

Proficiency Testing Program General Information and Instructions

- The PT item is a ground corn sample that is naturally contaminated with aflatoxin. The sample production has been following the ISO 17043 guideline and the final products have past the homogeneity and stability test.
- The assigned value is determined by averaging the homogeneity testing results and the concentration of the PT item is reported in parts per billion (ppb). The measurement uncertainty of the PT item is the Relative Standard Deviation (of the multiple homogeneity test measurement results) multiplying by 2. The target standard deviation σ , Z score calculations and evaluations are based on the following equations and criteria's:

$$z = (x - \mu) / \sigma$$

where z is the z score to evaluate the individual laboratory performance, X is the mean value of the two individual laboratory reported numbers. μ is the assigned value for the corresponding PT item. σ is calculated based on the following equation:

$$\sigma = 2^{(1 - \log(C)/2)}$$

where C is the concentration of aflatoxin in percentage.

Z score evaluation:

$$|z| \leq 2.0 \text{ satisfactory}$$

$$2.0 < |z| < 3.0 \text{ questionable}$$

$$|z| \geq 3.0 \text{ not satisfactory}$$

- The outlier test is based on Cochran C test and Grubbs test. The calculation will be based on the following equation:

$$C_j = \frac{s_j^2}{\sum_{i=1}^N s_i^2}$$

Where

C_j = Cochran's C statistic for data series j

s_j = standard deviation of data series j

N = number of data series that remain in the data set; N is decreased in steps of 1 upon each iteration of the C test

s_i = standard deviation of data series i ($1 \leq i \leq N$)

- a) The Grubbs test statistic is calculated based on the following equation:

$$G = \frac{\max_{i=1, \dots, N} |Y_i - \bar{Y}|}{s}$$

Where \bar{Y} and s denoting the sample mean and standard deviation, respectively.

- Sample Analysis

The testing of the received PT item should follow the same format of routine analysis of laboratory samples. The PT samples are stable in the course of production, transportation, PT testing and reporting period. The PT item is ready to use in its delivered form and does not require any extra laboratory preparation. Typical laboratory environment conditions are sufficient to perform the expected measurements. The PT item is the same as normal maize samples and do not require special safety handling procedures.

- Test Methods

The participating laboratories can use any method of their own choices. The chosen methods need to be provided following the reporting instructions. Eligible methods include but are not limited to traditional instrument analysis (HPLC) and testing kit methods. The data analysis for results obtained by different methods will be divided into two categories, the analysis of data obtained by all methods, and analysis of data obtained by testing kit analyses only.

Return of the PT sample is not required for this program.

- Reporting Results

Each laboratory participant representative shall use the credential issued by the PT provider and log in the website. Two independent analyses (weighing, extraction and analysis) shall be performed for the same PT item and two results are reported.

The final reporting shall not be later than the date that is specified in the shipping slip.

- PT Summary Report Usage Policy

The laboratory participant can use the PT summary report for their legitimate purpose when crediting this PT program.

- PT Result Appeal Policy and Procedures

The participant laboratory shall appeal the PT result by contacting the PT program manager via written request (email or mail requests). The PT provider will investigate the appeal by arranging a three-member committee, which shall be composed by at least two members who are not affiliated with the PT providers' organization. The committee shall determine the validity of the PT result or a new PT item shall be issued for a new testing.

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