

Contents of Kit:

- 100 QuickStix Strips packed in two moisture-resistant canisters
- Sample cups and disposable transfer pipettes

Items Not Provided:

- Bunn grinder or equivalent
- Graduated cylinder
- Tap water
- QuickScan System

Catalog Number AQ 003 BG

Intended Use

The EnviroLogix QuickStix Kit for QuickScan - Cry1A detects and quantifies Cry1Ab (Bt11 or Mon810 event) or Cry1A.105 (in MON89034 event) proteins at the levels typically expressed in genetically modified corn grain. The sensitivity of these QuickStix Strips is 0.8% based on tests conducted with Mon810 corn (i.e. one kernel in 125). For Bt detection in corn and cotton plant tissues and individual seeds, please use QuickStix Cat# AS 003 CRLS or CTLS.

How the Test Works

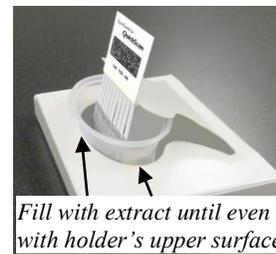
In order to detect the Cry1A proteins, the sample must first be extracted to solubilize the protein. Each QuickStix Strip has an absorbent pad at each end. The protective tape with the arrow indicates the end of the strip to insert into the sample cup. The sample will travel up the membrane strip and be absorbed into the larger pad at the top of the strip. The portion of the strip between the protective tape and the absorbent pad at the top of the strip is used to interpret the reactions as described under “Interpreting the Results.” Results are scanned and interpreted quantitatively with the EnviroLogix QuickScan System. Please avoid bending the strips.

Sample Preparation

1. Collect a composite sample according to USDA/GIPSA instructions found in the reference documents listed in Precautions and Notes.
2. Determine the **average weight** of the grain from the lot to be tested. Count and weigh 100 kernels/seeds, then divide by 100. Corn kernels vary widely from region to region and from year to year. Be sure to test the desired number of kernels by checking average kernel weight periodically.
3. Calculate the sub-sample weight (g) needed for testing, (number of seeds X **average seed weight**). A sub-sample size of at least 200 grams is required to create enough extract for the test. Note: it is necessary to grind more than the calculated sub-sample weight—subsample is weighed out after grinding (Step 5).
4. Calculate water volume needed for sample preparation. The Common Extraction Method calls for a water volume to sample weight ratio of **1.5 to 1** (see example, right).
5. Grind corn using the Auto-Drip setting on the Bunn grinder (or equivalent), then weigh out the subsample calculated in Step 3. The sample should be the consistency of coffee grounds – 60-70% of the sample should pass through a 20-mesh sieve.
6. Weigh out subsample calculated in Step 3, then place sub-sample into an appropriately sized jar or stand-up, zip-type plastic bag and add the volume of tap water calculated in Step 4.
7. Close the jar or bag and shake vigorously for 30 seconds, then allow sample to settle for another 30 seconds.
8. Assemble cardboard holder and lift the support. (Note: save and reuse holders.) On a flat surface, insert sample cup in the space provided, then transfer approximately 35 mL of the liquid portion from above the settled sample into the sample cup. Use a fresh pipette from the kit, or pour slowly and carefully, until the depth of the sample is level with the upper surface of the cardboard holder. Important: Avoid transferring particles as much as possible, and after transfer, allow the liquid in the sample cup to settle for 30 seconds so that any particles will settle at the bottom of the cup.
9. To prevent cross-contamination, thoroughly clean blender parts and jars to remove dust and residue prior to preparation of each sample, and use a new sample cup for each. If pipetting, always use a new pipette for each sample.

Corn Common Extraction™
g of corn X 1.5 = mL of water

Example:
800 kernel sub-sample with an
average kernel weight of 0.3g.
0.3 g X 800 = 240 g...
240 X 1.5 = 360 mL water



How to Run the QuickStix Strip Test

1. Allow refrigerated canisters to come to room temperature before opening. Remove the QuickStix Strips to be used. Avoid bending the strips. Reseal the canister immediately.
2. Place the strip into the sample cup provided, being sure to insert the end indicated by the arrows on the protective tape. The sample will travel up the strip.
3. Allow the strip to develop for 5 minutes before making final assay interpretations.

4. Immediately cut off and discard the bottom section of the strip covered by the arrow tape and place in QuickScan Reader. Strips must be read while still wet.

NOTE: Use extreme caution to prevent sample-to-sample cross-contamination with grain, fluids, or disposables.

Interpreting the Results

Development of the Control Lines within 5 minutes indicates that the strips have functioned properly. Any strip that does not develop a Control Line should be discarded and the sample re-tested using another device.

Results are scanned and interpreted quantitatively with the QuickScan System. Place QuickStix Strip into the carrier, slide in, and press “Read Test” on the screen. QuickScan will return a result as “% GMO” or “<LOD” (less than the Limit of Detection). Please consult the QuickScan User Manual for details.

Kit Storage

QuickStix can be stored at room temperature, or refrigerated for a longer shelf life. Note the shelf life on the kit box for each storage temperature. The kit may be used in field applications; however, prolonged exposure to high temperatures may adversely affect the test results. Do not open the desiccated canister until ready to use the test strips.

Precautions and Notes

- This kit is designed to give a quantitative result using the QuickScan System and is not intended to be visually interpreted.
- As with all tests, it is recommended that results be confirmed by an alternate method when necessary.
- The assay has been optimized to be used with the protocol provided in the kit. Deviation from this protocol may invalidate the results of the test.
- The results generated through the proper use of this kit reflect the condition of the working sample directly tested. Extrapolation as to the condition of the originating lot, from which the working sample was derived, should be based on sound sampling procedures and statistical calculations which address random sampling effects, non-random seed lot sampling effects and assay system uncertainty. A negative result obtained when properly testing the working sample does not necessarily mean the originating lot is entirely negative for the analyte or protein in question.
- Protect all components from hot or cold extremes of temperature when not in use. Do not leave in direct sunlight or in a vehicle.
- USDA References:
 - www.gipsa.usda.gov/fgis/handbook/BK1/Book1_2015-09-18.pdf - USDA Grain Inspection Handbook, Book 1, Grain Sampling.
 - www.gipsa.usda.gov/fgis/biotech/sample2.htm - Guidance document entitled Sampling for the Detection of Biotech Grains.
 - www.gipsa.usda.gov/fgis/biotech/sample1.htm - Practical Application of Sampling for the Detection of Biotech Grains.
 - www.gipsa.usda.gov/fgis/biotech/samplingplan1.xlsx - This website provides a simple to use Sample Planner (29K Excel Spreadsheet). The planner allows you to enter different assumptions in terms of sample size, number of samples, acceptable quality level and to determine the probability of accepting lots with given concentration levels. It also plots the probabilities in graph form for easy interpretation. Specific data can be saved for documentation and future analyses.

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