Marestail – Will it be a problem this year?

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Last summer, there were a number of product performance issues related to poor herbicide activity on marestail. There are a number of reasons why this occurred and the purpose of this article is to provide an overview of these reasons and an update on the current status of marestail in Indiana.

Reasons why marestail was difficult to control in 2002:

1) Marestail is a weed which can emerge both in the fall and in the spring. In essence, it is both a winter and a summer annual. Fall emerging marestail will have a more extensive root system than those that emerge in the spring. Plants with more established root systems can be difficult to control because of resprouting from meristems in the lower part of the stem and roots. This occurs if systemic herbicides are not translocated to these meristems in high enough quantities to inhibit growth. Larger or older plants will have a larger number of active meristematic areas in the plant, thus effective herbicide translocation to all meristems becomes very important.

2) Glyphosate products (Roundup, Touchdown, Glyphomax and others) are relatively weak on large marestail. These products provide fairly good control of small (4 inch or less) seedlings, but control falls off pretty dramatically when marestail is more than 4 inches tall. Many of the control failures with glyphosate products were on plants sprayed when they were greater than 1 foot tall. In many of the same fields, glyphosate was the only product used. The addition of 2,4-D or FirstRate/Amplify to glyphosate would have improved control of larger marestail.

3) Weather conditions. Typically, weeds growing in very wet or very dry soils have slower rates of metabolism than weeds growing in less extreme conditions. It is highly likely that the reduced rate of metabolism of weeds growing in these conditions resulted in compromised herbicide activity. We observed this with glyphosate on common lambsquarters in 2002 as well. Common lambsquarters, much like marestail, is difficult to control with glyphosate when it is more than 4 inches tall. So the combination of reduced plant metabolism, plus the fact that glyphosate efficacy on large marestail is variable anyway resulted on control failures.

4) Glyphosate-resistant marestail has been confirmed in Jackson, Bartholomew and Jefferson counties and is suspected in several other counties in southern Indiana. Glyphosate resistant marestail has also been confirmed in Ohio, Kentucky, and Tennessee. It appears initially that this problem will continue to grow because of widespread adoption of glyphosate use in soybean and the potential for growth in use of glyphosate in corn. In addition, marestail seed is well suited to dispersal by wind. Once
a population is established, it will spread very quickly if resistant plants are allowed to go to seed.

**The Good News.**

Our observations so far this year is that the marestail populations are lower than they were last year. There are a number of reasons for this.

1) The past fall was relatively dry and seedlings did not emerge.

2) The past winter was relatively harsh compared to previous years. While I was at the University of Missouri conducted studies to monitor winter weed populations in the fall, winter and early spring months. I was relatively surprised by the relatively high rate of mortality of many winter annual weeds, even during relatively mild winters. Typically, henbit and chickweed populations were 50 to 75% lower in the spring compared to the previous fall. So, it is highly likely that any marestail that emerged in the fall would have suffered a similar fate, which would further reduce populations.

3) Spring has been relatively dry in many parts of the state, so spring emergence of marestail is low.

4) 2,4-D provides good control of marestail and is one of the cheapest herbicides we have. In some areas of the state, there is/was a reluctance to use 2,4-D as part of a burndown program for no-till crop production. Crop advisors, representatives with companies that sell glyphosate products, and Purdue University extension specialists have taken an active role in educating our clientele about this issue over the winter months. It appears initially, that much more 2,4-D is being used as a component of the burndown program. This is a wise strategy as it provides another mode of action on this and other weeds and will slow the development of more resistant weed populations.

So, to answer our question above, it appears that the marestail problems are of a lower magnitude so far this year. But weather conditions which prevent spraying and/or soil preparation over the next couple of weeks could result in a different story. Stay tuned….

Final Comment. Weed Scientists at Purdue University are very concerned about this issue and will be monitoring the distribution and spread of glyphosate-resistant marestail in Indiana. If you think you have a suspect population, please contact your county Extension Educator. We will be collecting seed later this summer and fall from across the state for glyphosate tolerance screening and would like to collect seed from as many populations as we can manage.

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