

Glyphosate:

A Broad Spectrum Herbicide



What is Glyphosate?

Glyphosate is an active ingredient in all Roundup® brand herbicides and is present in other products other than Roundup®. Glyphosate is used as a broad spectrum/non-selective herbicide. This means that glyphosate based herbicides will kill most broadleaf plants and grasses. (Monsanto Company, 2002-2015)

What is the Glyphosate Assay?

The glyphosate assay utilizes the technique of Enzyme Linked Immunosorbent Assay (the ELISA method).

In general, the glyphosate is tested using a “competitive” ELISA method. This means that an enzyme-linked glyphosate molecule (labeled glyphosate) competes with an unlabeled glyphosate molecule that might be present in the sample for binding sites on a binding protein or antibody present in the assay wells. Ultimately, this means at the end point step of the assay the deeper the color that appears in the wells the less glyphosate there is present in the sample.



What is glyphosate?

An example of a broadleaf weed - (Baumann, 2012)



ELISA ASSAY ELISA uses the technique of the intensity of transmitted light by spectrophotometry based on color change of samples for positive sample detection.

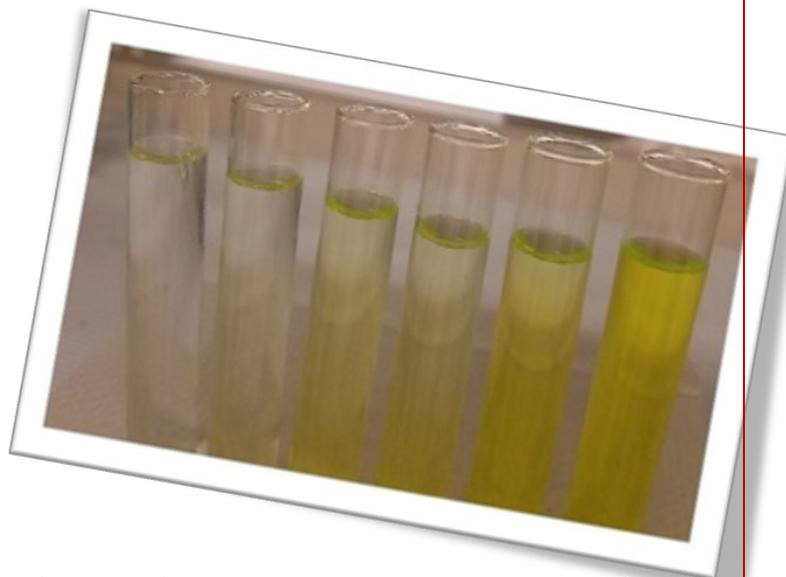
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How is Glyphosate Detected in Assay?

The concentration of glyphosate in samples is determined by using an appropriate extraction method (based on sample type) to extract glyphosate from submitted samples. These extracted samples are then prepared for assay by mixing them with appropriate solutions that will allow glyphosate in the sample to be detected and quantified. Sample glyphosate concentration is calculated based on the equation of the line from the response curve generated with standards (known concentrations) run with each sample set. To ensure quality control, a positive control sample of known concentration is run with each analysis.

The Level of Detection (LOD) or lowest amount the assay can detect is based on the sample's extraction method. For example: the LOD of glyphosate in a water sample is 0.05 parts per billion (ppb) and the LOD of glyphosate in a soil sample is 18.75ppb.

Parts per Billion is defined as, "the number of units of mass of a contaminant per 1000 million units of mass" (Champman, 2016)



What about Positive Results?

At Microbe Inotech Laboratories it is our duty to report sample results as they are calculated from the analysis. We are NOT a Human clinical diagnostic laboratory. Our data is not generated for human diagnosis but to determine the quantity and presence and distribution of glyphosate. Therefore, we do not give counsel or advice about toxicity issues or how the amount of glyphosate present in the sample may be affecting an individual.

For information regarding glyphosate and health, please refer to your physician and the National Pesticide Information Center:
<http://npic.orst.edu/factsheets/glyphogen.htm>

For sample submission see our website at www.microbeinotech.com or contact us:
 (800) 645-2177 bhemming@microbeinotech.com
 11754 Westline
 Industrial Dr., St.
 Louis, MO 63146

