

## **Mycotoxins in Crops: A Threat to Human and Domestic Animal Health**

### **AFLATOXINS**

Aflatoxins are one of the most potent and dangerous groups of mycotoxins worldwide. Over four billion people in developing countries are repeatedly exposed to aflatoxins, contributing to greater than 40 percent of the disease burden in these countries. Aflatoxins are produced primarily by the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. There are four main types of aflatoxins: B1, B2, G1, and G2. Aflatoxin B1 is the major toxin produced, and is regulated in the United States in agricultural products that may be used in human food. The clinical effects of aflatoxins may include death, liver cancer, reproductive problems, anemia, immune system suppression, and jaundice. Nursing animals may be severely affected by a toxic derivative of aflatoxin (aflatoxin M1) that can be passed through milk. Aflatoxin contamination is economically important in crops such as maize, peanuts, cottonseed, and tree nuts. Powdery, grey-green spores may develop on the surface of maize ears, and aflatoxins may be produced by the fungus until the kernel moisture reaches about 15 percent. High temperatures, drought stress, and insect injury may contribute to increased aflatoxin contamination in maize. Cottonseed, an important food source for dairy cattle, may become contaminated with aflatoxins if the seed-bearing capsules (bolls) are damaged, followed by high humidity and warm temperatures before or after harvest. Tree nuts such as pistachios and almonds may become contaminated with aflatoxins during injury, such as the splitting of hulls.

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### **Questions:**

**Read the text carefully and do the activities.**

**1) Propose an appropriate title to the text above.**

**2) Find in the text words or phrases that are closest in meaning to the following**

- a)strong =
- b)infection=
- c)produce=

**3) Find in the text words that are opposites of the following**

- a) low/
- b) insignificant/
- c) slightly/

**4) Answer the following questions according to the text:**

- Which fungus is mainly responsible for the production of aflatoxins?
- Can aflatoxins contaminate cottonseeds and can high humidity and high temperatures damage them?
- How animals can be poisoned by the aflatoxin M1 derivative

**5) Underline all the verbs found in the paragraph below**

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**6) Aflatoxin G1 is the main toxin produced**

- a) True
- b) False

**7) Aflatoxin contamination mainly affects. One of them is not correct**

- a) Corn
- b) Cheeses
- c) Peanut
- d) Cottonseeds
- e) tree nuts
- f) oilseeds

**8) Aflatoxin are mycotoxins produced by:**

- a) Stachybotrys
- b) Fusarium
- c) Penicillium
- d) Aspergillus
- e) Acremonium

**9) What is Microbiology?**

- a) Study of molecules that are visible to human eyes
- b) Study of animals and their family
- c) Study of organisms that are not visible to naked eyes
- d) Study of microscope

**10) Their chronic toxicity is dominated by:**

- a) nephrotoxicity (cancers, etc.)
- b) hepatotoxicity (cancers, cirrhosis, etc.)
- c) nerve degeneration
- d) anemia
- e) fertility disorders