



## Ochratoxin fact sheet

Fungi and molds that grow in grains or forage can produce poisonous compounds (or toxins). These compounds are collectively called “mycotoxins” and may affect the health of both humans and livestock. More than four hundred mycotoxins have been identified, but only a small number are of concern to livestock.

### A. What is “ochratoxin”?

#### 1. Is mycotoxin produced primarily by *Penicillium verrucosum*

- a. Originally associated with *Aspergillus ochraceus*
- b. Often occurs with zearalenone and aflatoxin B<sub>1</sub>

#### 2. Ochratoxin is potential problem in cereal crop grains

- a. Primarily corn, barley, wheat, rye
- b. *Penicillium* species generally responsible for contamination in cool, temperate climates
- c. *Aspergillus* species generally responsible for contamination in hot, tropical climates

### B. Ochratoxin advisory levels

#### 1. U.S. Food and Drug Administration (FDA) has not set action, advisory, or guidance levels

- a. Has listed ochratoxin as “Potentially Hazardous Contaminant”
- b. Commission of the European Communities has set guidance levels (see Table 1)

#### 2. Concern level

- a. Level indicating possible favorable conditions for mycotoxin development
- b. Additional testing of feed ingredients or rations may be prudent
- c. Limit amounts fed to livestock if moderate performance effects are observed
- d. Discontinue use (at least temporarily) if pronounced chronic symptoms or acute clinical symptoms are observed

#### 3. Potentially harmful level

- a. Indicates probable involvement of zearalenone in reduced performance, chronic symptoms, or acute clinical symptoms
- b. Discontinue feeding - at least temporarily - if either chronic or acute symptoms are noted
- c. Observe animals closely if symptoms are absent
- d. Continue testing feedstuffs or rations

### C. Conditions favoring ochratoxin contamination

#### 1. Generally associated with mold growth

- a. Drying grain quickly is primary prevention strategy

#### 2. Safe moisture thresholds:

- i. Wheat, barley, oats: 14% to 15%
- ii. Corn: 14%
- iii. Rice: 13% to 14%
- iv. Canola, rape seed: 7% to 8%

### D. Ochratoxin effects

#### 1. Rapidly degraded in rumen

- a. Typically not considered health concern for ruminants
- b. Almost exclusively problem for monogastrics
- c. Concern for “pre-ruminant” calves?

#### 2. Pigs

- a. Often associated with kidney disease
- b. Ochratoxin accumulates in kidney and liver

#### 3. Poultry

- a. Less sensitive to ochratoxin than swine

Table 1. Recommended threshold levels for ochratoxin A.		
Livestock feedstuffs	----- mg/kg or ppm -----	
Total ration dry matter		
Concern level	0.25	
Potentially harmful:		
Cattle	5.0 to 9.0	
Swine	0.7 to 1.5	
European Guidance Levels	88% D.M.	100% D.M.
Cereals, cereal products	0.25	0.28
Rations for:		
Pigs	0.05	0.057
Poultry	0.10	0.11

### References

Adams, R.S. et. al. *Mold and mycotoxin problems in livestock feeding*. DAS 93-21. Pennsylvania State Univ. Coop. Ext. Svc. 17 pg. <http://www.das.psu.edu/research-extension/dairy/nutrition/pdf/mold.pdf/view?searchterm=mycotoxin>

Battacone, et. al. 2010. *Effects of Ochratoxin A on Livestock Production*. *Toxins* 2010, 2(7), 1796-1824; doi:10.3390/toxins2071796. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3153269/> accessed 15Sept2017.