

## SUGARCANE RIPENER

Albert J Orgeron  
Area Pest Management Specialist  
LSU AgCenter

Kenneth A Gravois<sup>1</sup>, Ben L Legendre<sup>2</sup>, James L Griffin<sup>3</sup>

<sup>1</sup>LCES, <sup>2</sup>Audubon Sugar Institute, and <sup>3</sup>School of Plant, Environmental and Soil Sciences

### **Early Season Variety Response to Glyphosate Ripener**

On August 31, 2015, 5.3 oz/a of Roundup PowerMax II was applied to the experimental plots in St. Gabriel. Varieties included in the experiment were HoCP 96-540, L 01-299, HoCP 04-838, HoCP 07-613, HoCP 09-804, and Ho 09-840. The experiment was hand harvested on September 28<sup>th</sup>, 29 days after glyphosate treatment. Samples were processed using Spectra Cane NIR to determine variety TRS, fiber, and purity. Environmental conditions promoted natural ripening, resulting in above average sucrose levels for all varieties as evident by purity levels above 84% (Table 1) for nontreated sugarcane. TRS was increased by 10.7% for HoCP 96-540, 29 days after treatment; however, other varieties evaluated did not respond to glyphosate.

### **Evaluating ATRIUM as a Sugarcane Ripener**

On August 31, 2015, ATRIUM was applied at 20, 30, and 40 oz/a to plantcane HoCP 96-540 in St. Gabriel. Also included in this study were the ripeners Roundup PowerMax II and Moddus, applied at 5.3 and 19 oz/a, respectively. A nontreated check was also included for comparison. The experiment was hand sampled then harvested by combine on September 29<sup>th</sup>, 30 days after ripener treatment. Samples were processed using Spectra Cane NIR to determine variety TRS, fiber, and purity. Cane yield (TC/A) and sugar per acre (TRS/A) were also calculated. TRS, Cane Yield and Sugar Yield were similar to the check regardless of ATRIUM rate (Table 2).

### **Evaluating NAI 1360 as a Sugarcane Ripener**

On August 26, 2015, NAI 1360 was applied at 2.1oz/a to plantcane HoCP 96-540 and HoCP 04-838 in St. Gabriel. Also included in these studies was the ripener Roundup PowerMax II applied at 5.5 oz/a, and a nontreated check. The experiments were hand sampled at 4, 6, and 8 weeks after treatment (WAT) and were harvested by combine on October, 20, 2015. Samples were processed using Spectra Cane NIR to determine variety TRS, fiber, and purity. Cane yield (TC/A) and sugar per acre (TRS/A) were also calculated. TRS, Cane Yield and Sugar Yield were similar to the check regardless for NAI 1360 (Table 3 and 4). Roundup PowerMax II increased TRS compared to the nontreated check, 4 and 8 WAT for HoCP 96-540; however, TRS was not improved in HoCP 04-838 with Roundup PowerMax II.

### **Evaluating the Efficacy of Moddus as a PGR in Sugarcane**

In St. Gabriel, LA, field experiments were conducted in 2014 and 2015 at the Sugar Research Station to measure the efficacy of Moddus to reduce internode length for seedcane, as well as, to evaluate its effect on the plantcane crop. L 99-226 seedcane was treated with 12 oz/a of Moddus in June. Treatments included Moddus treated whole stalks, Moddus treated billets, nontreated whole and nontreated billets. Prior to planting, buds from all stalks were counted (Table 5). Shoot germination counts were taken every two days, beginning 12 days after planting and ending 30 days after planting and % fall shoot emergence was calculated (Table 6). Spring shoot

counts were recorded, and plots were hand sampled on November 4, 2014 and November 3, 2015 to determine TRS (Table 7). Sugarcane was harvested by combine and cane yield (TC/A) and sugar per acre (TRS/A) was calculated. Regardless of treatment, no significant differences were found for number of buds, TRS, can yield, sugar yield, or mean stalk weight.

Table 1. Effect of Roundup PowerMax II on TRS, Fiber, and Purity for 4 commercial and 2 experimental varieties at the Sugar Research Station in St. Gabriel, LA in 2015 plantcane.

Variety	Glyphosate	TRS <sup>1</sup> (lb/ton)		Fiber (%)	Purity (%)	
HoCP 96-540	No	252		13.8	84.6	
	Yes <sup>2</sup>	279	+	13.7	86.9	+
L 01-299	No	259		12.6	85.3	
	Yes	270		12.0	86.0	
HoCP 04-838	No	261		11.9	86.1	
	Yes	250		13.4	84.0	-
Ho 07-613	No	271		12.6	86.5	
	Yes	263		12.5	85.8	
HoCP 09-804	No	253		12.7	84.1	
	Yes	259		12.5	85.3	
HoCP 09-840	No	269		13.6	86.3	
	Yes	272		13.4	86.2	

<sup>1</sup> Mean separation used least square means probability differences where P=0.05. Varieties that are significantly higher or lower than nontreated are denoted by a plus (+) or minus (-), found next to the mean value for each trait.

<sup>2</sup> Plots treated with 5.3 oz/a of Roundup PowerMax II on August 31, 2015 and harvested September 28, 2015.

Table 2. Effect of ATRiun on Cane Yield, TRS, and Sugar Yield on plantcane HoCP 96-540 at the Sugar Research Station in St. Gabriel, LA in 2015.

Treatment <sup>1</sup>	Rate/a	Cane Yield (tons/a)	TRS (lb/ton)	Sugar Yield (lb/a)
ATRiun	20 oz	43.6	228 abc <sup>2</sup>	9,936
ATRiun	30 oz	44.5	220 bc	9,780
ATRiun	40 oz	47.2	211 c	9,954
Roundup PowerMax	5.3 oz	43.6	241 a	10,532
Moddus	19 oz	44.7	236 ab	10,531
Check		44.2	225 abc	9,909

<sup>1</sup> Plots treated with on August 31, 2015 and harvested September 29, 2015.

<sup>2</sup> Means followed by the same letter are not significantly different from each other.

Table 3. Effect of NAI 1360 on TRS, Cane Yield, and Sugar Yield on plantcane HoCP 96-540 at the Sugar Research Station in St. Gabriel, LA in 2015.

Treatment	Rate/a	TRS	TRS	TRS	Cane Yield (tons/a)	Sugar Yield (lb/a)
		4WAT (lb/ton)	6WAT (lb/ton)	8WAT (lb/ton)		
NAI 1360	2.1 oz	189 b	222 a	243 b	46.4 a	11238 a
Roundup PowerMax	5.5 oz	200 a	229 a	254 a	45.8 a	11623 a
Check		183 b	220 a	241 b	45.9 a	11104 a

<sup>1</sup> Plots treated with on August 26, 2015 and harvested by combine on October 20, 2015.

<sup>2</sup> Means followed by the same letter are not significantly different from each other.

Table 4. Effect of NAI 1360 on TRS, Cane Yield, and Sugar Yield on plantcane HoCP 04-838 at the Sugar Research Station in St. Gabriel, LA in 2015.

Treatment	Rate/a	TRS	TRS	TRS	Cane Yield (tons/a)	Sugar Yield (lb/a)
		4WAT (lb/ton)	6WAT (lb/ton)	8WAT (lb/ton)		
NAI 1360	2.1 oz	223 a	244 a	278 a	40.3 a	11186 a
Roundup PowerMax	5.5 oz	226 a	248 a	286 a	39.5 a	11302 a
Check		217 a	238 a	273 a	42.8 a	11685 a

<sup>1</sup> Plots treated with on August 26, 2015 and harvested by combine on October 20, 2015.

<sup>2</sup> Means followed by the same letter are not significantly different from each other.

Table 5. Means number of buds for each treatment for the L 99-226 Moddus plantcane experiments conducted in St. Gabriel, LA during 2014 and 2015.

Treatment	Buds (no./plot)
Mod Billet (2) <sup>1</sup>	103
Mod Whole (2)	113
No Mod Billet (2)	86
No Mod Whole (2)	91
No Mod Whole (3)	135
P-Value	0.0591

<sup>1</sup> The number with in ( ) is the planting rate or number of running stalks per plot. For billet treatments, stalks were cut into 18" long billets prior to planting.

Table 6. Fall shoot emergence as a percentage of buds planted for the L 99-226 Moddus plantcane experiments conducted in St. Gabriel, LA during 2014 and 2015.

Treatment	% Germination									
	12DAP <sup>1</sup>	14DAP	16DAP	18DAP	20DAP	22DAP	24DAP	26DAP	28DAP	30DAP
Mod Billet	6.1	16.0	25.0	33.9	38.2	43.4	46.5	48.4	48.9	53.4
Mod Whole 2	1.6	8.1	17.1	26.0	30.6	33.7	35.9	36.6	37.7	39.3
No Mod Billet	6.0	17.6	30.6	41.6	48.4	53.8	57.1	59.0	59.8	64.6
No Mod Whole 2	2.0	8.4	14.8	23.3	28.6	32.6	34.1	34.6	35.2	37.2
No Mod Whole 3	2.1	7.9	17.0	24.4	29.3	34.2	35.0	37.5	36.9	40.3

<sup>1</sup> DAP = Days after planting

Table 7. Treatment means for the L 99-226 Moddus plantcane experiments conducted in St. Gabriel, LA during 2014 and 2015.

Treatment	Spring Shoot Count (no./plot)	Cane Yield (Tons/a)	TRS (lb/ton)	Sugar Yield (lb/a)	Mean Stalk Weight (lb)
Mod Billet	102	44.8	238	10558	3.02
Mod Whole 2	142	44.9	240	10906	2.97
No Mod Billet	112	41.6	219	9038	2.93
No Mod Whole 2	130	42.5	243	10270	3.22
No Mod Whole 3	157	45.1	234	10679	3.13
P-Value	0.5265	0.8294	0.4413	0.5288	0.5441