

## Monitoring of glyphosate residues in herbicide tolerant soybeans from eight production areas of Brazil - 2005/2006 and 2006/2007 harvest seasons.

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The approval for commercial use of soybeans tolerant to the herbicide glyphosate (Event GTS 40-3-2) was issued in 1998 and released to the Brazilian farmers only in 2005, due to legal challenges. The area of soybeans production is very significant and according to estimates of the National Supply Company for the year of 2006 was 22.190 thousand hectares. The States of Mato Grosso (MT), Mato Grosso do Sul (MS), Goiás (GO), Minas Gerais (MG), Paraná (PR), Rio Grande do Sul (RS) and Bahia (BA) respond with 90 % of national production. In the 2006/2007-harvest season the area planted with soybeans tolerant to glyphosate reached approximately 56% of the total soybeans planted area. So, it is interesting to know the herbicide residues that may occur in glyphosate tolerant soybeans under commercial production conditions.

In the present study residues were evaluated in samples from the 2005/2006 and 2006/2007 harvesting seasons from eight selected areas of soybeans production. Field applications of the herbicide Roundup Ready<sup>®</sup> were made in pre planting and after the emergence of soybean using the label recommendation rate and time, including one or two application over the top. Samples were collected at the end of the culture cycle after harvest.

The analytical procedure for determination of residues of glyphosate and aminomethylphosphonic acid (AMPA) based on the extraction of the two compounds with acid aqueous solution; clean up in chelating resin, and HPLC fluorescence detection after post-column-reaction with o-phthalaldehyde. Recoveries in the range of 87 to 94% were obtained from spiked soybeans samples and the LOQ was 0.05 mg kg<sup>-1</sup>.

All residues were below the MRL of 10.0 mg kg<sup>-1</sup> set for the soybean crop in Brazil. Glyphosate residues ranged from <LOQ to a maximum of 2.0 mg kg<sup>-1</sup> and AMPA residues ranged from <LOQ to a maximum of 2.5 mg kg<sup>-1</sup>. AMPA residues tend to be slightly higher than glyphosate residues. No significant differences in residues were observed between samples from both harvesting seasons.