**Tall waterhemp control in glyphosate tolerant soybeans at Waseca, MN in 2000.** Hoverstad, Thomas R. The objective of this trial was to evaluate tall waterhemp control in soybeans using conventional herbicides and Roundup or Touchdown 5. The research site was a shallow peat and muck soil. The previous crop was corn that had been fall chisel plowed. The entire area was field cultivated once in the spring prior to herbicide application. Following preplant incorporated treatments the entire area was field cultivated twice to a depth of 3 to 4 inches to incorporate herbicides and prepare a seedbed. Asgrow ‘2101’ soybeans were planted on May 25, 2000 in 30-inch rows. Due to flooding rain and standing water during emergence on June 1 Asgrow 1301 soybeans were replanted on June 14, 2000. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at 40 psi using 8002 flat-fan nozzle tips. Application dates, environmental conditions, crop and weed stages are listed below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Treatment</th>
<th>May 25 PPI</th>
<th>May 26 Pre</th>
<th>July 14 Post 6-inch weeds</th>
<th>July 21 Post 8-inch tawh</th>
<th>July 25 Post 12-inch tawh</th>
<th>July 28 Post 18-inch tawh</th>
<th>July 31 Post 20-inch tawh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air temp °F</td>
<td>82</td>
<td>67</td>
<td>81</td>
<td>76</td>
<td>84</td>
<td>75</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Soil temp (4-inch)</td>
<td>66</td>
<td>58</td>
<td>83</td>
<td>73</td>
<td>88</td>
<td>77</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Relative humidity (%)</td>
<td>15</td>
<td>35</td>
<td>60</td>
<td>46</td>
<td>56</td>
<td>70</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>NW 8</td>
<td>E 8</td>
<td>N 3</td>
<td>NW 7</td>
<td>S 7</td>
<td>NE 5</td>
<td>SW 5</td>
<td></td>
</tr>
<tr>
<td>Soil moisture</td>
<td>Moist</td>
<td>Moist</td>
<td>Wet</td>
<td>Wet</td>
<td>Moist</td>
<td>Dry</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>-</td>
<td>-</td>
<td>R1</td>
<td>R2</td>
<td>R2</td>
<td>R2</td>
<td>R2</td>
<td></td>
</tr>
<tr>
<td>height (inch)</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>13</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Tall Waterhemp</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>leaf no.</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>18</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>height (inch)</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>18</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Results are presented in the accompanying table. Flooding rain and standing water resulted in generally poor performance of soil applied treatments. The only treatments that provided adequate control of waterhemp and good soybean yields were soil applied Authority, Boundary or Domain followed by Roundup postemergence. Flexstar postemergence provided poor control of 8 inch waterhemp. Roundup Ultra applied to 8 to 20-inch tall waterhemp resulted in good control of waterhemp but poor soybean yields due to early season competition.
Table. Tall Waterhemp Control in Soybeans at Waseca, MN in 2000. Hoverstad.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Tawh Aug 15</th>
<th>Tawh Sept 18</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preplant incorporate 2X/POST (6 to 8-inch weeds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treflan/ Roundup Ultra+AMS</td>
<td>1.5/</td>
<td>87</td>
<td>85</td>
<td>35.8</td>
</tr>
<tr>
<td>Prowl/</td>
<td>2+2.5 lb</td>
<td>91</td>
<td>92</td>
<td>33.0</td>
</tr>
<tr>
<td>Extreme+NIS+AMS</td>
<td>3+0.125%+2.5 lb</td>
<td>74</td>
<td>78</td>
<td>27.2</td>
</tr>
<tr>
<td>Pursuit+Flexstar+MSO+28%N</td>
<td>4 oz +12 oz +0.5%+28%N</td>
<td>22</td>
<td>8</td>
<td>12.8</td>
</tr>
<tr>
<td>Treflan+Valor/ First Rate+NIS+28%N</td>
<td>1.5+3 oz /</td>
<td>71</td>
<td>67</td>
<td>30.2</td>
</tr>
<tr>
<td>Sonalan+Python/ First Rate+NIS+28%N</td>
<td>2.5+1 oz /</td>
<td>71</td>
<td>67</td>
<td>30.2</td>
</tr>
<tr>
<td>Pre/POST (6 to 8-inch weeds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valor/ Roundup Ultra</td>
<td>2.5 oz / 2</td>
<td>76</td>
<td>67</td>
<td>30.0</td>
</tr>
<tr>
<td>Valor/</td>
<td>2.5 oz /</td>
<td>15</td>
<td>8</td>
<td>11.6</td>
</tr>
<tr>
<td>First Rate+Select+COC+28%N</td>
<td>0.3 oz+6 oz+1.2%+2.5%</td>
<td>7</td>
<td>10</td>
<td>10.5</td>
</tr>
<tr>
<td>Authority / Flexible+MSO+28%N</td>
<td>4 oz + 1.25%+2.5%</td>
<td>76</td>
<td>77</td>
<td>32.8</td>
</tr>
<tr>
<td>Authority / Roundup Ultra+AMS</td>
<td>1.5 + 2 lb</td>
<td>97</td>
<td>96</td>
<td>43.2</td>
</tr>
<tr>
<td>Boundary /</td>
<td>1.5 /</td>
<td>89</td>
<td>91</td>
<td>42.9</td>
</tr>
<tr>
<td>Roundup Ultra+AMS</td>
<td>1.5 + 2.5 lb</td>
<td>96</td>
<td>95</td>
<td>40.5</td>
</tr>
<tr>
<td>Domain /</td>
<td>13 oz /</td>
<td>40</td>
<td>42</td>
<td>20.0</td>
</tr>
<tr>
<td>Roundup Ultra+AMS</td>
<td>1.5 + 2.5 lb</td>
<td>3</td>
<td>3</td>
<td>18.7</td>
</tr>
<tr>
<td>Pendimax+Authority</td>
<td>2.5 + 4 oz /</td>
<td>0</td>
<td>0</td>
<td>6.7</td>
</tr>
<tr>
<td>First Rate+Select+COC+AMS</td>
<td>3 oz + 6 oz + 1.2% + 2.5 lb</td>
<td>0</td>
<td>0</td>
<td>6.7</td>
</tr>
<tr>
<td>Postemergence (6 to 8-inch weeds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roundup Ultra+AMS</td>
<td>2 + 2.5 lb</td>
<td>90</td>
<td>88</td>
<td>32.2</td>
</tr>
<tr>
<td>Touchdown 5 +AMS</td>
<td>1.6 + 2.5 lb</td>
<td>81</td>
<td>71</td>
<td>32.2</td>
</tr>
<tr>
<td>First Rate+Glyphomax</td>
<td>0.3 oz + 1.5 + 2.5 lb</td>
<td>92</td>
<td>92</td>
<td>29.1</td>
</tr>
<tr>
<td>First Rate+Flexstar+Select+MSO+AMS</td>
<td>0.3 oz + 10 oz + 6 oz + 1.2% + 2.5 lb</td>
<td>40</td>
<td>38</td>
<td>18.7</td>
</tr>
<tr>
<td>Weedy -</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>6.7</td>
</tr>
<tr>
<td>Postemergence (Post Plus Applied to 6-inch grass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roundup Ultra+AMS (8-inch waterhemp)</td>
<td>32 oz + 2.5 lb</td>
<td>97</td>
<td>95</td>
<td>21.5</td>
</tr>
<tr>
<td>Roundup Ultra+AMS (12-inch waterhemp)</td>
<td>48 oz + 2.5 lb</td>
<td>97</td>
<td>99</td>
<td>22.0</td>
</tr>
<tr>
<td>Roundup Ultra+AMS (18-inch waterhemp)</td>
<td>48 oz + 2.5 lb</td>
<td>99</td>
<td>99</td>
<td>25.2</td>
</tr>
<tr>
<td>Roundup Ultra+AMS (20-inch waterhemp)</td>
<td>48 oz + 2.5 lb</td>
<td>99</td>
<td>99</td>
<td>20.5</td>
</tr>
<tr>
<td>LSD(0.1)</td>
<td>19</td>
<td>20</td>
<td>8.9</td>
<td></td>
</tr>
</tbody>
</table>

a MSO = methylated seed oil, ; NIS = nonionic surfactant, Class Preference; 28%N = an aqueous solution of urea and ammonium nitrate; AMS = spray grade ammonium sulfate.
b Yield adjusted to 13% moisture.