EXAMINING THE EFFECT OF GLYPHOSATE TREATMENT ON SHIKIMATE PATHWAY METABOLITES IN DIFFERENT PLANT SPECIES. Keith Kretzmer*, Mason Hughes, Ashleigh Norris and R. Doug Sammons, Monsanto Company, St. Louis, MO.

An HPLC-MS method was developed in order to identify and quantify the metabolites of the shikimic acid pathway in plant extracts. Metabolites were identified by using known standards or by the mass of both parent and daughter fragment negative ions. The following metabolites were measured: shikimate, shikimate 3-phosphate (S3P), 3-dehydroshikimate, chorismate, 3,4-dihydroxybenzoate (protocatechuate), and quinic acid. The identification of 3-dehydroquinate was equivocal.

The results showed that there were plant species differences in the levels of quantified metabolites, especially of shikimate, S3P and quinate. In addition, there were differences in the levels of accumulation of shikimic acid metabolites measured 3 days after Roundup treatment. Both shikimate and quinate accumulated to high levels after Roundup treatment in many species. In legumes, such as soybean and alfalfa, only shikimate accumulated. In several other species, and particularly monocot species more quinate than shikimate accumulated after Roundup treatment.

The highest levels of shikimate were measured to be 11.9, 10.7, 8.7 and 8.0 mg/gFW, in soybean, common ragweed, sunflower and alfalfa, respectively, 3 days after Roundup treatment. In the monocot species tested, quinate was measured to be 8.0, 5.6, 4.9 and 4.7, in perennial ryegrass, barnyard grass, sorghum, and wheat, respectively.

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