

Herbicide Resistance in Arkansas Soybean and Cotton

Bob Scott
Extension Weed Scientist

Resistance in Arkansas- 2016

glyphosate resistant weeds

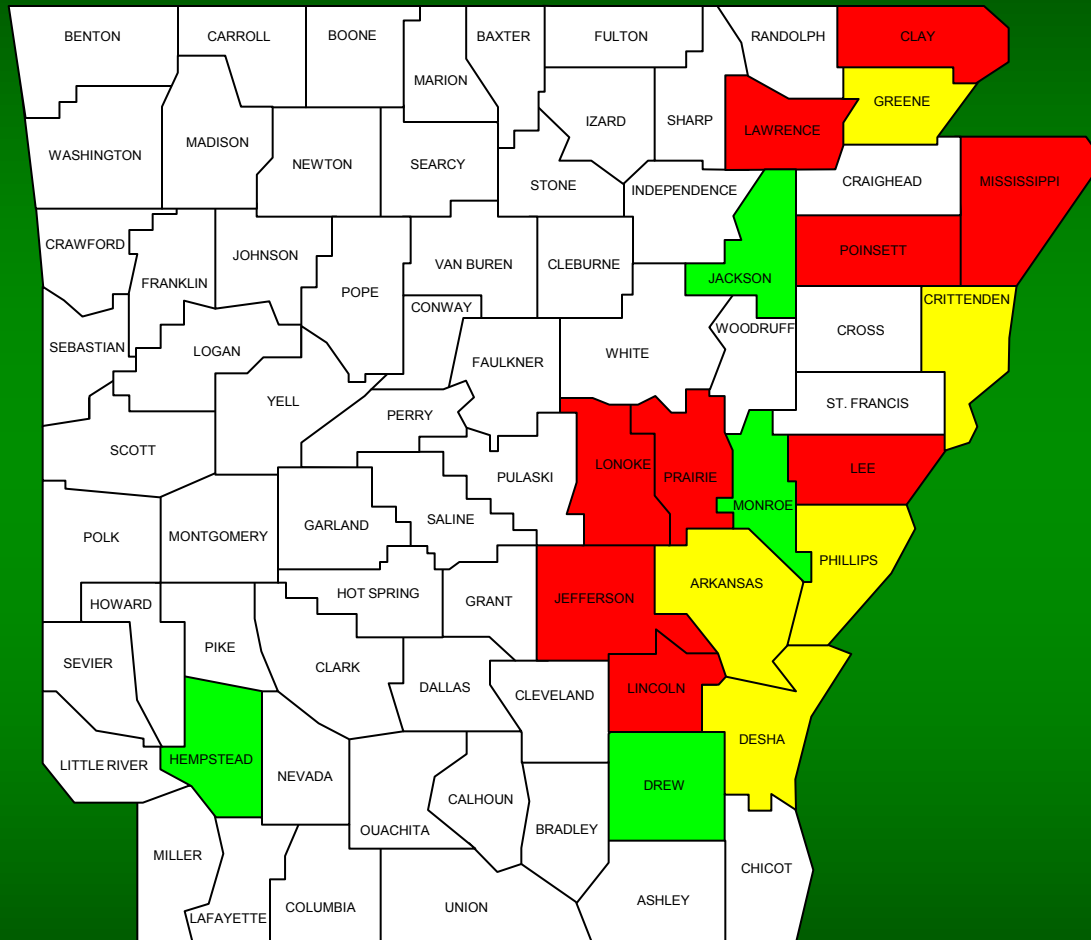
- Horseweed
- Common Ragweed
- Giant Ragweed
- **Palmer pigweed**
- Johnsongrass
- Ryegrass
- Tall Waterhemp

2009 Pigweed stopped Harvest



-\$230

Roundup resistant *P. amaranth* Distribution fall of 2007

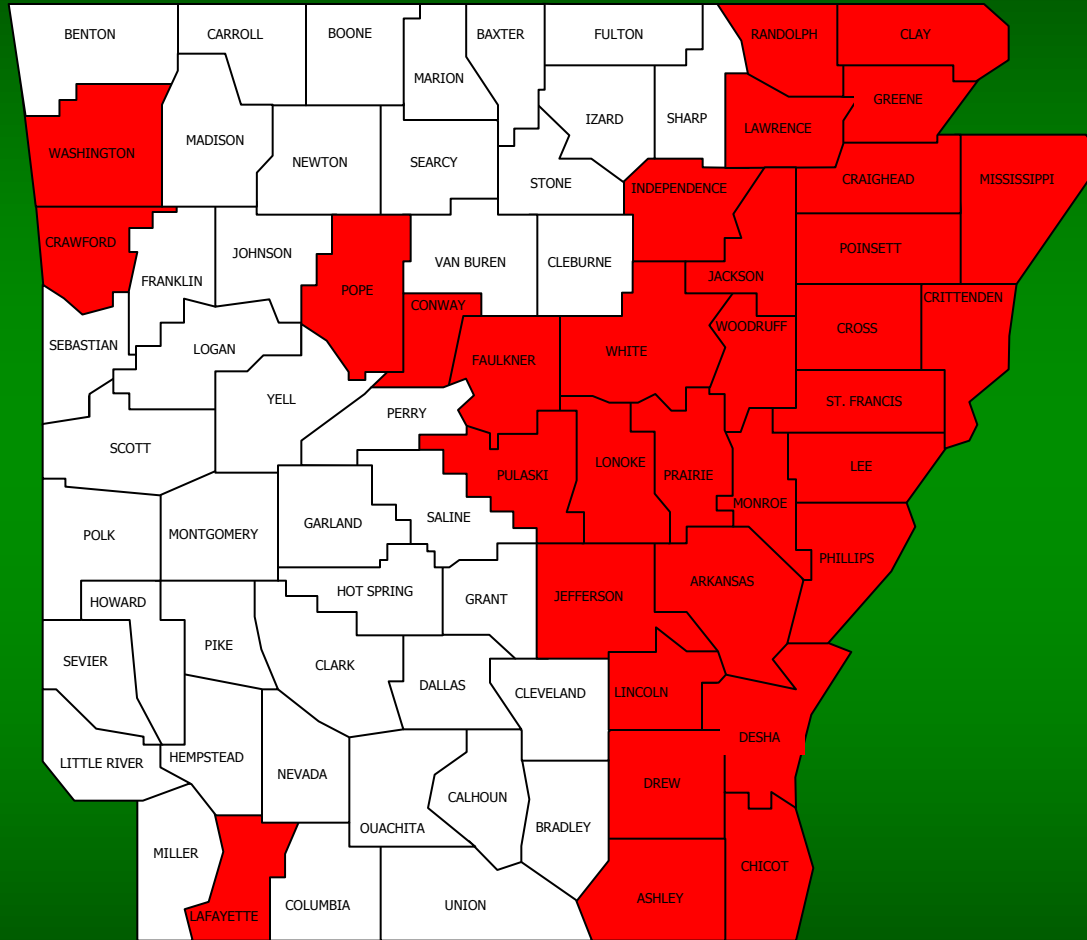


Field Rate

0.5 Field Rate

Susceptible

Roundup resisant P. amaranth Distribution fall of 2010



***Confirmed
Resistant to
field rate**

Multiple modes of action ??

Tank mixtures

Preplant	
Dual Magnum, Outlook	15
Dual Magnum or Freedom + Scepter	15,2
Dual Magnum or Freedom + Sencor	15,5
Prowl or Treflan + Scepter	3,2
Treflan or Prowl + Sencor	3,5
Treflan Prowl Pendimax	3
Valor	14
Preemergence	
Authority MTZ	14,5
Canopy	2
Dual Magnum, Outlook	15
Dual Magnum + Scepter	,2
Dual Magnum + Sencor	15,5
Prefix	15,14
Python	2
Scepter	2
Sencor	5

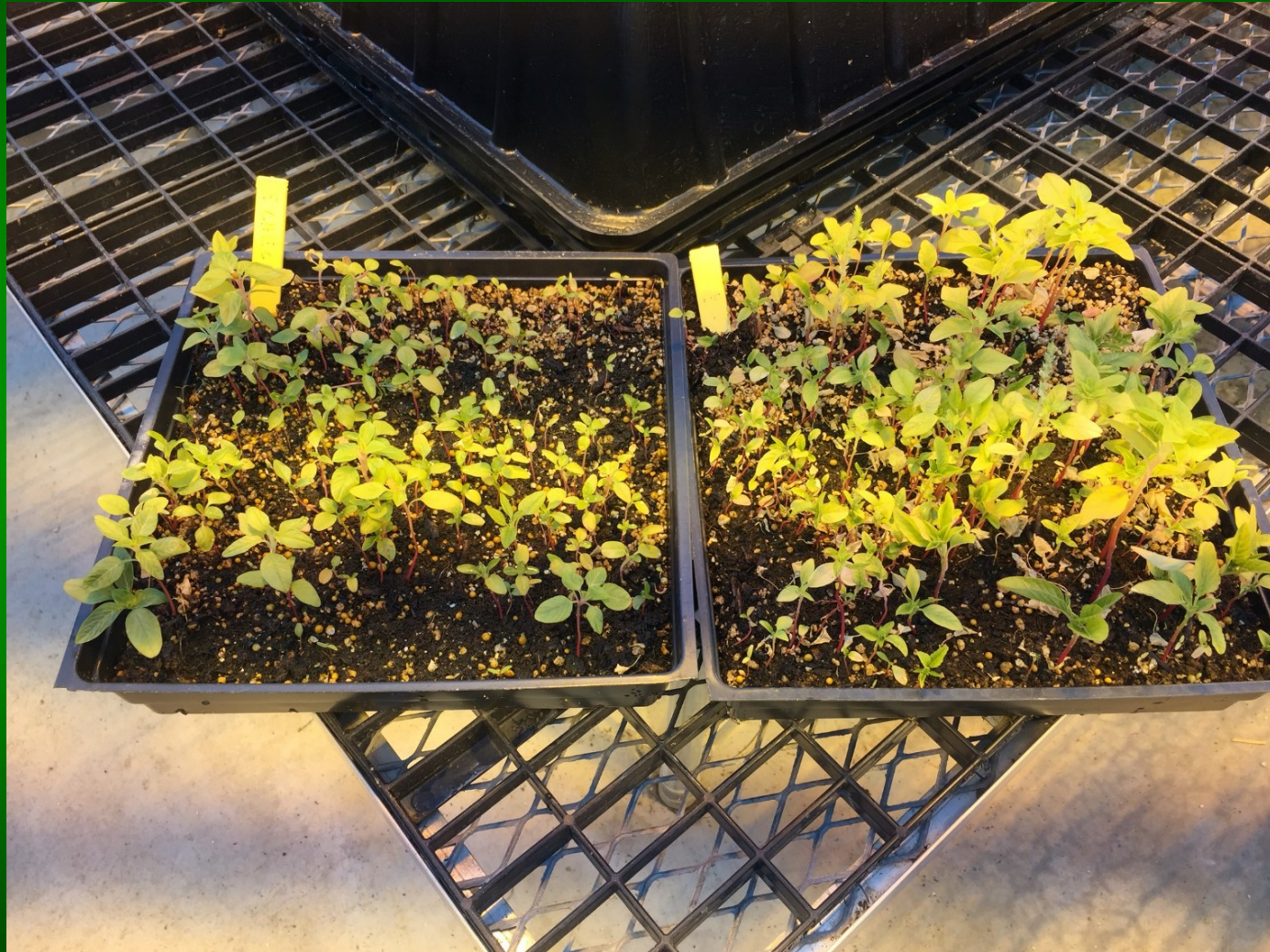
Sequential applications

Postemergence-OT	
Assure II	1
Basagran	6
Classic	2
Cobra	14
Flexstar	14
FirstRate	2
Fusilade DX/Fusion	1
Glyphosate, Single	9
Glyphosate, Split	9
Liberty, Single	10
Liberty, Split	10
Poast Plus	1
Pursuit	2
Scepter	2
Scepter + Ultra Blazer	2,14
Select	1
Ultra Blazer	14

Screen of 2015 pigweed pop.
Valor 2 oz/A PRE



Flexstar 16 oz/A POST



Palmer Amaranth

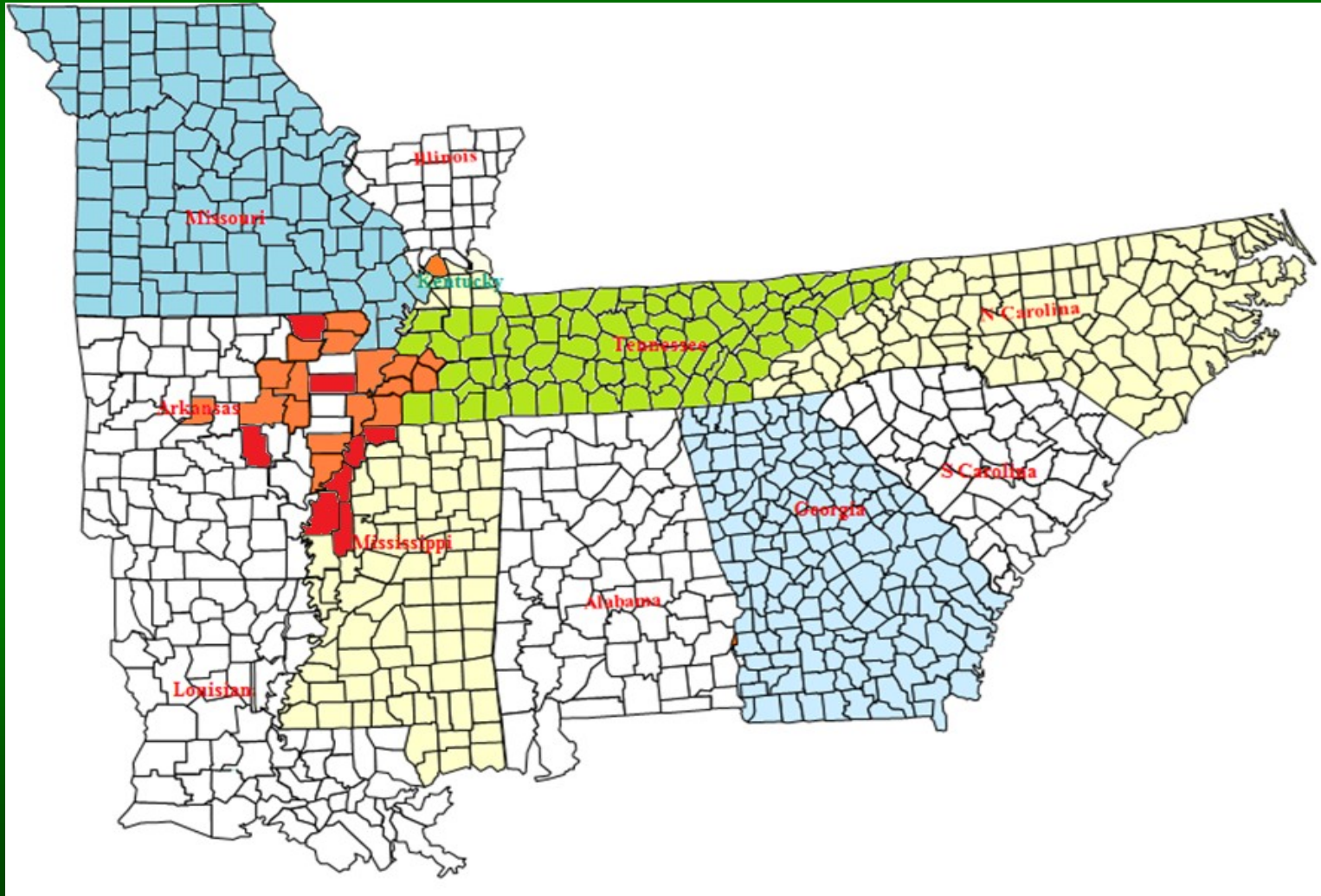
(Woodruff County - Gregory)

- ~~- Glyphosate (Group 9)~~
- ~~- ALS (Group 2)~~
- ~~- PPO (Group 14)~~
- ~~- DNA's (Group 3)~~

You can't grow Roundup Ready soybean in this field!
Our recommendation for 2016: Corn, Sorghum or LL

PPO-Resistant Palmer amaranth

By fall of 2015



New Technology

- Liberty Link (not that new)
- Xtend (dicamba tolerant)
- Enlist (2,4-D Choline+glyphosate+glufosinate)

14 days after treatment



32 oz/A Roundup PowerMax



29 oz/A Liberty



16 oz/A Clarity



4.75 pt/A Enlist Duo

Xtend Performance on Pigweed

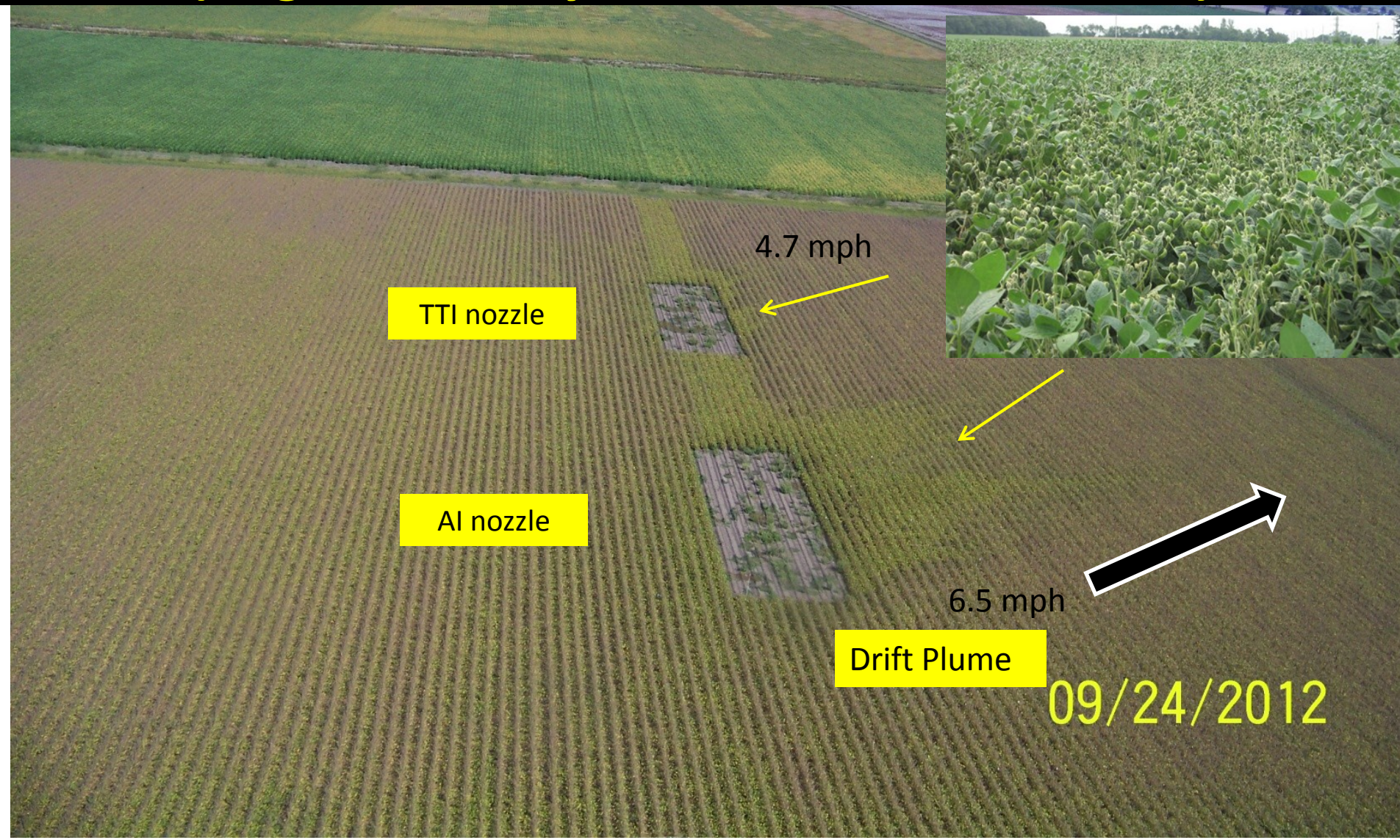


Check



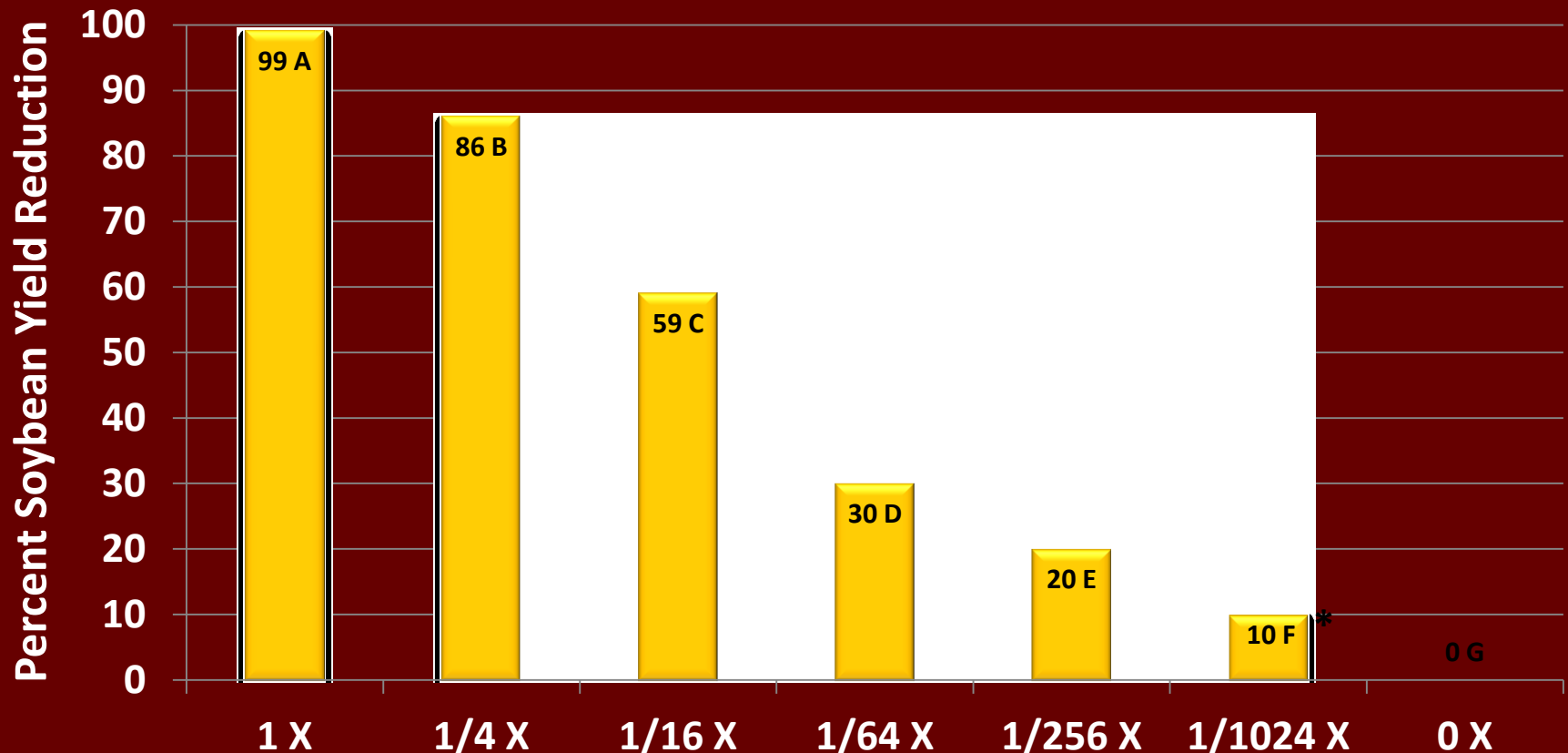
Glyphosate +
dicamba (X2)

Experimental Glyphosate + Dicamba Premix Formulation Drift Trial (Vegetative Soybean – 2012, Keiser, AR)



Soybean Yield Reductions By Dicamba Application Rate

(Averaged Over 6 site years)

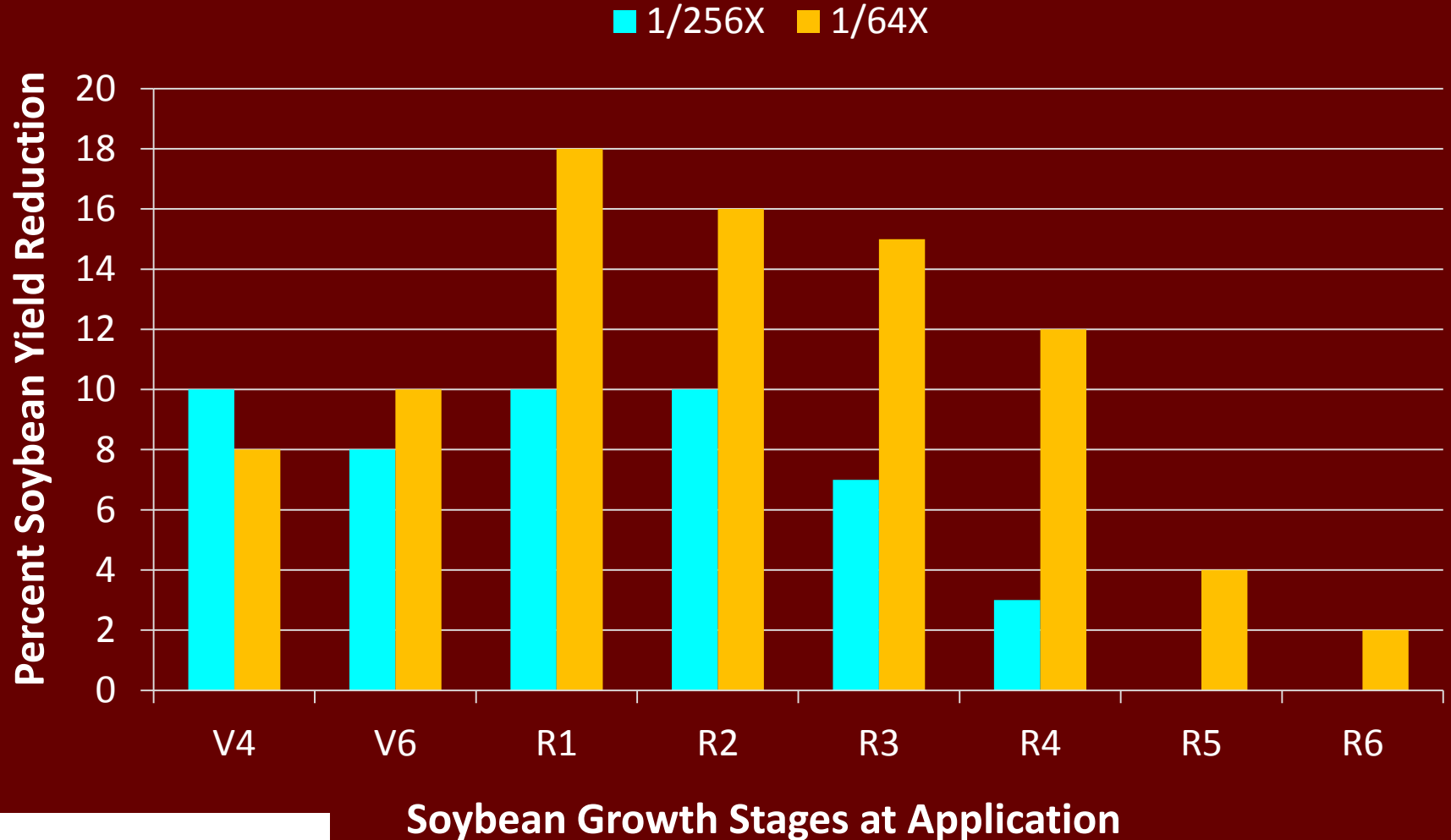


Fraction of dicamba rate applied:

1 X = 0.5 lb ae/A or 1pt/A Clarity sprayed at R1

Soybean yield response from dicamba rates and timing on indeterminate (Group IV cultivar)

1/256 and 1/64X dicamba rate fractions based on label rate of 0.5 lb ai/A or 16 oz/A Clarity



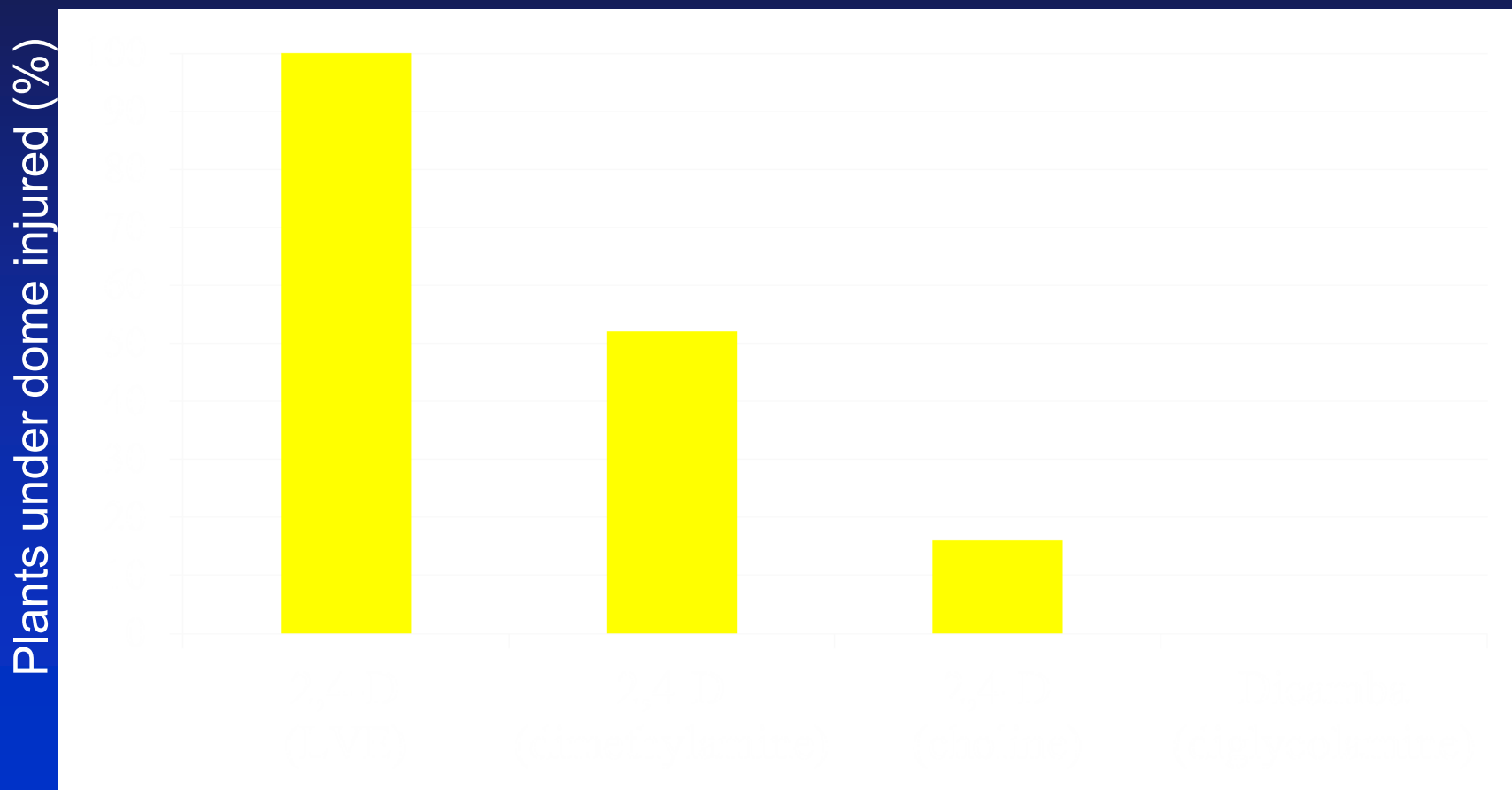
2,4-D and Dicamba Volatility Study



Artificial Comparison:

- Confined space
- High temp. & RH
- Relative comparison

Volatility Study Cotton – 21 DAA



* All treatments contained glyphosate

Volatility Study Soybean – 21 DAA



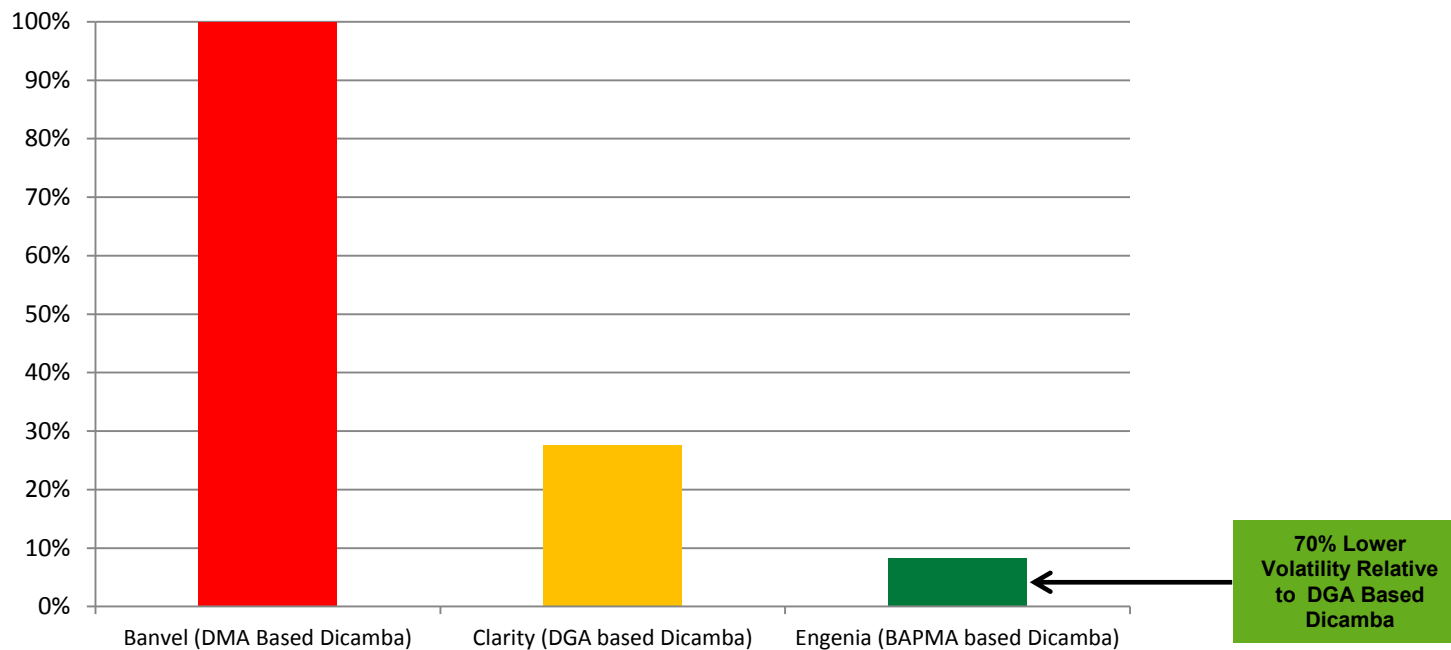
* All treatments contained glyphosate

Engenia™ Herbicide

Dicamba, reinvented



Relative Volatility vs. Form of Dicamba¹



¹Volatility ratings using five different measurement techniques: Field testing, Humidome, TGA, C¹⁴, Incubator

MON and VaporGrip

- 2016:
- MON76980 = XtendiMAX with VaporGrip
- MON 100235 = WARRANT/dicamba premix with VaporGrip
- MON 100234 = WARRANT/dicamba premix with VaporGrip
- MON 76981 = Roundup Xtend with VaporGrip**
- Prior to 2016 (2010-2015):
 - M1691, Clarity, MON76754, others
- **not in my program this year

Other Technology

- HPPD tolerant Soybean (2020?)
- Non-Chemical
 - Harvest weed seed destruction
 - Cover crops research and implementation
 - Zero Tolerance programs
- Down the road:
 - New PPO chemistry
 - New Modes of action or sites of action beginning to be talked about by several companies.

Tolerance overview

- Xtend Soybean:
 - Glyphosate and dicamba
- Xtend Cotton:
 - Glyphosate, dicamba and Liberty (glufosinate)
- Enlist crops:
 - Glyphosate, 2,4-D and glufosinate
- HPPD (Syngenta):
 - HPPD, glufosinate, glyphosate
- HPPD (Bayer)
 - Different HPPD, glufosinate, glyphosate



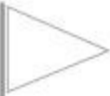



Questions?

MP 44

Fact Sheets
www.uaex.edu

Thank you AR
Soybean
Promotion Board

Color Codes

RED signifies conventional varieties with no herbicide technology traits. <i>Extreme caution.</i>		BRIGHT YELLOW is the color chosen for Clearfield® rice technology and STS® soybeans. ¹	
WHITE represents the Roundup Ready® technology that is tolerant to glyphosate herbicide.		TEAL indicates tolerance to both 2,4-D and POP (Accure) herbicides or the Enlist® technology. The white stripes indicate tolerance to glyphosate. For Enlist cotton and soybean fields, a green flag should be added to denote tolerance to glufosinate (Liberty).	
BRIGHT GREEN indicates the Liberty Link® technology. This technology is tolerant to glufosinate (Liberty) herbicide.		BLACK indicates tolerance to dicamba herbicide or Xtend®. The black and white checks indicate tolerance to both dicamba and glyphosate (Roundup). A green flag should be added for cotton to denote glufosinate (Liberty) tolerance.	

¹Although many herbicides are in the ALS family of herbicides, crops with this technology are not tolerant to all ALS herbicides.

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