

SUGARCANE RIPENERS

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Response of Ho-07-613 to Several Ripener Treatments

A study was conducted in 2020 at the Sugar Research Station in St. Gabriel, LA to evaluate the response of third ratoon Ho 07-613 to several ripener treatments. The experimental design was a randomized complete block design with 3 replications, and the plot size was two rows wide (12 ft.) X 40 ft. in length. On August 4, 2020, ripener treatments were applied using a tractor mounted boom. Treatments included Roundup PowerMaxII® at 5.3 ozs./A, Roundup PowerMaxII® at 3 ozs./A, and Roundup PowerMaxII® at 3 ozs./A + Intake® ripener additive at 8 ozs./A, as well as an untreated check. A hand-cut, 10-stalk sample from each plot was harvested on September 22, 2020, 49 days after application (DAA) and was processed using Spectra Cane NIR to determine theoretical recoverable sugar (TRS, lbs. per ton of cane). The TRS for the 5.3 oz Roundup PowerMaxII® treatment averaged 254 lbs./ton and was significantly greater than the Roundup PowerMaxII® + Intake® and the untreated check treatments which averaged 212 and 188 lbs/ton, respectively (Table 1). At 49 DAA, plots were harvested with a sugarcane chopper harvester and were loaded into a wagon equipped with load cells, and the weight of each plot was recorded. The sum of the plot weights and sample weights was used to calculate cane yield (ton/A). Sugar yield (lbs./A) was calculated as the product of TRS and cane yield. Cane yield was reduced for all treatments as compared to the untreated check, by at least 5.1 ton/A. Sugar yield was similar for all treatments, but was numerically greatest for the untreated check.

Table 1. Effect of ripener treatments on sugarcane yield parameters for third ratoon Ho 07-613 at 49 days after treatment in St. Gabriel, LA in 2020

Treatment ¹	Rate/a	TRS (lbs./ton)	Cane Yield (ton/A)	Sugar Yield (lbs./A)	Fiber (%)
Roundup PowerMaxII®	5.3 ozs.	254 a ²	21.4 b	5,463 a	13.5 a
Roundup PowerMaxII®	3 ozs.	229 ab	24.0 b	5,538 a	13.6 a
Roundup PowerMaxII® + Intake®	3 ozs. + 8 ozs.	212 bc	25.5 b	5,422 a	13.5 a
Untreated Check		188 c	30.6 a	5,744 a	13.8 a

¹ Treatments applied August 4, 2020 and harvested September 22, 2020.

² Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

Influence of Treatment-to-Harvest Interval on Sugarcane Harvested Early in the Season

A study was conducted in 2020 at the Sugar Research Station in St. Gabriel, LA to evaluate the influence of treatment-to-harvest interval (THI) on glyphosate ripened sugarcane harvested early in the season. The experimental design was a randomized complete block design with 4 replications, and the plot size was two rows wide (12 ft.) X 60 ft. in length. Roundup PowerMaxII® was applied at 6 ozs./A using a tractor mounted boom on August 10, 2020, or

August 21, 2020 to first ratoon L 01-299. Plots were sampled and harvested on September 22, 2020, resulting in a THI of 43 and 32 days respectively, for the August 10th and August 21st applications. An untreated check was included for comparison. A hand-cut, 10-stalk sample from each plot was harvested on September 22, 2020 and was processed using Spectra Cane NIR to determine TRS (lbs./ton). Plots were then harvested with a sugarcane chopper harvester and were loaded into a wagon equipped with load cells, and the weight of each plot was recorded. The sum of the plot weights and sample weights was used to calculate cane yield (ton/A). Sugar yield (lbs./A) was calculated as the product of TRS and cane yield. The 43 day THI treatment averaged 36 more pounds of sugar per ton of cane than the 32 THI treatment, and 81 more pounds of sugar per ton of cane than the untreated check (Table 2). Cane yield was reduced by 6 ton/A for the 43 THI as compared to the untreated check which yielded 32.7 ton/A. Sugar yield for both the 43 and 32 THI treatments were significantly greater than the untreated check and averaged at least 1,137 more pounds of sugar/a.

Table 2. Influence of treatment-to-harvest interval on glyphosate¹ ripened first ratoon L 01-299 sugarcane harvested early in the season in St. Gabriel, LA in 2020

Application Date	Treatment-to-Harvest Interval ² (days)	TRS (lbs./ton)	Cane Yield (ton/A)	Sugar Yield (lbs./A)	Fiber (%)
August 10, 2020	43	255 a ³	26.7 b	6,794 a	10.7 a
August 21, 2020	32	219 b	31.5 ab	6,876 a	11.3 a
Untreated Check		174 c	32.7 a	5,657 b	11.6 a

¹ Roundup PowerMaxII[®] applied at 6 ozs./A.

² Sugarcane harvested on September 22, 2020.

³ Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

TRS Response of Newly Released or Late-Stage Experimental Varieties to Roundup PowerMaxII[®] Ripener

Six studies were conducted in 2020 to evaluate the TRS response of newly released or late-stage experimental varieties to Roundup PowerMaxII[®] ripener at the Sugar Research Station in St. Gabriel, LA. Each study was composed of a single variety (Ho 12-615, L 12-201, Ho 13-739, L 14-267, or HoCP 14-885). The experimental design was a randomized complete block design with either 3 or 4 replications, and plot size was two rows wide (12 ft.) X 30-40 ft. in length (based on field size). Roundup PowerMaxII[®] was applied at 5.3 ozs./A using a tractor mounted boom. A hand-cut, 10-stalk sample from each plot was harvested and was processed using Spectra Cane NIR to determine TRS (lbs./ton). The treatment-to-harvest interval for the studies ranged from 35 to 40 days. Ho 12-615, L 01-201, and L 14-267, showed the greatest response to ripener treatment and TRS was increased by 23, 24, and 33% of their respective untreated control (Table 3). Response of Ho 13-739 and HoCP 14-885 to glyphosate ripener was minimal.

Table 3. Effect of Roundup PowerMaxII®¹ on TRS for 3 commercial and 2 experimental varieties in St. Gabriel, LA in 2020

Variety	Treatment-to-Harvest Interval	Harvest Date	Roundup PowerMaxII® TRS (lbs./ton)	Untreated Check TRS (lbs./ton)	% Increase in TRS above the Untreated Check
Ho 12-615	35 days	Sept. 23	221 a ²	179 b	+23
L 12-201	35 days	Sept. 23	240 a	193 b	+24
Ho 13-739	35 days	Sept. 23	237 a	215 a	+10
Ho 13-739	40 days	Oct. 21	269 a	250 b	+8
L 14-267	40 days	Oct. 21	264 a	198 b	+33
HoCP 14-885	40 days	Oct. 21	263 a	250 a	+5

¹ Roundup PowerMaxII® applied at 5.3 ozs./A.

² Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

Efficacy of Roundup PowerMax3® ripener as compared to Roundup PowerMaxII®

A study was conducted in 2020 at the Sugar Research Station in St. Gabriel, LA to evaluate the efficacy of Roundup PowerMax3® ripener as compared to Roundup PowerMaxII®. The experimental design was a randomized complete block design with 4 replications, and the plot size was two rows wide (12 ft.) X 40 ft. in length. On August 18, 2020, ripener treatments were applied using a tractor mounted boom to second ratoon L 01-299. Treatments included Roundup PowerMax3® and Roundup PowerMaxII® and were applied at equivalent amounts of glyphosate acid (0.186 lb/a), corresponding to 4.97 ozs. of Roundup PowerMax3® and 5.3 ozs./A of Roundup PowerMaxII®, as well as, Roundup PowerMaxII® + Moddus® (2.65 oz + 11 oz/a). An untreated check was included for comparison. On September 22, a hand-cut, 10-stalk sample from each plot was harvested, and was processed using Spectra Cane NIR to determine TRS (lbs./ton). Plots were then harvested with a sugarcane chopper harvester and were loaded into a wagon equipped with load cells, and the weight of each plot was recorded. Sugarcane yield parameters (TRS, cane yield, and sugar yield) were equivalent for the Roundup PowerMax3® and Roundup PowerMaxII® treatments at harvest (Table 4). The TRS level for the Roundup PowerMaxII® + Moddus® treatment was statistically similar to the Roundup PowerMax3® and Roundup PowerMaxII® treatments; however, the Roundup PowerMaxII® + Moddus® treatment averaged 37 more pounds of sugar per ton than the untreated check.

Table 4. Efficacy of Roundup PowerMax3[®] ripener as compared to Roundup PowerMaxII[®] on sugarcane yield parameters for second ratoon L 01-299 at 35 days after treatment in St. Gabriel, LA in 2020

Treatment ¹	Rate/a	TRS (lbs./ton)	Cane Yield (ton/A)	Sugar Yield (lbs./A)	Fiber (%)
Roundup PowerMax3 [®]	4.97 ozs.	223 ab ²	34.2 a	7,623 a	11.8 a
Roundup PowerMaxII [®]	5.3 ozs.	215 ab	33.7 a	7,231 a	11.5 a
Roundup PowerMaxII [®] + Moddus [®]	2.65 ozs. + 11 ozs.	228 a	35.4 a	8,086 a	11.8 a
Untreated Check		191 b	35.2 a	6,752 a	11.8 a

¹ Treatments applied August 18, 2020 and harvested September 22, 2020.

² Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

TRS Response of L 01-299 to Experimental Compounds

A study was conducted in 2020 at the Sugar Research Station in St. Gabriel, LA to evaluate the potential value of experimental compounds as a sugarcane ripener tool. The experimental design was a randomized complete block design with 3 replications, and the plot size was two rows wide (12 ft.) X 35 ft. in length. On August 20, 2020, experimental ripener treatments were applied to first ratoon L 01-299 using a tractor mounted boom. Treatments included Capreno[®] at 1.5 ozs/a, Clethodim[®] at 5.5 ozs./A, and GlucoPro[®] at 10 ozs./A. An untreated check was included for comparison. Induce[®], non-ionic surfactant, was added to all treatments at 0.25% v/v. At 37 and 53 DAA, a hand-cut 10-stalk sample from each plot was harvested and was processed using Spectra Cane NIR to determine TRS (lbs/ton). At 37 and 53 DAA, the Clethodim[®] treatment significantly increased TRS levels by 32 and 35 pounds per ton of cane respectively as compared to the untreated control (Table 5). The Capreno[®] and GlucoPro[®] treatments provided a numerical increase in TRS level at 53 DAA as compared to the untreated check. Capreno[®] and Clethodim[®] are restricted use pesticides, and are not labeled for use in sugarcane.

Table 5. Effect of three experimental compounds on TRS level at two sampling dates in second ratoon L 01-299 in St. Gabriel, LA in 2020

Treatment ¹	Rate/A	TRS (lbs./ton) 37 DAA ²	TRS (lbs./ton) 53 DAA
Capreno ^{®*}	1.5 ozs.	176 ab ³	207 ab
Clethodim ^{®*}	5.5 ozs.	199 a	222 a
GlucoPro [®]	10 ozs.	166 b	197 ab
Untreated Check		167 b	187 b

¹ Treatments applied August 20, 2020, 0.25% v/v NIS added to all treatments.

² DAA = Days after application.

³ Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

* Not label for use in sugarcane.

Evaluation of FiberTek® as a Sugarcane Ripener

A study was conducted in 2020 at the Sugar Research Station in St. Gabriel, LA to evaluate the potential value of FiberTek® as a sugarcane ripener tool. The experimental design was a randomized complete block design with 4 replications, and the plot size was two rows wide (12 ft.) X 35 ft. in length. On August 20, 2020, ripener treatments were applied to second ratoon L 01-299 using a tractor mounted boom. Treatments included FiberTek® at 272 ozs/a (Part A at 16 ozs./A + Part B at 256 ozs./A) and Roundup PowerMaxII® at 5.3 oz/a. An untreated check was included for comparison. At 42, 48 and 56 DAA, a hand-cut 10-stalk sample from each plot was harvested and was processed using Spectra Cane NIR to determine TRS (lbs./ton). TRS was not improved at any sample date for the FiberTek® treatments as compared to the untreated check (Table 6). The Roundup PowerMaxII® treatment resulted in a significant increase in TRS for the 48 and 56 DAA samplings, as compared to the untreated check, and averaged 25 and 46 more pounds of sugar per ton of cane than the untreated check. At 56 DAA, plots were harvested with a sugarcane chopper harvester and were loaded into a wagon equipped with load cells, and the weight of each plot was recorded. The sum of the plot weights and sample weights was used to calculate cane yield (ton/A). Sugar yield (lbs./A) was calculated as the product of TRS and cane yield. Cane yield and sugar yield was statistically similar for all treatments respectively at 56 DAA (Table 7).

Table 6. Efficacy of FiberTek® ripener as compared to Roundup PowerMaxII® on TRS for second ratoon L 01-299 at three sampling dates in St. Gabriel, LA in 2020

Treatment ¹	Rate/A	TRS (lbs./ton)	TRS (lbs./ton)	TRS (lbs./ton)
		42 DAA ²	48 DAA	56 DAA
FiberTek® ³	272 ozs.	161 b ⁴	192 b	187 b
Roundup PowerMaxII®	5.3 ozs.	205 a	213 a	224 a
Untreated Check		178 ab	188 b	178 b

¹ Treatments applied August 20, 2020.

² DAA = Days after application.

³ FiberTek® is a two-part compound and was applied at 16 ozs. Part A + 256 ozs. Part B per acre.

⁴ Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

Table 7. Efficacy of FiberTek® ripener as compared to Roundup PowerMaxII® on Cane Yield, Sugar Yield, and Fiber for second ratoon L 01-299 at 56 days after application in St. Gabriel, LA in 2020

Treatment ¹	Rate/A	Cane Yield (ton/A)	Sugar Yield (lbs./A)	Fiber (%)
FiberTek® ²				
Part A + Part B	16 ozs. + 256 ozs.	39.4 a ³	7,343 a	11.6 a
Roundup PowerMaxII®	5.3 ozs.	36.4 a	8,119 a	11.3 a
Untreated Check		40.7 a	7,228 a	11.5 a

¹ Treatments applied August 20, 2020 and harvested on October 15, 2020.

² FiberTek® is a two-part compound and was applied at 16 ozs. Part A + 256 ozs. Part B per acre.

³ Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

Large-scale Evaluation of Intake® Ripener Additive

A large-scale, commercial study was conducted in 2020 at 90 South Farms in Mathews, LA to evaluate the effect of adding Intake® to Roundup PowerMaxII® ripener. The experimental design was a randomized complete block design with 4 replications, and the plot size was eight rows wide (48 ft.) X approximately 500 ft. in length (length of the block). Treatments were applied stubble L 01-299 with a helicopter on September 25, 2020. Treatments included Roundup PowerMaxII® at 5.3 ozs./A, Roundup PowerMaxII® at 2.65 ozs./A, and Roundup PowerMaxII® at 2.65 ozs./A + Intake® ripener additive at 8 ozs./A, as well as an untreated check. A hand-cut, 10-stalk sample from each plot was harvested on November 11, 2020, 47 DAA and was processed using Spectra Cane NIR to determine TRS (lbs./ton). After sampling was completed, 300 feet per row of the center two rows for each plot was harvested with a sugarcane chopper harvester and were loaded into a wagon equipped with load cells, and the weight of each plot was recorded. The sum of the plot weights and sample weights was used to calculate cane yield (ton/A). Sugar yield (lbs./A) was calculated as the product of TRS and cane yield. TRS values were numerically greater for the Roundup PowerMaxII® treatments (5.3 and 2.65 ozs./A) as compared to the untreated check and Roundup PowerMaxII® + Intake® treatments (Table 8). Cane yield was numerically greatest for the untreated check treatment and sugar yield was similar among all treatments.

Table 8. Effect of commercially applied ripener treatments on sugarcane yield parameters for second ratoon L 01-299 at 47 days after treatment in Mathews, LA in 2020

Treatment ¹	Rate/A	TRS (lbs./ton)	Cane Yield (ton/A)	Sugar Yield (lbs./A)	Fiber (%)
Roundup PowerMaxII®	5.3 ozs.	264 a ²	32.5 a	8,564 a	12.6 a
Roundup PowerMaxII®	2.65 ozs.	265 a	32.3 a	8,560 a	12.3 a
Roundup PowerMaxII® + Intake®	2.65 ozs. + 8 ozs.	251 a	32.9 a	8,256 a	12.5 a
Untreated Check		252 a	33.8 a	8,538 a	12.4 a

¹ Treatments applied September 25, 2020 and harvested November 11, 2020.

² Means within a column followed by the same lowercase letter are not significantly different at P=0.05.

Large-scale Evaluation of Anova® Ripener Additive

A large-scale, commercial study was conducted in 2020 at Harper Planting Partnership in Cheneyville, LA to evaluate the effect of adding Anova® to Roundup PowerMaxII® ripener. The experimental design was a randomized complete block design with 3 replications, and the plot size was 12 rows wide (70 ft.) X approximately 1,850 ft. in length (length of the block). Treatments were applied with an airplane on September 30, 2020. Treatments included Roundup PowerMaxII® at 5.3 ozs./A, and Roundup PowerMaxII® at 5.3 ozs./A + Anova® ripener additive at 11 ozs./A, as well as an untreated check. A hand-cut, 10-stalk sample from each plot was harvested on November 16, 2020, 47 DAA and was processed using Spectra Cane NIR to determine TRS (lbs./ton). After sampling was completed, the center six rows of each plot were harvested with a sugarcane chopper harvester and were loaded into two semi-trucks, and mill weights were utilized to calculate cane yield (ton/A). Sugar yield (lbs./A) was calculated as the product of TRS and cane yield. TRS values were numerically greater for the Roundup

PowerMaxII[®] treatment as compared to the untreated check and Roundup PowerMaxII[®] + Anova[®] treatments (Table 9). Cane yield was similar among all treatments, but sugar yield was numerically greatest for the Roundup PowerMaxII[®] treatment.

Table 9. Effect of commercially applied ripener treatments on sugarcane yield parameters for second ratoon L 01-299 at 47 days after treatment in Cheneyville, LA in 2020

Treatment ¹	Rate/A	TRS (lbs./ton)	Cane Yield (ton/A)	Sugar Yield (lbs./A)
Roundup PowerMaxII [®]	5.3 ozs.	262 a ²	40.4 a	10,578 a
Roundup PowerMaxII [®] + Anova [®]	5.3 ozs. + 16 ozs.	251 a	39.9 a	10,006 a
Untreated Check		223 a	40.4 a	9,001 a

¹ Treatments applied September 30, 2020 and harvested November 16, 2020.

² Means within a column followed by the same lowercase letter are not significantly different at P=0.05.