



# QuickStix™ Kit for Roundup Ready® Bulk Sugar Beet Seed

Catalog Number AS 010 SB

## Highlights:

- Results in 5 minutes or less
- Available as 100-strip kits or in bulk packaging

## Contents of Kit:

- 100 QuickStix strips packed in two moisture-resistant canisters
- 100 transfer pipettes
- 100 reaction vials

## Items Not Provided:

- Coffee grinder or equivalent seed pulverizer
- Graduated cylinder of appropriate capacity
- Tap water



## Intended Use

The EnviroLogix QuickStix™ Kit for Roundup Ready® Bulk Sugar Beet Seed is designed to extract and detect the presence of CP4 EPSPS protein at the levels typically expressed in Roundup Ready sugar beet seeds. The sensitivity of these QuickStix strips is 0.1% Roundup Ready beet seed (i.e. one Roundup Ready seed in 999 conventional seeds).

## How the Test Works

In order to detect the CP4 EPSPS protein expressed by Roundup Ready sugar beet seeds, 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 reaction vial. 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 view the reactions as described under “Interpreting the Results”.

## Preparation of the Sample

1. Obtain a representative sample of the desired size. By determining the average weight per seed (count and weigh 100 seeds, divide by 100), samples can be measured by total weight. Suggested sample size is 1000 seeds. If the average weight per seed is 0.015 grams, a 1000-seed sample can be obtained by weighing out 15 grams of seed sample.
2. Pulverize seeds in a coffee grinder or equivalent grinder. Visually check ground sample to ensure all seeds are crushed. Grind sample for three 7-second pulses. Shake sample to mix between each pulse.
3. Pour ground sample into a suitable container with a lid.
4. Add the volume of tap water calculated by the formula: Grams of Seed Sample x 3 = mL of water. For example: (1000 x 0.015 g [average seed weight]) = 15 g x 3 = 45 mL of water.
5. Cap and shake jar vigorously until the entire sample is wet (20-30 seconds, depending on the number of grains). Sample will begin to settle immediately and liquid can be drawn off at that time. Use sample extract within ten minutes of preparation.
6. Draw up 500 µl of sample extract by filling the transfer pipette up to the line at the top of the flared portion of the pipette bulb (see figure at left). Avoid pulling up particles. Dispense extract into a reaction vial and test immediately.
7. To prevent cross-contamination thoroughly clean grinder parts and jars of dust and residue prior to preparation of a second sample. Use a new transfer pipette and reaction vial 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 vial. The sample will travel up the strip. Reaction vials will stand on their own or may be inserted into the cardboard racks provided.
3. Allow the strip to develop for 5 minutes before making final assay interpretations. Positive sample results may become obvious much more quickly.
4. If you wish to retain the strip, cut off and discard the bottom section of the strip covered by the arrow tape.

**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.

If the extract is from a sample containing at least 0.1% Roundup Ready sugar beet (1 in 1000), a second line (Test Line) will develop on the membrane strip between the Control Line and the protective tape. *The results should be interpreted as positive for CP4 EPSPS protein expression.*

If no Test Line is observed after 5 minutes, the results should be interpreted as negative. A negative result means the sample contains less than 0.1% of CP4 EPSPS.



Any clearly discernable pink  
Test Line is positive

## 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.

## Cross-reactivity

The following materials have been tested with this kit using the protocols specified herein, and have been found to cause no false positive results at the levels indicated (concentrations are in the grain sample):

- Cry1Ab and Cry1Ac proteins at 10 ppm in sugar beet, and Cry1C, Cry1F, Cry2Aa, Cry2Ab, Cry3Bb, Cry9C, PAT from the *bar* gene, PAT from the *pat* gene, and cyanamide hydratase proteins at 100 ppm in sugar beet.
- Corn, soybean, cottonseed, canola, polished rice, sorghum, and wheat all at 100% of sample.



## Precautions and Limitations

- This kit is designed to screen for presence or absence only, and is not meant to be quantitative.
- This product is currently not applicable for use in any crop other than bulk sugar beet seeds, or for leaf or individual seed testing.
- 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 diagnostic tool 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.
- A strong positive result may safely be interpreted in as little as 2 minutes after sample addition. It is not safe, however, to interpret negative results prior to 5 minutes.
- Protect all components from hot or cold extremes of temperature when not in use. Do not leave in direct sunlight or in vehicle.



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