

Mycotoxins

Mycotoxins, toxic chemical compounds produced by moulds, can contaminate commodities either in the field or during storage and are invisible, odourless and tasteless. According to the Food and Agriculture Organization, food losses due to mycotoxin contamination are estimated at 25% on a global scale and pose a real threat to food security, especially in Africa where the magnitude of losses is difficult to estimate because of a lack of information.

Effective management to prevent food losses or adverse health effects as a result of long-term exposure to contaminated food is only possible when adequate reliable testing data is available. Well-timed interventions in the food and feed value chain can then be based on these testing results.

Mycotoxin production is foremost a food safety issue, although the occurrence of moulds can also lead to damage ranging from rancidity, odour, flavour changes, loss of nutrients and germ layer destruction resulting in a reduction in quality. The only proven way to determine whether grain, cereals, feed or food are contaminated, is by analytical testing. Most mycotoxins are toxic at very low concentrations, sensitive and reliable methods for their detection are therefore required.

The accredited multi-mycotoxin assessments included in the annual wheat crop quality survey for the past ten seasons, provide the most comprehensive overview of the multi-mycotoxin risk in commercial wheat produced and delivered to commercial grain storage companies in South Africa. Approximately 10 - 20% of the wheat crop samples were selected every season to proportionally represent all the production regions.

The absence of Aflatoxin B₁, B₂, G₁, G₂, Fumonisin B₁, B₂, B₃, Ochratoxin A, T2-toxin and HT-2 toxin in the wheat samples over the past ten seasons were confirmed in the 2020/21 season. Zearalenone residues were detected on a wheat crop sample for the first time during the previous season. The Deoxynivalenol prevalence this season is the highest of the past ten seasons with 43% of the samples testing positive for Deoxynivalenol residues. The average percentage of samples testing positive over the previous nine seasons is 14% and ranges from 3% to 25%. Two of the positive residue levels measured exceeded the national maximum allowable level (2 000 µg/kg) for cereals intended for further processing.

Constant monitoring and continued research on the prevention and mitigation of mycotoxin contamination are necessary. Application of good agricultural practices and storage conditions as well as effective mycotoxin risk management programs are essential elements in preventing the negative effects of mycotoxins.

National Mycotoxin Regulations

According to the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) and regulations published under Government Notice No. R. 1145, dated 8 October 2004, all foodstuffs, ready for human consumption, may not contain more than 10 µg/kg of aflatoxin, of which Aflatoxin B₁ may not exceed 5 µg/kg.

Amendments to Government Notice No. R. 1145, dated 8 October 2004, published in Government Notice No. 987 of 05 September 2016, specify that:

- Cereal grains (wheat, maize and barley) intended for further processing, may not contain more than 2 000 µg/kg of Deoxynivalenol.
- Flour, meal, semolina and flakes derived from wheat, maize or barley, ready for human consumption, may not contain more than 1 000 µg/kg of Deoxynivalenol.

Further processing means any other treatment or processing method that has been proven to reduce levels of fungus produced toxins in foodstuffs intended for human consumption.

