

Field demonstration to show the impact of delayed planting on giant ragweed densities in soybeans at Rochester, MN in 2014

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The objectives of this demonstration were 1) to show the impact of delayed planting on giant ragweed densities, and 2) to evaluate delayed planting as a non-chemical management tool to control giant ragweed in soybeans. The trial was planted with a 4-row John Deere 7000 planter on May 6, 19 and 27, 2014. Plots were 4 rows wide and the seeding rate was 149,000 seeds per acre with seed planted at a depth of 1.5 inches in 30 inch rows. A randomized complete block design was implemented and replicated three times. Roundup PowerMAX was applied at 32 fluid oz/acre just prior to each planting date (May 6, 19, and 27) to remove all weeds before planting, and to partially simulate the effects of removal by tillage. The soil type was a Lawler loam and the previous crop was corn.

In Minnesota, herbicide resistant weeds have largely been an issue in soybean where delayed planting has a negative yield penalty and where very limited postemergence herbicide options exist for broadleaf weeds. Research trials conducted by Jared Goplen, University of Minnesota graduate student, on SOA-2 and SOA-9 herbicide resistant giant ragweed in southeast Minnesota revealed the majority of the giant ragweed population germinated by early June in 2013 and 2014, Figure 1. This supports the current information that giant ragweed is an early emerging weed, with the majority of the weed seed emerging between May and June. Historically, in the eastern and Midwestern corn belt, giant ragweed emerged by early May. However, giant ragweed has now been reported to emerge as early as March and continue until early June. In parts of the eastern Corn Belt, it will continue to emerge into late-July (Biology and Management of Giant Ragweed: <https://www.extension.purdue.edu/extmedia/bp/gwc-12.pdf>)

Due to the early emergence pattern, one non-chemical option to help manage and control giant ragweed would be to delay planting and remove the first flush of weeds with tillage. This adds a non-chemical tactic to the limited number of tools available to control herbicide resistant weed populations. Potential benefits include 1) removing early emerging giant ragweed with tillage, 2) delaying application of preemergence herbicides, thus extending the residual benefit later in the growing season, 3) reducing the density of giant ragweed populations to be controlled after planting, and 4) delaying application of postemergence herbicide(s), again extending the herbicide system later in the growing season. Also, using residual PRE and

POST herbicides extends the time these herbicides could control later season germinating weeds, such as common waterhemp.

Additional work by Goplen, suggests that if a zero weed seed threshold is achieved, the seed bank can be depleted by 96-99% in 2 years. This provides an extra incentive to aggressively manage herbicide resistant giant ragweed populations. (University of Minnesota Extension Regional Office, Rochester, and Southern Research and Outreach Center, Waseca, MN).

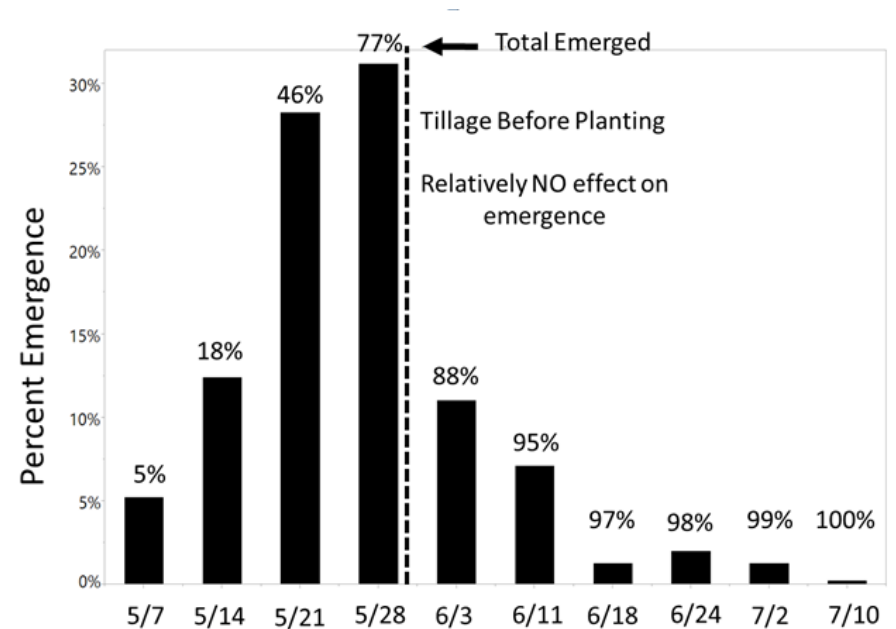
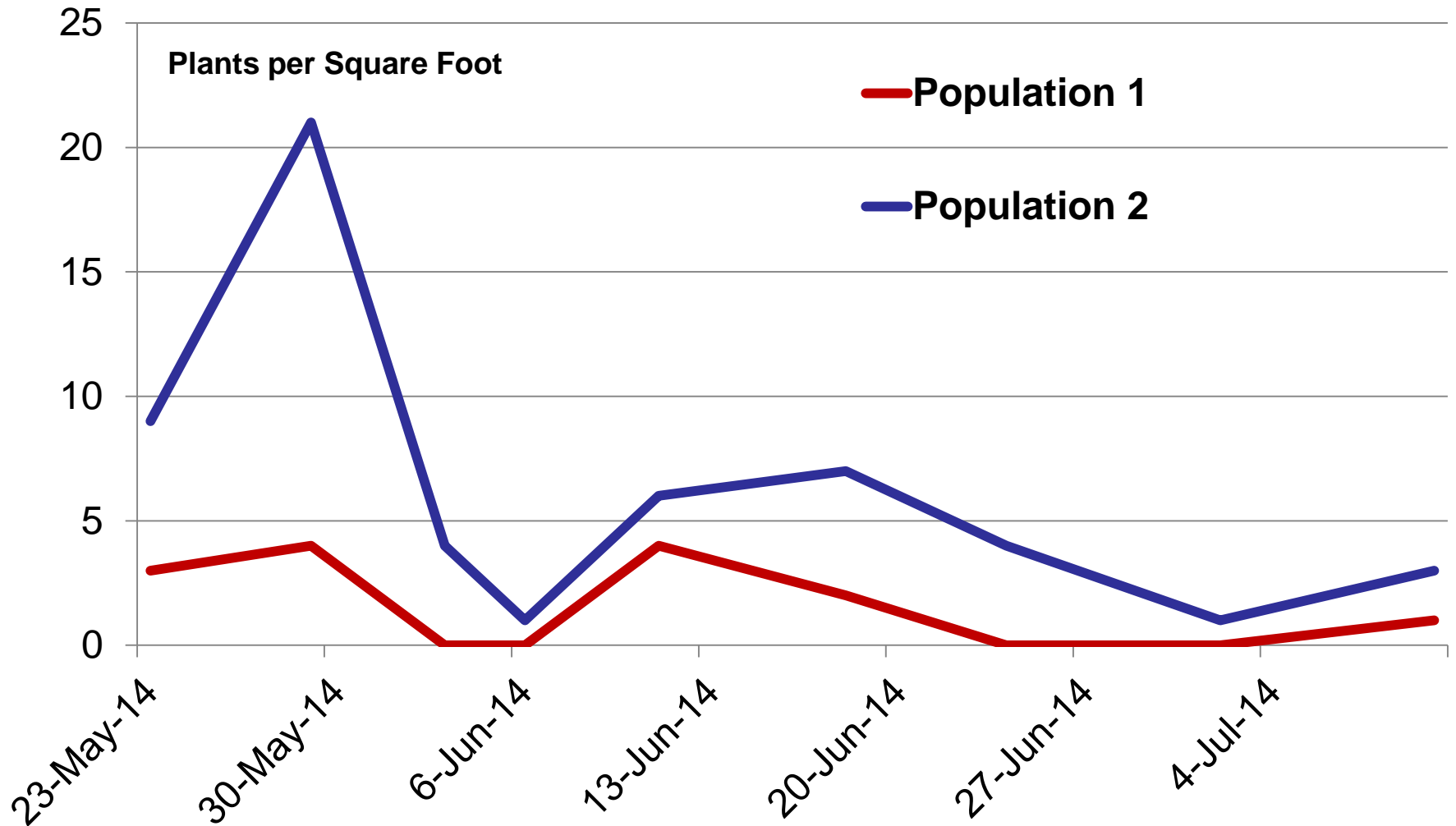


Figure 1: Giant ragweed emergence pattern in 2013 and 2014 in southeastern Minnesota. Bars represent total emergence on the specified date with cumulative emergence listed above bars (Source: Jared Goplen, University of Minnesota).

Impact of Delayed Planting on Giant Ragweed Densities in Soybean in 2014

Rochester, MN

Giant Ragweed Emergence in Rochester, MN in 2014



Trt. 2
Planted May 6, 2014
Giant ragweed removed 5/6/14 prior to planting with
Roundup PowerMAX 32 fl oz/a

June 3, 2014



June 9, 2014



June 16, 2014

June 23, 2014

Trt. 2
Planted May 6, 2014
Giant ragweed removed 5/6/14 prior to planting with
Roundup PowerMAX 32 fl oz/a

July 2, 2014



July 21, 2014



Trt. 4

Planted on May 19, 2015

**Giant ragweed removed prior to planting 5/19/14 with
Roundup PowerMAX 32 fl oz/a**

June 3, 2014



June 9, 2014



June 16, 2014

June 23, 2014

Trt. 4
Planted on May 19, 2015
Giant ragweed removed prior to planting 5/19/14 with
Roundup PowerMAX 32 fl oz/a

July 2, 2014



July 21, 2014



Trt. 6

Planted on May 27, 2014

Giant ragweed removed prior to planting on 5/27/14 with Roundup PowerMAX32 fl oz/a

June 3, 2014



June 9, 2014



June 16, 2014



June 23, 2014

Trt. 6
Planted on May 27, 2014
Giant ragweed removed prior to planting on 5/27/14 with
Roundup PowerMAX 32 fl oz/a

July 2, 2014



July 21, 2014

