SOYBEAN YIELD RESPONSE TO PLANTING POPULATION

TRIAL OVERVIEW

- In the past, higher plant populations were recommended as a weed management tool in soybean cropping systems. Higher plant populations allow for more rapid canopy closure, which reduces light availability for competing weeds. As weed management has improved, reliance on this strategy has declined, and population management has become an agronomic tool for optimizing yield potential.
- Though soybean plants can compensate for different plant populations, populations that are too high can lead to tall, slender plants that are prone to lodging. Besides the potential effect on yield, lodging decreases crop harvestability and compromises seed quality. Soybean products respond differently to plant populations and in their susceptibility to lodging.

RESEARCH OBJECTIVE

- The objective of this study was to determine the effect of planting population on the yield potential of Asgrow® brand soybean products spanning the maturity groups (MG) appropriate to the research region.

<table>
<thead>
<tr>
<th>Location</th>
<th>Soil Description</th>
<th>Previous Crop</th>
<th>Tillage Type</th>
<th>Planting Date</th>
<th>Harvest Date</th>
<th>Potential Yield/Acre</th>
<th>Planting Rate/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huxley, IA</td>
<td>Webster clay loam &amp; Nicollet loam</td>
<td>Corn</td>
<td>Conventional</td>
<td>05/07/2016</td>
<td>10/14/2016</td>
<td>70 bu/acre</td>
<td>100K, 150K, 200K</td>
</tr>
</tbody>
</table>

SITE NOTES:

- 14 Asgrow® soybean brands ranging from 1.7 to 3.2 MG were planted at three different planting rates: 100,000 seeds/acre (100K), 150,000 seeds/acre (150K), and 200,000 seeds/acre (200K).
- Each soybean product at each population was planted in a plot consisting of 6 rows, each 200 feet long, in 30-inch row spacing.
- Weed management consisted of pre- and post-emergence herbicide applications.

UNDERSTANDING THE RESULTS

- For the early MG soybean products, the highest planting population of 200K seeds/acre performed slightly better than the lower populations.
- For the later MG soybean products, the lowest planting population of 100K seeds/acre performed better.
- On average, the early MG soybean products performed better than the later MG products in this trial.

WHAT DOES THIS MEAN FOR YOUR FARM?
Yield is influenced by many factors including management practices, genetic response to the environment, climate, fertility, and pests and diseases, among others.

Product response to variable planting populations can affect year-end results.

Greater stand reductions were observed as planting population increased.

Wet, rainy conditions in May likely contributed to poor seedling health and reduced stands in all plots. A single hail event also occurred at the end of May, likely placing greater stress on the developing plants.

During pod fill in August, timely rain assisted the overall health of the soybean plants, leading to low lodging scores in the fall.

Yield was negatively affected in plots where SDS was more prevalent.

These results represent a non-replicated experiment at one location in 2016. Please consult your agronomist, district sales manager, or seed guide for specific information on product traits or positioning.

**LEGAL STATEMENT**

For additional agronomic information, please contact your local brand representative. Developed in partnership with Technology Development & Agronomy by Monsanto.

The information discussed in this report is from a single site, non-replicated demonstration. This information piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years wherever possible.

Always read and follow IRM, where applicable, grain marketing and all other stewardship practices and pesticide label directions. Asgrow® and Monsanto and Vine Design® are registered trademarks of Monsanto Technology LLC. All other trademarks are the property of their respective owners. ©2016 Monsanto Company. 161122144731 120116CAM

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### Table 1. Planting and Harvest Populations by Asgrow® Soybean Brands and Associated Lodging and Sudden Death Syndrome (SDS) Scores – Early MG

<table>
<thead>
<tr>
<th>Brand</th>
<th>Planting Population</th>
<th>Harvest Population</th>
<th>Lodging Score</th>
<th>SDS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG17K7</td>
<td>100K</td>
<td>95K</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>150K</td>
<td>114K</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>AG19K5</td>
<td>100K</td>
<td>88K</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>150K</td>
<td>119K</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AG20K5</td>
<td>100K</td>
<td>89K</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>150K</td>
<td>124K</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>AG20X7</td>
<td>100K</td>
<td>91K</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>150K</td>
<td>116K</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AG21X7</td>
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<td>87K</td>
<td>3</td>
<td>2</td>
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<tr>
<td></td>
<td>150K</td>
<td>112K</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
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<td>92K</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>150K</td>
<td>123K</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AG26X6</td>
<td>100K</td>
<td>92K</td>
<td>1</td>
<td>2</td>
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<tr>
<td></td>
<td>150K</td>
<td>109K</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>200K</td>
<td>141K</td>
<td>1</td>
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### Table 2. Planting and Harvest Populations by Asgrow® Soybean Brands and Associated Lodging and Sudden Death Syndrome (SDS) Scores – Late MG

<table>
<thead>
<tr>
<th>Brand</th>
<th>Planting Population</th>
<th>Harvest Population</th>
<th>Lodging Score</th>
<th>SDS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG27K7</td>
<td>100K</td>
<td>97K</td>
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<td>110K</td>
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<td>3</td>
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<td>AG28X6</td>
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<td>2</td>
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<td></td>
<td>150K</td>
<td>103K</td>
<td>1</td>
<td>2</td>
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<tr>
<td>AG28X7</td>
<td>100K</td>
<td>89K</td>
<td>1</td>
<td>2</td>
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<tr>
<td></td>
<td>150K</td>
<td>109K</td>
<td>1</td>
<td>2</td>
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<td>AG28X5</td>
<td>100K</td>
<td>94K</td>
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<td></td>
<td>150K</td>
<td>113K</td>
<td>2</td>
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<td>AG30X6</td>
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<td>94K</td>
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<td></td>
<td>150K</td>
<td>107K</td>
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<td></td>
<td>150K</td>
<td>102K</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>200K</td>
<td>143K</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

### Table 3. Percent Stand Reduction and Average Yield by Planting Population; percent stand reduction calculated from the time of planting to harvest.

<table>
<thead>
<tr>
<th>Population</th>
<th>Average % stand reduction - early MG</th>
<th>Average yield (bu/acre) - early MG</th>
<th>Average % stand reduction - late MG</th>
<th>Average yield (bu/acre) - late MG</th>
</tr>
</thead>
<tbody>
<tr>
<td>100K</td>
<td>9.6</td>
<td>68.3</td>
<td>7.2</td>
<td>65.5</td>
</tr>
<tr>
<td>150K</td>
<td>22.8</td>
<td>64.8</td>
<td>27.1</td>
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<td>200K</td>
<td>31.5</td>
<td>66.6</td>
<td>30.0</td>
<td>63.7</td>
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