WEEDSOFT: EFFECT OF TOTAL COMPETITIEVE LOAD ON SOYBEAN YIELD LOSS PREDICTIONS. Christy L. Sprague, Assistant Professor, Department of Crop Sciences, University of Illinois, Urbana, IL 61801.

WeedSOFT$_{SM}$ is a decision support system designed to assist growers, consultants, and educators in making weed management decisions. This interactive software is a bioeconomic model, which basis weed management decisions on the potential crop yield loss if no weed control measure is implemented. One factor used in the calculation of crop yield loss is total competitive load. The total competitive load takes in to account the sum of the individual weed species densities multiplied by their adjusted competitive indices. In 2000 and 2001, a series of field experiments were conducted in several North Central states that were interested in adapting WeedSOFT$_{SM}$. Individual WeedSOFT$_{SM}$ versions were used that were state specific for herbicide efficacy and weed competitiveness. One objective of this research was to determine how effective WeedSOFT$_{SM}$ was in predicting soybean yield based on total competitive load. For this experiment, soybeans were planted in 76-cm rows. Prior to postemergence herbicide applications, crop and weed sizes and densities were recorded for individual plots. This information was averaged over replications for individual treatments and entered into WeedSOFT$_{SM}$ to predict soybean yield for individual treatments. Common treatments included: weed-free and untreated plots, WeedSOFT$_{SM}$ generated treatments that provided maximum yield protection, and treatments that provided approximately 10% and 20% less than maximum yield. Predicted yield was correlated to actual yield after harvest. Yield correlations had a wide range, with a maximum correlation coefficient of $r = 0.97$. Weed density, type, and location had an affect on how well predicted yield correlated to actual yield.