Effects of Glyphosate Contamination on Field Corn

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BASF
Cross Plains, WI
Objective

Determine the effects of glyphosate contamination on corn growth and yield
<table>
<thead>
<tr>
<th>Application and Plot Information</th>
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<tbody>
<tr>
<td><strong>Planted:</strong> 5/19/03</td>
</tr>
<tr>
<td><strong>Sprayed Pre:</strong> Outlook @ 10 oz./A</td>
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<tr>
<td><strong>Sprayed Post:</strong> 6/16/03</td>
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<tr>
<td><strong>Corn Height:</strong> 11-12”</td>
</tr>
<tr>
<td><strong>Corn V-Stage:</strong> V3+-V4</td>
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<tr>
<td><strong>Weeds:</strong> 3-6”</td>
</tr>
<tr>
<td><strong>Plot size:</strong> 4 - 30” rows X 68’</td>
</tr>
<tr>
<td><strong># of reps:</strong> 2</td>
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<tr>
<td><strong>Location:</strong> Lodi, WI</td>
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</tbody>
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Application Information

All plots were sprayed post with:

Celebrity Plus @ 4.7 oz./ A
+ NIS @ 1 qt./ 100 gallons
+ AMS @ 5 lb./ 100 gallons
Treatment List

1.) Celebrity Plus (no Glyphosate)
2.) CP + Glyphosate @ 0.31 oz./A
3.) CP + Glyphosate @ 0.62 oz./A
4.) CP + Glyphosate @ 0.93 oz./A
5.) CP + Glyphosate @ 1.23 oz./A
6.) CP + Glyphosate @ 1.85 oz./A
7.) CP + Glyphosate @ 2.46 oz./A
8.) CP + Glyphosate @ 3.69 oz./A
9.) CP + Glyphosate @ 4.92 oz./A

Glyphosate rates = 4 lb. a.i./gallon
or 3 lb. ae/ gallion

0.31 oz./A = 1% of 32 oz./A rate
Data

1.) Plant heights: June 27
2.) Glyphosate residues: July 7
3.) Plant heights: July 7
4.) Tasseling/silking: July 31
5.) Yield October 22
 Glyphosate Contamination Study in Field Corn - Lodi WI  2003
Plant Heights - 11 DAT

<table>
<thead>
<tr>
<th>Glyphosate rate in oz./A</th>
<th>Plant Height (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>0.31</td>
<td>19.5</td>
</tr>
<tr>
<td>0.62</td>
<td>19</td>
</tr>
<tr>
<td>0.93</td>
<td>18.3</td>
</tr>
<tr>
<td>1.23</td>
<td>15</td>
</tr>
<tr>
<td>1.85</td>
<td>13.5</td>
</tr>
<tr>
<td>2.46</td>
<td>11.8</td>
</tr>
<tr>
<td>3.69</td>
<td>11.3</td>
</tr>
<tr>
<td>4.92</td>
<td>11</td>
</tr>
</tbody>
</table>
Glyphosate @ 1.23 oz./A  
15.0”

Glyphosate @ 1.85 oz./A  
13.5”

Glyphosate @ 2.46 oz./A  
11.8”

Glyphosate @ 4.92 oz./A  
11.0”
Glyphosate Contamination Study in Field Corn - Lodi WI 2003

Plant Heights - 21 DAT

Glyphosate rate in oz./A

Plant Height (Inches)

0 0.31 0.62 0.93 1.23 1.85 2.46 3.69 4.92

48.5 46.5 44.3 40.5 35 30.25 25.5 23 20.5

Glyphosate rate in oz./A
No Glyphosate
21 DAT - 7/7/03
48.5”

Glyphosate @ 0.31 oz./A
46.5”

Glyphosate @ 0.62 oz./A
44.3”

Glyphosate @ 0.93 oz./A
40.5”
Crop Response - 21 DAT

0, 0.31 & 0.62 oz./A:
0% chlorosis

0.93 & 1.23 oz./A:
Low % chlorosis

1.85, 2.46, 3.69 & 4.92 oz./A:
High % chlorosis

Glyphosate @ 4.92 oz./A
Glyphosate Corn Contamination Study
Glyphosate in ppm in Corn - 21 DAT

Glyphosate rate in oz./A

<table>
<thead>
<tr>
<th>Glyphosate rate in oz./A</th>
<th>Glyphosate in ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.62 oz./A</td>
<td>0</td>
</tr>
<tr>
<td>1.23 oz./A</td>
<td>0.033</td>
</tr>
<tr>
<td>2.46 oz./A</td>
<td>0.07</td>
</tr>
<tr>
<td>4.92 oz./A</td>
<td>0.1</td>
</tr>
</tbody>
</table>
Glyphosate Contamination Study in Field Corn - Lodi WI 2003

% Tasseling- 45 DAT

Glyphosate rate in oz./A

Percent Tassel

Glyphosate rate in oz./A

0 0.31 0.62 0.93 1.23 1.85 2.46 3.69 4.92
No Glyphosate  
45 DAT - 7/31/03  
100% tassel

Glyphosate @ 0.31 oz./A  
100% tassel

Glyphosate @ 0.62 oz./A  
100% tassel

Glyphosate @ 0.93 oz./A  
100% tassel
Glyphosate @ 1.23 oz./A  
2% tassel

Glyphosate @ 1.85 oz./A  
0% tassel

Glyphosate @ 2.46 oz./A  
0% tassel

Glyphosate @ 4.92 oz./A  
0% tassel
Glyphosate Contamination Study in Field Corn - Lodi, WI 2003

% Moisture

% Moisture

Glyphosate rate in oz./A
Ear samples at harvest

- 1.23 oz./A
- 4.92 oz./A
- 2.46 oz./A
Conclusions

1.) Corn plant heights were reduced and yield losses occurred with all rates of glyphosate contamination.

2.) Corn yields were reduced from 13 - 51% due to glyphosate contamination.

3.) Yield losses occurred with low rates of glyphosate contamination in the absence of visual symptoms.

4.) CLEAN THE SPRAYER!