

2015 Grain Corn Ear Mould and Vomitoxin (DON) Survey

Purpose:

The OMAFRA Field Crops team conducted a condensed version of its annual vomitoxin survey to assess the presence of corn ear mould and grain vomitoxin in the 2015 corn crop. Vomitoxins can be produced by *Gibberella* and *Fusarium* ear moulds and can be disruptive when fed to livestock, particularly hogs. The purpose of this annual survey is to increase our understanding and assess industry risk.

Methods:

A total of 87 samples were collected from Eastern and Southern Ontario from October 17th to 31st. In most cases, five consecutive ears were pulled from four random locations throughout a field. After rating for ear mould, damage and feeding, samples were dried within 24 hours of collection. Dry ears were shelled, mixed, put through a sample splitter, and taken to SGS Agrifood Laboratories in Guelph for vomitoxin (DON) analysis.

Results:

Of the 87 samples collected:

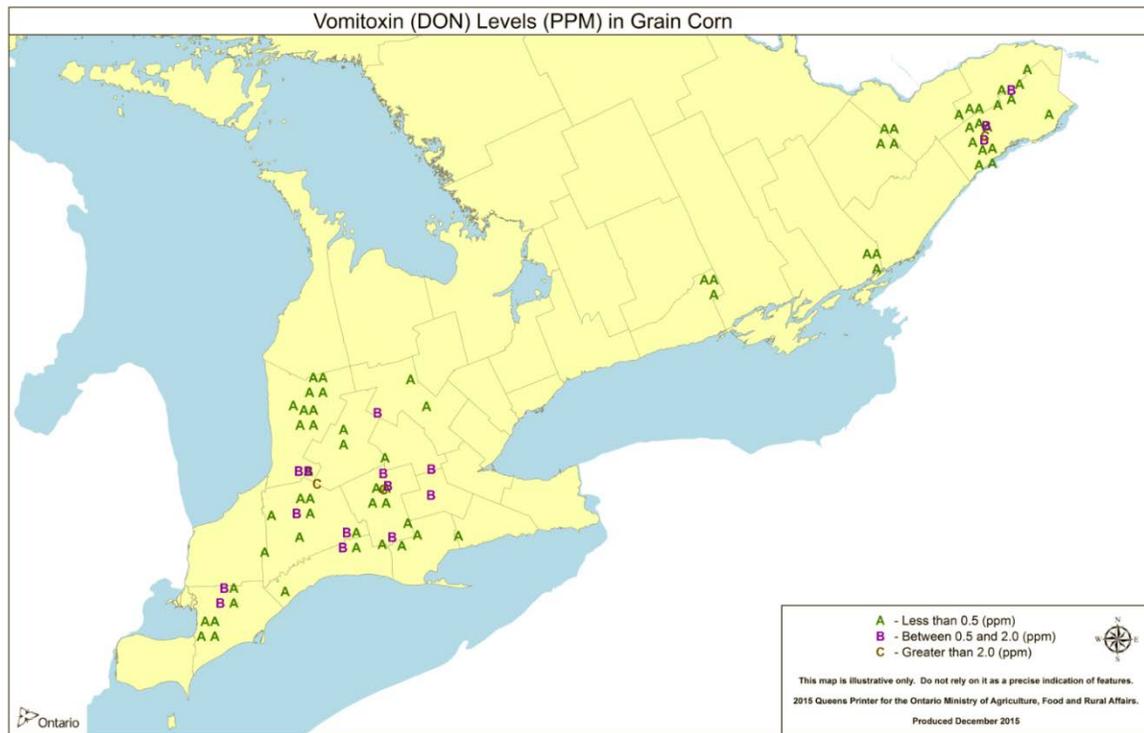
- 75% (66) had a DON concentration of less than 0.5 ppm;
- 20% (17) had a DON concentration between 0.5 and 2.0 ppm;
- 5% (4) had a DON concentration of 2.0 ppm or greater

In general, samples appeared clean this year. While evident in some fields, visual mould levels appeared relatively low. Vomitoxin analysis results are slightly lower than the 2014 survey, and appear to be in line with previous low-risk years (Table 1). While in general levels were low, there were a small number of fields where vomitoxin levels tested above 2.0 ppm, suggesting monitoring may be required for corn from fields which had elevated symptoms of ear rot even in lower risk years. No particular regions appeared to be at more risk than others; elevated levels appeared randomly distributed across the sampling area (Figure 1).

Table 1. Vomitoxin Results From The Past 4 OMAFRA Vomitoxin Surveys.

	2015	2014	2013	2012
< 0.50 ppm	75%	66%	84%	85%
0.50 to 2.00 ppm	20%	25%	14%	11%
≥ 2.00 ppm	5%	9%	2%	4%

Figure 1. Ontario Corn Ear Mould and Vomitoxin (DON) Survey Sampling Sites and DON Analysis Levels in 2015



Feeding Damage

Feeding on ears by pests, particularly Western Bean Cutworm, opens ears and presents an opportunity for greater mould infestation. While a number of samples with elevated vomitoxin levels displayed pest feeding and ear moulds, there were also a significant number of samples with ear feeding that displayed no mould or elevated risks. This suggests that while pest feeding may increase risks, elevated levels of vomitoxin in grain is not a certainty. Actual levels may depend on the circumstances and other risks present in that field (hybrid, local weather, time of feeding etc.). Risks associated with feeding should make these fields candidates for watching.

Summary:

Mould and vomitoxin levels appeared relatively low/normal in the fields surveyed in 2015. A few fields had vomitoxin concentrations > 2.0 ppm, suggesting vigilance may be required in corn from fields which exhibited elevated Gibberella/Fusarium symptoms. Pest feeding or open wounds to ears increases the risk of mould infection and potential for vomitoxin production, but does not necessarily guarantee there will be issues. In the future, affected fields should be monitored for their risk. This condensed survey was not able to sample all regions of the province; these results may not fully capture your local region.

Crop Advances: Field Crop Reports

When ear rot is present, the following harvest, storage and feeding precautions are advisable (OMAFRA Pub 811, *Agronomy Guide for Field Crops*):

- Harvest as early as possible especially susceptible hybrids.
- If insect or bird damage is evident, harvest outside damaged rows separately. Keep and handle the grain from these rows separately.
- Adjust harvest equipment to minimize damage to corn. Clean corn thoroughly to remove pieces of cob, small kernels and red dog.
- Clean bins before storing new grain and cool the grain after drying.
- Check stored grain often for temperature, wet spots, insects and mould growth.
- Exercise caution in feeding mouldy corn to livestock, especially to hogs. Pink or reddish moulds are particularly harmful. Test suspect samples for toxins.

Next Steps:

OMAFRA in conjunction with the Grain Farmers of Ontario and University of Guelph Ridgetown Campus review the ear mould and vomitoxin potential annually and will continue to do so in future years.

Acknowledgements:

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