

## ALABAMA COTTON COMMISSION 2005

**TITLE: Evaluation of seed specific fungicide applications for reducing early season cost associated with seedling disease management - research report.**

### INVESTIGATORS:

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**OBJECTIVES:** Our objectives are to evaluate the efficacy and benefit of 1) the seed specific in-furrow fungicide application techniques as compared to the standard in-furrow fungicide sprays; and 2) to compare the new fungicide seed treatments to the recommended in-furrow spray and granule fungicides.

### PROCEDURES:

#### 1. Determine the efficacy and economic benefit of the seed specific in-furrow fungicide application techniques to the standard in-furrow fungicide sprays.

Terraclor Super X, was applied with the seed specific fungicide application technology and compared to the standard in-furrow spray application. This test was conducted in the greenhouse using a modified spray system developed by Dr. Fulton. Treatments included the standard uniform in-furrow spray, a site specific 3" band on the seed, a site specific 3" band partially covering the seed, and no in-furrow spray application. The test included both high and low disease incidence levels. The high disease incidence test was inoculated with *Rhizoctonia solani* and *Pythium ultimum* and a low disease test soil was not enhanced. Seedling stand was rated weekly after planting. Site specific and the uniform in-furrow spray treatments ( $P \leq 0.05$ ) significantly increased cotton stand as compared to the control. Stand was comparable between the site specific and standard uniform spray treatments at all sample four dates. The reduction of the amount of fungicide applied in the site specific treatments did not decrease seeding survival under high disease pressure.

Treatment	Disease level	% Stand			
		7DAP	14DAP	21 DAP	28 DAP
Standard uniform in-furrow spray	High	68.75 b	65.63 b	65.625 b	62.5 b
Site specific 3" band on the seed	High	56.25 bc	59.38 bc	62.5 bc	56.25 b
Site specific 3" band partially covering the seed	High	59.375 b	59.38 bc	56.25 bc	56.25 b
No in-furrow spray application	High	43.75 c	46.88 c	50 c	50 b
Standard uniform in-furrow spray	Low	93.75 a	93.75 a	93.75 a	93.75 a
Site specific 3" band on the seed	Low	96.875 a	90.63 a	90.63 a	90.625 a
Site specific 3" band partially covering the seed	Low	90.625 a	84.38 a	84.38 a	84.375 a
No in-furrow spray application	Low	87.5 a	84.38 a	84.38 a	84.375 a
LSD ( $P \leq 0.05$ )		13.37	15.25	15.38	15.87

#### 2. Compare the new fungicide seed treatments to the recommended in-furrow spray and granule fungicides.

Cotton seedling disease incidence was high in 2005 due to cold wet weather. In the high disease incidence plots (inoculated), differences ( $P \leq 0.05$ ) in seedling stand were observed. At 2, 4 and 6 weeks after planting, all fungicide seed treatments increased stand compared to the control. The Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911 A, B, C, and D consistently produced greater stands than the Allegiance FL + RTU Baytan-Thiram 1.76 FS treatment alone. A lower skip index ( $P \leq 0.05$ ) indicating a more evenly spaced seedling stand was observed in four Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911 A, B, C, and D combinations and TSX treatments as compared to the control at 6 wk after planting. Eight of the seed treatment fungicides increased yields over the control ( $P \leq 0.05$ ). Averaging all fungicide treatment yields together produced an increase of 2455 lb seed cotton per acre compared to the untreated control. Under low disease pressure, at 2 wk after planting, no fungicide treatment increased stands as compared to the control. All four Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911 A, B, C, and D combinations increased stands compared to the control at 6 wk after planting. However, no differences were observed between any treatments as measured by the skip index at 6 wk after planting under low disease pressure. Seven of the seed treatment fungicides increased yields over the control ( $P \leq 0.05$ ). Yield was increased by

381 lb of seed cotton per acre as compared to the control under low disease pressure.

High disease pressure											
Treatment	Rate	Stand/25 ft row						Skip index		Seed cotton lb/a	
		14 DAP		28 DAP		42 DAP		42DAP			
Untreated control		11.8	e	6.6	f	4.4	e	22.2	a	1087.4	c
Allegiance FL + RTU Baytan-Thiram 1.76 FS	15 + 41 ga/100kg/seed	24	d	22.8	e	15.6	d	18	ab	2501.1	b
Dynasty CST 125 FS + Systane 40 WP	32 + 18 ga/100kg/seed	29.8	cd	29.8	cde	29.2	bc	10.2	de	3579.6	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + Dynasty CST 125 FS + Systane 40 WP	15 + 41 + 32 + 18ga/100kg/seed	30	bcd	33	b-e	35	ab	16.4	bc	3703	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911A	15 + 41 ga/100kg/seed + 0.045	40.6	abc	41.4	ab	41.4	a	7.6	e	3804.4	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911B	15 + 41 ga/100kg/seed + 0.045	45.2	a	44.6	a	43.8	a	7.2	e	3757.9	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911C	15 + 41 ga/100kg/seed + 0.045	37.8	abc	38.4	abc	39	ab	10	de	3773	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911D	15 + 41 ga/100kg/seed + 0.045	35.4	a-d	41.4	ab	43	a	11.4	cde	3826.9	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS	15 + 41 ga/100kg/seed	41.4	ab	35.2	a-d	29.8	bc	13	bcd	3478.7	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + TSX 18.8G	15 + 41 ga/100kg/seed + 5.5 lb/A	33.8	a-d	24.2	de	23.2	cd	10.4	de	3458.8	a
LSD P=(0.05)		11.4		11.5		11.1		5.1		505.6	

Low disease pressure											
Treatment	rate	Stand/25 ft row						Skip index		Seed cotton lb/a	
		14 DAP		28 DAP		42 DAP		42 DAP			
Untreated control		45.2	abc	43.2	b	41.6	c	7.2		3649.7	c
Allegiance FL + RTU Baytan-Thiram 1.76 FS	15 + 41 ga/100kg/seed	54	ab	59	a	54.6	ab	5.2		4104	ab
Dynasty CST 125 FS + Systane 40 WP	32 + 18 ga/100kg/seed	49	abc	52.2	ab	51.6	abc	5.2		4182.9	a
Allegiance FL + RTU Baytan-Thiram 1.76 FS + Dynasty CST 125 FS + Systane 40 WP	15 + 41 + 32 + 18ga/100kg/seed	57.8	a	59.6	a	55	ab	3.8		4145.8	ab
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911A	15 + 41 ga/100kg/seed + 0.045	44.4	abc	50.6	ab	53.4	ab	3.8		4006.2	ab
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911B	15 + 41 ga/100kg/seed + 0.045	52	ab	50.2	ab	54.8	ab	3		4100.3	ab
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911C	15 + 41 ga/100kg/seed + 0.045	41.4	abc	41	b	44.6	bc	6.4		3640.3	c
Allegiance FL + RTU Baytan-Thiram 1.76 FS + A14911D	15 + 41 ga/100kg/seed + 0.045	53	ab	56.2	a	57.2	a	4.4		4158.4	ab

Allegiance FL + RTU Baytan- Thiram 1.76 FS	15 + 41 ga/100kg/seed	38	bc	47.4	ab	51	abc	6.8	3813.8	bc
Allegiance FL + RTU Baytan- Thiram 1.76 FS + TSX 18.8G	15 + 41 ga/100kg/seed + 5.5 lb/A	34.6	c	39.8	b	46.2	bc	5.8	4125.4	ab
LSD P=(0.05)		16.4		12.9		10.9		5	349.1	

<sup>z</sup> Column numbers followed by the same letter are not significantly different according to Fishers least significant difference test at P=(0.05)