Cotton Weed Control Update – 2025

Stanley Culpepper
University of Georgia
Tifton GA

Value of Herbicides in a Rolled Rye* Conservation Tillage Cotton Program. Ty Ty, GA 2024

cover crop | + standard herbicide program | + reduced herbicide program (1 less applic)

*Rye averaged 5300 lb of dry biomass at plant.

Woodland, NC

- **Herbicides….anything new?**
- **Cotton weed management program**
- **Preparing you for ESA compliance**

Dicamba: In-Crop 2025

- Baring politics appears to be no chance for Engenia, Tavium, or XtendiMax for 2025 – ESA
- Quite concerned about getting them for 2026
- Section 18 has no chance

- Section 24 c local need label…..????
- UPW only if a label is successful

Diuron

Diuron

- 2025/2026 availability good
- EPA/manufacturers working through risk assessment

UNIVERSITY OF GEORGIA EXTENSION

Paraquat

The paraquat training module is now live on Syngenta's website. It is available at Paraquat Training. Links from Gramoxone 2.0 and 3.0 pages have been updated along with the EPA paraquat page.

- **No charge for the training**
- **English and Spanish**
- **One time registration form requiring name, email address, state, and pesticide application license number.**
- **Automatic renewal email**

UNIVERSITY OF GEORGIA EXTENSION

Liberty Ultra

BASF
We create chemistry

News Release

BASF announces EPA approval of Liberty ULTRA herbicide

RESEARCH TRIANGLE PARK, NC, October 18, 2024 – Liberty® ULTRA herbicide, powered by Glu-L™ Technology has received U.S. Environmental Protection Agency (EPA) registration and is now approved for use, subject to state approvals.

Liberty ULTRA herbicide, containing the active ingredient glufosinate-P-ammonium, also been referred to as L-glufosinate ammonium, is the next generation of Liberty herbicide from BASF. This powerful new post knockdown solution is effective on both broadleaves and grasses and is available for use on glufosinate-enabled soybean, cotton, corn and canola acres. In research trials, Liberty ULTRA herbicide has demonstrated 20% superior weed control and won nine out of ten head-to-head comparisons against generics[1].

- Rate range 24-29 fl oz.
- May make up to 2 applications in crop or one preplant + one in crop.
- Emergence till early bloom
- Liberty Ultra 24 oz ~= Liberty at 32-36 oz.
- Do not exceed 58 oz for entire year

UNIVERSITY OF GEORGIA EXTENSION

Enversa – Encapsulated Acetochlor for Cotton

Specimen Label

ACETOCHLOR	GROUP	15	HERBICIDE

CORTEVA™ agriscience

Enversa™

HERBICIDE

™®Trademarks of Corteva Agriscience and its affiliated companies

An encapsulated herbicide for weed control in Field Corn, Popcorn, Production Seed Corn, Silage Corn, Cotton, Peanut, Forage or Grain Sorghum (Milo), Soybean, and Sugar Beet.

Active Ingredient:

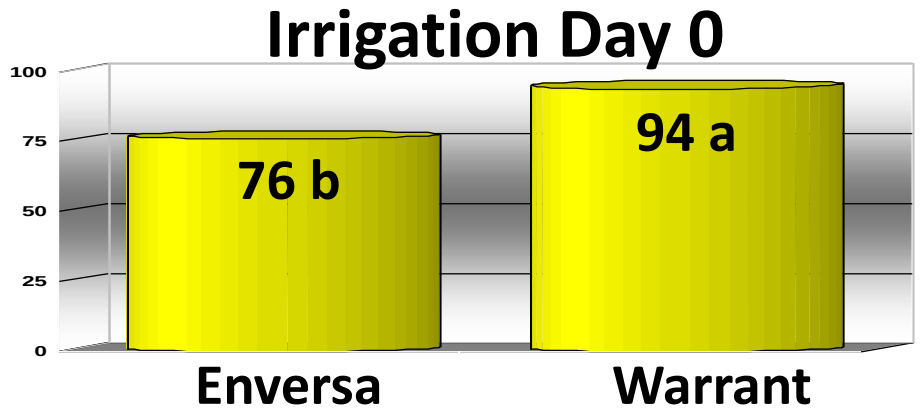
Acetochlor (2-chloro- N-ethoxymethyl-N-(2-ethyl-6-methylphenyl) acetamide)	33.0%
Other Ingredients	67.0%
Total	100.0%

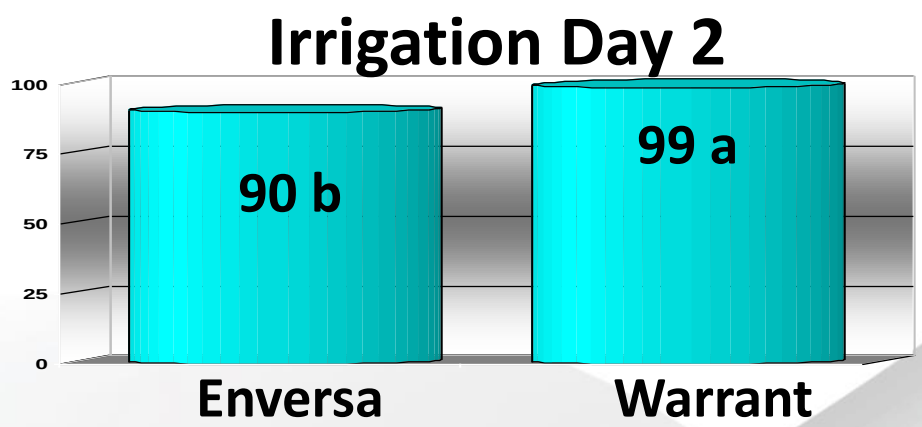
Contains 3.0 lb of active ingredient per gallon.

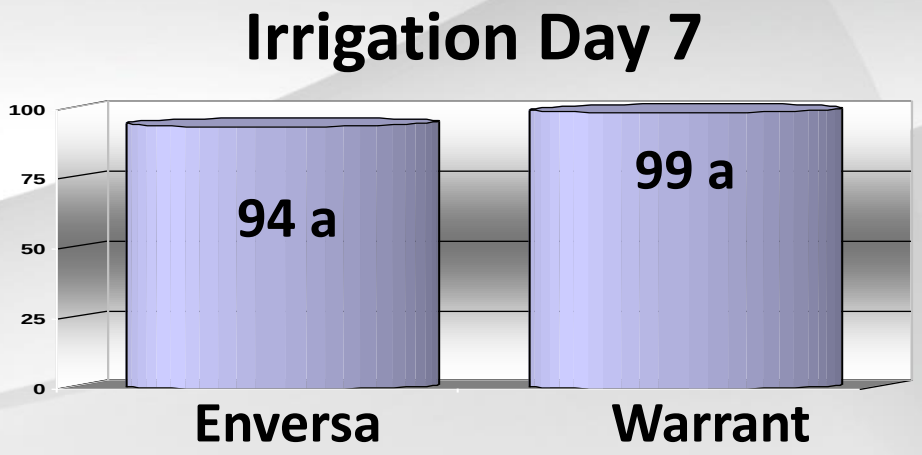
Not for Sale, Sale Into, Distribution and/or Use in Nassau and Suffolk Counties of New York State.

- **PRE rate range: 1.25 to 2 quarts; optimum is 1.5 qt/A**
- **POST 1.5 quarts: after cotton is completely emerged but before it reaches first bloom**
- **Do not exceed 2 qt per application or 4 qts for year.**
- **Research is seeing major differences from Warrant as influenced by “drying” time**

Palmer control with Enversa vs Warrant







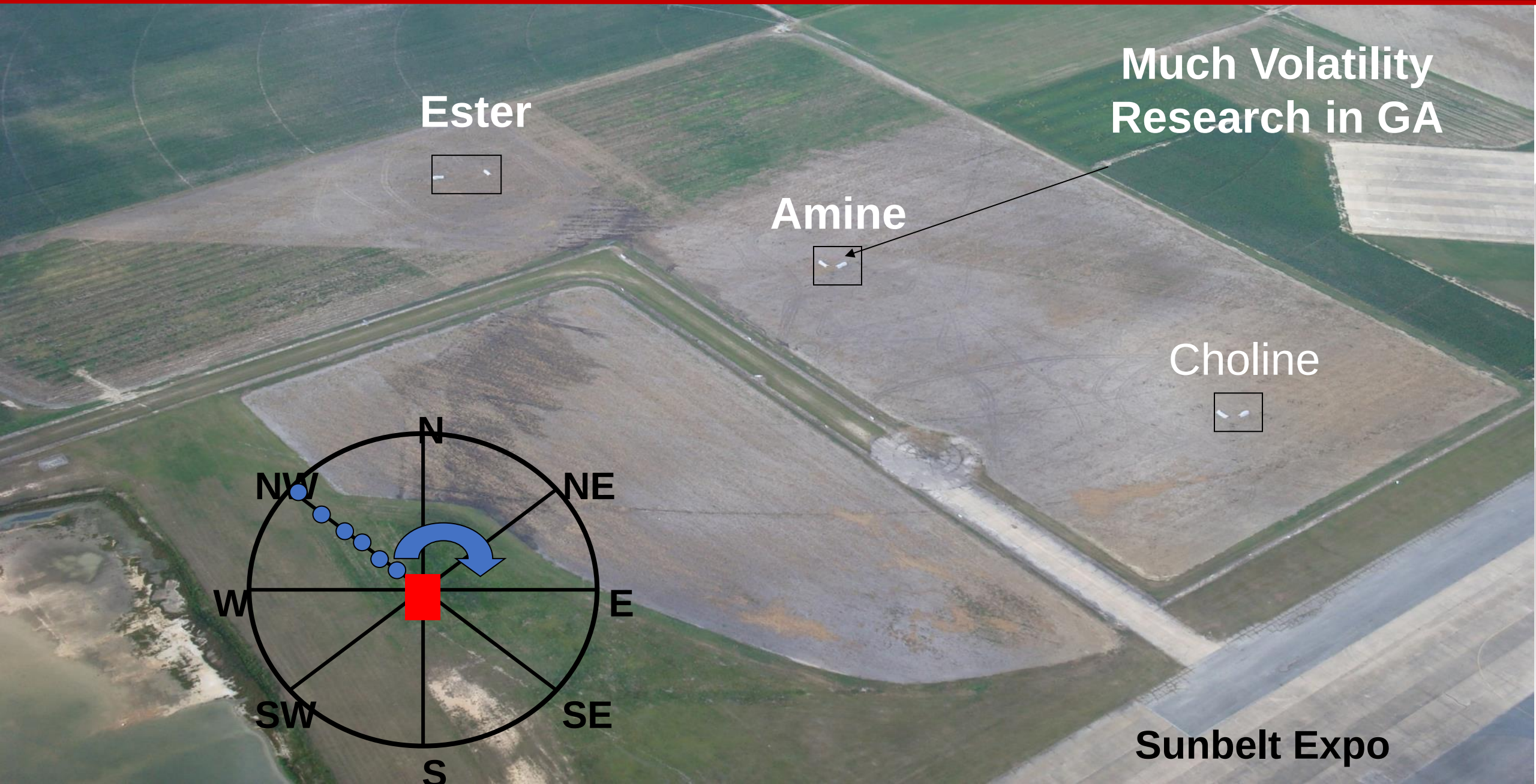
Rate for both products 48 oz/A; evaluation ~2 wk after irrigation

~~Alite 27~~….. Axant ISO Systems Are Strong!

Every other bed is treated with a tank mix partner with Axant

1. Must plant tolerant cultivar (Stoneville)
2. Little to no crop response
3. Residual at 2.5 to 3 oz/A is very good
4. Tank-mix needed, very broad spectrum

Comparing 2,4-D Formulations. #1 Drift Issue in 2024



Greatest Threats to Weed Management

Availability of economically effective pesticides is essential

Three mighty challenges

Economics on the farm

Regulatory actions

Herbicide resistance

Step 1: Herbicides Alone Are Not Sustainable

WEEDOUT POLLEN

#2: Don’t plant into emerged pigweed

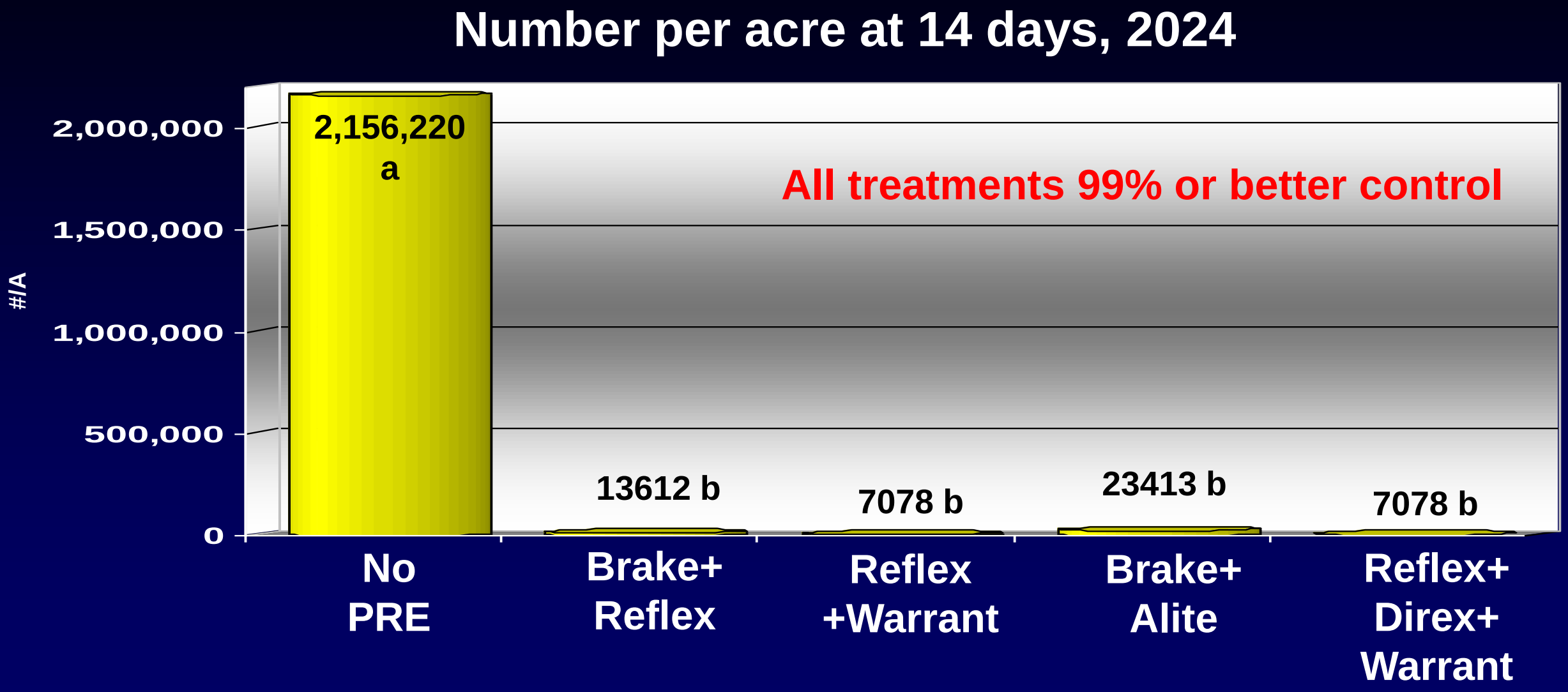
- **Planting operation covers plants with dirt …. *herbicides won’t kill***
- **Plant stressed from planters running…. *herbicide often don’t kill***
- **Less residual to the ground….*residual herbicides are key***

Stop and spray something like Gramoxone + Direx before running strip till rig and planting!

Step 3: At least two residuals effective on Palmer at plant!

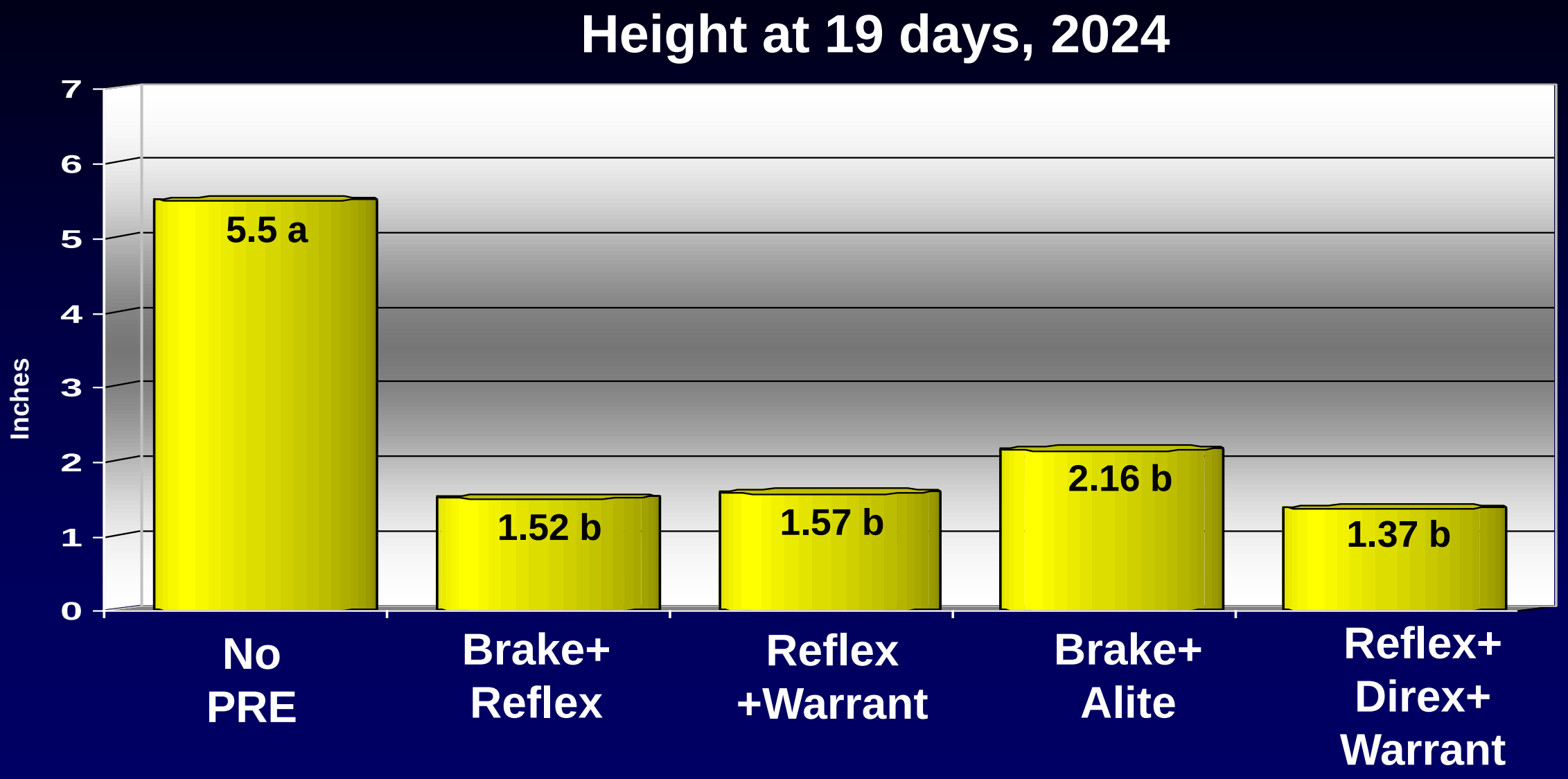
1. Reduces selection pressure – POST Herbicides!!!!!
2. Improves coverage POST herbicides
3. Removes early-season competition -- often higher yield

Residual herbicide influences Palmer population at POST1



C19-2024; Brake 16 oz, Direx 1 pt, Reflex 12 oz, Warrant 2 pt, Alite 2.5 oz

Residual herbicide influences Palmer height at POST1



C19-2024; Brake 16 oz, Direx 1 pt, Reflex 12 oz, Warrant 2 pt, Alite 2.5 oz

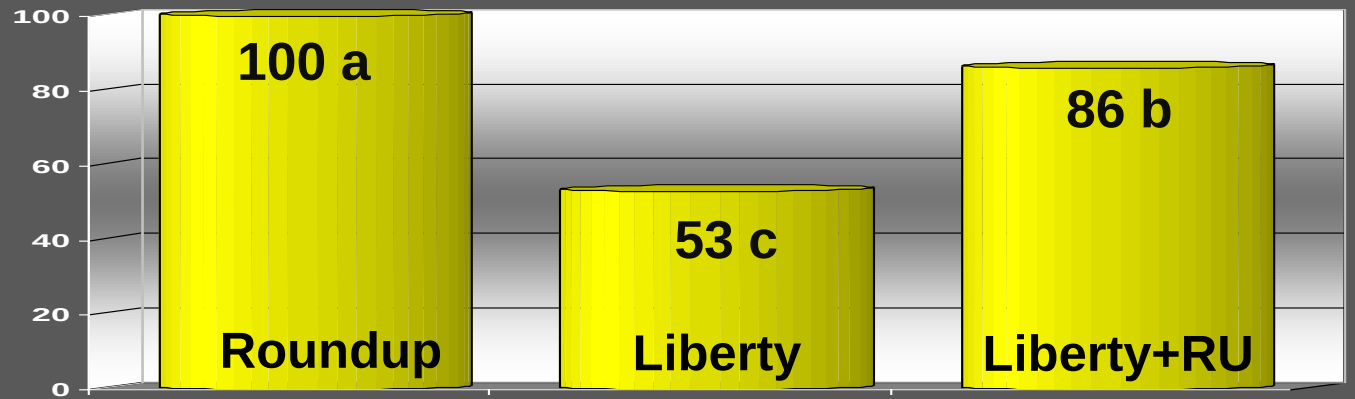
Step 4: Timely Postemergence Applications

- Decisions made on weed size?
- Decisions based on weed biology?
- Concept of overlapping residual (key)
- Avoid antagonism

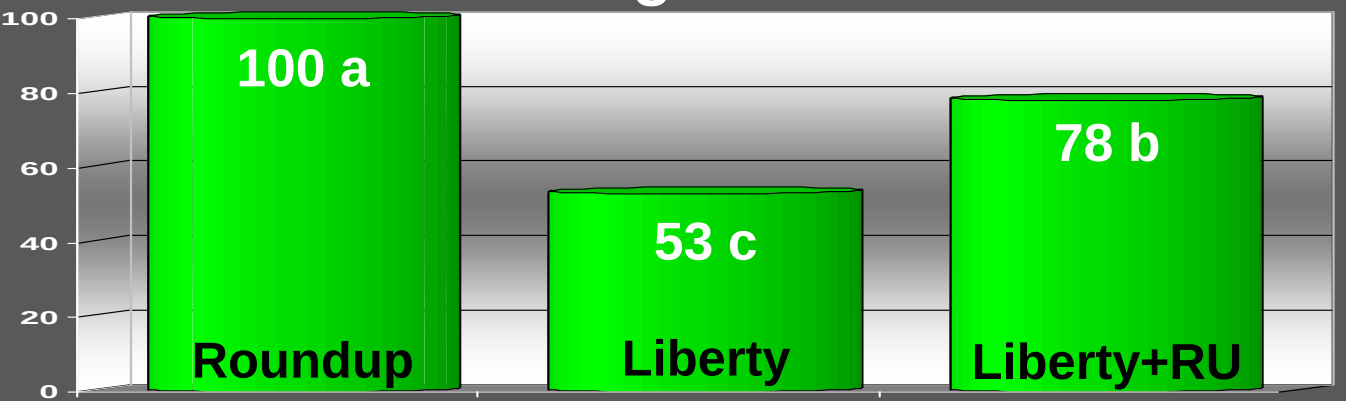
LIBERTY OR LIBERTY + ROUNDUP SYSTEMS	
POST 1 ~15-17 d after PRE (assuming PRE is activated)	**POST 2 ~ 15-17 d after POST 1 (before 9-leaf cotton)**
Liberty + Dual Mag, Outlook, Warrant, or Staple *or* Liberty + Roundup + Dual Mag., Outlook, or Warrant*	Liberty + Dual Mag., Outlook, or Warrant *Or if no pigweed is up* Roundup + Dual Mag., Outlook, or Warrant
*Mixtures of Liberty + Roundup + residual often cause 25+% injury. Mixing Liberty with Roundup may reduce grass control compared to Roundup alone, maximize Roundup rate.	

Weed Response to Roundup, Liberty, and Mixtures.

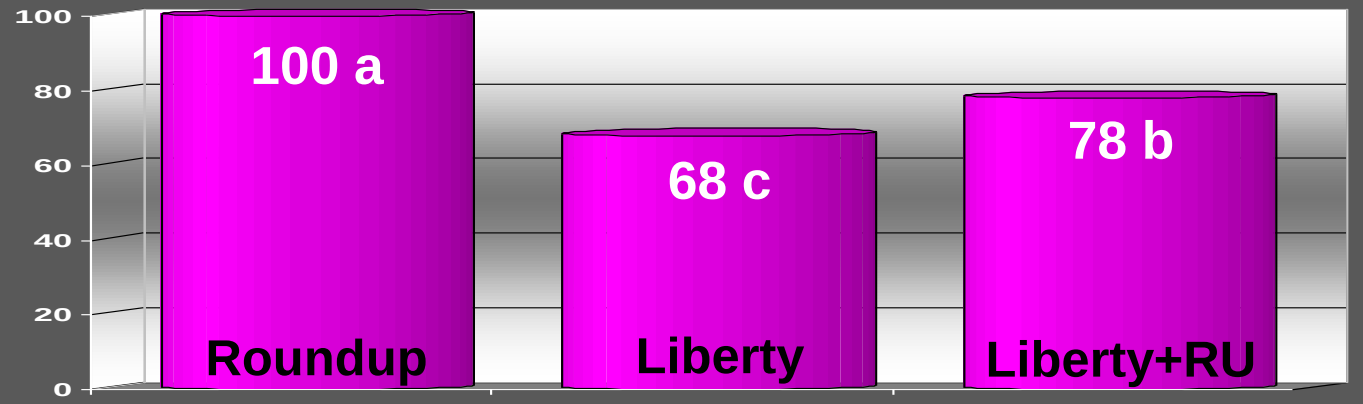
% Large Crabgrass Control



% Goosegrass Control

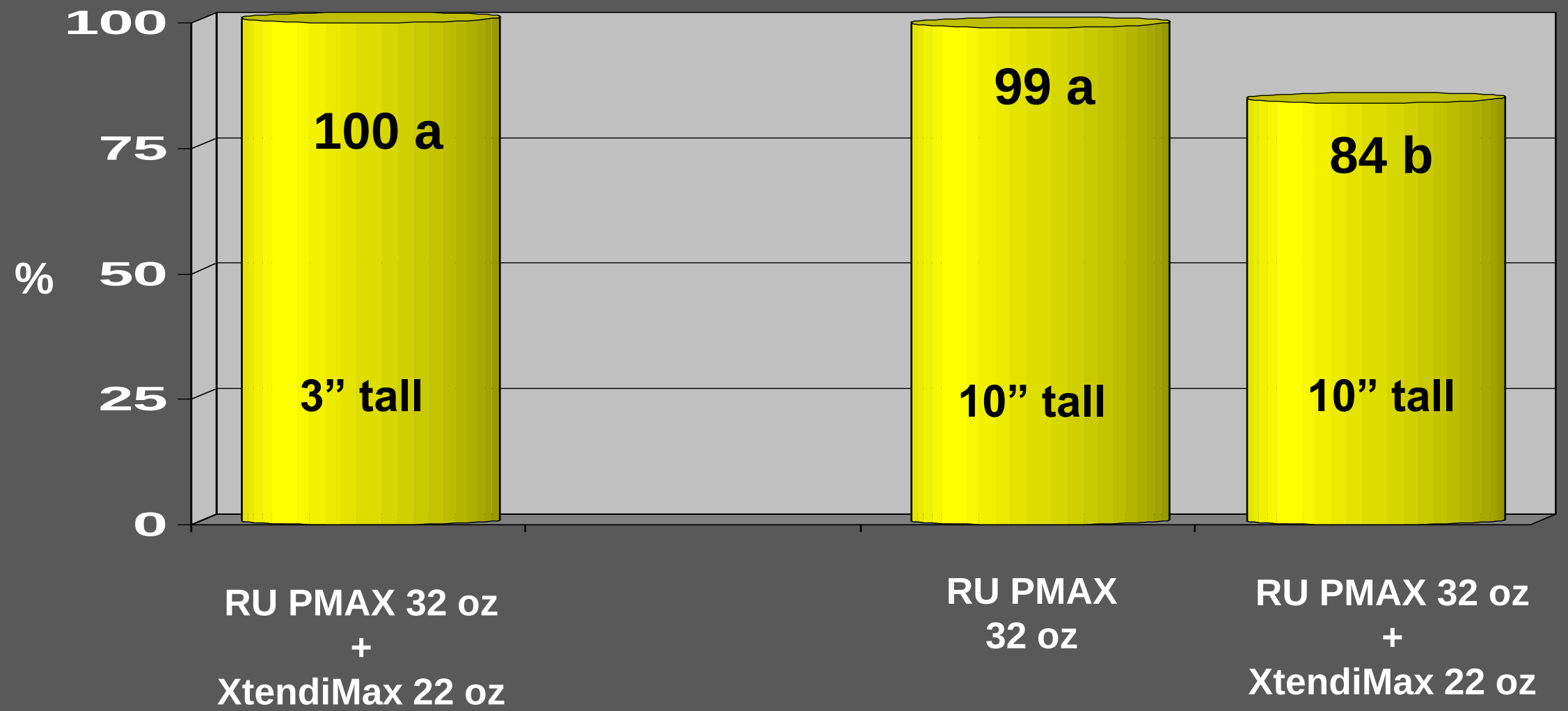


% Pink Purslane Control



Roundup PMAX 3 = full rate; Liberty = full rate.
Goosegrass 6”; purslane 15”, crabgrass 8”. Veg 5-2024.

Texas Millet Control by RU as Influenced by Dicamba



Limiting antagonism from POST tank mixtures

- **Smaller weed sizes, usually less than few inches**
- **Residual herbicides reducing density and size**
- **Full herbicide rates**
- **Coverage essential**
- **Sequential applications may make you money, especially with goosegrass**

Layby is a GAME CHANGER for weed control!!!

RU + Direx + Envoke
Direx + MSMA + Envoke

UNIVERSITY OF GEORGIA
EXTENSION

The Endangered Species Act (ESA)

- ESA implemented in 1973
- Provides framework to conserve & protect endangered & threatened species <u>& their habitats</u>!

Grey Wolf

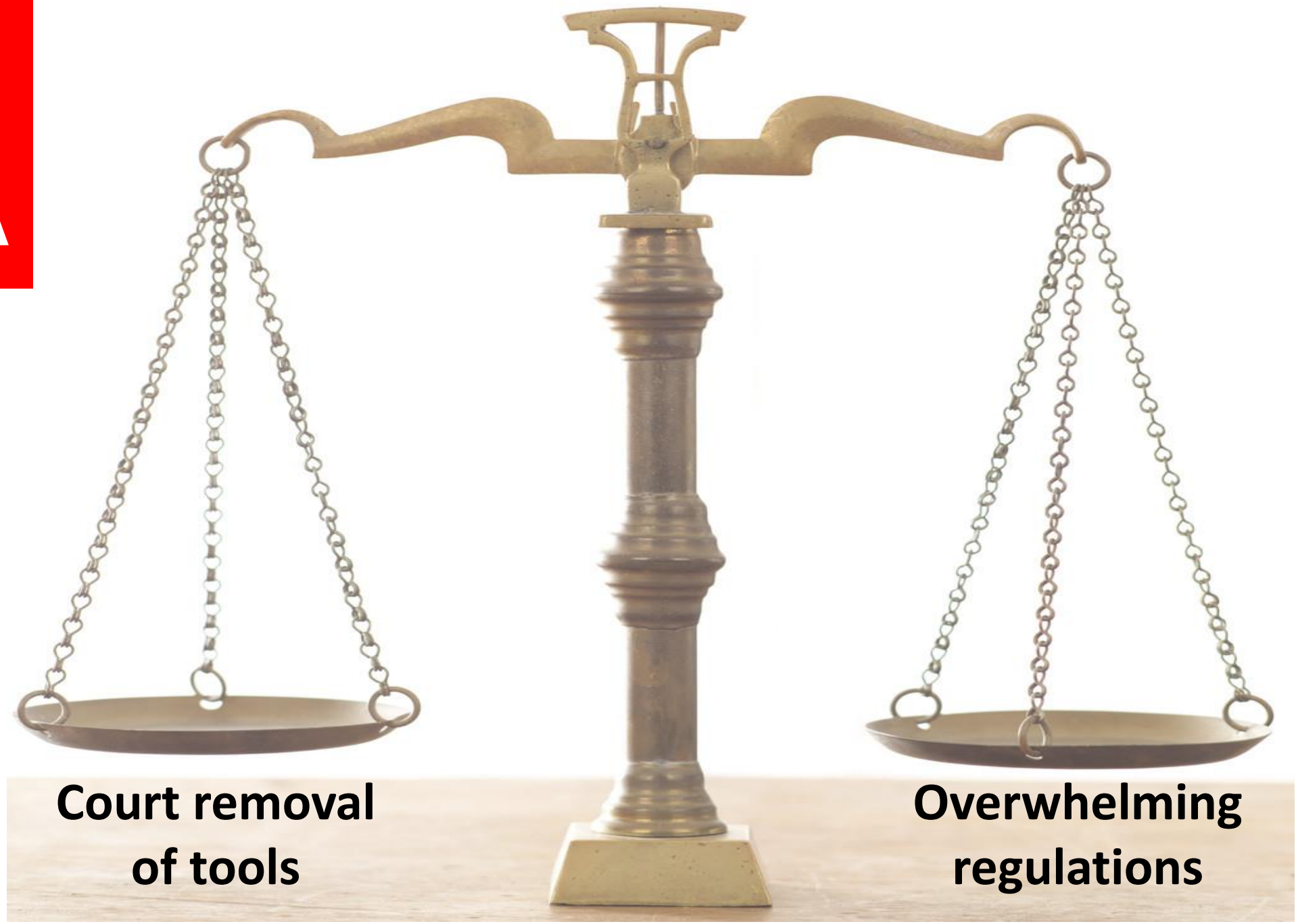
Whorled Sunflower

Black-footed Ferret

Wood Bison

Total of ~1600 species + 900 critical habitats!!!

The Dilemma with ESA



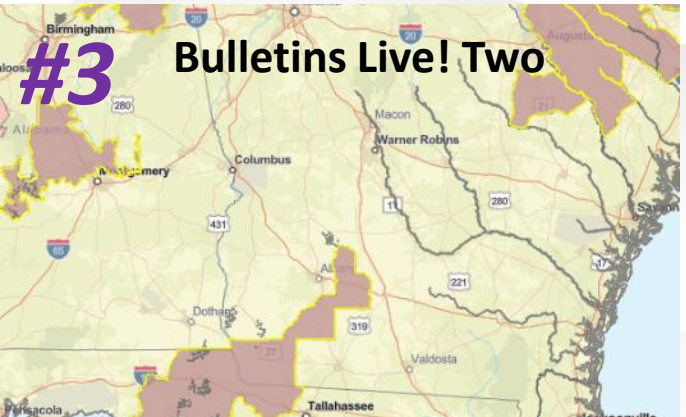
We Have Time and Can Simplify for Farmers

Advisors

- Extension
- Consultants
- Retailers
- Manufacturers
- Department of Agriculture

UNIVERSITY OF GEORGIA EXTENSION

Must Understand To Get Started



1. Runoff: **each pesticide will be assigned a value of potential of product to runoff and damage species or habitat (0-9 points).**

2. Particle Drift: **each pesticide will be given a buffer drift requirement as influenced by application method (ground, airblast, airplane, etc.)**

3. BLT: **Website identifies if your field is in a pesticide use limitation area (PULA).**

It is Very Complicated, Lets Do it Together

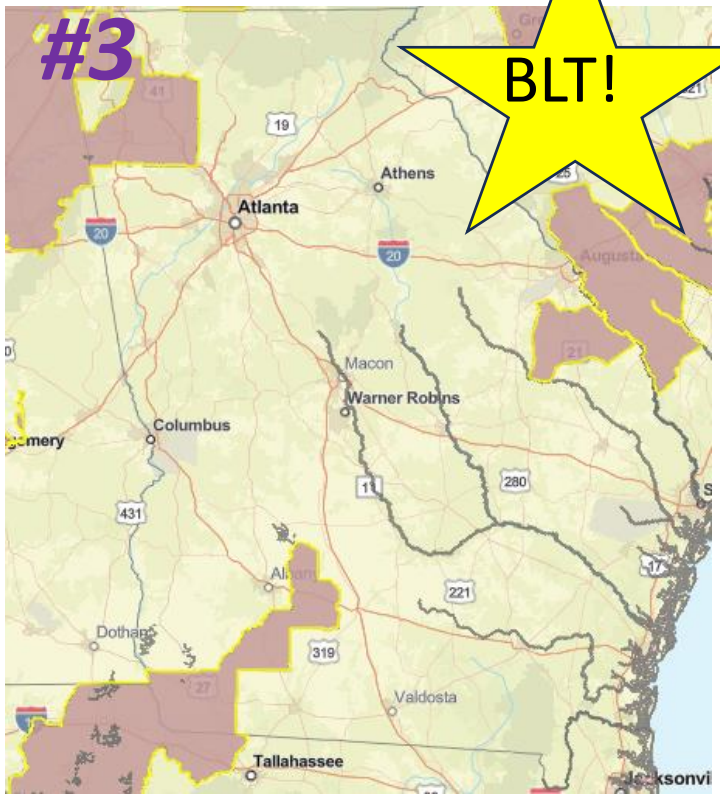
#1 Runoff

Real. Life. Solutions.™ UTEXTENSION INSTITUTE OF AGRICULTURE

#2 Particle drift

#3

BLT!

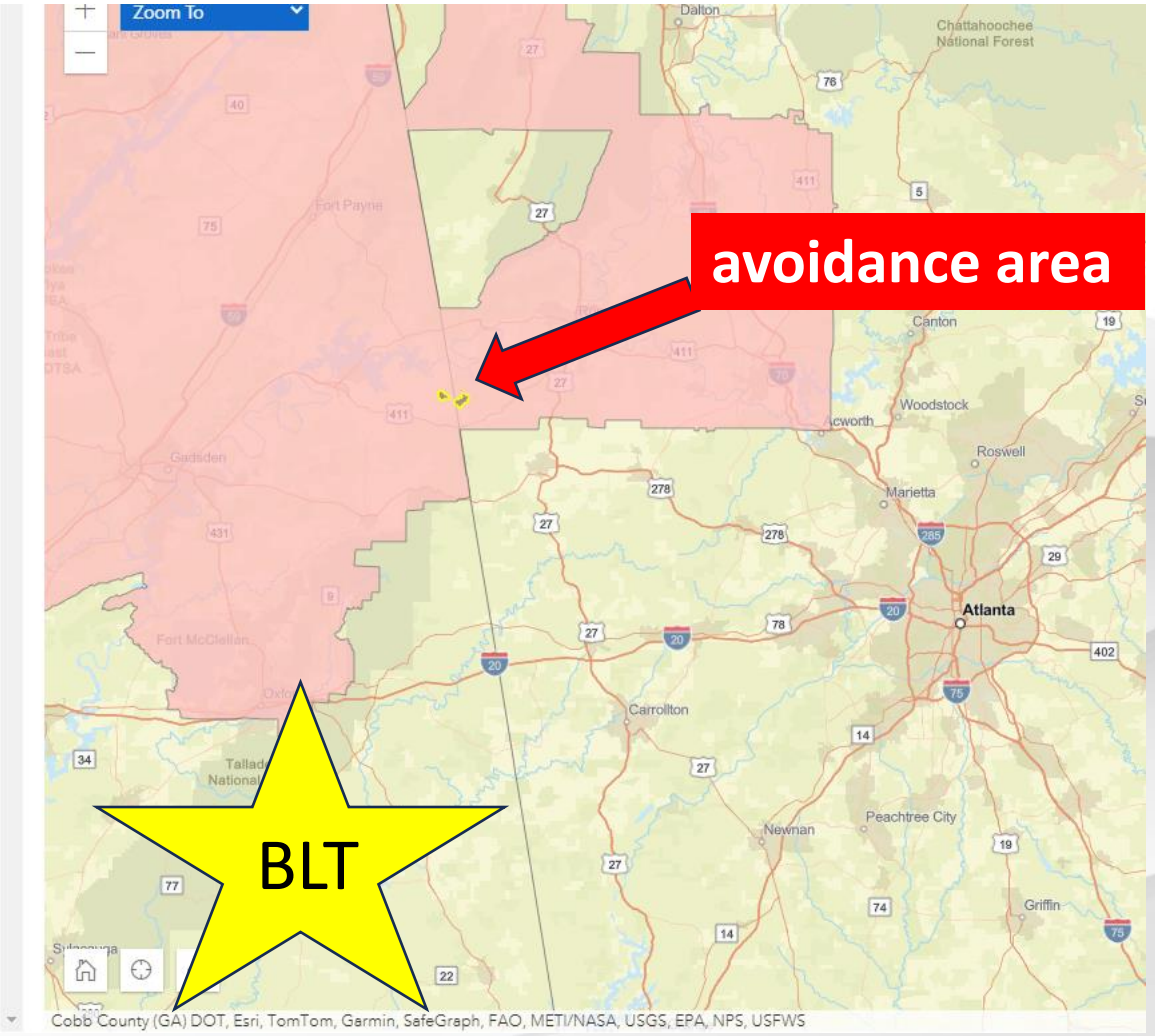


each field

each field

Pesticide Use Limitation Area
***Increase points for runoff**
***Increase drift buffers**
***Remove tool**

New Liberty Ultra Label - ESA Restrictions



Whorled Sunflower

Liberty® ULTRA
Herbicide – Powered by Glu-L™ Technology

Extension Approach To Overcome Herbicide Strategy!

#1 Runoff

Real. Life. Solutions.™ UF EXTENSION INSTITUTE OF AGRICULTURE

#2 Particle drift

Objective 1: **Get you to 9 points for all fields to avoid runoff mitigations.**

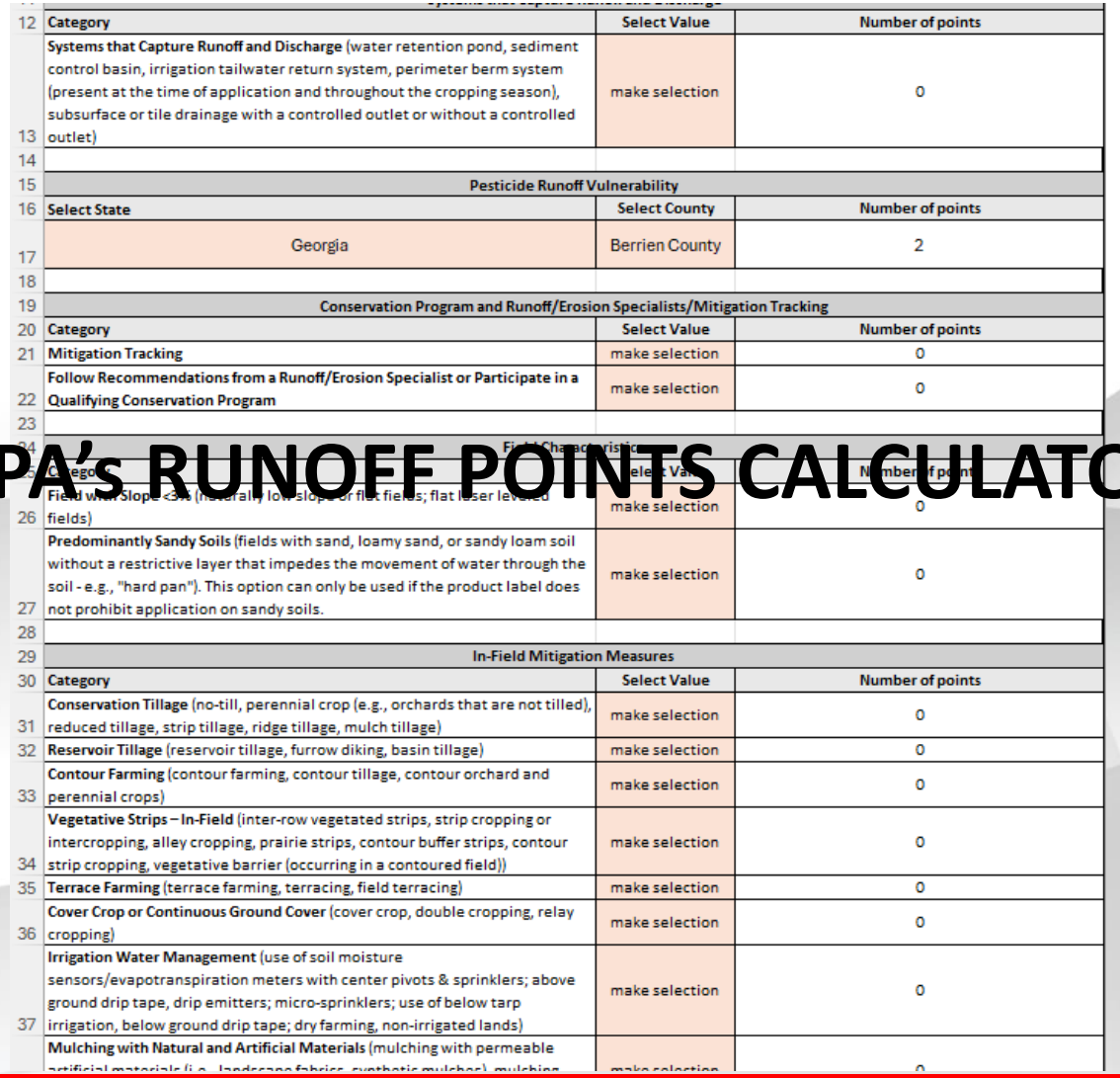
Objective 2: **Help you make sure you can take 230 buffer down to near 0.**

Objective 3: **You help us understand any barriers to meet these objectives.**

Keep in mind, we are hopeful most products require 6 points or less but there will be important exceptions!

Information Available To Help = EPA Resource Toolbox?

1. Mitigation Menu
2. Mitigation Calculator Guide
3. <u>Calculator is Key</u>
   - Advisor……KEY
   - Farmer…not so much



	Category	Select Value	Number of points
12			
13	**Systems that Capture Runoff and Discharge** (water retention pond, sediment control basin, irrigation tailwater return system, perimeter berm system (present at the time of application and throughout the cropping season), subsurface or tile drainage with a controlled outlet or without a controlled outlet)	make selection	0
14			
15	**Pesticide Runoff Vulnerability**		
16	**Select State**	**Select County**	**Number of points**
17	Georgia	Berrien County	2
18			
19	**Conservation Program and Runoff/Erosion Specialists/Mitigation Tracking**		
20	**Category**	**Select Value**	**Number of points**
21	**Mitigation Tracking**	make selection	0
22	**Follow Recommendations from a Runoff/Erosion Specialist or Participate in a Qualifying Conservation Program**	make selection	0
23			
24	**Field Characteristics**		
25	**Category**	**Select Value**	**Number of points**
26	**Field with Slope <3%** (naturally low-sloped or flat fields; flat laser leveled fields)	make selection	0
27	**Predominantly Sandy Soils** (fields with sand, loamy sand, or sandy loam soil without a restrictive layer that impedes the movement of water through the soil - e.g., "hard pan"). This option can only be used if the product label does not prohibit application on sandy soils.	make selection	0
28			
29	**In-Field Mitigation Measures**		
30	**Category**	**Select Value**	**Number of points**
31	**Conservation Tillage** (no-till, perennial crop (e.g., orchards that are not tilled), reduced tillage, strip tillage, ridge tillage, mulch tillage)	make selection	0
32	**Reservoir Tillage** (reservoir tillage, furrow diking, basin tillage)	make selection	0
33	**Contour Farming** (contour farming, contour tillage, contour orchard and perennial crops)	make selection	0
34	**Vegetative Strips – In-Field** (inter-row vegetated strips, strip cropping or intercropping, alley cropping, prairie strips, contour buffer strips, contour strip cropping, vegetative barrier (occurring in a contoured field))	make selection	0
35	**Terrace Farming** (terrace farming, terracing, field terracing)	make selection	0
36	**Cover Crop or Continuous Ground Cover** (cover crop, double cropping, relay cropping)	make selection	0
37	**Irrigation Water Management** (use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers; above ground drip tape, drip emitters; micro-sprinklers; use of below tarp irrigation, below ground drip tape; dry farming, non-irrigated lands)	make selection	0
	Mulching with Natural and Artificial Materials (mulching with permeable artificial materials (i.e., landscape fabrics, synthetic mulches), mulching	make selection	0

EPA's RUNOFF POINTS CALCULATOR

https://www.epa.gov/pesticides/mitigation-menu
https://www.epa.gov/endangered-species/pesticides-and-endangered-species-educational-resources-toolbox

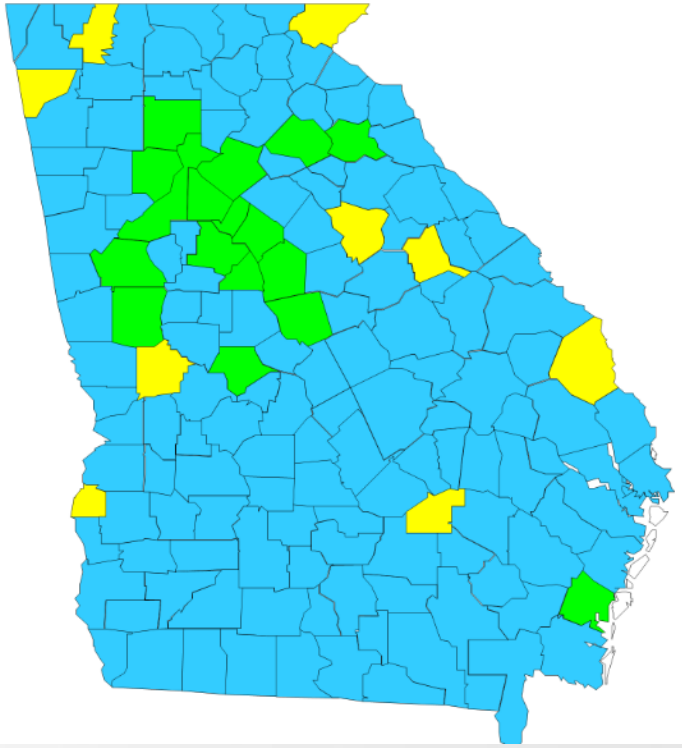
Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	
Field with ≤ 3% slope	
Sand, loamy sand or sandy loam (no hard pan)	
Cover crops (no tillage)	
Strip-till production	
Non-irrigated lands	
Incorporation (center pivot activation)	
Grass waterway	
Terraces	
Field border of vegetation (20 ft = 1 pt, etc…)	
Mitigation tracking	

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2

Runoff & Erosion: Mitigation Relief Points



0 points = yellow

2 points = blue

3 points = green

UNIVERSITY OF GEORGIA EXTENSION

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2

Field Slope < 3%

Land leveling, laser leveling, land smoothing are approved

2 points

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2
Sand, loamy sand or sandy loam (no hard pan)	2

Predominately Sandy Soil

50% sand, loamy sand, or sandy loam without restrictive layer that impedes movement of water into the soil

2 points

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2
Sand, loamy sand or sandy loam (no hard pan)	2
Cover crops (no tillage)	3

Cover Crop Options – Points

Tilled cover: terminated using tillage. **POINTS = 1**

Short duration cover: planted in fall but no active growth in spring or planted in spring. **POINTS = 2**

Long duration cover: planted in fall growing into spring, vegetation on field year around. **POINTS = 3**

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2
Sand, loamy sand or sandy loam (no hard pan)	2
Cover crops	3
Strip-till production	2

Strip-till, Mulch Till, No Till: Must have 30% residue on surface

Strip Till: Soil undisturbed except for strips up to 1/3rd the row width. Disc openers, coulters, row cleaners, in-row chisel can be used; cultivation emergency weed control. **POINTS = 2**

Mulch Till: 100% of soil surface disturbed but uniform layer or residue. **POINTS = 2**

No Till: Disc openers, coulters, and row cleaners but no tillage. **POINTS = 3**

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2
Sand, loamy sand or sandy loam (no hard pan)	2
Cover crops	3
Strip-till production	2
Non-irrigated lands	0
Incorporation (center pivot or tillage)	1

Non-Irrigated Lands and Incorporation

Non-Irrigated Lands: must not be irrigation on the land during year. **POINTS = 3**

Incorporation: For products not requiring incorporation, irrigation within 24 hrs or tillage moving herbicide to depth of 1" before first runoff. **POINTS = 1**

Agronomic Crop in Georgia

Mitigation	Points
	2
	2
	2
	3
	2
	0
	1
Grass waterway	0
Terrace	0

Grass Waterway & Terraces

Waterway: Downslope of application area; regularly maintained, vegetative cover, and outlet stability; inspected regularly; no width defined. **2 Points**

Terraces: Stair-stepping technique creating a flat crop areas having a 3% slope or less. **2 Points**

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	
Terraces	
Field border of vegetation	0
Mitigation tracking	1

Field Border and Mitigation Tracking

Field Border: strip of permanent vegetation established at the edge of the field (downslope). Maintain to eliminate or significantly reduce flow.

20-30 feet: 1 Point

30-60 feet: 2 Points

>60 feet: 3 Points

Mitigation tracking: Document your mitigations: 1 Point

Agronomic Crop in Georgia

Mitigation	Points
Mitigation relief points	2
Field with ≤ 3% slope	2
Sand, loamy sand or sandy loam (no hard pan)	2
Cover crops	3
Strip-till production	2
Non-irrigated lands	0
Incorporation (center pivot or tillage)	1
Grass waterway	0
Terraces	0
Field border of vegetation	0
Mitigation tracking	1

Do you have at least 9 points?

Other Options if Needed – Agronomic Crop

1. Exempt – managed areas 1000 foot down gradient
2. Expert (1 point) or conservation program (2 points)
3. Water sensors with center pivot = 2 points
4. Mitigation measures from multiple categories = 1 pt

Trying to avoid

1. Rate of product applied (annual max)
2. Percent of field treated (new technologies)

Trying even harder to avoid

Culpepper Farms: Fields 1- 36

Mitigation	Points
Mitigation relief points – Northampton County	2
Field with less 3% slope	2
Cover crops	3
Strip till	2
Dry Farming	3
Grass waterways	2
Multiple categories of mitigation	1
Mitigation tracking	1
	16

Culpepper Farms: Fields 37-40

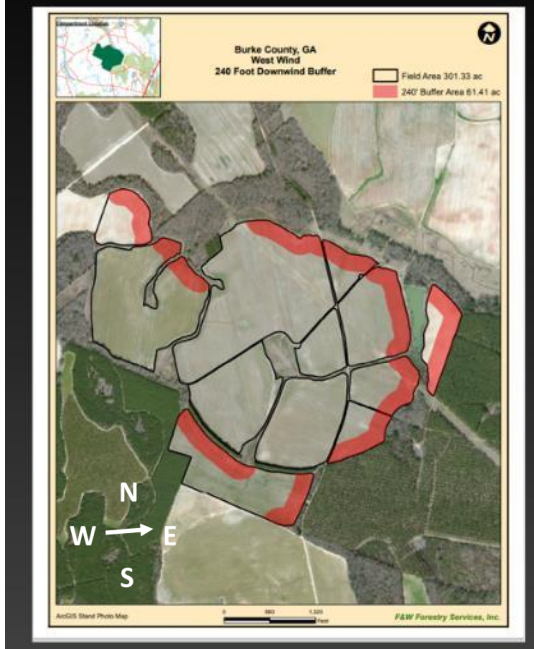
Mitigation	Points
Mitigation relief points – Northampton County	2
Field with less 3% slope	2
Cover crops	3
Strip till	2
Dry farming	3
Mitigation tracking	1

13

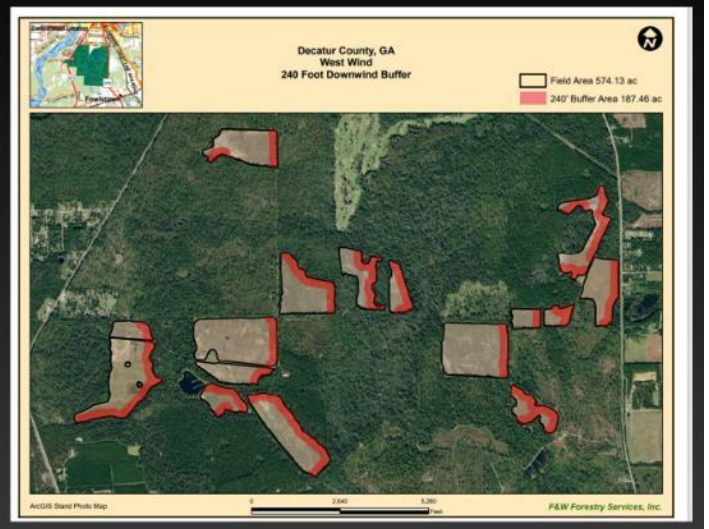
A few fields do not have grass waterways so when I take that away I lose multiple category mitigation as well

Impact From In-Field Drift Buffers*

Impact from 240-ft Downwind Buffer



Best case = lose 20.4%



Worst case = lose 32.6%

*Calculation assumes west wind.

EPA DETERMINED WORST CASE FOR GROUND RIG WILL BE <u>230 FEET DOWNWIND</u>

Calculations are BEFORE WE GET CREATIVE using the flexibility offered by the final herbicide strategy

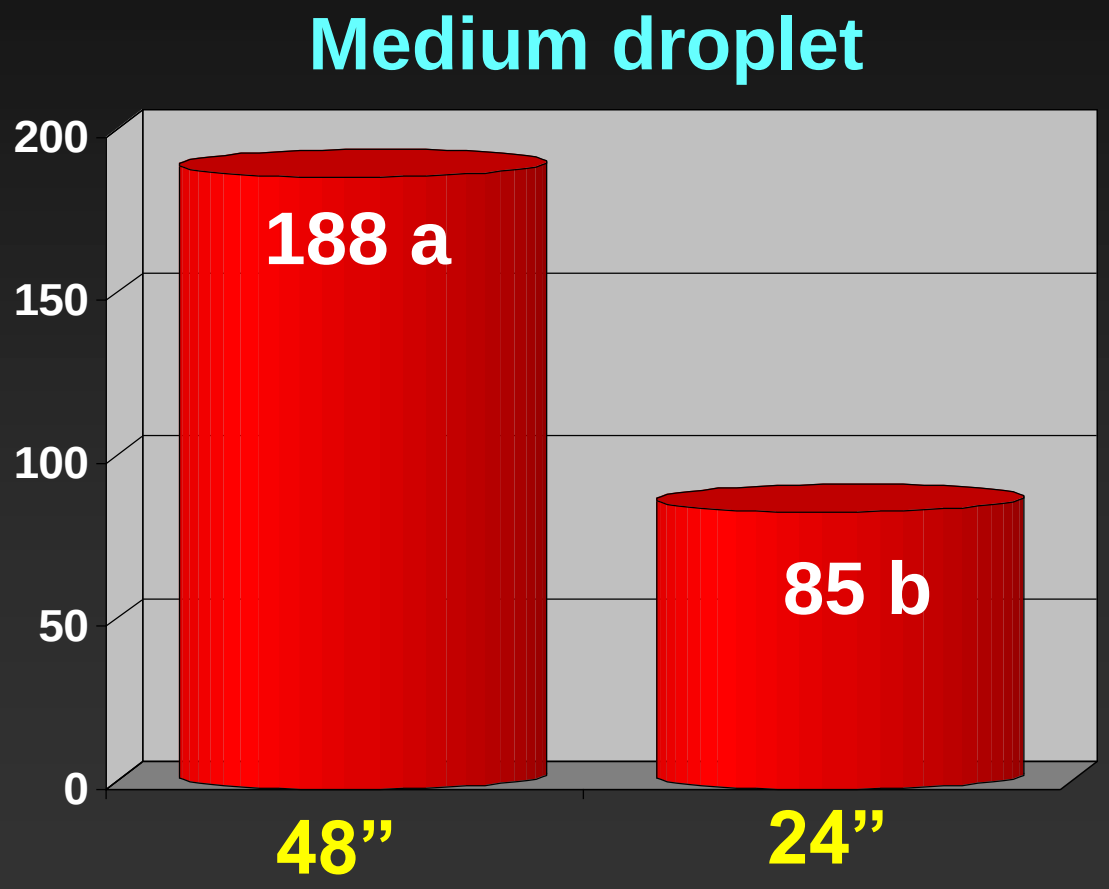
* As interpreted in the Draft Herbicide Strategy

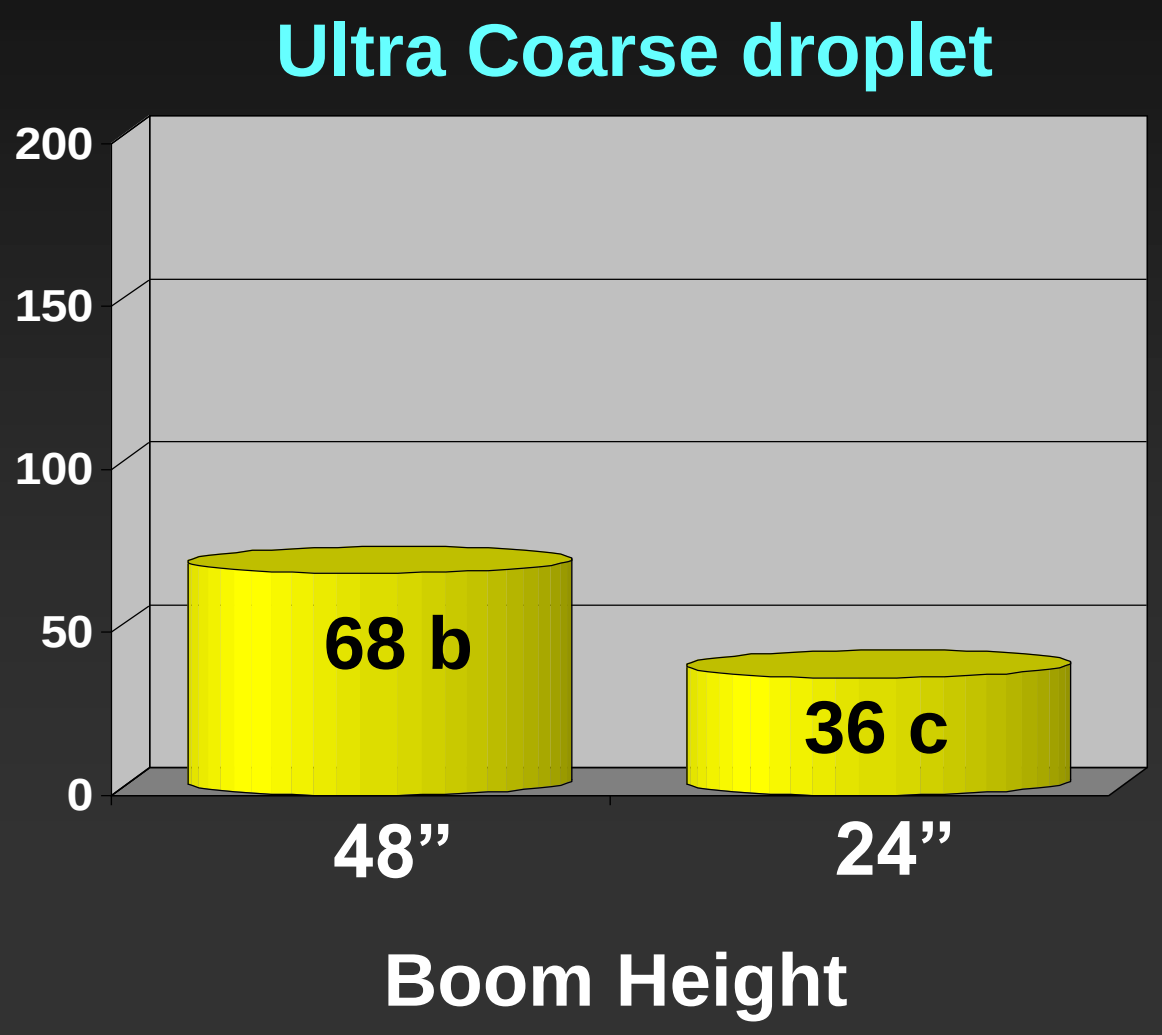
Spray Drift Ground Application– (0 to 230 feet)

Mitigation Measures	% Reduction
Low boom 24 inch above target, coarse drops	75%
High boom, coarse drops	65%
Low boom, fine to medium	40%

Low boom, coarse drops = 75% or 58 feet for worst case

Boom Height and Spray Droplet Size Impacts Pesticide Drift Distance (feet) to COTTON





Spray Drift Ground Application– (0 to 230 feet)

Mitigation Measures	% Reduction
Low boom, coarse drops	**75%**
Relative humidity ≥ 60%	**10%**
DRA as influenced by droplet	**15-30%**

Low boom, coarse drops, RH = 75 + 15 + 10 = 100% or 0 feet

UNIVERSITY OF GEORGIA EXTENSION

Additional Methods to Reduce Buffer

Broadcast Hooded: 50%

Layby Rig: 50%

Downwind Measures	% Reduction
Rate of product (single ap)	% below max
Windbreak – 4 foot wide, height of boom	50%
Windbreak – 8 foot wide, 2X boom height	75%
Forest/shrubland ≥ 60 ft, 2X boom height	100%

Hooded: 75%

Managed Areas Adjacent To Treated Field Downwind Can Represent Spray Drift Buffers

Approved Out of Field Buffers Downwind - Relevant to Georgia*
Ag fields
Roads, grassy areas, bareground
Field borders, hedgerows, CRP
On-farm contained irrigation water sources (irrigation ponds)

UNIVERSITY OF GEORGIA EXTENSION

*More options are available through herbicide strategy!

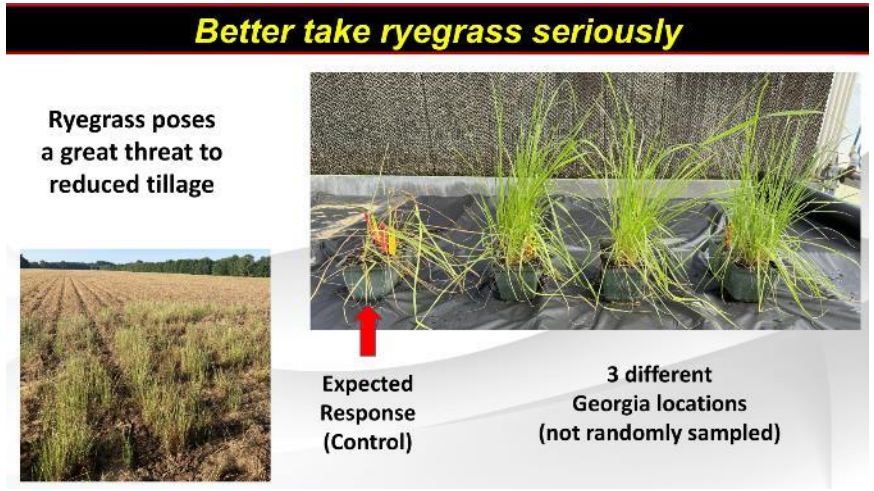
Who is Responsible for Ensuring Compliance

GDA GEORGIA DEPARTMENT OF AGRICULTURE PLANT INDUSTRY

1. Department of Ag is responsible
2. Occasional random inspection is possible
3. <u>Most likely when you get called in for a drift complaint</u>

UNIVERSITY OF GEORGIA EXTENSION

Other Critical Topics – Get The Handout



HANDOUTS:

COTTON

ESA

Wheat

Cole Crops

Greens

Squash

Sweet Potato

Watermelon

UGA EXTENSION – ESA AFTER TRAINING SURVEY, WINTER 2025

HOME COUNTY _____

WHO ARE YOU: Farmer Consultant Dealer Distributor Pesticide Manufacturer Other _____

RUNOFF:

1. What percent of your fields can you achieve 3 points _____
2. What percent of your fields can you achieve 6 points _____
3. What percent of your fields can you achieve 9 points _____

4. Are there practices you use to reduce pesticide movement from the field that were not discussed _____

SPRAY DRIFT BUFFERS (HERBICIDES – GROUND APPLICATION):

1. With mitigation practices available to reduce spray buffers, what % of your fields would be negatively impacted _____
2. If you do have fields where you are concerned, can you help us understand why you do not feel you can eliminate the buffers _____

3. Do you routinely add in DRA's (Drift Reduction Adjuvants) with your general herbicide sprays: yes no

BULLENTINS LIVE! TWO

1. Are you comfortable visiting this web site or prefer Extension shares periodic updates: Yourself or Extension

Please Fill Out Survey

Science, Cooperation, & Communication

Farmers

THE UNIVERSITY OF GEORGIA COOPERATIVE EXTENSION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

GDA GEORGIA DEPARTMENT OF AGRICULTURE PLANT INDUSTRY

Industry Partners

U.S. FISH & WILDLIFE SERVICE — DEPARTMENT OF THE INTERIOR

USDA United States Department of Agriculture

The IR-4 Project

WSSA WEED SCIENCE SOCIETY OF AMERICA www.wssa.net

cotton Cotton Incorporated