

THE LONG TERM IMPACT OF INTERACTIONS OF ATRAZINE RATES, TILLAGE LEVELS AND COVER CROPS ON WEED SEED SOIL BANKS. Randall S. Currie, Associate Professor, Southwest Research-Extension Center, Kansas State University, 4500 East Mary Street, Garden City, KS 67846.

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, 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 1.1-kg/ha applications of glyphosate. In the spring of 2002, glyphosate-resistant corn was planted and bi-weekly weed counts followed by a 1.1-kg/ha application of glyphosate were continued until corn was too tall to spray. Even 22 months after a single tillage event followed by a “perfect” rotational “crop”, fallow, and “perfect” postemergence control, tillage more than doubled the number and height of *Palmer amaranth*, that emerged after the corn was too tall to spray, and more than tripled their bio-mass per acre. Further, 27 months after killing a wheat cover crop under these “perfect” conditions, it also reduced the height of *Palmer amaranth* that emerged after the corn was too tall to spray, 2 fold and its biomass 3 fold. Therefore, we conclude that, surface residue has a dramatic and long lasting positive effect on weed control.