PROJECT TITLE: Rotational crop response to Beyond applied to Clearfield Winter Wheat (GN00E67).

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OBJECTIVES:
1) Evaluate Clearfield winter wheat response following fall and spring applications of Beyond.
2) Evaluate the potential for Beyond carryover to affect conventional winter wheat, spring wheat, and malt barley planted the following season.

METHODS:
Herbicides were broadcast applied with a CO₂ backpack sprayer calibrated to deliver 15 gal/A at 25 PSI and 3 MPH using 80015XR nozzles spaced 15 inches apart. Crop response following herbicide applications was evaluated visually using a rating scale that ranged from 0 (no visible injury) to 100% (complete plant death). Rotational crop stands were determined by counting the number of plants per square meter. Experimental site and herbicide application data are presented in Tables 1 and 2.

Table 1. Site information (Experiment GN00E67).

<table>
<thead>
<tr>
<th>Field no.</th>
<th>E</th>
<th>Planting pop.: See below</th>
<th>Soil type: clay loam</th>
<th>Row spacing: See below</th>
</tr>
</thead>
<tbody>
<tr>
<td>% OM</td>
<td>2.0</td>
<td>Plot size: 20 ft X 36 ft</td>
<td>pH: 7.5</td>
<td>Expt design: RCB</td>
</tr>
<tr>
<td>Date planted</td>
<td>See below</td>
<td>Repts.: 4</td>
<td>Date harvested: Not harvested</td>
<td></td>
</tr>
<tr>
<td>Variety</td>
<td>See below</td>
<td>Precip. &amp; Temp.: See Table A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Herbicide application data for Beyond treatments (Expt. GN00E67).

<table>
<thead>
<tr>
<th>Treatment timing:</th>
<th>Fall, 2000</th>
<th>Spring, 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date treated:</td>
<td>10/26/00</td>
<td>4/24/01</td>
</tr>
<tr>
<td>Time:</td>
<td>10 am</td>
<td>9 am</td>
</tr>
<tr>
<td>Soil moisture (surface):</td>
<td>Dry</td>
<td>Dry</td>
</tr>
<tr>
<td>Soil temperature (F) (2 in):</td>
<td>50</td>
<td>48</td>
</tr>
<tr>
<td>Air temperature (F):</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Wind (MPH; direction):</td>
<td>0-3 NE</td>
<td>5-10 NW</td>
</tr>
<tr>
<td>Relative humidity (%):</td>
<td>65</td>
<td>48</td>
</tr>
<tr>
<td>Sky description:</td>
<td>Cloudy</td>
<td>Clear</td>
</tr>
<tr>
<td>Clearfield W. Wheat</td>
<td>Height (in): 2.5-3.5</td>
<td>4.5-5.5</td>
</tr>
<tr>
<td>Stage:</td>
<td>2 lf</td>
<td>4-5 T</td>
</tr>
</tbody>
</table>
SITE INFORMATION

Previous crop: Site was fallowed in 1999

Fall 2000: Fertilizer: 100 lbs/A of 11-52-0
Insecticide: Disyston applied at 1 pt/A PPI on 9/19/00
Tillage: Disked twice and field cultivator once
Seeded Clearfield winter wheat 'IMI-R C0980879' at 60 lbs/A in 12 inch row spacing on 9/20/00.

Summer 2001: Harvested Clearfield winter wheat

Fall 2001: Tillage: Field cultivator twice
Seeded 'Promontory' winter wheat at 90 lbs/A in 12 in row spacing on 9/21/01.

Spring 2002: Fertilizer: top dressed 60 lbs/A of N
Seeded 'McNeal' spring wheat at 75 lbs/A in 12 in row spacing on 4/08/02.
Seeded 'Moravian 37' malt barley at 100 lbs/A in 12 in row spacing on 4/08/02.
Weed control: Applied Puma at 2/3 pt+ Bronate 1 pt postemergence on 5/15/02
Rated crop injury and took stand counts on w. wheat, s. wheat, and barley

RESULTS: No injury was observed to the Clearfield winter wheat following fall or spring applications of Beyond (Table 3). No injury or stand reduction was observed in the rotational crops (conventional winter wheat, spring wheat, and malt barley) that were planted the following season (Tables 3 and 4). This research suggests that winter wheat, spring wheat, or malt barley can be planted the season following a Beyond application to Clearfield winter wheat, with little risk of herbicide carryover affecting the rotational crop.
Table 3. Clearfield winter wheat and rotational crop injury ratings at Huntley, MT from 2000 to 2002 (GN00E67).

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</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td></td>
<td></td>
<td>Per Acre</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Beyond NIS 32% UAN</td>
<td>6.14 fl oz</td>
<td>Fall, 2000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td></td>
<td>0.25% v/v</td>
<td>Fall, 2000</td>
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<td></td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1% v/v</td>
<td>Fall, 2000</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Beyond NIS 32% UAN</td>
<td>12.3 fl oz</td>
<td>Fall, 2000</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td></td>
<td>1% v/v</td>
<td>Fall, 2000</td>
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<tr>
<td>Beyond NIS 32% UAN</td>
<td>6.14 fl oz</td>
<td>Spring, 2001</td>
<td>0</td>
<td>0</td>
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<td>0.25% v/v</td>
<td>Spring, 2001</td>
<td></td>
<td></td>
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<td>0</td>
<td>0</td>
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<tr>
<td></td>
<td>1% v/v</td>
<td>Spring, 2001</td>
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<tr>
<td>Beyond NIS 32% UAN</td>
<td>12.3 fl oz</td>
<td>Spring, 2001</td>
<td>0</td>
<td>0</td>
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<td>0.25% v/v</td>
<td>Spring, 2001</td>
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<tr>
<td></td>
<td>1% v/v</td>
<td>Spring, 2001</td>
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<tr>
<td>LDS (p=0.5)</td>
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<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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Table 4. Rotational crop stand data at Huntley, MT in 2002 (GN00E67).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Appl. timing</th>
<th>Conv W.Wheat Stand</th>
<th>Conv S. Wheat Stand</th>
<th>Conv S. Barley Stand</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>5/14/02 (plants/m²)</td>
<td>5/14/02 (plants/m²)</td>
<td>5/14/02 (plants/m²)</td>
</tr>
<tr>
<td>Untreated</td>
<td></td>
<td></td>
<td>Per Acre</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>85</td>
<td>204</td>
<td>161</td>
</tr>
<tr>
<td>Beyond NIS 32% UAN</td>
<td>6.14 fl oz</td>
<td>Fall, 2000</td>
<td>82</td>
<td>198</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>0.25% v/v</td>
<td>Fall, 2000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1% v/v</td>
<td>Fall, 2000</td>
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<td></td>
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</tr>
<tr>
<td>Beyond NIS 32% UAN</td>
<td>12.3 fl oz</td>
<td>Fall, 2000</td>
<td>77</td>
<td>208</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>0.25% v/v</td>
<td>Fall, 2000</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>1% v/v</td>
<td>Fall, 2000</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Beyond NIS 32% UAN</td>
<td>6.14 fl oz</td>
<td>Spring, 2001</td>
<td>79</td>
<td>198</td>
<td>157</td>
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<tr>
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<td>0.25% v/v</td>
<td>Spring, 2001</td>
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<tr>
<td></td>
<td>1% v/v</td>
<td>Spring, 2001</td>
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<tr>
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<td>Spring, 2001</td>
<td>88</td>
<td>201</td>
<td>152</td>
</tr>
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<td>0.25% v/v</td>
<td>Spring, 2001</td>
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<td>1% v/v</td>
<td>Spring, 2001</td>
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<tr>
<td>LDS (p=0.5)</td>
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<td>NS</td>
</tr>
<tr>
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<td>5</td>
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