

TILLAGE-INDUCED MULTIPLE SEASON DEGRADATION OF WOLF SPIDER (ARANEAE: LYCOSIDAE) HABITAT. Randall S. Currie, Holly N. Davis, Lawrent L. Buschman, Norman L. Klocke, and B. Wade French, Associate Professor, Kansas State University, SW Research-Extension Center, Garden City, KS 67846, Insect Diagnostician and Professor, Department of Entomology, Kansas State University, Manhattan, KS 66506, Professor, SW Research-Extension Center, Kansas State University, Garden City, KS 67846, Research Entomologist, USDA, Brookings, SD 57006.

From 1998 to 2004, a balanced factorial study of three levels of atrazine with and without a killed winter wheat cover crop was imposed on the same plots for 3 yr at each of three locations as described in Currie and Klocke (2005). After that study was completed, half of each plot was disked twice to produce 12 unique management histories in each of 5 replicates during the fallow phase that lasted from 18 to 22 months after completion of the original study. Ground-dwelling arthropods were collected in fall traps as described in Davis et al. (2009). Although more than 7,000 arthropods from 20 genera were collected and classified, only wolf spider (Araneae: Lycosidae) results are presented here. At Location 1, significantly higher numbers of wolf spiders were found in subplots managed as no-till and in plots with residues from the history of a cover crop. There was a two-way interaction between tillage and prior weed density. Wolf spiders were most common in no-till subplots with a history of high weed densities created by the lack of herbicide use. Differences between tillage treatments decreased under lower weed densities induced by herbicide use. Significantly more wolf spiders were collected in no-till subplots and plots with a cover crop history than in tilled subplots and in plots without a cover crop history. Herbicide-induced weed density histories did not affect wolf spider numbers at Location 1. At Location 2, there were no significant interactions between the three treatment factors and no differences in the number of wolf spiders found in the three herbicide-induced weed density histories. There were significantly higher numbers of wolf spiders in no-till subplots and in plots with a cover crop history at this location. At Location 3, there were no significant interactions between the three treatment factors. Clearly, tillage damaged wolf spider habitat, and the history of cover crop use was still positively affecting wolf spider habitat more than a year after the practice was stopped.

Literature Cited

Currie, R.S. and N.L. Klocke. 2005. Impact of a Terminated Wheat Cover Crop in Irrigated Corn on Atrazine Rates and Water Use Efficiency. *Weed Sci.* 53:709-716.

Davis, H.N., R.S. Currie, B.W. French, and L.L. Buschman. 2009. Impact of Land Management Practices on Carabids (*Coleoptera:Carabidae*) and Other Arthropods on Western High Plains of North America. *Southwestern Entomologist* 34:43-59.