

THE EFFECT OF HABITAT HETEROGENIETY, CHARACTERIZED BY SOIL ORGANIC CARBON, ON GROWTH AND REPRODUCTIVE FITNESS OF COMMON SUNFLOWER. Rachelle R. Fargo, John L Lindquist, David A. Mortensen, and Daniel T. Walters, Graduate Research Assistant and Professors. Department of Agronomy and Horticulture, University of Nebraska, Lincoln, NE 68583-0817.

Research was conducted to determine the effects of soil organic carbon on growth and reproductive fitness of corn and common sunflower. Field experiments were conducted in 2001 and 2002 at the Agricultural Research and Development Center (ARDC) near Mead, Nebraska. Experimental design was a split plot with soil organic carbon as main plots and isoxaflutole presence or absence subplots. Isoxaflutole was applied at 1 and 15 g ha⁻¹. Common sunflower was seeded adjacent to the crop row. Biomass of common sunflower was obtained twice throughout the growing season; corn biomass was obtained at anthesis. Leaf area of common sunflower and corn were also measured. Sunflower inflorescences were counted and diameters were measured to determine reproductive fitness. Common sunflower biomass, leaf area, and seed production increased with increasing amounts of soil organic carbon. At low dosages of isoxaflutole, plant response did not vary across the soil the soil organic gradient. This indicates that there will be a greater abundance of common sunflower in environments with higher amounts of soil organic carbon. Corn yield loss owing to common sunflower interference may be greater in high soil organic carbon environments.