

MYCOTOXIN MANAGEMENT IN CORN

DISEASE DEVELOPMENT AND MYCOTOXINS

Multiple *Fusarium* species are associated with ear rot. *Fusarium* fungi overwinter on residue, particularly corn and wheat. Fungal spores are easily spread by wind and splashing rain and infect corn ears through the silk channels. Disease risk prediction and decision support models are urgently needed, however periods of moisture during silking and high humidity are often an indicator of increased risk. Prolonged silking periods in corn, as during the 2023 season, can increase the potential for infection by prolonging the risk window. The primary concern with *Fusarium* fungi is that it can produce mycotoxins such as DON, also called vomitoxin. High levels of DON are dangerous to livestock consumption and could cause load rejection or reduced price at delivery.

IN-FIELD MANAGEMENT

Although no corn hybrids are immune to ear molds, there are differences in susceptibility and greater effort needs to be placed on using varieties with increased levels of resistance. Early research shows some fungicide products that are labelled for suppression of ear molds including Proline, Zee, and Miravis Neo have been successful in protecting against mycotoxin development. Optimal fungicide timing is during green silk to help protect silks from infection. Fields should also be managed when necessary to reduce damage to ears such as that caused by Western bean cutworm, either through selection of hybrids with effective insect traits or insecticide applications when warranted.

SCOUTING AND HARVEST

Scouting at dent stage can identify problematic fields. In areas throughout the field pull back husks on 20 ears and assess for ear mold development. *Gibberella* ear rot can be identified by a red- or pink-colored mold growth on the tip of the corn ear. By comparison, *Fusarium* ear rot is often scattered throughout the ear, with a starburst pattern on kernels. If unsure submit a sample to the MSU plant and pest diagnostic clinic <https://www.canr.msu.edu/pestid/>. Scouting for ear mold will help inform harvest timing and postharvest grain storage and handling.

Harvest – The timing of harvest can impact the levels of mycotoxins. Infected fields should be harvested as early as possible to prevent additional accumulation of mycotoxins. Ear molds can continue to produce mycotoxins in moist grain. Using heat to quickly dry grain will assist in stopping additional mold growth.



KEY FACTS

- The Fusarium fungal species that causes Gibberella ear rot and Fusarium ear rot, can produce mycotoxins in infected kernels. Deoxynivalenol (DON), also called vomitoxin, is the primary mycotoxin of concern.
- Fusarium fungi overwinter on crop residue and release spores that can be spread to ears by wind and rain.
- The Fusarium fungus generally infects corn through the silk channel. Infection is promoted through wet conditions during and after silking.
- Damage to ears by insects or birds can also be a point of entry for infection by Fusarium.
- Fungicide applications are most effective when applied during green silk.
- Mycotoxin contamination of grain may or may not be present alongside ear mold symptoms. Mold-infected kernels should be assumed to include mycotoxins.
- Fields with high ear rot levels should be harvested early and handled separately as best as possible. Delayed harvest and high moisture grain will allow for continued fungal growth and mycotoxin accumulation. Grain should be dried to 15% grain moisture, or 13% if stored through summer months.
- During ethanol production DON does not break down but is concentrated three-fold in the distillers dried grains with solubles (DDGS).



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