

## **REPUBLIC OF KENYA**



## **MINISTRY OF AGRICULTURE**

### **POST HARVEST CHALLENGES TO FOOD SECURITY IN KENYA**

**By Dr Wilson Songa, Agriculture Secretary and  
Dr Johnson Irungu, Director of Agriculture, Crop Management**

#### **1.0 Introduction.**

Kenya experiences a bi-modal distribution of rainfall with the long rains occurring in the months of March/April and the short rains during the months of October/November. The long rains are more reliable and hence a higher production is achieved during these rains.

The major food crops grown in the country and which are the main sources of food include Maize, Beans, Irish Potato, wheat, Rice, Cassava, Sorghums and Millet. However, the three most important food crops are Maize, Beans and Irish Potatoes whose estimated hectareage this year is about 2.2, 1.2 and 0.373 million Hectares with an estimated production of 36, 8.9 and 3.86 million 90 kg bags respectively.

Maize is the most important cereal crop grown for consumption in Kenya and the main staple food for about 90% of the Kenyan population, now standing at around 38.6 million people. In this respect, the country's national and household food security strongly hinges on maize production, preservation, its profitability to farmers and accessibility of the produce to consumers. In Kenya, the bulk of maize production is carried out by small scale holder farmers spread all over the country. Large and medium scale farmers are mainly found in some parts of the Rift Valley Province.

Last year 2009, Maize production reached a total of 27.1 million bags from an area of 1.9 million Hectares, being an increase of 3.2 % from the previous year's production of 26.3 million bags from an area of 1.8 million Hectares.

During the same year, bean production witnessed a dramatic turn-around rising by 78.2% to 5.2 million bags from 2.9 million bags in 2008.

For enhanced food security, the Government has increased the strategic grains reserve to 8 million 90 kg bag.

## **2.0 Post harvest challenges.**

Post harvest losses in the country have previously been estimated at 30% of all stored produce. However, with the advent of the Lager Grain Borer and Aflatoxin, the loss can be 100% depending on the severity of the outbreak. Therefore, for improved food security, appropriate mitigating measures against these losses need to be instituted early enough before attack take place for enhanced food security. These include;

- Timely harvesting.
- Timely dusting with the recommended pesticides using the right rates.
- Scouting during storage.

## **2.1 When to harvest.**

Although time of harvesting fall under pre harvesting period, its effect has direct linkage to Post harvest challenges. Delayed harvesting after physiological maturity increases chances of storage pest infestation and grain rotting in the field in the event of early onset of rains. Timely harvesting is crucial to reducing post harvest losses.

Harvesting should be timed to coincide with dry weather as wet harvesting result in great losses .This year, the country experienced wet weather during the harvesting period of the short rains crop planted in October/November 2009 mainly in Eastern, Central and Coast Provinces. This resulted in widespread outbreak of Aflatoxin contamination in these regions. Grains contaminated beyond 10ppb with Aflatoxin are rendered unfit for human consumption and hence not marketable.

## **2.2 Method of harvesting.**

Mechanical harvesting as opposed to manual harvesting results in high percentage of, broken grains especially where poor calibration of the machine is done. During harvesting, dropping of dehusked cobs on the bare ground increases the chances of Aflatoxin contamination .A survey conducted by the Ministry of Agriculture in 2007 indicated that over 90% of small scale farmers in Eastern province dropped maize cobs on the ground during harvesting. This practice should be discouraged and dehusked cobs placed in clean containers to avoid contamination.

## **2.3 Drying of produce.**

Drying of maize to the recommended moisture content below 13.5 % increases storage life as well as maintain high quality of produce through:

- Reduction in growth of fungi.
- Reduction of insect infestation in storage
- Reduction in respiration of kernels
- Prevention of germination while the kernels/seed retains its germination potential

Drying of produce on bare grounds and on road sides should be discouraged as this increases chances of contamination. The same study indicated that 75% of farmers in Eastern, Central and Coast Provinces dried their cobs on bare ground increasing incidences of Aflatoxin contamination.

It is recommended that drying is done in a drying crib, on clean canvas or a raised platform.

## **2.4 Shelling/threshing of produce.**

The method of shelling can affect the produce quality as well as predispose it to further deterioration. Over 70% of farmers in Eastern Central and Coast province shell Maize through physical beating. This results in grain cracking. Such produce is downgraded and exposed to attack by fungi and secondary pests. Simple hand shellers that can shell up to 5 bags per day per person are recommended for small scale farmers while large scale farmers can use well calibrated shellers to lower the percentage of damaged grains.

The practice by farmers to thresh sorghums and millets on bare rock should be discouraged as the presence of sand and rock particles renders the produce less marketable.

### **2.5 Storage Pesticides/Dusting.**

Dusting protects stored grains from attack by storage pests. However, few farmers especially the small scale farmers dust their produce as recommended. A survey conducted in Eastern, Central and Coast provinces indicated that less than 50% of the farmers dust their produce. Out of these some use materials /compounds that are not recommended for grain preservation, under dose, poor timing and a good number do not scout for storage pests in their produce during storage as recommended. Poor dusting practices increase insect activities leading to loss of quality through damaged grains and fungal infection. This affects marketability of the produce negatively.

### **2.6 Storage materials.**

The type of storage material used can preserve or cause deterioration of the produce. Grains stored in polypropylene material and with relatively high moisture content for longer than one month are likely to develop fungal infection.

Natural fibre material allows for further drying and hence appropriate for longer term storage. In the country about 80% of small-scale farmers store their produce in polypropylene bags as opposed to the recommended natural fibre bags.

### **2.7 Storage structures.**

For assured supply of food, the Ministry has promoted both the ON and OFF farm storage of grains. While the OFF Farm is mainly practiced by large organizations such as the National Cereals and Produce Board (NCPB), Grain millers, Feed manufacturers and Grain merchants. The NCPB which handles most of grains in the country has a total capacity of about 19 million bags country wide.

These OFF farm systems handle large amounts of produce. They handle grains professionally therefore there is minimum loss during storage.

ON Farm is usually practiced by Small scale farmers. A recent survey by the Ministry indicated that due to insecurity farmers are shifting from storing grains in traditional structures such as Granaries to storing in the living houses. However, houses are poorly aerated and due to human activity the relative humidity is high predisposing the produce to both storage pests and fungal attack.

### **2.7 Transportation.**

The common practice of transporting Agricultural produce using the general purpose commercial vehicles increases chances of contamination. Produce should be transported in clean and closed vans to avoid both contamination and moisture in case of precipitation during transit. Wetting of dry grain during transit and storage can result in fungal infection leading to loss of value hence affecting marketability of the produce negatively.

### **3.0 Ministry's strategies to curb Post Harvest losses.**

The government through the Ministry of Agriculture has instituted various measures to reduce crop post harvest losses which includes among others;

- Training of Extension staff.
- Provision of moisture meters and hand shellers.
- Training of farmers.
- Partnering with relevant stakeholders.
- Investing in community based storage structures.
- Increasing the area under irrigation.
- Encouraging value addition at farm level to transform the produce to products with a longer shelf life.
- Investing in long term solutions to the challenges of food security through the economic stimulus programme.
- Facilitating NCPB to offer the recently introduced Ware House Receipt System.

#### **4.0 Partnership**

The government is partnering with among others the following stake holders/development partners, to bring order to the region grain trade, practicing and promoting approaches to trade that help farmers, suppliers, traders and processors transform their business and improve food security within the country:

- Eastern Africa Grain council(EAGC)
- USAID -East Africa's Competitiveness and Trade Expansion Program(COMPETE)
- Swedish International Development Agency(SIDA)
- Danish International Development Agency(DANIDA)
- European Union (EU)
- Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ)
- African Union (AU)