

ONE SAMPLE STRATEGY AFLATOXIN & FUMONISIN RISK MANAGEMENT IN TEXAS

Texas Feed and Fertilizer Control Service



Office of the Texas State Chemist

Handbook

2018

Version 8.2

**Office of the Texas State Chemist
Texas A&M University System**

BACKGROUND

To manage the economic and food safety risk of mycotoxin contaminated corn, Texas producers, crop insurance agents, local grain elevators, feed mills, and regulators need real-time information about the true level of mycotoxins going into and out of bins. That's why timely, accurate, and reproducible aflatoxin and fumonisin results are the primary goal of the One Sample Strategy.

Accurate measurement of aflatoxin and fumonisin in corn is complicated by the nature of the toxins and the challenges of sampling and testing corn. To standardize these processes and reduce the variability of test results, the One Sample Strategy promotes the use of uniform sampling and testing equipment and methods. One Sample Strategy participants use equipment approved by the USDA Grain Inspection, Packers and Stockyards Administration (GIPSA) (**Appendix A**) to sample and grind corn and use GIPSA performance verified mycotoxin test kits that have been validated by the Office of the Texas State Chemist (OTSC) to measure aflatoxin at levels over 100 parts per billion (ppb) aflatoxin and up to 60 ppm fumonisin (**Appendix B**).

The OTSC Feed and Fertilizer Control Service (FFCS) provides regulatory oversight for the distribution and use of corn containing aflatoxin over 20 ppb and fumonisin over 5 ppm in Texas, and all FFCS field investigators carry state and U.S. Food and Drug Administration (FDA) credentials. As the competent authorities in Texas, OTSC and FFCS monitor all One Sample Strategy program activities, and through cooperation with the USDA Risk Management Agency (RMA) (**Appendix C**), One Sample Strategy aflatoxin and fumonisin results are recognized as official results for crop insurance purposes as well as regulatory compliance.

ELIGIBILITY & PARTICIPATION

All firms licensed by the Texas Feed & Fertilizer Control Service are invited to participate. Firms agree to contribute:

- A written Sampling and Testing Plan (**Appendix D**);
- Industry recognized sample sizes, sample preparation methods and equipment;
- USDA/Association of Analytical Communities (AOACI)-approved testing methods;
- Recordkeeping and reporting; and
- Trained personnel.

OTSC does not charge for participation in the One Sample Strategy. Firms are responsible for all operating costs associated with the program, but the cost of conducting the analysis and generating official results may be passed along to the seller. Firms that test for aflatoxin are automatically enrolled in the of Aflatoxin Proficiency Testing (PT) Program (**Appendix T**) and have the option to file an annual Plan to Blend (**Appendix U**).

EMPLOYEE QUALIFICATION

At least two employees must be assigned to perform One Sample Strategy activities at each location. These employees:

- Must review the One Sample Strategy handbook and approved Sampling & Testing Plan prior to qualification;
- Must be trained prior to the OTSC qualification (**Appendix E**);
- May not wear clothing or headwear that represents any product or establishment other than OTSC while performing One Sample Strategy activities;
- Must meet the minimum age requirements established by the Texas Child Labor Law;
- May be required to pass a Texas criminal background check; and
- Are approved as OTSC designees authorized to issue official results.

As per the USDA Loss Adjustment Manual Standards Handbook (LAM), samples collected for crop insurance must be analyzed by personnel who are considered 'disinterested third parties'. One Sample Strategy designees may only analyze samples for crop insurance if:

- They are not engaged in purchasing and selling the grain, including senior management who oversee such activities; and
- The corn is not owned by the employee or relatives of the employee.

Firm management is responsible for conformance to these requirements. Family-owned operations may participate in the One Sample Strategy but cannot issue results for insurance.

PREVENTIVE CONTROLS

Preventive controls serve as a mechanism for continual assessment and improvement. OTSC designees monitor preventive controls and take corrective actions to maintain equipment and analytical performance at five points within the process (Table 1).

Table 1. Preventive control points, objectives, and parameters.

POINT	OBJECTIVE	CONTROL PARAMETER
Sample collection	Ensure that the sample represents the entire truckload of corn	USDA Grain Inspection, Packers and Stockyards Administration (GIPSA) sampling patterns; and Grind a 5 lb. (minimum) sample from individual truckloads, or Grind a 15 lb. (minimum) composite sample
Grinder check (Appendix F)	Ensure that the sample is finely ground and homogeneous	≥70% of the ground particles (% fines) pass through a 20 mesh sieve
Lab scale calibration (Appendix G)	Ensure that the scale is calibrated	50 gram weight standard measures between 49.5 - 50.5 grams
Control sample analysis (Appendix H)	Maintain analytical performance to accurately measure mycotoxin concentrations	Control sample test results duplicate within acceptable range (e.g., ±34% [20 - 40 ppb] for a 30 ppb aflatoxin control; ±20% [32-48 ppm] for a 40 ppm fumonisin control)
File Sample Verification (Appendix I)	Retain a representative file sample for verification analysis by OTSC Agricultural Analytical Service (AAS)	Verification results duplicate within acceptable range <i>Note: Verification results are not used for regulatory purposes</i>

SAMPLING & TESTING

Uniform procedures reduce the variability of test results (**Appendices J – N**). One Sample Strategy procedures are based on the USDA Loss Adjustment Manual (LAM), the GIPSA Aflatoxin Handbook, Grain Inspection Handbook, and Equipment Handbook. Each participating location submits a customized Sampling and Testing Plan to describe how the standard operating procedures will be implemented.

Companies may choose to sample some or all truckloads incoming and/or outbound, and trucks may be sampled either individually or as a composite. Official results for crop insurance can only be issued for individual, incoming truckloads. The benefits of reduced regulatory surveillance vary depending upon sampling frequency (Table 2).

Table 2. Sampling frequency/regulatory surveillance scenarios

Scenario	Description
A	If all corn is analyzed inbound (individual truckloads or composite) and segregated by toxin level; or all corn is analyzed outbound, the firm receives the full benefit of increased market confidence and reduced regulatory surveillance. OTSC will not sample or seize corn as it is distributed through the marketplace.
B	If some but not all corn is analyzed inbound and/or outbound, OTSC may sample incoming truckloads and/or truckloads that have not been tested outbound.

Option to Divide Before Grinding: For individual truckloads, original samples larger than 10 lbs. may be reduced using a GIPSA approved divider (e.g., Boerner or cargo). Composite samples may be reduced to 15 lbs. (minimum).

Subsampling After Grinding: Proper subsampling techniques provide a representative sub-portion of a ground sample for testing. If the company's milling equipment does not subsample the ground material into two or three portions, the firm must subsample using GIPSA-approved equipment or an approved alternate method.

RECORDKEEPING & REPORTING

All participating locations agree to keep records for a period of one year and make records available for OTSC review. Companies that issue official results also agree to share crop insurance sample information with RMA through OTSC. Records include:

- Scale tickets (to record the date, producer information, county of origin, weight, etc.)
- Sample log (**Appendix O**);
- Printed test results;
- File samples;
- Preventive control records (**Appendix P**);
- Certificate of analysis record (if official results are issued for crop insurance) (**Appendix Q**); and
- Corn exemption stamp (**Appendix R**).

MONITORING & CORRECTIVE ACTIONS

FFCS monitors personnel, equipment, and performance records to ensure compliance with the program standards (**Appendix S**). Unannounced monitoring visits occur weekly during harvest season at grain elevators. At facilities operating year-round, visits occur every 4-6 weeks throughout the year. During monitoring visits, an FFCS field investigator may:

- Observe sampling, grinding and testing procedures;
- Review records;
- Take corrective actions; and
- Collect file samples for verification analysis.

File samples collected by FFCS field investigators are analyzed (without further grinding) by the OTSC Agricultural Analytical Service (AAS) for:

- Aflatoxin using high performance liquid chromatography (HPLC); and
- Fumonisin using Ultra-high Performance Liquid Chromatography with a Tandem Mass Spectrometry Detector (LC/MS/MS).

OTSC compares the firm's aflatoxin and fumonisin result with the AAS result and reports the levels to the company's management. Verification results are not used for regulatory purposes and no 'Report of Analysis' is issued. When verification results do not agree, OTSC performs a review to find the cause of the discrepancy and initiates corrective actions.

Corrective actions may include:

- Adjustment or repair of equipment;
- Retraining of personnel;
- Correction of records;
- Assistance from the firm's management to improve processes;
- Suspension or removal of an employee or firm from the program; and/or
- Criminal investigation if OTSC suspects that aflatoxin results have been intentionally misrepresented.

CONTACT INFORMATION

Mary Sasser
Manager, Field Operations
Office of the Texas State Chemist
Phone: (979) 845-1121
Email: mary@otsc.tamu.edu

APPENDICIES

- A. [Equipment Checklist](#)
- B. [Rapid Test Kit Validation](#)
- C. [USDA Risk Management Agency Bulletin](#)
- D. [Sampling & Testing Plan](#)
- E. [Employee Qualification Checklist](#)
- F. [Particle Size Check Procedure](#)
- G. [Lab Scale Calibration Procedure](#)
- H. [Control Sample Analysis Procedure](#)
- I. [File Sample Procedure](#)
- J. [Sampling Procedure \(Individual Truckloads\)](#)
- K. [Composite Sampling Procedure \(Combined Truckloads\)](#)
- L. [Grinding Procedure](#)
- M. [Subsampling Procedure](#)
- N. [Official Sample Analysis Procedure](#)
- O. [Example Sample Analysis Log](#)
- P. [Preventive Control Records](#)
- Q. [Certificate of Analysis Record](#)
- R. [Corn Exemption](#)
- S. [Monitoring & Corrective Actions Checklist](#)
- T. [Aflatoxin Proficiency Testing Program](#)
- U. [Plan to Blend](#)

Early selection and procurement of equipment is essential for successful implementation of the One Sample Strategy. Refer to the [GIPSA Active Approved Equipment list](#) before purchasing and contact sales representatives early to ensure timely delivery. Example items are listed below. Equivalent items may be available from other suppliers.

Sampling & Grinding Equipment

- 6' spiral hand probe or hydraulic probe
 - [Part #39C-OH; 72" brass spiral probe with 12 openings](#)
 - [Part #72SBOH; 72" brass spiral probe with 11 openings](#)
- Sampling containers
- Grain test scale (to check the weight of original samples)
- Gram scale near the grinder (to weigh 100 g for particle size check)
- #20 wire-mesh sieve and pan
 - [Part # 20SS8F: 8" diameter grain sieve, 20 mesh wire sieve, stainless](#)
 - [Part # PS8F: matching bottom pan for the sieve](#)
- Optional:* Divider (to reduce sample before grinding)
 - [Part # 34: Boerner divider complete with 2 pans](#)
 - [Part # 292: Cargo type divider](#)
- Mill capable of producing $\geq 70\%$ fines
 - [Part # 9453: Grinder, 3-lb. Bunn with Part # 9517 Divider for Bunn Grinder](#)
 - [Part # EQMMS2010: Romer Series II Sub-Sampling Mill – 115V](#)
 - [Part # 70: Wonder Mill](#)
 - [Part # 43: Glen Mills Disk Mill](#)
- Optional:* Subsampling equipment or subdividing method (if mill is not equipped with diverter/sub-sampler)

Aflatoxin or Fumonisin Rapid Test Kits (Appendix B)

- Rapid test kit reader
- Rapid test kit printer (or equivalent printing capabilities)
- Rapid test kits
- Accessories (e.g., multi-channel pipettes; air pumping station, glassware, incubator, etc.)
- Calibration set (if not included with the kit)
- Reagents (e.g., methanol or ethanol; and distilled or deionized water)
- Laboratory scale (with a minimum division of 0.1 grams)
- 50 gram weight standard (to calibrate the laboratory scale)
 - [Part # WT-50F: 50 gram stainless steel weight, class F](#)
- File sample bags

Equipment Providers

- [Hoffman Manufacturing, Inc.](#), (800) 692-5962
- [Mill & Elevator Supply Co., Inc.](#), (800) 821-5578
- Wheatland Equipment Co. ([Seedburo](#) distributor), (903) 577-0637
- [Romer Labs](#), (636) 583-8600, office@romerlabs.com
- [Charm Sciences, Inc.](#), (800) 343-2170, info@charm.com
- [Vicam](#), (877) 228-4244, orders@vicam.com
- [Neogen Corporation](#), (800) 234-5333, foodsafety@neogen.com
- [EnviroLogix, Inc.](#), (866) 408-4597
- [R-Biopharm, Inc.](#) +49 (0) 61 51-8102-0
- [Grain Belt Supply](#), (800) 255-2742
- [Grainger](#), (800) 472-4643
- [GlenMills](#), (973) 777-0777

OBJECTIVE:

This policy describes the procedure and criteria for the validation of rapid mycotoxin test kits in support of the One Sample Strategy.

BACKGROUND:

Through industry’s adoption of the One Sample Strategy, the Office of the Texas State Chemist (OTSC) seeks to standardize sampling and testing equipment and processes to produce timely, accurate and reproducible mycotoxin test results. To achieve this goal, participating firms use rapid test kits that are performance verified by the U.S.D.A. Grain Inspection, Packers and Stockyards Administration (GIPSA). OTSC had previously validated these kits using the GIPSA protocol to expand the range of approval above 100 ppb. In 2016, OTSC expanded the One Sample Strategy to include fumonisin. Previous attempts by OTSC to validate fumonisin kits could not reproduce analytical results within the prescribed range contained in GIPSA protocol. Advances in testing technology, however, have yielded fumonisin kits that more closely mirror those produced by the OTSC Agricultural Analytical Service (AAS). GIPSA now requires approved kits to accurately measure up to 30 ppm, which more closely aligns with OTSC regulatory maximum levels for fumonisin for some target species.

In order to address the continual introduction of new aflatoxin and fumonisin rapid test kits on the market, a field validation process for may be used to validate GIPSA Performance Verified Test Kits.

A. Process for Validation (Figure 1):

1. Grain operator selects a [GIPSA Performance Verified Test Kit](#)
2. Grain operator submits One Sample Strategy Sampling and Testing Plan to OTSC;
3. AAS requests/receives GIPSA data package from Test Kit Manufacturer;
4. Grain operator analyst passes qualification exercise;
5. Grain operator analyst runs high and low OTSC control samples daily;
6. Grain operator analyst retains a file sample for each sample analyzed;
7. Texas Feed & Fertilizer Control Service (FFCS) collects records and file samples for verification by AAS;
8. AAS completes statistical data analysis and notifies the Texas Feed & Fertilizer Control Service (FFCS) upon completion of the validation;
9. Results that significantly deviate from the performance criteria (Tables 1 and 2) may be removed from the One Sample Strategy as an approved test kit.

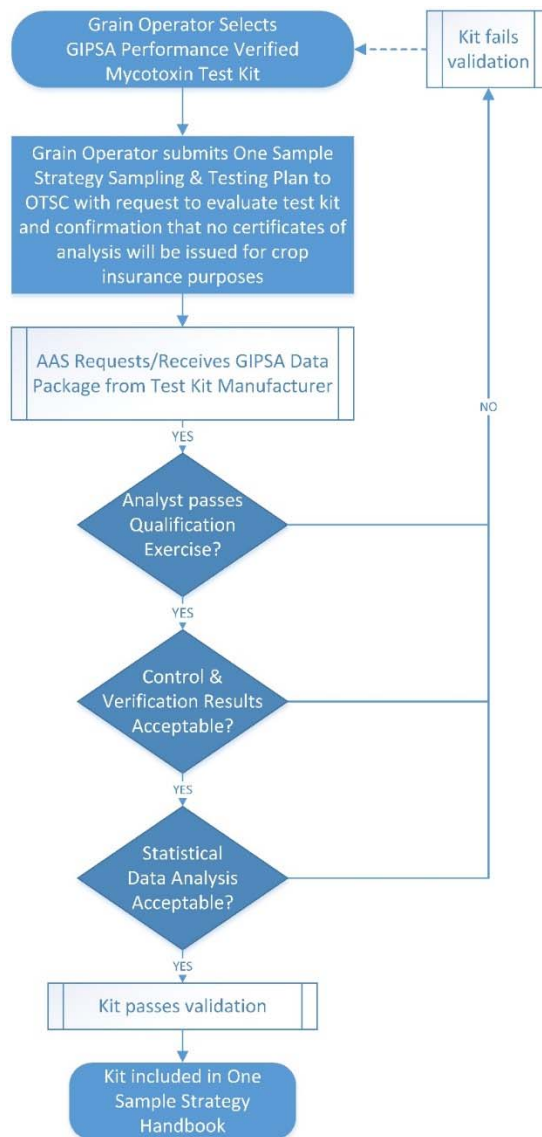


Fig.1 Test Kit Validation Process

B. Criteria for Validation:

1. **Analyst Qualification:** Analyst correctly follows GIPSA official instructions to produce four test results within the acceptable range of duplication (Tables 1 & 2):
 - a. Two analyses of a low concentration control sample; and
 - b. Two analyses of high concentration control sample.

Table 1. Aflatoxin Duplication Limits for control sample analysis.

If the Aflatoxin control is:	≤ 25 ppb	> 25 to ≤ 50 ppb	> 50 to ≤ 100 ppb	> 100 ppb
The Acceptable Duplication limit is:	± 40 %	± 34 %	± 25 %	± 20 %

Table 2. Fumonisin Duplication Limits for control sample analysis.

If the Fumonisin control is:	> 5 to ≤ 60 ppm	>60ppm
The Acceptable Duplication limit is:	± 20 %	± 30 %

2. **Control Sample Results:** Analyst documents control sample results and describes corrective actions if the initial result is out of the acceptable duplication limit
 - a. **Verification Sample Results:** The results from retained file samples that are collected by FFCS field investigators and analyzed (without further grinding) by AAS must duplicate within the acceptable limits.
 - b. **Statistical Data Analysis Results:** Overall statistical data analysis must indicate that the kit meets accuracy and precision requirements.
3. **Cost for Validation**
 - a. OTSC does not charge for test kit validation. Control sample material is provided free of charge to firms participating in the One Sample Strategy.



United States
Department of
Agriculture

Farm Production
and Conservation

Risk
Management
Agency

1400 Independence
Ave. SW,
Mail Stop 0801
Washington, DC
20250

BULLETIN NO.: MGR-17-015

TO: All Approved Insurance Providers
All Risk Management Agency Field Offices
All Other Interested Parties

FROM: Heather Manzano /s/ Heather Manzano 10/6/2017
Acting Administrator

SUBJECT: One Sample Strategy for Mycotoxins in Texas

BACKGROUND:

The Risk Management Agency (RMA) issued Manager's Bulletin MGR-11-011 on July 26, 2011, authorizing the "One Sample Strategy (OSS)" for aflatoxin testing in approved Texas elevator facilities for the 2011 crop year. The Bulletin stated RMA would annually reauthorize the program. RMA held discussions with the Office of the Texas State Chemist (OTSC), Regional Offices, and other interested parties and received written summary results from OTSC to determine whether to continue the program beyond the 2011 crop year. RMA issued Manager's Bulletin MGR-12-004 on April 12, 2012, authorizing the "One Sample Strategy" for aflatoxin testing in approved Texas elevator facilities for the 2012 and succeeding crop years.

ACTION:

For the 2017 and succeeding crop years, Approved Insurance Providers (AIPs) may consider OTSC-approved Texas grain elevator facilities to be approved laboratories for Mycotoxin testing for crop insurance purposes unless RMA or OTSC announces the suspension of OSS. The OTSC will provide a list of participating elevator facilities they have certified to test for Mycotoxins on their website for verification purposes at the following address: <http://otscweb.tamu.edu/Risk/OneSample/Default.aspx>

This list will be updated weekly. If an elevator is decertified by the OTSC, Mycotoxin tests conducted by that elevator after the date of decertification must not be used for Federal crop insurance purposes.

The OTSC will provide official test certificates of analysis documenting the level of Mycotoxin, which will be completed by the participating elevator and provided to the insured. AIPs using these test results for claims settlement must maintain a copy of this official test certificate for the claim file.

For fumonisin, the FDA has no published action levels or use restrictions for crops with 0 to 2.0 parts per million (ppm). Therefore, crop insurance policy provisions will provide quality adjustments for levels 2.1 ppm and above.

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AIPs may continue to use other approved private, State, or University laboratories for Mycotoxin testing in lieu of any elevators operating under the OTSC's OSS program. A link to a list of these approved sites can be found here: https://www.gipsa.usda.gov/fgis/serviceproviders_listing.aspx

DISPOSAL DATE:

December 31, 2017

Contact Information

Firm Name: _____

Main office phone: _____

Physical address (for FedEx deliveries): _____

Primary contact: _____

Email: _____

Phone: _____

Secondary contact: _____

Email: _____

Phone: _____

Additional information (i.e., satellite storage facilities, etc.): _____

Participation (include additional pages as necessary)

1. Which toxin(s) will your firm will test under the One Sample Strategy? (choose one or both below)

Aflatoxin: At what **Aflatoxin** level is grain rejected by your firm? _____ ppb

Fumonisin: At what **Fumonisin** level is grain rejected by your firm? _____ ppm

2. Does your firm segregate all grain by toxin level(s)? YES NO

3. Will your firm issue official results for crop insurance purposes? YES NO

4. Where will truckloads be tested? Inbound Outbound Both

5. What is your testing frequency? All loads Some loads Composite (See below)

6. Describe or illustrate the probe pattern(s) followed by your firm to collect a representative sample:

Comments

Describe any other methods that are unique to your operation (e.g., grinder cleaning method; subsampling method, etc.)

Composite Sampling Scheme

Please describe sampling frequency, equipment, and composite sample labeling/identification method, etc. For example, first truck out of every field is sampled; if the load tests below X ppb or X ppm (i.e., level rejected by firm), the next 3 semi-trucks or 6 bobtail trucks from the same field will be sampled as a composite; composite sample will be collected in a bucket and identified by a scale ticket with: farm name, field number, county of origin. Composite sample will be reduced with a Boerner or Cargo divider before grinding. Note: For composite samples, a minimum of 10 lbs. is required for grinding. Official results for crop insurance cannot be issued for composite samples.

Equipment & Methods

Describe the equipment your firm has allocated for the One Sample Strategy. Refer to GIPSA’s approved equipment list and the brand-specific equipment & supplies required for each test kit in the GIPSA Mycotoxin Handbook.

Item	In Place	On Order	N/A	Manufacturer/ Model	Comments
6’ spiral hand probe					
Hydraulic/pneumatic probe					
Sampling containers					
Grain test scale <i>(to check weight of min. 5 lb. sample)</i>					
Gram scale near the grinder <i>(to weigh 100g for grinder check)</i>					
20 wire mesh sieve					
Boerner or cargo grain divider & 2 pans <i>(optional equipment used to reduce samples larger than 10-pounds)</i>					
Mill capable of producing ≥70% fines					
Subsampling equipment (aka riffler)					
AFLATOXIN Rapid test kit * Refer to GIPSA PART #					
FUMONISIN Rapid test kit * Refer to GIPSA PART #					
Ability to print rapid test kit results					
Calibration set <i>(If not included with kit)</i>					
Rapid test kit accessories <i>(e.g., multi-channel pipette, etc.)</i>					
Methanol (or Ethanol)/Water <i>(if provided by commercial supplier)</i>					
Laboratory Scale <i>(minimum division of 0.1 grams)</i>					
50 gram weight standard					
File sample bags					

* [https://www.gipsa.usda.gov/fgis/metheqp/GIPSA Approved Mycotoxin Rapid Test Kits.pdf](https://www.gipsa.usda.gov/fgis/metheqp/GIPSA%20Approved%20Mycotoxin%20Rapid%20Test%20Kits.pdf)

Submit plan for approval to the Office of the Texas State Chemist (ATTN: Mary Sasser) at mary@otsc.tamu.edu.

Firm Name/Location		
Designee Name (print)		Date of Birth
Designee Signature		

By signing above, I confirm that I have received and read the One Sample Strategy Handbook, and agree to follow the program criteria and methods.

Sampling

Yes No

- 1. Employee follows the sampling pattern described in the firm’s approved sampling and testing plan
- 2. Employee collects representative sample (≥5 lb. single; ≥30 lb. composite)
- 3. Employee cleans and dries sampling equipment and containers

Grinding

Yes No

- 1. Employee correctly performs particle size check (_____%)
- 2. Employee cleans and dries mill, pans, dividers, and containers

Inv #: _____
Date: _____
Approved: <input type="checkbox"/> Yes <input type="checkbox"/> No

Aflatoxin Testing

Yes No

- 1. Employee correctly performs laboratory scale calibration
- 2. Employee collects and weighs a 50 g test sample
- 3. Employee correctly performs two analyses and results duplicate within acceptable limits (Table 1).

Inv #: _____
Date: _____
Approved: <input type="checkbox"/> Yes <input type="checkbox"/> No

Aflatoxin Test Kit (GIPSA Part #): _____
https://www.gipsa.usda.gov/fgis/metheqp/GIPSA_Approved_Mycotoxin_Rapid_Test_Kits.pdf

Control A# _____ Target: _____(ppb) Range _____(ppb) Results: A1: _____(ppb) & A2: _____(ppb)

*Control B# _____ Target: _____(ppb) Range _____(ppb) Results: B1: _____(ppb) & B2: _____(ppb)

Fumonisin Testing

Yes No

- 1. Employee correctly performs laboratory scale calibration
- 2. Employee collects and weighs a 50 g test sample
- 3. Employee correctly performs two analyses.
Results must duplicate within acceptable limits (Table 2).

Inv #: _____
Date: _____
Approved: <input type="checkbox"/> Yes <input type="checkbox"/> No

Fumonisin Test Kit (GIPSA Part #): _____
https://www.gipsa.usda.gov/fgis/metheqp/GIPSA_Approved_Mycotoxin_Rapid_Test_Kits.pdf

Control A# _____ Target: _____(ppm) Range _____(ppm) Results: A1: _____(ppm) & A2: _____(ppm)

Control B# _____ Target: _____(ppm) Range _____(ppm) Results: B1: _____(ppm) & B2: _____(ppm)

Table 1. Aflatoxin Duplication Limits for control sample analysis.

If the Aflatoxin control is:	≤ 25 ppb	> 25 to ≤ 50 ppb	> 50 to ≤ 100 ppb	> 100 ppb
The Acceptable Duplication limit is:	± 40 %	± 34 %	± 25 %	± 20 %

Table 2. Fumonisin Duplication Limits for control sample analysis.

If the Fumonisin control is:	> 5 to ≤ 60 ppm	> 60 ppm
The Acceptable Duplication limit is:	± 20 %	± 30 %

Purpose: Maintain mill performance

Objective:

Ensure that $\geq 70\%$ of the ground particles (% fines) pass through a 20 mesh sieve

Frequency:

Once daily and after repair or electrical outage

Equipment & Materials:

- Whole corn (~100 grams with $\leq 14\%$ moisture)
- Mill
- No. 20 wire woven mesh sieve
- Lab scale

Records:

- Particle Size Record

References:

- GIPSA Mycotoxin Handbook, Chapter 4.7: Checking Particle Size
- GIPSA Mycotoxin Handbook, Chapter 4.6: Cleaning Grinders
- GIPSA Mycotoxin Handbook, Chapter 2, Laboratory Safety

Method:

1. Clean and dry grinding equipment
2. Grind corn in the mill
3. Weigh 100 grams of ground sample on the scale (record weight)
4. Place the 100 grams of ground sample in the top of the sieve
5. Cover the sieve with the lid (if available)
6. Shake the ground sample into the bottom pan
7. Weigh the portion that passed through the sieve (record weight)
8. Calculate the percent (%) fines:

$$\frac{\text{Portion passed through sieve (grams)}}{\text{Entire ground portion (grams)}} \times 100 = \% \text{ fines}$$

9. Complete the Particle Size Record
10. Take corrective action if the % fines are $< 70\%$
11. Properly dispose of the ground material
12. Clean and dry the grinding equipment

Corrective Actions:

- Adjust mill;
- Notify your supervisor to request equipment repair or replacement, and post a repair note on the mill; and/or
- Grind samples as many times as necessary to achieve $\geq 70\%$ fines.

Purpose: Maintain scale (balance) performance

Objective:

Ensure that the scale is calibrated to weigh a 50 gram weight standard within ± 0.5 grams (49.5 - 50.5 grams)

Frequency:

Once daily and after repair or electrical outage

Equipment & Materials:

- 50 gram weight standard
- Filter paper or tongs
- Lab scale with minimum division of 0.1 gram

Records:

- Lab Scale Calibration Record

References:

- GIPSA Equipment Handbook, Chapter 2.4: Testing

Method:

Note: Keep the weight standard clean of particles or fingerprints.

Handle the weight with filter paper or forceps.

Store the weight in a clean and dry container.

1. 'Zero out' the balance with nothing on the scale
2. Pick up the 50 gram weight standard with filter paper or tongs
3. Place the 50 gram weight standard on the scale
4. Complete the Laboratory Calibration Record
5. Return the 50 gram weight standard to the storage box using the filter paper or tongs
6. Take corrective actions if the scale is not calibrated within an acceptable range (49.5 - 50.5 grams)

Corrective Actions:

- Clean the weight standard and scale before recalibrating
- Notify your supervisor to request equipment repair or replacement and post a repair note on the scale

Purpose: Maintain analytical performance to accurately measure the level of aflatoxin or fumonisin within a sample of OTSC reference material.

Objective:

Ensure that aflatoxin or fumonisin control sample test results are within an acceptable range of duplication (Tables 1 & 2)

Table 1. Aflatoxin Duplication Limits for control sample analysis.

Aflatoxin control sample test result (ppb)	Duplication limit (%)	Acceptable Range Examples
≤ 25	± 40	If the control is 20 ppb, the acceptable range is 12 - 28 ppb
> 25 to ≤ 50	± 34	If the control is 40 ppb, the acceptable range is 26 - 54 ppb
> 50 to ≤ 100	± 25	If the control is 80 ppb, the acceptable range is 60 - 100 ppb
> 100	± 20	If the control is 160 ppb, the acceptable range is 128 - 192 ppb

Table 2. Fumonisin Duplication Limits for control sample analysis.

Fumonisin control sample test result (ppm)	Duplication limit (%)	Acceptable Range Examples
≤ 60	± 20	If the control is 40 ppm, the acceptable range is 32 - 48 ppm
> 60	± 30	If the control is 100 ppm, the acceptable range is 70 - 130 ppm

Frequency:

Firms that intend to issue certificates of analysis for crop insurance purposes: Run control twice daily, after changing to a new lot of test kits, or after an electrical outage.

Firms that do not issue certificates of analysis for crop insurance purposes: Run control twice on the first operating day of the week (AM and PM), after changing to a new lot of test kits, or after an electrical outage.

Note: Participating firms receive enough bottles of OTSC control sample to run the control analysis at least twice daily.

Equipment & Materials:

- Test kit reader, printer, and calibration set
- Rapid test kit and accessories
- Office of the Texas State Chemist reference material (50 grams)
- Calibrated lab scale with minimum division of 0.1 gram

Records:

- Control Sample Record

References:

- GIPSA Official Instructions
- Manufacturer's product inserts
- GIPSA Mycotoxin Handbook, Chapter 2, Laboratory Safety

Method:

Note: Calibrate the test kit reader according to the manufacturer's instructions.

1. Weigh 50 grams of the control sample on the lab scale
2. Follow the official GIPSA instructions for your test kit
3. Complete the Control Sample Record
4. Take corrective actions if the control sample result exceeds duplication limits (Table 1 or 2)

Corrective Actions:

- Check expiration dates on reagents and test kit; power off/on test kit reader and recalibrate; check pipettes, etc.
- Notify your supervisor to request assistance from OTSC's Quality Assurance Manager

Purpose: Retain a representative file sample for verification analysis by OTSC Agricultural Analytical Service (AAS).

Objective:

Ensure that the file sample is properly labeled and stored.

Frequency:

Retain a file sample for each analysis.

Equipment & Materials:

- Retained corn sample (approximately 500-700 grams)
- File sample bag
- Spoon (to transfer the ground corn)
- Marker (to label the file sample bag)

Records:

- Scale ticket (to identify the sample)

References:

- GIPSA Mycotoxin Handbook, Chapter 4, Sample Preparation

Method:

1. Designees clearly label the file sample bag with the following information:
 - Date;
 - Producer’s name;
 - County of origin;
 - Scale ticket number(s) (list all scale ticket numbers for composite samples);
 - Aflatoxin and/or fumonisin level; and
 - Analyst initials.

Note: When the county of origin is unknown, record the county where the sample was tested.

2. Place the retained portion in a file sample bag
3. Store file sample bag in a manner that will maintain the integrity of the sample
Note: Samples ≤20 parts per billion (ppb) should be stored separately from samples >20 ppb.
4. Retain the file sample for a minimum of:
 - 15 days if ≤20 parts per billion (ppb) aflatoxin or ≤ 5 ppm fumonisin.
 - 6 weeks if >20 ppb aflatoxin or > 5ppm fumonisin.

Note: feed mills and firms with blending plans may be required to retain file samples for longer time periods.

4. FFCS field Investigators collect file samples for verification analysis by AAS.

5. Reports will be available online at otscweb.tamu.edu/risk/OneSample (Figure 1). Active One Sample Strategy participants will receive a username and temporary password by email. For technical assistance, please email oss@otsc.tamu.edu or contact your area Investigator.

Facility ID	Analyte	SampleNumber	Date Analyzed	OTSC Result	Facility Result
1	AFLATOXIN	-6358	08/15/2017	< 1 ppb	4 ppb
1	AFLATOXIN	-6364	08/15/2017	< 1 ppb	5 ppb
1	AFLATOXIN	-6371	08/15/2017	< 1 ppb	7 ppb
1	FUMONISIN	-6358	08/15/2017	< 1 ppm	
1	FUMONISIN	-6364	08/15/2017	< 1 ppm	
1	FUMONISIN	-6371	08/15/2017	2 ppm	

Figure 1. Example mycotoxin verification report.

Purpose: Maintain uniform sampling methods.

Objective:

Ensure that each sample is representative of the entire truckload of corn.

Frequency:

Refer to the approved Sampling and Testing Plan for your firm. Some or all truckloads may be sampled inbound and/or outbound. Truckloads may be sampled individually or as a composite. Note: A minimum of 5 lbs. is required for samples submitted by crop insurance adjusters.

Equipment & Materials:

- 6' spiral hand probe or hydraulic probe (to collect the sample)
- Sampling containers (to transport the sample)
- Grain test scale (to check the weight of the sample)

Records:

- Scale ticket (to record the date, producer information, county of origin, weight, etc.)

References:

- USDA Risk Management Agency Loss Adjustment Manual, PAR. 102 F (2) (d) Representative Sampling Pattern Guidelines (Fig. 1)
- GIPSA Grain Inspection Handbook, Book 1, Chapter 2, Probe Sampling

Method:

1. Using clean and dry sampling equipment;
2. Collect a 5 pound (minimum) sample:
 - Select the appropriate sampling pattern;
 - If using a hand probe, angle the tip of the closed probe at 10° from vertical;
 - If using a hand probe, push the probe to the bottom of the trailer; If using a hydraulic/pneumatic probe, use caution to collect the sample from the all levels of the grain mass in the truck;
 - Open the probe as you begin to pull the probe up;
 - Close the probe before pulling it out of the grain;
 - Empty the grain into a clean and dry sample container.
3. Large samples may be reduced to 5 pounds using an approved divider:
 - For individual truckload, samples >10 lbs. may be reduced;
 - For composite truckloads, samples >30 lbs. may be reduced.
4. Clean and dry sampling equipment (for hydraulic/pneumatic probes, discard the first 200 g from the first probe to avoid cross contamination from the previous load);
5. Deliver the sample to the grinder with the Scale Ticket.

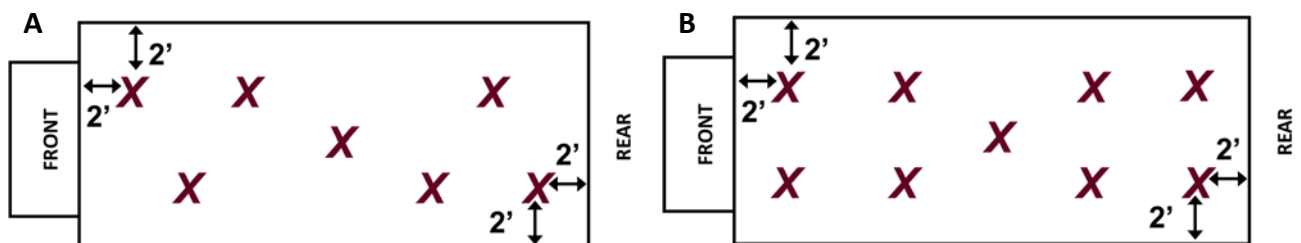


Figure 1. Representative Sampling Patterns. (A) PATTERN 1: With the tip of the probe angled 10 degrees, following the pattern below to insert the probe seven times when grain is loaded *more* than four feet deep in a flat-bottom truck or trailer. (B) PATTERN 2: With the tip of the probe angled 10 degrees, following the pattern below to insert the probe nine times when grain is loaded *less* than four feet deep in a flat-bottom truck, trailer, or when dealing with difficult sampling scenarios.

Purpose: Promote uniform sampling methods to meet grain operator and crop insurance needs.

Objective:

Ensure that each individual sample is representative of the entire truckload of corn, and the combined composite sample represents the unit.

Frequency:

Refer to the approved Sampling and Testing Plan for your firm.

Equipment & Materials:

- 6' spiral hand probe or hydraulic probe (to collect the sample) or hydraulic pneumatic probe
- Sampling containers (to transport the sample)
- Grain test scale (to check the weight of the sample)
- Boerner or cargo divider

Records:

- Scale tickets (to record the date, producer information, county of origin, sample weight, etc.) for each individual truckload in the composite sequence.

References:

- GIPSA, Grain Inspection Handbook. Book 1. Chapter 1. Section 1.8 Proportional Sampling
- USDA Risk Management Agency Loss Adjustment Manual, PAR. 102 F (2) (d) Representative Sampling Pattern Guidelines
- GIPSA Grain Inspection Handbook, Book 1, Chapter 2, Probe Sampling

Method:

Follow the method described in the approved Sampling and Testing Plan for your firm.

Example Method for Aflatoxin:

1. Using clean and dry sampling equipment;
2. Sample and test the first truck from every field;
3. If the first truck from a field tests under 20 parts per billion (ppb); then:
 - a. The first truck is unloaded in the appropriate bin according to aflatoxin level;
 - b. Samples from the same field are collected (3 semi-trucks or 6 bobtail trucks);
 - c. Each individual sample (at least 10 lbs.) is reduced through a Boerner or cargo type divider;
 - d. The entire composite sample (at least 15 lbs.) is ground;
 - e. A sub-portion of the ground sample is tested for aflatoxin.
4. If the first truck from a field tests over 20 ppb; then:
 - a. Each individual truckload is tested and segregated according to aflatoxin level.

Constraints:

- Scale tickets must be kept with the composite sample;
- Sample information for each truckload must be recorded in the sample log;
- All scale ticket numbers are included on the file sample bag;
- The composite sampling scheme may be adjusted at the end of working day if a field produces less than the minimum number of truckloads. For example: 2 semi-trucks, 20 lb. composite sample; 3 bobtails, 15 lb. composite sample.

Purpose: Promote uniform grinding methods.

Objectives:

- Ensure that the grinder is cleaned to avoid cross contamination; and
- Ensure that each corn sample is ground to a sufficiently fine particle size to produce a homogeneous blend for testing.

Frequency:

Refer to the approved Sampling and Testing Plan for your firm.

Equipment & Materials:

- Representative corn sample (minimum 5 lbs. for individual truckloads; minimum 15 lbs. for composite samples) with $\leq 20\%$ moisture
- Mill (to grind the sample)
- One or more pans (to collect the ground sample)
- Cleaning method and/or equipment (to flush or vacuum the mill)

Records:

- Scale ticket (to record the date, producer information, county of origin, weight, etc.)

References:

- GIPSA Mycotoxin Handbook, Chapter 4, Sample Preparation
- GIPSA Mycotoxin Handbook, Chapter 4.6: Cleaning Grinders

Method:

1. Clean and dry grinding equipment, or flush by grinding and discarding at least the first 200 g of the sample or physically cleaning the grinder
2. Grind the entire sample
3. Collect a sub-portion for aflatoxin and/or fumonisin testing

Purpose: Collect a sub-portion of ground corn for testing and retain the remaining portion as a file sample (Fig. 1).

Objective:

Ensure that the subsample represents the aflatoxin and/or fumonisin concentration of the entire truckload.

Frequency:

Refer to the approved Sampling and Testing Plan for your firm.

Equipment & Materials:

- Ground corn sample
- Grain scale (to weigh the ground sample)
- Container (to transport the sample)
- Spatula or spoon
(to stir ground corn and collect portion for testing)
- Scale with a minimum division of 0.1 gram
(to weigh a 50 g portion for testing)

Records:

- Scale ticket (to identify the sample)

References:

- GIPSA Mycotoxin Handbook, Chapter 4, Sample Preparation

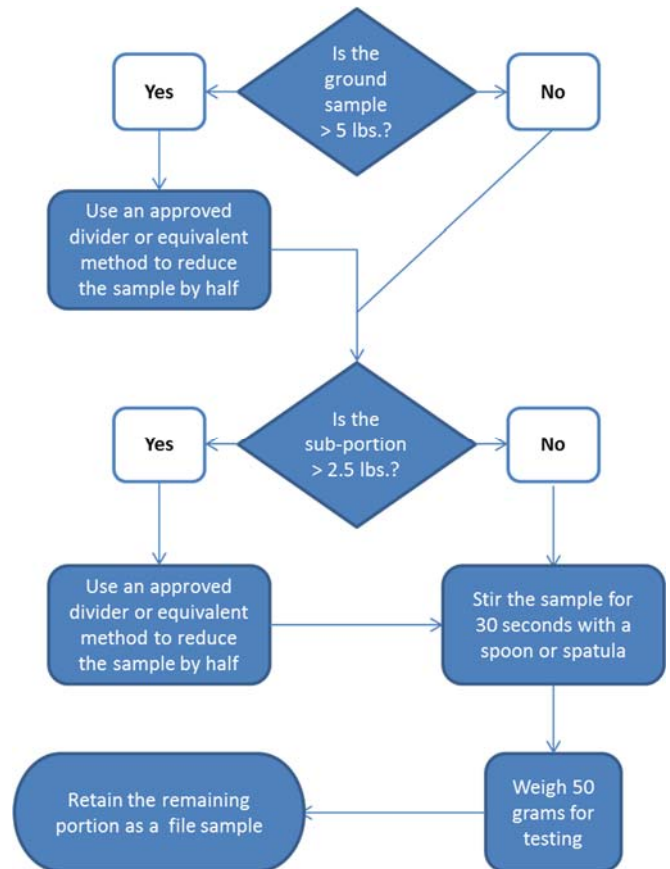


Figure2. Subsampling decision tree

Method:

1. Choose the appropriate method to subdivide:
 - A. *If the mill subdivides and the sub-portions are <2.5 lbs. (<1,135 grams):*
 - i. No further subdivision is necessary;
 - ii. Keep one portion for the official test and file sample. Discard the unused portion(s).
 - B. *If the mill subdivides and the sub-portions are >2.5 lbs. (>1,135 grams):*
 - i. Use an approved divider or equivalent method to reduce one of the portions by half.
 - ii. Keep one portion for the official test and file sample. Discard the unused portion(s).
 - C. *If the mill does not subdivide and the sample is >5 lbs. (>2,267 grams)*
 - i. Use an approved divider or equivalent method (as described in the Sampling & Testing plan) to reduce the sample by half; and
 - ii. Repeat the process to reduce the sub-portion by half again.
 - iii. Keep one portion for the official test and file sample. Discard the unused portion(s).
2. Stir the subdivided sample portion for 30 seconds to produce a homogenous blend
3. Weigh 50 grams of the blended sample on the scale
4. Retain the remaining portion as a file sample

Purpose: Accurately measure the aflatoxin and/or fumonisin concentration of a sample.

Objective:

Ensure that the reported sample test results are timely, accurate, and reproducible.

Frequency:

Refer to the approved Sampling and Testing Plan for your firm.

Equipment & Materials:

- Test kit reader, printer, and calibration set
- Rapid test kit and accessories
- Office of the Texas State Chemist (OTSC) aflatoxin and/or fumonisin reference material (50 grams)
- Calibrated lab scale with minimum division of 0.1 gram

Records:

- Scale ticket (or tickets for composite sample analysis)
- Sample log (to record the date, producer information, test result, analyst, etc.)

References:

- GIPSA Official Instructions
- Manufacturer's product inserts
- GIPSA Mycotoxin Handbook, Chapter 2, Laboratory Safety

Method:

Note: Calibrate the test kit reader according to the manufacturer's instructions.

1. Weigh 50 grams of the sample on the lab scale
2. Follow the official GIPSA instructions for your test kit

If the initial test results are above the range of the test kit, follow the official GIPSA instructions for supplemental analysis.

NOTE: Supplemental analysis is not required for Romer Fluoroquant® Afla ([GIPSA Memorandum #249, 8/2/12](#)) and Vicam AflaTest® ([GIPSA Memorandum #257, 7/30/2013](#))

3. Enter sample information in the sample log; and
4. Complete the sample ticket (to record the date, producer information, county of origin, weight, etc.)

Constraints:

- Under no circumstances may the truck be re-sampled and tested a second time by the same establishment or company (if there are multiple locations)
- Before unloading, the producer may request that a second 50 gram sample (obtained from the file sample) be analyzed and the average of the first and second analysis will be reported as the official result
- Texas Commercial Feed Act §141.104. Independent Analysis

AFLATOXIN ANALYSIS SAMPLE LOG

Firm Name							Location		
Date Collected	Scale/Log Number	Farmer Name	Farm Number	Bushel Weight	Moisture	Analyst Initials	Run 1 Result	Run 2 Result	Final Result <i>(Avg. Run 1&2)</i>

APPENDIX P: Preventive Control Records

NAME OF FIRM
City, TX

2017 Particle Size Record

Date	Grinder Initials	Initial Result	If the initial Result is outside of the acceptable range, describe your corrective actions & enter the result after adjustment

NAME OF FIRM
City, TX

2017 Lab Scale Calibration Record

Date	Analyst Initials	Initial Calibration Result	If the initial Calibration Result is outside of the acceptable range, describe your corrective actions & enter the result after adjustment

NAME OF FIRM
City, TX

2017 Aflatoxin Control Sample Record

Date	Time	Analyst	Control Sample (ppb)*	Initial Test Result (ppb)	If the Initial Result is outside of the acceptable duplication range*, describe your corrective actions & enter the result after adjustment.

FIRM NAME
City, TX

2017 Fumonisin Control Sample Record

Date	Time	Analyst	Control Sample (ppm)*	Initial Test Result (ppm)	If the Initial Result is outside of the acceptable duplication range*, describe your corrective actions & enter the result after adjustment.

Purpose: Share information about mycotoxin samples submitted for crop insurance with Office of the Texas State Chemist (OTSC) and the USDA Risk Management Agency (RMA).

Objective: Ensure that results for crop insurance purposes are reported accurately OTSC and shared with RMA.

Frequency: Send sample information to OTSC for each Certificate of Analysis issued for crop insurance purposes.

Equipment and Materials:

- Sample log
- Access to computer and email (required)
- Certificate of Analysis Record (Microsoft Excel macro)

Records:

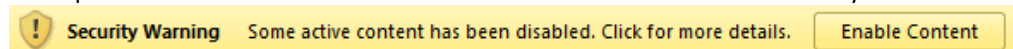
- Certificate of Analysis (Figure 1)

References:

- Certificate of Analysis Record instructions

Entering Sample Information:

1. Open Certificate Record.xls file and select 'Enable Content' on the security bar.



2. Select the 'Sample Data' button
3. Enter or copy/paste crop insurance sample information in columns A-J in the data worksheet:
 - A. DateCollected: date sampled
 - B. ScaleTicketNo: scale ticket or Log number
Note: Add 'R' (rejected) or 'ND' (no dump) to the scale ticket #when entering rejected load information
 - C. FarmNo: farm number
 - D. FarmName: farm name
 - E. SamplerID: enter 'OTSC Designee' (incoming) or 'Insurance Adjuster' (submitted)
 - F. DateAnalyzed: date tested
 - G. AnalystID: name of analyst (as it appears in the 'cAnalyst' worksheet)
 - H. Dfactor: dilution factor (blank = zero)
 - I. RunOneResult: result of first test (or first result after supplemental analysis)
 - J. RunTwoResult: second test result (with or without dilution) done at producer's request
4. Select 'Calculate' to see FinalResult (column K). FinalResult is automatically calculated as the average of RunOne and RunTwo; average is reported on the Certificate of Analysis.
5. Select File > Save As

Printing a Certificate of Analysis:

* A Certificate of Analysis cannot be printed for results ≤ 20 ppb aflatoxin or ≤ 5 ppm fumonisin

1. Select 'Certificate' button on the 'Main' worksheet
2. Click to select a scale ticket from the Certificates Management list
3. Select 'Print'
4. Select 'Print > choose print details (printer or PDF) > OK

Reporting Results to OTSC:

1. Save the Certificate Record file (.xls)
2. Email the Certificate Record.xls file as an attachment to mary@otsc.tamu.edu on a daily basis.

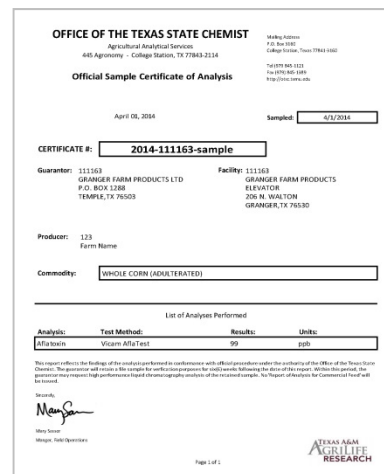


Fig. 1 Certificate of Analysis

The Office of the Texas State Chemist (OTSC) administers the One Sample Strategy, a voluntary risk management program for Texas grain facilities that are licensed by Feed and Fertilizer Control Service (FFCS) to distribute corn over 20 parts per billion (ppb) aflatoxin or fumonisin over 5 ppm. As part of the One Sample Strategy, OTSC verifies the proficiency of grain elevator employees to accurately measure mycotoxins in corn. Since mycotoxin measurements reported by OTSC designees are recognized as official OTSC results, corn distributed by One Sample Strategy facilities may be exempt from OTSC regulatory sampling and seizure.

The following information is intended to describe the criteria used by FFCS to determine if corn is exempt from regulatory sampling and aflatoxin testing; and describe the use and limitations of the OTSC One Sample Strategy stamp/sticker (Fig. 1) by participating firms.

Each One Sample Strategy facility receives a stamp (or equivalent stickers) from OTSC. The imprint of the stamp/sticker is placed on shipping documentation for outbound truckloads of corn and/or sewn-on deer corn tags. FFCS field investigators accept the imprint as evidence that the corn has been tested according to the One Sample Strategy criteria and methods. OTSC will not collect a regulatory sample for aflatoxin or fumonisin testing when One Sample Strategy corn is encountered in the market.



Figure 1. Example OTSC One Sample Strategy stamps for: (left) firms that have tested all loads inbound and segregated by mycotoxin level; and (right) firms that test individual truckloads outbound.

Corn Exemption Eligibility Criteria

Corn is exempt from regulatory sampling, testing, and/or seizure when FFCS field staff determine, through review of records, that:

- a) A participating One Sample Strategy facility tests every incoming truckload of corn, segregates corn by mycotoxin level, and directs corn to the appropriate market channels; and/or
- b) The outbound documentation for an individual truckload of corn from a One Sample Strategy participant includes an imprint of the OTSC One Sample Strategy stamp or sticker; or
- c) Records indicate that all incoming corn purchased by an end user has been supplied by, or tested at, an eligible One Sample Strategy participant(s).

End users who purchase all corn from, or test all corn at, a One Sample Strategy location(s), should be aware that the benefit of the corn exemption (i.e., reduced regulatory surveillance) depends upon the availability of complete purchase records for FFCS review, and extends only so long as the One Sample Strategy supplier remains an eligible participant in the program.

Use of the OTSC One Sample Strategy stamp/sticker

One Sample Strategy firms may use the OTSC One Sample Strategy stamp/sticker to:

- a) Imprint outbound shipping documents; and/or
- b) Imprint sewn-on deer corn tags (not bags) or make copies of an imprinted tag; and/or
- c) Imprint sewn-on deer corn tags (not bags) with the following text:
'One Sample Strategy- Firm's OTSC license number' (e.g., One Sample Strategy-012345).

Limitations

One Sample Strategy participants must conform to OTSC Feed Industry Memorandum 5-12 and/or 5-20, all aspects of the Texas Commercial Feed Rules, and the One Sample Strategy criteria and methods. In addition:

- a) OTSC One Sample Strategy stamps/stickers remain property of OTSC and may be recalled by OTSC if the facility withdraws from the program or is suspended or removed; and
- b) Sewn-on deer corn tags with the OTSC-issued stamp imprint may not be distributed in the marketplace if the facility withdraws from the program or is suspended or removed.

One Sample Strategy Blending Plan

Firm Name:

Date:

Firm Location:

Investigator #:

Refer to the firm's approved Sampling and Testing Plan as you review records and procedures. Immediately contact the OTSC Quality Assurance Manager if results or records are out of conformance. Document discussions with management on the Post-Inspection Form. Attach copies of the following records: Particle Size Record; Lab Scale Record; Control Sample Record(s); and Sample Log.

File Samples					
Scale Ticket/Log #	Date Analyzed	TX County of Origin	Aflatoxin (ppb)	Fumonisin (ppm)	Analyst (or initials)

- Yes** **No**
- File Samples:** Do designees correctly label file samples?
- Sampling & Sample Size:** Do designees use approved equipment and follow the sampling pattern described in the approved Sampling & Testing Plan to collect at least the minimum sample size?
- Grinder Check:** Do designees perform the daily grinder check and enter results in the particle size record?
- a) Date: _____ Result: _____%
- b) Date: _____ Result: _____%
- c) Date: _____ Result: _____%
- Lab Scale Check:** Do designees perform the daily lab scale calibration check with a 50-gram weight standard and enter the results in the lab scale record?
- Control Samples:** Do designees perform the control sample analysis and document results on the Control Sample Record?
- Crop Insurance:** If the firm issues Certificates of Analysis for crop insurance, has the certificate information been shared with OTSC?

DATE RANGE: _____ to _____

TOTAL # of Samples Tested: _____

MAXIMUM Levels Tested: _____ ppb **Aflatoxin** and/or _____ ppm **Fumonisin**

MINIMUM Levels Tested: _____ ppb **Aflatoxin** and/or _____ ppm **Fumonisin**

Participation in the One Sample Strategy (OSS) ensures timely, accurate and repeatable official results that help you manage mycotoxin risk, but have you ever wondered how your company's analytical performance compares with others? As an extension of the One Sample Strategy, firms that analyze for aflatoxin are provided with a free 100g packet of Aflatoxin Proficiency Testing (PT) sample once each year (July). This sample is different from the daily control material – it won't be labeled with the level of aflatoxin and everyone in the program gets the same ground material. Your lab runs the sample twice, submits the results through the program Website and then views an Aflatoxin PT report that compares everyone's anonymous results. General instructions are below. For additional information, please see the OTSC-Texas A&M AgriLife Research Aflatoxin Proficiency and Control Program page at <http://pt.tamu.edu>.

A. Watch for your PT sample and unique lab number assignment to arrive by mail in early July

B. Setup your account (or login with an existing account)

1. Go to <http://pt.tamu.edu>
2. Select '[Setup your Account \(First Time User\)](#)'
3. Enter your assigned Aflatoxin PT Lab number
4. Enter your email address
5. Select 'Reset Password' to receive an email with your password

C. Weigh, extract and analyze two 50 g samples and document the results of both analyses

Note: Any OTSC designee may run the analyses but the same designee must run both tests on the same day.

D. Submit your results through the Laboratory Data Reporting system during the submission period

1. Go to <http://pt.tamu.edu> and select '[Laboratory Login](#)'
2. Login with your Aflatoxin PT Lab Number & password
3. Select '**Enter Sample Data**' (Figure 1)
4. Enter your test kit information:
 - i. Method (e.g., organic, water)
 - ii. Test kit brand/manufacturer (or part number)
 - iii. Testing format: Select 'Kit'
5. Enter your sample results:
 - i. Run 1 (ppb)
 - ii. Run 2 (ppb)
 - iii. Test Type: Select 'Total'
6. Select 'Submit Data'

Note: The system allows only one total aflatoxin entry per lab. Please contact technical support to request corrections/resubmission.

E. Verify that your data has been entered correctly (optional)

7. Go to <http://pt.tamu.edu> and select '[Laboratory Login](#)'
8. Login with your Aflatoxin PT Lab Number & password
9. Select '**Verify Entered Data**'
10. If no data has been submitted: Select 'Enter Sample Data' as described above
11. If two results have already been submitted, the page will display your entry as follows:

We have received the follow results for lab 1000:
Total aflatoxin: 43.43 35.64

F. Review your Aflatoxin PT Report (Available in early October)

1. Go to <http://pt.tamu.edu> and select '[Laboratory Login](#)'
2. Select '**View Reports**'
3. Login with your Aflatoxin PT Lab Number & password
4. Select options to 'Download Report' for your files

The screenshot shows a web form for entering sample data. It contains the following fields and options:

- Method: [Text input field]
- Brand of Test: [Text input field]
- Testing Format: [Dropdown menu with 'Kit' selected]
- Sample Results:
 - Run 1 (ppb): [Text input field] (0.00)
 - Run 2 (ppb): [Text input field] (0.00)
- Test Type: [Radio button selected] Total [Radio button unselected] B1

Fig. 1. Sample data entry form

Firms participating in the One Sample Strategy have the option to submit a pre-season blending plan as a supplement to their annual Sampling and Testing Plan. Firms with an approved blending plan receive a blending permit from the Office of the Texas State Chemist (OTSC). A blending permit allows the facility to properly label and distribute unprocessed whole corn originally containing aflatoxin or fumonisin after blending with similar corn, so that the final blended product is below the appropriate maximum levels in corn used in animal feed. Steps toward an approved blending plan are described below and detailed in the following Feed Industry Memoranda, which are available at <http://otscweb.tamu.edu/Laws>:

- Memo 5-12. Distribution of Aflatoxin-Containing Whole Grain and Oilseed in Commercial Channels and Their Use in Mixed Feeds
- Memo 5-20. The Distribution of Fumonisin-Containing Whole Grain and Screenings in Commercial Channels and Their Use in Mixed Feeds

Blending Plan Steps:

- A. Submit your plan to blend as a supplement to your Sampling and Testing Plan and include:
1. Which bin(s) have been identified to store segregated corn prior to blending;
 2. Outbound testing frequency (e.g., all loads, every X load, composite sampling scheme);
 3. A disposition plan for any corn that tests >500 ppb aflatoxin;
 4. Further blending when a load of blended corn tests above the maximum level; and
 5. A 'Blended Corn' label for the appropriate species (Fig. 1 & 2).

<p>BLENDED CORN</p> <p>This product contains between ____ and ____ ppb aflatoxin determined on <u>(date)</u>. To be fed only to finishing cattle in confinement.</p> <p>Net weight ____ or may appear on invoice.</p> <p>WARNINGS: May not be fed to lactating dairy cattle or lactating dairy goats. Not for human use.</p> <p>Manufactured By: Name of Manufacturer Address of Manufacturer City/State/Zip of Manufacturer Net Wt. ____ lb. (____ kg)</p>	<p>BLENDED CORN</p> <p>This product contains between ____ and ____ ppb fumonisin determined on <u>(date)</u>. To be fed only to ruminants >3 months old being raised for slaughter or mink raised for pelt production not to exceed 50% of diet.</p> <p>Net weight ____ or may appear on invoice.</p> <p>WARNINGS: May not be fed to equids or rabbits. Not for human use.</p> <p>Manufactured By: Name of Manufacturer Address of Manufacturer City/State/Zip of Manufacturer Net Wt. ____ lb. (____ kg)</p>
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Figure 1. Example blended corn label for aflatoxin **Figure 2.** Example blended corn label for fumonisin

- B. Receive your approved Blending Plan Permit from OTSC
- C. Segregate and blend corn:
1. >300 ppb aflatoxin with other corn >20 ppb to a level under 200 ppb aflatoxin
 2. >60 ppm fumonisin with other corn to a level under 60 ppm fumonisin
 3. >100 ppm fumonisin with other corn to a level under 100 ppm fumonisin
- D. Sample, test and label outbound loads according to your blend plan and One Sample Strategy methods, and store blended corn file samples separately from official file samples.
- E. Do not ship blended corn or rations containing blended corn out of state
- F. Keep records for two years