

WEED COMMUNITY CHARACTERISTICS OF CORN AND SOYBEAN FIELDS MANAGED POSTEMERGENCE IN WISCONSIN. Nathanael D. Fickett, Chris M. Boerboom, and Clarissa M. Hammond, Graduate Student and Professor, University of Wisconsin, Madison, WI 53706, and Weed Scientist, Department of Agriculture, Trade, and Consumer Protection, Madison, WI 53718.

Knowledge of weed species, height, density, and duration in a field is necessary to determine the severity of early-season weed-crop competition. To assess the potential yield loss due to weed competition in Wisconsin corn and soybean fields that are managed with postemergence herbicide programs, the weed communities must first be characterized. In 2008, weed populations were surveyed in corn fields of 10 counties, and in soybean fields of eight counties. Approximately five fields per county that were at least 3 miles apart were randomly selected to be surveyed. A total of 48 fields of corn and 30 fields of soybean were surveyed. For each field, a surveyor walked a horseshoe pattern through the field starting and ending at the field's edge. Heights and densities of predominant weed species were estimated in 10 1-m<sup>2</sup> quadrats per field spaced at intervals of 30 paces. The surveys were repeated every 3 to 4 days until the fields were treated with a postemergence herbicide, which marked the end of early-season weed competition. On average,  $7.7 \pm 3.5$  weed species were observed in the corn fields, and  $7.6 \pm 2.6$  weed species were observed in the soybean fields. When the corn fields were treated postemergence, the weed population had a mean height of  $15 \pm 0.9$  cm and a mean estimated density of  $19 \pm 3.0$  plants m<sup>-2</sup> with a range of  $8 \pm 1.2$  to  $28 \pm 4.7$  plants m<sup>-2</sup>. When the soybean fields were treated postemergence, the weed population had a mean height of  $30 \pm 2.8$  cm and a mean density of  $25 \pm 8.9$  plants m<sup>-2</sup> with a range of  $10 \pm 5.2$  to  $28 \pm 12.8$  plants m<sup>-2</sup>. Corn fields were, on average, treated postemergence at the V5 growth stage on June 18 and soybean fields were, on average, treated at the V4 growth stage on July 7. The dominant weeds species in both crops were common lambsquarters, annual grasses (not identified to species), velvetleaf, dandelion, and common ragweed. In corn fields, they were present in 96, 94, 94, 58, and 50% of the fields, respectively. When the corn fields were treated, these weeds had mean heights of  $13 \pm 0.8$ ,  $18 \pm 1.0$ ,  $10 \pm 0.6$ ,  $15 \pm 1.2$ , and  $15 \pm 1.1$  cm, respectively, and mean density ranges of  $13 \pm 3.9$  to  $42 \pm 12.0$ ,  $27 \pm 8.1$  to  $91 \pm 23.0$ ,  $3 \pm 0.7$  to  $10 \pm 2.0$ ,  $2 \pm 0.5$  to  $5 \pm 1.5$ , and  $3 \pm 0.9$  to  $9 \pm 2.4$  plants m<sup>-2</sup> among the fields, respectively. In soybean fields, common lambsquarters, annual grasses, velvetleaf, dandelion, and common ragweed were present in 97, 97, 70, 67, and 63% of the fields, respectively. At the time of treatment, these weeds had mean heights of  $25 \pm 2.8$ ,  $36 \pm 2.7$ ,  $23 \pm 2.9$ ,  $15 \pm 1.2$ , and  $15 \pm 4.6$  cm, respectively, and mean density ranges of  $6 \pm 1.9$  to  $18 \pm 6.0$ ,  $46 \pm 16.0$  to  $119 \pm 39.0$ ,  $5 \pm 1.6$  to  $18 \pm 5.1$ ,  $3 \pm 2.6$  to  $14 \pm 10.5$ , and  $3 \pm 1.7$  to  $7 \pm 4.5$  plants m<sup>-2</sup> among the fields, respectively. Based on the data from this survey, the timing of postemergence herbicide treatment may exceed the critical time of weed removal in a moderate percentage of corn and soybean fields in Wisconsin. Thus, crop yield loss may be occurring from early-season weed competition. This data, in combination with a bioeconomic model, will be used to predict the potential yield loss from weed competition in corn and soybean grown in Wisconsin.