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Farming characteristics in urban districts of Nairobi county - Kenya

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Abstract

Urban farming practitioners face challenges like lack of quality irrigation water, poorly decomposed manure, diverse inputs of unknown sources, unhealthy farm environment and abject poverty. All these contribute to production of unsafe food. Heavy metals and pathogens contaminate edible produce like tomato fruits, kale leaves and arrowroot corms. Urban produced vegetable crop contamination can come from substrates, irrigation water or the atmosphere. Therefore, this study was conducted to evaluate the features of urban farming in Nairobi city. Predesigned semi structured questionnaires were administered to ninety five farmers in eight of the nine Nairobi districts. Forty two percent of Nairobi farmers irrigate used city council supplied water with 16 and 7.4% using waste water (including sewage) and polluted stream water, respectively. County council supplied water was used by over 70% of degree holders with none using sewage water. Fourteen percent of farmers with primary level education used sewage. Out sourced livestock manure was used by 41.1% of the farmers, 21.1% from on- farm livestock while 12.6% used compost. Youths and over 65 year old farmers had half of their population using out sourced and own livestock manure, respectively. Agricultural waste is fed to livestock by 45.3% of farmers, 35.8% recycle and 3% throw it away. The highest users of county council supplied water for irrigation are the degree holders at 70% implying that the level of education greatly contributes to ultimate food safety.

Key words: Edible produce, urban farming

Résumé

Les praticiens de l'agriculture urbaine font face à des défis tels que le manque d'eau d'irrigation de qualité, le fumier mal décomposé, diverses entrées de sources inconnues, de l'environnement agricole malsain et une pauvreté abjecte. Tous ces éléments contribuent à la production d'aliments dangereux. Les métaux lourds et les agents pathogènes contaminent les produits comestibles comme les fruits de tomate, les feuilles de chou et les oignons de l'arrow-root. La contamination de la production de la culture urbaine peut provenir de substrats, de l'eau d'irrigation ou de l'atmosphère. Par conséquent, cette étude a été menée pour évaluer les caractéristiques de l'agriculture urbaine dans la ville de Nairobi. Des questionnaires semi-structurés prédéfinis ont été administrés à quatre vingt quinze agriculteurs dans huit des neuf districts de Nairobi. Quarante-deux pour cent des agriculteurs de Nairobi

irriguent en utilisant l'eau du Conseil municipal de 16 et 7,4% de l'eau de déchets (y compris les eaux usées) et de l'eau des cours d'eau pollués, respectivement. Le Conseil municipal fournit de l'eau utilisée par plus de 70% des titulaires d'un diplôme avec aucun n'utilisant les eaux usées. Quatorze pour cent des agriculteurs ayant un niveau primaire utilisent des eaux usées. Le fumier provenant du bétail a été utilisé par 41,1% des agriculteurs, 21,1% à partir des fermes d'élevage d'animaux de ferme tandis que 12,6% ont utilisé du compost. Les jeunes et les agriculteurs de 65 ans d'âge utilisent la moitié de leur population à partir de leurs propres fertilisants. Les déchets agricoles sont l'alimentation du bétail pour 45,3% d'agriculteurs, 35,8% le recyclage et 3% le rejeter. Les plus grands utilisateurs de l'eau fourni par le Conseil municipal pour l'irrigation sont les titulaires d'un diplôme à 70% ce qui implique que le niveau d'éducation contribue grandement à la sécurité alimentaire ultime.

Mots clés: produits comestibles, l'agriculture urbaine

Background

Urban farming practitioners face challenges like quality irrigation water, poorly decomposed manure, diverse inputs of unknown sources, unhealthy farm environment and abject poverty. All these contribute to production of unsafe food. Contamination could arise from heavy metals and or pathogens. Consumers are increasingly aware of the problems associated with consumption of poorly produced food crops like food-borne diseases. The research objective was to identify farmer's practices that could cause food insecurity and propose interventions against the same.

Literature summary

Nairobi city is divided into nine administrative districts namely,Njiru, Embakasi, Makadara, Kasarani, Starehe, Kamkuji, Dagoreti, Westlands and Langata.The districts are either urban, peri-urban or a combination of the two. Due to quality water scarcity, farmers irrigate their crops using both raw sewage and gray water. Heavy metals and pathogens contaminate edible produce like tomato fruits, kale leaves and arrowroot corms (Karanja *et al* 2011). Urban produced vegetable crop contamination can come from substrates, irrigation water or the atmosphere (Amoah et al 2005). Tang, (2014), observed that consumers are concerned about food safety due to their awareness of environmental pollution.

Study description

Predesigned semi structured questionnaires were administered to ninety five farmers in eight of the nine Nairobi districts. The pilot tested questionnaire captured household characteristics like farmer's highest education level, time spent in farming, income and age, It also sought information on farming characteristics like irrigation water sources, manure sources and waste management. The farmers were purposively sampled with the help of agricultural extension officers depending on if they grew the three crops namely arrowroots (*Colocasia esculenta* L), kales (*Brassica oleraceae* var Acephala L.) and tomatoes (*Lycopersicon esculentum* M.). Data collected was recorded in excel spread sheet. Analysis

tested for frequency of farmers on farming and household characteristics and the interrelationships between response variables.

Results

Farmers who irrigate using city council supplied water were 42.1%. Those who used waste water (including sewage) were 16%, while 7.4% used polluted stream water. County council supplied water was used by over 70% of degree holders with none using sewage water (Fig. 1). Primary school educated farmers who used sewage were 14%. Out sourced livestock manure was used by 41.1% of the farmers, 21.1% from on- farm livestock while

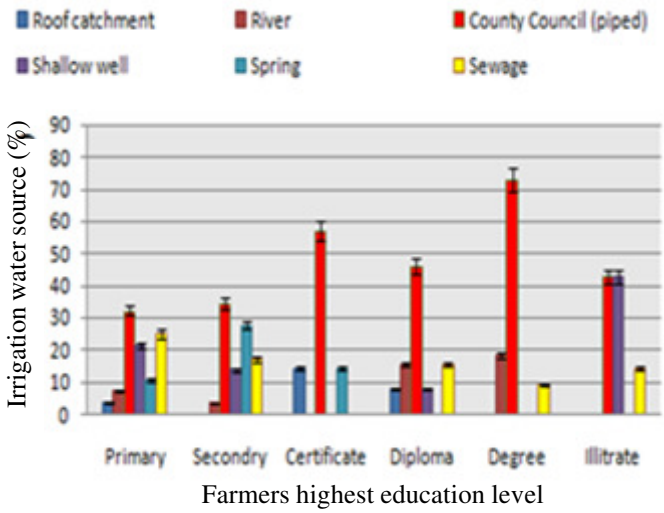

Figure 1. Farmer's education level against irrigation water source.

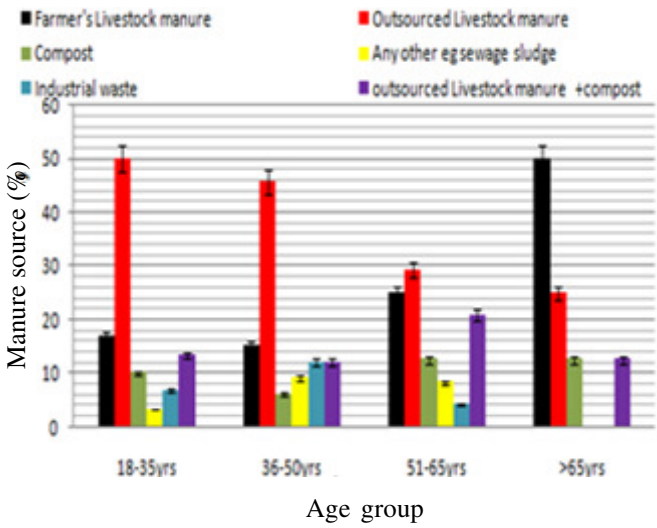

Figure 2. Farmer's age against manure sources.

12.6% use compost. Youths and over sixty five year old farmers had half of their population using out sourced and own livestock manure, respectively (Fig. 2). Agricultural waste is fed to livestock by 45.3% of farmers, 35.8% recycle and 3% throw it away.

Conclusion

The highest users of county council supplied water for irrigation are the degree holders at 70%,while primary school educated farmers who used sewage were 25%.Both the youthful and the over 65 years old farmers use outsourced and own livestock manure respectively.

Acknowledgement

We thank the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) for giving us an opportunity to share our findings.

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