

EFFECT OF FORAGE SOYBEAN AFTER WHEAT HARVEST ON PALMER AMARANTH AND DOWNY BROME. Justin Petrosino, J. Anita Dille, Kraig Roozeboom, and Mark Claassen, Graduate Research Assistant, Associate Professor, Assistant Professor, Professor, Department of Agronomy, Kansas State University, Manhattan, KS 66506

Palmer amaranth (*Amaranthus palmeri*) and downy brome (*Bromus tectorum*) are two common weeds in Kansas that flourish during the fallow period from winter wheat harvest to planting of the following summer annual crop. The potential exists to minimize weed emergence, survivorship, and fecundity without the use of herbicides by cultural methods such as replacing the fallow period with a cover crop. Field experiments were established in 2008 at the Department of Agronomy North Farm in Manhattan, KS and at the Harvey County Experiment Field in Hesston, KS to determine how the replacement of the fallow period after wheat harvest with a forage soybean planted at varying seeding rates and terminated by three different methods would affect weed emergence, survivorship, and fecundity. A randomized complete block design with four replications was established with five soybean seeding rates (100,000, 225,000, 350,000, 475,000 and 600,000 seeds/ha) and a no-cover control as treatments. Weeds were established in 1 m<sup>-2</sup> micro plots in each treatment. Maximum forage soybean biomass was obtained at 350,000 seeds ha<sup>-1</sup> in Manhattan, and 225,000 seeds ha<sup>-1</sup> in Hesston. Palmer amaranth emergence was higher in Hesston compared to Manhattan but it was not different across soybean seeding rates. Presence of the forage soybean cover crop decreased individual Palmer amaranth biomass compared to the no-cover control. Total Palmer amaranth biomass per treatment was negatively affected by increasing soybean biomass at both locations. Downy brome emergence was lower in the rolled and sprayed termination methods compared to the standing method in Manhattan. The presence of the forage soybean cover crop affected Palmer amaranth biomass accumulation and the cover crop termination method affected downy brome emergence.