Ghana Farmer, Vol.1 (6), 228-230.

[5] Drechsel, p. & Karg, H. (2013). Motivating behavior change for safe waste water irrigation in urban and peri-urban Ghana. Sustainable Sanitation Practice, Vol. 16, 10-20.

[6] Fuseini, J.Y., Adam, J. N. & Al-hassan, I. (2017). Microbial analysis of leafy vegetables in iceless cooling facility, International Journal of Environment, Agriculture and Biotechnology, Vol. 3(1), 187- 194.

[7] Ijeomah, A.U., Ugwuona, F.U. & Ibrahim, Y. (2012). Nutrient composition of three commonly consumed indigenous vegetables of North Central Nigeria. Nigerian Journal of Agriculture, Food and Environment. 8(1):17 – 21.

[8] Norman, J.C. (1992). Tropical vegetable crops. University of Wisconsin, Madison. Stockwell Ltd.

[9] Nugent, R.A. (2000). The impact of urban agriculture on the household and local economies in Bakker, N et al. (eds), Growing cities, growing food: Urban agriculture on the policy agenda, Deussche Stiffung fur international Entwicklung (DSE), Zentralstelle fur Ernahrung und Landwirtschaft, Feldafing/Germany, pp. 67-97.

[10] Obuobie, E., Keraita, B., Danso, G., Amoah, P., Olufunke, O.C., Raschid-Sally, L., & Dreschsel, P. (2006) Irrigated Urban Vegetable Production in Ghana, Characteristics, Benefits and Risks. Accra, Ghana: IWMI-RUAF-CPWF.

[11] Schippers, R.R. (2002). *African indigenous vegetables. An overview of the cultivated species.*

https://dx.doi.org/10.22161/ijhaf.2.2.3 *ISSN: 2456-8635*

University of Greenwich, Natural Resources Institute, London, UK.

[12] Enock Dashu, P.(2017).Microbial Effect of Refuse Dump on the Composition of Leafy Vegetables Grown in the Vicinity of Dump Site Along River Benue, Mubi Road, Yola. *International Journal of Environment Agriculture and Biotechnology(ISSN: 2456-1878)*.2(4), 1895-1899.10.22161/ijeab/2.4.54

[13] Fuseini Jacob Yakubu, James Natia Adam, Al-hassan Issahaku, P.(2018).Microbial analysis of leafy vegetables in iceless cooling facility. *International Journal of Environment Agriculture and Biotechnology(ISSN: 2456-1878)*.3(1), 187-194.10.22161/ijeab/3.1.24

[14] Seidu, J. M., Bobobee, E.Y. H., Kwenin, W. K. J., Frimpong, R., Kubge, S. D., Tevor, W.J. & Mahama, A.A. (2012). Preservation of indigenous vegetables by solar drying. Asian Research Journal, Vol. 7(6). 407- 415.

[15] World Health Organisation/Food and Agriculture Organisation (2003).Promoting Fruit and Vegetable Consumption around the World. Retrieved from http://www.who.int/dietphysicalactivity/fruit/en/14/09/2014.