

FOUR YEAR SUMMARY OF WEED SPECIES OBSERVED BY SCOUTING NINE KENTUCKY CORN AND SOYBEAN FIELDS. Michael W. Marshall, J.D. Green, and J.R. Martin, Research Specialist, Extension Professor, Extension Professor, Department of Agronomy, University of Kentucky, Lexington, KY 40546.

A survey was initiated in 1998 and 1999 to determine the baseline weed species composition in Kentucky corn and soybean fields before the introduction of genetically tolerant crop varieties. Within the span of 4 years, it has been estimated that 80% of soybeans planted have the Roundup Ready technology and, in Kentucky, approximately 30% of corn acres have been planted with Clearfield corn hybrids. However, a potential exists for a shift in the dominant weed species in response to these new herbicide programs. The objectives of this study were to develop a baseline of the most frequently occurring weed species that infest Kentucky corn and soybean fields, to develop a long-term assessment of the impact of herbicide tolerant crop technology on the occurrence of weed species and, with these assessments, determine if these practices resulted in a shift in the dominate weed species present. For the statewide baseline assessment, ten counties were chosen in 1998 and 1999, which consisted of 64 soybean fields and 39 corn fields, representing approximately 4700 acres. For the long-term annual assessment, the focus was narrowed to 8 fields in Taylor County and 1 field in Hardin County. Fields were surveyed approximately 3 to 5 weeks after planting, but before any postemergence herbicide treatment. The scouting procedure consisted of a S-shaped pattern where the total number of survey sites within a field were determined by a set number of paces which divides a field into 5 acre blocks or segments. For example, 4 sample sites would be used to represent a 20 acre field. In addition, at each of the survey sites, a handheld GPS unit was used to record the exact location using GIS-GPS satellite system. At each survey site, the weed species present and relative density of each weed species was determined. In addition, the following production practices were noted: tillage, crop variety and growth stage, planting date, and herbicide program. Percent frequency occurrence of individual species was calculated as the number of sites where the weed species was detected divided by the total number of sites in a given field. Weed species were ranked according the percent frequency of occurrence. In statewide soybean fields, the following species were detected: prickly sida > johnsongrass > honeyvine milkweed > ivyleaf morningglory > smooth pigweed. Similarly, in statewide corn fields, the following species were detected: smooth pigweed > johnsongrass > yellow nutsedge > horsenettle > ivyleaf morningglory. In Taylor County soybean fields, prickly sida, common lambsquarters, and giant foxtails were among the most prevalent species detected in 1999; however, the 2002 survey indicated that ivyleaf morningglory, horseweed, and johnsongrass were observed most frequently. Similarly, the Taylor County corn fields, in 1999, showed that horsenettle, smilax spp., and johnsongrass were the most prevalent, but, during the 4 year scouting program, dandelion, smooth pigweed, broadleaf signalgrass, and pitted morningglory became the most frequent or prevalent. For a more detailed analysis, two fields in Taylor County and one field in Hardin County were selected. The top five weed species found during the 1999 baseline survey in the two Taylor County fields were broadleaf signalgrass, horseweed, ivyleaf morningglory, pitted morningglory, and common lambsquarters. Broadleaf signalgrass and pitted morningglory remained among the most frequently detected species through 2002. However, in Hardin County, perennial dicots were among the most prevalent species found in 1999. Similarly, honeyvine milkweed and hemp dogbane remained the most frequently detected species through 2002. In conclusion, annual morningglories remained at or near the top of the weed ranking due to ability to escape control measures. In soybeans, certain weed species, such as horseweed, increased due to changing herbicide programs, such as lack of soil residual treatments. Johnsongrass remained a commonly observed species, but mainly as seedling plants. Due to no-tillage production practices, perennial dicots, such as honeyvine milkweed, hemp dogbane, and common pokeweed, increased in severity or frequency. Also, marginal species, such as brambles spp., smilax spp., and tree saplings, were detected.