2012 Grain Corn Ear Mould and Vomitoxin (DON) Survey

Purpose:

As in previous years, the OMAFRA Field Crops team completed a survey of the 2012 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 concern in the United States surrounding another mycotoxin "aflatoxin" has not gone unnoticed in Ontario and as a result OMAFRA and the Grains Farmers of Ontario (GFO) decided to test for aflatoxins this year as well. In corn aflatoxin is produced by the fungal pathogen ***Aspergillus flavus*** which causes *Aspergillus* ear rot. The hot dry conditions across much of the corn growing area of North America has been favourable for *Aspergillus* ear rot and unfortunately aflatoxin production as well. In Ontario, environmental conditions are often more favourable for *Gibberella, Fusarium, Diplodia* and other ear rots rather than *Aspergillus*. Although *Aspergillus* ear rot and aflatoxin production is rare in Ontario corn, OMAFRA determined due to the concern this year to test for aflatoxin as well.

Methods:

A total of 171 samples were collected September 18 to 25, 2012 from corn fields across the province. In each field, 2 random areas were selected and in each, 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 sent to A & L Canada Laboratories in London for vomitoxin (DON) and aflatoxin analysis.

Results:

Of the 171 samples collected, **85%** (146**)** had a DON level of less than 0.5 PPM; **11%** (19) had DON concentrations of 0.6 to1.9 PPM; and only **4%** (6) were found to have DON levels of 2.0 PPM or greater; with no sample being above 3.0 PPM DON. In comparison, the 2011 OMAFRA survey showed 23% of samples had DON levels of 2.0 PPM or greater. Clearly the incidence of *Gibberella* and *Fusarium* ear moulds and DON was minimal in 2012 and perhaps the lowest levels that we have encountered in the past decade. Samples that had slightly elevated DON levels were generally in the southwest part of the province but no specific area could be identified as having a concern for elevated DON.

To test for aflatoxins, a subset of 26 samples from the total 171 collected samples which represented a unique field/hybrid location. All 26 samples (100%) were found to have no detectable aflatoxin.

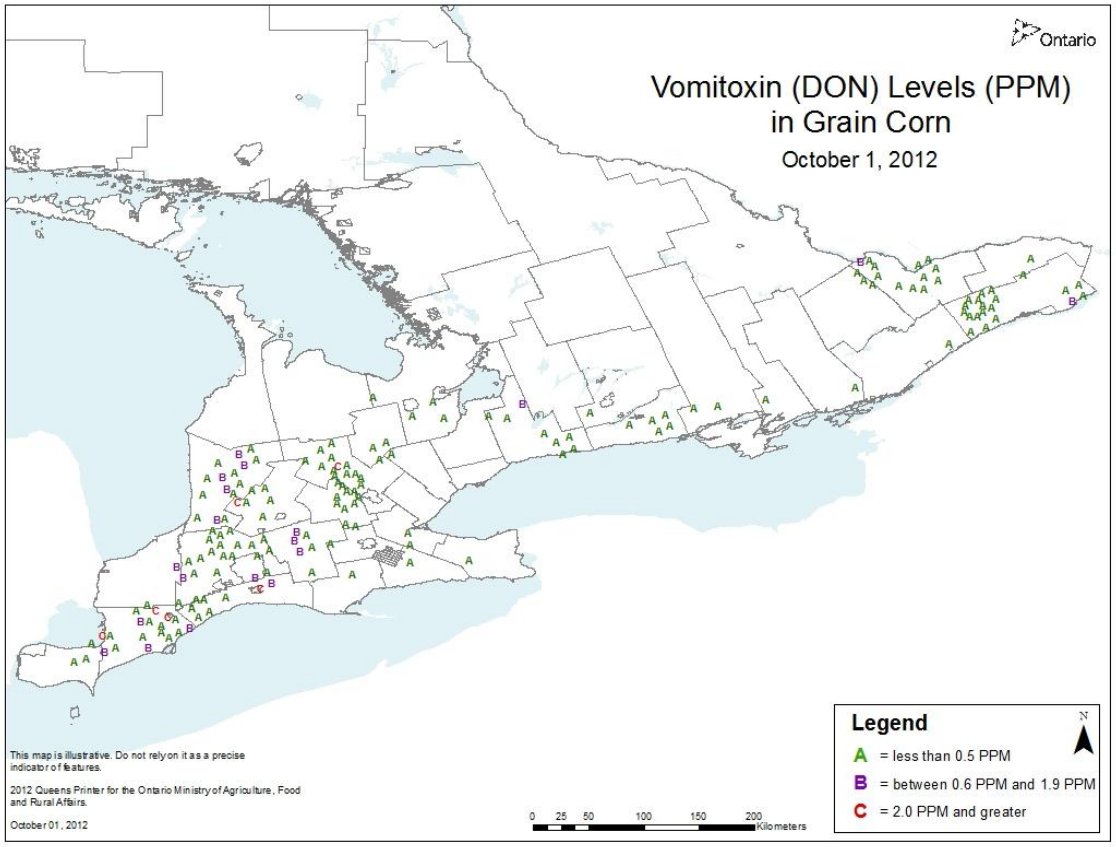

Figure1: Distribution of Sampling Sites and Don Incidence Detected in 2012

Summary:

The incidence of *Gibberella/Fusarium* ear moulds and DON was minimal in 2012. However the importance of local microclimates and variability in susceptibility amongst hybrids has on ear rot disease and mycotoxin potential must be recognized. The level of tolerance has improved in corn hybrids but remember that even two hybrids grown side-by-side in the same location could differ greatly in DON production. As producers are planning their 2013 corn hybrid selections they should remember to include disease, insect and mycotoxin tolerance ratings on your checklist of characteristics to select for!

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 2013.

Acknowledgements:

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