



The Chemical Company

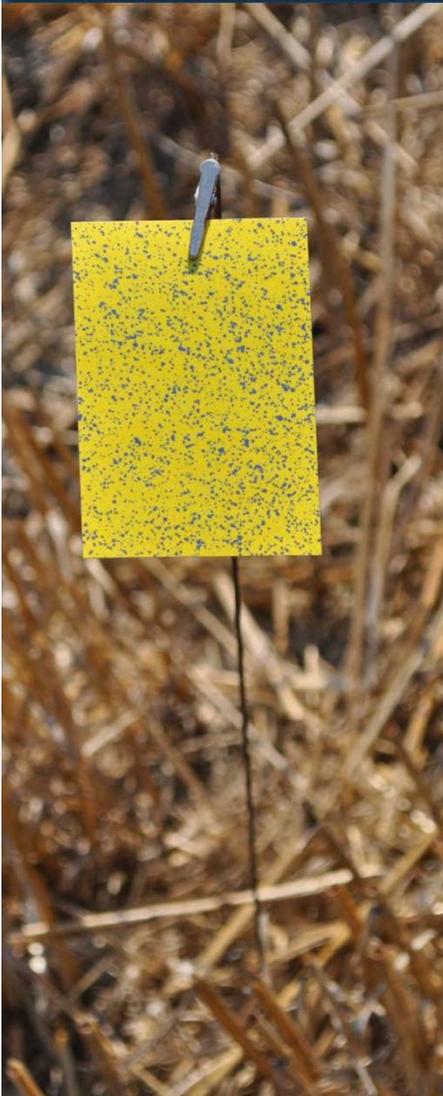
Factors Affecting Droplet Size, Coverage, and Weed Control With Sharpen™ Herbicide

G. Fellows¹, R.N. Barbosa², R. Vidrine¹, A. Rhodes¹

¹BASF Corporation, ²LSU AgCenter



Background



- Sharpen™ herbicide is a contact herbicide with limited mobility within target weeds
- Sharpen needs contact with growing points and leaf area for best control
- Weed Control efficacy and consistency is controlled by ACTT guidelines



ACTT to Optimize Performance

Adjuvant

- MSO (1 pt/acre) + UAN/AMS

Coverage

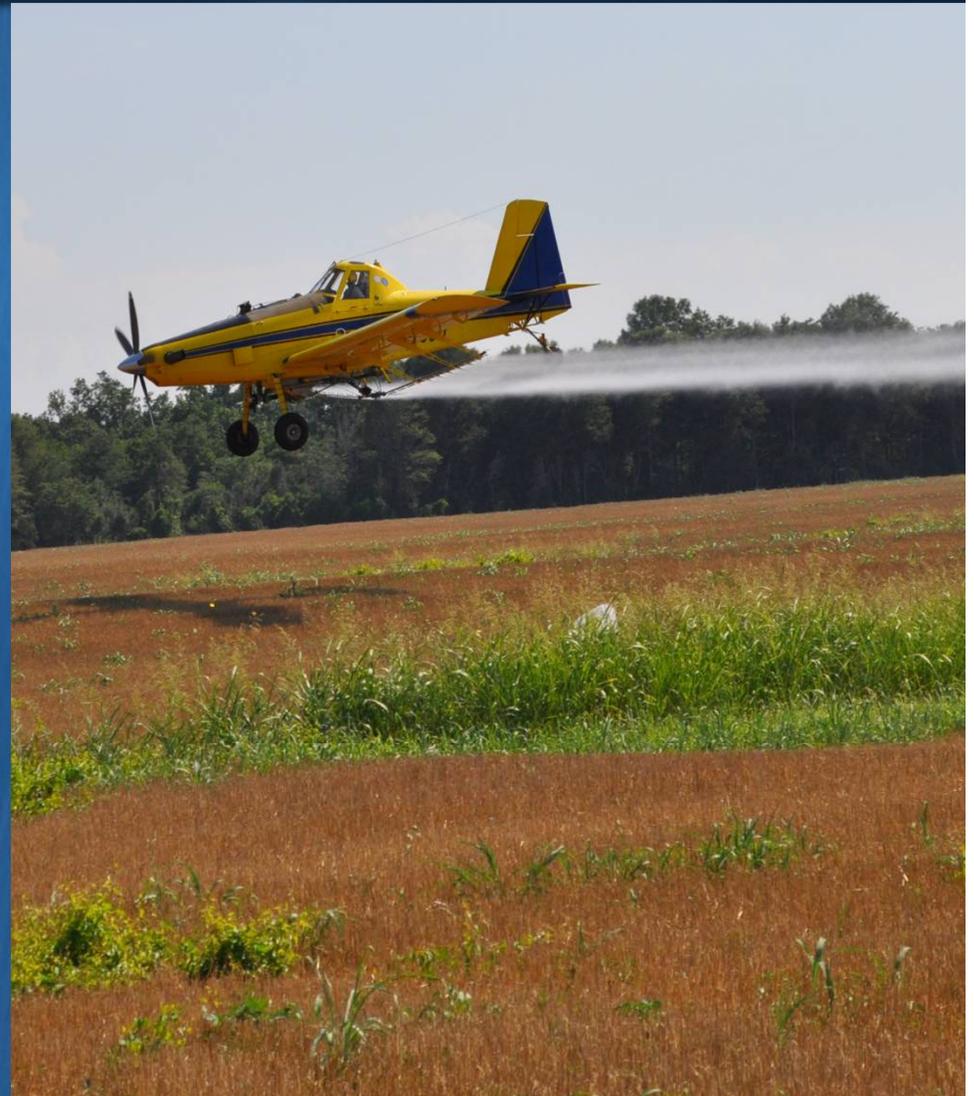
- 3 GPA Minimum (Aerial)

Tank-mix

- Glyphosate

Timing

- Less than 6" Weed height



Research Objectives



- Evaluate Aerial applications and setting for proper herbicide coverage
- Test droplet size, distribution, and nozzles settings for maximum coverage for a contact herbicide

Materials and Methods

- **Wheat stubble field selected for application**
- **Location: Angelina Plantation, Monterey, LA**
- **Angelina Flying Service - Manager: Larry Graf**
 - Ag Tractor 602 @ 150 mph
 - CP 09 nozzles (63 total)
 - Pilot: Rick Hernandez
- **June 21, 2010 - Hot (105°F) and dry at applications**
- **Dr. R. Barbosa, LSU AgCenter, conducted calibrations and aerial spray deposition evaluations**
- **Weed Control efficacy rated 7, 16 dat**

Materials and Methods

Sprayer Setup for field study

Treatment	Sharpen Rate	Total Volume	Pressure	Nozzle Deflection Angle
	(oz per acre)	(gallons per acre)	(PSI)	
1	0.5	3	46	Straight
2	1.0	3	46	Straight
3	0.5	3	26	30° deflection
4	1.0	3	26	30° deflection
5	0.5	5	31	30° deflection
6	1.0	5	31	30° deflection

Sprayer setups selected based on USDA model output.

Each treatment was prepared to spray 10 acres and contained glyphosate (32 oz/a), Control¹ (1 oz/tank), MSO (1 pt/a), and AMS (12 lbs/100 gal)

Swath Width: 70 feet for 5 GPA; 75 feet for 3 GPA

¹Garrco Products Inc.

Materials and Methods



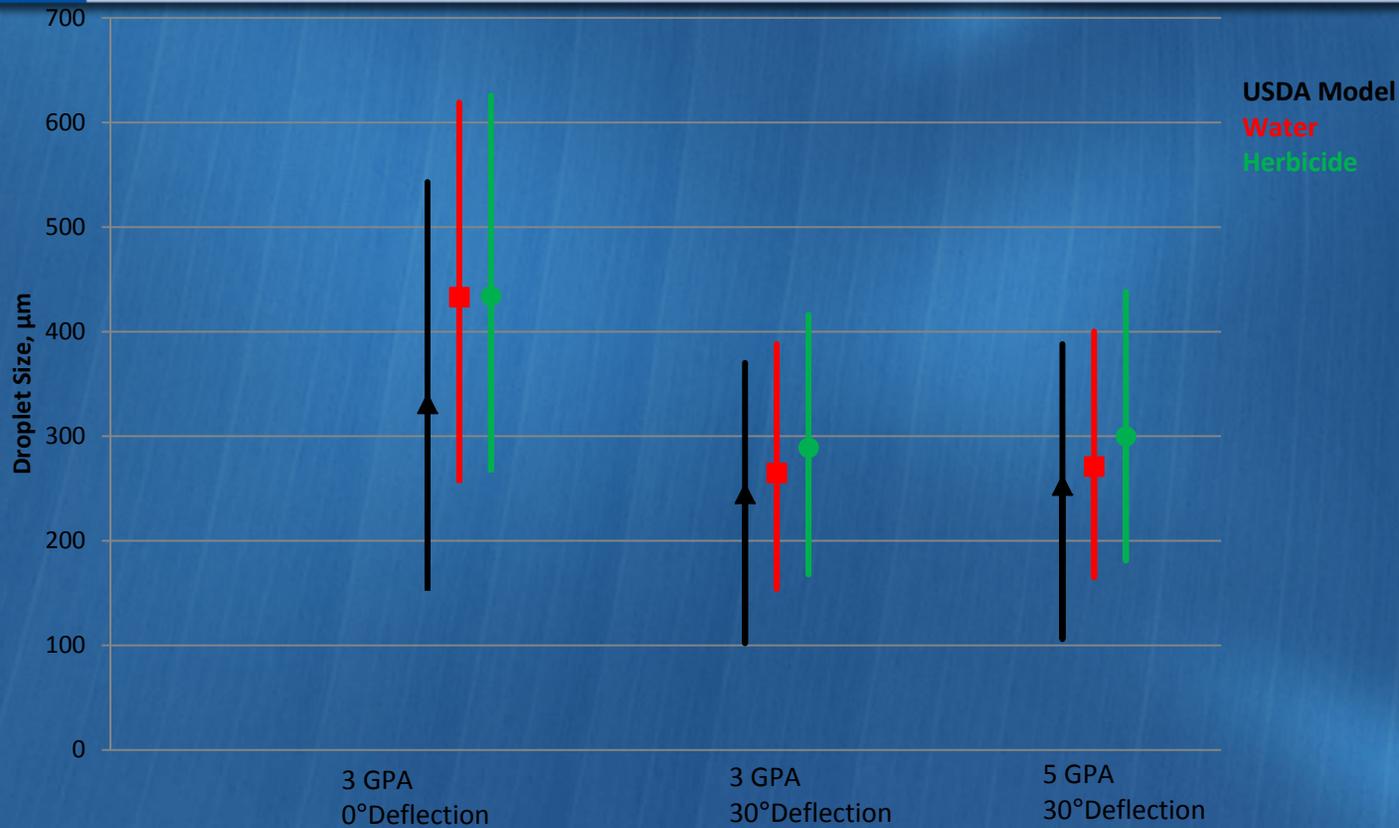
Water Droplet testing



Herbicide Droplet testing



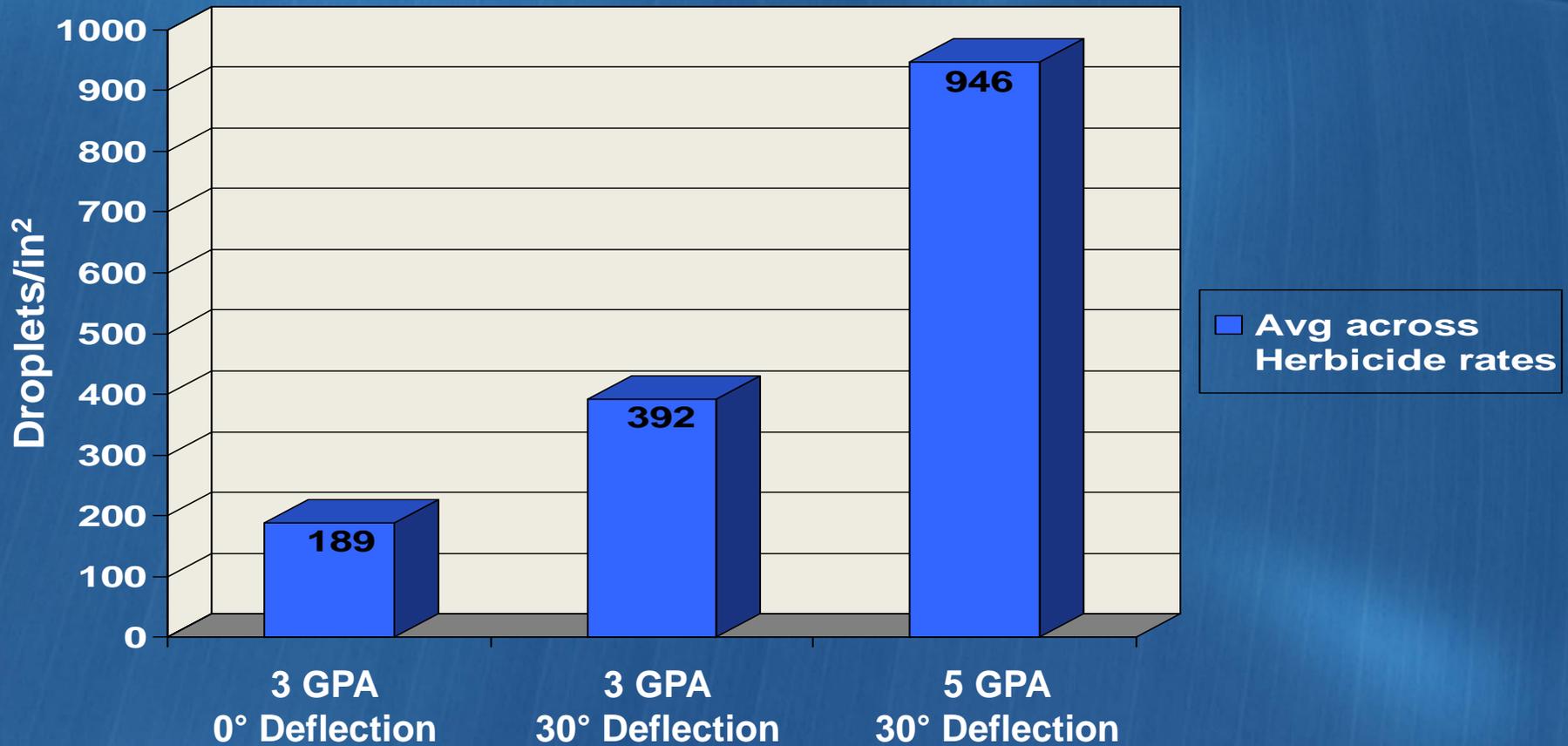
Droplet size (VMD) Expected vs Water vs Herbicide



- USDA model predicted larger relative span, lower VMD's
- Water and Herbicide testing were very close

Droplets/in²

Herbicide applications



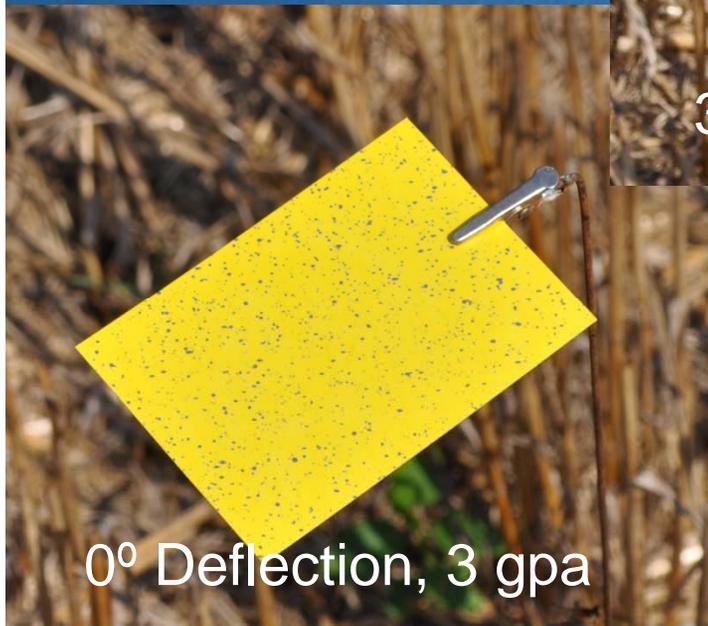
- Increased droplets number from both deflection and GPA



30° Deflection, 5 gpa

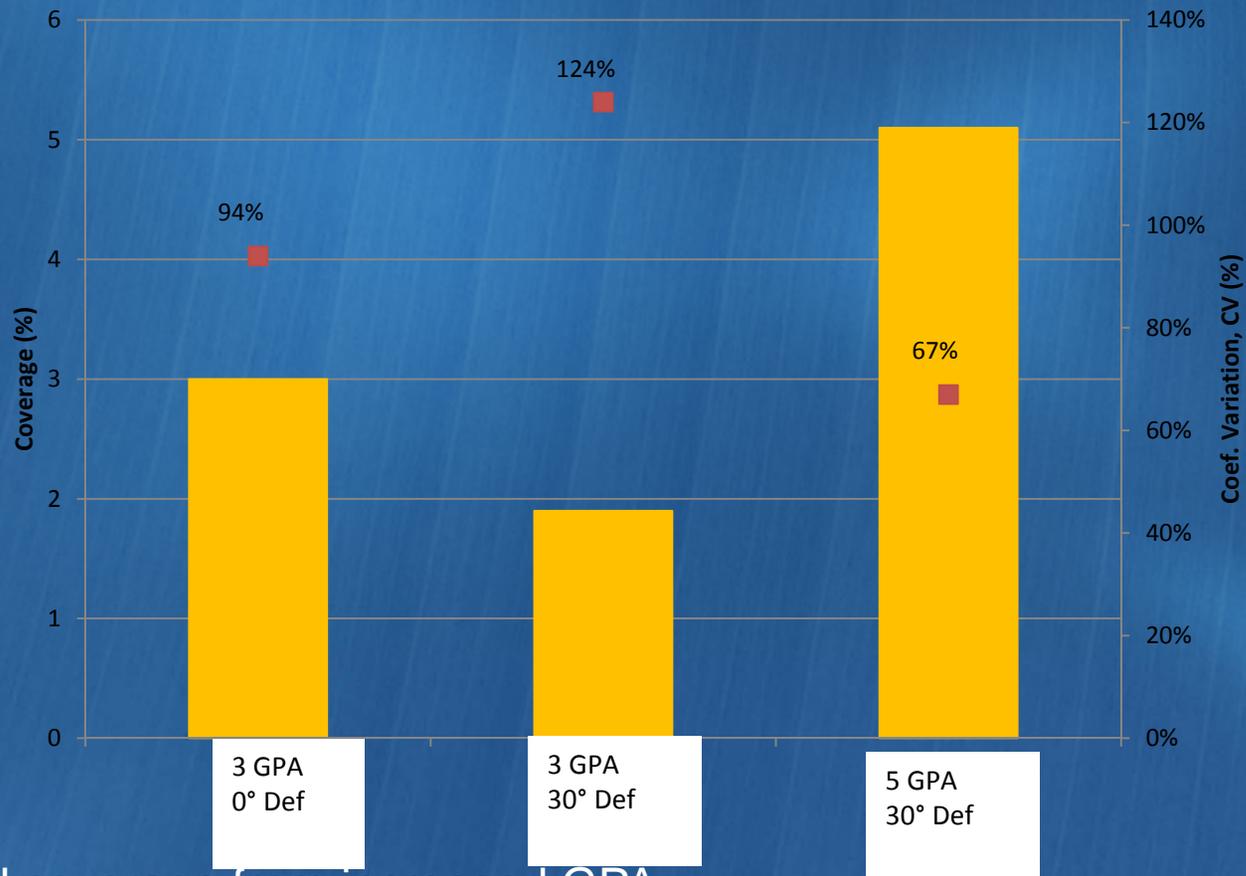


30° Deflection, 3 gpa



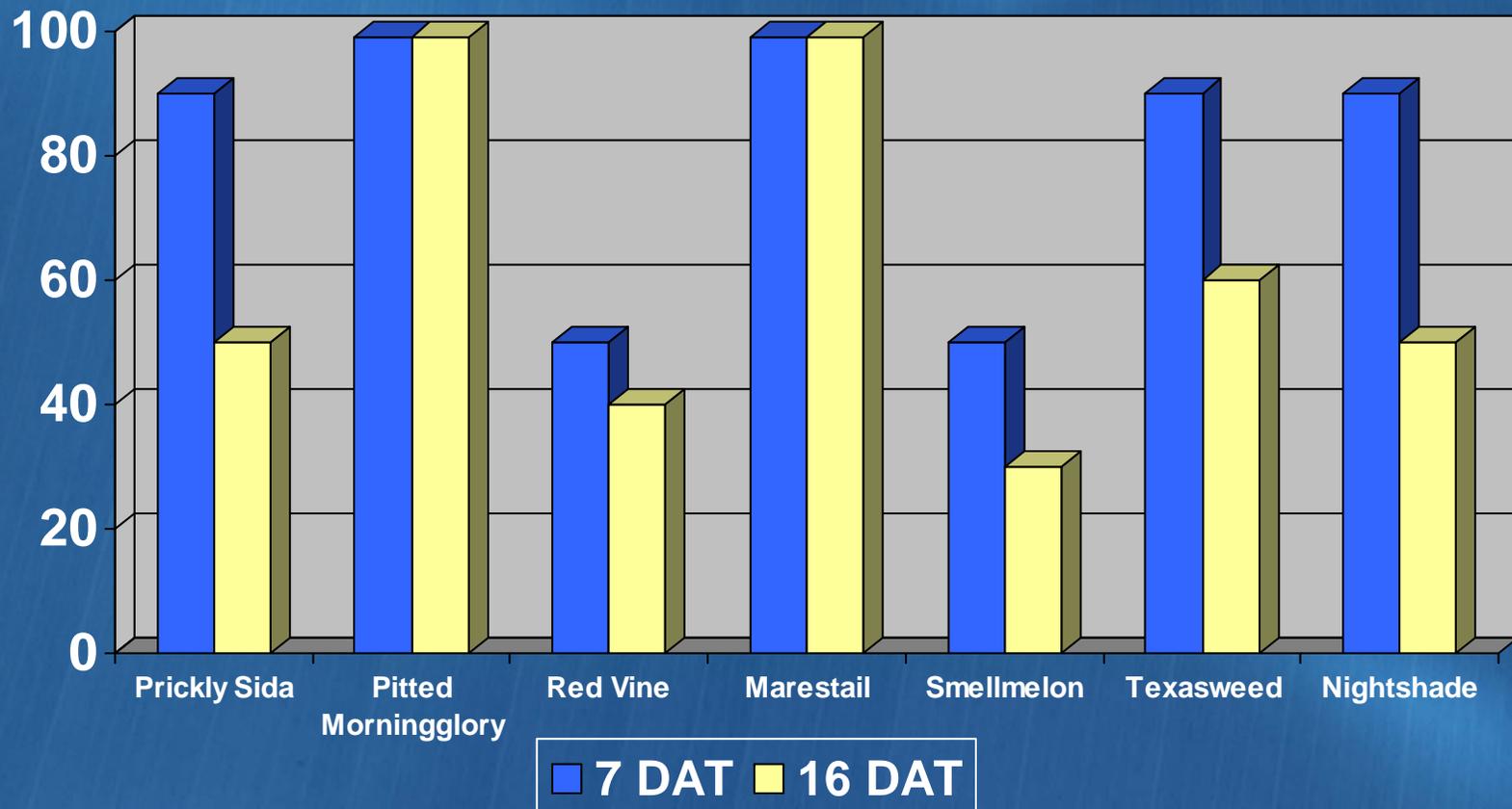
0° Deflection, 3 gpa

Coverage (%) Herbicide applications



- Increased coverage from increased GPA
- Note increased CV from WSC when using deflection

Weed Control of Sharpen + Glyphosate



- No differences between Sharpen Rates in weed control (0.5 vs 1.0 oz/a)
- Weeds were not glyphosate resistant – so separation from spray patterns were not present

Conclusions

- USDA model is a good starting indicator of actual application – BUT – true values only accurate when aerially tested
- Water and herbicide application numbers were closely related
- Coverage and droplet numbers increased with gpa and nozzle deflection

Practical Implications

- Field Experience on over 8 million acres demonstrated that coverage with Sharpen + glyphosate is key to control (Contact herbicide)
 - Glyphosate resistant weeds
 - High pressure or density of weeds
- Aerial Study shows increased GPA and Deflection resulted in increased number of droplets and more homogeneous coverage
- Airplane setup depends on chemical being applied

Questions ??



Thanks to Angelina Plantation and Angelina Flying Service for allowing us to conduct this trial

- EXTRA SLIDES

Droplet size (VMD) Expected vs Water vs Herbicide

			VMD Droplet size (μ)		
TRT	GPA	Deflection	Expected	Water	Herbicide (average) ¹
1,2	3	0	331	433	434
3,4	3	30	245	265	289
5,6	5	30	252	271	300

¹Average of two treatments

- USDA model fits actual data closer in Deflected applications than 0 deflection
- Water testing appears to be a reliable estimate of Herbicide applications

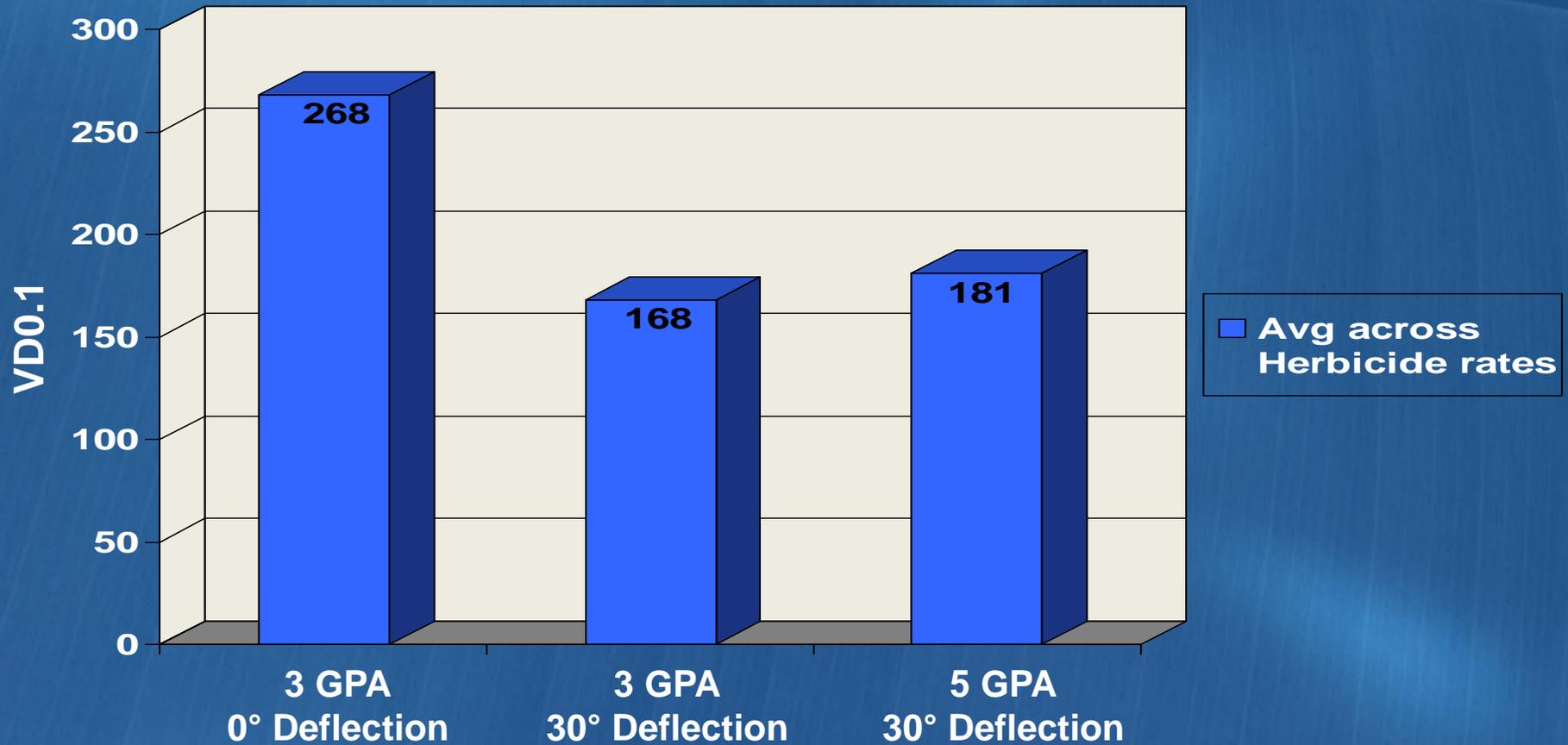
Droplets number/in² Expected vs Water vs Herbicide

			Droplet number/inch ²		
TRT	GPA	Deflection	Expected	Water	Herbicide (average) ¹
1,2	3	0		91	189
3,4	3	30		173	392
5,6	5	30		217	946

¹Average of two treatments

- No dpi was estimated from USDA Model
- Increased coverage from both deflection and gallonage

VD0.1 (VMD of smallest 10% droplets) Herbicide applications



•VD0.1 Decrease in size with Deflection, but still exceed 150 μ .