

FEEDBACK RESPONSE OF COMMON SUNFLOWER AND GIANT RAGWEED GROWTH IN KANSAS' SOIL. Analiza Henedina M. Ramirez and J. Anita Dille, Graduate Research Assistant and Associate Professor, Department of Agronomy, Kansas State University, Manhattan, KS 66506.

Success of plants in any environment is due to many factors and among them, the presence of soil microbial communities, which are beneficial to the plant species and may influence species' persistence as well as abundance. A greenhouse study was conducted to quantify the plant-soil feedback response of giant ragweed and common sunflower in Kansas. Field soil was placed in 40 pots measuring 30.5 cm in diameter and 27 cm in height, which were divided into two sets of 20 pots. Seeds of giant ragweed from Illinois and common sunflower from Kansas were sown in a set of 20 pots. Six plants were established and allowed to grow in each pot for two cycles each lasting 10 weeks, known as the conditioning phase. After each cycle, plants were removed and soil from each set was remixed and made ready for the next planting. For the feedback phase, each set of soil was further divided into two with that subset being planted to either the same species previously grown in that soil (SAME) or with the other (DIFF, either giant ragweed or common sunflower). The plants were allowed to grow for another 10 weeks after which plants in each pot were harvested and individually measured for height, fresh and dry weights. The experiment was laid out in a randomized complete block design with 10 replications. Soil feedback scores for height and dry weight were calculated by subtracting average per pot values of DIFF from SAME. Results showed feedback response of common sunflower and giant ragweed to soil history for all parameters measured varied significantly. Common sunflower tended to grow well in Kansas' soil regardless of soil history (positive feedback score) while giant ragweed's growth was generally inhibited (negative feedback score). Dry weight feedback scores for common sunflower and giant ragweed were 2.08 and -2.35, respectively, while feedback scores for height were 8.07 and -20.78 for common sunflower and giant ragweed respectively, indicating significant inhibition. The results presented are from one trial, with another run of this study currently being done. If similar results are obtained, it might possibly explain common sunflower's predominance and giant ragweed's limited occurrence in Kansas.