Late-Season Weed Escapes in Indiana Soybean

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Introduction

Crop advisors and extension personnel have observed a recent increase in the number of complaints regarding weed control with glyphosate. Glyphosate-resistant horseweed was discovered in southeast Indiana in 2002 and now infests at least 19 counties. Since glyphosate-resistant soybeans are grown on 89% of soybean acres in Indiana, in addition to determining the distribution of glyphosate-resistant horseweed in Indiana, we were interested in determining what other weeds are escaping glyphosate treatments.

Objectives

The objective of this research was to record the identity, occurrence and distribution of weed species in soybean just prior to harvest.

Materials and Methods

Field surveys of 718 fields in 43 Indiana counties were conducted in September and October of 2003 and 2004. Survey sites were randomly selected by examining NASS Cropland Data Layer and USGS digitized imagery. The number of sites in the most intensively sampled counties was based on a target of one field per 3500 acres of cropland.

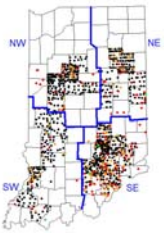

Figure 1. Map of Indiana which shows the sampling locations in each county. The blue line indicates regional borders based roughly on Extension Reporting Districts.

At each site, identity and field coverage of each weed protruding above the soybean canopy was recorded (Figure 2).

Figure 2. Survey data collected at each site.

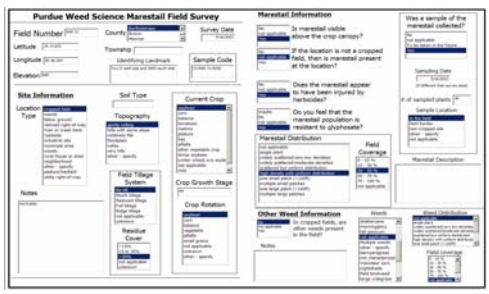

Table 1. Predominant weed species found in soybean fields in Indiana during September and October of 2003 and 2004.

Weed	NE (150 fields)	NW (157 fields)	SE (245 fields)	SW (166 fields)	Statewide (718 fields)
	----------% of fields surveyed----------				
Giant ragweed	35	54	17	52	37
No weeds present	31	27	14	19	22
Horseweed	6	6	50	8	21
Lambsquarters	17	13	6	11	11
Giant foxtail	16	11	8	5	10
Red./smooth Pigweed	5	3	3	16	6
Cocklebur	6	3	4	5	4
Fall panicum	2	3	6	4	4
Waterhemp	5	1	1	5	3
Common ragweed	5	3	1	3	3
Velvetleaf	5	6	1	1	3
Barnyardgrass	1	3	2	2	2
Johnsongrass	1	1	4	2	2
Volunteer corn	3	4	0	1	2
Morningglory sp.	5	1	1	1	2
Pokeweed	0	3	0	1	1

Results and Discussion

Broadleaf Weeds: Giant ragweed was the predominate specie found in three of the four regions of Indiana. Horseweed (aka marestail), was the predominante weed in SE Indiana where glyphosate resistance is wide spread (Davis et al., 2004) and the weed is well adapted as a summer annual (Davis et al., 2004). Common lambsquarters was found in greater than 10% of the fields in the same regions where giant ragweed was the predominant specie.

Grass Weeds: Giant foxtail, fall panicum and barnyardgrass were the predominant grass weeds found in the survey. Giant foxtail prevelance appeared to be higher in the NE and NW regions of Indiana compared to the other regions. Fall panicum and barnyardgrass were found in all four regions in less than 10% of the fields sampled. Johnsongrass was found in 4% of the fields in SE Indiana, but 2% or less of the fields in the other regions.

Influence of Tillage System on Late-Season Incidence of Giant Ragweed and Horseweed: Information on tillage practices and crop rotation was collected at each site (Figure 2). Horseweed was most commonly found in SE Indiana in no-till fields with either wheat or soybean as the previous crop (Barnes et al., 2004). Increased tillage intensity reduced prevalence of horseweed by 30% or more. Rotation corn with soybean did not greatly reduce horseweed prevalence. Giant ragweed was most commonly found in fields rotated with corn utilizing intermediate levels of tillage. Utilization of no-till or more aggressive conventional tillage practices reduced giant ragweed incidence by 10-15% over mulch tillage practices.

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Literature Cited

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