



GEORGIA
Precision Ag

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Evaluation of MagGrow Technology for Defoliating Cotton in Mississippi and Georgia

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MagGrow Technology

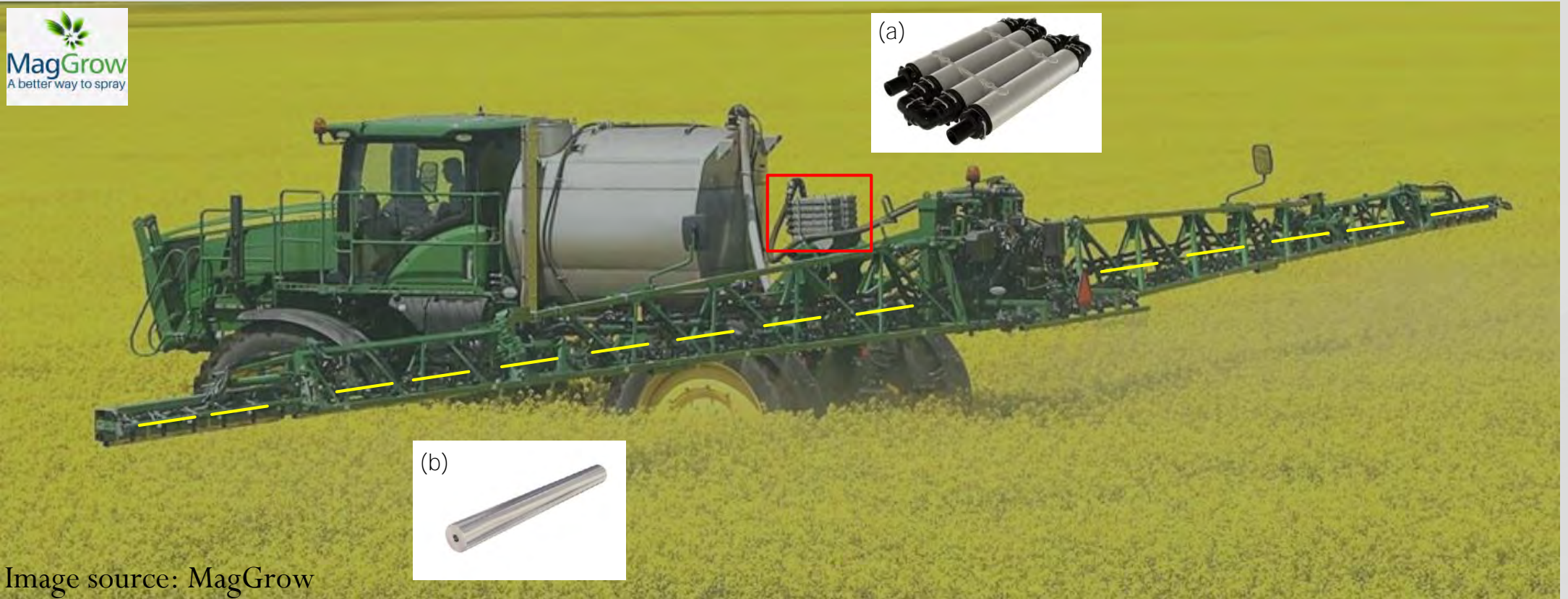


Image source: MagGrow

Components -

- Manifolds between the tank & section control
- Magnetic Rods inside the boom

Benefits (www.maggrow.com) -

- Increased spray coverage (20-50%)
- Lower water usage (up to 50%)
- Reduces spray drift (up to 70%)



Cotton Harvest-aids: preserves yield, quality, and influences harvest efficiency

Cotton defoliation: technology or practices that can help

- ✓ Provide on-target application
- ✓ Improve coverage and efficacy
- ✓ More efficient with spray applications

Does a sprayer equipped with MagGrow provides better coverage and efficacy than conventional system?



Locations & Methods:

Treatments:

1. Two sprayers –

- *With MagGrow*
- *Without MagGrow*

2. Application Rate – (GA)

- *Standard (100%)*
- *Reduced (80%)*

Location	Mississippi	Georgia
Applicator	John Deere R4023 (2)	Case IH 3340 (2)
Control System	JD Rate Controller + PWM	Raven Viper 4 + Rate Controller
Application Rate	10 GPA	8 & 10 GPA
Nozzle Spacing	20"	20"
Nozzle Type	PS3DQ008	Wilger ER11004, ER11003
Pressure	50 PSI	28 PSI
Products	Drop 1-50 Prep 1-4 80/20 0.25%	Tribufos 6 Daze 4SC Boll'd 6SL



Calibration: Rate, Pressure, Spray Pattern.....



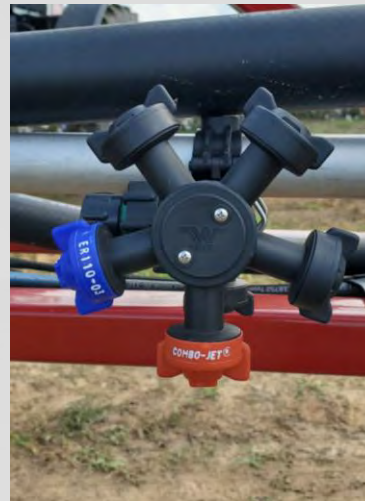
Case Patriot 3340 Sprayers



Nozzle spray pattern verification



MagGrow system



Wilger ER11004



Pressure Verification



Data Collection

Pre-Application:

- % defoliation

During Application: *(only in Georgia)*

- Spray Coverage (top, middle and bottom)

Post-Application: (7-14 DAP)

- Harvest-aid ratings - defoliation, green leaves, and desiccated leaves (%)
- green bolls (%)
- Visual aerial imagery using a UAV





Results

(*Mississippi*)

Harvest-aid efficacy ratings

Trt No.	Description	Defoliation	Green Leaves	Desiccated Leaves	Green Bolls
		%	%	%	%
1	MagGrow applicator	78.3	10.0	11.6	8.3
2	Standard applicator	78.3	10.0	11.6	8.3
<i>p-value (0.10)</i>		NS	NS	NS	NS

Means were analyzed using Tukey's HSD Test for means separation ($p \leq 0.10$).

Abbreviations: ns = means are not significantly different.



Results

Glendora, Mississippi





Results

(Georgia)

Spray Coverage at three different plant locations:

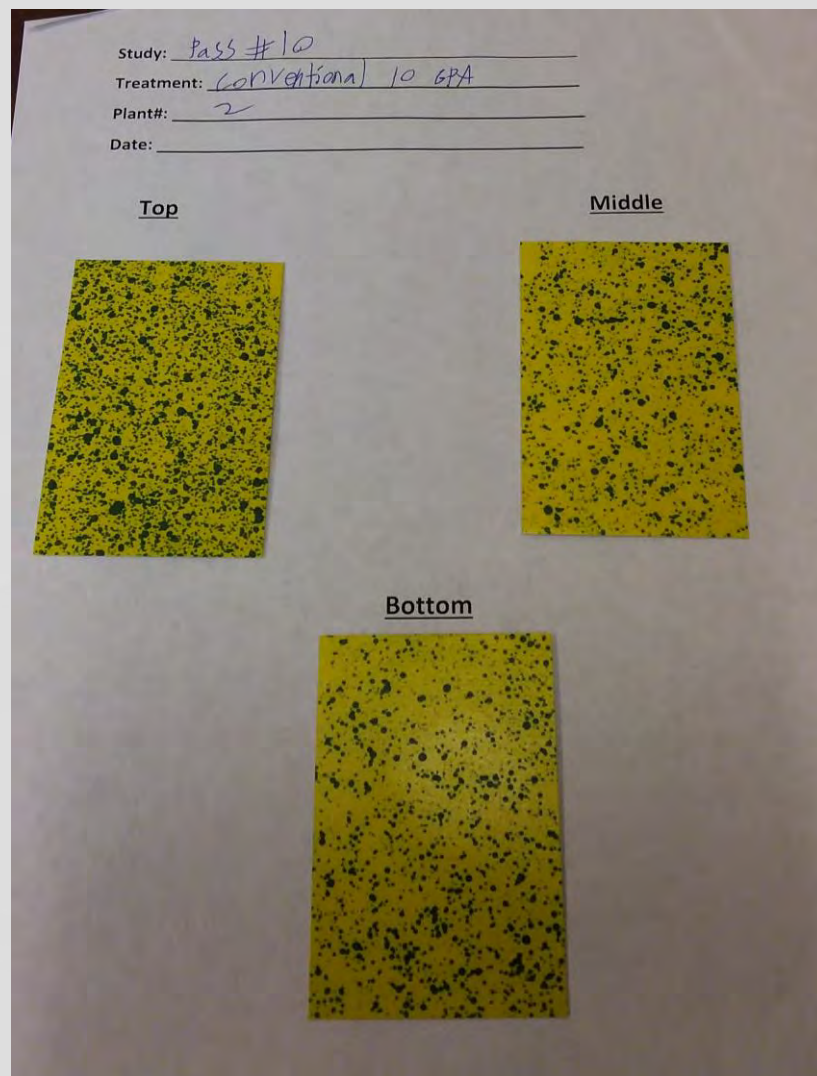
Trt No.	Description	Top	Middle	Bottom
		%	%	%
1	Conventional – 10 GPA	3.9	3.3	3.4
2	MagGrow – 10 GPA	4.8	3.9	3.5
3	Conventional – 8 GPA	4.7	4.2	4.0
4	MagGrow – 8 GPA	4.5	3.8	3.7
<i>p-value (0.10)</i>		NS	NS	NS

Means were analyzed using Tukey's HSD Test for means separation ($p \leq 0.10$).

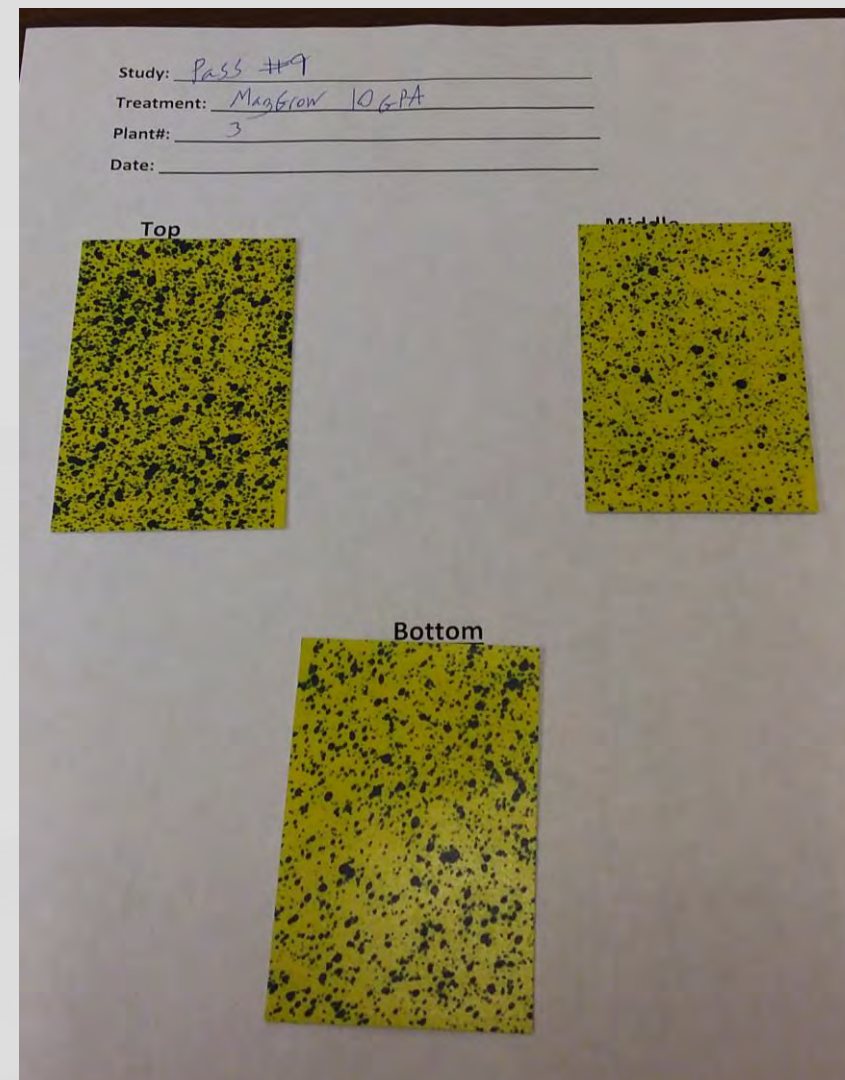
Abbreviations: ns = means are not significantly different.



Conventional – 10 GPA

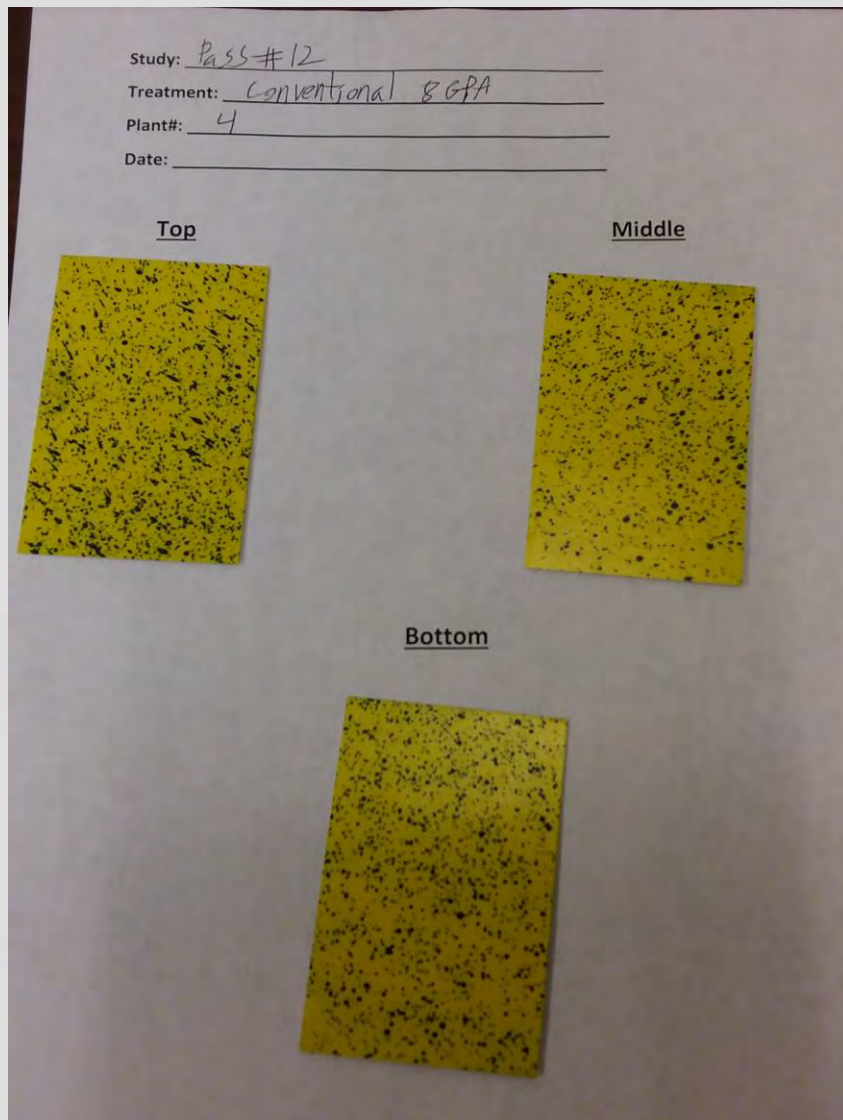


MagGrow – 10 GPA

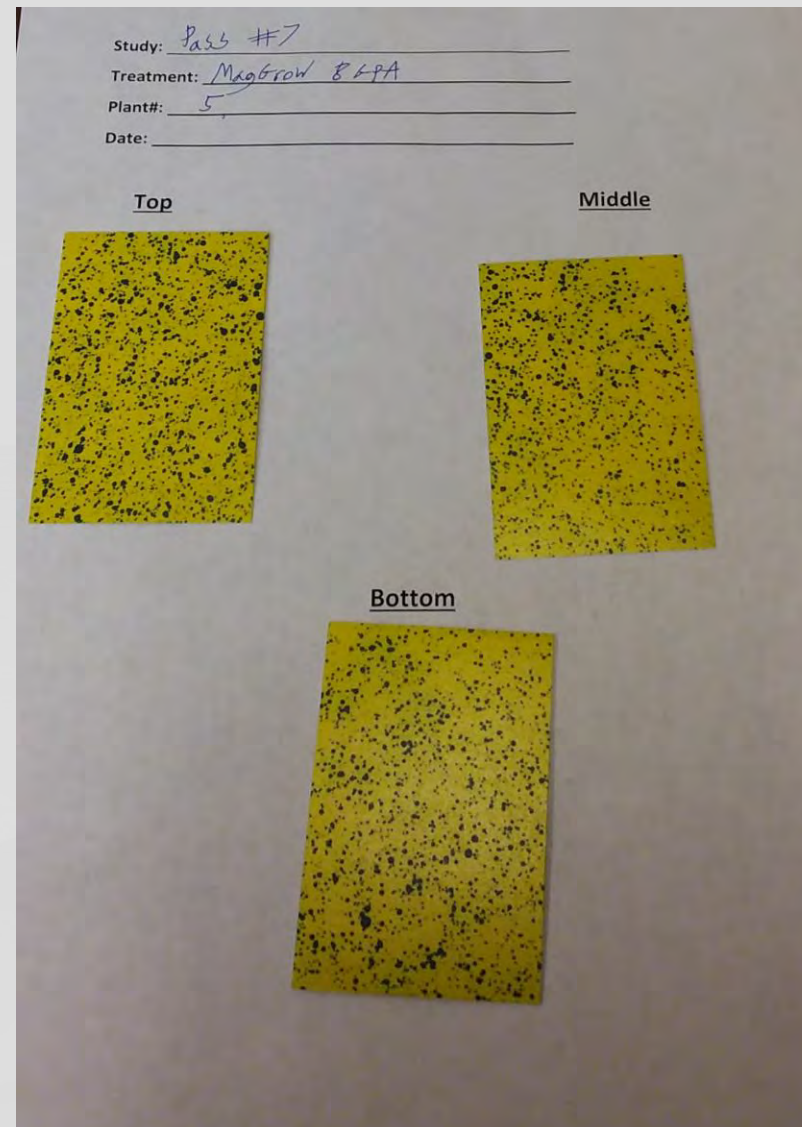




Conventional – 8 GPA



MagGrow – 8 GPA

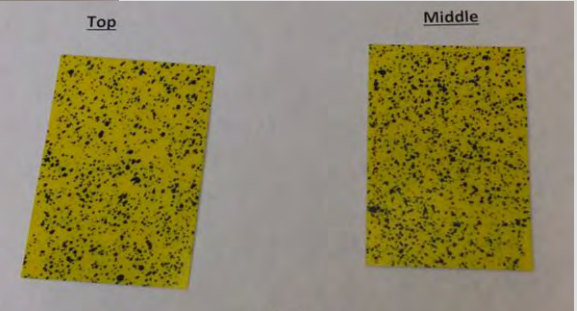


Coverage variability: Boom & Plant

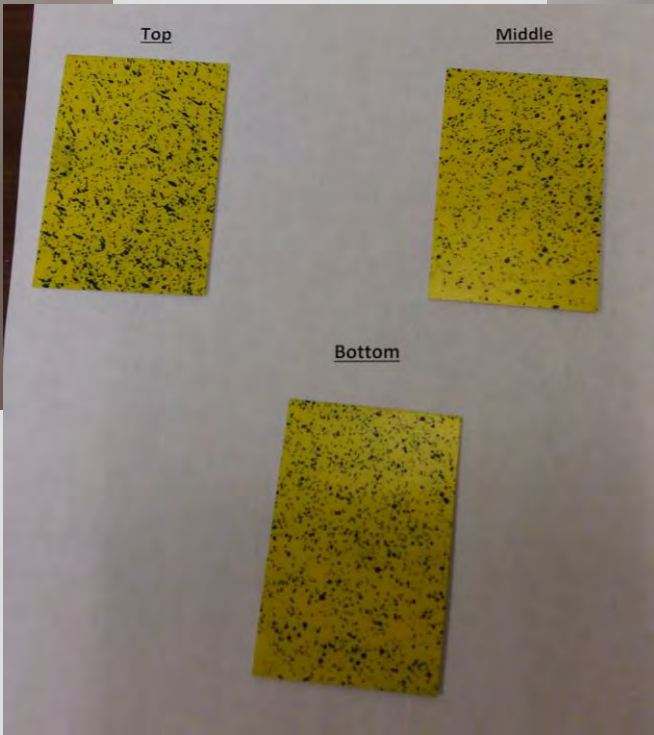
- Card Location
- Canopy



Plant#1



Plant#2



Plant#3



Plant#4



Plant#5



Results

(Georgia)

Harvest-aid efficacy ratings

Trt No.	Description	Defoliation	Green Leaves	Desiccated Leaves	Green Bolls	Open Bolls
		%	%	%	%	%
1	Conventional – 10 GPA	93.3	0.0	6.7	2.0	98.0
2	MagGrow – 10 GPA	98.0	0.3	1.7	0.0	100.0
3	Conventional – 8 GPA	97.3	0.0	2.7	2.7	97.3
4	MagGrow – 8 GPA	91.7	0.0	8.3	3.3	96.7
<i>p-value (0.10)</i>		NS	NS	NS	NS	NS

Means were analyzed using Tukey's HSD Test for means separation ($p \leq 0.10$).

Abbreviations: ns = means are not significantly different.



Results

Lilly, Georgia



Conventional 10 GPA MagGrow 8 GPA Conventional 8 GPA MagGrow 10 GPA Conventional 8 GPA MagGrow 10 GPA MagGrow 8 GPA Conventional 10 GPA MagGrow 10 GPA Conventional 10 GPA MagGrow 8 GPA Conventional 8 GPA

Rep 1

Rep 2

Rep 3



Summary

(Mississippi & *Georgia*)

- Based on spray deposition analysis, no differences in spray coverage were observed between the conventional and MagGrow systems at both 8 and 10 GPA
- Based on visual ratings, harvest-aid products had remove > 80% (Mississippi) and > 90% (Georgia) of the foliage in both conventional and MagGrow systems
- Results showed no effect (positive or negative) of the MagGrow system on spray coverage and harvest-aid efficacy

What's Next: More technology evaluation for Pesticide applications – volume, coverage & drift



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Questions/Comments?

