



NIGERIAN STORED PRODUCTS RESEARCH INSTITUTE (NSPRI)
GUIDE
ON

'POST HARVEST HANDLING OF MAIZE



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Increasing Nigerian' s Agricultural Self Reliance
Through Adequate Post Harvest Loss Prevention

GUIDE ON POST HARVEST HANDLING OF MAIZE

INTRODUCTION

Maize is the most widely cultivated cereal in Nigeria. Maize is a major source of energy, for animal feed and a stable material for the production of starch and starch-based industrial products. It is also a staple food for most communities in Nigeria. This guide gives information on post harvest techniques for handling maize crop.

Signs and causes of reduction in maize quality

- (1) Presence and activities of insect pest. This results in reduction in weight, loss of viability and food nutrients. The presence of holes on grains, grain dusts and webs signify the activities of insects.

- (ii) Presence and activities of fungi.
This results in degradation of colour of grains due to mould growth, loss in seed viability and production of food poisons (mycotoxins, e.g. Aflatoxin)

- (iii) Presence and activities of rodents.
The results in loss of grains due to consumption by rodents, spillage and wastage of grains damage to bags and other structures used in packaging grains, rodent droppings and urine that contaminate and foul the grains.

- (iv) **Maize grains** not properly dried due to lack of drying facilities especially in the wetter part of Nigeria result in moldiness and caking of grains.

- (v) **Improper packaging and use of poor method of shelling maize** pre-dispose them to attack by insects, rodents and mould.

Post Harvest Handling Techniques

Storage of Maize Cobs

- (a) After harvest, transport maize cobs with its sheath to a central collection. On no account sheath to a central collection. On no account should you heap for more than one day so as to avoid moldings and rodent attack.
- (b) For storage of more than one tone, remove the sheath and dry the cobs. Drying could be done using the maize cribs or sun-dry in the northern part of Nigeria or mechanical dryer. The use of cribs has been found effective in the southern and central part of the country.



(c) Use the maize crib as storage and drying equipment. The crib could be constructed with farm materials, sawn wood or metal depending on capability.

(d) While storing your maize on cob in the crib, make sure you treat with candidate insecticide as a protection against insect pests. It is recommended that **Actellic dust**, **Coopex dust** could be used. **Actellic emulsion** (25 E.C.) can be used.

Fig.1 Maize Crib.

Storage of Shelled Maize

- (a) Properly dried maize on cob could be shelled for storage in bags in ware houses, silos and air-tight containers for domestic use.
- (b) Dried maize cobs can be obtained from the cribs, dryers, or sun-drying. Shelling of maize cob could be done manually or mechanically. The method of driving tractor on maize cobs to shell them or beating with sticks in sacks must be discouraged. There are simple hand maize shellers or tractor mounted shellers that must be used.

- (c) After shelling, package maize grains in either jute bags or polypropylene woven bags.
- (d) The bagged maize must be fumigated to control insect pests before storage in warehouses or stores. Jute and other woven bags must be lined with polythene sheets before the grains are fumigated.

Ware house Storage

- (a) Bagged maize must be stored on pallets or dunage in stacks in the ware house. The stacks must be numbered for recording date of formation, history of pest control, moisture content, etc.



- (b) For long period storage, before bagging, the grains must be protected from insect damage by admixing **Actellic dust, Coopex or Actellic Super**. Re-bag the protected grains and store. If the grains are protected with the recommended dosages of insecticides, it will be protected for up to six months.
- (c) Ensure that monthly samples are taken from each stack for quality assessment.

ON NO ACCOUNT MUST INSECTICIDE NOT RECOMMENDED FOR FOOD BE USED ON STORED

GRAINS.

Silo Storage of Maize

- (a) Silo storage is for bulk storage of grains and must be professionally handed. It is, however, available and grains must be dried enough for storage in Silos.
- (b) Protect grains by admixing with **Actellic or Coopex dust** before storage in Silos.

- (c) The **Inert Atmosphere Silos** of NSPRI do not use insecticides but **Inert Gas**, hence are very safe. You can contact NSPRI on its installation and management.

Domestic Storage

- (a) Store properly dried maize in air-tight containers like metal drums, plastic pots with screw caps, polythene bags.
- (b) Control infestation by any of the following:
1. Fumigate with one tablet of phostoxin to one bag of shelled grain. The maize grain must be kept in airtight bags before fumigation. Put the phostoxin tablet in an envelope or a piece of cloth before closing the bags tightly. The 'ash' left by the phostoxin tablet should not be allowed to mix with the grains when ready to use.

2. If you have a freezer, put grains in polythene bags and keep in deep freezer for 5 days before storage.



- (c) You can know that your grain is dried enough for storage if it snaps sharply when cut with teeth, it makes a clear light tone sound when shaken in a glass cup or when dry salt is added to some of the grains in a glass cup the sail does not stick to the side of cup after shaking them together for about 2 minutes.

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