ANNUAL WEED EMERGENCE AND SEED PRODUCTION AT FOUR SOWING TIMES IN CORN. Kathrin Schirmacher* and J. Anita Dille, Graduate Research Assistant and Assistant Professor, Kansas State University, Manhattan, KS 66506.

Few competition studies have been conducted in Kansas. Yet WeedSOFT®, a Decision Support System (DSS), that incorporates information on weed and crop growth, has been introduced in the state. The current biological database in the program has been derived from expert opinion. The objective was to compare the time of emergence and seed production of four annual weed species established at four different planting times in corn to generate a local database of information to be used in the Kansas version of WeedSOFT®. Field studies were conducted with common sunflower, giant foxtail, shattercane, and velvetleaf near Manhattan, Kansas in 2001 and 2002. Weeds were sown at planting time (V0), VE, V1, and V3 corn growth stages.

Range of emergence for planting times V0 and VE grouped common sunflower, giant foxtail, shattercane, and velvetleaf together. Decreasing soil moisture throughout the growing season caused greater variability in emergence of planting times V1 and V3 with few or no replicates emerging for all weed species. In Kansas, emergence of weeds was found to be highly contingent with rainfall patterns and explains the relatively earlier emergence of weeds in 2002 as opposed to 2001. Seed production was linearly related to end-of-season weed biomass with pooled models across years for all weed species. Maximum seed production for common sunflower was 33,900 seed plant^{-1} in 2002 and 8,100 seed plant^{-1} for velvetleaf in 2002. Rates of seed production were similar with 23.2 and 24.4 seed g^{-1} of weed biomass for common sunflower and velvetleaf, respectively. Rate of seed production for grasses was highest for giant foxtail with 296.5 seed g^{-1} and then shattercane with 26.5 seed g^{-1} across years.

Early emerging plants produced greater biomass and thus, had a higher level of seed production. Late-emerging weeds were still able to produce seed and contribute to the future dynamics of the weed population. The linear relationship between seed production and end-of-season biomass across years allows for estimating potential weed seed production.

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