

## Latest QA Programs

### Monitoring MYCOTOXIN Level In Corn and Other Commodities

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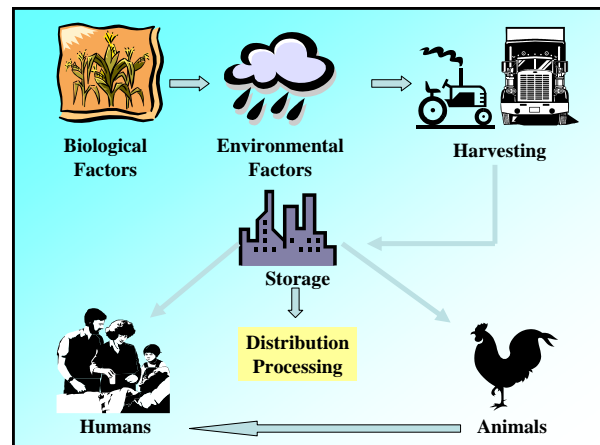
## Outline:

- I. Introduction
- II. **Veratox**® Total Quantification System
- III. **Agri-Screen**® Semi-Quantitative System
- IV. **Reveal**® System for Screening Corn
- V. Hands-on Analysis



## Mycotoxin Problem in Perspective

- Naturally occurring
- Highly toxic compounds
- No longer new



- **LOSERS** (economically)
  - growers of vulnerable crops;
  - livestock, milk and poultry producers;
  - food processors; and
  - buyers and handlers of raw commodities
- Acquiring an understanding of the problem including its nature and control is the best means of avoiding loss



## MYCOTOXINS

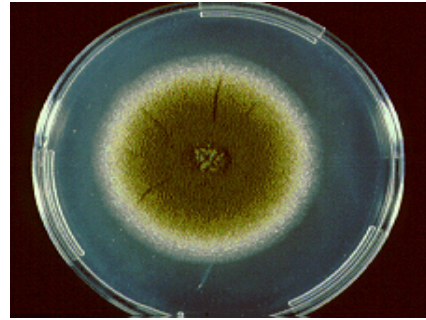
HOW DO YOU KNOW THEY ARE THERE?

You cannot **SEE** them!  
You cannot **SMELL** them!  
You cannot **TASTE** them!



## Major Types:

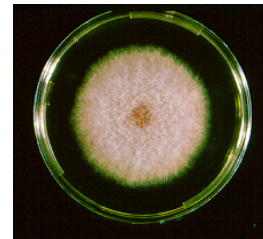
1. Aflatoxin
2. Fumonisin
3. Ochratoxin
4. Vomitoxin
5. T-2 Toxin
6. Zearalenone



**ASPERGILLUS** Colony



**ASPERGILLUS**



**FUSARIUM** Colony



**FUSARIUM**



## Commodities Tested



- Corn & corn products
- Copra, wheat, barley, sorghum, soya
- Finished feeds
- Meat, milk and egg
- Peanuts & peanut products
- Tree nuts (pistachio nuts, pecans, walnuts, Brazil nuts)
- Cottonseed
- Pepper



## 3 Types of Mycotoxin Test Kits

### 1. Veratox 2. Agri-Screen

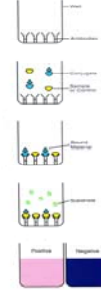


### 3. Reveal



## DIRECT COMPETITIVE ELISA - NEOGEN®

1. Microwells are coated with antibodies specific to the target substance
2. Conjugate competes with target substance/controls for antibody binding sites
3. Conjugate and target substance/controls remain bound in wells
4. Substrate is added to produce a color change
5. Results are read visually or in a reader—the less blue color, or more red, the more target substance detected



## What format to use?

	Veratox	Agri-Screen	Reveal
Results	Total quantitative (20.88ppb)	Semi-quantitative (<50, >20ppb)	Screening <0/>20ppb
Testing time	6 minutes	6 minutes	4 minutes
Application	Lab based testing, for all commodities	Lab or field testing, for all commodities	Field testing for corn
Kit expiry and storage	8 months 2-8C	6 months 2-8C	1 year Room temp.
No. of tests/kit	36-44 max. microwell	12-20 max. microwell	25 tests strip

## 3 Basic Procedure

- Sample Extraction
- Assay (Mixing of reagents)
- Reading of results

### 1. Veratox 2. Agri-Screen




for Aflatoxin

## 1. Sample Extraction




1. Obtain a representative sample. Grind and weight out a 5 g sample.
2. Add 25 mL 70% methanol to sample.
3. Shake sample vigorously for 1 minute. **Alternative: Blend for 1 minute.**



4. Allow sample to settle .

5. Filter sample using a filter syringe. OR Filter sample using a Whatman #1 filter paper.


## 2. Assay



1. Add conjugate to all wells

2. Add controls and samples to respective wells

3. Mix, transfer to antibody wells and incubate

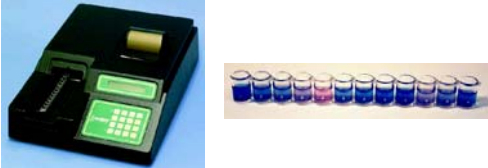


4. Tap out water on absorbent towel


5. Add substrate and incubate

6. Add Red Stop

## 3. Reading of Results



**For Veratox** = Read results in a microwell reader to get exact ppb level up to 2 decimal ex. 20.98ppb



**For Agri-Screen**=Compare color reaction on control  
The the lesser the toxin <20ppb  
The **REDDER** the higher the toxin >20ppb

## 3. Reveal For Aflatoxin



## Reveal for Aflatoxin

### 1. Extraction



1. Obtain a representative sample. Grind and weight out a 10 g sample.
2. Add 20 mL 70% methanol to sample.
3. Shake sample vigorously for 1 minute.  
*Alternative: Blend for 1 minute.*

## Reveal for Aflatoxin



4. Allow sample to settle .
5. Filter sample using a filter syringe. OR Filter sample using a Whatman #1 filter paper.

## Reveal for Aflatoxin

### 2. Assay



5. Add 200  $\mu$ L sample diluent to a sample cup.
6. Add 200  $\mu$ L sample extract to the sample cup and mix 3 times.

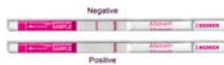
## Reveal for Aflatoxin

### 3. Reading of Results



7. Place a new Reveal Aflatoxin strip into a sample cup. Set timer for 3 minutes.
8. Interpret test results.

## Reveal for Aflatoxin



**Negative** (less than 20 ppb) sample can be interpreted as soon as 2 lines are visible (1-2 min).

AND  
OR

**Positive** (more than 20 ppb) sample should be interpreted at 3 min. No sample line and one control line. (3 min.)



Interpret using the Reveal AccuScan System.

## Benefits and Advantages

- Rapid/Real time results ( 4-6 minutes)
- Accurate
- Sensitive
- User-friendly
- Cost effective
- Approved

## APPROVALS FOR VERATOX® MYCOTOXIN TEST KITS

AOAC  
USDA/FGIS  
GIPSA



## VERATOX® END- USERS

- Widely used by over 164 institutions
  - Commercial feed mills
  - Non- commercial feed mills
  - Cooperatives
  - Grain suppliers
  - Copra exporters
  - Regulatory agencies
  - Testing laboratories
  - Food processors

