



CLIMATE CHANGE: ENVIRONMENTAL & SUSTAINABILITY ISSUES; THE PERSPECTIVE OF HORTICULTURE INDUSTRY IN KENYA

Video conference on high value horticulture for Eastern & Southern Africa

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Introduction

Climate change with regard to erratic weather patterns, availability of water resources, basic farming technologies, food miles threats, and prevalence of pest and diseases pose a big challenge to the sustainability of horticulture industry in Kenya. Horticulture in Kenya is predominately smallholder relying on rainfall which is increasingly becoming unpredictable due to erratic weather patterns. Smallholder farmers contribute up to 80% of the horticulture produce in Kenya. Diminishing water resources continue to draw conflicts and exerting pressure on available resources. This is well illustrated by 50% decline in the area of lake Naivasha over the last four decades. Global warming will have serious negative impacts on Kenyan horticulture due to inaccessibility and affordability of advanced agricultural technologies essential for coping with the effect of climate change. In addition, the implementation of food miles policy will certainly have severe consequences on more than 6.5 million Kenya who derive livelihood from export of horticulture crops to Europe and America. Global warming has not only significantly shrink the area for production of crops such as sugar snap and snow peas which are among the leading vegetable exports from Kenya; but has also increased the cost of managing pest and diseases. The Government and leading local environmental organizations are engaged in conserving the country's five major water catchments in a bid to mitigate the effect of climate change.

1.0. Erratic weather patterns

Horticulture production in most parts of Kenya is increasingly experiencing unpredictable weather condition. This has negatively and significantly affected planned production leading to scarcity and high cost of produce in the domestic market. In addition, scarcity of export produce has an overall effect of making Kenya produce less competitive in the international market. In view of the erratic weather conditions, the government is promoting adoption of simple water harvesting techniques, use of water efficient irrigation systems, and greenhouse constructed using local material. Use of greenhouse technology is increasingly becoming popular even for crops such as summer flowers.

2.0. Availability of water resources

Inadequate water for irrigation is one of the more pronounced effects of climate change in Kenya. The diminishing water resource is well illustrated by the shrinking of lake Naivasha, Kenya's third largest fresh water lake, to 10,700 hectares, roughly half its size. Presently, the inflow from river Malewa that supplies 90 per cent of the lake water is only 3.5 cubic metres per second. This is against the lake's evaporation rate that is three times higher than the 600 mm of rain the area receives annually. In addition, horticulture activities along water resources such as the Yatta Canal have come to almost a halt due to insufficient water volumes.

In order to abate the impact of climate change on availability of water for irrigation, the government through Water Resource Management Authority (WRMA) initiated regulation of water abstracted from the water resources across the country as an immediate cause of action. The long term plan for addressing shortage of irrigation water involves conservation of all water catchment areas through Public Private Partnership.

The Kenya horticulture industry has further proposed that the drawing of water from the resources be regulated on the basis of the available water and not the quantity specified in the water permit. The proposal designates the water volume in the resources into three (3) levels: critical (red), adequate (indigo), and excess (green). Under this scheme the farms will: not be allowed to draw any quantity of water when the water level is critical; draw only 50% of the quantity stated in the water permit when the water level is adequate; and draw up to 100% of the permissible quantity when the water level is excess.

3.0. Basic farming technologies

Climate change has led to a wide range of growing conditions. Agriculture in the developed countries is relatively well positioned to adapt to growing conditions resulting from climatic changes, partly due to the advanced technologies available to farmers. Generally, crop production in developed countries could increase, unless the warming becomes great or the frequency of extreme weather increases.

Kenya like many other countries in Africa and North America is increasingly becoming pressed to adopt advanced technologies to mitigate the effects of climate change. However, the smallholder nature of Kenyan horticulture industry is a limitation to the type of technologies that can be adopted. Some of the technologies that can be adopted by smallholder farmers include use of superior seed that has been bred for harsh environmental conditions resulting from climate change. Smallholders can also adopt use of drip irrigation while more large scale farmers can be encouraged to adopt use of water recycling technologies to reduce on quantity of water abstracted from the water resources.

4.0. Food miles threats

Horticulture farming in Kenya like most other countries in Africa and North America is labor intensive and cultivation throughout the year is under natural conditions. African horticultural imports represent 0.1 percent of all of Britain's carbon emissions. Horticultural imports to the U.S. including Kenyan produce represent 0.05 percent of carbon emissions. Moreover, at least two-thirds of Kenyan horticultural exports are flown out in the hold of passenger flights, meaning they are merely riding on the back of largely tourist travel. Despite its insignificant contribution to global warming, the horticulture industry in Kenya stands to lose foreign earnings in excess of \$1.0 billion annually with the implementation of the food miles policy. This will have far reaching negative effects on more than 6.5 million people that earn their livelihood from the industry.

In addition to labor intensive based farming and cultivating under natural conditions, the horticulture industry in Kenya has adopted use of donkey carts for transportation of produce within the farms to mitigate carbon emissions. Further, efforts are geared towards increasing shipping of horticultural produce by sea which is more efficiency in fuel utilization compared air freighting.

5.0. Prevalence of pest and diseases

Prevalence of pest and diseases emanating from climate change is probably the single most important factor limiting crop production in Kenya. High temperatures accompanied by high relative humidity, characteristic to tropics, predispose most crops to pest and diseases. The efforts to minimize crop loss due to pest and diseases is partly hampered by the reluctance to embrace biotechnology in the control of the menace. In addition, most smallholder farmers have no access to information on pest and disease control despite the availability of such information among universities, local and international research institutions based in Kenya. It is envisaged that as the country continues to experience warmer climate due to climate change, crop loss will be experienced in unprecedented levels.

6.0. Intervention in climate change

The Government of Kenya and leading local environmental organizations such as the Green Belt Movement (GBM) are engaged in conserving the country's five major water catchments in a bid to mitigate the effect of climate change. The catchments which include Mt. Kenya; Aberdares; Mau Complex; Mt. Elgon; and Cherengani Hills provide over 90% of Kenya's population with water. Despite the controversy, the Government has reposed land illegally acquired and relocated the occupants from the Mau catchment. The Government intends to conduct similar conservation measures in all the remaining water catchment areas. Since 1977, GBM communities have planted over 45 million trees in Kenya; the support from

the international communities has been enormous with more than twelve (12) donors partnering with the movement in increasing the countries forest cover.