THE IMPACT OF A SINGLE RESIDUE INCORPORATION ON THE SEED SOIL BANK OF *PALMER AMARANTH* UNDER SIX CROP MANAGEMENT HISTORIES.

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Most weed control studies do not account for the long-term effect of weed seeds when studying a particular management system. Following the completion of a 3-year study of 3 levels of atrazine (0, 0.8 and 1.8 kg/ha) with and without a cover crop for production of irrigated corn (described in Proc. of WSSA 41:132.). A second study was initiated in October 2000 in which half of each of these six systems was tilled with two passes of a double gang disk. This tillage created a study to measure the impact of tillage on the seed soil bank created by these 12 cropping systems. In the spring of 2001 the fallow phase of a corn-fallow-corn rotation was commenced, with bi-weekly weed counts followed by a 1.1 kg/ha application of glyphosate.

A history of atrazine use reduced *Palmer amaranth* seedling emergence by 2 to 33 fold early in the season across all management systems. Due to variability, these differences were not always statistically significant. Tilled plots with a previous history of atrazine use showed a dramatic reduction in *Palmer amaranth* seedling emergence compared to untilled plots without previous atrazine use.

The effect of previous cropping system was diminished by June 6. At that point, all systems were similar, with the exception of the cover crop with no fall tillage system. With a previous history of atrazine use, this management system produced 77.6 fewer seedlings per m^2. By June 11 all systems produced similar numbers of emerged seedlings. *Palmer amaranth* seedling emergence declined dramatically and variability increased from June 27 to July 30. Cumulative germination for these rating dates was 3 to 4 fold less than any previous single rating date. Cumulative emergence for the season across all levels of management did not differ and ranged from 232 to 327 *Palmer amaranth* seedlings per m2. Although previous management history affected the timing of *Palmer amaranth* emergence, total seasonal depletion of its seed soil bank was not affected.