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Urban farming as an adaptation to food security and climate change in Nyeri county, Kenya

Karienyee, David^a, Doris Nderitu^b and Gilbert Nduru^c Hellen Kamiri^d

^a Department of Geography, Garissa University College. P.O. Box 1801 Garissa Kenya

^b School of Education and Social Sciences, Department of Geography, Karatina University, P.O. Box 1957-10101, Karatina, Kenya

^c School of Natural and Environmental Studies, Karatina University, P.O. Box 1957-10101, Karatina, Kenya

^d Department of Crop Science, Karatina University, P.O. Box 1957-10101, Karatina, Kenya

Introduction

Urban farming is proposed as a one of the key solutions to food insecurity especially in the developing countries where high population and declining land sizes have resulted to major food shortages. It is one of the fastest growing agricultural sub-sector in Africa whose definition vary with locality. In this paper we define urban farming as growing and raising food crops and animals in an urban setting for the purpose of feeding local populations (Hendrickson, 2012).

Urban farming can offer health, environmental and economic advantages that make it an appealing movement. For example, farming in cities can provide increased access to healthy, cheap produce for urban residents, while lowering pollution impacts from transportation and waste products from the rural areas (Mukherji, N., and A. Morales, 2010). In Kenya, many urban farmers are small producers who use the accrued profits mostly to subsidize household income.

Global threats of climate change and its impacts on agricultural productivity has compounded the issues of food production under rainfed conditions due to declining rainfall amounts, droughts and floods thus requiring shift to other production innovations such as supplementation of soil water by use of drip irrigation and diversification of crops and farm animals thus resulting to the adoption of urban farming in major cities. However, the extent at which urban farming is practiced and the crops grown has not been well studied in Nyeri county. A study was carried out within the county in selected urban centers in order to investigate the type of urban farming, the dynamics and production potential.

Material and Methods

The research was carried out in Nyeri county, Central Kenya region. A total of 60 respondents who were directly involved with crop and/or livestock production in the urban centers were selected. The survey involved the use of structured questionnaire and in depth interview to key informants in addition to observation. Questionnaires were administered to household heads and data collected on the type of crops, income accrued, and motivation to do urban farming. Triangulation transect was used to ensure all farmers within the urban centers were given fair chance during data collection. Since the region is vast, purposive sampling was used to select the area of study.

Results and Discussion

Urban farming within the urban centers was practiced by more than 40% of the households, with the most common type of farming being kitchen gardens of various sizes (Table 1). The main type of urban farming practiced included growing of vegetables, (both exotic and indigenous) and animal keeping both (poultry and dairy animals).

Table 1: Types of urban farming within the urban areas of Nyeri county

Type of farming	Percentage (%)
Kitchen garden	48%
Fruits production	6%
Domestic Livestock	42%
Flowers production	2%

The highest percentage of respondents (80 %) own the land where they practice urban farming while 20% lease the land of various sizes ranging from 0.0625 to 0.0125 acre. A considerable percentage (42%) of farmers kept some form of livestock both dairy and/or poultry. A small portion of farmers had fruits and flowers with 6% and 2% respectively. These vegetables supplement diet while milk form part of the beverage to the urban dwellers. The main sources of market of the produce are the adjacent local markets with the urban and suburban areas of Nyeri town. Our findings conquer with FAO, (2012) who reported that many African urban dwellers cultivate vegetables and fruit trees in home gardens, both for their families and for sale. In Dakar Senegal for example 7,500 households grew their own food in micro gardens while in Malawi, 700 000 urban residents practised home gardening to meet their food needs and earn extra income.



Figure 1: Vegetable farming in Majengo sub-urban area of Nyeri

Regarding motivation to practice urban farming, a larger number of respondents (90%) was motivated by the declining food availability and increased prices due to poor rains. This the farmers adopted to practicing farming to supplement their food source.

Ninety five percent (95%) of respondents reported reduced and unreliable rainfall and increased temperature which had resulted to loss of crops. The frequency of drought had increased thus resulting in more days without food for the family. The region has been experiencing drought at least once in a year posing a threat to the food status of the region

There was differentiation on the type or urban agriculture between the urban centers and their suburbs. This was related to the population density, whereby the suburbs near high populated urban centers attracted a high proportion and more diversified form of urban agriculture (both crops and animal production) than low populated town centers. Majority of the farmers (80%) use irrigation while only 20% rely on rain fed agriculture. To overcome the effect of drought, the farmers practice irrigation (80%) either as drip irrigation or using buckets (bucket irrigation).



Figure 2: Fruit farming in Kamakwa Nyeri County Fig 3: Dairy farming in Majengo Nyeri County

Majority of farmers (90%) admitted that urban farming promote food security in the region through easy access of fresh and affordable food and also supplement household income. About 95% of farmers reported that urban farming is the only sure way of coping with the changing rainfall patterns in the region since the technology requires small space minimal labour. In a recent study by FAO (2012) it was reported that higher temperatures and less predictable rainfall are likely to accelerate eco-migration from rural areas to large and mid-sized cities thus comprising their resilience to climate change. Urban farming has thus increasing interest in enhancing and developing food systems that can contribute to a community’s overall economic, social, environmental and nutritional concerns in the region.

Conclusions and Outlook

Urban farming is one strategy for achieving sustainable food systems with less pollution to the environment and can be seen as a way to address the key citizen issues such as increasing access to healthy foods, encouraging community economic development or green economy goals, and strengthening community relationships. If well practiced through provision of resources it can be one of the best be options for coping with climate change and food insecurity issues in the region.

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