

## SUGARCANE WEED MANAGEMENT

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### **Investigating the Impact of Italian Ryegrass Competition on Newly Established Plantcane**

A study was initiated in a newly established plantcane field of L 01-299 at the Sugar Research Station in St. Gabriel, LA on November 7, 2020, to investigate the impact of Italian ryegrass (*Lolium multiflorum*) on sugarcane. Treatments included “Gulf” ryegrass overseeded at a rate of 20 lb/A and an unplanted control which was treated with Moccasin MTZ at 2.25 qt/A. Ryegrass was allowed to compete with the sugarcane until it naturally senesced. Stalk counts were recorded on August 10, 2021. Ryegrass competition reduced the number of stalks per ha by 31% as compared to the unplanted control treatment (39,507 stalks/A) (Table 1). Plots were hand-sampled (10-stalks) and harvested with a sugarcane chopper harvester on October 19, 2021, and were loaded into a wagon equipped with load cells to gain theoretical recoverable sucrose and sugarcane yield. While sugarcane yield was statistically similar for all treatments, a numerical decrease was observed for the ryegrass treatment. The ryegrass treatment also had lower theoretical recoverable sucrose as compared to the control treatment and was reduced by approximately 7%. Sugar yield, the product of sugarcane yield and theoretical recoverable sucrose averaged 7,218 lb/A for the unplanted-check treatment as compared to 6,040 lb/A for the ryegrass treatment.

### **Evaluating Panther MTZ and Other Herbicides on Newly Emerged Spring Sugarcane**

A study was initiated at the Sugar Research Station in St. Gabriel, LA on March 9, 2021, to evaluate the impact of Panther MTZ (flumioxazin + metribuzin) and other herbicide treatments on newly emerged sugarcane and winter weeds. Winter weeds included bur clover (*Medicago polymorpha*), Carolina geranium (*Geranium carolinianum*), and hairy buttercup (*Ranunculus sardous*). Herbicide treatments included Panther MTZ at 48 oz/A, Panther MTZ + Metribuzin 4L at 24 oz + 32 oz/A, Panther SC (flumioxazin) at 8 oz/A, Metribuzin 4L at 48 oz/A, Weedmaster at 32 oz/A, and Sulfentrazone 4F at 12 oz/A. All treatments were broadcast applied to over-the-top of the newly emerged sugarcane. Herbicide injury and weed control was evaluated at 13, 28, and 42 days after herbicide treatment (DAT). All treatments which contained flumioxazin had notable herbicide injury at all observations. Flumioxazin injury was characterized as maroon oval shaped lesions on the sugarcane leaf tissue. Injury ranged from 19 to 26% at 13 DAT for treatments containing flumioxazin and injury decreased with time (Table 2). The treatments which contained Panther MTZ, provided at least 94% control of the weed complex at 28 and 42 DAT, and control was similar for the metribuzin and Weedmaster treatments (Table 3). The Panther SC and sulfentrazone treatments poorly controlled the winter weed complex and control at 42 DAT averaged 14 and 4%, respectively.

### **Efficacy of Mission 25G (Flazasulfuron) on Emerged Itchgrass in Spring**

A study was initiated in a commercial sugarcane field in St. Charles, LA to evaluate control of itchgrass (*Rottboellia cochinchinensis*) with Mission 25G herbicide in spring. On May 16, 2021, Mission 25G was applied at 2.85 oz/A to 3 to 4 in. tall itchgrass. Asulam, the industry standard for controlling emerged itchgrass, was also included in the study and was applied at 4 qt/A. Non-ionic surfactant was added to all herbicide treatments at 0.25% v/v. Itchgrass control and

sugarcane injury was recorded at 15 and 28 days after herbicide treatment (DAT). Itchgrass control was similar for both treatments at 15 DAT and averaged 49% for the Mission 25G treatment and 53% for the asulam treatment (Table 4). Itchgrass control increased for the 28 DAT observation as compared to the 15 DAT observation for both herbicide treatments; however, the asulam treatment provided 12% greater itchgrass control than the Mission25G treatment (83 vs 71%). Sugarcane was slightly stunted, and leaf chlorosis was noted for the Mission 25G treatment at 28 DAT.

### **Postemergence Suppression of Bermudagrass with Trycera Mixtures**

A study was initiated at the Sugar Research Station in St. Gabriel, LA on May 27, 2021, to evaluate postemergence control of established bermudagrass (*Cynodon dactylon*) in a fallow sugarcane field. Herbicide treatments included Armezon + Trycera (1 oz + 40 oz/A), TriCor + Trycera (2 lb + 40 oz/A), TriCor + Trycera + Unison (2 lb + 40 oz + 64 oz/A), and Karmex + Trycera (3 lb + 40 oz/A). Non-ionic surfactant was added to all herbicide treatments at 0.25% v/v. Bermudagrass suppression was evaluated at 6, 14, and 27 days after herbicide treatment (DAT). Bermudagrass suppression at 6 DAT was statistically similar and ranged from 39 to 56% among treatments (Table 5). At 14 and 27 DAT, the Armezon + Trycera treatments provided the greatest bermudagrass suppression at 88 and 74%, respectively. Bermudagrass suppression at 14 DAT was similar to the 6 DAT observation for all other herbicide treatments. Bermudagrass suppression was reduced to less than 28 % for the TriCor + Trycera treatment and to 18 % for the TriCor + Trycera + Unison treatment at 27 DAT.

### **Evaluating Weed Control with Panther MTZ at Layby**

A study was initiated at the Sugar Research Station in St. Gabriel, LA on June 1, 2021, to evaluate the efficacy of Panther MTZ and other herbicide treatments on morningglory at layby. Plots were overseeded with a mixture of entireleaf morningglory (*Ipomoea hederacea* var. *integriuscula* Gray) and ivyleaf morningglory (*Ipomoea hederacea* (L.) Jacq) immediately prior to the final cultivation. Herbicide treatments were post-directed to the base of sugarcane plants and onto the soil surface. Herbicide treatments included Panther MTZ applied at 24 oz/A, Panther MTZ at 48 oz/A, Panther SC at 8 oz/A and Metribuzin 4L at 48 oz/A. Herbicide injury and weed control was evaluated at 14, 28, and 43 days after herbicide treatment (DAT). All treatments which contained flumioxazin (Panther MTZ and Panther SC) had notable herbicide injury where it contacted the lower leaves of sugarcane. Flumioxazin injury was characterized as maroon oval shaped lesions on the sugarcane leaf tissue. Injury ranged from 4 to 5% at 14 DAT for treatments containing flumioxazin and injury decreased with time (Table 6). The Panther MTZ and Panther SC treatments provided at least 89% control of entireleaf and ivyleaf morningglory at 14 DAT and control was similar for all Panther treatments at 28 DAT (Table 7). At 43 DAT, the Panther treatments controlled at least 75 % of entireleaf and ivyleaf morningglory as compared to the untreated control. Maximum control of morningglories with the metribuzin treatment was recorded at 28 DAT and averaged 14%.

### **Postemergence Suppression of Bermudagrass with Metribuzin and Varying Doses of Triclopyr (Trycera)**

A study was initiated at the Sugar Research Station in St. Gabriel, LA on June 16, 2021 to evaluate postemergence control of established bermudagrass (*Cynodon dactylon*) in a fallow sugarcane field with metribuzin and varying doses of Trycera. Herbicide treatments included

TriCor + Trycera at 2 lb + 40 oz/A, TriCor + Trycera at 2 lb + 53.6 oz/A, TriCor + Trycera at 2 lb + 67.2 oz/A and, Armezon + Trycera at 1 oz + 40 oz/A. Non-ionic surfactant was added to all herbicide treatments at 0.25% v/v. Bermudagrass suppression was evaluated at 28 days after herbicide treatment (DAT). Bermudagrass suppression at 28 DAT averaged 60% for the TriCor + Trycera at 2 lb + 40 oz/A treatment (Table 8). Bermudagrass suppression was increased to 78% when the Trycera rate was increased to 53.6 oz/A. The Armezon + Trycera treatment was statistically similar to the TriCor + Trycera (2 lb + 53.6 oz/A) treatment, and averaged 83% suppression 28 DAT.

Table 1. Effect of overseeded “Gulf” Italian ryegrass on mean stalk population, sugarcane yield, theoretical recoverable sugar (TRS), and sugar yield of plantcane L 01-299 in St. Gabriel, LA in 2021

Treatment <sup>1</sup>	Population <sup>2</sup> (stalks/A)	Cane Yield (tons/A)	TRS (lb/ton)	Sugar Yield (lb/A)
Ryegrass	27,286 b <sup>3</sup>	35.0 a	173 b	6,040 b
Control	39,507 a	38.8 a	186 a	7,218 a

<sup>1</sup> Ryegrass overseeded on 11/7/2020 at 20 lb/A and control plots treated with Moccasin MTZ at 2.25 qt/A.

<sup>2</sup> Stalk counts were recorded on August 10, 2021 and plots were harvested October 19, 2021.

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

Table 2. Sugarcane injury at 13, 28, and 42 days after treatment of several spring herbicide treatments at the Sugar Research Station in St. Gabriel in 2021

Treatment <sup>1</sup>	Rate/A	% Sugarcane Injury 13 DAT <sup>2</sup>	% Sugarcane Injury 28 DAT	% Sugarcane Injury 42 DAT
Panther MTZ	48 oz	24 a	20 a	10 a
Panther MTZ + Metribuzin 4L	24 oz + 48 oz	19 b	15 b	9 a
Panther SC	8 oz	26 a	20 a	10 a
Metribuzin 4L	48 oz	0 c	0 c	0 b
Weedmaster	24 oz	0 c	0 c	0 b
Sulfentrazone 4F	12 oz	0 c	0 c	0 b

<sup>1</sup> Treatments applied 3/9/2021.

<sup>2</sup> DAT = Days after treatment.

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

Table 3. Broadleaf winter weed complex<sup>1</sup> control at 13, 28, and 42 days after application with several spring herbicide treatments at the Sugar Research Station in St. Gabriel in 2021

Treatment <sup>2</sup>	Rate/A	% Sugarcane Injury 13 DAT <sup>3</sup>	% Sugarcane Injury 28 DAT	% Sugarcane Injury 42 DAT
Panther MTZ	48 oz	86 a <sup>4</sup>	94 a	94 a
Panther MTZ + Metribuzin 4L	24 oz + 48 oz	83 a	97 a	97 a
Panther SC	8 oz	21 c	20 b	14 b
Metribuzin 4L	48 oz	55 b	96 a	95 a
Weedmaster	24 oz	71 ab	94 a	91 a
Sulfentrazone 4F	12 oz	8 cd	4 c	4 bc
Non-treated Control		0 d	0 c	0 c

<sup>1</sup> Broadleaf winter weed complex included bur clover (*Medicago polymorpha*), Carolina geranium (*Geranium carolinianum*), and hairy buttercup (*Ranunculus sardous*).

<sup>2</sup> Treatments applied 3/9/2021.

<sup>3</sup> DAT = Days after treatment.

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

Table 4. Mean percentage POST control of 3 to 4 inch tall itchgrass with Mission 25G (Flazasulfuron) herbicide in St. Charles, LA in spring of 2021

Treatment <sup>1</sup>	Rate/A	% Itchgrass Control 15 DAT <sup>2</sup>	% Itchgrass Control 28 DAT
Mission*	2.85 oz	49 a	71 b
Asulam	4 qt	53 a	83 a
Non-treated Control		0 b	0 c

<sup>1</sup> Treatments applied 5/16/2021. Induce<sup>®</sup> non-ionic surfactant at 0.25% v/v added to all treatments.

<sup>2</sup> DAT = Days after treatment.

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

\* Experimental compound; not labeled for use in sugarcane.

Table 5. Mean percentage POST bermudagrass injury in a fallowed sugarcane field in St.Gabriel, LA in 2021

Treatment <sup>1</sup>	Rate/A	%	%	%
		Bermudagrass Injury 6 DAT <sup>2</sup>	Bermudagrass Injury 14 DAT	Bermudagrass Injury 27 DAT
Armezon + Trycera	1 oz + 40 oz	39 a <sup>3</sup>	88 a	74 a
TriCor + Trycera	2 lb + 40 oz	56 a	56 b	28 bc
TriCor + Trycera + Unison	2 lb + 40 oz + 64 oz	56 a	50 b	18 c
Karmex + Trycera	3 lb + 40 oz	48 a	66 b	43 b
Non-treated Control		0 b	33 c	0 d

<sup>1</sup> Treatments applied 5/27/2021. Induce non-ionic surfactant at 0.25% v/v added to all treatments.

<sup>2</sup> DAT = Days after treatment.

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

Table 6. Sugarcane injury with several post-directed layby treatments at the Sugar Research Station in St. Gabriel in 2021.

Treatment <sup>1</sup>	Rate/A	% Sugarcane Injury 14 DAT <sup>2</sup>	% Sugarcane Injury 28 DAT
		Panther MTZ	24 oz
Panther MTZ	48 oz	4 a	3 a
Panther SC	8 oz	6 a	3 a
Metribuzin 4L	48 oz	0 b	0 b
Non-treated Control		0 b	0 b

<sup>1</sup> Treatments applied 6/1/2021.

<sup>2</sup> DAT = Days after treatment.

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

Table 7. PRE entireleaf and ivyleaf morningglory control with several post-directed layby treatments at the Sugar Research Station in St. Gabriel in 2021.

Treatment <sup>1</sup>	Rate/A	% Morningglory	% Morningglory	% Morningglory
		Control 14 DAT <sup>2</sup>	Control 28 DAT	Control 43 DAT
Panther MTZ	24 oz	89 a <sup>3</sup>	81 a	75 a
Panther MTZ	48 oz	90 a	89 a	85 a
Panther SC	8 oz	95 a	96 a	88 a
Metribuzin 4L	48 oz	0 b	14 b	5 b
Non-treated Control		0 b	0 b	0 b

<sup>1</sup> Treatments applied 6/1/2021.

<sup>2</sup> DAT = Days after treatment.

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

Table 8. Mean percentage POST bermudagrass injury in a fallowed sugarcane field in St.Gabriel, LA in 2021

Treatment <sup>1</sup>	Rate/A	% Bermudagrass Injury
		28 DAT <sup>2</sup>
TriCor + Trycera	2 oz + 40 oz	60 b <sup>3</sup>
TriCor + Trycera	2 lb + 53.6 oz	78 ab
TriCor + Trycera	2 lb + 67.2 oz	73 ab
Armezon + Trycera	1 oz + 40 oz	83 a

<sup>1</sup> Treatments applied 6/16/2021. Induce non-ionic surfactant at 0.25% v/v added to all treatments.

<sup>2</sup> DAT = Days after treatment.

<sup>3</sup> Means within a column followed by the same lowercase letter are not significantly different at P=0.05