FACT SHEET

CASA | ACSA
CANADIAN AGRICULTURAL SAFETY ASSOCIATION
ASSOCIATION CANADIENNE DE SÉCURITÉ AGRICOLE

FUSARIUM AND MYCOTOXINS

BACKGROUND:

Fusarium fungi can produce a range of plant diseases, including both Fusarium head blight (scab) in small grains and Gibberella ear rot in corn. Both of these diseases can result in deoxynivalenol (also known as DON, vomitoxin) and zearalenone production in affected grain. Three factors must be in place for this disease risk in crops: presence of the pathogen (primarily *Fusarium graminearum* and *Fusarium culmorum*), a susceptible host (e.g., corn, wheat, barley), and conducive environment/weather conditions (for small grains: warm, moist conditions and high relative humidity at flowering; for corn cool, moist conditions during and after pollination). Fusarium fungi overwinter in crop debris on or in the soil. It also overwinters in infected seed. It can be spread through rain splash and even wind. Insects can also spread the fungi in places like bins.

Mycotoxins, including DON and zearalenone affect both livestock health and productivity when they are exposed through feed; swine are particularly sensitive to feed contamination with these mycotoxins. Animals' consumption of DON-contaminated feeds is typically associated with vomiting and other gastrointestinal issues while zearalenone can have negative effects on reproductive functions. Limiting the inclusion of mycotoxin-contaminated ingredients in feed rations is important to protecting both animal health/welfare and business profitability. Testing grain for mycotoxins can help to classify lots for appropriate end use. Different livestock and end users have a range of susceptibility to these mycotoxins and, therefore, can tolerate different levels of contamination in raw ingredients and final products.

DEFINITIONS:

Mycotoxin: Mycotoxins are toxic compounds that are naturally produced by certain types of moulds (fungi). Most mycotoxins are chemically stable and do not degrade during storage or under normal food processing conditions.[1]

1. World Health Organization,. 'Mycotoxins', (2018), online: https://www.who.int/news-room/fact-sheets/detail/mycotoxins

KEY POINTS:

Farmers handling moldy grain with or without mycotoxins should take appropriate precautions to limit their exposure, as potential health risks that may result from inhalation exposure are not well-known.

Exposure through food is another route of exposure, however, this is dependent on the amount eaten and level of contamination in the product(s). Limits for contamination in food and feed products should be adhered to in order to protect human and animal health.

Even though a farmer may not know if mycotoxins are present in grains infected with *Fusarium*, just like with any grain molds, fungi or dusts, it's important to prevent exposure. (Anyone involved in production, storage, transportation or processing of grain should take precautions.)

TO ELIMINATE EXPOSURE, THE FOLLOWING STEPS SHOULD BE TAKEN:

1) When possible, ventilate the area.
2) Use Personal Protective Equipment (PPE).
   a. Respirators selected and fitted for each individual
3) Modify the task to decrease exposure (for example: use a conveyor or vacuum.)
4) Educate and train any personal working around or with grain.
5) Speak with a health care professional about potential exposure.

FOR MORE INFORMATION, PLEASE VISIT:

CROP PROTECTION NETWORK PUBLICATION LIBRARY: https://cropprotectionnetwork.org/library/ (Available in English only)

CANADIAN FOOD INSPECTION, MYCOTOXINS IN LIVESTOCK FEED: http://www.inspection.gc.ca/animals/feeds/regulatory-guidance/rg-8/eng/1347383943203/1347384015909?chap=1#s1c1

CANADIAN GRAIN COMMISSION: https://grainscanada.gc.ca/en/ (Search for vomitoxin, mycotoxin, Fusarium)

GRAIN FARMERS OF ONTARIO: https://gfo.ca/

SASKWHEAT FUSARIUM RESOURCES: http://www.saskwheat.ca/producer-info/fusarium-risk-assessment-map/

The Building Safety on the Farm series is a part of Canadian Agricultural Safety Week 2019. For more information, visit agsafetyweek.ca.
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