Effect of Time of Weed Removal on Corn Yield
(multiple locations)

One pass or two? What would a PRE do?

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

- Different weeds emerge at different times during the growing season
- If left uncontrolled, weeds emerging before or with the crop are more competitive than weeds that emerge after crop emergence
- Weed effects on yield will depend upon:
  - Weed species
  - Weed density
  - Environmental conditions
  - Duration of weed/crop competitive period

Question: What effect does time of weed removal have on corn yield?

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

- In 2004, 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 four locations
- Major Weeds at each location:
  - **Lamberton**: yellow foxtail, common lambsquarters, redroot pigweed, wild buckwheat
  - **Morris**: green foxtail, common lambsquarters, Powell amaranth, wild mustard
  - **Rochester**: giant foxtail, giant ragweed, common waterhemp, common lambsquarters
  - **Waseca**: giant foxtail, common ragweed, redroot pigweed, common lambsquarters, velvetleaf,

Treatments and Timing of Application

<table>
<thead>
<tr>
<th>Trt</th>
<th>Description</th>
<th>Timing</th>
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<tbody>
<tr>
<td>1</td>
<td>Harness/Roundup WeatherMax + AMS</td>
<td>PRE / 1” weeds</td>
</tr>
<tr>
<td>2</td>
<td>Roundup WeatherMax + AMS</td>
<td>1” weeds</td>
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<tr>
<td>3</td>
<td>Harness/Roundup WeatherMax + AMS</td>
<td>PRE / 3” weeds</td>
</tr>
<tr>
<td>4</td>
<td>Roundup WeatherMax + AMS</td>
<td>3” weeds</td>
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<tr>
<td>5</td>
<td>Harness/Roundup WeatherMax + AMS</td>
<td>PRE / 5” weeds</td>
</tr>
<tr>
<td>6</td>
<td>Roundup WeatherMax + AMS</td>
<td>5” weeds</td>
</tr>
<tr>
<td>7</td>
<td>Harness/Roundup WeatherMax + AMS</td>
<td>PRE / 7” weeds</td>
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<tr>
<td>8</td>
<td>Roundup WeatherMax + AMS</td>
<td>7” weeds</td>
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<tr>
<td>9</td>
<td>Harness/Roundup WeatherMax + AMS</td>
<td>PRE / 9” weeds</td>
</tr>
<tr>
<td>10</td>
<td>Roundup WeatherMax + AMS</td>
<td>9” weeds</td>
</tr>
<tr>
<td>11</td>
<td>Harness</td>
<td>PRE</td>
</tr>
<tr>
<td>12</td>
<td>Roundup WeatherMax / Roundup WeatherMax</td>
<td>3” weeds</td>
</tr>
</tbody>
</table>

Harness at 1.25 pt/A
Roundup WeatherMax at 22 oz/A + AMS at 2.5 lb/A
Glyphosate Timing and Corn Yield
Across Locations, 2004

Trt 5 – Harness (1.25 pt./A) / Roundup WeatherMax (22 oz/A) + AMS at 5 inch weeds
Trt 11 – Harness PRE
Trt 12 – Roundup WeatherMax + AMS / Roundup WeatherMax + AMS at 3”/ 2-4” regrowth

Trt 5 – Harness (1.25 pt./A) / Roundup WeatherMax (22 oz/A) + AMS at 5 inch weeds
Trt 11 – Harness PRE
Trt 12 – Roundup WeatherMax + AMS / Roundup WeatherMax + AMS at 3”/ 2-4” regrowth

* Heavy giant ragweed competition key factor at this site.
2004 Summary – All locations
Under Cool & Wet Conditions:

Corn

One-pass glyphosate does not maximize yield or returns.

The longer the duration of competition the greater impact on yield.

PRE/POST sequential applications gave the best economic returns (average over all locations).

Two pass glyphosate system can work (high yield) but has more economic risk than PRE / POST III (5 inch weeds).