



NIGERIAN CODE OF PRACTICE

Code of Hygienic Practice For The Prevention of Mycotoxin Contamination In Melons During Harvesting and Washing

ICS:

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FOREWORD

In order to promote best practices in harvesting and washing of melons and to ensure that customers get wholesome products, the Standards Organisation of Nigeria authorized the development of this code of practice.

The expert technical committee on Mycotoxin Prevention considered the need to elaborate on this code of hygienic practice to encourage farmers/ handlers produce mycotoxin free melon seeds while ensuring consumer safety, fair trade practices and keeping pace with development in trade and commerce.

Melons (*Citrullus colocynthis* L) or its hybrid is highly nutritious and an important leguminous plant in Nigeria. The product is an important source of protein in Nigeria and a potential foreign exchange earner but production has been largely at subsistence levels. However, in recent times there has been a rise in exportation of the packaged form of the product.

While elaborating this code, reference was made to relevant CODEX standards and Nigerian Industrial Standards. Inputs provided by farmers and other stakeholders are hereby acknowledged.

1.0 SCOPE

The scope of this standard shall include prevention of mycotoxins contamination in melon (*citrullus species*) during harvest and washing of melon seeds. This code applies to farmers and handlers of melon seeds.

This code of practice excludes: code of hygienic practice for planting of melon seeds, storage of melon seeds and grinding of melon seeds.

2.0 NORMATIVE REFERENCE

The following references contain provisions applicable to this Nigerian Industrial Standard. At the time of publication the editions indicated were valid. These Standards and Publications are subject to revision and parties to this Standard are encouraged to investigate the possibility of applying the recent edition of the references indicated below:

- (i) Codex Alimentarius Commission / RCP 2 Code of Practice for general principles of food hygiene.
- (ii) Codex Alimentarius Commission Standard on pre-packaged food labelling
- (iii) Codex Alimentarius Commission /RCP 1 “Hazard Analysis and Critical Control Point (HACCP) System and Guidelines for its Management”.
- (iv) Nigerian Industrial Standard for Potable Water NIS 306

3.0 TERMINOLOGY

For the purpose of this code, the following definitions and terms shall apply:

3.1.0 contaminants

Any foreign substance that constitutes impurity in products or commodities.

3.1.1 control measure

Any action and activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

3.1.2 Critical Control Point (CCP)

A step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

3.1.3 critical limit

A criterion which separates acceptability from unacceptability.

3.1.4 HACCP

A system which identifies, evaluates, and controls hazards which are significant for food safety.

3.1.5 HACCP plan:

A document prepared in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the segment of the food chain under consideration.

3.1.6 hazard analysis:

The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety and therefore should be addressed in the HACCP plan.

3.1.7 herbicide

Biological or synthetic substances used to control or prevent the growth of herbs between the periods of cultivation and harvest.

3.1.8 hull

The thick fleshy mass of the melon fruit.

3.1.9 insecticide

Any substance used to control, inhibit or stop the degrading activities of insects.

3.1.10 monitor

The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a CCP is under control.

3.1.11 mycotoxins

Poisonous or lethal substances produced or secreted by moulds, or fungi, that is injurious to animals and humans when consumed. such as Aflatoxins B₁, B₂, G₁,

3.1.12 pesticide

Any synthetic or biological substance used to inhibit or stop the activities of pests from reducing the wholesomeness of a commodity.

3.1.13 processing

The act of refining or adding value to a raw material.

3.1.14 Standard Operating Procedure

A statement, pictorial representation or form that describes a particular way in which an activity shall be performed.

3.1.15 toxins

Poisonous or lethal substances produced or secreted by biological entities.

4.0 General Requirements for Harvest and Processing

4.1.0 Containers (Skips, wagons, trucks) to be used for collecting and transporting the fermented hulls from the field to drying facilities, and to storage facilities after drying, should be clean, dry and free of insects and visible fungal growth before use.

4.1.1 Hulls shall be heaped on appropriate surface other than direct soil to allow for decomposition.

4.1.2 The material used to cover the hulls for fermentation shall be free from materials that can aid in contamination of melon seeds.

4.1.3 Potable water shall be used to wash off decomposed mesocarp off the melon seeds (Nigerian Industrial Standard for Potable Water NIS 306).

4.1.4 Washed melon seeds shall be dried, with an appropriate method.

4.1.5 Damaged and discoloured melon seeds shall be removed by sorting.

4.1.6 Washed melon seeds shall be dried in a manner that will not encourage the growth of moulds.

4.1.7 Washed melon seeds shall be dried in a manner that disallows infestation by rodents, insects and other contaminating substances.

4.1.8 Washed melon seeds shall be dried in such a manner that damage to the seed is minimized and moisture levels are lower than those required to support mould growth and infestation by rodents during storage (Specification for melon seeds).

4.1.9 Harvesting and washing procedures implemented each season shall be documented by taking notes of measurements (e.g., temperature of decomposition, moisture, and humidity) and any deviation or changes from established practices.

Note: This information is very useful for explaining the cause(s) of fungal growth and mycotoxin formation during a particular crop year and help to avoid similar mistakes in the future.

4.1.10 Standard Operating Procedures for processes performed during harvesting and washing of melon seeds should be developed.

4.1.11 Records should be made of activities during harvesting and washing of melon seeds (Refer to Annex A.)

4.2 Hazard Analysis and Critical Control Point (HACCP)

critical control points for the processes after harvesting, shall be identified by the processor or farmer for mycotoxins produced by fungi during storage. A critical control point shall be at the decomposition site of the hulls, preventing the direct contact of hulls with the soil.

4.2.1. It is recommended that resources be directed to emphasizing Good Manufacturing Practices (GMPs) during the processing and distribution of melon seeds. A HACCP system shall be built on sound GMPs.

4.2.2 Critical limits shall be specific and validated if for each critical control point. Criteria often used include measurements of temperature, moisture level, pH, visual appearance, smell and texture. These parameters shall be determined by the processor through testing.

4.2.3 Specific corrective action shall be developed by the processor for each CCP and HACCP system in order to deal with deviations when they occur. The actions shall ensure that the CCP has been brought under control and documented.

4.2.4 Actions shall also be taken to include proper disposal of affected melon seeds by burning/ incineration.

4.2.5 Deviation and disposal procedure shall be documented in the HACCP for record keeping and reference. (Refer to Annex A.)

5.0 Marking and Labelling

5.1.0 Labelling Requirement

- 5.1.1** Melon seeds shall be whole and labelled accordingly
- 5.1.2** Name of product/Farm sourced from
- 5.1.3** Location Address of Farm
- 5.1.4** Date marking: the date, month and year of packaging and best before date.
- 5.1.5** Net Content shall be declared in metric system
- 5.1.6** Temperature of storage
- 5.1.7** Moisture content
- 5.1.8** List of Preservatives used in descending order of proportion
- 5.1.10** Condition of storage: Shall be stored in a cool dry place.
- 5.1.11** MANCAP Logo and certificate Number (If product is certified)
- 5.1.12** Batch number

Annex A

PRINCIPLES OF THE HACCP SYSTEM

The HACCP system consists of the following seven principles:

HACCP DESCRIPTION	PRINCIPLE
Conduct a hazard analysis.	A detailed step by step diagram of the process is prepared, identifying where significant hazard occur
Determine critical control point	Critical Control Points (CCPs), points at which the hazards can be controlled, are identified throughout the process.
Establish critical limits.	These are limits that must be adhered to if risk is to be minimized
Devise a monitoring programme.	Monitoring is critical in any HACCP programme to ensure control points remain under control
Define corrective actions.	If a control point is shown to be out of range, corrective measures must be implemented
Establish verification procedures.	Verification that the HACCP plan is successfully controlling mycotoxin contamination is necessary. At this point, some chemical analysis of the product is required. If contamination is found to exceed limits, immediate action is necessary to identify the step or steps at which failure has occurred. This may mean new CCPs are identified, critical limits are adjusted or the monitoring programme is altered.
Develop documentation and record keeping.	A successful HACCP programme relies on comprehensive documentation of procedures and records. This will usually involve a flow diagram of the process; the hazard and risk assessment; and a list of CCPs, critical limits and monitoring programmes. Ongoing records of monitoring and corrective action must be kept for consultation as well as the results of

HACCP DESCRIPTION	PRINCIPLE
	verification. Operation requirements for staff and records of staff training should also clearly documented and available. An audit of a HACCP system will include an examination of all this documentation and must be satisfactory should accreditation be desired.