

2014 Grain Corn Ear Mould and Vomitoxin (DON) Survey

Purpose:

As in previous years, the OMAFRA Field Crops team completed a survey of the 2014 Ontario corn crop to determine ear mould incidence as well as the occurrence of mycotoxins in the grain. These mycotoxins, particularly vomitoxin (DON) produced primarily by Gibberella/Fusarium ear moulds can be disruptive when fed to livestock, especially hogs. The purpose of this annual survey is to increase our understanding and access industry risk.

Methods:

A total of 202 samples were collected from October 14 to 17, 2014 from corn fields across the province. In each field, 2 random areas were selected and in each area 10 consecutive ears were hand harvested and bagged. In fields with several hybrids, representative samples were taken again from two areas for each hybrid (maximum of 4 hybrids per field). The 20 ear samples were then immediately dried and shelled. The resultant sample was thoroughly mixed and a sub-sample was provided to A & L Laboratories in London for vomitoxin (DON) analysis (see Table).

Results:

Table 1 shows that 66 % (134) of samples had a DON level of less than 0.5 PPM; 25 % (51) had DON concentrations of 0.5 to 1.9 PPM; and 9 % (17) were found to have DON levels of 2.0 PPM or greater. As stated 202 corn samples which were collected from across the Province and these results show an increase in vomitoxin levels compared with the 2013 survey where only 2% of the samples registered a DON level of more than 2.0 PPM. These are significantly lower than the 2011 survey when 23% of the samples registered 2.0 PPM DON or higher.

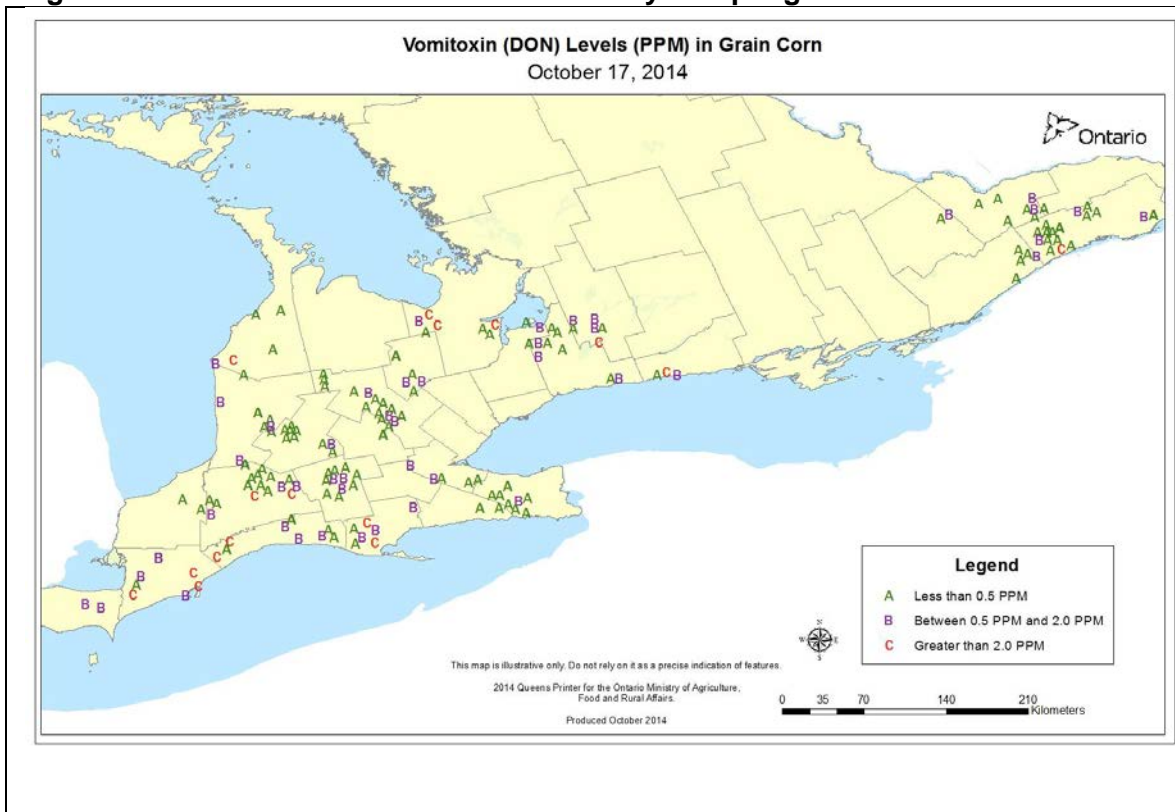
Table 1. Results of Ontario Corn Ear Mould Survey

% of Samples	Total Fields Sampled 202	DON (ppm)
66 %	134	< 0.5
25 %	51	0.5 to 1.9
9 %	17	> 2.0

With 91% of the samples testing below 2.0 PPM (see map) it the 2014 corn crop was able to move through the system with few concerns over DON levels. However, the 2014 survey shows that increased diligence is needed in monitoring fields for ear mould, insect damage and elevated DON levels. In particular, high DON concentrations in this year's survey (>5.0 PPM) appear to be closely associated with ears that had Western

Bean Cutworm (WBC) feeding. WBC damage fosters the development of ear moulds and toxin development.

Figure 2. Ontario Corn Ear Mould DON Survey Sampling Sites and Levels Detected



Summary:

For the 2014 samples that had slightly elevated DON levels they did not appear to be concentrated in any particularly area of the province (see map below). The survey did point out that in an area or field where the DON concentrations appear to be very low on average; hybrid impacts can be significant, as side by side hybrids sometimes had significantly different DON levels. Growers and seed company personnel need to be vigilant in checking for ear mould or DON risks that might be hybrid related.

It is important stakeholders be on the lookout for fields with ear damage (Western Bean Cutworm injury or bird feeding) as DON levels may be distinctly higher in those fields. In addition, late planted and/or frost injured fields where husk cover is tight may be at risk for mould and higher DON levels. Appreciation is extended to the Grain Farmers of Ontario and A&L Canada Laboratories Inc. for their support of this survey and rapid analysis of the samples.

Crop Advances: Field Crop Reports

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

- 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 mycotoxin potential annually and will continue to do so in 2015.

Acknowledgements:

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Location of Project Final Report:

<http://fieldcropnews.com/2014/10/2014-grain-corn-ear-mould-and-vomitoxin-survey/>