

Molds and Mycotoxins - Mycotoxin Levels and Interpretation

Tom Wright, OMAFRA, Dairy Cattle Nutritionist

Infosheet

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Fusarium fungus produces Deoxynivalenol (DON or vomitoxin), Zearalenone, T-2 toxin, HT-2 toxin, Fumonisin and Nivalenol. Note that results may be expressed in a number of different ways.

Therefore remember: ppm = mg/kg = ug/g.

Some results may be expressed as ppb; 1,000 ppb = 1 ppm. Always check the dry matter basis on which the results are given - many cases this is as-fed. Correct for moisture level; divide by the decimal dry matter. eg. 1 ppm on 30% dry matter basis is $1 / 0.3 = 3.3$ ppm DM.

Agriculture and Agri-Food Canada guidelines for DON (Vomitoxin) in animal feeds are:

- pigs, calves, lambs, lactating cows and lactating ewes, 1 ppm in the diet,
- adult cattle, adult sheep and poultry, 5 ppm in the diet.

United States FDA guidelines for DON (Vomitoxin) in feeds in the US are:

- 10 ppm in grains and by-products fed to chickens, ruminating beef and feedlot cattle older than 4 months. Maximum ingredient level 50% of total ration. (ie. 5 ppm in the final ration).
- 5 ppm in ingredients for swine with a maximum inclusion rate of 20% of total ration. (ie. 1 ppm in the final ration).
- 5 ppm in ingredients for all other animals with a maximum inclusion of 40% of the ration. (ie. 2 ppm in the final ration).

Pennsylvania State University suggested guidelines on mycotoxin levels in feeds are (Adapted from Penn State)

Total Ration (on a Dry Matter basis)

Mycotoxin	Concern Level ¹ (ppm)	Potentially Harmful	
		Cattle (ppm)	Swine (ppm)
DON/Vomitoxin	0.56	2.5 to 6.0	0.6 to 1.0
Zearalenone	0.56	3.9 to 7.0	0.6 to 3.9
T-2	0.25	0.7 to 1.5	0.7 to 1.5
HT-2	0.25	1.5 to 3.0	1.5 to 3.0

Notes on the Penn State University table:

- ¹ Concern level: Indicates favourable conditions for mycotoxin production. May require further testing, especially if moderate symptoms are present. Limit the amount of suspect feed fed if performance and/or health symptoms persist. Discontinue use if severe production decreases occur and/or acute clinical symptoms appear.
- Potentially Harmful: Mycotoxins at these levels suggest toxin involvement in depressed performance and/or acute clinical symptoms. Discontinue feeding, at least temporarily, sample and test.

For more information:

Telephone: 1-877-424-1300

E-mail: ag.info.omafra@ontario.ca

www.ontario.ca/livestock