# PHILIPPINE NATIONAL STANDARD

PNS/BAFPS 44:2009
ICS 65.020.20

# Code of practice for the prevention and reduction of aflatoxin contamination in copra

**BUREAU OF PRODUCT STANDARDS**

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## Foreword

The formulation of the Philippine National Standard (PNS) Code of practice for the prevention and reduction of aflatoxin contamination in copra was an offshoot of the request of the Philippine Coconut Authority (PCA) to the Bureau of Agriculture and Fisheries Product Standards (BAFPS). It aimed to provide uniform guidance for all copra stakeholders in an attempt to control and manage contamination by various mycotoxins, specifically aflatoxins and at the same time, serve as basis for compliance to Good Agricultural Practices (GAP) for Copra. It also provides direction consistent to the stringent requirements of developed countries especially in the European Union which is the major importer of Philippine coconut products. Most importantly, this standard is intended to provide guidance to all persons involved in producing and handling copra for entry into local and international trade intended for human and animal consumption.

The PNS Code of practice for the prevention and reduction of aflatoxin contamination in copra was prepared by the Technical Working Group (TWG) created per Special Order No. 257 series of 2008. Prior to development of this standard, series of technical reviews and public consultations were conducted to gather inputs from different copra stakeholders. The draft standard was presented in the identified major copra producing/trading/processing areas particularly in Regions 11, 10 and Region 4B in collaboration with the coconut industry and the regional field offices of the PCA and the Department of Agriculture.

# Code of practice for the prevention and reduction of aflatoxin contamination in copra

## 1 Introduction

The code of practice for the prevention and reduction of aflatoxin contamination in copra will provide uniform guidance for all copra stakeholders in an attempt to control and manage contamination by various mycotoxins, specifically aflatoxins and at the same time, serve as basis for compliance to good agricultural practices (GAP) for copra. This document will provide adequate measures to manage aflatoxin contamination in the supply chain following the framework of farm-to-table approach of food safety. Among the identified mycotoxins, the aflatoxin has been identified by the World Health Organization (WHO) as a significant source of food borne illnesses. Due to the serious effects of aflatoxin, many countries had established regulations in food and feed to safeguard human and animal health.

## 2 Scope

This document is intended to provide guidance to all persons involved in producing and handling copra for entry into local and international trade intended for human and animal consumption. This code constitutes an on-farm production to on-farm/off-farm storage. This code of practice recommends measures that shall be implemented by all persons who have the responsibility of assuring that copra for food and feed are safe from aflatoxin contamination.

## 3 References

The titles of the standard publications and other references of this standard are listed on the inside back cover.

## 4 Definitions

**4.1**
**aflatoxin**
a group of toxic compounds generally produced by strains of the fungi, Aspergillus flavus and Aspergillus parasiticus on suitable hosts/substrates such as copra, corn, peanut and other oilseeds which cause severe human and animal diseases

**4.2**
**aflatoxin related mold (ARM)**
copra grades based on the presence of yellowgreen mold together with penetrating mold

**4.3**
**coconut**
the fruit of the coconut palm, scientifically known as Cocos nucifera Linn

**4.4 copra**
dried meat (kernel) of a coconut which serves as basic raw material for the extraction of coconut oil.

**4.5**
**moisture content (MC)**
the amount of moisture (water) in the copra expressed in percent (%)

## 5 Recommended practices based on good agricultural practices for coconut production

### 5.1 Harvesting and postharvest operations

#### 5.1.1 Harvesting practices

**5.1.1.1** In order to obtain good quality copra, gather only mature coconuts which are approximately 11 ½ to 12months old.

**5.1.1.2** Harvest mature coconuts at least every 45 days interval.

**5.1.1.3** Avoid putting newlyharvested coconuts in a moist soil to prevent pest proliferation and subsequent germination.

#### 5.1.2 Seasoning

**5.1.2.1** In case immature coconuts (segundas or terceras) are harvested, season them from two to four weeks after harvesting. Immature coconuts are generally green with small brown patches. Seasoning lessens the production of ‘copra goma’ which lessens the quality of copra.

#### 5.1.3 Husking and splitting

**5.1.3.1** Use clean tools, equipment and materials during husking and splitting of coconuts to avoid direct microbial contamination.

**5.1.3.2** Perform husking and splitting operations in a clean and dry area or cemented floors if possible to avoid contamination.

**5.1.3.3** If splitting is not being carriedout immediately after husking, cover the husked coconuts with husk, leaves or fronds to prevent cracking due to direct heat of the sun. Cracks or openings provide entry points of insects and other organisms which initiate meat spoilage.

**5.1.3.4** Gather newlysplit coconuts in a clean and dry pavement or in a relatively drier area using appropriate underlays to protect from direct contact with soil.

**5.1.3.5** Use clean suitable containers or baskets to gather split nuts.

**5.1.3.6** Sortout and discard coconuts that show visible signs and symptoms of insect or microbial damage.

**5.1.3.7** Discarded coconuts should be disposed properly in a compost pit away from the production, drying and storage areas.

**Drying**

**5.1.3.8** Drying must start within four hours after splitting.

**5.1.3.9** When utilizing solar radiation for drying, it is recommended that coconut splitting operation be done early in the morning and immediately dry them in a clean pavement with appropriate underlays. Fungal growth will set in on the meat surface when drying is delayed.

**5.1.3.10** For efficient drying of copra, follow the recommended standard operating procedure (RSOP) of copra dryers. Hot air dryer produces high quality grade copra (Grade 1).

**5.1.3.11** When using 'tapahan' for drying, use dry combustible farm waste materials as fuel. Regulate the fuel feeding to prevent overheating which will likely affect the quality of the meat.

**5.1.3.12** Avoid mixing dried copra with wet or undried copra or any foreign matter.

**5.1.3.13** As a general rule, dry the copra to at least 12 % MC.

**5.1.4 Packing/bagging, storing and transport**

**5.1.4.1** Before packing or bagging, sortout copra that shows visible signs of copra 'goma', and symptoms of insect or microbial damage.

**5.1.4.2** Allow copra to cooloff before bagging for storage.

**5.1.4.3** Ensure that copra meat has been dried uniformly to 12 % MC. This can be determined by the Brown-Duvel or Oven Dry Method. The measurement of the moisture content of the copra shall be determined from a representative sample randomly taken from the whole batch (refer to PNS copra).

**5.1.4.4** Use clean and suitable containers for the copra.

**5.1.4.5** The copra shall be moved to a suitable storage or processing area as soon as possible after drying.

**5.1.4.6** When storing loose or unsacked copra, make sure that the product is stored in a clean, dry and well-ventilated bodega. For bagged copra, observe uniform piling inside the warehouse to allow good ventilation.

**5.1.4.7** Avoid copra moisture accumulation during storing and transport by using appropriate covering for the container. Copra to be transported shall be properly stacked in pallets inside the transport vehicle and covered with tarpaulin sheets.

**5.1.4.8** The storage structure shall be made of durable materials and shall be able to withstand strong winds, rain and earthquakes. It shall be situated in areas where there is no flooding. The design of the warehouse should meet the following minimum requirements namely:

a. prevent rewetting of copra;
b. prevent entry of insects, birds and rodents; and
c. provide good ventilation to the stored copra.

**5.1.4.9** Avoid mixing newlydelivered copra from those previously stored. Copra with more than 12 % MC should be re-dried immediately.

**5.1.4.10** During storage, follow the first-in- firstout (FIFO) principle.

**5.1.4.11** The MC of copra shall be maintained at 6 % to 7 % at all times in storage to prevent the growth of *A. flavus* and/or *A. parasiticus*.

**5.1.4.12** Maintain cleanliness at all times to prevent insect and rodent infestation.

**5.1.4.13** Periodically measure the temperature of the stored copra during storage. A temperature rise may indicate microbial growth and/or insect infestation. Visually check copra for evidence of mold growth and separate the infected portion. Subject infected samples for aflatoxin analysis, if possible.

## 6 Record keeping and documentation

**6.1** Document all activities in the production, harvesting and postharvest operations including the environmental conditions during each activity.

**6.2** For the purpose of identification and traceability, the date of collection/delivery of copra in bulk or in bags from different origins shall be handled separately and kept separated, until the final processing and packaging.

## 7 General recommendation

**7.1** All personnel involved in copra production shall be regularly trained for proper personal hygienic and sanitary practices that must be implemented at all stages of production.

**7.2** National and local government as well as nongovernment organizations (NGOs), trade associations and cooperatives shall provide basic education and information updates on the hazards associated with aflatoxin contamination to the stakeholders involved in the copra production chain.

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Codex Alimentarius Commission. Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Peanuts. CAC/RCP 55 2004. 7 p.

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