POST HARVEST CHALLENGES TO FOOD SECURITY IN KENYA

PRESENTED BY
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1.0 INTRODUCTION

- Kenya experiences two main seasons.
- Long and short rains in March/April and October/November respectively.
- Main food crops grown are Maize, Irish potato, Beans, Wheat, Cassava, Rice, Sorghums and Millet.
- Three major food crops are Maize, Beans and Irish potato.
Maize is the major cereal crop and staple food for 90% of pop of about 38.6 million people.

2008, prod. was 26.3 million bags from 1.8 hectares
2009, prod. was 27.1 million bags of 90 kg from 1.9 million Hectares.

Beans production increased by 78.2% in production from 2.9 million bags in 2008 to 5.2 million 90 kg bags in 2009.

Government has raised the strategic grain reserve to 8 million bags
2.0 POST HARVEST CHALLENGES.

- Previous post harvest losses have been estimated at 30% of all produce.
- With the advent of LGB and Aflatoxin incidences the losses can be 100%
- Farmers are therefore faced with the following challenges.
2.1 WHEN TO HARVEST.

- Harvest at physiological maturity before storage pest attack.
- Harvesting best done when weather is dry.
- Avoid contact with soil to reduce contamination.
- Due to GLOBAL WEATHER CHANGE, this year, February and March which are harvesting months were wet.
2.2 METHOD OF HARVESTING.

- Mechanical harvesting leads to higher % of broken grains as opposed to manual harvesting.
- Dropping of produce on bare ground increases incidences of contamination.
- A survey done in 2007 by our ministry indicated 90% of farmers in Eastern, Central and Coast provinces dropped Harvested and dehusked cobs on bare ground.
AFLATOXIN INFECTED MAIZE.
2.3 DRYING OF PRODUCE.

- Drying of maize to below 13.5% moisture content increases storage life and maintain quality by;
- Reduction in growth of fungi.
- Reduction in insect infestation in storage.
- Reduction in respiration of kernels.
- Prevention of germination.
- Drying should be done in a drying crib, raised platform, or on clean canvas.
- AVOID DRYING GRAINS ON BARE GROUNDS.
- The same survey indicated that 75% of the farmers dried cobs on bare ground.
2.4 SHELLING/THRESHING OF PRODUCE.

- High % of broken grain through poor shelling affect quality, quantity and can predispose produce to further deterioration.
- The same survey indicated that 70% of farmers shelled their maize through physical beating leading to high % of broken grains.
- Simple hand shellers with an output of 1-5 bags per day. Shelling on bare grounds and rocks should be avoided.
- Right calibration of machine driven shellers should be done.
2.5 STORAGE PESTICIDES/DUSTING.

- Dusting protects stored produce from storage pests.
- Pest attack causes quantitative loss and further deterioration.
- The same survey indicated that less than 50% of farmers dusted their produceleave alone using the right pesticides and quantities and at the right time.
- Few farmers scout for pest presence during storage leading to increased storage losses.
2.6 STORAGE MATERIALS.

- Storage material used for storage can preserve or cause deterioration of produce.
- Natural fibre bags allow for further drying during storage.
- Polypropylene bags cause caking of produce.
- An estimated 80% of farmers in the country store produce in polypropylene bags.
2.7 STORAGE STRUCTURES.

- The ministry of Agriculture promotes both ON and OFF farm grain storage.
- OFF farm is mainly by large organizations.
- ON farm is mainly by Farmers.
- Recent survey has indicated farmers are shifting from storing produce in traditional storage structures to living houses.
- Due to poor aeration and high relative humidity such grains are exposed to fungal attack.
- This is further aggravated by the storage materials used.
Transportation of produce is currently by general purpose commercial vehicles. This increases chances of contamination and such grains are less marketable. Clean and closed vans are recommended to avoid wetting and contamination during transportation.
3.0 MINISTRY’S STRATEGY TO CURB POST HARVEST LOSSES.

- Training of Extension staff.
- Training of farmers.
- Provision of moisture meters and hand shellers
- Partnering with relevant stakeholders.
- Investing in community based storage structures.
- 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.
- Facilitating NCPB to offer the recently introduced Ware House Receipting.
### 4.0 Specifications (Maize) Grade 1  Grade 2

<table>
<thead>
<tr>
<th>Specification</th>
<th>Grade 1</th>
<th>Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture content (max)</td>
<td>13.5</td>
<td>13.5</td>
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<tr>
<td>Foreign matter %</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Inorganic matter %</td>
<td>0.25</td>
<td>0.5</td>
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<tr>
<td>Broken grains</td>
<td>2.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Pest damaged grains %</td>
<td>1.0</td>
<td>3.0</td>
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<tr>
<td>Rotten diseased %</td>
<td>2.0</td>
<td>4.0</td>
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<tr>
<td>Discolored grains %</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Live insects</td>
<td>nil</td>
<td>nil</td>
</tr>
<tr>
<td>Immature/shriveled %</td>
<td>1.0</td>
<td>2.0</td>
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<tr>
<td>Aflatoxin max</td>
<td>10ppb</td>
<td>10ppb</td>
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<tr>
<td>Total defective grains</td>
<td>4.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Packaging</td>
<td>90kgs</td>
<td>90kgs</td>
</tr>
</tbody>
</table>
IMPROPERLY STORED MAIZE
IN FEB/MARCH WET WEATHER DURING HARVESTING.
SOME COPPING METHODS BY FARMERS.
Improper drying methods.
OFF FARM STORAGE USING RECOMMENDED STRUCTURES AND STORAGE MATERIALS
5.0 PARTNERSHIP

- 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)