WEED MANAGEMENT AND BIOLOGY RESEARCH IN SUGARCANE

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Postemergence Management of Eastern Black Nightshade

Eastern black nightshade (EBN) (*Solanum ptycanthum* Dun.) has become a problematic weed in many Louisiana sugarcane fields. Spring postemergence (POST) herbicide studies were conducted in Cheneyville and Plattenville, LA. Average EBN control 42 days after treatment (DAT) for the Garlon (triclopyr), Clarity (dicamba), and Callisto (mesotrione) + Atrazine (atrazine) treatments were 97.0, 86.7, and 73.1%, respectively (Table 1). Brash (2,4-D + dicamba) and Callisto (mesotrione) treatments controlled EBN between 49.3 and 64.5, 42 DAT. Zidua (pyroxasulfone), Sharpen (saflufenacil), and Zidua (pyroxasulfone) + Sharpen (saflufenacil) provided less than 17% of EBN. For the Sharpen and Zidua + Sharpen treatments, 50% sugarcane leaf injured was noted 14 days after treatment (DAT); however, leaf injury was not evident 28 DAT. At harvest the Garlon and untreated plots were sampled and used to calculate sugarcane yield, TRS, and sugar yield. Averaged across locations, sugarcane yield and sugar yield were 10 ton/a and 2700 lb/a greater, respectively, for the Garlon treatment as compared to the untreated check (Table 2).

Postemergence Control of Vaseygrass

Vaseygrass (*Paspalum urvillei* Steud.), a perennial grass, continues to infest sugarcane fields throughout Louisiana. A POST study was conducted in Thibodaux to evaluate the effectiveness of several herbicide treatments. 99 DAT, Asulox (asulam) and Asulox + Envoke (trifloxysulfuron-sodium) controlled ≥ 95% of Vaseygrass; whereas, Velpar (hexazinone) and Callisto provided no control. Vaseygrass reduced stalk population, mean stalk weight, and sugarcane yield by 30, 19, and 43%, respectively when compared to the Asulox + Envoke treatment (Table 3).

Postemergence Evaluation of Armezon in Sugarcane

Bermudagrass (*Cynodon dactylon* (L.) Pers.) is a major weed problems that many sugarcane farmers battle. In 2014, a study showed multiple applications of the combination of Armezon (topramezone) + Garlon (triclopyr) provided excellent POST control of bermudagrass. A spring study was conducted in Port Allen to further investigate the ability of Armezon + Garlon to control bermudagrass POST. Two applications of Armezon + Garlon provided 72.5% of bermudagrass 65 days after the initial application; whereas, a single application of Armezon + Garlon 65 DAT controlled 45% of bermudagrass.

Postemergence Evaluation of Lumax in Sugarcane

A POST study to evaluate sugarcane tolerance and efficacy of Lumax (s-metolachlor + atrazine + mesotrione) and Acuron (s-metolachlor + atrazine + mesotrione + bicyclopyrone) was conducted at the Sugar Research Station. Herbicide was applied to sugarcane in spring following sugarcane and weed emergence. Maximum injury rating 15 DAT for Lumax was 11% and plots showed little sign of injury by 28 DAT. Injury from Acuron was impacted by herbicide application rate. At 15 DAT, yellowing and whitening leaf injury was noted for the 3

and 6 qt/a Acuron treatments (10-12.5% injury); however, sugarcane injury decreased to 1.3% 28 DAT for the 3 qt treatment and no injury was noted 42 DAT. Injury rating increased 28 DAT for the 6 qt/a Acuron treatment to 17.5%, and remained 42 DAT. Both Lumax and Acuron provided control of emerged winter weeds and residual weed control.

Evaluation of Alion in Sugarcane

A spring sugarcane study was conducted in St. Gabriel to evaluate the tolerance and efficacy of Alion (Indaziflam) in sugarcane. Treatments were applied in early April to emerged sugarcane. Selected treatments were also applied a second time in early May. Severe lodging occurred within all plots which received a second Alion application in May, but lodging was not evident for the initial treatment.

Evaluation of MSMA Alternative Herbicides for Ditchbanks

Four herbicides were evaluated at the Sugar Research Station in St. Gabriel, LA to find an alternative for MSMA on ditchbanks. Prior to the EPA's band, MSMA was used by some growers to promote ditchbank stabilization. MSMA provides POST control of johnsongrass and itchgrass, yet it does not control bermudagrass. Outrider (sulfosulfuron), Pastora (nicosulfuron + metsulfuron methyl), Plateau (imazapic), and two different rates of Roundup PowerMax (glyphosate) rates were applied POST. Roundup PowerMax at 56 oz/a completely controlled johnsongrass 21 days after treatment (DAT); however, bermudagrass was also controlled (73.3%) leaving a great deal of bare soil. Outrider, Pastora, Plateau, and Roundup PowerMax at 10 oz/a provide 45-63% 21 DAT, but did not impacted bermudagrass. At 56 DAT, Roundup PowerMax at 56 oz/a provided excellent control (>98%) of johnsongrass, and Outrider, Pastora, and Plateau control of johnsongrass increased from the 21 DAT rating. Significant bermudagrass injury was noted in the Roundup PowerMax (56 oz/a) plots.

Evaluation of 2 New Pendimethalin Formulations

A PRE study to evaluate sugarcane tolerance and efficacy of KFD-228-01 and KFD 207-01 was conducted at the Sugar Research Station. Herbicide treatments were applied following the planting of sugarcane. No sugarcane injury was noted for KFD-228-01 and KFD 207-01. Annual grass and johnsongrass control was > 95% 10 WAT for both products. Broadleaf weed control was fair 8WAT, but decreased rapidly 10 WAT for both KFD-228-01 and KFD 207-01.

Evaluation of Sinbar At-Planting on Current Sugarcane Cultivars

A new formulation of terbacil was evaluated to investigate varietal tolerance at-planting. Sinbar WDG was applied at 1.5 lb/a to HoCP 96-540, L 99-226, HoCP 00-950, L 01-283, L 01-299, HoCP 04-838, Ho 07-613, HoCP 09-804, HoCP 09-840, and L 79-113. No herbicide injury was noted, regardless of variety.

Table 1. Mean percentage control of Eastern black nightshade in Plattenville and Cheneyville, LA in 2015.

		% Control		
Treatment	Rate	14 DAT[5]	28 DAT	42 DAT
Clarity + NIS[1]	1 qt/a + 0.25% v/v	46.7 ab[3]	81.8 ab	86.7 ab
Callisto + NIS	3 oz/a + 0.25% v/v	52.7 ab	57.7 b	54.1 bc
Callisto + Aatrex 4L + NIS	3 oz/a + 19.2 oz/a + 0.25% v/v	63.1 ab	70.8 ab	73.1 abc
Garlon[4] + NIS	1 qt/a + 0.25% v/v	71.7 a	94.4 a	97.0 a
Brash + NIS	1 qt/a + 0.25% v/v	37.1 abc	53.4 b	50.5 bcd
Brash + COC[2]	1 qt/a + 1% v/v	34.7 abc	57.5 b	49.3 cd
Brash + NIS	2 qt/a + 0.25% v/v	41.7 abc	71.5 ab	64.5 abc
Zidua[4] + NIS	3 oz/a + 0.25% v/v	1.1 c	2.1 c	5.2 e
Sharpen[4] NIS	2 oz/a + 0.25% v/v	31.4 abc	14.3 c	10.6 e
Zidua + Sharpen + NIS	2 oz/a + 1 oz/a + 0.25% v/v	23.2 bc	14.7 c	16.6 de
Nontreated		0.0 c	0.0 c	0.0 e
p-Value		0.001	<.0001	<.0001

[1] NIS = Non Ionic Surfactant: Induce
[2] COC = Crop Oil Concentrate: AgriDex
[3] Means within a column followed by the same lowercase letter are not significantly different.
[4] Not labeled for use in sugarcane.
[5] DAT = Days After Treatment

Table 2. Comparison of yield components for the Eastern black nightshade experiments conducted in Plattenville and Cheneyville, LA in 2015.

Treatment	Population (stalks/a)	Mean Stalk Weight (lb)	Estimated. Cane Yield (tons/a)	TRS (lb/ton)	Sugar Yield (lb/a)
Garlon EC + NIS	38256 a[1]	1.94 a	36.5 a	231 a	8346 a
Nontreated	32380 b	1.65 b	26.2 b	215 a	5603 b
p-Value	0.0473	0.0176	0.0062	0.2018	0.0012

[1] Means within a column followed by the same lowercase letter are not significantly different.
[2] Not labeled for use in sugarcane.

Table 3. Mean percentage control of Vaseygrass and sugarcane yield components for the Vaseygrass experiment conducted in Thibodaux, LA in 2015.

		% Control			Population	Mean	Estimated
Treatment[1]	Rate/a	22 DAT	35 DAT	99 DAT	(stalks/a)	(lb)	(tons/a)
Asulam	4 qt	60.0 a[2]	70.0 a	96.7 a	35,923 ab	-	-
Asulam + Envoke	2 qt + 0.3 oz	56.7 a	68.3 a	95.0 a	39,582 a	1.51 a	29.9 a
Velpar	1 qt	1.7 b	0 b	0 b	29,824 b	-	-
Velpar	0.5 qt	0 b	0 b	0 b	27,588 b	-	-
Callisto	3 oz	1.7 b	0 b	0 b	26,630 b	-	-
Untreated Check		0 b	0 b	0 b	27,676 b	1.22 a	17.0 b

[1] Nonionic surfactant (Induce) added to all herbicide treatments @ 0.25%v/v.
[2] Means within a column followed by the same lowercase letter are not significantly different.