CODEX ALIMENTARIUS COMMISSION E

Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Item 9 **CX/CF 16/10/10**
February 2016

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

10th Session
Rotterdam, The Netherlands, 4-8 April 2016

DRAFT REVISION OF THE CODE OF PRACTICE FOR THE PREVENTION AND REDUCTION OF MYCOTOXIN CONTAMINATION IN CEREALS (CAC/RCP 51-2003)

Comments at Step 6 (in reply to CL 2015/24-CF) submitted by Brazil, Canada and Kenya

BRAZIL

In order to avoid any confusion of the terms used in the present document, Brazil suggests the inclusion of the following definitions, which are based on the "Dictionary of the Fungi and Dr John Pitt personal communication:

Strain: a group of clonally related individuals or cells. This term is also applied for a particular culture collection.

Fungal infection: Entry into, and growth of, a fungus in a plant or plant tissue, including fruit or seeds, before or after harvest, including dried or processed foods". Growth may be pathogenic, i.e. on living tissue, or saprophytic, i.e. on senescent, moribund or processed foods".

Fungal contamination: The presence of fungal propagules (spores, cells or mycelium) on or in a food or feedstuff without growth.

Many members suggested the use of the words infestation and race, but according to the same sources these definitions (below) don't apply in the context of the COP.

Infestation: The presence of live insects in or on a foodstuff.

Race: Physiologic race a group of forms alike in morphology but unlike in certain cultural, physiological, biochemical, pathological or other characters. The term race has also been used in a different sense by plant pathologists, using tests of different hosts. Isolates (or strains) taken from different hosts, that probably belong to the same species.

We also suggest deleting myco in the word mycotoxigenic when it is used together with fungi, since myco refers to fungi, such as in paragraph 11,

11. Consider developing and maintaining a crop rotation/sequence schedule appropriate to avoid planting the same crop in the same field, for two consecutive seasons in order to reduce the inoculum in the field. Some crops have been found to be particularly susceptible to certain species of toxigenic fungi and the use in rotation with each other should be evaluated. Table 1 shows the most susceptible crops to toxigenic fungi and the mycotoxins that can be produced. Some of these crops are infected after harvest, but the seeds can carry toxigenic fungal spores. Crops of low susceptibility to toxigenic fungi such as clover, alfalfa, beans and other legumes can be used in rotation to reduce the inoculums in the field. Wheat and maize have been found to be particularly susceptible to *Fusarium* species and they should not be used at very close positions in rotation with each other if possible. When used in the same rotation, inclusion of soybeans, oilseeds and pulses and forage crops may reduce the incidence and severity of pre-harvest infection.

CANADA

Canada would like to thank Brazil for its work last year in consolidating comments from the members of the electronic working group on this Code of Practice, and its continued work on the Annexes. Canada offers the following comments for the consideration of the Committee.

Introduction

Paragraph 9: This General Code of Practice contains general principles for the reduction of various mycotoxins in cereals. For the education of producers **and processors**, and providing information on testing to relevant parties, the following should be observed.

Paragraph 9(b): It is necessary to ~~make available~~ **develop** affordable and accurate ~~test kits~~ **analytical methods** and associated sampling plan for producers/handlers/processors to quickly ~~access the mycotoxins levels to allow testing of~~ **test** grain shipments **for mycotoxins** without undue disruption of operations plans. The proper use and implementation of any such ~~test kits~~ **analytical methods** or tools is critical to their provision of accurate information and data. **It is recommended that producers, handlers, and processors contribute adequate resources and training to ensure that sampling plans are followed and test procedures can be properly performed.** Procedures should be in place to properly handle, through segregation, reconditioning, recall or diversion, cereal crops that may pose a threat to human and/or animal health.

Harvest

Paragraphs 25: During the harvesting operation, the moisture content should be determined in several spots of each load of the harvested grain since the moisture content may vary considerably within the same field. As far as possible, avoid harvesting grain with high moisture content due to precipitation or morning dew or during late afternoon as it takes a longer time to dry. If possible, when preharvest monitoring or surveying of grain shows a field as having a higher **Fusarium** infection rate ~~by Fusarium ear blight~~, harvest and store grain from such field(s) separately from those fields with a lower infection rate.

Storage after drying and cleaning

Paragraphs 38: To more effectively monitor the condition of stored grain, it is advisable, if possible, to measure the temperature and humidity of the storage facilities and the stored grain at regular time intervals during storage. A grain temperature rise of 2-3°C may indicate microbial growth and/or insect infestation. If temperature or moisture becomes unacceptably high, where possible, aerate the grain by circulation of air through the storage area to maintain proper and uniform temperature levels. Aeration should be conducted, if possible, during periods of low ambient relative humidity of air being forced through the mass of stored grain. Aeration during periods of high relative humidity can actually increase condensation and aw in stored grain whose temperature is below ambient air temperature. Grain can also be transferred from one storage container to another to promote aeration and disruption of potential hot spots during storage. If grain spoilage or mold growth in grain is observed, separate the apparently infected portions of the grain and collect samples for mycotoxins analysis **using appropriate sampling plans**. When spoiled grain is removed, it is extremely important to minimise the mixing of the spoiled grain with the remaining portion of grain that appears to be in good condition. Small quantities of highly contaminated grain can greatly increase mycotoxin levels in grain that is otherwise in good condition. When spoiled grain has been removed, it may be necessary to aerate the remaining grains to lower the temperature to acceptable levels.

Paragraph 39: For cold climate countries, it is important to note that reduction of grain temperature below 15 degrees Celsius that can occur during colder months of temperate grain producing regions will contribute to safe storage and prevention of mold growth and mycotoxin production. Extremely cold temperatures will also inhibit insect growth and reproduction, reducing risk of insect damage ~~in turn facilitating~~ **which can facilitate** mold growth.

Processing

Paragraph 47: Analytical testing can be used as a tool to monitor mycotoxin concentrations in cereal grains. **It is important that sampling plans and analytical testing are properly implemented in order to provide accurate and representative results.** In some cases, ~~ELISA based,~~ **simple** screening test kits are commercially available for certain mycotoxins, such as DON; however, the proper implementation of sampling plans and use of any such test kits or tools is critical to their provision of accurate information and data. This will require commitment of adequate resources and training so that sampling plans and test procedures can be properly performed. It is important that the cereal grains removed from storage for transport are tested at loading or unloading for mycotoxin concentrations before going into storage at grain processing facilities, especially when the risk of mycotoxin contamination is high. Lots containing higher levels of mycotoxin should undergo extensive cleaning and processing that significantly decreases mycotoxin levels to guarantee a safe product to consumers.

Canada thanks the Secretariat of the Codex Alimentarius Commission for the opportunity to comment on this matter.

KENYA

Storage after drying and cleaning

35. .For bagged commodities, ensure that bags are clean, dry and stacked on pallets or incorporate a water impermeable layer between the bags and the floor. The bags should facilitate aeration and be made of non-toxic food-grade materials, that do not attract insects and rodents and are sufficiently strong to resist storage for longer periods. ~~**When stored by the conventional system bagged grains should enter storage with moisture content less than 1% of the reference moisture held by the bulk storage system.**~~ **When grains are stored by bulk storage system, moisture content should be 1% less that the reference moisture held by the conventional system held by bagged grains**

Comment: We propose the deletion of the last clause in paragraph 35 as shown "~~When stored by the conventional system bagged grains should enter storage with moisture content less than 1% of the reference moisture held by the bulk storage system~~"; and instead have the clause as "When grains are stored by bulk storage system, moisture content should be 1% less that the reference moisture held by the conventional system held by bagged grains"

Rationale: The reverse of the clause is true. That is when grains are stored by bulk storage system, moisture content should be 1% less that the reference moisture held by the conventional system held by bagged grains. Bagged grains has better aeration than grain in bulk.

39. For cold climate countries, it is important to note that reduction of grain temperature below 15 degrees Celsius that can occur during colder months of temperate grain producing regions will contribute to safe storage and prevention of mould growth and mycotoxin production. Extremely cold temperatures will also inhibit insect growth and reproduction, reducing risk of insect damage in turn ~~**facilitating**~~ **limiting** mould growth.

Comment: we propose the replacement of "facilitating" in paragraph 39 with "limiting".

Rationale: when insect damage is reduced, mould growth is also reduced.