

Why Residual Herbicides Are So Important?



Todd Baughman – Weed Scientist, Oklahoma State University
E-Mail: todd.baughman@okstate.edu Twitter: @oSu_WeedScience



AGRICULTURE

“What will the cost of your herbicide program be?”

“If you can afford it will you be able to get it?”



Residuals “How Important – You tell Me”

June 8, 2021



June 22, 2021

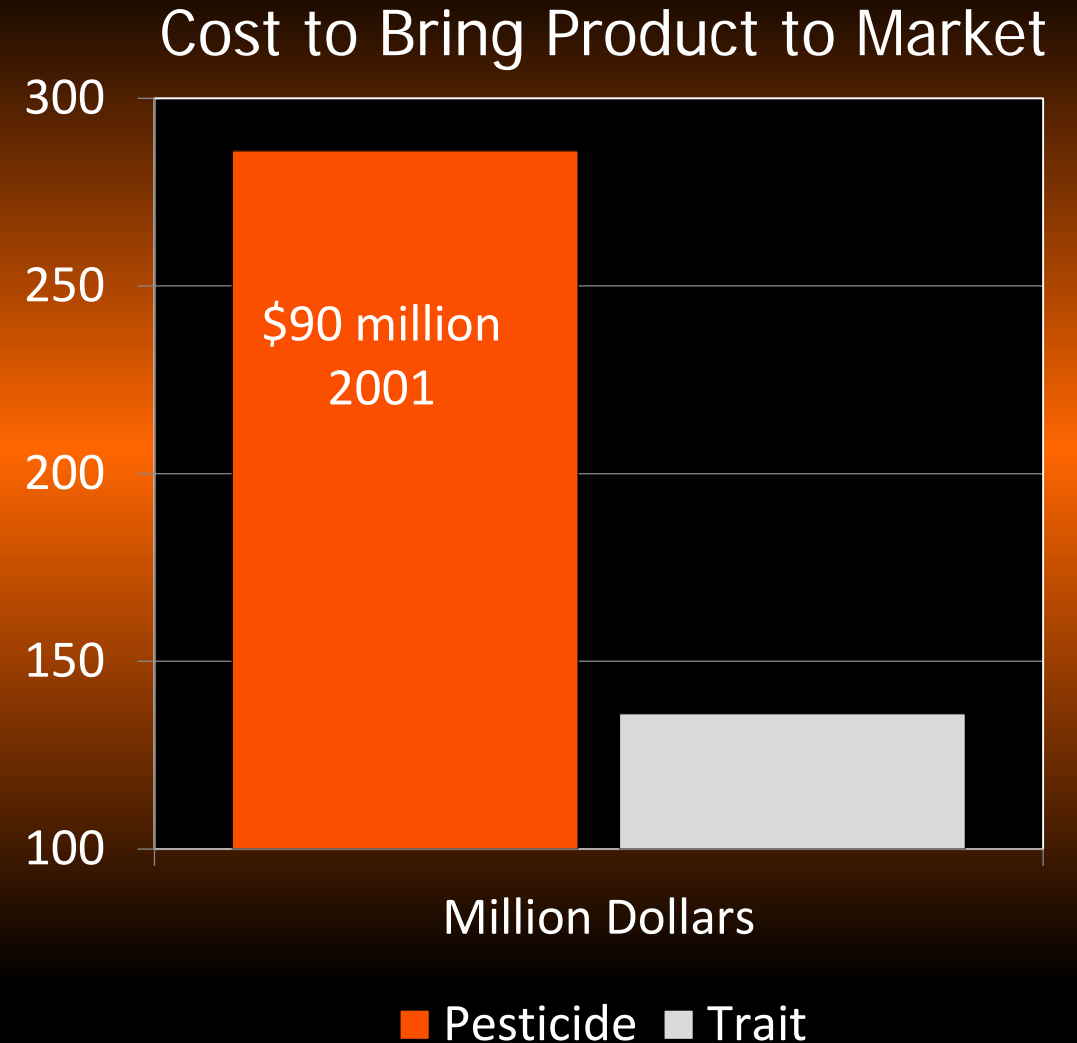


“We have to protect what tools we currently have”



Reason to Protect New Technology

- 1 in 140,000 tested chemicals will reach the market (Purdue University)
- Crop protection product 11 years of testing in 2014 (8 years – 1985)
- Biotech Trait avg 13 years of testing 1988-2015 (10 years 1988-1997)



Reason to Protect New Technology

- HPPD Inhibitors were the last new mode of action discovered and brought to market
- Discovered in late '70's early '80's
- Corn, Sorghum, Wheat, Rice, Sugarcane
- Biotech Traits being developed in Cotton & Soybean

Reason to Protect New Technology

Cotton only herbicides for in-season use:

MSMA (1960's)

Caparol (1964)

Cotoran (1974)

Staple (1996)

Brake FX (2016/1986)

Reason to Protect New Technology

- Major Herbicide Actives:

- Glyphosate: Corn, Cotton, Soybean
- Glufosinate: Corn, Cotton, Soybean
- Dicamba: Corn, Cotton, Soybean, Grain Sorghum, Small Grains
- 2,4-D: Corn, Cotton, Soybean, Grain Sorghum, Small Grains
- HPPD's: Corn, Soybean, Grain Sorghum, Small Grains, Cotton
- POST Grass: Cotton, Soybean, Grain Sorghum, Small Grains, Peanut
- PPO's: Corn, Cotton, Soybean, Peanut
- Chloroacetamide's: Corn, Cotton, Soybean, Grain Sorghum, Small Grains, Peanut
- ALS's: Corn, Cotton, Soybean, Grain Sorghum, Small Grains, Peanut
- Triazine's: Corn, Soybean, Grain Sorghum, Small Grains

Why Residuals Important?

Weed Competition

Weeds can reduce yield by - 1% per day



Start Clean – Stay Clean



Why Residuals Important Weed Competition

Crop yields are protected if weeds are controlled before reaching 4-8" height

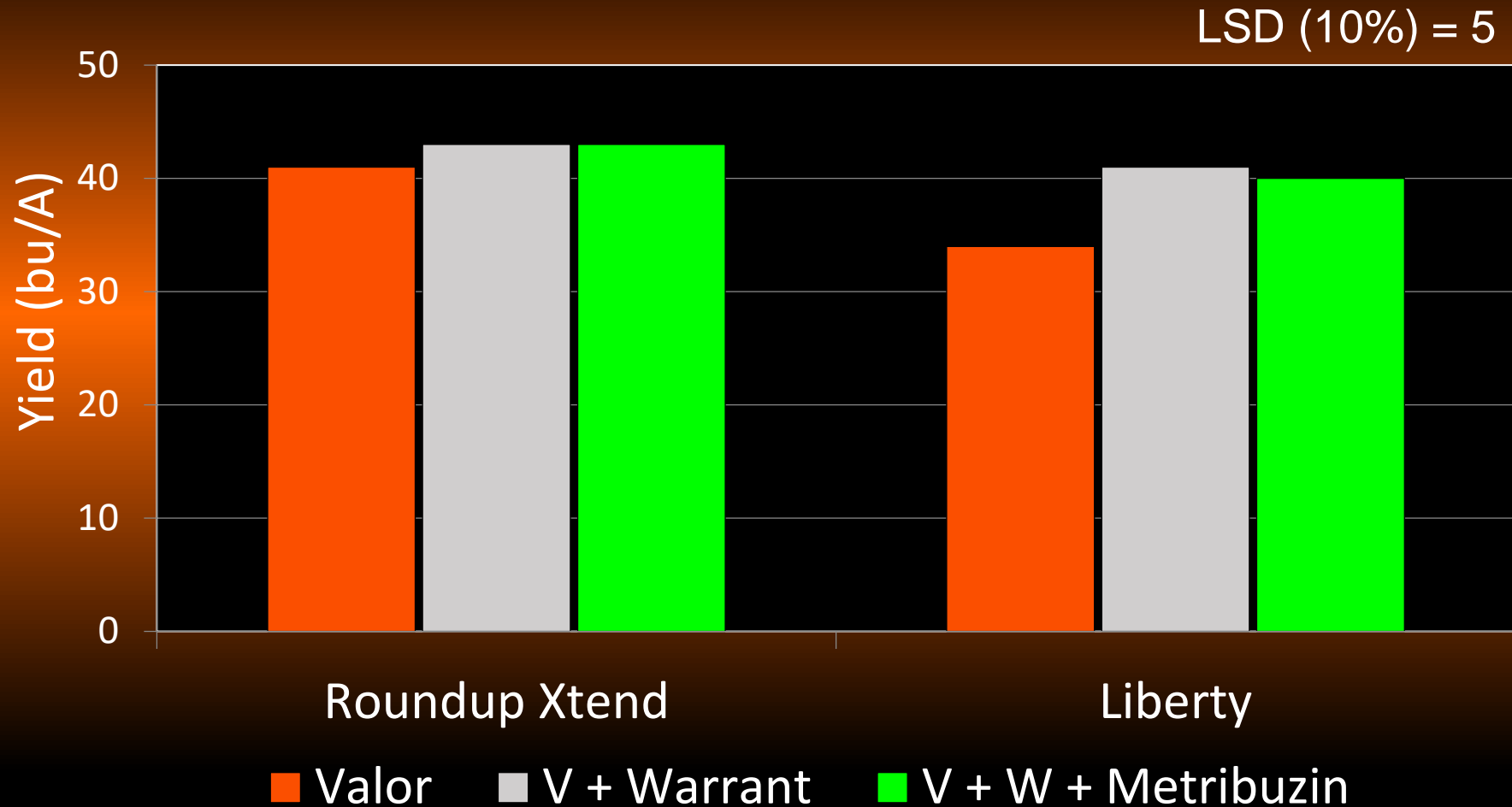


Weed Size Key to POST Weed Control Success



Actual vs Perceived Weed Size

Glyphosate Resistant Palmer Pigweed



Roundup Ready Xtend Cotton

Altus

Treatments	AMAPA	LEFFI	Yield
Treflan f/by Liberty + Warrant f/by Liberty	54	99	1115
Treflan f/by Caparol f/by Liberty f/by Liberty+ Warrant	71	100	1261

Residual Benefits in Cotton



Sinister 11.2 fl oz/A PRE
f/by
Engenia 12.8 fl oz
Roundup 32 fl oz
POST 2X



Engenia 12.8 fl oz
Roundup 32 fl oz
POST 1X



Engenia 12.8 fl oz
Roundup 32 fl oz
POST 2X

Corn Residual Program



Untreated



Lexar EZ 1.8 qt
PRE

Herbicide Tank-Mix Programs

ALS/Glyphosate/PPO
Resistance



Valor (PRE)
f/by
Roundup (POST)



Authority Supreme (PRE)
f/by
Xtendimax + Roundup (POST)

Weed Situation/Complex

What weeds are in the field?

Dinitroaniline, Chloroacetamide, ALS, PPO, HPPD, Triazine



Integrated Approach - Multiple MOA

- Best way to battle resistance
- See benefits with PPO, ALS, Triazine PRE
- Increase Window of POST Application
- Protection in Extreme Weather Conditions



Spartan @ 4.5 fl oz/A - PRE

Zidua @ 2.5 oz/A – PRE

Tricor @ 12 fl oz/A - PRE

Engenia @ 12.8 fl oz/A – POST

Roundup @ 32 fl oz/A - POST

A Question For You???

- How many acres can be effectively and safely sprayed in 1 day?
 - *How many total acres need to be sprayed?*
 - *What if it rains?*
 - *What if it is windy?*



“Even more important with new technologies and restrictions”

Hours to Legally Spray

Bixby, OK – June 2017

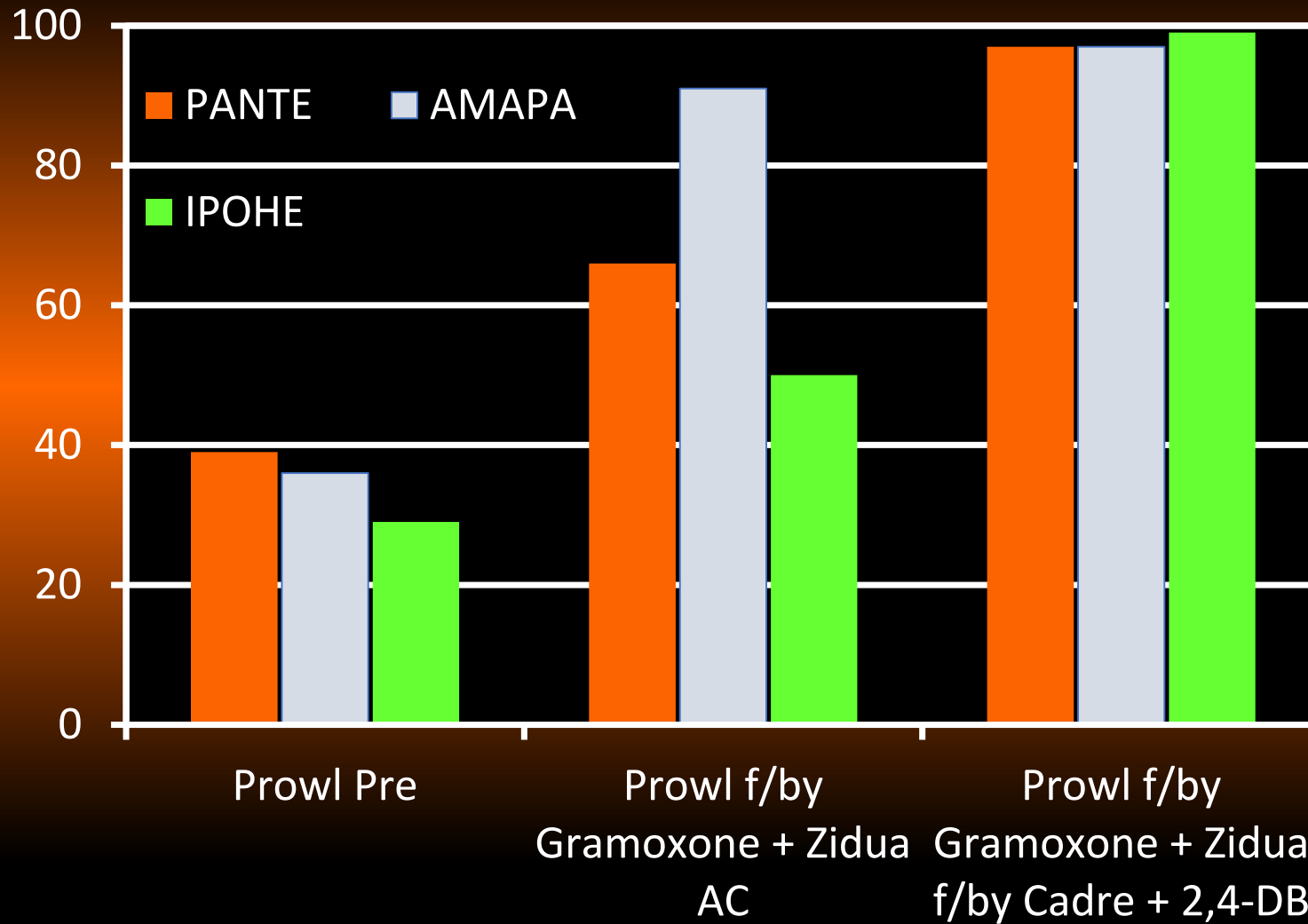
- Total Hours = 720 hours
- Daytime Hours = 480 hours
- 0-3 mph average wind speed = 188 hours
- 144 hours associated with temperature inversion
- >10 mph average wind speed = 155 hours
- >10 mph maximum wind speed = 376 hours
- Rainfall = 68 hours
- Rainfall + 24 hours = 164 hours

Layering Residual Herbicides

- Application prior to secondary flushes
- Allows flexibility with technology and seed choices
- Reduce weed seed population



Layering Residuals Peanut



POST Residual Tank-Mixes

- Another option to help battle resistance
- Reduce weed seed population
- Reduce potential for harvest problems
- Many cases cheap insurance



Better to have a **RESIDUAL** and
not need it than to not have a
RESIDUAL and need it



Summary

“If you keep doing what you’ve always done, you’ll keep getting what you’ve always got”

Charles Stíchler – Texas AGM Extension Specialist

That’s not the case with weed management



AGRICULTURE