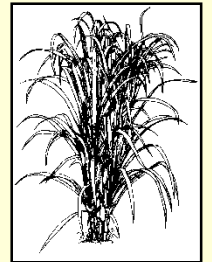
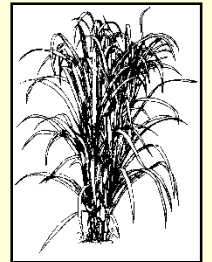


# ***Sugarcane: Split Herbicide Application and Spring Herbicide Timing***

**Jim Griffin**



# ***Bermudagrass Control/Suppression***



# Weed Control in Sugarcane

## PRE Soil-Applied Herbicides (28 to 35 DAT)

Herbicide	Seedling Johnson-grass	Rhizome Johnson-grass	Itchgrass (Raoul-grass)	Bermuda-grass*	Browntop Panicum	Annual Grasses
Atrazine	2	0	2	0	4	5
Command	8	2	8	6	8	8
Command plus Direx	9	2	8	8	9	9
Direx/Karmex	7	0	5	1	6	6
DuPont K-4	8	2	7	7	8	9
Prowl/others	8	2	8	2	8	9
Prowl plus DuPont K-4	8	2	8	5	9	9
Prowl plus Sencor/Metri DF	9	2	8	5	9	9
Sencor/Metri DF	9	0	2	6	6	9
Sinbar	9	0	2	8	3	9
Spartan	4	0	2	0	3	4
Treflan/others (incorporated)	9	6	9	7	9	9
Valor	3	0	2	0	3	4

# ***At Planting Weed Control (August/September) 2012 Sugarcane Weed Control Guide***

Herbicides may be applied on a band to the top of the row or broadcast. A broadcast application will help reduce weed encroachment from the row middles. Herbicide should be applied immediately after the row has been rolled or packed.

Because residual weed control for herbicides applied at planting can be expected for about 60 days, a follow up application of herbicide will be needed to prevent re-establishment of summer weeds and to control winter weeds



# ***At Planting Weed Control (Split Application Programs)***

A split application program with herbicide applied **at planting and around 60 days later** will provide extended residual weed control. Programs that can be successful in suppressing bermudagrass include:

**Command** at 3.3 pt/A plus **Direx 4L/** others at 2.5 lbs/A at planting followed 60 days later by **Sencor/Metri DF/**others at 1.5 lb/A

**DuPont K-4** at 4 lb/A at planting followed 60 days later by **Sencor/Metri DF/**others at 1.5 lb/A

**Sencor/Metri DF/**others at 2 to 3 lb/A at planting followed 60 days later by **Sencor/Metri DF/**others at 1.5 lb/A

**Treflan** /others at 2 qt/A banded (4 qt/A broadcast) and incorporated at planting followed 60 days later by **Sencor/Metri DF/**others at 1.5 lb/A



# *At-planting Herbicides for Bermudagrass Control*

## *Caleb Dalley, USDA*

- Trial planted in 2010
  - HoCP 96-540
- At planting Treatments (Sept 30)
  - Command plus Direx (3.3 pt plus 2.5 lbs/A)
  - Command plus Sencor (3.3 pt plus 2.67 lbs/A)
  - Command plus Sinbar (3.3 pt plus 1.25 lbs/A)
  - Prowl plus Direx (2.4 qt plus 2.5 lbs/A)
  - Prowl plus Sencor (2.4 qt plus 2.67 lbs/A)
  - Prowl plus Sinbar (2.4 qt plus 1.25 lbs/A)
  - Metribuzin (3.2 lbs/A)
  - Sinbar (2.25 lbs/A)
  - DuPont K4 (4 lbs/A)
  - Prowl plus Atrazine (2.4 qt plus 2 lbs/A)
- Spring Treatments (Mar 18)
  - Repeated treatments applied at planting



# Plant-Cane Trial (Bermudagrass Control)

## Caleb Dalley, USDA



# Plant-Cane Trial (Sugarcane Yield)

## Caleb Dalley, USDA





# Spring Bermudagrass Control Programs



# Weed Control in Sugarcane

## PRE Soil-Applied Herbicides (28 to 35 DAT)

Herbicide	Seedling Johnson-grass	Rhizome Johnson-grass	Itchgrass (Raoul-grass)	Bermuda-grass*	Browntop Panicum	Annual Grasses
Atrazine	2	0	2	0	4	5
Command	8	2	8	6	8	8
Command plus Direx	9	2	8	8	9	9
Direx/Karmex	7	0	5	1	6	6
DuPont K-4	8	2	7	7	8	9
Prowl/others	8	2	8	2	8	9
Prowl plus DuPont K-4	8	2	8	5	9	9
Prowl plus Sencor/Metri DF	9	2	8	5	9	9
Sencor/Metri DF	9	0	2	6	6	9
Sinbar	9	0	2	8	3	9
Spartan	4	0	2	0	3	4
Treflan/others (incorporated)	9	6	9	7	9	9
Valor	3	0	2	0	3	4

# ***Herbicide Treatments***

## ***Caleb Dalley, USDA***

- Sencor 75 DF
  - 2, 3, and 4 lbs per acre
- Command plus Direx
  - 3 pt plus 2.5 lbs per acre



**Herbicides applied February 12, 2008 (Experiment 1)**

**Herbicides applied February 9, March 9, and April 8, 2009 (Experiment 2)**

## Bermudagrass Control and Sugar Yield Herbicide Application February 12, 2008 (Exp 1)

Herbicide treatment	Bermudagrass control (%)		Sugar yield (lb/A)
	4 WAT	6 WAT	2-yr avg.
Sencor 3 lb	63	40	11,222 a
Sencor 4 lb	71	45	10,550 a
Command 3 pt + Direx 2.5 lb	84	70	11,047 a



## Bermudagrass Control 4 WAT

### Herbicide Application February 9, March 9, and April 8, 2009 (Exp 2)

Herbicide treatment	Herbicide application date		
	February 9	March 9	April 8
Sencor 3 lb	70	56	31
Sencor 4 lb	75	72	49
Command 3 pt + Direx 2.5 lb	83	61	52



## Sugar Yield (lb/A)

### Herbicide Application February 9, March 9, and April 8, 2009 (Exp 2)

Herbicide treatment	Herbicide application date		
	February 9	March 9	April 8
Sencor 2 lb	11,940	12,906	10,613
Sencor 3 lb	11,353	12,217	10,758
Sencor 4 lb	10,862	12,330	11,591
Command 3 pt + Direx 2.5 lb	11,589	10,074	9,202
Nontreated	9,610		



# Bermudagrass Control Study

## J. Griffin, LSU AgCenter

- Stubble cane fields (Jeanerette and Franklin, LA)
  - HoCP 96-540
  - Planted in late-September 2007 and 2008
- Herbicides applied on:
  - February 15, 2011
    - No bermudagrass or sugarcane emerged
  - March 1, 2011
    - Bermudagrass less than 5% ground cover/1-3 inch height/no runners
    - Sugarcane 1-4 leaf/2-8 inch height
  - March 15, 2011
    - Bermudagrass 20-45% ground cover/2-4 inch height/2-10 inch runners
    - Sugarcane 2-4 leaf/6-10 inch height



# Herbicide Treatments

- Ø Sencor at 3 lb/A per acre
- Ø Command plus Direx at 3 pt plus 2.5 qt/A
- Ø Prowl plus Sencor at 2 qt plus 3 lb/A
- Ø Command plus Sencor at 3 pt plus 1 lb/A



**Herbicides applied February 15, March 1, and March 15, 2011.**



## Bermudagrass Control 4 and 8 WAT Herbicide Application Feb 15, Mar 1, and Mar 15, 2011

Herbicide treatment	Herbicide application date		
	February 15	March 1	March 15
Sencor 3 lb	45/10	28/33	38/30
Command 3 pt + Direx 2.5 lb	68/40	62/55	70/45
Prowl at 2 qt + Sencor at 3 lb	32/10	47/38	42/30
Command 3 pt + Sencor 1 lb	50/25	50/58	75/60
Nontreated	0/0		



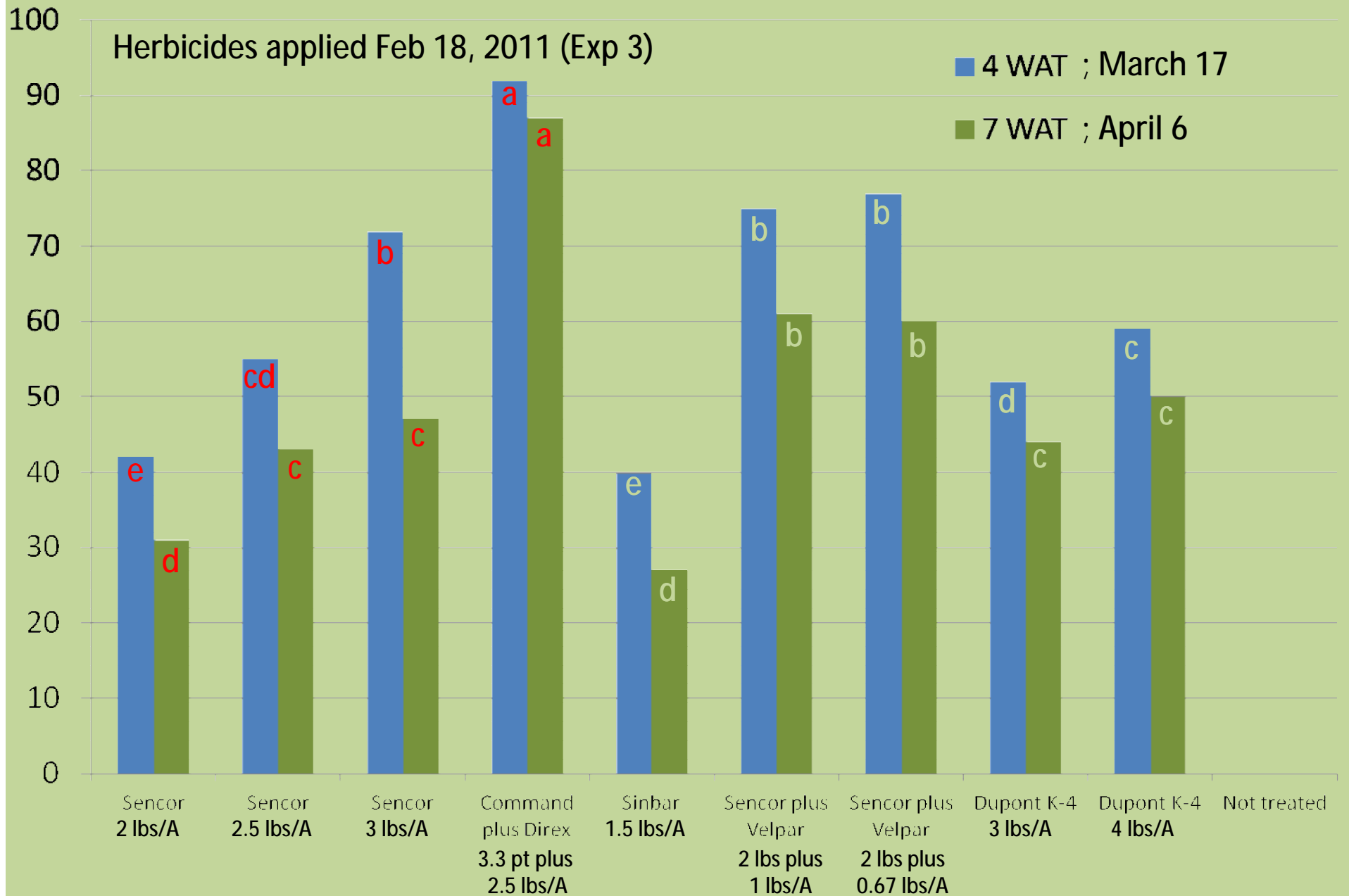
# *Paincourtville Trial (Exp 3)*

## *Caleb Dalley, USDA*

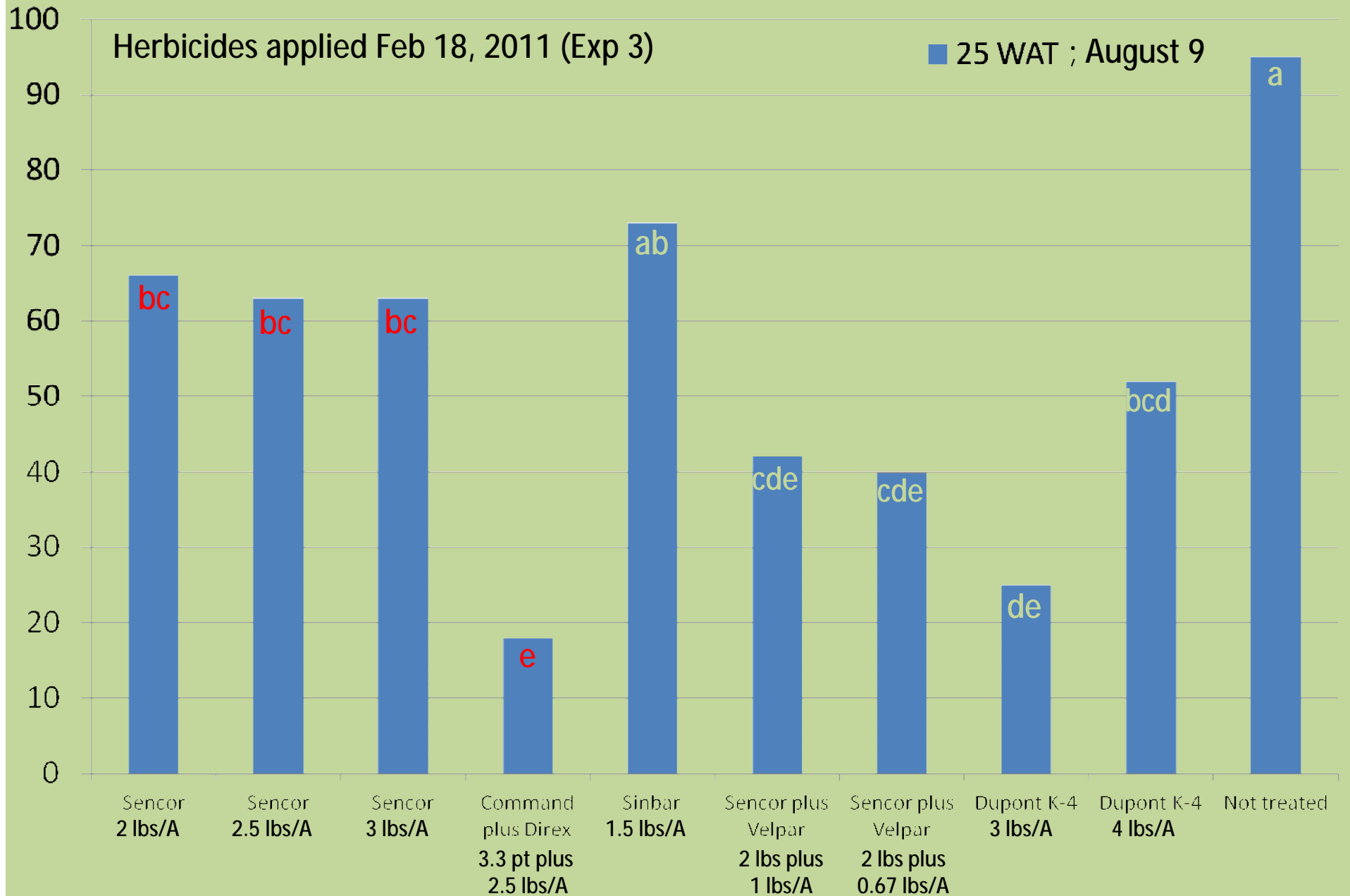
- Comparison of spring-applied herbicides for bermudagrass suppression in sugarcane
  - Applied on February 18, 2011
  - Rainfall occurred within one week after application
- Bermudagrass control determined 4 and 6 WAT
- Bermudagrass cover was determined in August
- Harvested on Nov 28
  - Cane and sugar yields were measured



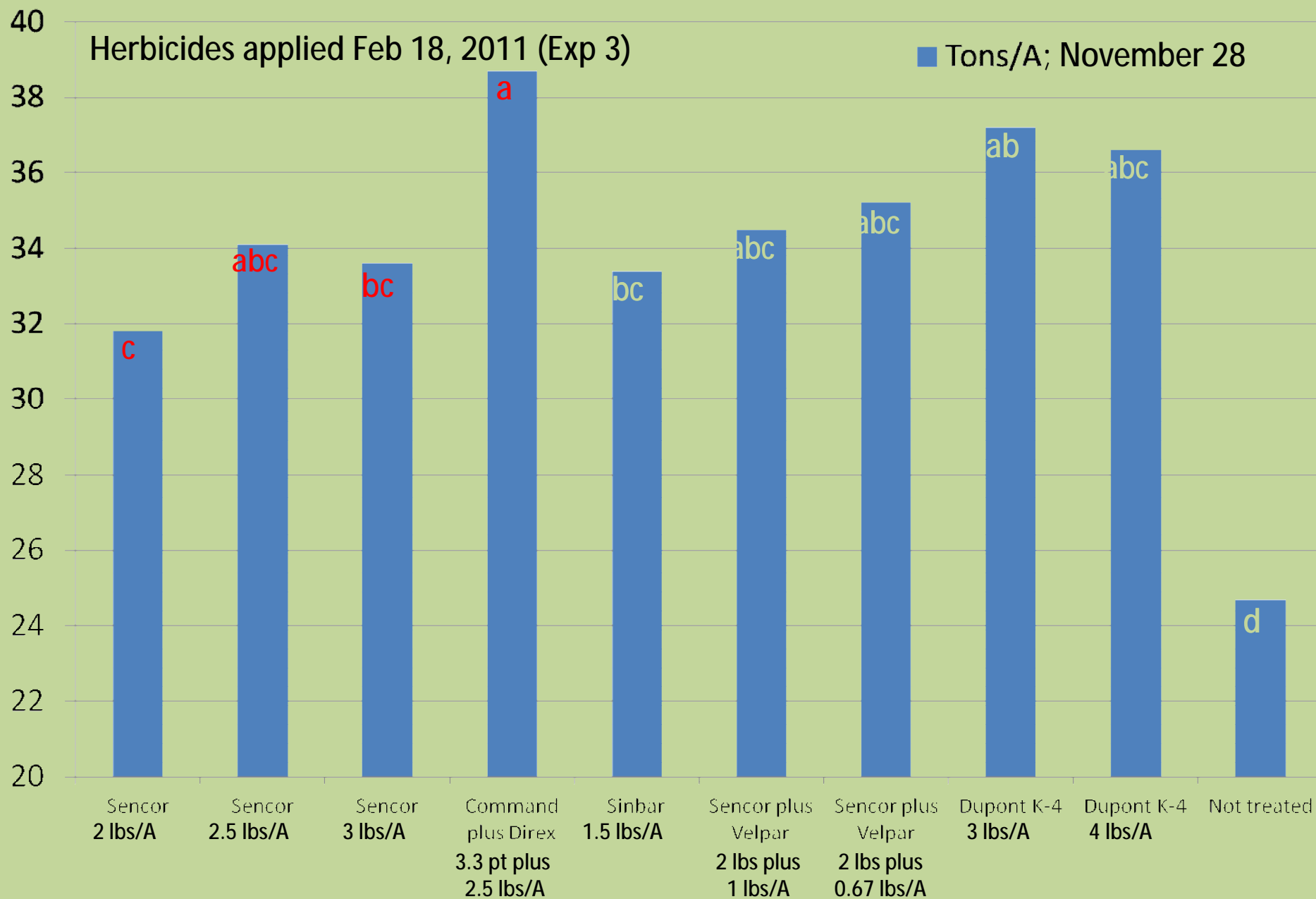
# Paincourtville Trial (Bermudagrass Control)



# *Paincourtville Trial (Bermudagrass Cover)*



# *Paincourtville Trial (Sugarcane Yield)*



# *Timing of Spring-Applied Herbicides for Bermudagrass Control (Exp 4)*

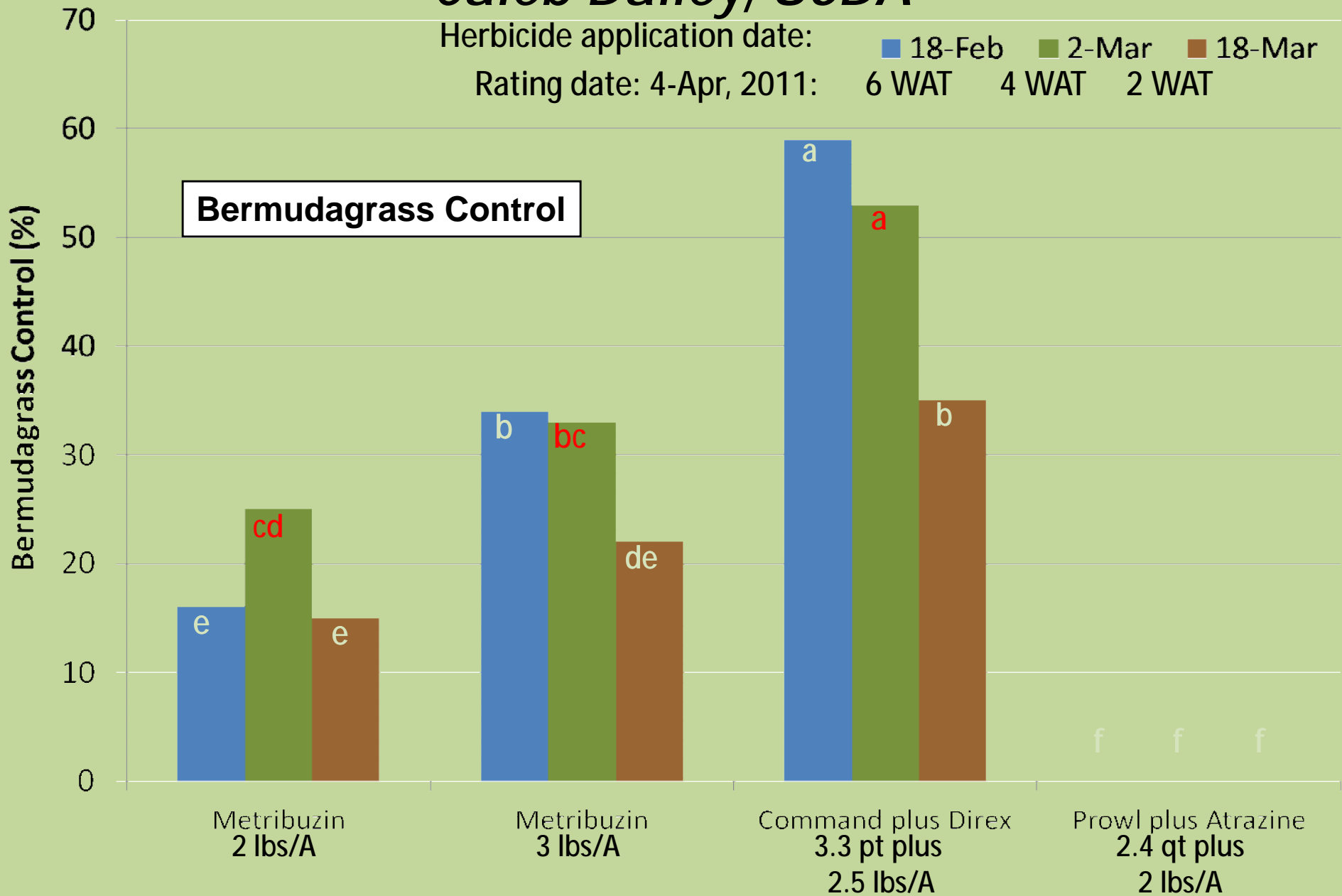
## *Caleb Dalley, USDA*

- Herbicide Treatments
  - Metribuzin @ 2 lbs/A
  - Metribuzin @ 3 lbs/A
  - Command plus Direx @ 3.3 pt plus 2 lbs/A
  - Prowl plus Atrazine @ 2.4 qt plus 2 lbs/A
- Timings
  - February 18, 2011
    - 0.13 inches of rain on Feb 25 (7 DAT)
  - March 2, 2011
    - 0.51 inches of rain on Mar 4 (2 DAT)
  - March 18, 2011
    - 0.43 inches of rain on Mar 29/30 (11-12 DAT)

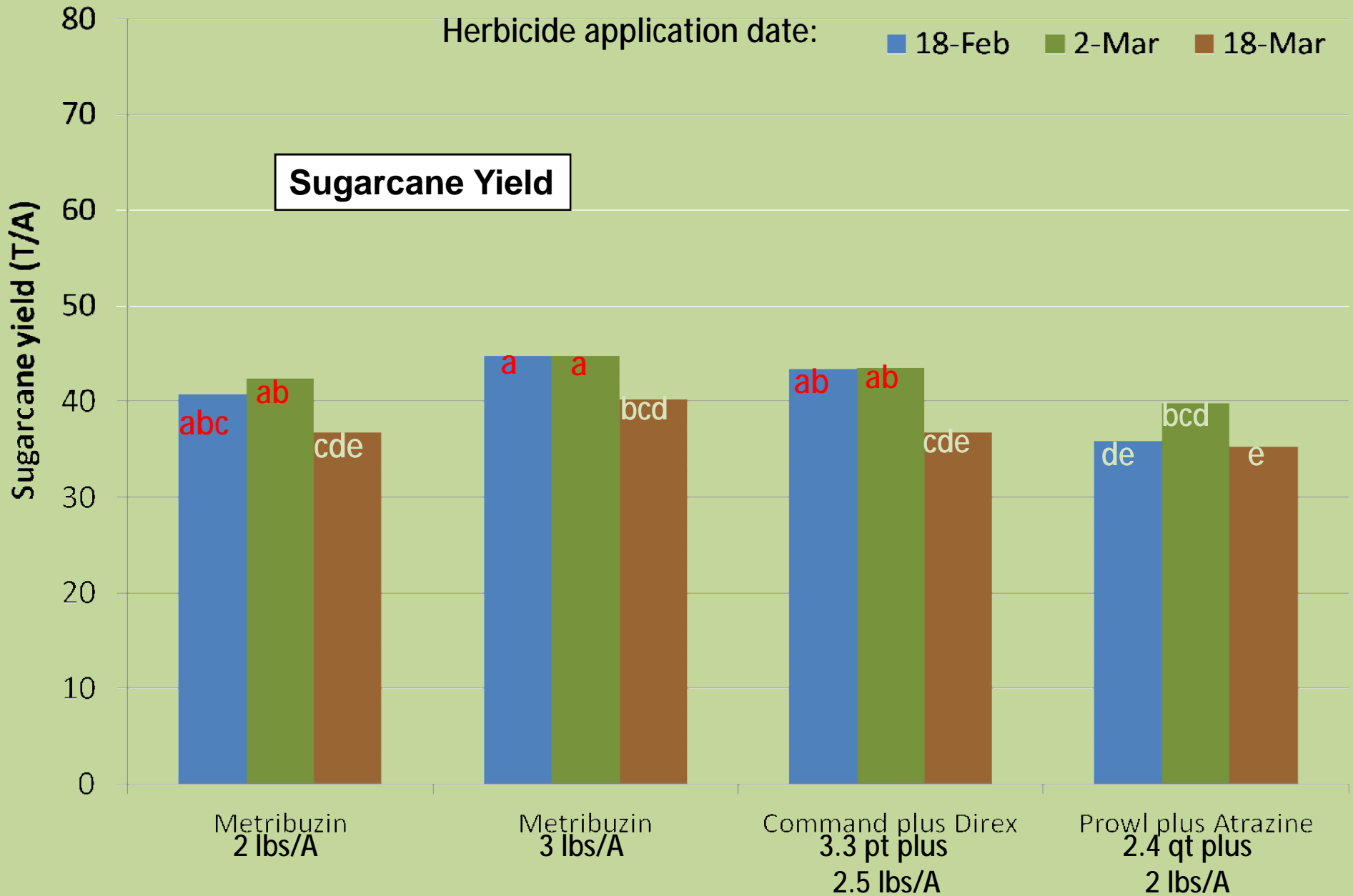


# Timing Trial (Ardoyne Farm) – Exp 4

## Caleb Dalley, USDA



# Timing Trial (Ardoyne Farm) – Exp 4







**USDA Research – Mid-February application (2 experiments)**

*Bermudagrass control 4 and 7 WAT was greater for Command + Direx vs. Sencor at 3 or 4 lb/A.*

*Bermudagrass ground cover in August was lowest for Command + Direx.*

*Sugar yield was equivalent when Command + Direx or Sencor was applied.*



### **USDA Research – Mid-February and early March applications (2 experiments)**

*Bermudagrass control 4 WAT for Command + Direx and Sencor at 3 or 4 lb/A was 70 to 83% (Feb application) and 56 to 72% (Mar application) for Exp 1. For Exp 2, bermudagrass control 4 WAT was 55% for Command + Direx and 25 to 35% for Sencor at 3 or 4 lb/A.*

*For all herbicide treatments, sugar yield was greater for the March application in Exp 1 and sugarcane yield was equal for the Feb and Mar applications in Exp 2*

*For both experiments, yield was equivalent when Command + Direx or Sencor was applied.*

**Confused Yet?**

# ***What Does All of This Mean?***

- Variability in bermudagrass control among experiments was great
  - Command provided 55 to 93% control; Sencor 25 to 72% control
  - Not a reflection of the quality of research or methodology
- Variability primarily due to working with a perennial weed and with herbicides that provide only suppression
- Other factors affecting variability in results:
  - Bermudagrass infestation level
  - Sugarcane variety
  - Time of emergence of bermudagrass and sugarcane
  - Weather conditions: late frost, rainfall, temperature (affect growth rate of weed and crop)

## **Facts are:**

- Herbicides will provide around 4 weeks of bermudagrass suppression whether applied in February or March.
- Even though differences in bermudagrass control were observed among herbicide treatments, yields were equivalent so

***Don't base the value of the herbicide treatment only on bermudagrass control!***

# Spring Bermudagrass Control Programs

- Remove crop residue to assure herbicide contact with soil (see photo)
- Be aware that slow growth of 540 in spring will decrease competitiveness with bermudagrass
- Apply Sencor/Metribuzin; Command + Direx; or Command + Sencor/Metribuzin in early to mid-March
  - Do not skimp on rate
  - Expect some crop injury with Command + Direx if significant sugarcane foliage is present
  - Do not fret if bermudagrass has already greened up
  - Expect bermudagrass suppression for 4 to 6 weeks
  - Crop competition critical to bermudagrass control
  - Rainfall of at least 0.25 inch within 10 days after application needed for herbicide activation



Residue in this field should not negatively affect herbicide activity

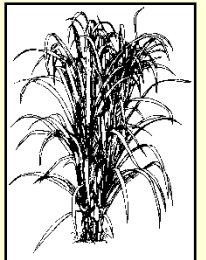


***Questions?***



# ***Why Soil-Applied Herbicides Fail?***

- Ø Poor weed control during fallow
- Ø Weed spectrum and level of weed pressure
- Ø No rain within 14 DAA; Not enough rain within 14 DAA; Too much rain
- Ø Herbicide selection
- Ø Herbicide rate
- Ø Herbicide application date



# ***Poor Weed Control During Fallow?***

- Weed control in sugarcane starts during the fallow period.
- Timely applications of glyphosate products are a wise investment with a significant return.



***Bermudagrass Control During the Fallow Period Directly Affects Weed Control in the Planted Sugarcane Crop ...***

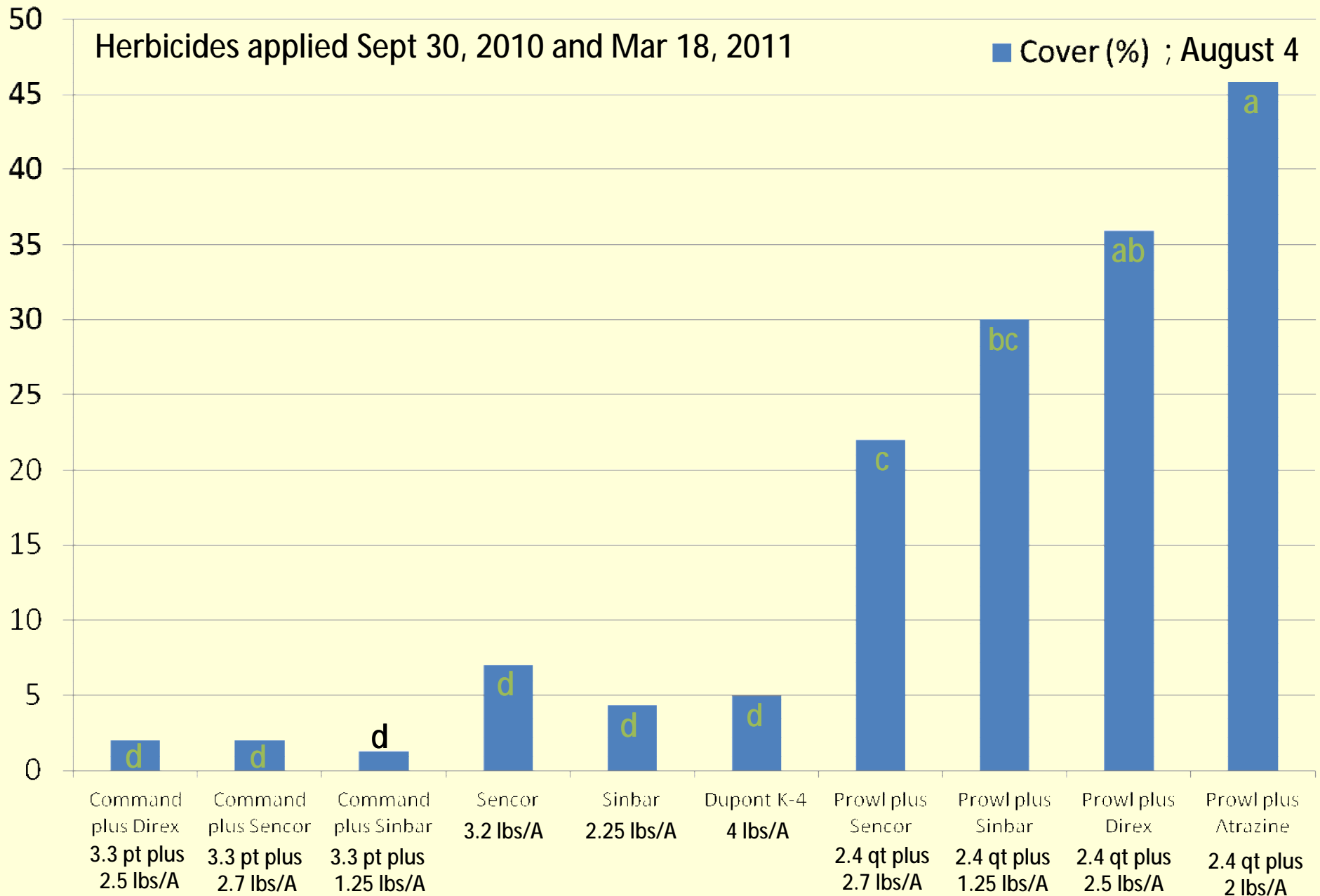


**Sencor Applied at Planting**  
**Bermudagrass not controlled in Fallow**

**Sencor Applied at Planting**  
**Bermudagrass controlled in Fallow**



# Plant-cane trial (Bermudagrass Cover)



# ***Bermudagrass - Treflan At Planting Program***

- Plant, cover cane, and roll or pack beds.
- Spray Treflan (2 qts / 36' band) and incorporate within 24 hours after application.
- Avoid incorporation at a depth that will damage seed pieces.
- Rainfall for activation not a concern.



# How to Get the Most Value From At-Planting Herbicides?

- Choose appropriate herbicide based on weed problems and do not skimp on rate.
- Consider a split application program with herbicide applied at planting and around 60 days later to extend weed control.
- Plant early to increase likelihood of receiving rainfall.
- Don't overlook the old standby – a trifluralin product incorporated at planting followed by tillage of row sides and middles and application of a metribuzin product 6 to 8 weeks later.

# Conclusions

- Applying an herbicide at planting at a rate effective for controlling bermudagrass will reduce competition from bermudagrass and increase sugarcane yields
- Competition from bermudagrass is greatest in the spring and early-summer months
- Suppressing bermudagrass during spring months will help sugarcane become better established and reduce yield losses
- As there are no herbicides providing complete bermudagrass control, additional applications will need to be made each year to reduce losses
- Control in fallow period is essential

## ***Planning Sugarcane Weed Control Programs: Questions That Must be Addressed***

- What herbicide program are you currently using? What is the cost?
- What value are you receiving from the herbicides being used?
- Is the value of economic significance? i.e. does use of herbicide have value in increasing sugar yield, quality, and/or harvest efficiency
- Could a herbicide be eliminated without an economic loss?
- How much are you willing to spend?
- What weed problems do you have? Which ones are most problematic?