

Food Safety Practices to Prevent Exposure to Multiple Toxicants

This guide is written to contribute to increased awareness about food safety risks and management strategies along the food value chain from production to consumption.



By Titilayo Falade, Kolawole Banwo and Taiwo Adesina



Follow good agricultural practices to reduce crop stress and exposure to pesticide residues. Crop stress and high incidence of toxigenic moulds predisposes crops to diseases and mycotoxin accumulation.



- Ensure sufficient nutrients with appropriate fertilisation to avoid nutrient stress
- Ensure adequate moisture during crop development to avoid water stress
- Ensure proper spacing and removal of weeds to avoid nutrient stress
- Use aflatoxin-resistant varieties
- Use Aflasafe (biological control) appropriately to control pre-harvest aflatoxin contamination
- Use correct preharvest interval (PHI) before you harvest crops to avoid elevated pesticide residues

Dry crops on secure, covered surfaces to avoid heavy metal and mycotoxin contamination



- Dry your produce on covered surfaces e.g. using tarpaulin in secure places
- Dry produce on elevated surfaces in secure places.
- Do not dry your produce directly on the ground or where people and animals can trample.
- Do not dry food produce by the roadside or where there is exposure to vehicle fumes (e.g. roadside). These can expose your foods to multiple toxicants including mycotoxins and heavy metals.



Store and transport foods following good handling practices to avoid contamination with pesticide, heavy metals and aflatoxigenic moulds

- Store well dried grains in hermetic containers like PICS bags. This prevents insect infestation without the need for using pesticides
- Store grains in bags on pallets with good airflow to avoid infestation by pests and mycotoxin accumulation
- Do not apply pesticide directly to food produce
- Use covered vehicles to transport food commodities

Dry properly and quickly.



- Do not store produce when they are wet or damp.
- Damp conditions provide the ideal environment for moulds to grow and to biosynthesize mycotoxins. It also attracts other pests that can introduce other contaminants to food in storage.

Damaged or shrivelled grains have higher risk for mycotoxin contamination



- Sort out damaged, shrivelled, discoloured, floating grains and discard them.
- Do not feed them to your animals.



Use clean and appropriate shopping bags for carrying food items.



- Do not re-use cement or sandbags as shopping bags. Using cement or sand bags as shopping or storage bags can expose your food to heavy metals.
- Use clean shopping bags to avoid introducing contaminants.

Follow good hygiene practices and use domestic practices to reduce exposure to microbial and pesticide residues



- Do not eat fruits and vegetables without rinsing them.
- Soak fruits and vegetables in 1% baking soda solution for 15 minutes and rinse off with clean water to remove pesticide residue contamination.
- Rinse fruits and vegetables properly with clean water before eating them. This also removes microbial contamination.

Some facts about food hazards, food borne diseases relevant for food safety

Globally, there are over 600 million cases of foodborne illnesses responsible for 420,000 deaths. Most of these occur in Africa: 91 million cases and 137,000 deaths – World Health Organisation
Food safety is critical.
"If it is not safe, it is not food"
- FAO

Mycotoxins are fungal toxins. They occur naturally when foods are contaminated by fungi. The toxins, like aflatoxins, have no taste, smell and are invisible. Aflatoxins cause liver cancer, other illnesses. Other mycotoxins also negatively affect human and animal health.

Pesticide residues can be carried from food production, when crops are harvested too soon after applying crop protection products. Pesticide residues can result in antimicrobial resistance, kidney and liver diseases and other negative health outcomes.

Heavy metals are present in food because of natural contamination from production sites, processing and other anthropogenic practices. They are associated with multiple neurological and reproductive illnesses among others.

The production and printing of this manual was made possible by support from the European Commission through the Healthy Diets for Africa project to the International Institute of Tropical Agriculture.

For more information, please contact International Institute of Tropical Agriculture, IITA Headquarters, PMB 5320, Oyo Road, Ibadan 200001, Oyo State, Nigeria
Tel: +234 803 403 5281, 0803 403 5282, 0803 403 5283
Email: iita@cgiar.org

Correct Citation: Falade T, Banwo K, and Adesina T (2024) Food Safety Practices to Prevent Exposure to Multiple Toxicants. IITA, Ibadan, Nigeria. 4 pages

