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Evaluation of Ascend® Plant Growth Regulator: Hormones that stimulate corn root growth

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During good times and bad, but especially years with strong grain prices, numerous products appear on the market that seem too good to be true. Often these products come with wild claims. Little information is available for growers to make an informed decision, so it often becomes a case of "buyer beware."

Ascend® is touted as a "... tool to increase plant efficiency" and "... can stimulate higher yields through a larger root mass ..." Ascend® contains the plant growth regulators cytokinin (0.09%), gibberellic acid (0.03%) and indole butyric acid (0.045%). It can be applied at rates of 4.5 to 6 oz/A in-furrow at planting, 2x2 inches below the seed at planting, at 6.4 to 10 oz/A at the 3 to 10 leaf stage, and/or at 6.4 oz/A at the R1-R3 leaf stage. We tested the plant growth regulator Ascend® at eleven locations in Wisconsin by applying it to an adapted hybrid and comparing it to the same hybrid left untreated during 2012 (4 reps) and 2016 (3 reps).

If there was any growing season when a corn root growth enhancer should work it was during the drought of 2012. During 2012, locations that exhibited significant drought stress included Chippewa Falls, Lancaster, Janesville, Arlington and Fond du Lac. Hancock was an irrigated site. At seven of eleven locations there was no statistical difference when using Ascend® (Table 1). At three of eleven locations, the untreated plots yielded more than plots treated with Ascend®. At one of eleven locations, Ascend® treated plots yielded more than untreated plots. At none of the sites that had significant drought stress during the growing season did Ascend® stimulate higher yields. Across all locations there was no statistical difference between corn treated with Ascend® (196 bu/A) and untreated corn (200 bu/A).

Table 1. Corn grain yield (bu/A) response to Ascend® plant growth regulator compared to an untreated check during 2012.

Location	Ascend®		LSD(0.10)
	Foliar	Untreated	
Arlington	227	229	NS
Chippewa Falls	135	149	5
Coleman	261	270	NS
Fond du Lac	203	202	NS
Galesville	226	225	NS
Hancock	224	218	6
Janesville	136	146	NS
Lancaster	159	178	10
Marshfield	145	157	11
Seymour	200	201	NS
Valders	243	223	NS
All Locations	196	200	NS

During 2016, we expanded the number of Ascend® treatments to in-furrow and foliar treatments. All were applied within the labelled rates and timings. The 2016 growing season was an ideal season throughout the state. Little stress was observed. We measured no significant yield response using Ascend® plant growth regulator (Table 2). At only one location, Hancock, was there a statistical difference using Ascend® when the control and the Ascend® foliar treatment were higher yielding than the Ascend® in-furrow and Ascend® in-furrow + foliar treatment. Across all locations there was no statistical difference between corn treated with Ascend® (228-230 bu/A) and untreated corn (230 bu/A). No statistical differences were observed for other agronomic measurements (Table 3).

Further Reading

For specific details of the experiments see <http://corn.agronomy.wisc.edu/Research/>

Table 2. Corn grain yield (bu/A) response of an adapted corn hybrid treated with Ascend® plant growth regulator treatments compared to an untreated check during 2016.

Location	Ascend® In-furrow	Ascend® Foliar	Ascend® In-furrow + Foliar	Untreated	LSD(0.10)
Arlington	270	268	256	272	NS
Chippewa Falls	196	178	184	180	NS
Coleman	215	218	221	214	NS
Fond du Lac	238	247	241	246	NS
Galesville	233	241	231	231	NS
Hancock	216	228	219	230	10
Janesville	259	255	256	253	NS
Marshfield	208	211	215	211	NS
Montfort	254	257	255	267	NS
Seymour	209	204	199	204	NS
Valders	226	214	226	219	NS
All locations	230	229	228	230	NS

Table 3. Agronomic response of an adapted corn hybrid treated with Ascend® plant growth regulator treatments compared to an untreated check during 2012 and 2016. Values are means across 11 locations.

Location	Ascend® In-furrow	Ascend® Foliar	Ascend® In-furrow + Foliar	Untreated	LSD(0.10)
2012					
Grain yield (bu/A)	---	196	---	200	NS
Grain moisture (%)	---	16.6	---	16.3	NS
Grain test weight (lb/bu)	---	57.5	---	57.8	NS
Plant lodging (%)	---	4	---	5	NS
2016					
Grain yield (bu/A)	230	229	228	230	NS
Grain moisture (%)	21.1	21.3	21.2	21.3	NS
Grain test weight (lb/bu)	55	55	55	55	NS
Plant lodging (%)	1	1	1	1	NS
Plant harvest density (no./A)	33900	34100	34000	34500	NS