# On-farm management of aflatoxins in farmer's produce

*NURI Practical Guide Series, No. 2*

## Funded by:

Embassy of Denmark in Uganda
P.O. Box 11243, Kampala Uganda
Plot 3, Lumumba Avenue
Website: www.uganda.um.dk

## For more information, contact:

Northern Uganda Resilience Initiative (NURI)
P.O. Box, 29851, Kampala
Umoja House, 2nd Floor, Plot 20 Nakasero Road
Email: info@nuri.ag Website: www.nuri.ag

## Management of aflatoxin-prone produce on farms

Aflatoxin is a poisonous compound produced by a fungi Aspergillus flavus and Aspergillus parasiticus. This fungus mainly invades not-well-dried crops as maize, groundnuts, soybean, sorghums, cassava and millet as host for their reproduction. It's a potent cause of cancer and associated health risks through liver and kidney disease and suppression of immune system in both humans and

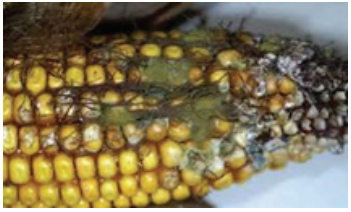
## What about this practical guide?

This guide provides easy and affordable practical methods for handling aflatoxins-prone crop produce to prevent aflatoxin contamination and increase market value of farmers produce. It was developed by NURI with support from extension teams who will disseminate this knowledge to farmers.

## Physical signs of Aflatoxin:

- Mouldy and musty smell.
- Caking.
- Poor flow out of grain bins.
- Dustiness.
- Darkening of grain and feed.
- Inappetence in livestock.

## Factors that influence mould growth



Fungal growth with mycotoxin is particularly influenced by;

- Moisture.
- Temperature.
- Oxygen content.
- Produce that are damaged and stressed by drought, pests and cultivation and harvesting practices.

## When do we start managing aflatoxin?

Post-harvest practices to prevent aflatoxin begins from the field with harvesting at the correct maturity period to storage moisture content.

## Post-harvest actions taken to reduce aflatoxin contamination.

### a) Drying

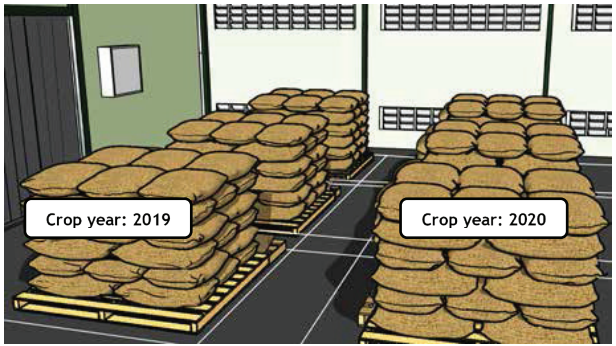
- Produce should be spread on clean tarpaulins or empty bags laid on the ground or concrete plinth.
- Unthreshed produce can be laid on platform or in ventilated crib to dry, some crops can be tied in pair and suspended on vertical or A-frame to dry e.g., Maize and sesame.
- In wet or humid condition, produce should be dried in house or artificially using solar drier.

## b) Threshing, Shelling and Winnowing

- Handle produce well to avoid broken or damaged grains.
- Use hand or pedal operated threshers if possible.
- Avoid excessive beating using stick as this may lead to grain breakage thus mould development.

## c) Storage

- Discard diseased and mouldy grains
- Check for offensive smell.
- Remove insects and insect damaged grains.
- Observe broken kernels and discard.
- Ensure moisture content of produce is to the recommended level about 14% for grains and pulses before storage.




*Non application of the concept of first-in-first-out while storing produce*

## Bad practices that result in loss of quality of produce in store

- Harvesting immature crop with inadequate drying.
- Storage of the produce with moisture content above 14% for grains and pulses.
- Use of poor storage materials that are damaged.
- Placing the produce directly on the floor or heaping produce.
- Storage of produce in poorly aerated and piling bags in poorly aerated/ventilated stores.
- Sprinkling water on the produce before and during marketing to increase on weight of the produce.

*Stack produce on home-made pallets and off the ground*

## Good practices for quality produce storage

- Winnow and sort to remove shriveled, damaged, diseased and foreign matter in the produce.
- Store clean, sorted and graded produce in cool dry place for long shelf life.
- Store dried produce in food grade containers such as PICS bags and plastic or hematic bags to prevent moisture sorption and insect or rodent infestation.

*Store clean, sorted and graded produce in cool dry place for long shelf life.*

*Periodically re-dry the produce to attain the recommended moisture content.*

## Key Notes in control of aflatoxin:

- *Use certified seeds free from fungal infection.*
- *Timely planting so that crop matures early.*
- *Regular weed and disease control.*
- *Control insects, animals and virus pests.*
- *Practice crop rotation to break the cycle of fungal growth.*
- *Avoid nutrient stress by incorporating organic fertilizers.*
- *Plant resistant crops where these are available.*

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