

REGIONAL VARIABILITY IN SEED PRODUCTION OF ANNUAL WEEDS. Kathrin Schirmacher\*, and J. Anita Dille, Graduate Research Assistant and Assistant Professor, Agronomy Department, Kansas State University, Manhattan, KS 66506, Corey J. Guza and James J. Kells, Graduate Research Assistant and Professor, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824, Christy L. Sprague, Assistant Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801, and George O. Kegode, Assistant Professor, Department of Plant Sciences, North Dakota State University, Fargo, ND 58105.

Biological processes driving regional variability in weed populations are poorly understood because weed species, environmental conditions, and cropping systems vary across the Midwest. Quantifying weed population dynamics via potential seed production on a regional scale will contribute to the database that is founded on biological and ecological interactions. The objective was to characterize the regional variability in potential seed production of common lambsquarters, giant foxtail or green foxtail, and velvetleaf relative to four cohort emergence times in corn production systems across the Midwest. Field experiments were conducted in 2001 and 2002 in Illinois, Kansas, and Michigan, and in 2002 in North Dakota. Experimental whole-plots included the different weed species grouped by cohort, with cohort identified at a given corn growth stage (0, VE, V1, and V3). Weeds were harvested at or shortly after physiological maturity and average seed production per plant was determined. Illinois and Michigan showed low velvetleaf seed production and no significant differences across cohorts observed. Greater amount of velvetleaf seed were produced by earlier seeded cohorts in Kansas and North Dakota producing 2055 and 5843 seed plant<sup>-1</sup>, respectively compared to later cohorts. No cohort by location interaction was found for common lambsquarters ( $p=0.654$ ), and no differences across cohorts ( $p=0.477$ ). Giant foxtail (and green foxtail in North Dakota) showed the greatest variability across locations. In 2001, only Kansas showed differences in seed production for giant foxtail across cohorts and showed significantly greater seed production with the first cohort planting (0) than with later emerging cohorts. In 2002, no differences across time of plantings for giant foxtail were noted for Illinois and Michigan. In Kansas and North Dakota, earlier plantings showed greater overall average seed production producing 4242 and 1158 seed plant<sup>-1</sup> respectively at the first cohort planting (0), and produced 0 and 105 seed plant<sup>-1</sup> respectively at the V3 growth stage. Seed production variability across locations was likely related to regional variability in rainfall patterns during the years of study. Furthermore, variable crop seeding rates and planting dates across the region could contribute to creating a more competitive crop against the weeds.