CONTROLLING FIELD HORSETAIL AND OTHER ODD WEEDS

Vince M. Davis[1]

Introduction

Field horsetail (*Equisetum arvense*) is in the *Equisetaceae* family which was comprised by over 30 species some 230 million years ago. The horsetail family was the dominant plant group in that time period. Currently, two surviving species from the family which many of us today call weeds are *E. arvense* and *E. hyemale*, or scouring rush. Therefore, these 'weeds' have been around a long time so it's obvious they have a tremendous ability to adapt to their environment. Field horsetail is a perennial weed that vegetatively re-propagates by spreading rhizomes. It is additionally unique because it is a non-flowering plant so it does not reproduce my seed, but rather, it reproduces by spores. The reproduction by spores occurs early in the spring when a single, fertile brownish stalk emerges and produces a 'cone-like' structure which releases the spores at the top of the main stalk. This early growth is followed by a single, sterile green stalk and then branched, green plants as shown in Figure 1.

Figure 1 on left, Branched field horsetail among field corn. Figure 2 on right, field horsetail extending from the roadside into a no-till field of corn. Both images were taken in 2011 at a field research site in Green Lake, WI.

Field horsetail populations often start in ditch banks or other adjoining natural areas and spread inward from the field edges (Figure 2). Like many perennials, field horsetail is favored by reduced tillage. Moreover, very few herbicides are effective at controlling field horsetail, and common no-till herbicides, namely glyphosate and 2,4-D, offer essentially no control. Despite few control options, this weed has not been studied a lot because while it is difficult to control, it traditionally occupies few acres. However, with the popularity of reduced tillage and subsequent increased reliance on glyphosate in Roundup Ready crops, it is increasing in several geographies.

Dr. Chris Boerboom wrote an article in the Wisconsin Crop Manager in May of 2009, *Field Horsetail ID and Management in Field Corn* that addressed the increasing concern a couple years ago. They established field research trials in 2009 and 2010. Tim Trower reported on those trials at the Wisconsin Crop Management conference in 2011. Results in those trials were extremely variable among locations and between years (results not shown). In 2010, no

[1] Assistant Professor, Dept. of Agronomy, 1575 Linden Dr., Univ. of Wisconsin-Madison, Madison, WI 53706.

differences in field horsetail control were observed among the soil-applied herbicide programs they examined. Postemergence applications of Steadfast plus Hornet and Steadfast plus Status seemed to be the most consistent postemergence programs. According to research in Ontario Canada and other Midwest states, flumetsulam, the active ingredient in Python and one of the active ingredients in Hornet and Surestart herbicides, provides the most consistent control when applied preemergence. However, as Boerboom noted in 2009, growers often still report inadequate control.

Research continued in 2011 in a field site in Green Lake county Wisconsin. This was a long-term no-till field where horseweed completely infested approximately 10% of 60 acres. The objective in 2011 was to compare postemergence herbicide combinations focusing on combinations of acetolactate synthase (ALS) inhibitor and dicamba herbicide combinations presented in Table 1. All treatments were broadcast at 15 gal/a on June 9, 2011 when the corn was at the V4 growth stage and the field horsetail was 6 to 14 inches tall. All herbicide treatments contained the addition of ammonium sulfate at 3.4 lb/a.

Table 1. Visual control ratings for field horsetail following postemergence herbicide applications in corn on June 9, 2011; where 0 is no control and 100 is complete control.

			Percent control rating		
Herbicide treatment	Rate	Unit	6/24/2011	7/28/2011	10/5/2011
Roundup PowerMax	22	fl oz/a	0 b	0 b	0 c
Roundup PowerMax +	22	fl oz/a	25 ab	37 a	47 b
Surestart	1.5	pt/a			
Roundup PowerMax +	22	fl oz/a	37 ab	45 a	67 ab
Yukon +	4	oz/a			
NIS	0.25	% v/v			
Steadfast +	0.75	oz/a	34 ab	59 a	95 a
Yukon +	4	oz/a			
COC	1	% v/v			
Steadfast +	0.75	oz/a	53 a	74 a	95 a
Status +	5	oz/a			
COC	1	% v/v			
Steadfast +	0.75	oz/a	35 ab	58 a	77 a
Hornet +	4	oz/a			
COC	1	% v/v			
Roundup PowerMax +	22	fl oz/a	36 ab	61 a	88 a
Status +	5	oz/a			
COC	1	% v/v			
Steadfast +	0.75	oz/a	48 a	71 a	95 a
Northstar +	5	oz/a			
COC	1	% v/v			
LSD (P=.05)			24	26	22
Standard deviation			16	17	15
CV			48	34	21

2011 Field Horsetail Summary

Field horsetail control was again very inconsistent among treatments and the experimental variability was quite large. Roundup Powermax plus Surestart applied postemergence provided the least horsetail control, despite having flumetsulam as one of the active ingredients. However, in a normal field use rate of surestart, the concentration of flumetsulam is much lower than can be applied as Python or Hornet in preemergence applications. Conversely, Steadfast + Status again performed among the best (albeit numerically) and was the most consistent across timings. Steadfast + Northstar also performed equally well in this trial. As evidenced in Table 1, none of the postemergence herbicide options were highly effective, and there is still no clear answer or easy solution for horsetail control. A multipronged approach, and repeated applications are needed and ideas for successful integrated approaches will be discussed in more detail.

Other 'ODD' Weeds

In addition to the continued pursuit of investigating control options for field horsetail, a few other weeds which are less common to Wisconsin crop production fields came to our attention this year. Namely common pokeweed (*Phytolacca americana*) and Palmer amaranth (*Amaranthus palmeri*). We will discuss identification of these weeds and potential implications and control strategies.

References

Field horsetail ID and management in field corn. Chris Boerboom. Posted May 14 2009. Wisconsin Crop Manager. Accessible at: http://ipcm.wisc.edu/WCMNews/tabid/53/EntryId/716/Field-Horsetail-ID-and-Management-in-Field-Corn.aspx

Managing emerging old weed problems in Wisconsin. Timothy L. Trower, Mark Renz, Bryan Jensen, and Larry Binning. Proceedings of the 2011 Wisconsin Crop Management Conference, Vol. 50, pp. 33-37. Accessible at: http://www.soils.wisc.edu/extension/wcmc/

Palmer amaranth is in Wisconsin crop production fields. Vince M. Davis. Posted October 13 2011. Wisconsin Crop Manager. Accessible at: http://ipcm.wisc.edu/WCMNews/tabid/53/EntryId/1281/Palmer-amaranth-is-in-Wisconsin-crop-production-fields.aspx