

# Effect Of Late Bloom Fungicide Treatment On Nine Roundup Ready Cotton Varieties To Manage *Corynespora* Leafspot

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## Abstract

*Corynespora* leaf spot has been identified as yield limiting disease in cotton. Fungicides have shown that they can help manage *Corynespora* leaf spot and protect yield. Exact timing of a fungicide spray is thought to be the 3<sup>rd</sup> or 4<sup>th</sup> week of bloom based on limited research. Concerns and questions from growers and cotton industry professionals about late season fungicide treatment efficacy and yield effect were present. A replicated trial with nine round-up ready cotton varieties were treated with the fungicide containing pyraclostrobin and metconazole (Twinline) at 8oz per acre during the beginning of the six week of bloom. Field counts were done pre-treatment on each variety and again two weeks after treatment to evaluate treatments. Final yield and gin data was collected to evaluate effect of treatment.

## Introduction

*Corynespora* leaf spot, also known as Target spot, has been present in Georgia for several years and has now been identified in several other cotton growing states. More attention has been given to *Corynespora* leaf spot in the recent years due to awareness of the disease in the field. There are still questions on a) how cotton varieties are effected by *Corynespora* leaf spot, b) how cotton varieties respond to fungicide treatments, and c) exact timing of a fungicide spray to manage *Corynespora* leaf spot. This on-farm research study looked at 1) defoliation and 2) yield effect using a late season fungicide spray on nine different Roundup Ready cotton varieties.

## Methods

A replicated on-farm trail was conducted in Mitchell County, GA. The trial was planted on May 1st, 2012. Plots were on 36-inch row spacing, were 6-rows wide per variety, replicated the block 4 times, were approximately 1,000 feet in length, and were irrigated by center pivot. Nine cotton varieties were planted in each block: DPL 1050, DPL 1137, FM 1740, PHY 367, FM 1944, PHY 375, ST 5458, PHY 499, DPL 1252. Treatment consisted of spraying the fungicide during the sixth week of bloom containing pyraclostrobin and metconazole (Twinline) at 8 oz/A on the 100 and 300 blocks while blocks 200 and 400 were left untreated. Visual estimated defoliation ratings were taken pre treatment on all blocks and again two weeks later on all blocks using ten row feet in each rep. Each plot was harvested with a six row cotton picker and a boll buggy with scale to obtain weight for each rep. Gin data was collected for each variety as well.

## Results

Ratings taken two weeks after fungicide treatment did visually appear to help suppress defoliation on average in treated vs. untreated. The fungicide treatment (Table 1) shows reduction in defoliation numerically and was significant versus no fungicide treatment indicating reduction in defoliation by spraying a fungicide like Twinline.

**Table 2: Visual estimated defoliation ratings pre treatment and 2 weeks later**

Defoliation Variety	Pre application			Post application		
	Data	0.05	0.1	Data	0.05	0.1
DPL 1050	33%	bc	c	50%	c	d
DPL 1137	23%	c	d	60%	bc	bcd
FM 1740	11%	d	e	50%	c	d
PHY 367	29%	c	cd	65%	ab	abc
FM 1944	23%	c	d	58%	bc	bcd
PHY 375	31%	bc	c	55%	bc	cd
ST 5458	41%	bc	b	65%	ab	abc
PHY 499	59%	a	a	75%	a	a
DPL 1252	56%	a	a	68%	ab	ab

The fungicide Twinline did have significant impacts (Table 3) on yield with a late bloom application on three varieties as noted by the asterisk: PHY 367, FM 1944, and PHY 375 with 137 lbs/ac, 222 lbs/ac, and 171 lbs/ac, respectively. At the late bloom spray we saw yield increases with six of the nine varieties. The whole plot averaged 73lb/ac more cotton with the fungicide treatment vs. no treatment.



Premature defoliation, notice the sunlight penetrating thru the canopy.

**Table 1: Comparison of visual estimated defoliation treated vs. untreated.**

Defoliation All Varieties	Pre application			Post application		
	Data	0.05	0.1	Data	0.05	0.1
(1) Fungicide	0.3	b*	b*	0.54	b*	b*
(2) No Fungicide	0.4	a	a	0.67	a	a

Visual defoliation from pre to post application (Table 2) ranged from highs with varieties FM 1740 (+39%), DPL 1137 (+38%), PHY 367 (+36%), FM 1944 (+35%) to lows of DPL 1252 (+11%) and PHY 499 (+16%). This could be a combination of early season defoliation catching up and variety's maturity.

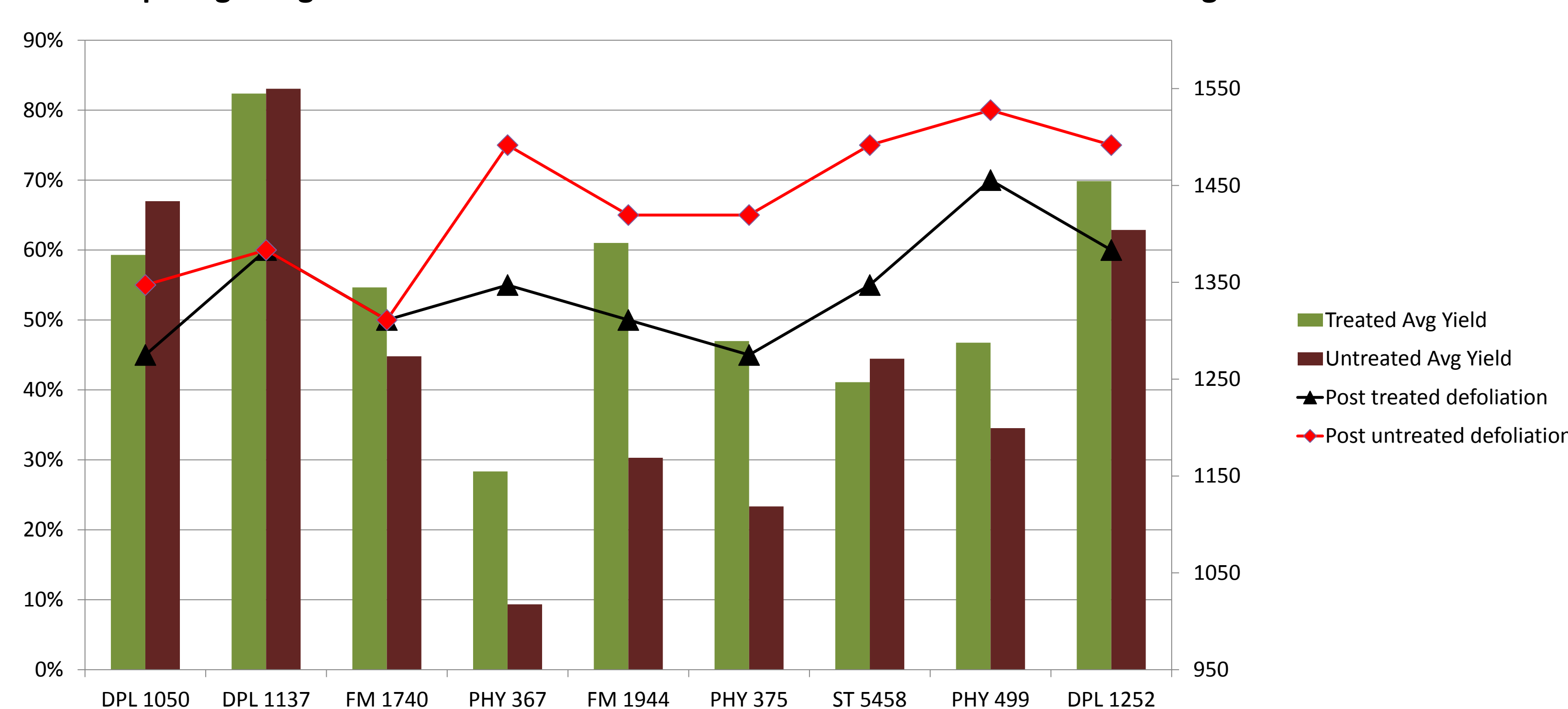
**Table 3: Harvest results by variety and treatment**

Variety	Fungicide	Yield	0.05	0.1
DPL 1050	Yes	1378.3	bcde	bcd
DPL 1050	No	1433.8	bcde	bc
DPL 1137	Yes	1544.9	a	a
DPL 1137	No	1549.8	a	a
FM 1740	Yes	1344.7	cdef	cde
FM 1740	No	1273.6	efgh	efg
PHY 367	Yes	1154.7	ij*	ih*
PHY 367	No	1017.5	k	j
FM 1944	Yes	1390.7	bcde*	bc*
FM 1944	No	1168.8	hij	ih
PHY 375	Yes	1289.3	defg*	def*
PHY 375	No	1118.6	jk	ih
ST 5458	Yes	1246.9	fghi	fgh
ST 5458	No	1271.1	efgh	efg
PHY 499	Yes	1287.7	defg	efg
PHY 499	No	1199.4	ghij	ghi
DPL 1252	Yes	1454.5	ab	b
DPL 1252	No	1404	bc	bc



*Corynespora* on cotton leaf, typical bulls-eye appearance

**Comparing Fungicide Treated vs Untreated: Yield & Post Visual Defoliation Rating**



## Conclusion

The 2012 cotton growing season in Southwest Georgia was difficult due to cloudy weather and rain which creates perfect environment for diseases like *Corynespora*. This was evident in the average defoliation and average yield gain of 73lbs/ac for the fungicide treated plots vs untreated even with a late bloom application. Only three varieties did not show a positive average yield gain with use of fungicide, DPL 1050, DPL 1137, and ST 5458. The other six varieties showed positive average yield gain and three of those varieties showed statistically different gains: PHY 367, FM 1944, and PHY 375.

Defoliation from *Corynespora* leaf spot can be suppressed with use of a fungicide, even in late bloom such as this trial. The visual defoliation data shows as a whole the fungicide treatment was both numerically and statistically different versus untreated, 54% and 67%, respectively. Cotton growers can obtain a yield benefit from fungicide. We may find that the varieties that are more susceptible to *Corynespora* would benefit with an earlier bloom fungicide spray while others still benefit from a late bloom spray. Further research could look at this to evaluate earlier sprays and final effects.



See the fungicide plot before and after the fungicide spray, as well as each rep being harvested. Visit youtube and my channel, rjsagnews, for this and more.