

INTEGRATED WEED MANAGEMENT APPROACHES: USE OF LANDSCAPE FABRIC AS MULCH IN ORGANIC VEGETABLE PRODUCTION. Joel Felix and Doug J. Doohan, Research Associate and Associate Professor, Department of Horticulture and Crop Science, The Ohio State University/Ohio Agricultural Research and Development Center (OARDC), 1680 Madison Ave, Wooster, OH 44691.

Practices that control weeds cost-effectively and build soil organic matter will improve the profitability of organic agriculture and lead to a biologically buffered soil that will require reduced external inputs in the future. The use of woven black landscape fabric could accelerate reduction in weed seedbank and reduce the need for intensive cultivation to control weeds in fields transitioning to organic production. The woven black landscape fabric is uniquely designed to allow water and air to pass through into the soil, yet it is strong enough to last more than five years.

A field study was initiated at OARDC, Wooster, Ohio during summer 2006 to study the impact of woven landscape fabric on weed seedbank if used as groundcover for the initial three years followed by a combination of flaming, mechanical, and vinegar to manage weeds thereafter. The study was laid out in a split-plot design with groundcover duration (bare, 2 years, and 3 years) as main plots and crops (fresh market tomato, cabbage, and jalapeno pepper) as subplots with treatments arranged in a randomized complete block design in an organic transition field. The ground was moldboard plowed and disc cultivated before spreading and incorporating compost at 25 T/ha. The study had four replications and plots measuring 2.1 wide (two rows) x 3.6m. Registered organic insecticides and fungicides were applied to manage insects and diseases as needed. The soil samples taken to characterize the seedbank at the initiation of the study showed 29 weed species varying in population density but uniformly distributed in the field. Weeds with the highest field uniformity value included grasses, common purslane, giant ragweed, common lambsquarters, Virginia copper leaf, Pennsylvania smartweed, eastern black nightshade, Oxalis, henbit, bittercress, Indian tobacco, and daisy fleabane. The average yield for jalapeno pepper and cabbage was 19 and 31 T/ha, respectively, across the ground cover. Tomato yield was affected by ground cover, with bare ground having only 64% of the 54 T/ha harvested in plots covered with landscape fabric. The reduction in yield for bare ground was directly related to heavy leaf diseases earlier in the season. The study will run on the same plots for the next two years.