

### **Stop #3: Plant Growth Regulators for Bermudagrass, Kikuyugrass, and Seashore Paspalum Management**

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#### **Objectives:**

This study was conducted to quantify effects of several plant growth regulators (PGRs) on visual turfgrass quality, growth regulation and injury to 'Tifway II' hybrid bermudagrass, 'Whittet' kikuyugrass, and 'Platinum' seashore paspalum maintained as a golf course fairway. Use of adjuvants with Primo Maxx was also evaluated on bermudagrass.

#### **Materials and methods:**

The study was conducted on mature hybrid bermudagrass, kikuyugrass, and seashore paspalum turf grown on a Hanford fine sandy loam. Kikuyugrass was mowed at 0.45 inches, and bermudagrass and seashore paspalum were mowed 0.5 inches three times/wk. All three species received verticutting in May 2016 prior to the start of the experiments. The study was setup as a randomized block design, with 4 replications on 4'x10' plots. Treatments were applied with a CO<sub>2</sub>-powered backpack sprayer with TeeJet 8003VS nozzles (9-inch spacing; 2 gal/M) beginning on July 28. Plots were evaluated weekly for turf quality and digital image analysis (DIA), and clippings were collected every three weeks before treatment application and oven dried at 105 °C for 24 hours.

#### **Results:**

On bermudagrass, crabgrass pressure was extremely high prior to the beginning of the study, hence chemical control was necessary leaving voids in the turf. Although no treatment improved quality in comparison to control after 2 applications, Primo Maxx alone or in combination with Ad-Max 90, and PoaCure herbicide were the only treatments to achieve acceptable quality (Table 1). Clippings collected in plots treated with PoaCure had the highest dry weight in comparison to the rest of the treatments (Table 1). After only one application of treatments and sampling for clipping yield three weeks later, it appeared that adjuvants, especially Sync, tank-mixed with Primo Maxx provided more growth suppression than the PGR alone. However, further investigation is needed to substantiate this observation.

Although no differences were found among PGR treatments on kikuyugrass, Trimmit applied at 24 oz/A caused injury to the plots (Table 2); in fact, plots that received the highest rate of Trimmit were the only ones that did not show sufficient quality on 25 August. All treatments with the exception of Legacy at the lowest rate and PoaCure

decreased clipping dry weight in comparison to control (Table 2), with Trimmit at 24 oz/A providing the biggest reduction.

After one month the beginning of the trial there was no effect of PGRs on seashore paspalum visual quality. No statistical differences were found on clipping dry weight either, with the lowest clipping dry weight collected on plots that received the highest rates of Primo Maxx and Cutless (Table 3).

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**Treatment list for bermudagrass trial**

Treatment	Rate	Company	Frequency (wks)
1. Untreated control			
2. Primo MAXX	11 oz/A	Syngenta	3
3. Primo MAXX	11 oz/A	Syngenta	3
3. Ad-Max 90	0.25 % v/v	Simplot	3
4. Primo MAXX	11 oz/A	Syngenta	3
4. Sync	0.0625 % v/v	Precision Labs	3
5. Primo MAXX	11 oz/A	Syngenta	3
5. Sync	0.125 % v/v	Precision Labs	3
6. Primo MAXX	11 oz/A	Syngenta	3
6. Sync	0.25 % v/v	Precision Labs	3
7. Legacy	15 oz/A	SePRO	3
8. Cutless MEC	25 oz/A	SePRO	3
9. Cutless MEC	35 oz/A	SePRO	3
10. Anuew	8 oz/A	Nufarm	3
11. Anuew	16 oz/A	Nufarm	3
12. Trimmit 2SC	24 oz/A	Syngenta	3
13. PoaCure	1.2 oz/M	Moghu	3

**Bermudagrass PGR trial plot plan**

12	4	10	5	
6	11	1	4	
2	9	2	3	
3	12	3	11	
4	5	13	5	
6	7	7	8	
10	9	8	1	North
7	9	13	2	
10	6	1	8	
13	12	12	11	
8	9	10	11	
7	6	5	4	
1	2	3	13	

**Treatment list for kikuyugrass trial**

Treatment	Rate	Company	Frequency (weeks)
1. Untreated control			
2. Primo MAXX	13 oz/A	Syngenta	3
3. Trimmit	16 oz/A	Syngenta	3
4. Trimmit	24 oz/A	Syngenta	3
5. Anuew	8 oz/A	Nufarm	3
6. Anuew	16 oz/A	Nufarm	3
7. Legacy	5 oz/A	SePRO	3
8. Legacy	10 oz/A	SePRO	3
9. Legacy	20 oz/A	SePRO	3
10. PoaCure	1.2 oz/M	Moghu	3

**Kikuyugrass PGR trial plot plan**

1	2	3	4	5	6	7	8	9	10
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6	2	4	1	10	9	8	3	5	7
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5	4	1	6	10	2	3	7	8	9
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6	3	10	7	1	9	2	4	5	8
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North

**Treatment list for seashore paspalum trial**

<b>Treatment</b>	<b>Rate</b>	<b>Company</b>	<b>Frequency (weeks)</b>
1. Untreated control			
2. Primo MAXX	9 oz/A	Syngenta	3
3. Primo MAXX	11 oz/A	Syngenta	3
4. Trimmit	16 oz/A	Syngenta	3
5. Anuew	8 oz/A	Nufarm	3
6. Cutless	20 oz/A	SePRO	3
7. Cutless	40 oz/A	SePRO	3
8. Muskateer	20 oz/A	SePRO	3
9. Muskateer	30 oz/A	SePRO	3

**Seashore paspalum trial plot plan**

North

4		1
6		2
8		3
1		4
2		5
9		6
7		7
5		8
3		9
2		4
1		6
9		1
7		9
6		7
3		3
4		2
8		5
5		8

**Table 1. Effect of PGRs on clipping dry weight (g) and visual quality (1-9; 9=best) of hybrid bermudagrass.**

Treatment	Rate	Turf Quality (8/24/2016)	Clipping dry weight (g) (8/16/2016)
Untreated control		5.6 AB	5.7 AB
Primo MAXX	11 oz/A	6.5 A	3.1 B
Primo MAXX Ad-Max 90	11 oz/A 0.25 % v/v	6.0 AB	2.6 B
Primo MAXX Sync	11 oz/A 0.0625 % v/v	5.3 AB	1.5 B
Primo MAXX Sync	11 oz/A 0.125 % v/v	5.5 AB	1.8 B
Primo MAXX Sync	11 oz/A 0.25 % v/v	5.3 AB	1.7 B
Legacy	15 oz/A	5.0 AB	5.3 B
Cutless MEC	25 oz/A	4.5 B	3.0 B
Cutless MEC	35 oz/A	5.3 AB	5.2 B
Anuew	8 oz/A	5.8 AB	4.0 B
Anuew	16 oz/A	5.5 AB	3.3 B
Trimmit 2SC	24 oz/A	5.3 AB	4.8 B
PoaCure	1.2 oz/M	6.3 AB	10.6 A

Treatments were applied on 7/28/2016; 08/18/2016; 9/08/2016

**Table 2. Effect of PGRs on visual quality (1-9; 9=best) and clipping dry weight (g) of kikuyugrass.**

Treatment	Rate	Turf Quality (8/24/2016)	Clipping dry weight (g) (8/16/2016)
Untreated control		6.5 ABC	5.1 AB
Primo MAXX	13 oz/A	7.0 AB	3.0 CDE
Trimmit	16 oz/A	6.5 ABC	2.4 CDE
Trimmit	24 oz/A	5.8 C	1.4 E
Anuew	8 oz/A	7.3 A	3.3 CD
Anuew	16 oz/A	7.0 AB	2.5 CDE
Legacy	5 oz/A	6.8 AB	3.8 BC
Legacy	10 oz/A	6.8 AB	2.8 CDE
Legacy	20 oz/A	6.8 AB	1.7 DE
PoaCure	1.2 oz/M	6.3 BC	5.5 A

Treatments were applied on 7/28/2016; 08/18/2016; 9/08/2016

**Table 3: Effect of PGRs on clipping dry weight (g) of seashore paspalum.**

<b>Treatment</b>	<b>Rate</b>	<b>Clipping dry weight (g) (8/16/2016)</b>
Untreated control		19.6 AB
Primo MAXX	9 oz/A	18.5 AB
Primo MAXX	11 oz/A	8.2 B
Trimmit	16 oz/A	14.0 AB
Anuew	8 oz/A	29.0 A
Cutless	20 oz/A	21.6 AB
Cutless	40 oz/A	12.2 B
Muskateer	20 oz/A	24.3 AB
Muskateer	30 oz/A	14.8 AB

Treatments were applied on 7/28/2016; 08/18/2016; 9/08/2016