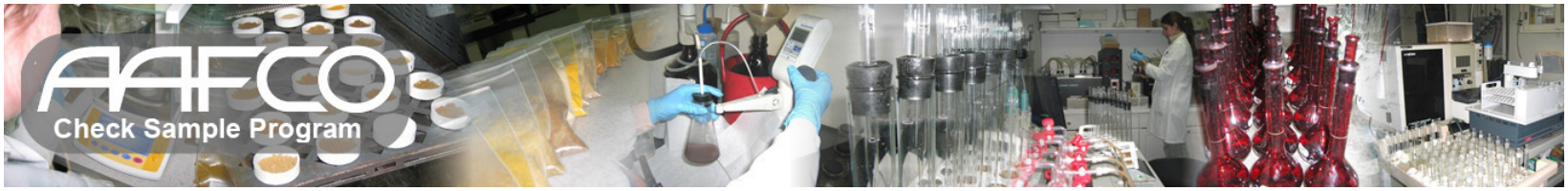


2014 AAFCO Check Sample Mycotoxins Program

Samples Engineered to Contain Relevant Concentrations of Significant Mycotoxins.

The Samples

Source the base feed.

Materials thoroughly processed with regard to particle size and blending.

70,000 lb
Masters Collection

- Carefully sourced feeds naturally contaminated with Mycotoxins.
- Incubated to raise concentration.

- Homogenous Samples for distribution.
- Certificate of Analysis and homogeneity data.

In Sacramento Last Summer:
I reported on Sample 201461, Poultry Feed.
Our First Sample!

Two More Samples Completed Last Year:

- 201462, Swine Feed (Issue Date: August 31st)
- 201463, Cattle Feed (Issue Date: October 31st)

All 3 Samples Reported:

- Using a Reference Lab Assigned Value for **Measure of Location**
- Horwitz %RSD – **Measure of Dispersion**

We will talk about the “Learning Curve”

3 Samples so Far in 2014

Number of Labs Participating

Code	Analyte (ppb)	Poultry Feed 201461 (23 Labs)	Swine Feed 201462 (25 Labs)	Cattle Feed 201463 (26 Labs)
600	Total Aflatoxin	17	20	23
601	AB1	8	11	7
602	AB2	8	10	7
603	AG1	7	11	7
604	AG2	7	9	7
610	Deoxynivalenol	17	20	10
620	Total Fumonisin	13	13	14
621	FB1	8	5	6
622	FB2	8	5	6
623	FB3	3	2	3
630	Ochratoxin A	9	13	15
640	T-2	8	9	9
650	Zearalenone	14	16	18

3 Samples so Far in 2014

Assigned Values (Reference Lab)

Code	Analyte (ppb)	Poultry Feed 201461 (23 Labs)	Swine Feed 201462 (25 Labs)	Cattle Feed 201463 (26 Labs)
600	**Total Aflatoxin**	20.1	21.5	42.6
601	**AB1**	18.5	20.0	40.2
602	**AB2**	1.6	1.5	1.7
603	**AG1**	ND (0.5)	ND (0.5)	0.7
604	**AG2**	ND (0.5)	ND (0.5)	ND (0.5)
610	**Deoxynivalenol**	1,200	830	2,700
620	**Total Fumonisin**	1,900	2,100	1,800
621	**FB1**	1,300	1,500	1,400
622	**FB2**	400	400	270
623	**FB3**	200	200	140
630	**Ochratoxin A**	44.0	85.7	188.9
640	**T-2**	236.8	46.9	244.6
650	**Zearalenone**	242.3	183.9	250.6

Tracking Z Scores:

Reference Lab vs Participant Consensus

Measure of Location X_A

$$Z = \frac{X_{LAB} - X_A}{\sigma_{ffp}}$$

Horwitz Used as the Measure of Dispersion σ_{ffp} in Both Cases

Sample 201461 (218 Detects)		
	Reference	Consensus
Compliant Z	68.8%	67.9%
Warning Z	12.4%	12.8%
Actionable Z	18.8%	19.3%
Sample 201462 (237 Detects)		
	Reference	Consensus
Compliant Z	69.6%	72.6%
Warning Z	13.5%	13.1%
Actionable Z	16.9%	14.3%
Sample 201463 (252 Detects)		
	Reference	Consensus
Compliant Z	55.2%	68.7%
Warning Z	17.1%	10.3%
Actionable Z	27.8%	21.0%

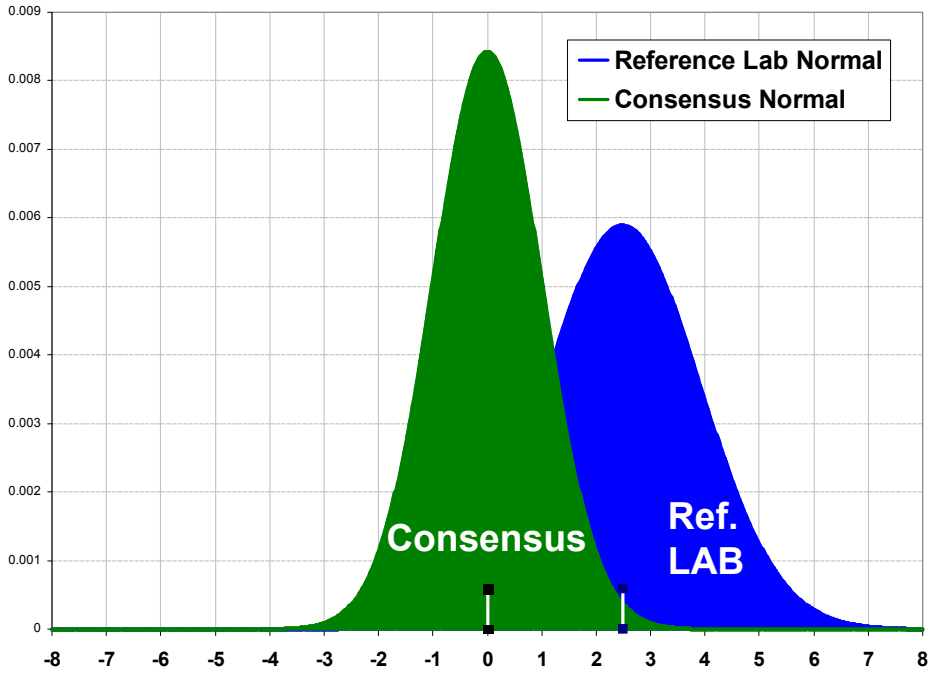
Sample 201463 Cattle Feed

Detail Tracking Z Scores For The Mycotoxins: Reference Lab vs Participant Consensus, Measure of Location

		Participant Consensus				Reference Lab			
	Detects	Value	Compliant	Warning	Actionable	Value	Compliant	Warning	Actionable
Total Aflatoxin	46	36	91.3%	4.3%	4.3%	43	89.1%	8.7%	2.2%
AB1	14	34	85.7%	0.0%	14.3%	40	85.7%	0.0%	14.3%
AB2	12	1.9	83.3%	16.7%	0.0%	1.7	75.0%	16.7%	8.3%
AG1	2		100.0%	0.0%	0.0%	1	100.0%	0.0%	0.0%
AG2	0					ND (0.5)			
Deoxynivalenol	44	2,114	56.8%	9.1%	34.1%	2,700	52.3%	13.6%	34.1%
Total Fumonisin	28	2,428	60.7%	10.7%	28.6%	1,800	32.1%	10.7%	57.1%
FB1	12	1,860	75.0%	16.7%	8.3%	1,400	66.7%	0.0%	33.3%
FB2	12	560	83.3%	16.7%	0.0%	270	0.0%	33.3%	66.7%
FB3	6	279	83.3%	16.7%	0.0%	140	33.3%	0.0%	66.7%
Ochratoxin A	30	162	53.3%	13.3%	33.3%	189	46.7%	23.3%	30.0%
T-2	14	161	42.9%	14.3%	42.9%	245	28.6%	28.6%	42.9%
Zearalenone	32	216	59.4%	12.5%	28.1%	251	46.9%	40.6%	12.5%

Let's Look at Some Data Distribution Charts For Sample 201463, Cattle Feed

Reference Lab vs Participant Consensus Compare Measure of Location Relative to Data Detects

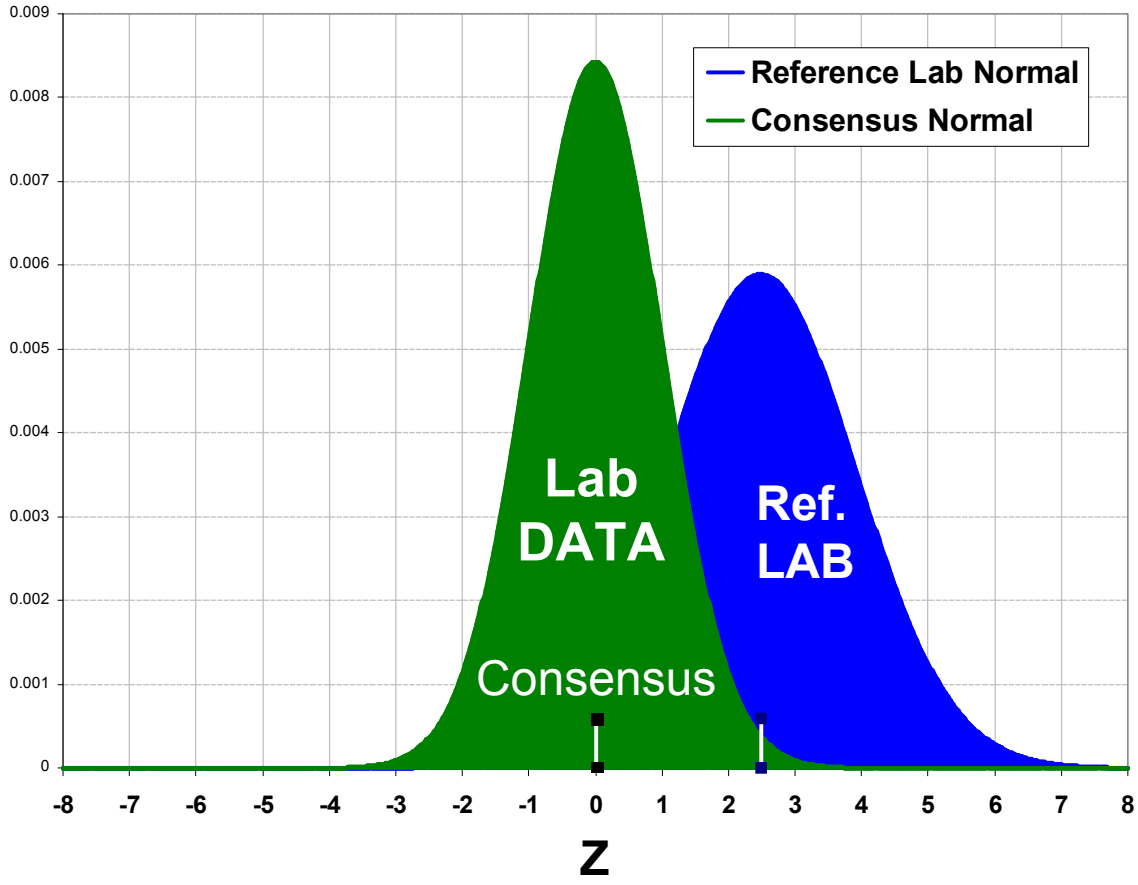


Now the Question is:

"What do we want our Z Score to tell us?"

1. Should we be assessed against a single Reference Lab Assigned Value?

2. Should we be assessed against our best estimate of the center of all the data?

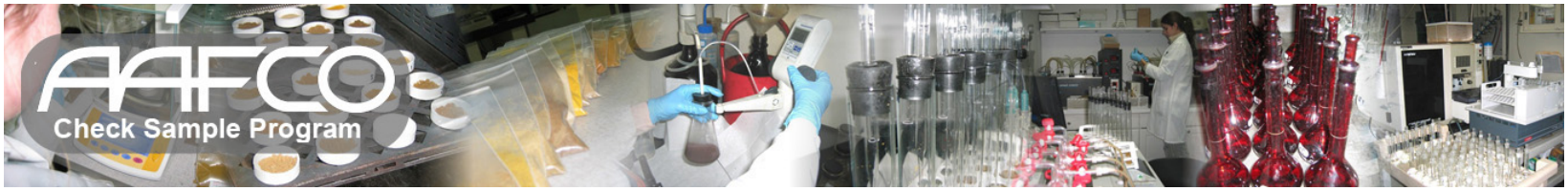


Revised Mycotoxin Proposal

Recommendations

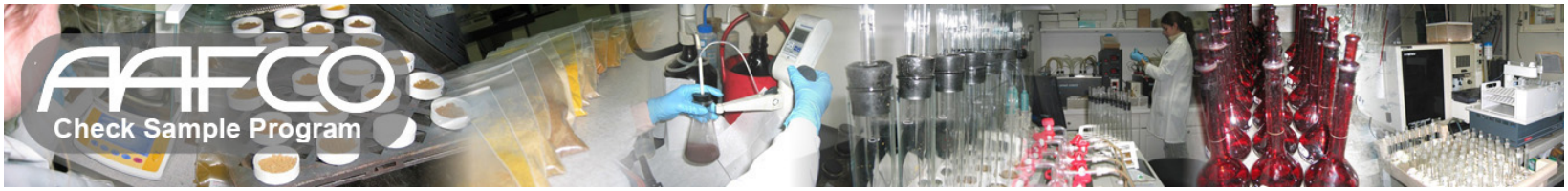
- Use Robust Consensus to Calculate Z Scores.
- Where There is Minimal Data, Use Reference Lab to Calculate Z Scores.
- Continue to Collect Reference Lab Homogeneity Data.
- Continue to Use Horwitz Relationship to Estimate σ_p (fit for purpose).
- Continue to Calculate Probability of Detection for Non Detects.

"It was a new day yesterday but it's an old day now."



2014 Mycotoxin CSP

Ochratoxin Methods (Bias?)



2014 Mycotoxin CSP

Analyte Report Ordered by Z Score

Revised Mycotoxin Proposal

Recommendations

- Use Robust Consensus to Calculate Z Scores.
- Where There is Minimal Data Use Reference Lab to Calculate Z Scores.
- Continue to Collect Reference Lab Homogeneity Data.
- Continue to Use Horwitz Relationship to Estimate σ_p (fit for purpose).
- Continue to Calculate Probability of Detection for Non Detects.
- Include Analyte Report in the Data Reporting Website

Comments?

Dog Food # 201464

- Ship Date ~ 12/20/2014
- Data Due 01/10/2015
- Reports Available 01/31/2015


2015
AFFCO
Check Sample Program
THANK YOU!