

USING LEAF NITROGEN CONTENT TO PREDICT BIOMASS ALLOCATION PATTERNS 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

Knowledge of how plants will partition their new biomass will aid in understanding competition between crops and weeds. 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 and tissue carbon and nitrogen concentration were made at 10 different sample dates during the growing season. By using these measurements, actual results were compared to the predicted results of a model to see if the model can be used to correctly predict the amount of plant biomass allocated to roots and shoots. The tested model has potential as a reliable tool for predicting plant biomass allocation patterns. Biomass partitioning was correctly predicted for corn in 2001 and 2002 and for velvetleaf in 2001.