

THE EFFECTS OF NITROGEN SUPPLY ON ROOT:SHOOT RATIO IN CORN AND VELVETLEAF. Kimberly D. Pavelka and John L. Lindquist, Graduate Research Assistant and Professor, Department of Agronomy and Horticulture, University of Nebraska-Lincoln, Lincoln, NE 68583-0817

Competition between crops and weeds can be better understood with knowledge of how plants partition their new biomass in response to a gradient of nutrient supply. This study was conducted in pots in the field to determine the fraction of biomass partitioned to the root versus the shoot in corn and velvetleaf over time in response to nitrogen. Pots measuring 28 cm in diameter and 60 cm deep were buried in holes in the ground and contained one plant of either corn or velvetleaf. In 2001 each plant received one of three nitrogen treatments: 0, 1 g, or 3 g of nitrogen applied as ammonium nitrate. In 2002 each plant received 0, 2, or 6 g of nitrogen. Measurements of total above and belowground biomass were made at 10 different sample dates during the growing season. The root:shoot ratio decreased over time for both corn and velvetleaf as a result of normal plant growth and development, and the root:shoot ratio also decreased for both corn and velvetleaf as nitrogen supply increased. Root:shoot ratio differed between the two species for all stages of development and at all levels of nitrogen supply. Both corn and velvetleaf display plasticity in root:shoot ratio in response to nitrogen supply and the degree of plasticity in root:shoot ratio differs between species.