

ENVIROLOGIX™ QuickStix™ Kit for QuickScan mCry3A (Agrisure® RW) Corn Bulk Grain

Highlights:

- Use with Common Extraction™ method
- Quantitative results in just over 5 minutes
- Available as 100-strip kits, in bulk packaging, or in QuickCombs™

Contents of Kit:

- 100 QuickStix Strips packed in two moisture-resistant canisters
- 100 transfer pipettes
- 100 reaction cups

Items Not Provided:

- Waring blender, model 31BL91 or equivalent, with glass jar adapter (Eberbach #E8495) and glass Mason jars
~~OR~~
- Bunn grinder or equivalent
- Graduated cylinder
- Tap water
- Protective cover for blender jar while grinding
- QuickScan System



Catalog Number AQ 037 BG

Intended Use

This QuickStix Kit for QuickScan – mCry3A detects and quantifies modified Cry3A protein at the levels typically expressed in genetically modified corn grain. In a ground corn sample the Limit of Detection for these QuickStix Strips is 1% (i.e. one kernel in 99 conventional corn kernels).

How the Test Works

In order to detect the mCry3A proteins with this Kit, the sample must first be extracted in tap water 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 reaction 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 the margin on Page 2.
2. Determine the **average weight** of the grain from the lot to be tested. Count and weigh 100 kernels/seeds, then divide by 100.
3. Calculate the sub-sample weight (g) needed for testing, (number of seeds X **average seed weight**).
4. Choose appropriate container based on sub-sample weight. If using Waring blender, container must allow enough free space above the sample for blades to operate.
5. 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**.

Example Calculation using a 400 kernel sub-sample with an average kernel weight of 0.3g.
 $0.3g \times 400 = 120g \times 1.5mL = 180 mL$ water for extraction

Grind Sub-Sample:

Bunn grinder or equivalent:

1. Weigh out subsample based on the average weight per seed calculation.
2. Grind subsample (using Auto-Drip setting if using a Bunn grinder) with grinder until all whole grains are broken. The sample should be the consistency of coffee grounds.

Waring blender or equivalent:

6. Weigh sample into the appropriate size glass Mason jar and attach jar adapter with blade.
7. Place assembly on the Waring blender (or equivalent). Shield with protective cover to prevent injury in the event of jar breakage. Grind sample at high speed for 15-45 seconds, or until all whole grains

USDA References:

- <http://archive.gipsa.usda.gov/reference-library/handbooks/grain-insp/grbook1/bk1.pdf> - USDA Grain Inspection Handbook, Book 1, Grain Sampling.
- <http://archive.gipsa.usda.gov/biotech/sample2.htm> - Guidance document entitled Sampling for the Detection of Biotech Grains.
- <http://archive.gipsa.usda.gov/biotech/sample1.htm> - Practical Application of Sampling for the Detection of Biotech Grains.
- <http://archive.gipsa.usda.gov/biotech/samplingplan1.xls> - 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.

Corn Common Extraction™

Grams of Corn x 1.5 = mL of water

For example, 400 kernels with an average seed weight of 0.3 g:

$$(400 \times 0.3) = 120 \text{ g of corn}$$

$$120 \text{ g} \times 1.5 = 180 \text{ mL water}$$

Transfer 20 mL extract to cup:



Either pour...



...or pipette to the 20 mL mark

Bunn grinder or equivalent (cont.):

3. Place subsample into an appropriately sized jar or zip-type plastic bag and add the volume of tap water calculated using the Corn Common Extraction formula (left).
4. Cap the jar or “zip” plastic bag and shake vigorously for 30 seconds, then allow sample to settle for another 30 seconds.

Waring blender or equivalent (cont.):

- are broken. Optimum grind time may vary based on sample size and condition of equipment. The sample should be the consistency of coffee grounds.
8. Add the volume of tap water calculated using the Corn Common Extraction formula (left).
 9. Cap the jar and shake vigorously for 30 seconds, then allow the sample to settle for another 30 seconds.

6. Transfer 20 mL of the liquid portion from above the settled sample into the sample cup. Pour extract into cup to the 20 mL line, or use a fresh pipette from the kit to transfer extract until the 20 mL line is reached (when testing smaller subsamples). **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.
7. To prevent cross-contamination, thoroughly clean blender parts and jars to remove dust and residue prior to preparation of a second sample. Use a new transfer pipette and reaction cup for each sample.

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 reaction 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. Positive sample results may become obvious much more quickly.
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 Line within 5 minutes indicates that the strip has functioned properly. Any strip that does not develop a Control Line should be discarded, and the sample re-tested using another strip.

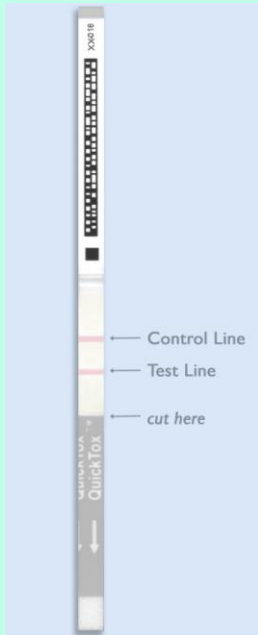
Results are scanned and interpreted quantitatively with the QuickScan System. Place QuickStix Strip into the carrier, slide in, and press “Read Test” on the screen. QuickScan will return a result as “% GMO” or “<LOQ” (less than the Limit of Quantification). Please consult the QuickScan User Manual for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



(outlined to demonstrate cup size and markings)



After 30 seconds, add QuickStix to cup



Strip must develop a Control Line to be valid – cut where indicated and read in QuickScan System

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 Limitations

- This kit is designed to be quantitative using the QuickScan System.
- 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.





**For Technical Support
Contact Us At:**

EnviroLogix
500 Riverside Industrial
Parkway
Portland, ME 04103-1486
USA

Tel: (207) 797-0300
Toll Free: 866-408-4597
Fax: (207) 797-7533

e-mail:
info@envirologix.com

website:
www.envirologix.com



LIMITED WARRANTY

EnviroLogix Inc. (“EnviroLogix”) warrants the products sold hereunder (“the Products”) against defects in materials and workmanship when used in accordance with the applicable instructions for a period not to extend beyond a product’s printed expiration date. If the Products do not conform to this Limited Warranty and the customer notifies EnviroLogix in writing of such defects during the warranty period, including an offer by the customer to return the Products to EnviroLogix for evaluation, EnviroLogix will repair or replace, at its option, any product or part thereof that proves defective in materials or workmanship within the warranty period.

ENVIROLOGIX MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The warranty provided herein and the data, specifications and descriptions of EnviroLogix products appearing in EnviroLogix published catalogues and product literature are EnviroLogix’ sole representations concerning the Products and warranty. No other statements or representations, written or oral, by EnviroLogix’ employees, agents or representatives, except written statements signed by a duly authorized officer of EnviroLogix Inc., are authorized; they should not be relied upon by the customer and are not a part of the contract of sale or of this warranty.

EnviroLogix does not warrant against damages or defects arising in shipping or handling, or out of accident or improper or abnormal use of the Products; against defects in products or components not manufactured by EnviroLogix, or against damages resulting from such non-EnviroLogix made products or components. EnviroLogix passes on to customer the warranty it received (if any) from the maker thereof of such non-EnviroLogix made products or components. This warranty also does not apply to Products to which changes or modifications have been made or attempted by persons other than pursuant to written authorization by EnviroLogix.

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of EnviroLogix shall be to repair or replace the defective Products in the manner and for the period provided above. EnviroLogix shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall EnviroLogix be liable for incidental, special, or consequential damages.

This Limited Warranty states the entire obligation of EnviroLogix with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

*Agrisure is a registered trademark of Syngenta Group Company
EnviroLogix, the EnviroLogix logo, QuickStix, QuickComb and Common Extraction are trademarks of EnviroLogix Inc.*

© EnviroLogix 2011