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2020 Summary of Herbicide Evaluations for Marestalk (Horseweed) Control in Soybean

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Abstract

Marestalk is one of the most widespread and troublesome weeds in Iowa croplands. It can grow to a height of 1.5 to 6 feet, produce up to 200,000 seeds, and can reduce soybean yields up to 80% if not controlled (Figure 1). Marestalk seeds are light and disperse across landscapes with winds. Seeds have little dormancy and can germinate soon after seed shed. In general, 75% of seedlings germinate in fall, remain in rosette-stage until spring, begin stem elongation in April, and start flowering in July. About 25% of seeds germinate in the spring. Due to these unique biological characteristics and a prolonged emergence period, a comprehensive management program is necessary for marestalk control.

Disciplines

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Figure 1. Maretail infestation in a soybean field at the ISU Research and Demonstration Farm near Ames, IA in 2020.

Maretail populations in Iowa have developed resistance to glyphosate (HG 9) and ALS-inhibitor (HG 2) herbicides. Therefore, a diverse herbicide program is needed. Controlling maretail at the rosette stage is critical for consistent control with postemergence herbicides. As temperatures increase in spring, maretail stems begin to elongate. Plants in the rosette stage are much easier to control than bolted plants. Fall or spring burndown (preplant) herbicide programs play a vital role by targeting maretail at the rosette stage.

Field trials at the ISU Research and Demonstration Farm near Ames, IA in 2020 evaluated the effectiveness of several herbicide programs on maretail (Figures 2 and 3).

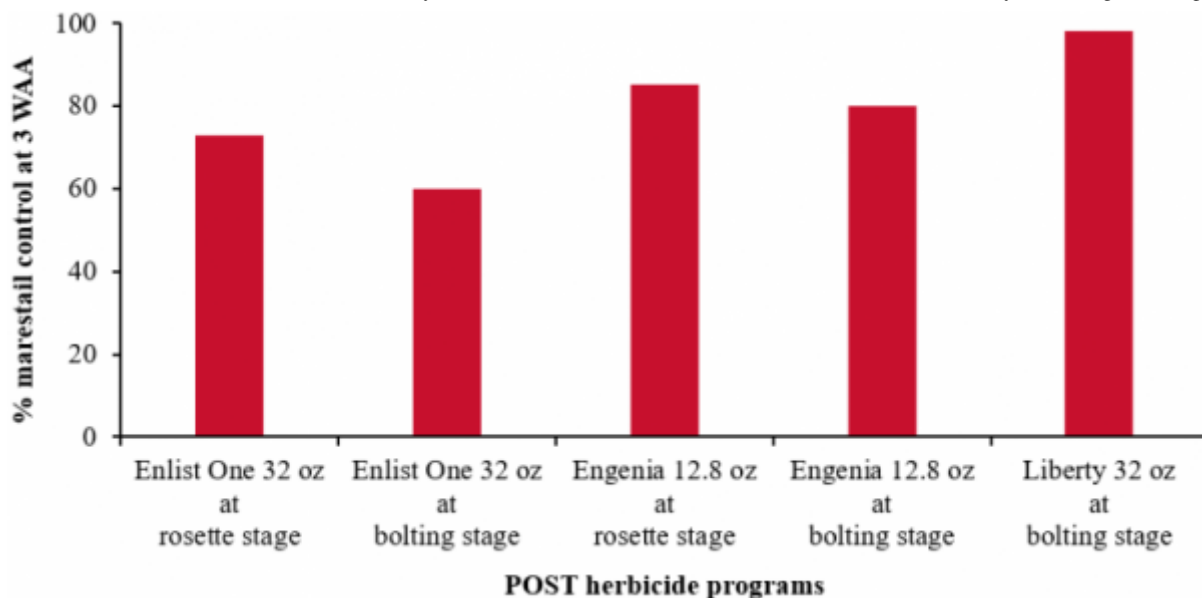


Figure 2. Effect of postemergence herbicides and application timing on marestalk control in a bare ground study at 3 weeks after application (3 WAA).

Engenia (dicamba) and Enlist One (2,4-D choline) both provided greater control of marestalk when applied at the rosette stage compared to the bolting stage (Figure 2). In this study, Liberty (32 oz/a) provided >90% control even when applied at the bolting stage of marestalk plants; however, applications should be targeted to plants at the rosette stage for consistent control.

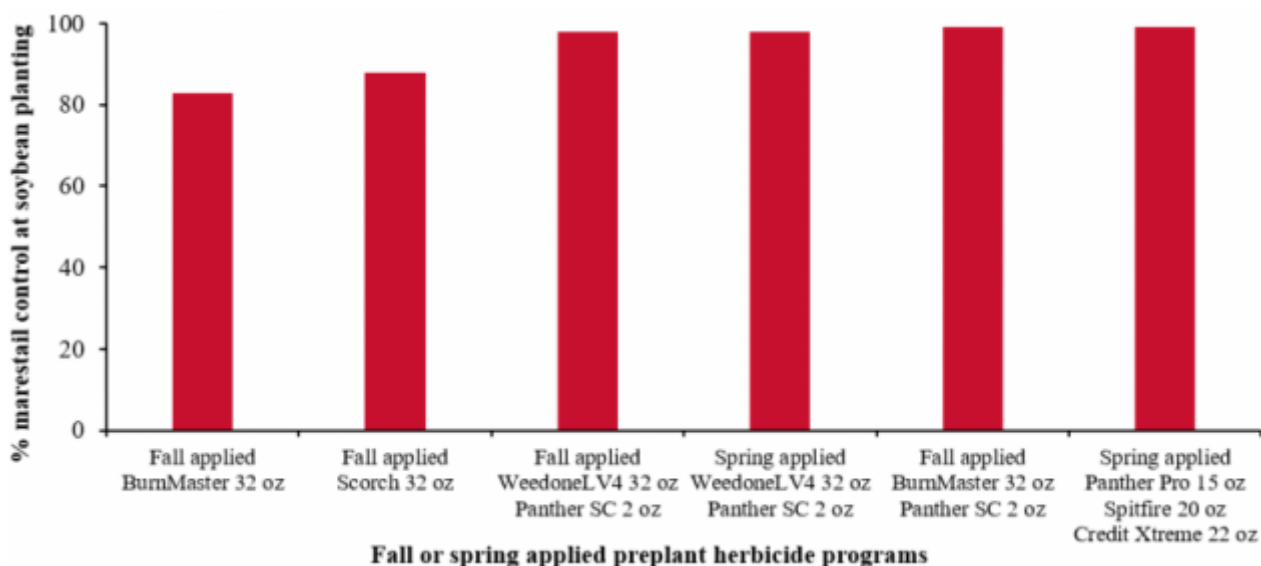


Figure 3. Efficacy of fall- or spring-applied preplant burndown herbicides on marestalk control in Roundup Ready 2 Xtend soybean.

In an Xtend soybean trial, fall-applied BurnMaster (dicamba + 2,4-D) or Scorch (dicamba + 2,4-D + fluroxypyr) provided complete control of marestalk until early spring (April 15, 2020; data not shown). However, due to a lack of residual activity, new marestalk plants emerged in the spring and percent control was reduced to <90% at the time of soybean planting (May 15, 2020) as shown in Figure 3. In contrast, 2,4-D-based fall burndown programs which included a residual herbicide such as Panther SC (flumioxazin) provided >98% control of marestalk at soybean planting. No differences were observed when the residual herbicide was added to the fall or spring burndown programs (>95% control). However, we recommend including residual herbicides (flumioxazin, metribuzin) in spring burndown applications for consistent control of late-emerging cohorts of marestalk and other early-emerging weed species such as common lambsquarters and giant ragweed prior to soybean planting.

Glufosinate should be added in spring burndown programs with 2,4-D choline and dicamba in Enlist E3 (tolerance to glyphosate, 2,4-D choline, and glufosinate) and XtendFlex (tolerance to glyphosate, dicamba, and glufosinate) soybeans, respectively, especially when applications are delayed due to a wet spring or when marestalk plants have bolted. On-going research trials conducted by the ISU weed science program indicate that fall-planted cereal rye cover crop would be an effective complimentary strategy to manage or suppress marestalk in soybean and reduce burden on herbicides.

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Category: Weeds

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Crop:

Soybean

Tags: marestalk horseweed weed management herbicide weed seed

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