

Weed Seedbank Composition in a Long-term Tillage and Landscape Variability Study

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Abstract

Weed composition has been shown to be influenced by numerous environmental and cropping system attributes. The objective of this study was to evaluate cropping and landscape effects on weed seedbank composition. Soil samples at two depths were collected from an established experiment located on a 24-acre Coastal Plain field at the E.V. Smith Research and Extension Center near Shorter, AL. The experimental design was a factorial arrangement of two tillage systems (conventional and non-inversion subsoiling), with and without manure, a corn-cotton rotation with both phases of the rotation present each year, with six replications imposed on 20-ft by 787-ft long strips across the field. Each strip in the field was divided into 20-ft by 60-ft cells. Soil samples were placed in plastic trays and kept moist for three months. Weed seedlings were identified and removed over time. The six major weeds (totaling 19,087 individual seedlings) included annual bluegrass (739), carpetweed (539), common chickweed (851), henbit (15,376), purple cudweed (398), and smallflowered bittercress (587). Sample depth, tillage, manure, and the manure by tillage interaction significantly influenced weed composition and density.