

Challenges and Approaches to Sustainable Citrus Production in Kenya

George Ouma*

Department of Botany and Horticulture, Maseno University, Kenya, P. O. Box 333, Maseno, Kenya

Correspondence: * goumaoindo@yahoo.com

ABSTRACT

Agriculture is the main stay of Kenya's economy. It contributes immensely to employment creation, foreign exchange earnings and incomes for the local population. Horticulture is its fastest growing sub-sector in terms of area of production, export earnings and employment creation. Fruits and vegetables are the main enterprises produced by the horticultural industry. Land mass in Kenya is mainly arid and semi arid and only a small part of it is used for arable farming. Horticultural production in Kenya is mainly carried out by small-scale producers. Because of the scarcity of productive land for growing horticultural crops there is need for intensive production using inputs such as fertilizers, pesticides, irrigation, etc. Fruit production is becoming very important in Kenya for domestic consumption and export. There are many constraints which limit citrus production in Kenya, citrus being an important fruit for domestic consumption. This paper discusses the constraints limiting citrus production in Kenya and the approaches to be applied to ensure sustainable citrus production and increase the area under citrus trees.

Keywords: constraints, domestic, food security, fruits

INTRODUCTION

Over 77% of Kenyans live in the rural areas a way from the major cities. Agriculture is the back bone of Kenya's economy and it is the basis for economic growth, generation of employment opportunities and foreign exchange earnings (Export processing zone authority, Kenya 2005; Embassy of Japan in Kenya Report, 2008). It contributes about 50% of Kenya's export earnings and employs 80% of the population. Its contribution to Gross Domestic Product (G. D. P.) averaged about 26.2% between 1990 and 1998. Kenya has a land area of 583, 000 Km² and a population of 30 million. The population is projected to increase by 42 million people by 2010. Out of the 2.57 million small-scale producers 70% are involved in horticultural production. Therefore the horticultural sub sector absorbs a large percentage of the labour force. The sub sector also makes substantial contribution to food production and security. Most of Kenya's land mass is arid and semi-arid (83%) requiring lots of resources to utilize it. The remaining 17% which is high potential is under arable farming. The only option left is to use the land more intensively. Some of the less productive land can be brought into production through investment in irrigation. Horticultural production offers the best possible undertaking among the existing agricultural enterprises and this is due to the special characteristics of most horticultural crops such as:

- Most horticultural crops are of relatively high value making them suitable where land area is limiting.
- Most horticultural crops are labour intensive therefore they would solve unemployment problems.
- Most horticultural crops are suitable to small scale farming which is predominant in Kenya.

The total area under horticultural production is estimated currently at 275,000 hectares and 93,000 hectares are under fruits such as avocado, bananas, pawpaw, citrus, mango, etc. (Mungai *et al.* 2002). Kenya's horticultural sector has received a lot of attention from local and international researchers, government and donors over the past decade due to the rapid and sustained growth of its export

sector (Jaffee 1994, 1995; Kimenye 1995; Swernberg 1995; Dolan *et al.* 1999; Stevens and Kennan 1999; Kamau 2000; Thiru 2000; Harris *et al.* 2001; Minot and Ngigi 2002). From a very low base Kenya's horticultural exports (mainly fruits and vegetables) grew 9% per year in the first decade after independence, in 1963, then 17% per year from 1974 to 1983 (Minot and Ngigi 2002). Growth slowed over the 1980s and 1990s but still averaged about 4% per year, over the past decade. By the year 2000 fruit and vegetable exports amounted to 15% of Kenya's total export economy. This impressive growth has contributed to increased incomes of rural households and reduction in poverty. Yet, despite its rapid and sustained growth exports remain a small fraction of Kenya's overall horticultural sector. For the past decade over 90% of all fruit and vegetable products was consumed domestically. The dominance of the local market is clear and is reflected at the farm level while over 90% of small holder farmers in all but the arid regions of Kenya produce horticultural products fewer than 2% do so directly for export (Bawden *et al.* 2002). Estimates of changes in Kenyan small holder share of the fresh horticultural export market vary widely. Most researchers agree that shares were as high as 75% in the early 1990s (Harris 1992). As far as fruit production is concerned small holder horticulture accounts for 40% of its production and the market share of fruits is 99% of the domestic market (Dijkstra 1997; Mwendu *et al.* 2004). Most of the fruit products are available in the domestic market making the prices to be determined by the demand and supply forces.

The seven fruits in terms of production area are bananas, citrus, mangos, avocado, passion fruits, pineapple and pawpaw. The production of citrus fruits has only contributed 13% of the total area under fruits. It has been stagnant and with low yields. As production of citrus has stagnated imports from South Africa, Tanzania and other countries have met the growing domestic demand.

CHALLENGES TO INCREASED CITRUS PRODUCTION

Land use

The traditional land tenure system has led to severe shortage of land. Because of human settlements farm holdings have continued to decrease in size as the small farms are subdivided for inheritance. This is aggravated by the fact that new families have to allocate part of the farm for the homestead. Thus, the small scale sector is characterized by intensive cultivation on the available land. This has put a lot of pressure on the land. Many growers have tried irrigation but there is no specific recommendations with respect to water use efficiency (M'Ribu 2004). The small scale farmer sector is characterized by low soil fertility caused primarily by intensive cultivation, heavy rainfall in some areas and low use of inorganic fertilizers. Heavy rainfall in some areas of Kenya such as the Mount Kenya and Rift valley regions leaches nutrients or washes the top soil down the slope. The Kenya highlands which are agriculturally productive are characterized by heavy rainfall storms that cause run-off down the slopes. The highlands have therefore been rendered vulnerable to soil erosion and landslides. Shortage of land has forced farming activities in fragile areas that were previously not used for agriculture.

Declining productivity

Production per unit area has continued to decline in addition to poor quality produce being obtained. This has been attributed to pest and disease build up, poor farm management due to high cost of inputs including seeds, fertilizer and pesticides (Ouko and Kenduiwa 2004), use of infected planting materials, planting of unimproved cultivars, scions and rootstocks (Obukosia and Waithaka 2000). Many citrus farmers cannot afford equipments for irrigation and postharvest handling. In addition to low yields per unit area most small scale producers cultivate small units of land which are not economically viable. In Kenya the occurrence of citrus greening disease has caused low citrus productivity and yields.

Declining government support

The government of Kenya liberalization policies since 1990 has caused a lot of shift in the public sector's functions from a role of being a facilitator in provision of goods and services. Private sector participation in supply of inputs and in some cases extension services is being encouraged as the Government of Kenya reduces its spending on them. This has been detrimental to the small scale farmer who is unable to pay for the services of consultants and exorbitant prices of inputs. The Government has withdrawn its intervention on stabilization mechanisms. The farmer therefore is not accessible to the important production and market information which was previously provided by its Ministry of Agriculture as this essential service is gradually being shifted to the private sector.

Lack of market information

The majority of small scale farmers' production is seasonal as determined by weather conditions. This production is unplanned and leads to gluts as all produce mature at the same time and compete for the same market outlets. Information of out of season production is either lacking or they have no technology to practice it. Supply and demand information is not made available to the farmers to enable them plan their production to benefit from off-season high prices (Ouko and Kuindwa 2004). Market linkages are not complete as most produces are at the detriment of middlemen who are able to access the market directly and sell produce on their behalf increasing postharvest losses.

The roads in the farming areas are in accessible and are

worse during the rainy periods when produce is due to be moved to the markets. This coupled with lack of electricity in rural areas and poor postharvest handling procedures cause heavy losses either in the farms or market outlets where facilities are inadequate. Those losses contribute about 40% of the total harvest.

Competition from imports

There has been an influx of oranges from South Africa and Tanzania. This competition has been unfair particularly from countries that subsidize or have lower production costs hence can dispose of their produce cheaply (Ouko and Kenduiwa 2004).

Lack of credit/investment capital

There should be facilitation of low interest rate borrowing for farmers. The cost of equipment and inputs need financing and most farmers have no collateral required by the financial institutions. There is lack of technical know how to manage the farms. Most small scale fruit farmers do not carry the fruit management practices such as pruning, training, fruit thinning, pest and disease control and irrigation. Further they use incorrect harvesting and postharvest handling techniques further, the farmers do not have storage structures to store their fruits during glut (Ouko and Kenduiwa 2004).

APPROACHES TO INCREASED CITRUS PRODUCTION IN KENYA

Some of the possible approaches to address the challenges above are:

- (a) Using improved production technologies e.g. improved cultivars, rootstocks, scions, irrigation, pest and disease control, postharvest handling techniques, harvesting practices, fertilizer application.
- (b) Institute proper practices such as grading, storage, packaging, transportation and postharvest care.
- (c) Improve infrastructure e.g. roads.
- (d) Value addition to produce by processing into juices, jam.
- (e) Seek alternative market outlets
- (f) Improve research-extension linkages. This will improve the management of the citrus orchards.
- (g) Improve citrus yields through sustained research efforts.
- (h) Provision of clean planting materials to farmers such as scions, rootstocks, seed.

Citrus yields in Kenya range from (0-40 tones/ha (Kolade and Olaniyan 1998) while the potential is up to 75 tones/ha under well managed orchards. The main factor reducing citrus yields since 1982 is the citrus greening disease which is caused by psyllids (*Trioza erytreae*) insect. Citrus greening is widely distributed in Asia and Africa and its heat sensitive form is found in Kenya among many other African countries (Batool *et al.* 2007). The citrus greening pathogen, now known as Huanglongbing is phloem limited, uncultivable gram-negative bacterium (Batool *et al.* 2007). There should be research on the production of disease free seedlings to farmers and integrated pest management control methods to reduce the incidence of psyllids insect. Also farmers who are growing citrus in areas with the highest incidence of citrus greening i.e., areas of altitude less than 800 metres above sea level should be told to abandon it until control measures are found.

CONCLUSION

Citrus is a very important fruit in Kenya mainly for domestic consumption. For the realization of its sustainable production the constraints affecting its production should be addressed. These are unviable land sizes, poor usage of fertilizers and pesticides. Poor management practices, use of unimproved varieties, rootstocks and other technologies. All these have to be addressed in addition to infrastructural

problems. There should be investments in research to reduce disease incidence and management problems. All these will ensure sustainable citrus production in Kenya.

REFERENCES

- Bawden RP, Sterns A, Harris S, Berdeque J** (2002) Increasing rural household incomes in Kenya through horticulture: A design proposal. A report prepared by USAID, Kenya, 60 pp
- Dolan CJ, Humphrey T, Harris J** (1999) Horticultural commodity chains. The impact of the UK Market on Africa horticultural industry. In: Morrisey O, Filatotaher J (Eds) *Globalization and Trade Implications for Exports from Marginalized Economies*, Frank Cass, London, pp 20-30
- Embassy of Japan in Kenya** (2008) Agricultural production in Kenya, 2 pp
- Export Processing Zones Authority** (2005) Horticultural industry in Kenya, 22 pp. Available online: <http://www.epzkenya.com/file/horticulture.pdf>
- Jaffee S** (1994) Contract farming in the shadow of competitive markets. The experience of Kenya horticulture. In: Little P, Walts M (Eds) *Living under Contract Farming and Agrarian Transformation in Sub-Saharan Africa*, University of Wisconsin, Madison, pp 36-55
- Jaffee S** (1995) The many faces of success: The development of Kenya horticultural exports. In: Jaffee S, Morton J (Eds) *Marketing Africa's High Value Foods*, The World Bank, Washington, DC, pp 50-59
- Harris S** (1992) Kenya Horticultural sub sector survey. Nairobi Export Developmental Support Project Report, 40 pp
- Harris SC, Hegaty PV, Kerallah M, Mukindia C** (2001) The impacts of standards on the food sector of Kenya. Report prepared by the Institute of Food and Agriculture Standards, Michigan State University, East Lansing, Michigan, 40 pp
- Kamau M** (2000) The way forward in export-oriented small holder horticulture. Background Paper for Small Holder Consultative Meeting, Nairobi, Kenya, August 7th to 10th 2000, 45 pp
- Kimenye L** (1995) Kenya's Experience in Promoting Small holder Horticulture for European Markets. *African Rural and Urban studies* 2, 121-141
- Kolade JA, Olaniyan AA** (1998) Performance of 12 Sweet orange cultivars in S. W. Nigeria. *Fruits, Paris* 53, 175-182
- Minot CM, Ngigi M** (2002) Horticultural development in Kenya and Ivory Coast. Paper prepared for IFRI Workshop on Successes in African Agriculture, Lusaka, June 10th-12th 2002, pp 15-35
- Mungai JK, Ouko JO, Heiden IM** (2002) Processing of fruits and vegetables in Kenya. GTZ – Integration of Tree Crops into Farming System Project, ICRAF House, Gigiri, Kenya, 64 pp
- M' Ribu K** (2004) Research challenges for the development of small-scale horticulture in the Mt. Kenya region. In: Onyango A (Ed) *Proceedings of the Third Workshop on Sustainable Horticulture Production in the Tropics*, 26th-29th Nov. 2003, Maseno University, Kenya, pp 34-48
- Mwendo KM, Tschirley D** (2004) Improving Kenyan domestic horticulture production and marketing system; current competitiveness forces of change and challenges for the future. 3. Horticultural Research and Input Sector Regulation in Kenya, Working paper No. 08c/2004. Tegemeo Institute of Agricultural Policy and Development, Egerton University, Kenya, 77 pp
- Obukosia S, Waithaka K** (2000) Nucellar embryo culture of *Citrus sinensis* and *Citrus limon* L. *African Crop Science Journal* 8, 109-116
- Ouko JO, Kenduiwa J** (2004) Linking small holder horticulture production with local and international markets. In: Onyango A (Ed) *Proceedings of the Third Workshop on Sustainable Horticulture Production in the Tropics*, 26th-29th Nov. 2003, Maseno University, Kenya, pp 142-146
- Stevens C, Kennan J** (1999) Will Africa's participation in horticulture chains survive liberalization. IDS Working Paper No. 106, Institute of Development Studies, Sussex, UK, 45 pp
- Sweinberg K** (1995) Horticultural exports from Kenya. *Horticultural Trade Journal* 3, 3-5
- Thiru A** (2000) International trade fruits and vegetables; opportunities and constraints for Kenya. Paper presented at the technical workshop on Fruits and Vegetable Standards and Grades, Naro-Moru, Kenya 15th-17th August, 2000, pp 15-20