Weed Emergence Patterns and the Effect of Time of Weed Removal on Soybean Yield

In 2004 - 2006, research compared 5 glyphosate timings (1", 3", 5", 7" and 9" weed heights), with and without a ½-rate of a PRE herbicide, on crop yield and economic returns.

Studies were conducted at six locations in 2004, five locations in 2005, and 4 locations in 2006.

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Major Weeds in Soybean

Lamberton
- Yellow foxtail, Common lambsquarters, Redroot pigweed

Luverne
- Giant foxtail, Common lambsquarters, Tall waterhemp

Morris
- Green foxtail, Common lambsquarters, Powell amaranth, Wild mustard

Potsdam
- Wild proso millet, Giant ragweed, Common lambsquarters, Velvetleaf

Rochester
- Giant foxtail, Giant ragweed, Common waterhemp, Common lambsquarters

Waseca
- Giant foxtail, Common lambsquarters, Velvetleaf, Common ragweed, Redroot pigweed (04) & Common cocklebur (05)

Glyphosate Timing and Soybean Yield

Glyphosate Timing and Soybean Yield Across Locations, 2004

Glyphosate Timing and Soybean Yield Across Locations, 2005

Legend:
- ■ = Pre + Post - Boundary (1.5 pt/A) + Touchdown Total (24 oz/A) + AMS
- ● = Post - Touchdown Total (24 oz/A) + AMS
- ▲ = 1-pass Pre – Boundary (1.5 pt/A)
- ○ = 2-pass Post - Touchdown Total +AMS at 3" weeds / Touchdown Total + AMS at 2-4" regrowth
Glyphosate Timing and Soybean Yield Across Locations, 2004-2005

Yield Advantage for Pre/Post vs Post Glyphosate Systems in Soybean, 2004-2005

Returns Advantage for Pre/Post vs Post Glyphosate Systems in Soybean, 2004-2005

Glyphosate Timing and Soybean Yield Rochester, 2006

The denominator of 48 is the product of 12 different environments and 4 replications/environment

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Glyphosate Timing and Soybean Yield Across Locations, 2006

Weed Height

- **Post**
- **Pre+ Post**
- **1-pass Pre**
- **2-pass Post**

- ■ Pre + Post - Boundary (1.5 pt/A) + Touchdown Total (24 oz/A) + AMS
- ♦ Post - Touchdown Total (24 oz/A) + AMS
- ▲ 1-pass Pre – Boundary (1.5 pt/A)
- ● 2-pass Post - Touchdown Total +AMS at 3” weeds / Touchdown Total + AMS at 2-4” regrowth


Returns ($/A)

- **Post**
- **Pre+ Post**
- **1-pass Pre**
- **2-pass Post**

- ■ Pre + Post - Boundary (1.5 pt/A) + Touchdown Total (24 oz/A) + AMS
- ♦ Post - Touchdown Total (24 oz/A) + AMS
- ▲ 1-pass Pre – Boundary (1.5 pt/A)
- ● 2-pass Post - Touchdown Total +AMS at 3” weeds / Touchdown Total + AMS at 2-4” regrowth

Soybean Summary 2004 - 2006

- Weed species and density are important factors to consider when developing a herbicide program.
- One-pass glyphosate (5 inch weeds) could maximize yield and return.
- Application of glyphosate too early (less than 5 inch weeds) resulted in reduced crop yield and economic return.
- PRE/POST (5 inch weeds or larger) provided less favorable economic returns.
- Two pass glyphosate is very effective and risk efficient.