



## **ARE COMMERCIAL CROPS DISPLACING FOOD CROPS AND COMPROMISING KENYA'S FOOD SECURITY?**

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*Full Length Research Paper*

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**Premised on the idea that malnutrition due to food insecurity undermines Africa's human capital base, we carried a survey among 108 Kenyan sugarcane farmers in the year 2000 to assess food crop production practices. Results indicate that cash crops could be displacing food crops. Almost all the land is dedicated to sugarcane, and minimal land is dedicated to food crops. Vegetables are ranked lower in importance to other foods with traditional vegetables faring worse than exotic vegetables. Further, inadequate agronomic practices, in particular, fertilizer underutilization and lack of pest control were prevalent. Thus, it was not surprising to find lack of self-sufficiency in vegetables that could contribute towards alleviating food insecurity.**

**Key words:** Food security, sugar cane, vegetables, land, cash crops.

### **INTRODUCTION**

Food security exists when all people times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2003). A good percentage of the world's population suffers from food insecurity which is one of the underlying causes of malnutrition in the developing world (Sebit, 1994; Ha and Gura, 1996; FAQ, 2003). In particular, malnutrition and other human capital, ion mechanisms undermine not only Africa's but also Kenya's development effo4 (Human Development Report, 2012). Indeed literature indicates that human capital educated and technically skilled workforce) is a basic determinant of Foreign Direct Investment (FDI) to the developing world (UNCTAD, 1999; Cleeve, 2005) and a major component of global competitiveness (Porter,

1990). Yet, these very forces may be undermining human capital development in Kenya as commercial crops displace food crops (Cameron and Ndhlovu, 2005). Thus, Kenya needs to address the problem of food insecurity in order to curb malnutrition and promote human capital base. This study reviews the subject of food security at the backdrops of the sugar industry in Kenya. Since food security is a huge subject, we focus on the production of vegetables among a segment of sugarcane farmers in Kenya.

Kenya's sugar belt is ideal for such a study as it has the highest infant mortality rate and suffers most from malnutrition and other human capital erosion mechanisms (MOPND, 2003). Vegetable is an ideal starting point because it is efficacious against food insecurity.

Vegetables are ideal for consumption and commercial purposes (Hass and Gura, 1996). They are a relatively cheap source of proteins, vitamins, minerals and essential amino acids in diets of many communities in rural Africa. Yet, the recommended vegetables intake is hardly ever achieved leading to micro nutrient deficiencies due to lack vitamin A, iron, and iodine, a condition known as "hidden hunger" (FAQ, 2003). Hidden hunger seems prevalent in rural communities that have displaced traditional food crops with commercial crops such as sugarcane, rice, and tobacco (Bezuneh et al. 2005; Ojode and Ogara, 2005). Vegetables are particularly vulnerable to displacement in the development world where they are seen as secondary to cereals (Hass and Gura, 1996).

Such displacement of vegetables can deprive the very needy of the greatest natural source of nutritional improvement through their supply of vitamins, minerals and plant proteins (Moomay, 1979). It is possible that the focus on sugarcane, the primary cash crop at the Mumias Sugarcane Scheme (MSS) has left little land for both staple crops such as maize as well as vegetable crops. In this study, we assess the level of vegetable production at MSS, and its potential addressing food insecurity. Specifically, we review the nature of vegetable production at MSS and the potential of vegetables in the improvement of food security among household. Our hypothesis is that given the focus on sugarcane as the main cash crop, little land will be allocated for food crop production, including vegetables. The next section focuses on the methodological aspects employed in this study.

## METHODOLOGY

This study was carried out between October and November, 2000 to assess vegetable production and consumption at MSS. The area surveyed consisted of three (3) administrative divisions in Butere-Mumias district namely Butere, Mumias and Matungu. From these divisions, a total of four (4) locations were randomly selected from which fifteen (15) sub-locations were also randomly picked. Finally, one village was purposively selected from each sub-location. Villages were selected on the basis of the level of food insecurity, presence of cash crop and the potential to improve food security situation. This was done with the help of the Ministry of Agriculture's extension staff where by a total of 108 households were finally randomly selected for interview.

To elicit the required information, a structured questionnaire was administered with the help of trained enumerators who could fluently speak both English and Wanga (the local dialect) from the study area. The questionnaire was pre tested and revised accordingly prior to the actual survey. Consistent with household respondents the questionnaire was administered to household heads but emphasis placed on the wives (where present) since women are the main growers of vegetables. Probing questions were encouraged whenever respondents were unclear (for example, about

**Table 1:** Main food crops grown at MSS

| Crop        | N   | %     |
|-------------|-----|-------|
| Maize       | 106 | 98.20 |
| Beans       | 100 | 93.50 |
| Ground nuts | 18  | 16.67 |
| Cassava     | 2   | 1.85  |
| Others      | 15  | 13.89 |

Source: Authors computations

**Table 2:** Common vegetables species grown at MSS

| Species        | N  | %     |
|----------------|----|-------|
| Collard        | 86 | 79.63 |
| Cowpea         | 91 | 84.26 |
| Sunhemp (miro) | 66 | 61.11 |
| Jute (murere)  | 28 | 25.93 |
| Cat whisker    | 23 | 21.30 |
| Amaranth       | 21 | 19.44 |

Source: Authors computations

sensitive information such as land size). The researchers followed the enumerators randomly to ensure data consistency. Data collected included, area under sugar, area under food crops, area under vegetables, types of food crops grown, types of vegetables grown (both exotics and traditional), income generated from vegetables sales, type of fertilizer inputs used as well as the major problems encountered in vegetable production.

## RESULTS AND DISCUSSION

Statistical package for social sciences (SPSS) version 10 was used for data analysis. Results indicate that most respondents (66.7%) owned less than two hectares of land, 21.3% owned between two to four hectares and 12% owned over four hectares. This shows that a majority of the MSS farmers (88%) are smallholder farmers (with less than four hectares of farmland).

Maize was the most important food crop cited by the most respondents (98.2%), followed by beans (93.5%) while the other crops were grown by less than 16% of the 108 respondents (Table 1).

Among the vegetables, Cow pea was cited as the most important vegetable by 84% of respondents. 80% of the respondents grew collard while 61% grew sunhemp (Table 2). Other important crops were Jute, Cat whisker and amaranth. Sunhemp (*Crotalaria Sun hem* or *miro*) was grown by 61% of the respondents with 9.3% of these growing it as the second most important crop.

About 46% of the respondents indicated that they considered 0.25 hectares of land sufficient allocation for consumption vegetables for their families for the whole year, 43.5% reported that 0.2 hectares of land to be sufficient while 10.2% needed more.

Over a half of the respondents (57%) of the respondents sold vegetables in the year 2000., Ten (10%) of the respondent indicated that they sold exotic vegetables with

**Table 3:** Vegetable types grown at MSS

| Fertilizer type | N  | %     |
|-----------------|----|-------|
| Inorganic       | 14 | 12.96 |
| Organic         | 46 | 42.59 |
| Both            | 19 | 17.59 |
| None            | 29 | 26.85 |

**Table 4:** Pesticides used as MSS

| Kind       | N  | %     |
|------------|----|-------|
| Commercial | 34 | 31.48 |
| Homemade   | 46 | 42.59 |
| Both       | 8  | 7.41  |
| None       | 20 | 18.52 |

Source: Authors computation

**Table 5:** Common vegetable species grown at MSS

| Challenge        | N  | %     |
|------------------|----|-------|
| Pests / diseases | 53 | 49.07 |
| Drought          | 29 | 26.85 |
| Lack of inputs   | 24 | 22.22 |
| Low prices       | 21 | 19.44 |
| Hail stones      | 18 | 16.67 |

Source: Authors computation

almost a half (47%) selling traditional vegetables. 18% of the respondents sold both types of vegetables while 10% did not sell any of their vegetables produced. Twenty-six (26%) percent of the respondents did not specify vegetable types (Table 3).

Table 3 shows that 42.6% of the respondents used organic fertilizers (mainly in the form of farm yard manure), 13% applied inorganic fertilizer, while 27% of the respondents did not apply any type of fertilizer. At least 17.6% of the respondents applied both organic and inorganic fertilizers.

Further results show that 31.5% of the respondents used commercial pesticides, 42.6% used homemade pesticides such as ash or Mexican Marigold (*Tagetes minuta*) juice (Table 4). A few farmers (8%) combined both pest control methods while a reasonable number (19%) of the respondents did not use any pest control. Moreover, about 94% of the respondents cited that family members were the major source of farm labour for vegetable production, with women and children providing most of this labour. Only 1.9% of the respondents used or complimented family labour with hired labour.

Finally, the table 5 lists a variety of challenges that farmers faced during vegetable production at the MSS. These included pests and diseases (49%), drought (26.8%), lack of inputs (22.2%), poor producer prices (19.4%) and hailstones (16.7%).

An educated and technically skilled workforce (human capital) is essential for economic development and it may

be the critical differentiator in the 21st century service economy (UNCTAD, 2004). Yet capacity for human capital development is undermined by food insecurity (FAQ, 2003). It may prove difficult for Kenya to join the rest of the world in developing human capital unless it can address perennial food insecurity. Hence, the significance of vegetables, the relatively economical but efficacious produce that thrive in most parts of the country throughout the year. Despite their importance, vegetables tend to be relegated to other subsistence crops in many parts of the country. We found such regulation to be the case among Kenyan sugarcane farmers that seem to focus on the primary cash crop at the expense of food crops such as vegetables. Little land is also spared for major food crops such as maize, beans and even vegetables. For instance, although a majority of the MSS farmers own less than two hectares of land, a very small part of this is set aside for vegetable production (less than ten square meters). The result is the never-ending shortage of vegetables particularly during dry seasons.

Although tropical regions normally produce and consume traditional leafy vegetables such as Cat's whiskers, Amaranth and Black nightshade that are adapted to the local environment and that require little investment (Oomen and Grubben, 1978). MSS families tend to favour Collard, and exotic vegetable. Such exotic vegetables are less vibrant under the questionable production practices (for example, under use of fertilizer and insufficient pests and diseases control) that prevail at the MSS. The reliance on exotic vegetables could compromise food security and may be indicative of a need to promote the production of the better-adapted local varieties. A related issue regards improper timing of growing seasons that leads to problems of pests, disease, hailstone and poor prices that occur during the long rains. Growing vegetables during the short rains could reduce these problems. The use of irrigation during the dry season could eliminate the problems of hailstone and poor prices as vegetable demand soars during such periods. The high water table around MSS, the proximity of river Nzoia, and the many smaller all season streams, could offer opportunity for economic irrigation.

## SUMMARY AND CONCLUSION

This study sought to review the subject of food security at the backdrop of the sugar cane production in Kenya. Since food security is a huge subject, we focused on the production of vegetables among a segment of Kenyan sugarcane farmers at the MSS. We hypothesized that vegetable production is allocated insufficient land in comparison to other food crops, and that vegetable production suffers from limited fertilizer use. The findings are in the affirmative. Indeed the land set aside for vegetable production was hardly sufficient for consumption vegetables not to mention resale.

It was also noted that very limited use of fertilizer (regardless of type) on vegetable production at MSS.

However, there are positive indications that vegetables could play a bigger role in ensuring food security as shown by some farmers who produced and sold vegetables particularly during the dry season. We did not seek cause and effect in this study, a fact that constraints us to a cautious interpretation of these results. Rather, the results have been used to select the preferred exotic vegetable, collard and two neglected traditional vegetables, Cat's whiskers and amaranth for trials and demonstrations in a follow up study what will assess potential effects of inorganic manure and farmyard manure on growth, yield and nutritive quality ( $\beta$  – carotene) of the three vegetables.

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