

CHANGES IN WEED COMMUNITIES DURING TRANSITION TO ORGANIC PRODUCTION. Isabel Rosa and John Masiunas, Graduate Research Assistant and Associate Professor, Department of Natural Resources and Environmental Sciences, University of Illinois, 1201 W. Gregory Dr., Urbana, IL 61801.

Emergent and soil seed bank populations of weeds undergo major changes during the transition from conventional to organic cropping systems. Often weed densities increase during the transition and stabilize or decrease after a period in organic production. We hypothesized that management intensity and soil amendments will impact weed communities. In 2003, we established three management intensities, intense vegetable crop production, medium intensity grain crop production and low intensity ley production. The three soil amendment strategies were cover crops only, cover crops and compost, and cover crops with manure. The experiment was a randomized block design in a split plot arrangement with four replications. Between 2003 and 2006, the number of weeds per plot decreased. In 2003, the dominant weed species were grasses in the ley; common lambsquarters and velvetleaf in the grain crop; and lambsquarters, grasses, and foxtails in the vegetable. In 2003, the ley system had the most weeds in subsequent years it had fewer weeds than other management intensities. In 2004 and 2005, the grain system had more weeds than the vegetable system. The higher returns for vegetable production allowed hand-weeding which likely reduced weed populations compared to the cash grain system. The effect of soil amendment varied depending on year. In 2004, there were more weeds in the manure amendment and in 2005 there were more weeds in the cover crop only amendment. Weed species composition changed depending on management intensity and year. Common lambsquarters became less frequent, mainly due to later plantings. *Amaranthus* species (primarily redroot pigweed) became more frequent. Common purslane, a problem weed of vegetables, first was found in Brassica vegetables in 2005. Weed species diversity in the seed bank increased between 2003 and 2005. Species composition of the seed bank was similar to the composition of the emergent weed community with the exception that seed from *Amaranthus* species were the most common. A managed ley system may be a method for land-rich farmers to transition to organic production without increases in weed populations.