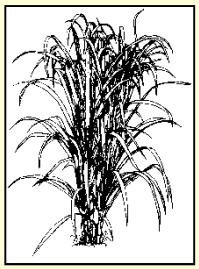
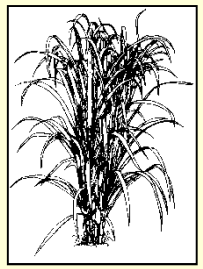
Bermudagrass Control Options and Bermudagrass Biotypes Research

Jim Griffin



LSU AgCenter Research & Extension



Spring Bermudagrass Control Programs

Bermudagrass Control Study 2012

HoCP 96-540 stubble (Jeanerette, LA)

Conditions in January-March

Mild winter promoted earlier than normal bermudagrass and sugarcane emergence

<u>Herbicides applied</u>:

February 22, 2012

Bermudagrass ground cover 40-50% with 3-8” runners; Sugarcane 12-14”

March 7, 2012

Bermudagrass ground cover 50-60% with 12” runners; Sugarcane 12-15”

March 27, 2012

Bermudagrass ground cover 50-60% with 12-15” runners; Sugarcane 25-30”

Rainfall received within 5 days after herbicide application.

Bermudagrass Control and Sugarcane Injury 4 Weeks after Treatment, 2012

Herbicide treatment	Herbicide application date					
	February 22		March 7		March 27	
	BG control	SC injury	BG control	SC injury	BG control	SC injury
	----------%----------					
Sencor 3 lb/A	40 a	0 c	40 a	0 c	48 a	5 a
Command 3 pt + Direx 2.5 qt/A	68 a	25 a	50 a	13 ab	40 a	18 a
Prowl 2 qt + Sencor 3 lb/A	48 a	5 c	38 a	0 b	35 a	8 a
Command 3 pt + Sencor 1 lb/A	45 a	20 b	43 a	8 c	43 a	15 a

Bermudagrass Control Study 2012

- Bermudagrass control greatest for Command + Direx applied in February
- Sugarcane injury greatest for Command plus Direx and Command plus Sencor; injury observed at all application dates when sugarcane foliage was present at application
- Early emergence of sugarcane enhanced its ability to compete with bermudagrass.

Command + Direx - Two weeks after March 7 application

Average Bermudagrass Control (%) 4 WAT
Research Summary - USDA (Caleb Dalley) and LSU AgCenter (Griffin)

Herbicide treatment	Herbicide application date		
	Mid-February	Early-March	Mid-March
Sencor 2 lb	39 (3)	38 (1)	--
Sencor 3 lb	54 (6)	41 (3)	43 (2)
Sencor 4 lb	73 (2)	72 (1)	--
Command 3.3 pt + Direx 2.5 qt	75 (6)	58 (3)	55 (2)

Average Bermudagrass Control (%) 6 WAT
Research Summary - USDA (Caleb Dalley) and LSU AgCenter (Griffin)

Herbicide treatment	Herbicide application date		
	Mid-February	Early-March	Mid-March
Sencor 2 lb	24 (2)	--	--
Sencor 3 lb	34 (5)	43 (2)	44 (2)
Sencor 4 lb	45 (1)	--	--
Command 3.3 pt + Direx 2.5 qt	61 (5)	49 (2)	47 (2)

Average Sugarcane Yield (T/A)

Research Summary - USDA (Caleb Dalley) and LSU AgCenter (Griffin)

Herbicide treatment	Herbicide application date		
	Mid-February	Early-March	Mid-March
Sencor 2 lb	38.4 (4)	45.4 (2)	36.7 (1)
Sencor 3 lb	40.5 (4)	45.4 (2)	40.2 (1)
Sencor 4 lb	41.3 (2)	47.2 (1)	--
Command 3.3 pt + Direx 2.5 qt	41.5 (4)	41.5 (2)	36.7 (1)
No herbicide	28.1 (3)	33.5 (1)	--

Average Sugar Yield (lb/A)
Research Summary - USDA (Caleb Dalley) and LSU AgCenter (Griffin)

Herbicide treatment	Herbicide application date		
	Mid-February	Early-March	Mid-March
Sencor 2 lb	10,150 (4)	11,715 (2)	8,562 (1)
Sencor 3 lb	10,620 (4)	11,325 (2)	9,621 (1)
Sencor 4 lb	10,874 (2)	12,330 (1)	--
Command 3.3 pt + Direx 2.5 qt	10,844 (4)	10,352 (2)	8,924 (1)
No herbicide	8,117 (3)	8,886 (1)	--

Bermudagrass Control with Sencor, Command + Sencor, and Sencor + Velpar

Herbicide treatment	Bermudagrass control		Sugarcane yield	Sugar yield
	4 WAT	6 WAT	T/A	lb/A
Sencor 3 lb	72/43 (58)	47/49 (48)	33.6	9,333
Sencor 1.5 or 2 lb + Velpar 2 pt	77/49 (63)	60/45 (53)	35.2	9,689

USDA Test (C. Dalley) 2/28 application; LSU AgCenter Test (J. Griffin) 3/2 application (bermudagrass ground cover 30-60% and 3-4" runners)

Cost Comparisons
Bermudagrass Control Programs

Herbicide treatment	Cost $/A					
	Sencor	Command	Direx	Velpar	Prowl	Total
Sencor 3 lb	$34.50	--	--	--	--	$34.50
Command 3 pt + Direx 2.5 qt/A	--	$51.24	$15.63	--	--	$66.90
Command 3 pt + Sencor 1 lb	$11.50	$51.24	--	--	--	$62.70
Sencor 2 lb + Velpar 2 pt	$23.00	--	--	$19.63	--	$42.63
Prowl at 2 qt + Sencor at 2 lb/A	$23.00	--	--	--	$11.00	$34.00

Sencor $11.50/lb; Command $17.08/pt; Direx 4L $25/gal; Velpar 2L $78.50/gal; Prowl EC $22.00/gal

Summary
Bermudagrass Research 2009-2012

- Variability in bermudagrass control observed among experiments (LSU and USDA)
- Bermudagrass control greatest for Command + Direx applied in February and March
  - Command provided 50 to 92% control; Sencor 28 to 75% control
  - Differences in bermudagrass control among herbicide treatments not reflected in yield differences
- Variability due to:
  - Perennial nature of bermudagrass; bermudagrass biotype (?)
  - Herbicides provide only suppression
  - Bermudagrass infestation level
  - Sugarcane variety; time of emergence of bermudagrass and sugarcane
  - Weather conditions: late frost, rainfall, temperature (affect time of emergence and competitiveness)

Spring Bermudagrass Control

For Maximum Bermudagrass Suppression:

- Apply herbicide in late February/early March (do not skimp on rate)
- Herbicides will provide around 4 weeks of bermudagrass suppression whether applied in February or March
- Do not become overly concerned if bermudagrass emerged at application
- Control = suppression of weed by herbicide + competition from the crop; 2012 showed the importance of early crop competition
- An early spring without a late frost can increase sugarcane competitiveness
- Management practices that encourage early emergence and rapid growth of sugarcane (residue removal soon after harvest, early removal of winter weeds, good field drainage, variety selection, etc.) should be followed
- Be aware that excessive sugarcane injury from Command due to presence of sugarcane foliage (late application) may result in yield loss

Bermudagrass Biotype Study

- Bermudagrass collected at sugarcane outfield locations and at other sites and used as “mother plants”
- Stolon sections from “mother plants” planted into 2 inch pots in the greenhouse
- Two plants transplanted in center of each 5 x 5 ft plot at the Ben Hur Research Farm
- Areas between plots sprayed with glyphosate using a hooded sprayer to prevent bermudagrass encroachment from adjoining plots

Why? To measure rate of establishment, biomass yield, response to frost, spring regrowth

Bermudagrass Biotypes Evaluated in Greenhouse and Field Experiments

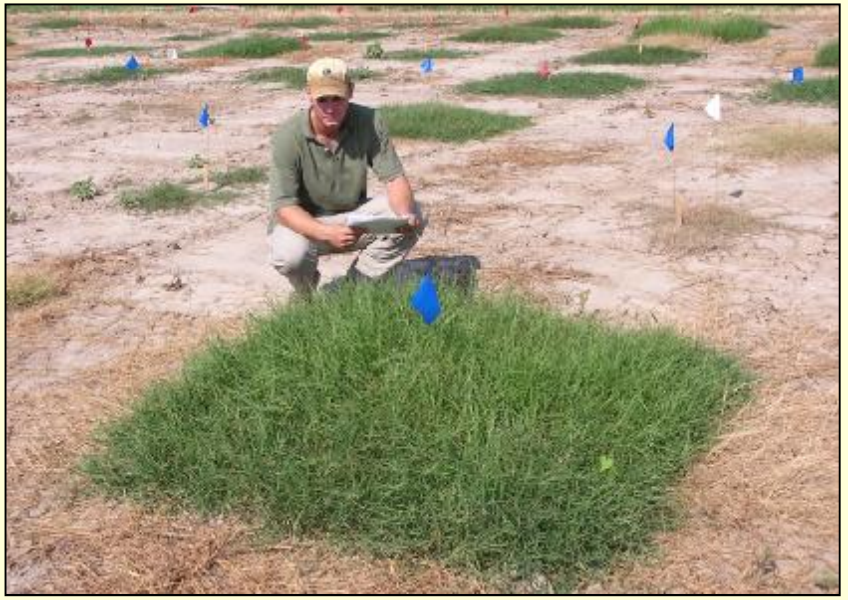
Biotype	Grower	Farm	Location	Parish
----------Outfield Sites (12)----------				
A	Lawrence Levert	St. John	St. Martinville	St. Martin
B	Ronald Hebert	Ronald Hebert	Jeanerette	Iberia
C	Brett Allain	Allain	Baldwin	St. Mary
D	Wilson Judice	Frank Martin	Centerville/Calumet	St. Mary
E	Pete Lanaux	Lanaux	Lucy	St. John the Baptist
F	Brian Graugnard	Bon Secour	Vacherie	St. James
G	Joel Landry	Glenwood	Napoleonville	Assumption
H	Howard Robichaux	Mary	Raceland	Lafourche
I	Danny Naquin	Magnolia	Schriever	Terrebonne
J	Joe Beard III	Brunswick	Samuels	Point Coupee
K	Todd Andre	Alma	Allon	Point Coupee
L	Al Landry	Landry Farm	Plaquemine	Iberville
----------Off-Station Nursery Site (1)----------				
M	Blake Newton	Bunkie	Bunkie	Avoyelles
----------Other Sites (7)----------				
N	Ronnie Gonsulan	Airport Road	New Iberia	Iberia
O[1]	Ronald Hebert	Bayside	Jeanerette	Iberia
P	Mike Cremaldi	Calumet Cut	Patterson	St. Mary
Q	Kerny Gros	Barrowza Plantation	Port Allen	West Baton Rouge
R	LSU AgCenter	Sugar Research Station	St. Gabriel	Iberville
S	LSU AgCenter	Dean Lee Res. Station	Alexandria	Rapides
T	LSU AgCenter	Northeast Res. Station	St. Joseph	Tensas

Bermudagrass Biotype Study Results

- Biotypes most aggressive based on bermudagrass ground cover 87 days after planting of at least 93%:
  - A (Lawrence Levert, St. Martinville)
  - Q (Kerny Gros, Port Allen)
  - R (LSU AgCenter, St. Gabriel)
- Biotypes least aggressive (no more than 39% ground cover):
  - J (Joe Beaud III, Samuels)
  - N (Ronnie Gonsulan, New Iberia)
  - T (LSU AgCenter, St. Joseph)
- Some biotypes were tall growing and established rapidly while others were short growing and slow to establish.

Bermudagrass Biotype Study Results

- Internode length and leaf width varied greatly among biotypes
- Biotypes most aggressive based on dry matter yield in 2011 and 2012:
  - A (Lawrence Levert, St. Martinville)
  - Q (Kerny Gros, Port Allen)
  - S (LSU AgCenter, Alexandria)
  - Averaged 3.3 tons/A (total for 1 harvest each year)
- Biotypes differed in time of emergence following winter dormant period and in seed head production
- Differences observed among biotypes may help explain variability in bermudagrass control and competitiveness in sugarcane



Bermudagrass Control Study Results

- Biotypes least susceptible to Roundup:
  - A (Lawrence Levert, St. Martinville)
  - C (Bret Allain, Baldwin)
  - J (Joe Beaud III, Samuels)
  - Q (Kerny Gros, Port Allen)
  - S (LSU AgCenter, Alexandria)
  - T (LSU AgCenter, St. Joseph)

- Biotypes most susceptible to Roundup:
  - D (Wilson Judice, Centerville)
  - F (Brian Graugnard, Vacherie)
  - L (Todd Andre, Allon)
  - M (Blake Newton, Bunkie)
  - P (Mike Cremaldi, Patterson)
  - R (LSU AgCenter, St. Gabriel)

Questions?

LSU AgCenter
Research & Extension