

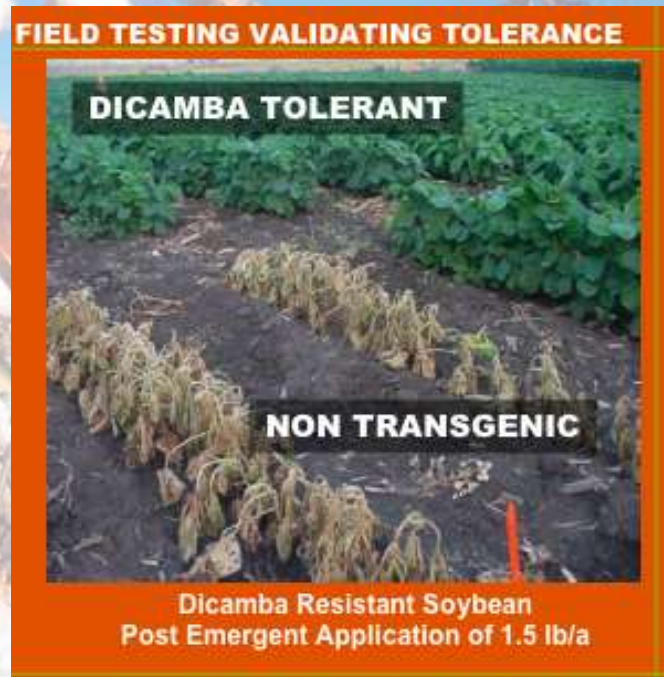
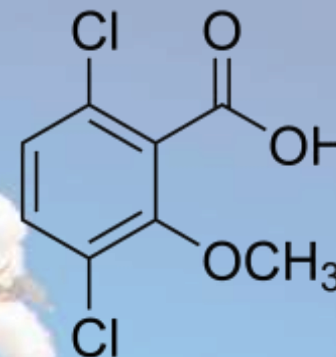
2018 Weed Control Update



**Steve Li. Extension Specialist and Assistant Professor
Auburn University**

DICAMBA...a pretty old herbicide

- First discovered in 1950's
- Synthetic auxin herbicide (mimic of IAA)
- Very mobile in plants, injury symptom starts with very low rates
- Broad-spectrum on broadleaf plants
- Registered in corn, wheat, grain crops, pasture and hay field, forestry, roadside, non-crop area and in resistant crops
- Has volatility (formulation dependent)
- Resistant crop varieties available since 2015



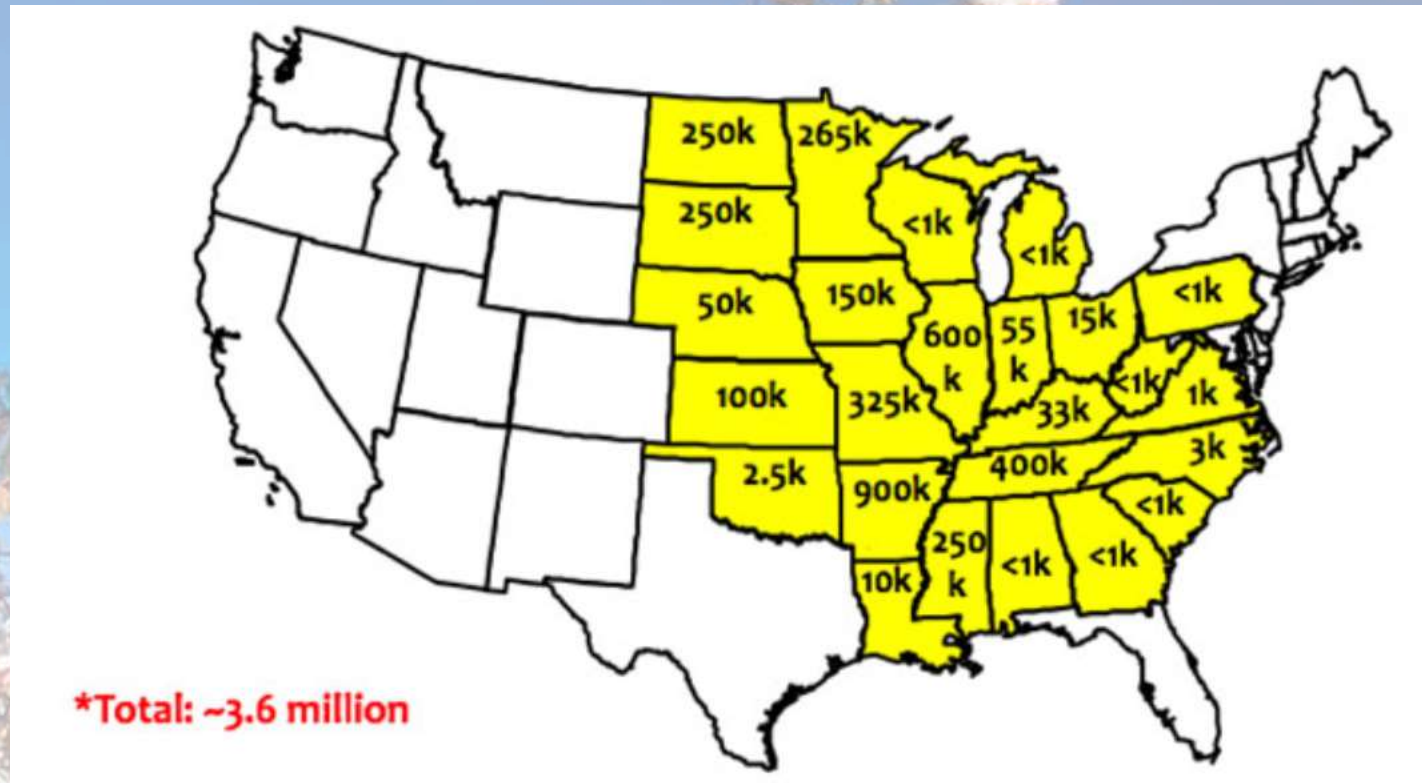
WELL, THE TRUTH IS...



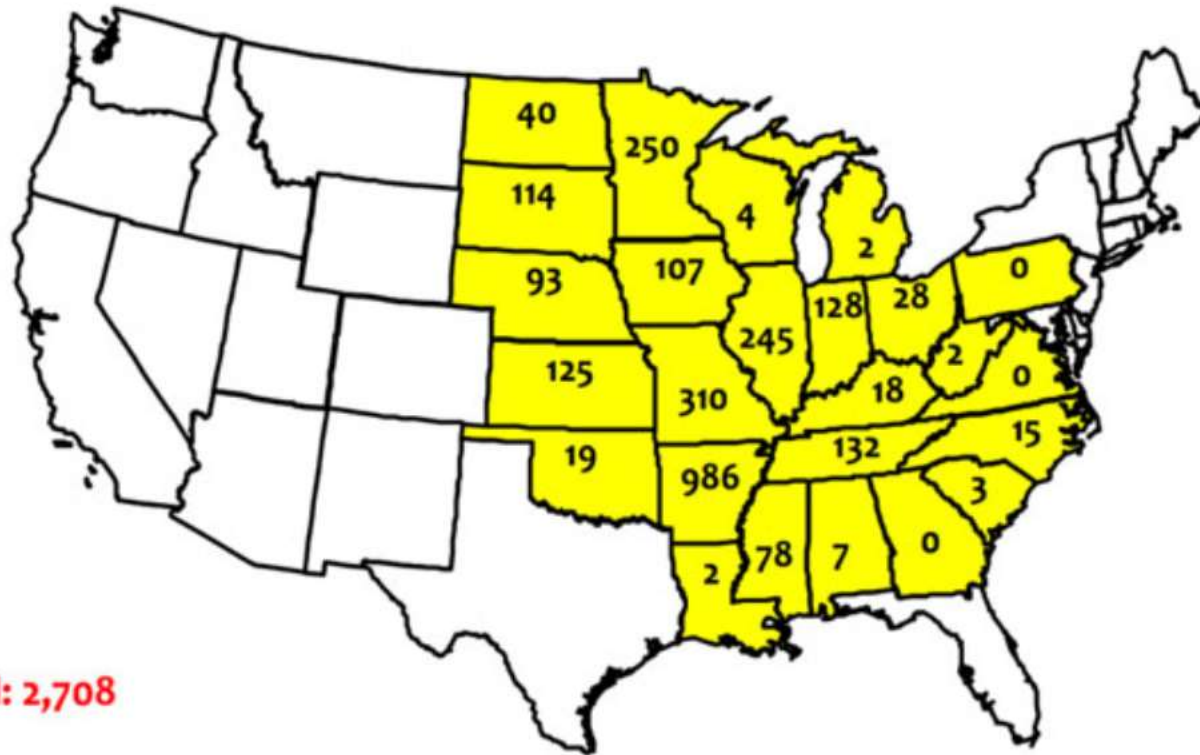
I WANT DICAMBA!!!



YOU CAN'T HANDLE IT !!!



As of Oct 15, 2017



***Total: 2,708**

As of Oct 15, 2017

Xtend and Enlist Update

- Plenty of dicamba drift all over soybean producing states (Glyphosate + ALS + PPO resistant pigweed)
- More restrictions for dicamba in 2018 season (record keeping, triple cleaning, application timing, restricted use, etc.)
- Xtendimax and Engenia federal label expires at the end of 2018 (EPA renewal???)
- Both Xtendimax and Engenia has lower volatility, but still not zero
- Enlist Duo and Enlist One for 2018
- Enlist Soybean for 2018?
- Mandatory auxin training in spring 2018

Reflex Injury!!!





2016 Evaluations

#	Trade name	Application rate (fl oz/a)
1	NTC	0
2	Reflex	4
3	Reflex	8
4	Reflex	16
5	Reflex	32
6	Reflex	64
7	Reflex	128
8	Reflex + Prowl H2O	16 + 32
9	Reflex + Warrant	16 + 48
10	Reflex + Direx	16 + 20
11	Brake F16	16
12	Brake F16	32
13	Brake FX	32

Cotton injury 20-22 DAP



Fairhope



Shorter



Cotton injury 20-22 DAP

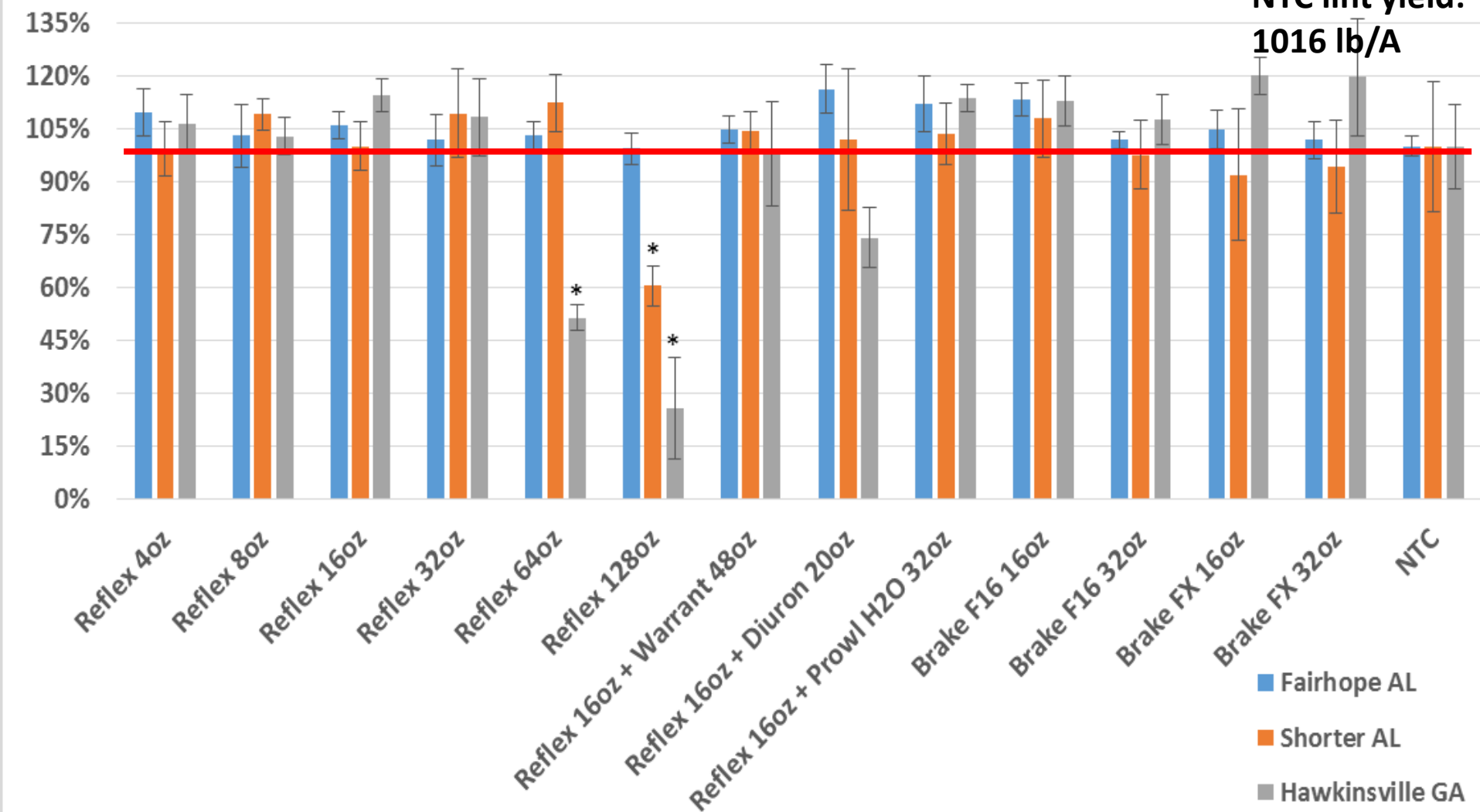
Hawkinsville GA



% of NTC

Final cotton yield as affected by herbicide treatments

NTC lint yield:
1016 lb/A



2017 Evaluations (1)

#	Trade Name	RATE	FIELD RATE PT/A
1	Reflex + Warrant	1X	1 + 3.2
2	Reflex + Warrant	2X	2 + 6.4
3	Reflex + Direx	1X	1 + 1.6
4	Reflex + Direx	2X	2 + 3.2
5	Reflex + Caparol	1X	1 + 4
6	Reflex + Caparol	2X	2 + 8
7	Brake F16	1X	1
8	Brake F16	2X	2
9	NTC		

**DP 1538 B2XF, DP 1646 B2XF, PHY 444 WRF, PHY 490 W3FE
planted in RCBD, 4 reps, 6 x 25 ft plots at 3 locations in AL
(Headland, Shorter and Atmore)**

COTTON STAND 3 WAP MACON COUNTY

(Planted May 30)



FOMESAFEN 2 pt/A + DIURON 3.2 pt/A

NTC

COTTON STAND 7 WAP MACON COUNTY (late July)

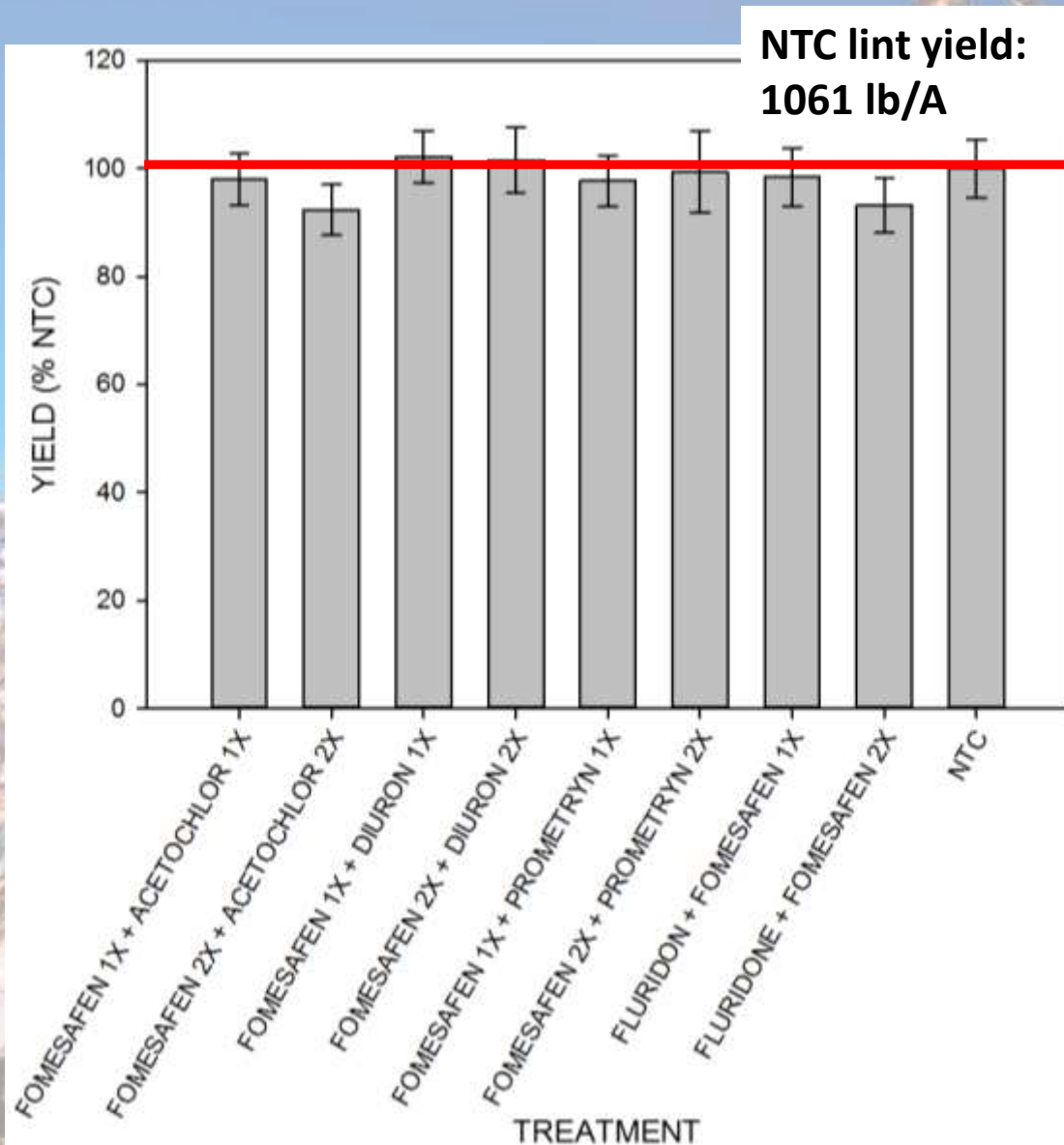


FOMESAFEN 2 pt/A + DIURON 3.2 pt/A



NTC

COTTON YIELD



- Lower stand count and cotton height observed at two locations with three treatments at 3 WAP. No differences were seen at 7 WAP
- No significant location or variety interactions with treatment

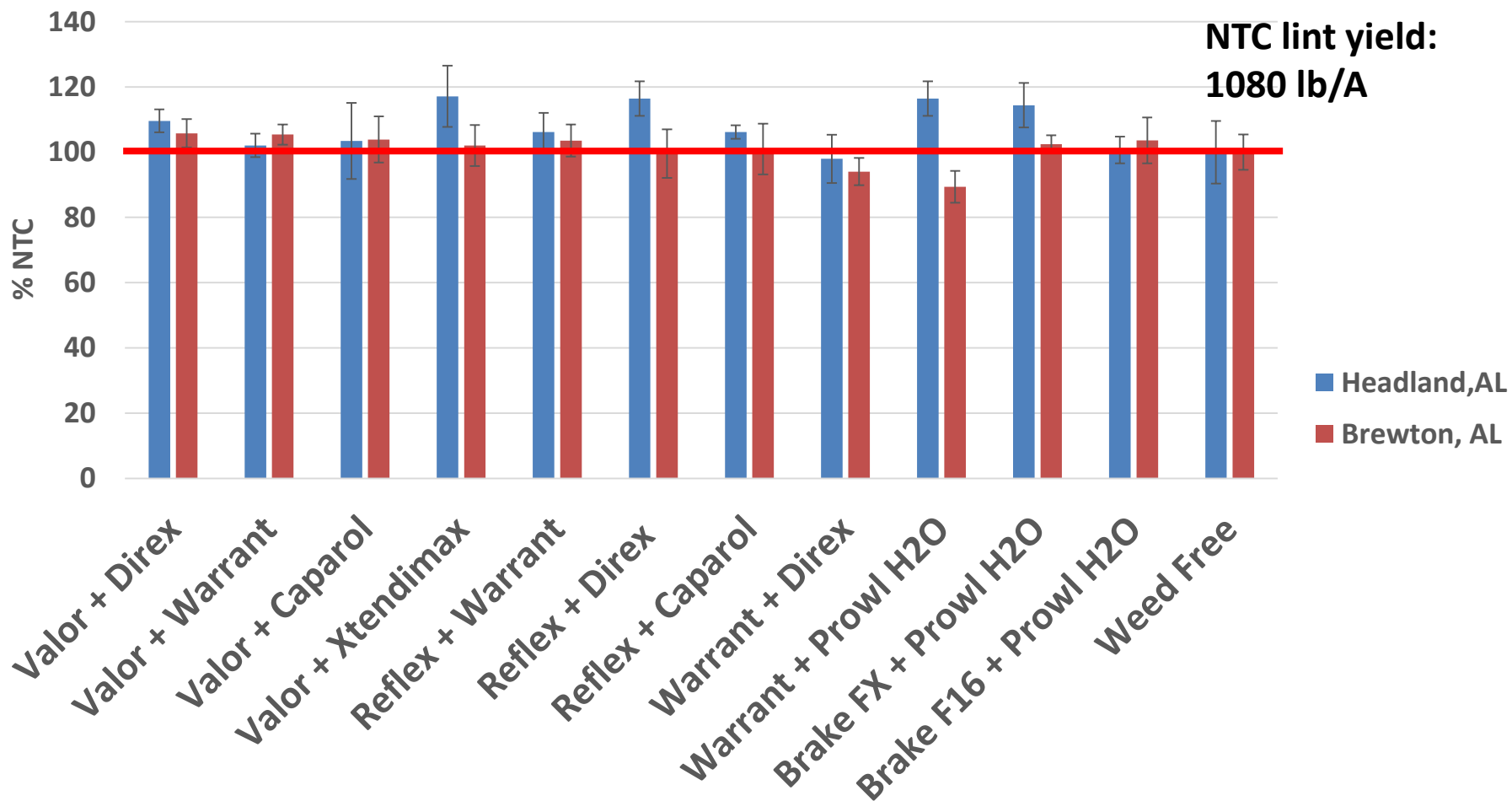
2017 Evaluations (2)

#	Herbicide Treatment	Application Rate	Application Timing
1	Valor + Direx 4L	2 oz/A + 1.6 pt/A	3 Weeks Prior to Planting
2	Valor + Warrant	2 oz/A + 3.2 pt/A	-
3	Valor + Caparol	2 oz/A + 4.5 pt/A	-
4	Valor + Xtendimax	2 oz/A + 44 oz/A	-
5	Reflex + Warrant	1+ 3.2 pt/A	1 Week Prior to Planting
6	Reflex + Direx 4 L	1+ 1.6 pt/A	-
7	Reflex + Caparol	1+ 4.5 pt/A	-
8	Warrant + Direx 4L	3.2 + 1.6 pt/A	-
9	Warrant + Prowl H20	3.2 + 2 pt/A	-
10	Brake FX + Prowl H20	2 + 2 pt/A	-
11	Brake F16 + Prowl H20	1 + 2 pt/A	-
12	Non Treated Check		

Gramoxone and NIS applied at 2 pt/A and 0.5% v/v with all treatments.
Two locations: Headland and Fairhope AL

- No treatment effect on stand count and cotton height during the season

Seed Cotton Yield





17 inch

**Liberty (29oz/a) +
Dual magnum
(22oz/a) followed by
Xtendimax (22 oz/a)+
Roundup Powermax
(32 oz/a) 4 days after
initial application**



**Day of initial
application
(June 15 2017)**



14 DAIT





20 inch

**Liberty (29 oz/a) +
Dual Magnum (22
oz/a) followed by
Enlist Duo (4.75 pt/a)
4 days after initial
application**

← **Day of initial
application
(June 15 2017)**



← **14 DAIT**



13 inch

**Xtendimax (22oz/a) +
Roundup Powermax (32
oz/a) followed by
Liberty (29 oz/a) + Dual
Magnum (22 oz/a) 4
days after initial
treatment**

← **Day of initial
application
(June 15 2017)**



← **14 DAIT**



19 inch

**Enlist Duo (4.75 pt/a)
followed by Liberty (29
oz/a) + Dual Magnum (22
oz/a) 4 days after initial
application**



**Day of initial
application
(June 15 2017)**



14 DAIT





14 inch

**Butyrac 200 (16 oz/a)
followed by Cobra (12.5
oz/a) + Dual Magnum (22
oz/a) 4 days after initial
application**



**Day of initial
application
(June 15 2017)**



14 DAIT





10 inch

**Butyrac 200 (16 oz/a)
+ Cobra (12.5 oz/a) +
Dual Magnum (22
oz/a)**



**Day of initial
application
(June 15 2017)**



14 DAIT







Liberty 32 oz/A
Dual Magnum 1.33 pt/a
Class Act Ridion 1% v/v



Liberty 32 oz/A
Warrant 3 pt/A
Class Act Ridion 1% v/v



**Liberty 32oz + Dual Mag
1.33 pt/A on June 28**

**Liberty 32oz + Outlook 21
oz/A on June 28**

**Liberty 32oz + Dual Mag
1.33 pt/A on July 20**

**Liberty 32oz + Outlook 21
oz/A on July 20**

NTC



**Xtendimax 22oz + Roundup
PM 32 oz/A on June 28**

**Liberty 32oz + Warrant 3
pt/A on July 20**



**Xtendimax 22oz + Roundup
PM 32 oz/A on June 28**

**Liberty 32oz + Dual Mag
1.33 pt/A on July 20**



**Xtendimax 22oz + Roundup
PM 32 oz/A on June 28**

**Liberty 32oz + Outlook 21
oz/A on July 20**

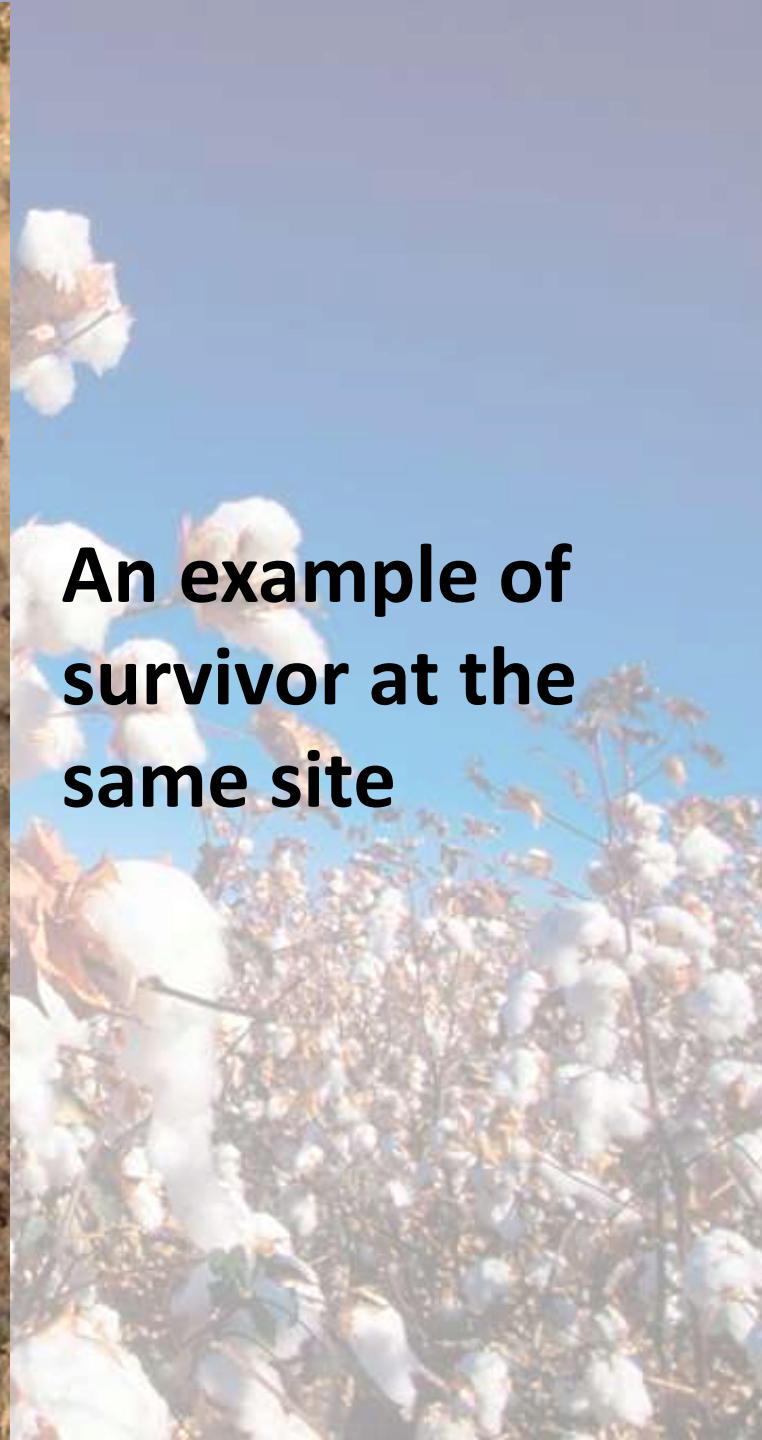




Neither dicamba nor 2,4-D will be the silver bullet. They may can take down a few big pigweed. But they can not do this consistently and those survivors are likely to develop resistance in future under constant selection pressure.



**An example of
survivor at the
same site**





**August 2016
Headland AL
Prior to application**



Gramoxone + Storm + 24DB



Cadre + Storm + 24DB

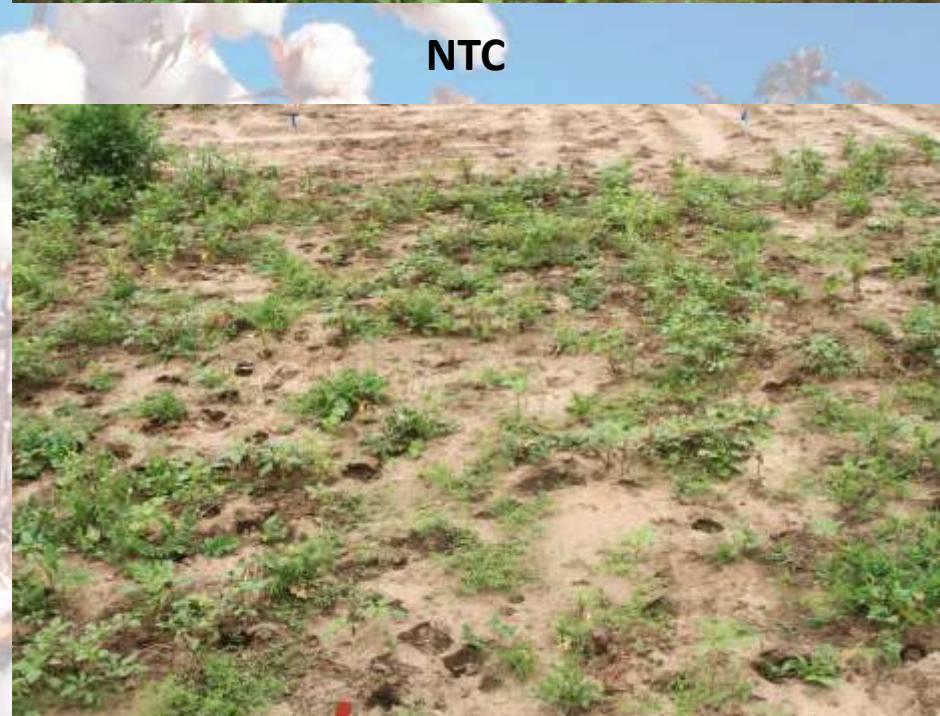
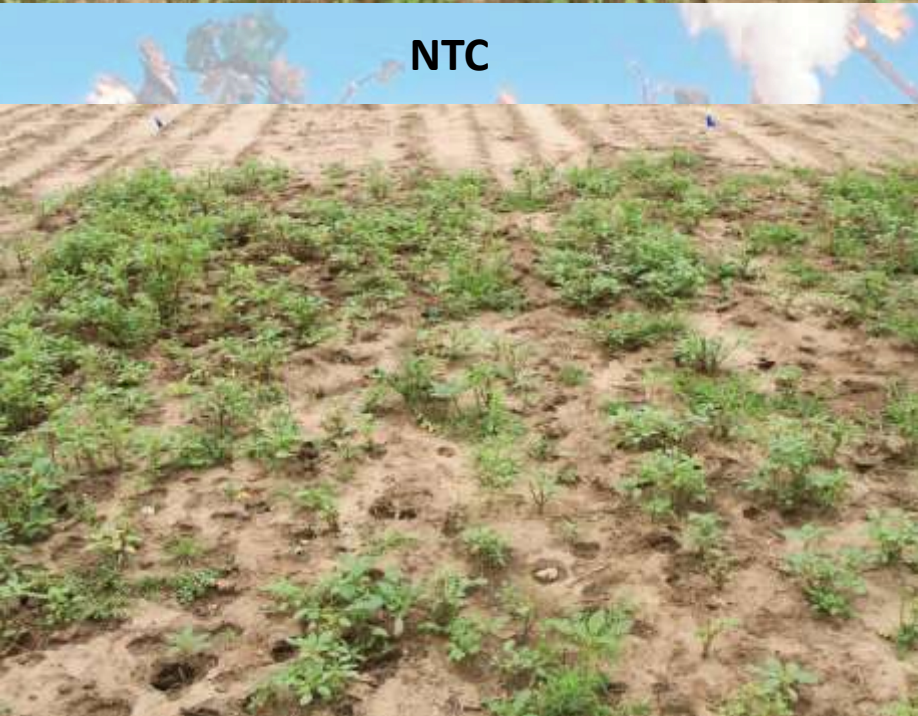


Roundup + 2,4-D



Liberty + 2,4-D





NTC

NTC

Direx 20 oz/A @ 50 DAT

Cotoran 2 pt/A @ 50 DAT



Reflex 12 oz/A @ 50 DAT



Warrant 3.2 pt/A @ 50 DAT



Xtendimax 44 oz/A @ 50 DAT



Reflex 12 oz + Cotoran 2 pt/A @ 50 DAT



Reflex 12 oz + Warrant 3.2 pt/A @ 50 DAT



Reflex 12 oz + Direx 20 oz/A @ 50 DAT



Brake F16 16 oz/A @ 50 DAT



Warrant 3.2 pt + Direx 20 oz/A @ 50 DAT

HAGIE UPFRONT STS 10



TANK CAPACITY: 3570 L
BOOM WIDTH: 27.4 M



JOHN DEERE 6700



TANK CAPACITY: 1590 L
BOOM WIDTH: 18.3 M



SPRACOUPE 4660



TANK CAPACITY: 1580 L
BOOM WIDTH: 24.4 M

2,4-D RETENTION

CLEANING PROTOCOL	RINSE 1 (PPM)	RINSE 2 (PPM)	RINSE 3 (PPM)	RINSE 4 (PPM)
TRIPLE RINSE WATER	203.13 A	21.20 A	2.75 A	1.90 A
AMMONIUM+GLYPHOSATE+WATER	420.79 A	11.66 A	1.27 B	0.90 AB
AMMONIUM+FIMCO+WATER	258.95 A	20.79 A	1.18 B	1.16 AB
AMMONIUM+PROTANK+WATER	675.19 A	22.13 A	2.13 AB	0.66 B
SPRAYER				
HAIGE UPFRONT STS 10	665.43 A	30.71 A	2.66 A	1.89 A
JOHN DEERE 6700	180.60 B	10.15 A	1.30 B	0.62 B
SPRACOUPE 4660	332.51 AB	15.98 A	1.53 AB	0.62 B

^A 2,4-D WAS INITIALLY APPLIED AT 1.06 KG AI HA⁻¹.

^B MEANS FOLLOWED BY THE SAME LETTER IN A COLUMN ARE NOT SIGNIFICANTLY DIFFERENT BASED ON A MIXED MODEL ANALYSIS OF VARIANCE (P=0.05).

^C NO SPRAYER X TREATMENT INTERACTIONS WERE OBSERVED AT P=0.05, THEREFORE DATA FROM ALL SPRAYERS WERE COMBINED FOR SPRAYER EFFECTS.

DICAMBA RETENTION

CLEANING PROTOCOL	RINSE 1 (PPM)	RINSE 2 (PPM)	RINSE 3 (PPM)	RINSE 4 (PPM)
TRIPLE RINSE WATER	310.44 A	22.22 A	3.57 A	1.25 A
AMMONIUM+GLYPHOSATE+WATER	534.10 A	17.77 A	0.72 B	0.67 A
AMMONIUM+FIMCO+WATER	385.25 A	30.85 A	1.21 B	0.90 A
AMMONIUM+PROTANK+WATER	484.77 A	31.06 A	1.28 B	0.50 A
SPRAYER				
HAIGE UPFRONT STS 10	555.17 A	32.85 A	2.55 A	1.09 A
JOHN DEERE 6700	282.46 B	18.05 A	0.75 A	0.91 A
SPRACOUPE 4660	448.28 AB	25.54 A	1.78 A	0.48 A

^A DICAMBA WAS INITIALLY APPLIED AT 1.12 KG AI HA⁻¹.

^B MEANS FOLLOWED BY THE SAME LETTER IN A COLUMN ARE NOT SIGNIFICANTLY DIFFERENT BASED ON A MIXED MODEL ANALYSIS OF VARIANCE (P=0.05).

^C NO SPRAYER X TREATMENT INTERACTIONS WERE OBSERVED AT P=0.05, THEREFORE DATA FROM ALL SPRAYERS WERE COMBINED FOR SPRAYER EFFECTS.

Dicamba at 5 ppm reduced soybean yield

Other data suggesting 3.6 ppm of 2,4-D reduced cotton yield (similar sensitivity compared to dicamba on soybean)

After triple rinse, 2,4-D concentration (0.62-1.89 ppm) and dicamba concentration (0.48-1.09 ppm) were below minimum concentration to cause yield loss on cotton and soybean

Our data suggests triple rinse will be definitely required to prevent dicamba or 2,4-D injuring sensitive soybean or cotton and reduce yield

The earlier you send out foliage sample to the lab, the more likely they can find it!

Cotton stand 51 DAP in 2016



2,4-D 0.5 lb/A @ planting



Dicamba 0.5 lb/A @ planting

Cotton stand 51 DAP in 2017



Dicamba 1 lb/A @ PRE



NTC

What we learned from 2017?

- **Whether you use Xtend, Enlist or Liberty, it will take two shots of POST to get your field clean**
- **We did good to prevent dicamba drift, but whether Xtendimax and Engenia can still have federal labels after 2018 remain uncertain**
- **Neither dicamba nor 2,4-D can replace soil herbicides. Soil herbicides are more important than ever considering resistance concerns and grass pressure.**
- **Crop injury by herbicide in general was worse due to excessive rains, but they managed to catch up**
- **No confirmed reports of PPO-resistant pigweed from South AL, South GA and FL panhandle, yet!!!**

Weed control system in dryland peanut

Gramoxone-based program

Valor-based program

- PRE: Prowl H2O @Planting
 - POST 1: Gramoxone (12 oz/A) + Storm/Basagran/24DB + Residual herbicide @14-28 DAP
 - POST 2: Cadre/Ultra Blazer/Cobra + 24DB + Residual Herbicide @45-60 DAP
 - Residual herbicide options for POST: Zidua, Dual Magnum, Warrant, Outlook
 - Use rate: 1.5-2.1 oz/A for Zidua, 1-1.33 pt for Dual Magnum, 2.5-3 pt/A for Warrant, 15-18 oz/A for Outlook
 - Only use NIS for POST treatments to prevent leaf burn
- PRE: Valor (3 oz/A) + Strongarm + Prowl H2O @Planting
 - Gramoxone (Optional)
 - POST 1: Cadre/Ultra Blazer/Cobra + 24DB + Residual Herbicide @30-40 DAP
 - POST2 (optional): Aim + 24DB @ 70-90 DAP



Late season weed problems. Many happened because farmers did not use residual herbicide in their POST applications!!!

Valor and Gramoxone Injury





**GA-06G Valor 3 oz/A
Henry County 22 DAP**



**Valor 3 oz/A + Strongarm 0.45 oz/A
Henry County 22 DAP**



GA 06G

**Valor 6 oz/A + Strongarm 0.9 oz/A
Henry County 22 DAP**



GA-O6G NTC

Henry County 22 DAP



GA-06G Valor 3 oz/A
Macon County 48 DAP



GA 06G
Valor 3oz/A + Strongarm
0.45 oz/A
Macon County 48 DAP



GA 06G

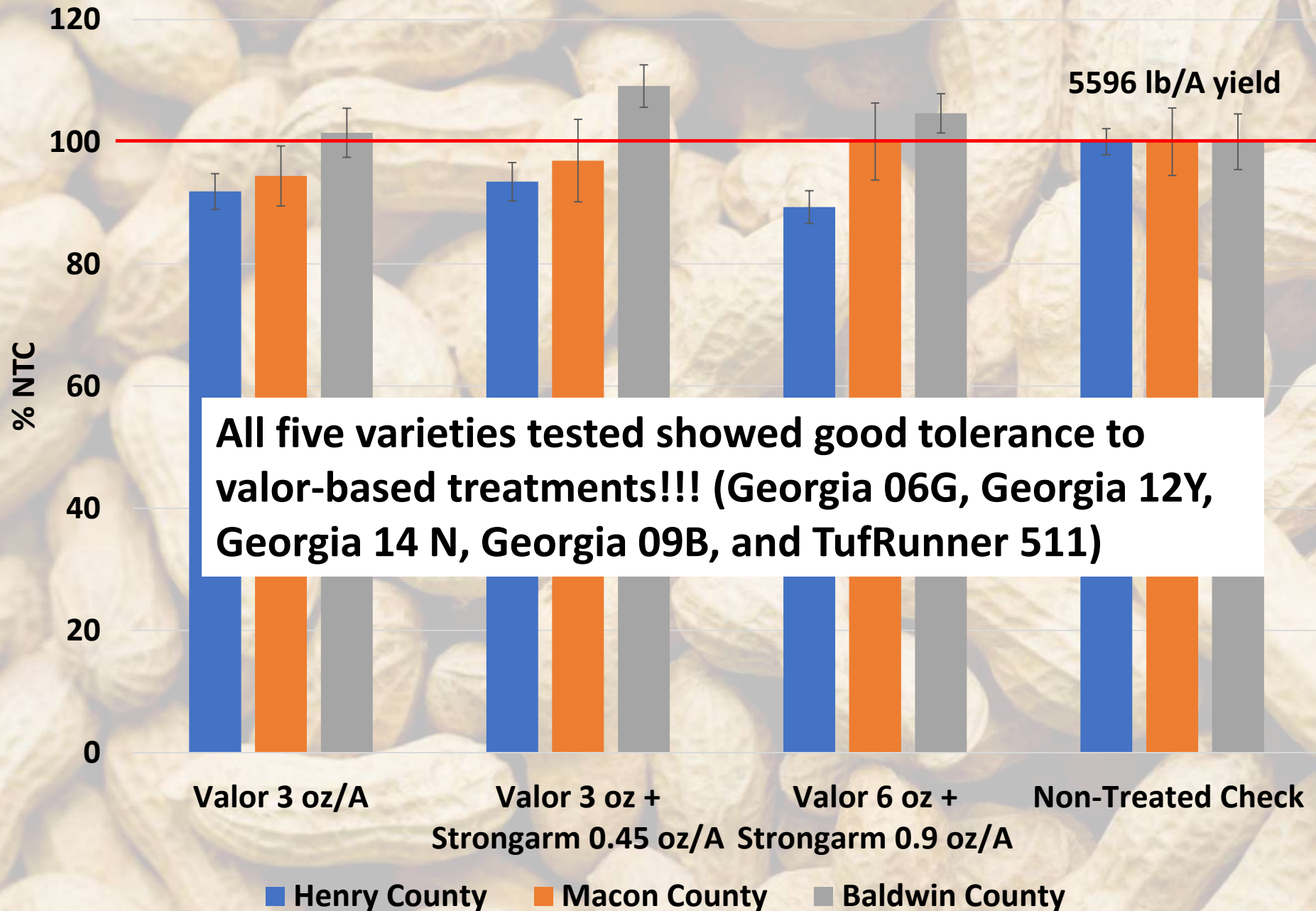
Valor 6 oz/A + Strongarm 0.9 oz/A

Macon County 48 DAP

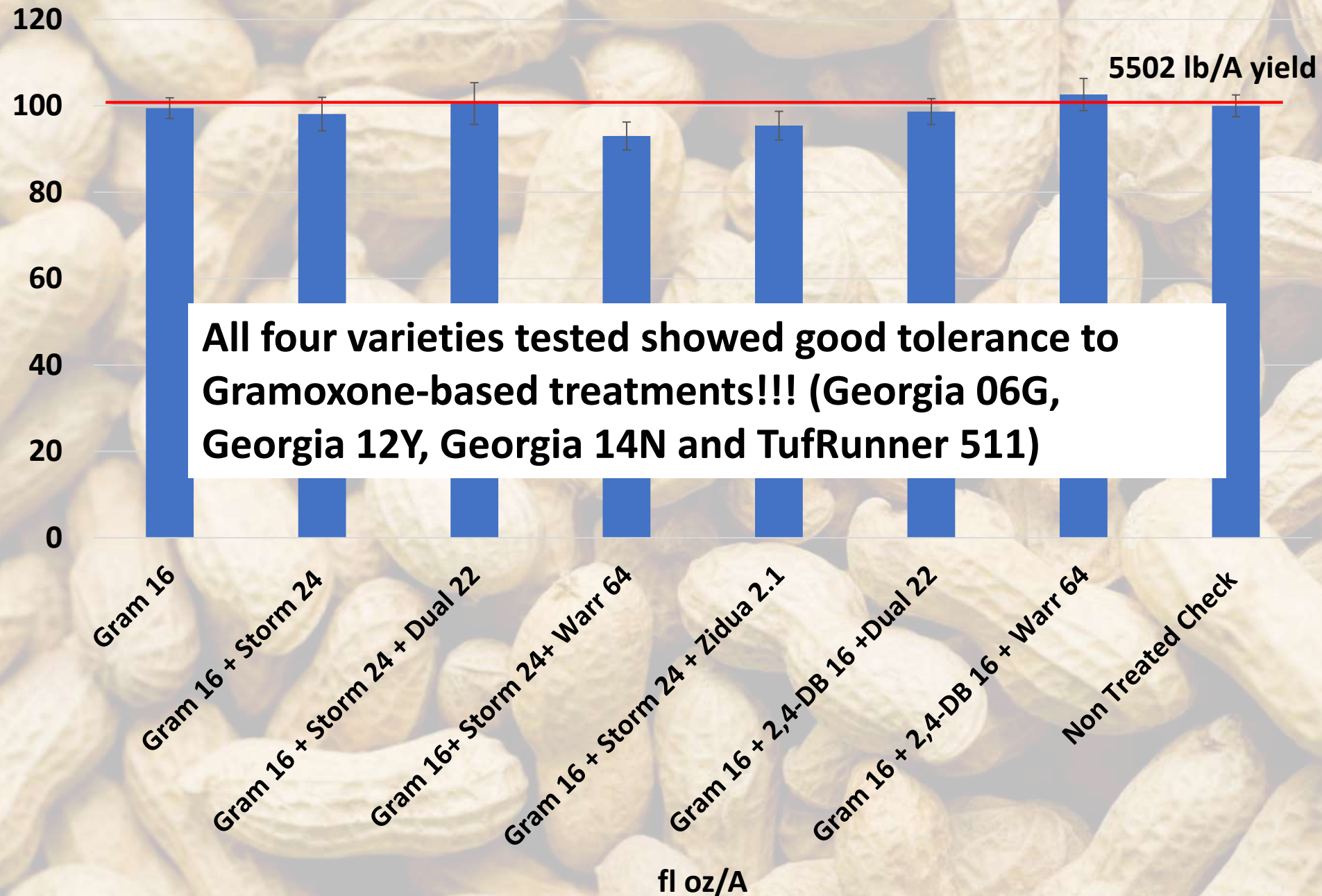


GA-O6G NTC
Macon County 48 DAP

Yield 141-164 days after planting



Peanut Yield



Tropical Spiderwort

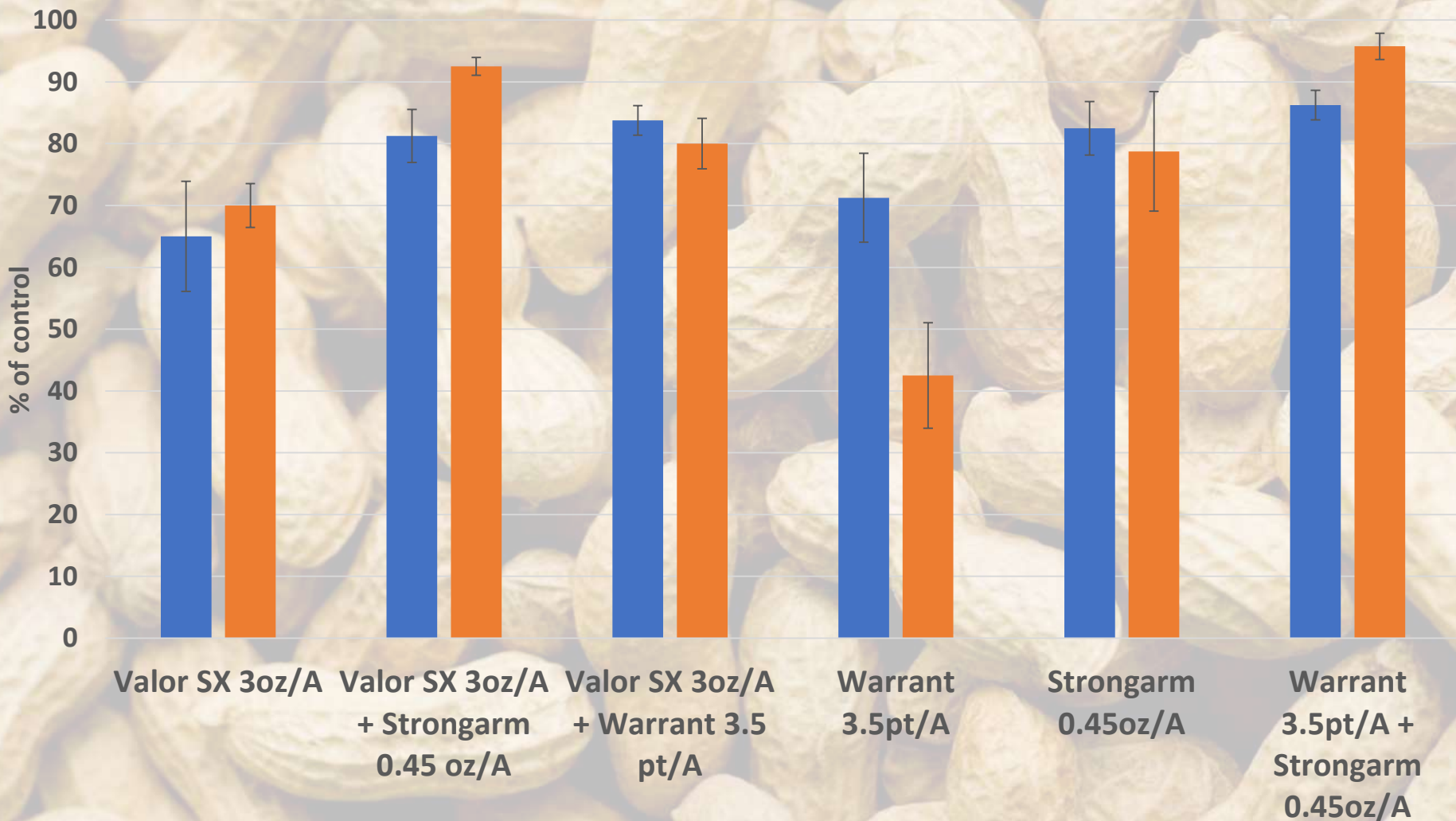




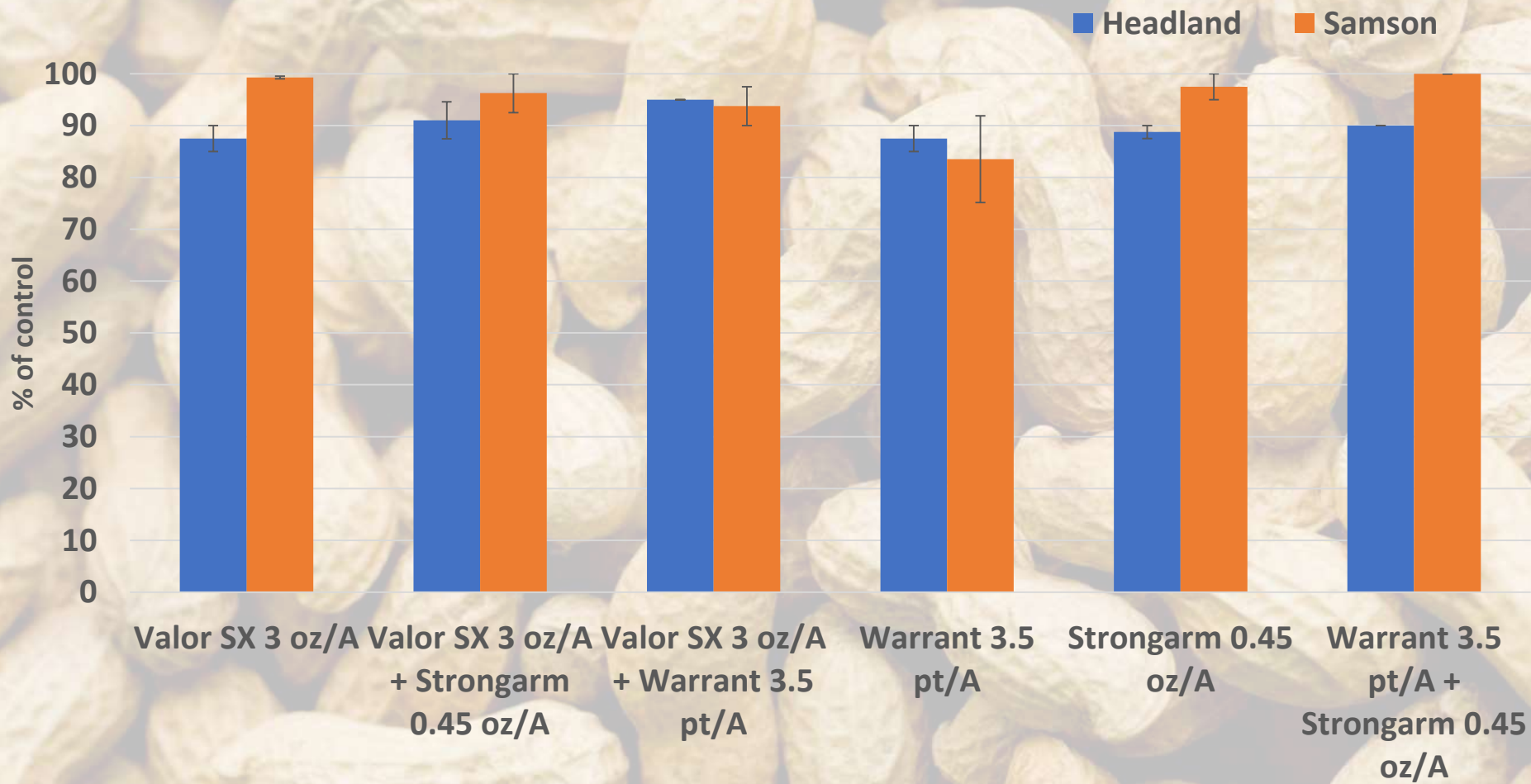
This field has a lot of tropical spiderwort!!!

Soil Herbicide Treatments for Tropical Spiderwort Control 6/8/17 @ 22 DAP

■ Headland ■ Samson



Tropical Spiderwort Control @ 15 days after Gramoxone + Dual Mag + 2,4-DB





Timing A
Prowl H2O 2 pt/A

Timing B
Gramoxone 12 oz/A
Dual Magnum 1.33 pt/A
Butyrac 200 16 oz/A
NIS 0.25 v/v





Timing A
Prowl H2O 2 pt/A

Timing B
Gramoxone 12 oz/A
Warrant 3.5 pt/A
Butyrac 200 16 oz/A
NIS 0.25 v/v





Timing A
Prowl H2O 2 pt/A

Timing B
Gramoxone 12 oz/A
Zidua 3.25 oz/A
Butyrac 200 16 oz/A
NIS 0.25 v/v





Non Treated Check





Thank you!