Ripener Research

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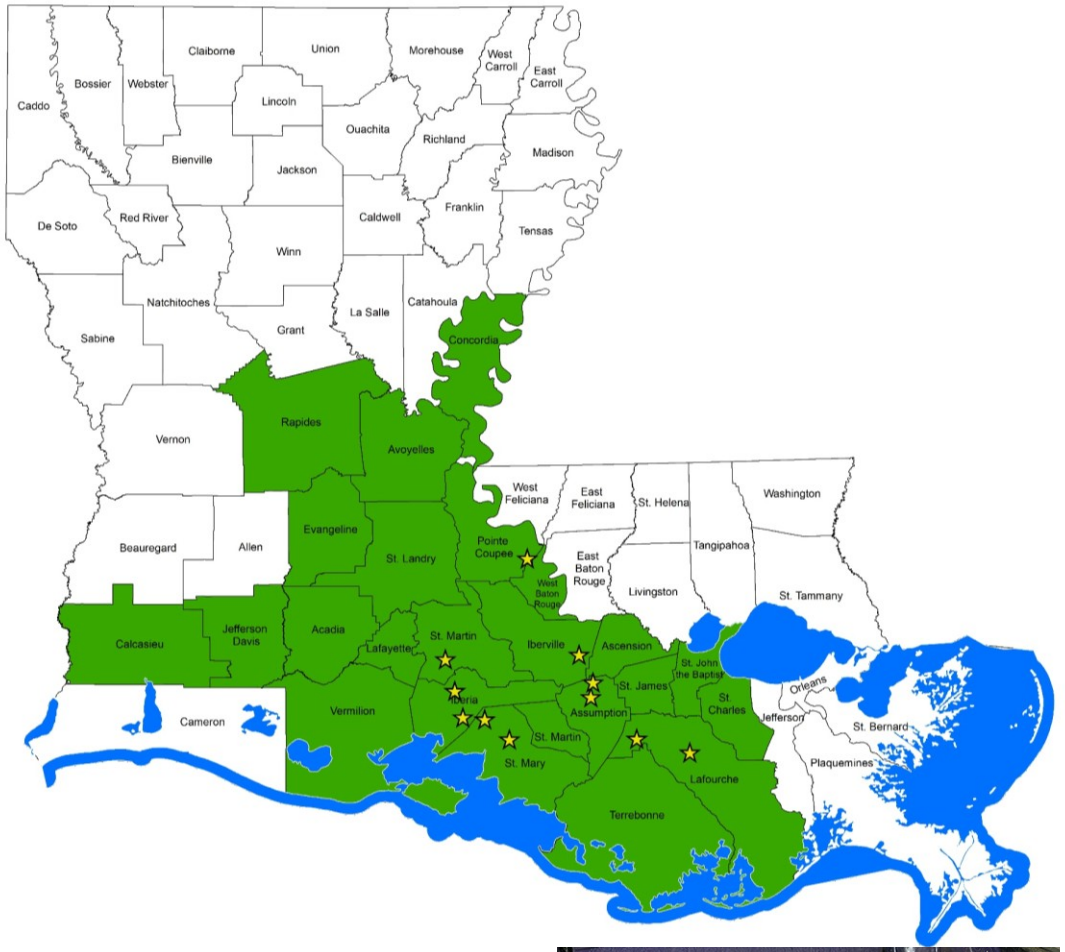
LSU AgCenter
Research · Extension · Teaching

One of the greatest **RISK** associated with growing sugarcane in Louisiana an untimely freeze event.



Daily Processing Capacity is LIMITED

Approximately 170,896 tons of cane /day

… so we begin processing cane in mid-September to help manage the risk of an untimely freeze event

- 544,000 acres of sugarcane
- 17.945 million tons of cane
- 11 Sugar Factories


HoCP 18-803
18-803

HoCP 18-803 Response to Ripener

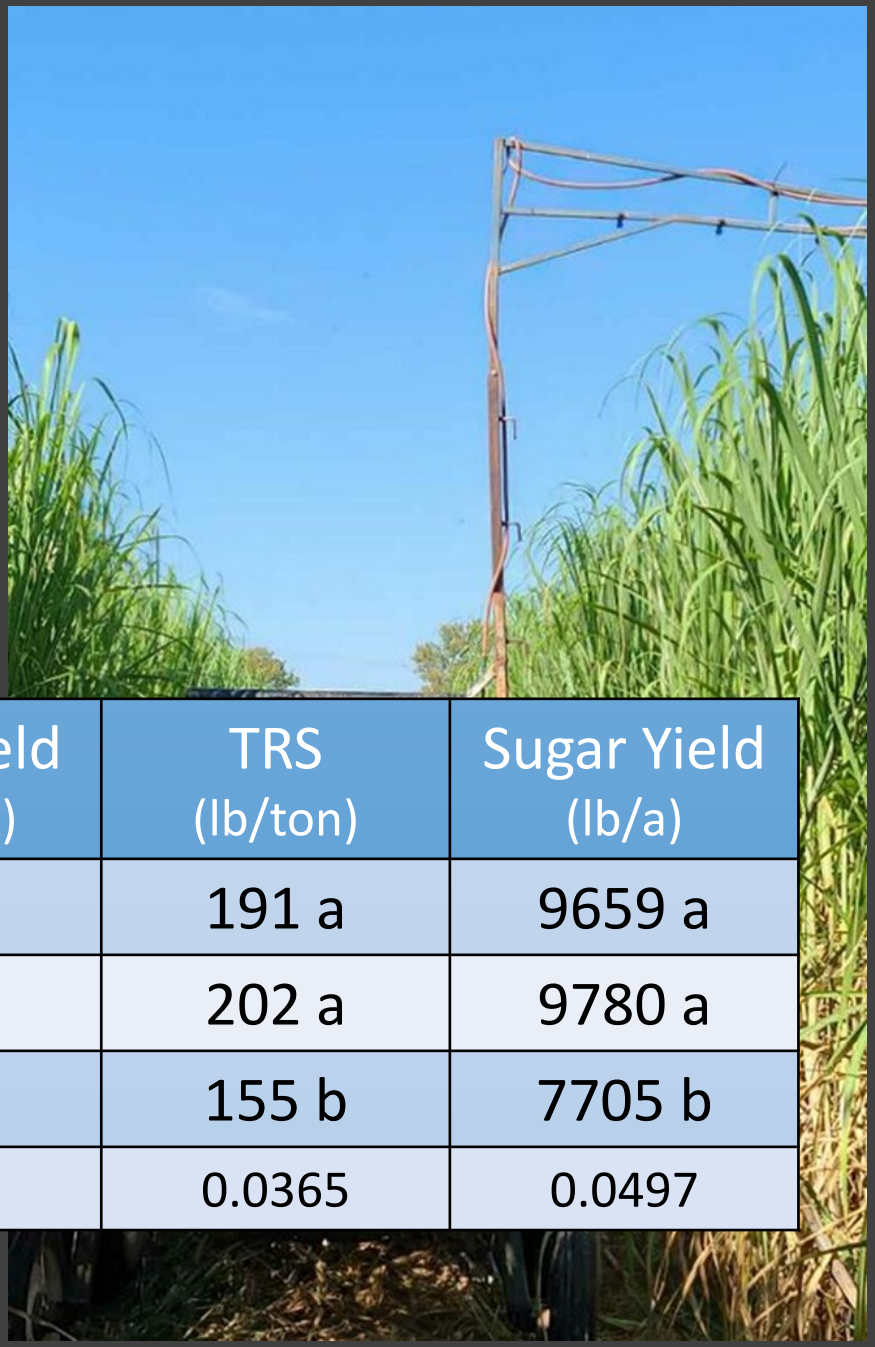
1st Stubble HoCP 18-803

Plot size 2 rows X 30 ft, 3 Replication, RCBD
Applied: Aug. 12, 2025; Tractor 10 gpa
Harvested: Sept. 16, 2025; 35 DAT
Sugar Research Station

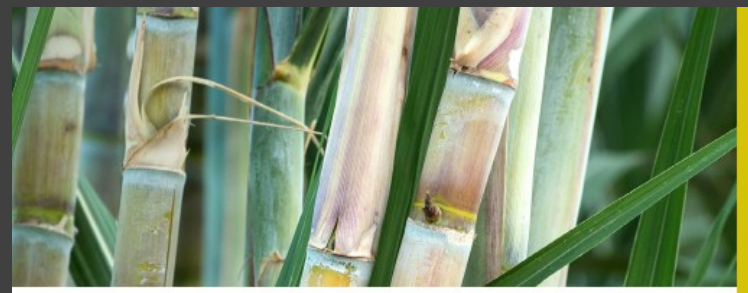
HoCP 18-803 Response to Ripener

1st Stubble HoCP 18-803

Plot size 2 rows X 30 ft, 3 Replication, RCBD
Applied: Aug. 12, 2025; Tractor 10 gpa
Harvested: Sept. 16, 2025; 35 DAT
Sugar Research Station



Treatment	Rate/A	Cane Yield (Tons/A)	TRS (lb/ton)	Sugar Yield (lb/a)
RU PowerMax3	5 oz	50.4	191 a	9659 a
RU Powermax3 + Moddus	2.5 oz + 11 oz	48.6	202 a	9780 a
Check		49.7	155 b	7705 b
P-value		0.6716	0.0365	0.0497



SugarMax™

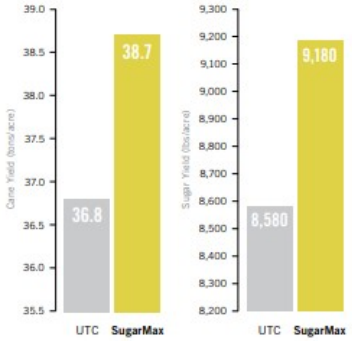
PLANT GROWTH REGULATOR

PRODUCT BENEFITS

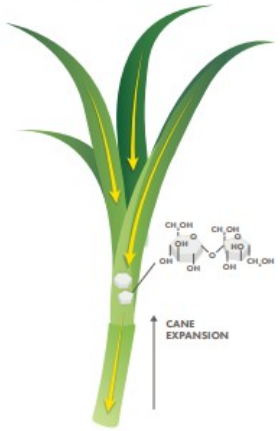
SugarMax™ Plant Growth Regulator is a novel ripening agent for sugarcane.
SugarMax promotes ripening and sugar accumulation in plant stems, resulting in greater sucrose availability, higher cane yield, and increased sugar productivity per acre without damaging regrowth.

SugarMax Increased Cane Growth

When compared to other ripener products, SugarMax increased average cane growth by 600 lbs/acre. The result was not only greater cane tonnage per acre, but also greater extractable sugars per acre, leading to a $222/ac increase in ROI.



How It Works



OVERVIEW

IMPROVED RIPENING
Increases sugar accumulation in the canes for higher sugar concentration

INCREASED CANE GROWTH
Increases cane growth for higher sucrose yield per acre

GREATER SUCROSE PRODUCTION
Increases extractable sugars per acre for higher ROI

VALENT BIOSCIENCES

SUGARMAX™ PLANT GROWTH REGULATOR
VALENTBIOSCIENCES.COM/BIOSTIMULANTS

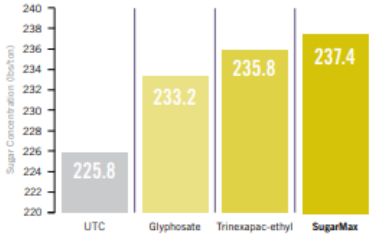
SugarMax™

Plant Growth Regulator

VALENTBIOSCIENCES.COM/BIOSTIMULANTS

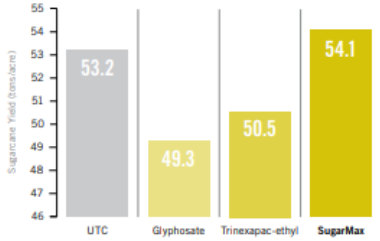
SugarMax Increased Sugarcane Ripening

Application of SugarMax prior to harvest advanced sugarcane ripening, increasing sugar accumulation in the cane compared to the untreated control (UTC) and other ripeners. This resulted in greater extractable sucrose from those canes treated with SugarMax.



SugarMax Does Not Hinder Cane Regrowth

Unlike other ripeners, SugarMax does not reduce cane regrowth in the ratoon crop. Instead, SugarMax supports robust cane regrowth for successive years of strong harvests.



SugarMax Trial Photos

UTC | Glyphosate | Trinexapac-ethyl | **SugarMax**

HOW TO USE	
Crop Type	Sugarcane
Use Rate	Apply 0.5 oz/acre. See label for details or contact your Valent BioSciences' crop advisor for additional information.
Application Timing	Apply 4 – 8 weeks prior to harvest

VALENT BIOSCIENCES

Objective(s): Test efficacy of pre-harvest applications of SugarMax (VBC-30051) on 1st ratoon, i.e., 2nd year sugarcane for effects on tonnage and sugar yields.

Crop: Sugarcane

Locations: LA

Regulatory: Non-Crop Destruct

VBC Products: VBC-30051 (20% S-ABA)

Plot Size: Minimum 4 row width x 30-50 feet long

Replications: Six

Spray timings: As noted in the table below.

Trt #	Product(s)	Rate	Spray Timing
1	Untreated Control	na	na
2	Roundup PowerMax 3 (51.2% glyphosate)*	Std. Rate	Std. Timing
3	VBC-30051	14.6 g/ac	A = 8 WBH
	Non-Ionic Surfactant	0.25% v/v	
4	VBC-30051	14.6 g/ac	B = 4 WBH
	Non-Ionic Surfactant	0.25% v/v	

Notes:

- **Select trial locations with highly uniform stands.**
- Spray Volume: Aerial: 3 GPA; Ground: 10 GPA

Application Method for the products: Foliar Spray

- Ensure pH of the spray solution is between 4.0 to 6.0; do not use NIS recommended for products requiring a pH 7.0 or higher.

SugarMax SG Plant Growth Regulator Soluble Granule

SDS# VBC-1186 Revision 0 ISSUED 07/28/2

[Classification according to OSHA; 29 CFR § Part 1910.1200, (3/12/2012)]

WARNING

Hazard Statement(s)

Harmful to aquatic life (lemna)

Precautionary Statement:

Prevention

Wash thoroughly after handling
Avoid release to the environment

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lense present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice/ attention.

Disposal

Dispose of contents/container in accordance with local/regional/national/regulations.

2.3 Other Hazards

None identified.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Active Ingredients - Name	Percent	g/kg
21293-29-8	S-Abscisic acid	20%	200

CAS #	Component Other-Ingredient Name	Percent	g/kg
Trade Secret	Other ingredients	80%	Balance

Evaluation of SugarMax

1st Stubble L 01-299

Plot size 2 rows X 40 ft, 6 Replication, RCBD
Applied A: Aug. 1, 2025; Tractor 10 gpa
Application B: Sept. 2, 2025; Tractor 10 gpa
LI 700 added to Sugar Max Treatments
Sampled: Sept. 16, 2025; Harvested: Sept. 30, 2025;
59 DAT A and 28 DAT B
Sugar Research Station

Treatment	Rate/A	TRS (lb/ton) Sept. 16 Sampling
SugarMax (59 DAT)	14.6 g	167 c
SugarMax (28 DAT)	14.6 g	168 c
RU PowerMax3 (28 DAT)	5 oz	194 a
Check		176 b
P-value		0.0001

Evaluation of SugarMax

1st Stubble L 01-299

Plot size 2 rows X 40 ft, 6 Replication, RCBD
Applied A: Aug. 1, 2025; Tractor 10 gpa
Application B: Sept. 2, 2025; Tractor 10 gpa
LI 700 added to Sugar Max Treatments
Sampled: Sept. 16, 2025; Harvested: Sept. 30, 2025;
59 DAT A and 28 DAT B
Sugar Research Station

Treatment	Rate/A	Cane Yield (Tons/A)	TRS (lb/ton)	Sugar Yield (lb/a)
SugarMax (59 DAT)	14.6 g	42.9	197 b	8478 b
SugarMax (28 DAT)	14.6 g	42.1	203 b	8540 b
RU PowerMax3 (28 DAT)	5 oz	39.2	247 a	9675 a
Check		43.4	206 b	8920 ab
P-value		0.5017	0.0001	0.0464

Evaluation of SugarMax

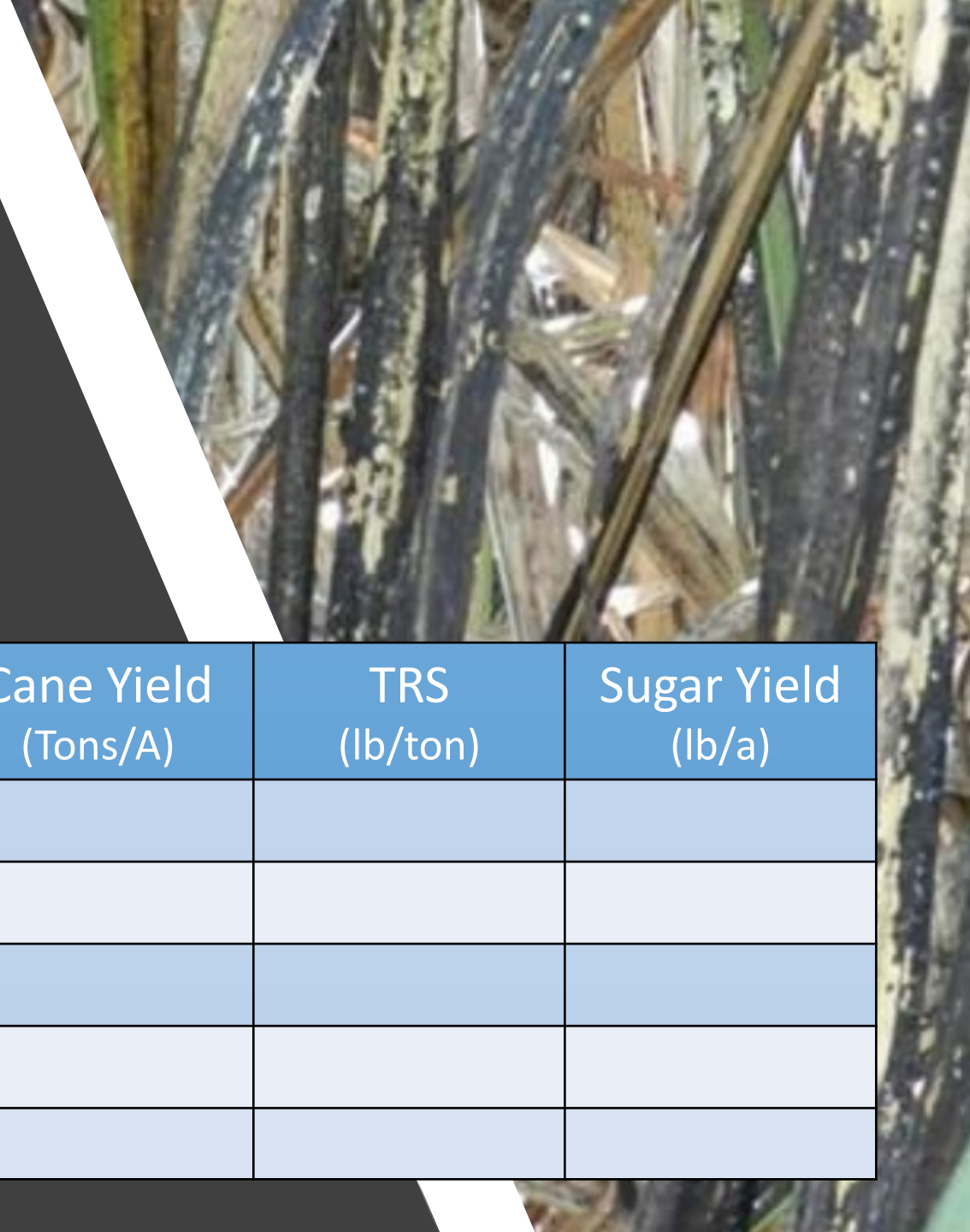
1st Stubble L 01-299

Plot size 2 rows X 40 ft, 6 Replication, RCBD
Applied A: Aug. 1, 2025; Tractor 10 gpa
Application B: Sept. 2, 2025; Tractor 10 gpa
LI 700 added to Sugar Max Treatments
Sampled: Sept. 16, 2025; Harvested: Sept. 30, 2025;
59 DAT A and 28 DAT B
Sugar Research Station

Treatment	Rate/ A	Shoot Reemergence (Shoots/A) Oct. 16
SugarMax (59 DAT)	14.6 g	48,612 a
SugarMax (28 DAT)	14.6 g	42,199 b
RU PowerMax3 (28 DAT)	5 oz	26,801 c
Check		42,320 b
P-value		0.0001

Photo credits Blake Wilson

Ripening Efficacy of RU PowerMax3 Tankmixes with Insecticides

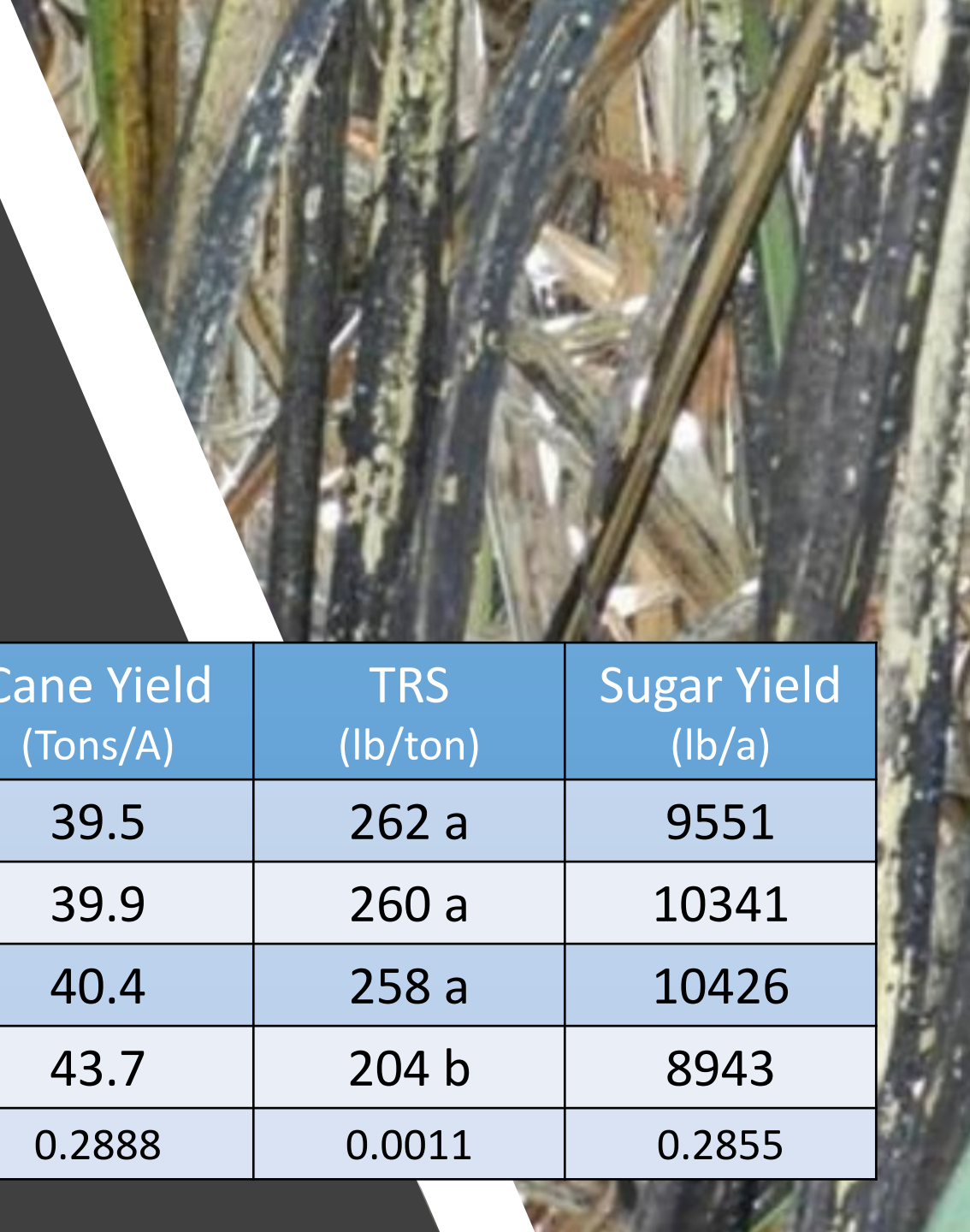


Plantcane L 01-299

Plot size 2 rows X 40 ft, 3 Replication, RCBD
Applied: Sept. 10, 2025; Tractor 10 gpa
Harvested: Oct. 22, 2025; 42 DAT
Sugar Research Station

Treatment	Rate/A	Cane Yield (Tons/A)	TRS (lb/ton)	Sugar Yield (lb/a)
PowerMax3	5 oz			
PowerMax3 + Savanto	5 oz + 4 oz			
PowerMax3 + Lamba Cyhalothrin	5 oz + 4.2 oz			
Check				
P-value				

Ripening Efficacy of RU PowerMax3 Tankmixes with Insecticides



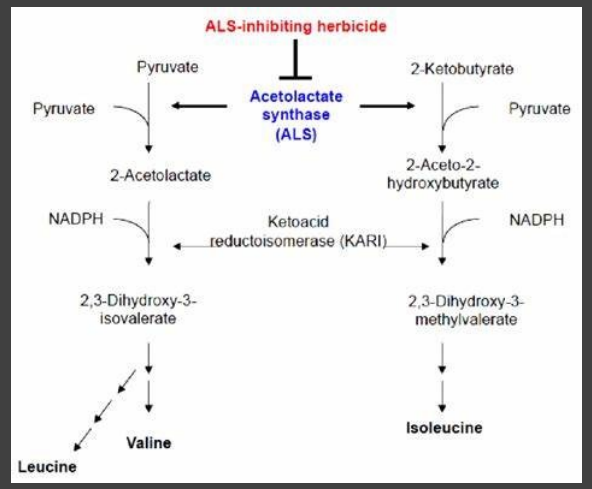
Plantcane L 01-299

Plot size 2 rows X 40 ft, 3 Replication, RCBD
Applied: Sept. 10, 2025; Tractor 10 gpa
Harvested: Oct. 22, 2025; 42 DAT
Sugar Research Station

Treatment	Rate/A	Cane Yield (Tons/A)	TRS (lb/ton)	Sugar Yield (lb/a)
PowerMax3	5 oz	39.5	262 a	9551
PowerMax3 + Savanto	5 oz + 4 oz	39.9	260 a	10341
PowerMax3 + Lamba Cyhalothrin	5 oz + 4.2 oz	40.4	258 a	10426
Check		43.7	204 b	8943
P-value		0.2888	0.0011	0.2855

Beyond Xtra®

- Active Ingredient: Imazamox, Imidazolinone Herbicide Family
  - Post-emergent herbicide and is utilized in several cropping systems including alfalfa, beans, chicory, as well as several genetically modified “Clearfield” crops
- Mode of Action: Inhibits the enzymes acetolactate synthase (ALS)/acetohydroxy acid synthase (AHAS)
  - Stops production of acetolactate/acetohydroxybutyrate, a necessary precursor of the branch chained amino acids valine, leucine, and isoleucine



Bo, Aung & Ok Jae, Won & Sin, H & Lee, J & Park, K. (2017). Mechanisms of herbicide resistance in weeds.

Imidazolines

Imazapyr (Arsenal) was shown to effectively ripen sugarcane in Louisiana by Dr. Ben Legendre in 2002 and 2003, but registration for crop use was not pursued by BASF.

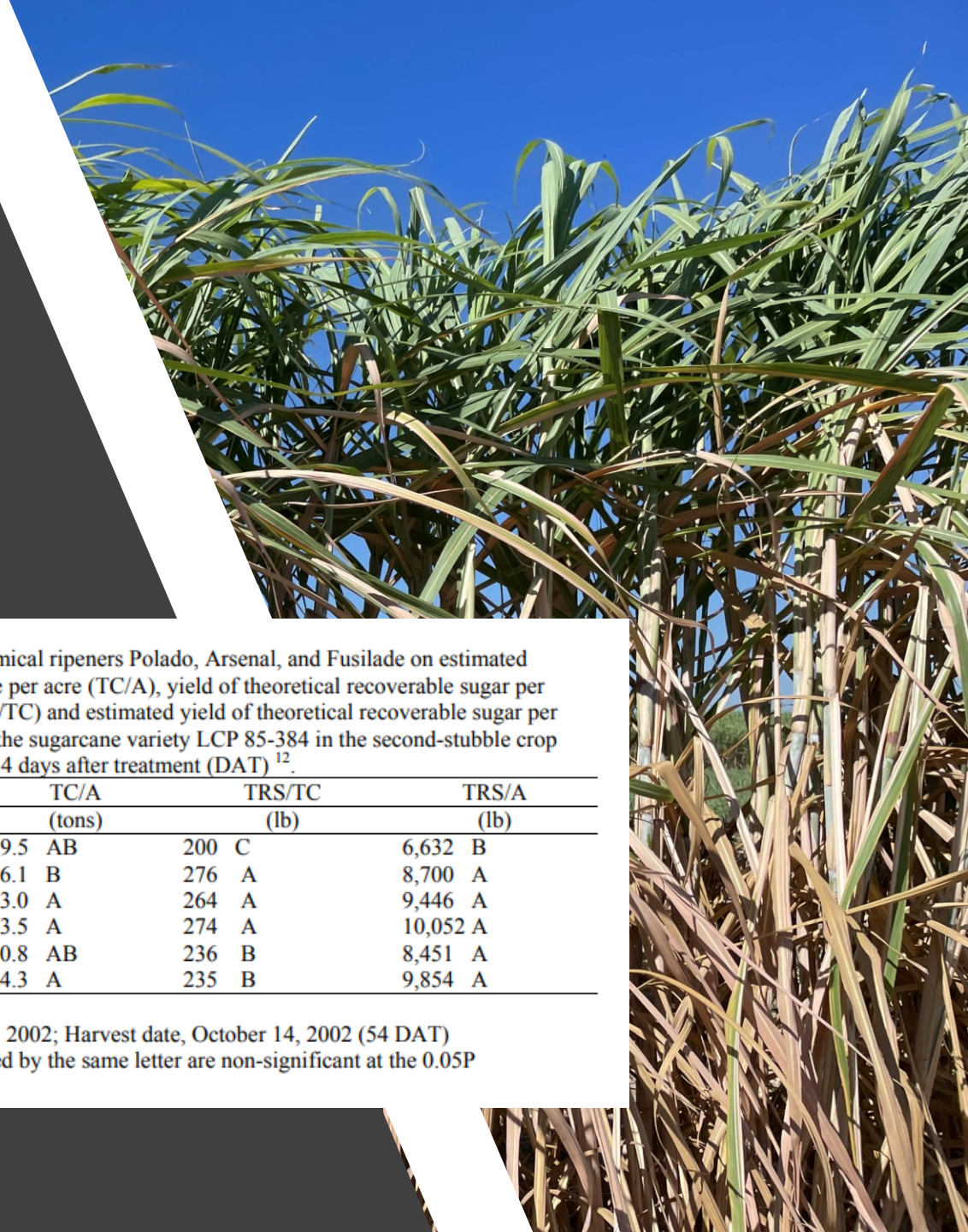


Table 4. Effect of the chemical ripeners Polado, Arsenal, and Fusilade on estimated yield of tons cane per acre (TC/A), yield of theoretical recoverable sugar per ton of cane (TRS/TC) and estimated yield of theoretical recoverable sugar per acre (TRS/A) of the sugarcane variety LCP 85-384 in the second-stubble crop when harvested 54 days after treatment (DAT) [1,2].

Treatment	Rate	TC/A (tons)		TRS/TC (lb)		TRS/A (lb)	
Control	-	39.5	AB	200	C	6,632	B
Polado	0.200 lb/A	36.1	B	276	A	8,700	A
Arsenal	0.143 lb/A	43.0	A	264	A	9,446	A
Arsenal	0.214 lb/A	43.5	A	274	A	10,052	A
Fusilade	0.062 lb/A	40.8	AB	236	B	8,451	A
Fusilade	0.087 lb/a	44.3	A	235	B	9,854	A

[1] Treatment date, August 21, 2002; Harvest date, October 14, 2002 (54 DAT)
[2] Means in a column followed by the same letter are non-significant at the 0.05P

Theoretical Recoverable Sugar (TRS) Averaged Across Years (2022 & 2023)

		TRS/Ton of Cane
Treatment	Rate/A	4 WAT
Beyond Xtra	1 oz	165 c
Beyond Xtra	2 oz	179 bc
Beyond Xtra	4 oz	194 b
PMax3	5 oz	230 a
Untreated		173 bc
P-value		<0.0001

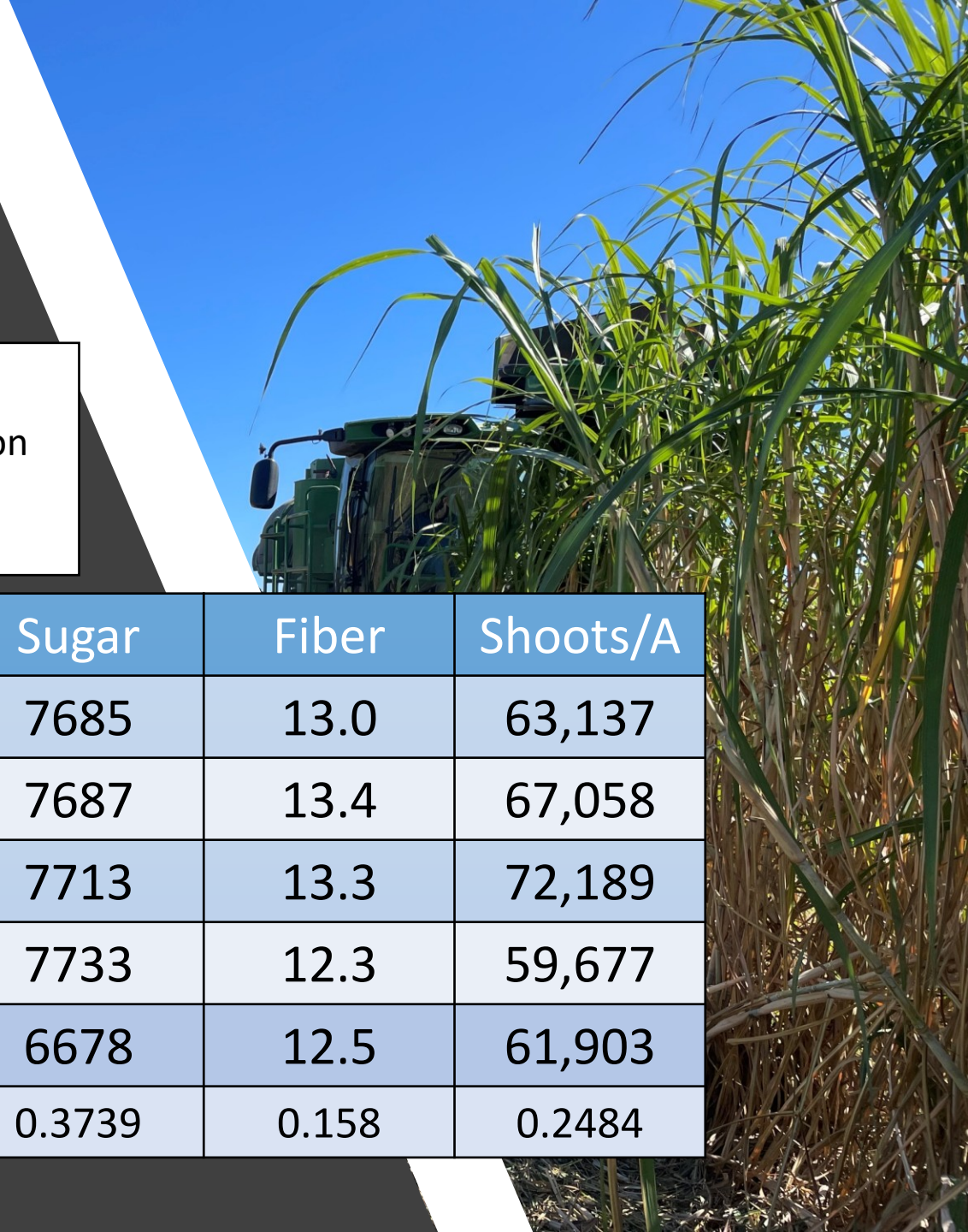
1% v/v COC added to Beyond Xtra Treatments

Evaluation of Beyond Xtra® at Higher Application Rates

Treatments	Rate
Beyond Xtra	6 oz/A
Beyond Xtra	8 oz/A
Beyond Xtra	10 oz/A
Roundup PowerMax3	5 oz/A
Untreated	

1% v/v COC added to Beyond Xtra Treatments

Evaluation of Beyond Xtra® at Higher Application Rates



3rd Stubble L 01-299

Plot size 2 rows X 50 ft, 3 Replication, RCBD, Sugar Research Station
Applied: Aug. 15, 2025; Tractor 10 gpa
Harvested: Sept. 19, 2025; 35 DAT

Treatment	Rate/A	Tons/A	TRS	Sugar	Fiber	Shoots/A
Beyond Xtra	6 oz	37.8	203 c	7685	13.0	63,137
Beyond Xtra	8 oz	36.4	211 bc	7687	13.4	67,058
Beyond Xtra	10 oz	33.1	233 a	7713	13.3	72,189
PMax3	5 oz	34.5	224 ab	7733	12.3	59,677
Untreated		36.6	182 d	6678	12.5	61,903
P-value		0.2338	0.0012	0.3739	0.158	0.2484

1% v/v COC added to Beyond Xtra Treatments


RU PowerMax3


Beyond Xtra 10 oz


Beyond Xtra
6+8+10 oz

Evaluation of Beyond Xtra® at Higher Application Rates

3rd Stubble L 01-299

Plot size 2 rows X 50 ft, 3 Replication, RCBD, Sugar Research Station
Applied: Aug. 15, 2025; Tractor 10 gpa
Harvested: Sept. 19, 2025; 35 DAT

Treatment	Rate/A	Shoots/A 10-16-2025
Beyond Xtra	6 oz	63,137
Beyond Xtra	8 oz	67,058
Beyond Xtra	10 oz	72,189
PMax3	5 oz	59,677
Untreated		61,903
P-value		0.2484

Late-Season Evaluation of Beyond Xtra

Plantcane L 01-299

Plot size 2 rows X 40 ft, 3 Replication, RCBD, Sugar Research Station
Applied: Oct. 24, 2025; Tractor 10 gpa
Harvested: Dec. 9, 2025; 46 DAT

Late-Season Evaluation of Beyond Xtra

Plantcane L 01-299
Plot size 2 rows X 40 ft, 3 Replication, RCBD, Sugar Research Station
Applied: Oct. 24, 2025; Tractor 10 gpa
Harvested: Dec. 9, 2025; 46 DAT

Treatment	Rate/A	Tons/A	TRS	Sugar
Beyond Xtra	10 oz	40.2	211	8506
PMax3	5 oz	36.6	208	7625
Untreated		36.9	211	7769
P-value		0.5710	0.8415	0.5492

SUGARCANE RIPENER RECOMMENDATIONS FOR 2025

Dr. Albert Orgeron, LSU AgCenter Sugar Research Station, St. Gabriel
Dr. Kenneth Gravois, LSU AgCenter Sugar Research Station, St. Gabriel
Dr. Matt Foster, LSU AgCenter Sugar Research Station, St. Gabriel

Glyphosate Program

Chemical ripeners for sugarcane in Louisiana provide an important benefit. When properly applied, ripeners can maximize recoverable sugar and minimize cane yield (tonnage) losses.

In 2025, the following glyphosate formulation is recommended as a chemical ripener: **Roundup PowerMAX 3**. Roundup PowerMax 3 contains 4.8 pounds of glyphosate acid per gallon and is formulated as a potassium salt.

Note that this product is labeled for use in stubble sugarcane crops only and not in plant cane. When used according to the label and the following recommendations, Roundup PowerMAX 3 increases recoverable sugar per ton of cane while minimizing losses in cane tonnage. Sugarcane response to ripener application may be lessened when conditions favor good natural ripening, during periods of plant stress or when conditions are not conducive to glyphosate absorption. Ripener response varies among varieties. Ripener application will reduce vegetative growth and will reduce cane tonnage. However, cane tonnage losses are generally offset by increases in recoverable sugar, resulting in equal or greater yields of sugar per acre.

Rates

Always read the label before ripener use. The recommended application rate for Roundup PowerMax 3 is 5.0 ounces per acre. For higher tonnage cane, such as L 01-299, consider higher rate ranges. The highest recommended rate is 7.0 ounces per acre. It is important to note that higher rates will not offset the number of days required to maximize recoverable sugar prior to harvest. The treatment-to-harvest interval is the most important aspect of any ripener management program.

Sugarcane Ripeners Recommendations for 2025

Product	Recommended Rate	Recommended Rate Range	Label Rate Range
Glyphosate Formulation	Ounces per acre	Ounces per acre	Ounces per acre
Roundup PowerMAX 3	5.0	5.0 to 7.0	4 to 10

Drift and Surfactants

Glyphosate can cause serious damage when drifted onto nontarget sites, such as newly planted cane, other crops or residential landscapes. Drift-control agents may be added to reduce drift. However, ripeners should only be applied when wind speeds are between 3 and 10 mph and should not be applied when there is a surface temperature inversion. A surface inversion occurs when the temperature at the surface is cooler than air above the surface — usually in the evening or early morning. Surface inversions restrict vertical air mixing and cause spray droplets to remain suspended. The spray droplets can then move laterally, reducing the effectiveness of the application and causing damage to off-target sites. Also, wind direction should be considered when applying glyphosate ripener to avoid drifting onto off-target sites.

Rainfall less than six hours after application may reduce sugarcane response to glyphosate. The low use rate of Roundup PowerMAX 3, when applied as a sugarcane ripener, results in a lower than ideal concentration of surfactant in the spray solution. This lower amount of surfactant may not provide the rain-fastening properties obtained when this formulation is applied at much higher herbicidal rates. Add a compatible nonionic surfactant (0.25% by volume) only if rainfall is likely within six hours of application. Avoid ripener applications if rainfall is imminent.

Lodging in cane is common during the time ripeners are being applied. For best results, apply glyphosate to erect cane. If cane is recently lodged, allow sufficient time (seven to 10 days) for the cane to erect itself before ripener application.

Variety Response

Sugarcane varieties vary in their ripener response to glyphosate.

Highly Responsive Varieties	Moderately Responsive Varieties
HoCP 96-540	HoCP 00-950
L 99-226	L 01-283
L 01-299	Ho 07-613
HoCP 04-838	HoCP 09-804
L 12-201	L 11-183
Ho 12-615	Ho 13-739
HoCP 14-885	L 14-267
HoL I5-508	L 15-306

Varieties HoCP 09-804, Ho 12-615 and L 14-267 appear very sensitive to glyphosate application. Observations indicate that spring regrowth of stubble cane following harvest ripener application may be slow and inconsistent. Use the low rate of the recommended range and do not exceed the 49-day treatment-to-harvest interval.

Treatment-to-Harvest Intervals and Scheduling

A 35- to 49-day treatment-to-harvest interval is recommended following glyphosate ripener application. Harvesting prior to 35 days will not maximize recoverable sugar for ripener applications. Delaying harvest beyond 49 days could reduce yield potential in the current crop and may cause yield loss in subsequent crops. It is important to note again that a higher application rate is not a substitute for the recommended treatment-to-harvest interval. Treatment-to-harvest interval is the most important aspect of any ripener management program.

Sugarcane scheduled for harvest after Dec. 1 responds less to glyphosate because the crop is naturally mature at this time.

Response to glyphosate is based on plant maturity at the time of ripener application. Use a handheld refractometer to test for juice Brix as an indicator of the cane's recoverable sugar prior to application. Fields with the highest Brix level should be treated first; accordingly, fields with the highest Brix level at the recommended treatment-to-harvest interval should be harvested first. Please refer to Estimating Brix Values to Improve Sugarcane Quality, AgCenter publication No. 2888. You can access the publication by holding the Ctrl key and clicking on the title.

Regrowth

Glyphosate ripener applications may delay shoot emergence following harvest and in the subsequent spring. In some years and in some varieties, spring shoots will appear bleached and stunted. Sugarcane will typically outgrow this injury as growing conditions improve with warmer weather.

Yield can be reduced in the following crop if harvest residue is not removed on a timely basis following harvest. In fields where mulch cannot be removed, a ripener should only be applied to the last stubble crop.

Ripener Additives

To date, research has shown that no ripener additive has consistently improved glyphosate performance for improving recoverable sugar in sugarcane in Louisiana. Thus, ripener additives are not recommended.

Points to Consider When Applying Glyphosate as a Ripener

- Follow product labels and use recommended rates.
- Do not apply to seed cane or plant cane.
- Apply the higher recommended rates only to higher tonnage crops.
- The recommended treatment-to-harvest interval is 35 to 49 days. Exceeding the maximum treatment-to-harvest intervals of 49 days may cause yield loss.
- For best results, apply glyphosate to erect cane. If recently lodged, allow sufficient time (seven to 10 days) for the cane to erect itself.
- Add a compatible nonionic surfactant (0.25% by volume) only if rainfall is likely within six hours of application. **Do not apply ripeners when rainfall is imminent.**
- If conditions warrant, use a drift control agent to reduce off-target movement.
- Use a handheld refractometer to measure juice Brix to optimize ripener scheduling.

Moddus Program

The plant growth regulator Moddus is labeled for use as a ripener on sugarcane in Louisiana. Moddus can be applied alone to all crops in the sugarcane crop cycle. Moddus alone does not increase recoverable sugar as effectively as glyphosate. The best use of Moddus has been as a tank mix with Roundup PowerMAX 3.

CAUTION: A tank mix of Moddus + Roundup PowerMAX 3 can be applied only to stubble crops.

Moddus Ripener Recommendation

Product	Recommended Rate
	Ounces per acre
Moddus + Roundup PowerMAX 3	11 + 2.5

Thank You!
Questions?

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LSU AgCenter
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