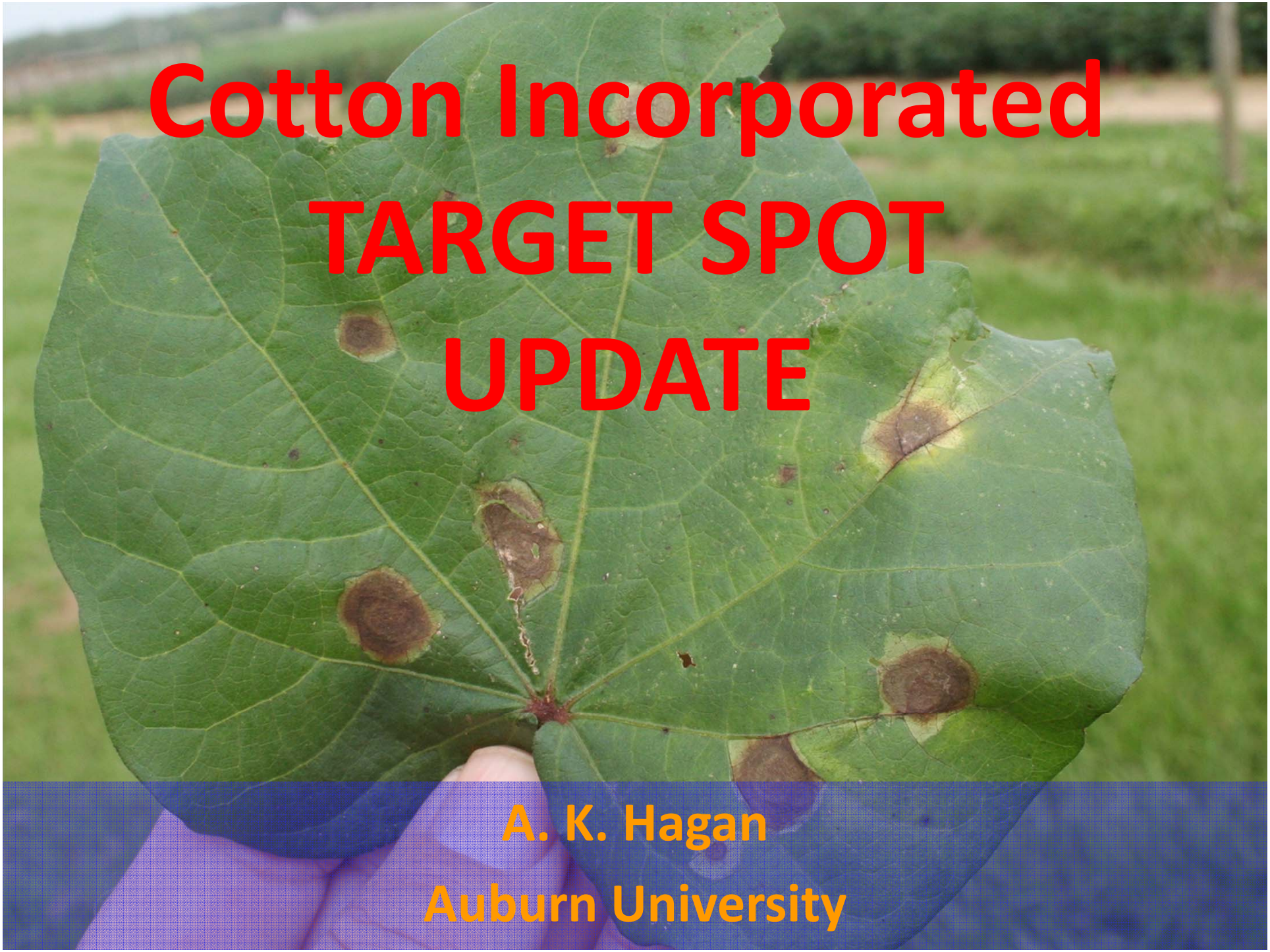
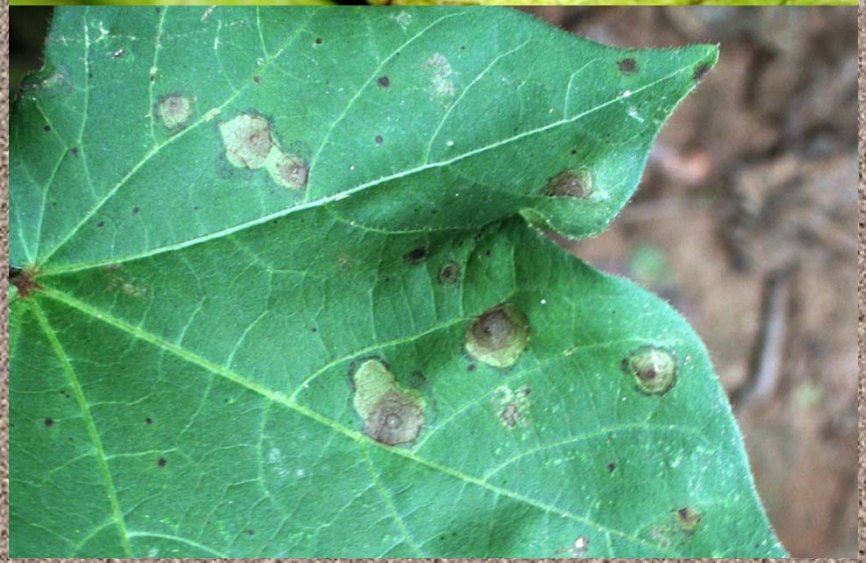
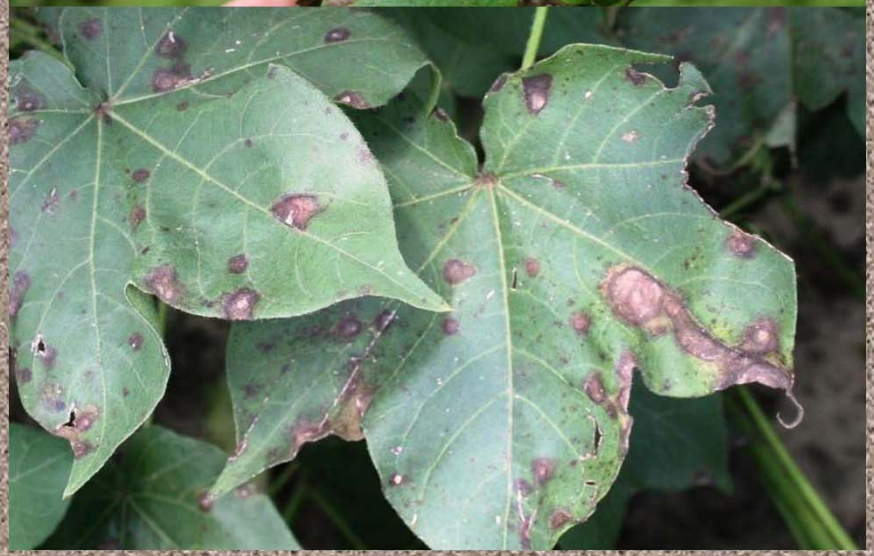


Cotton Incorporated TARGET SPOT UPDATE

A. K. Hagan
Auburn University

TARGET SPOT



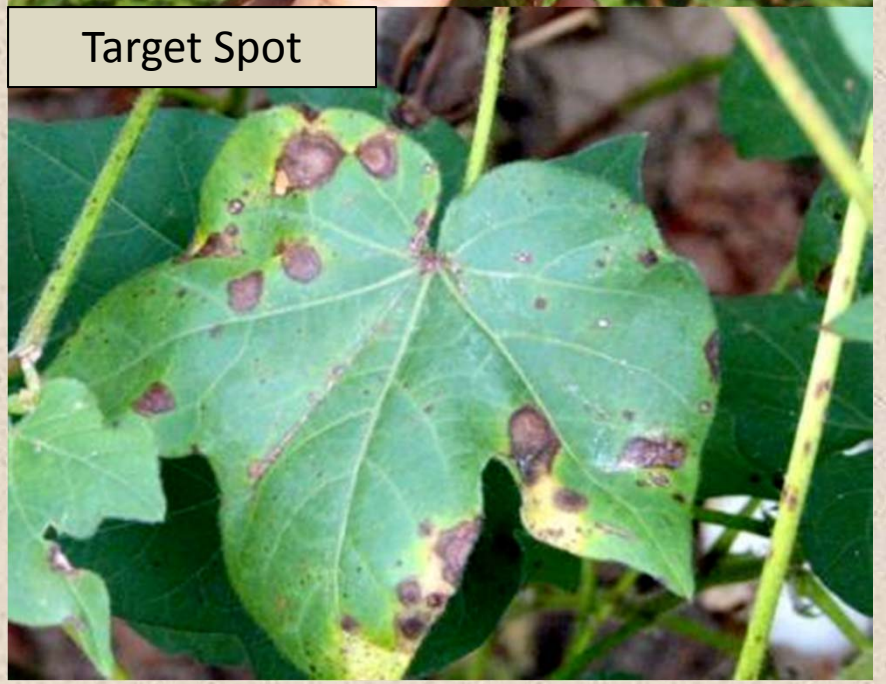


Target Spot

- Easily confused with Ascochyta Blight and Myrothecium Leaf Spot which are seen on 3 to 5 leaf cotton thru first bloom.
- Target Spot is mid- to late season disease.

Ascochyta Blight

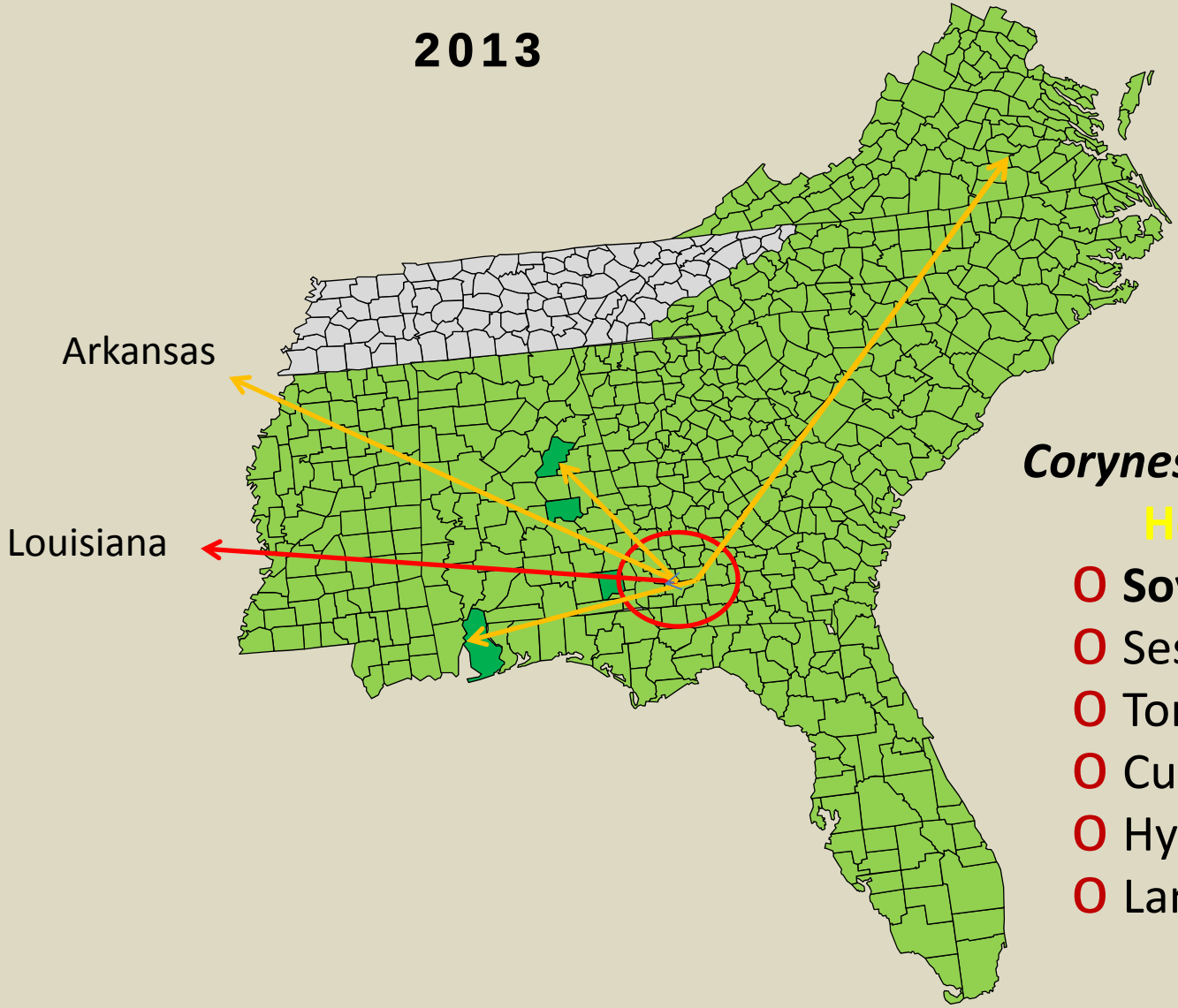
Target Spot



Distribution of Target Spot in Cotton

Southern United States

2013



Corynespora cassiicola

Host Range

- O **Soybean**
- O Sesame
- O Tomato
- O Cucumber
- O Hydrangea
- O Lantana

Target Spot

- Moisture driven disease.
- Develops quickly after canopy closure.
- Disease of ‘rank’ cotton.
- Irrigated cotton with high yield potential is at greatest risk as is cotton in high rainfall regions of Coastal South.
- Rotation and tillage impacts are unclear.

DOES TARGET SPOT REDUCE YIELD?

Estimate of 200 lb lint/A

Fulmer *et al.* 2012. PD 96:1066.

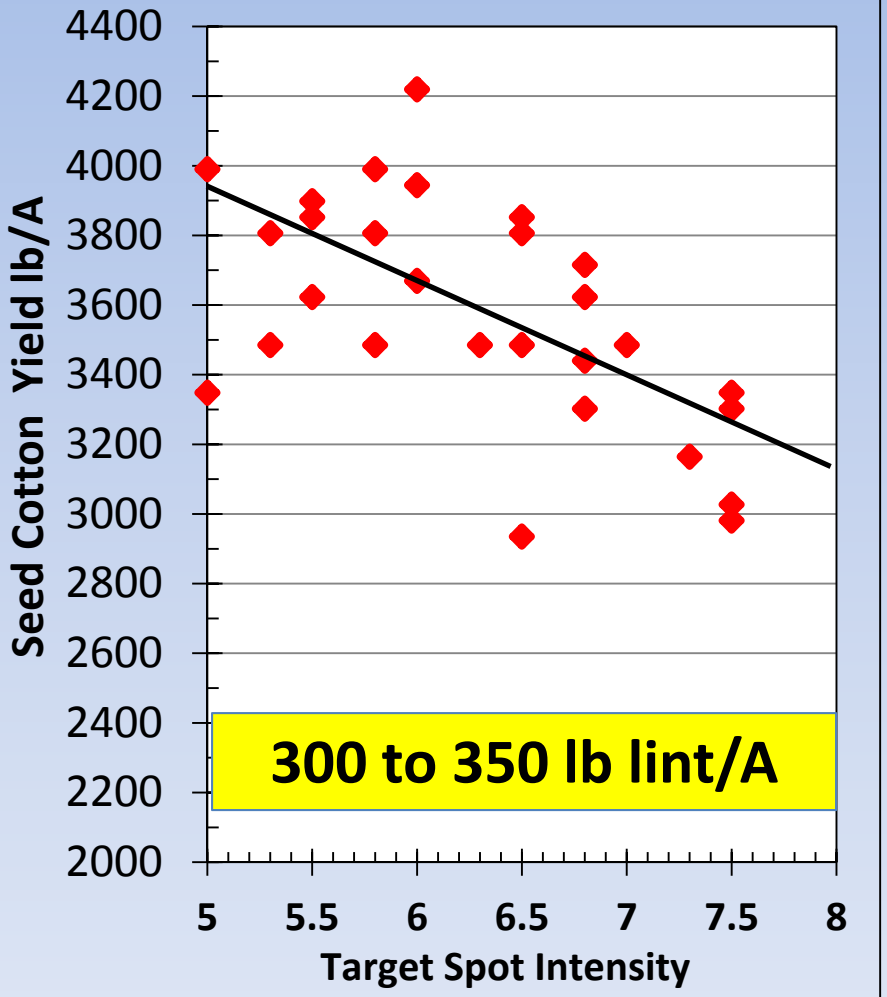
Claims of up to 600 lb lint/A

Possible TS Impacts on Yield

- If leaf(s) associated with immature boll(s) are lost due to TS, bolls may not mature.
- Heavy late-season defoliation may trigger square and immature boll shed in tops.
- Late-season leaf shed in mid canopy after bolls mature may not impact yield, it’s more of harvest aid.

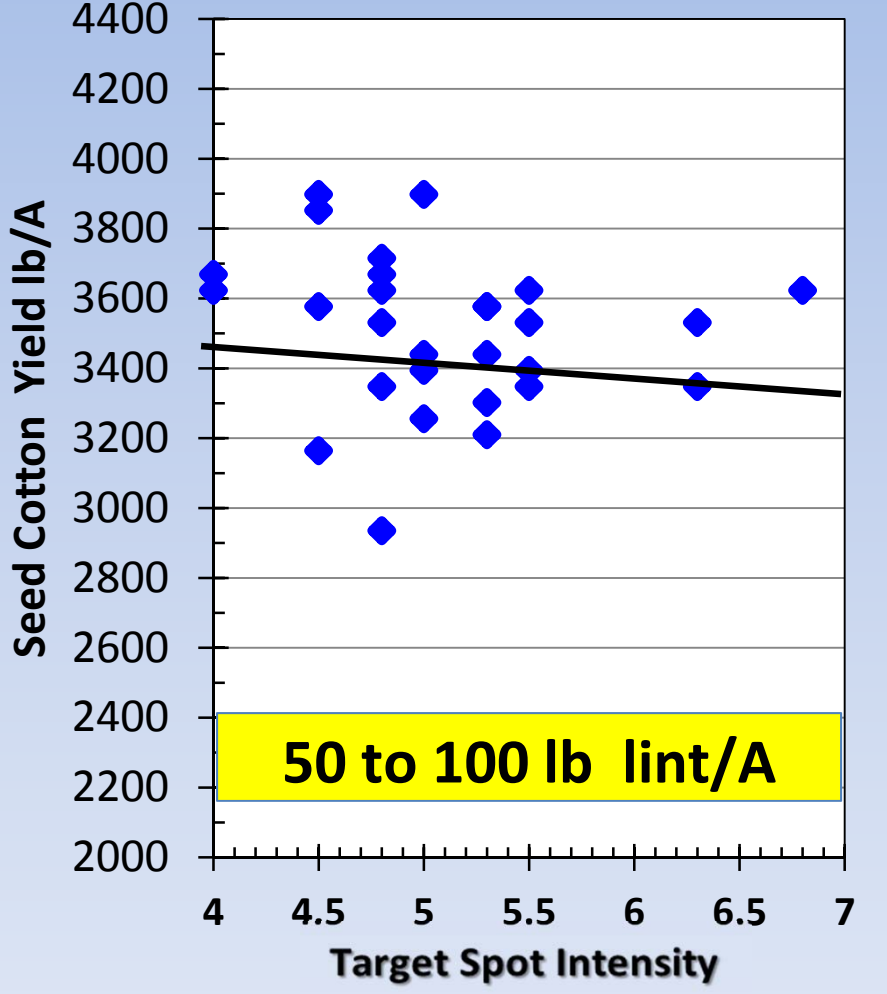
Target spot impact on seed cotton yield – GC 2012

Phytogen 499



Yield = 5121.7 - 245.84*(TSI), R^2 = 0.35***

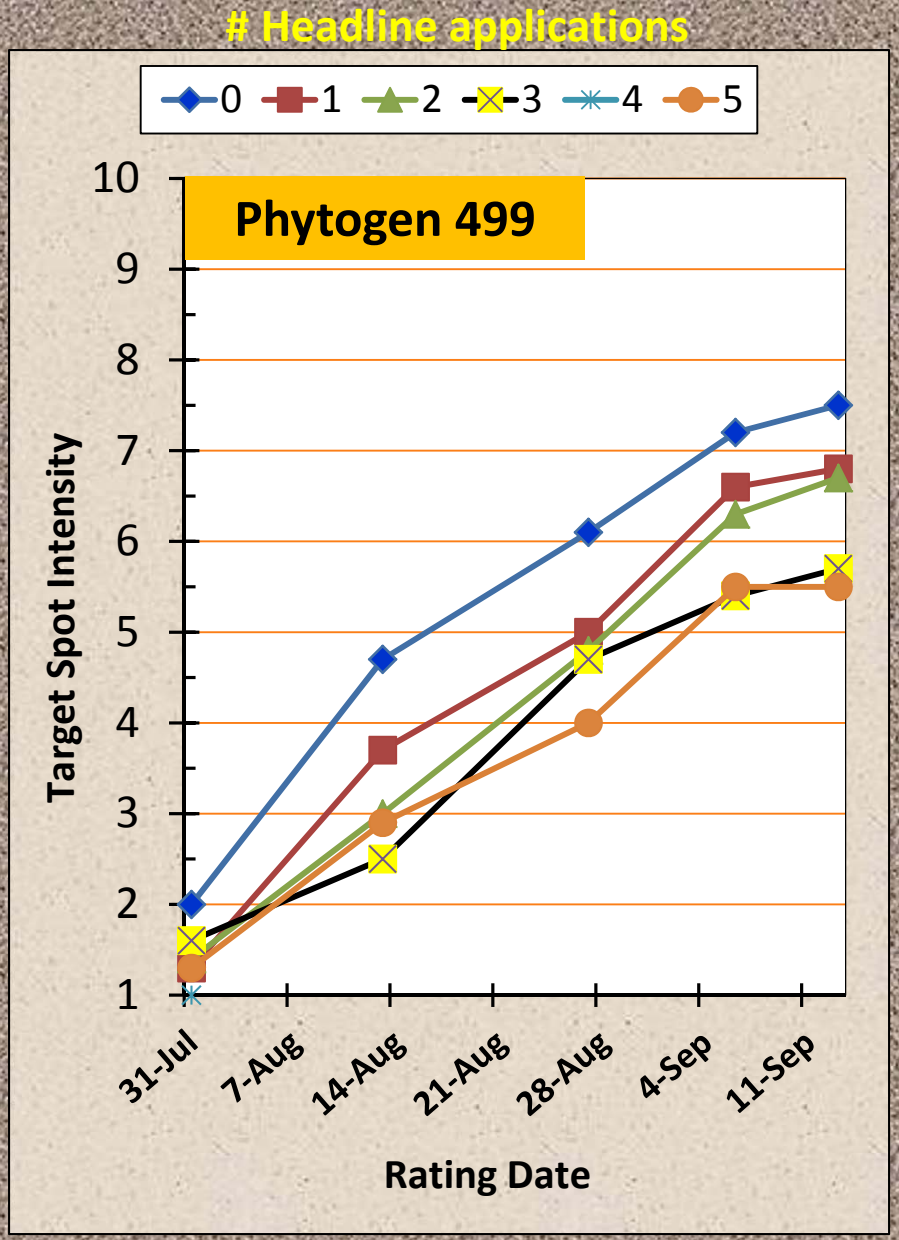
DPL 1050

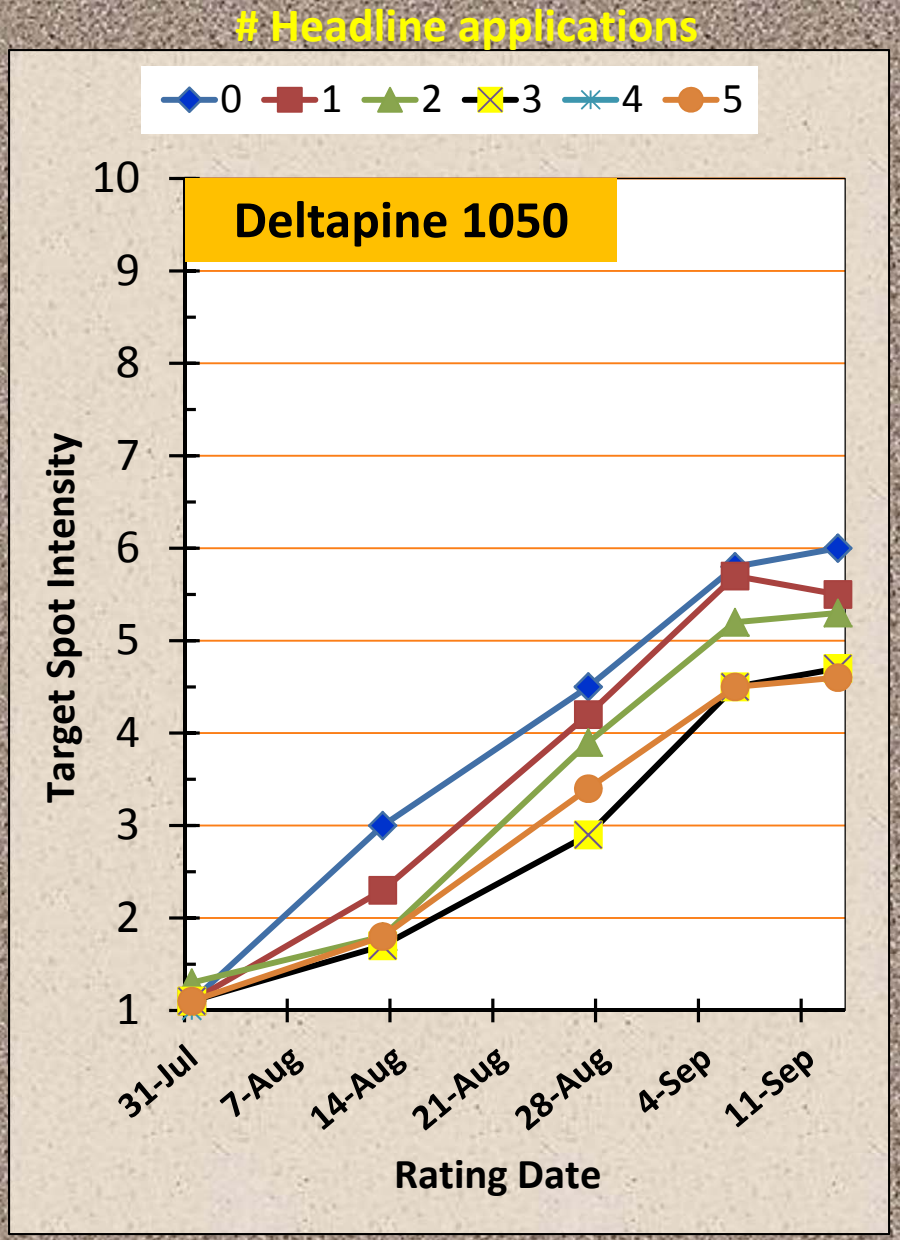


Yield = 3788.03 – 55.84*(TSI), R^2 = 0.03 NS


No Impact of
Target Spot on
Lint Quality in 3
2012 Studies

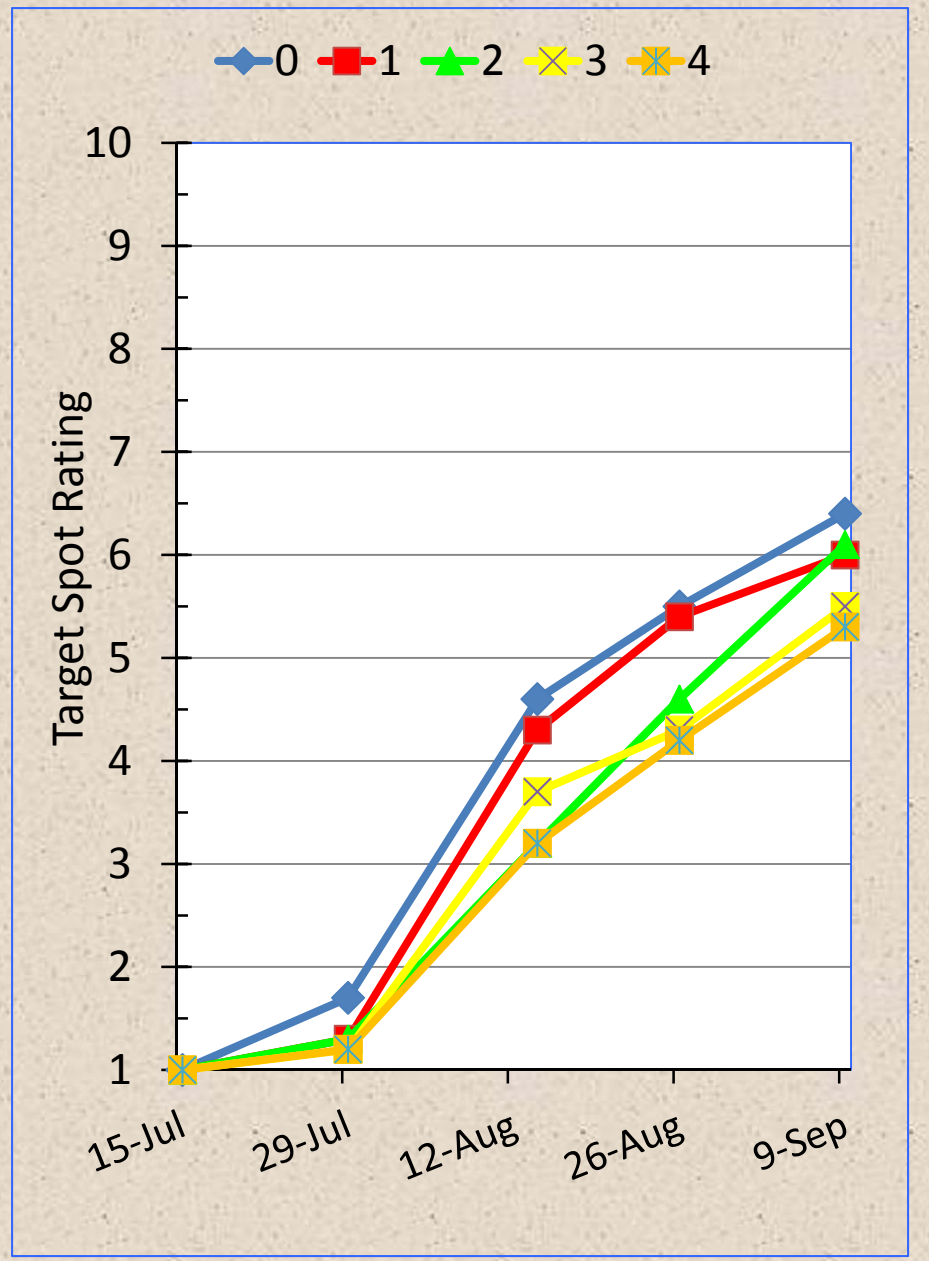
Disease Progress in Two Cotton Varieties - 2012





First fungicide application at first bloom – July 6.

Mean Disease Progress at GC on Two Varieties 2013



No. Apps	Jul 15	Jul 29	Aug 14	Aug 26	Sep 9
0	1 a	1.7 a	4.6 a	5.5 a	6.4
1	1 a	1.3 a	4.3 bc	5.4 a	6
2	1 a	1.3 a	3.2 c	4.6 b	6.1
3	1 a	1.2 a	3.7 bc	4.3 b	5.5
4	1 a	1.2 a	3.2 c	4.2 b	5.3
Cotton Variety					
P499	1 a	1.4 a	3.8 a	4.8 a	5.7
D1252	1 a	1.2 a	3.4 b	4.5 b	4.6


Cotton Variety
Sensitivity To
Target Spot

Cotton variety and fungicide impact Target Spot

Cotton Variety	TS Rating
Phytogen 499	5.7 a
Phytogen 565	5.3 ab
DPL 1137	4.9 bc
DPL 1050	4.8 c
DPL 1252	4.9 bc
Fibermax 1944	4.5 c
Stoneville 6448	4.8 c
Fungicide Program	**TS Rating**
Headline 12 fl oz @ 1st and 3rd wk	4.6 b
Control	5.4 a

Target Spot Reaction of Cotton Varieties – PEF

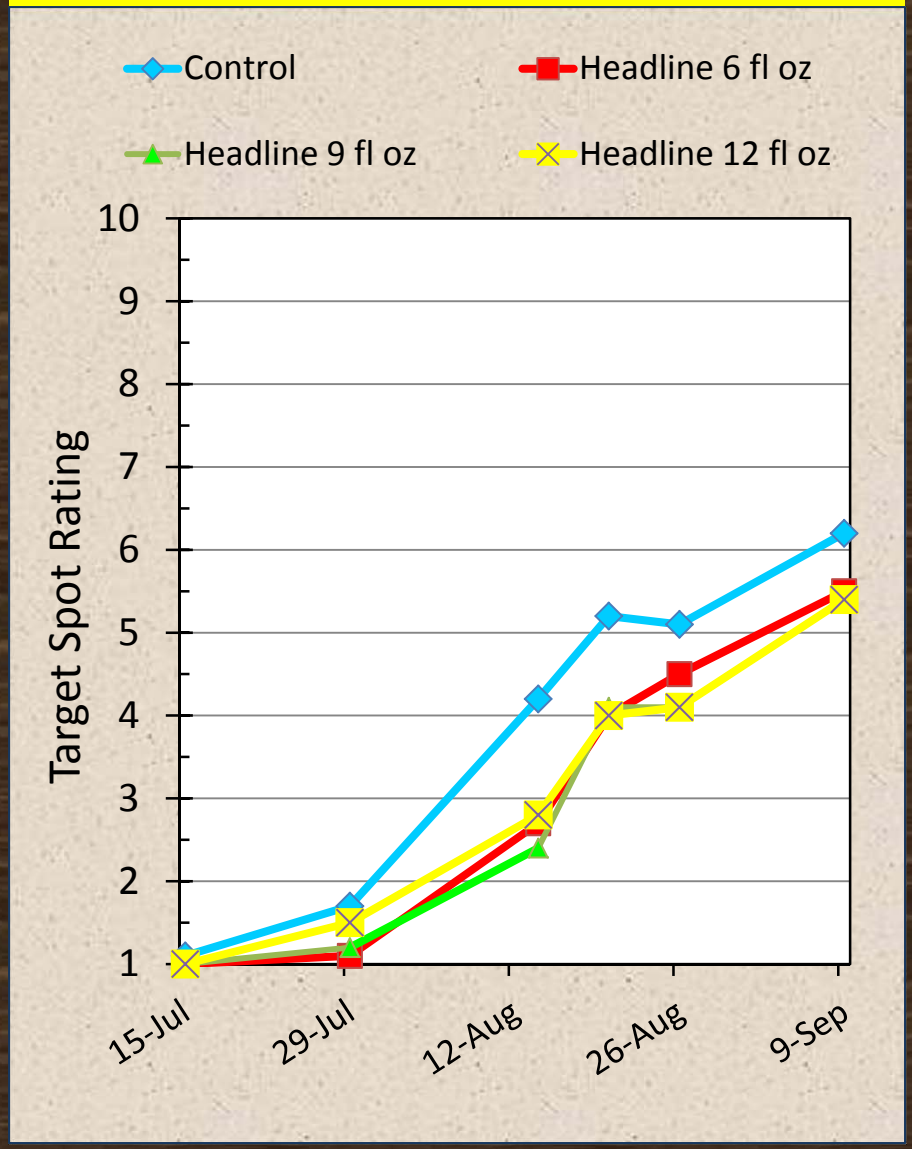
Cotton variety	Target Spot	Cotton Variety	Target Spot
Phytogen 339 WFR	6.3 b-e	Croplan CG 3787 B2RF	7.0 a
Phytogen 375 WFR	6.5 a-d	Bayer ST 4946 GLB2	6.5 a-d
Phytogen 499 WFR	6.4 a-d	Bayer ST 6448 GLB2	5.9 de
Phytogen 575 WFR	6.7 ab	DynaGro 2619 B2RF	6.4 a-d
DPL 1048 B2RF	6.5 a-d	Americot 1511 B2RF	6.4 a-d
DPL 1050 B2RF	6.3 b-e	Americot 5315 B2RF	6.6 abc
DPL 1137 B2RF	6.3 b-e	ALL Tex Nitro 44	6.2 b-e
DPL 1219 B2RF	5.8 e		
DPL 1252 B2RF	6.3 b-e	≤ 10% bolls open	


Fungicide
Efficacy

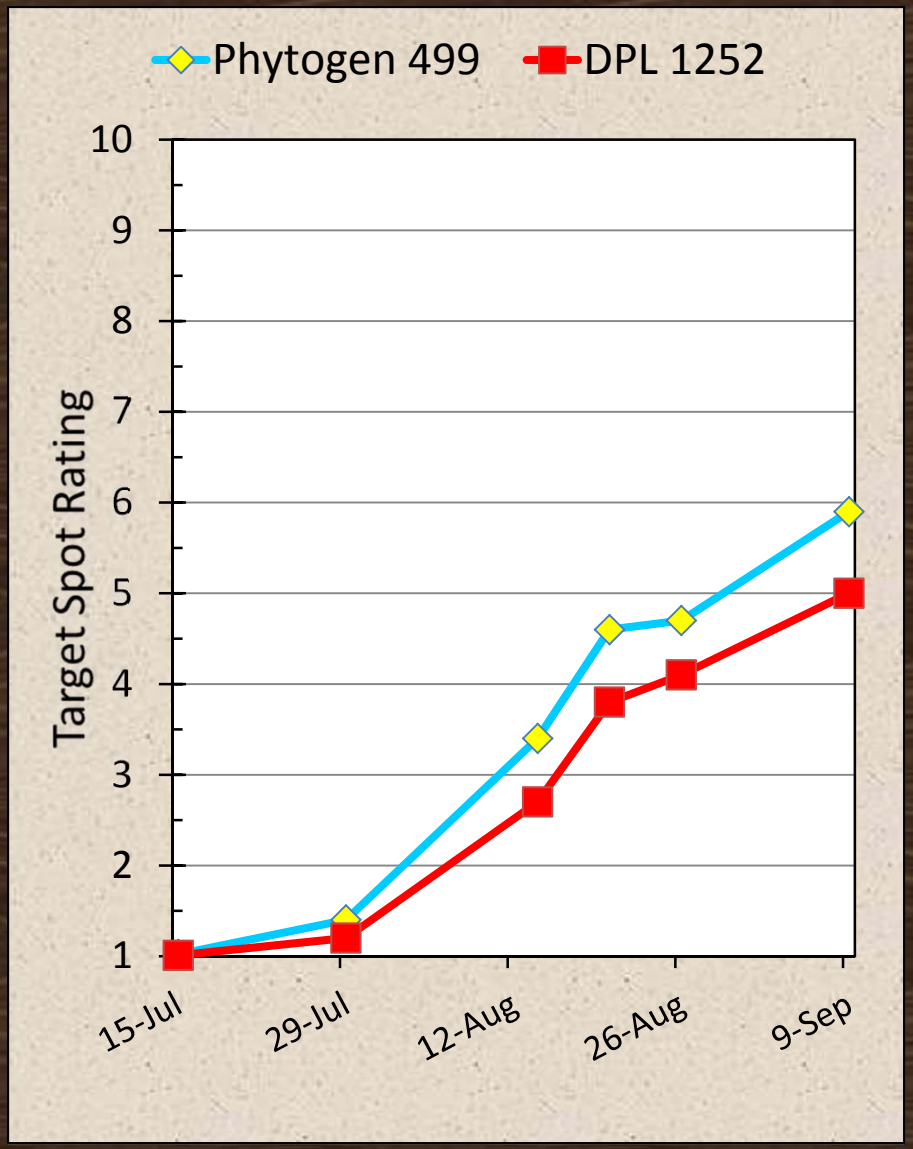
Comparison of Recommended Fungicides for Target Spot Control on Two Cotton Varieties – GC 2013

Treatments and Timing (wk of bloom)	Aug 26	Sep9
Control	5.1 a	6.2
Twinline 7 fl oz (2nd, 4th, and 6th wk)	4.2 bc	5.0
Twinline 8.5 fl oz (2nd, 4th, and 6th wk)	4.3 bc	5.2
Headline 6 fl oz (2nd and 4th wk)	4.5 bc	5.5
Headline 9 fl oz (2nd and 4th wk)	4.1 c	5.3
Headline 12 fl oz (2nd and 4th wk)	4.1 c	5.4
Quadris 6 fl oz (2nd and 4th wk)	4.6 b	5.6
Quadris 9 fl oz (2nd, 4th, and 6th wk)	4.4 bc	5.5

Impact of application rate on the control of target spot on cotton with Headline – GC 2013



Development of target spot on two cotton varieties – GC 2013



Headline Programs Compared – GC 2013

Fungicide and Rate	Timing	Aug 26	AUDPC
Control	---	6.8 a	188 a
Headline 6 fl oz	2nd and 4th wk Bloom	6.1 b	159 bcd
Headline 12 fl oz	2nd and 4th wk Bloom	5.1 e	132 ef
Headline 12 fl oz + Bravo 1 pt	PHS, 2nd, and 4th wk Bloom	5.3 e	125 f
Headline 12 fl oz + Bravo 1 pt	2nd, 4th, and 6th wk Bloom	5.1 e	140 def

Fungicides compared for target spot control on two cotton varieties – FC 2013

Fungicide and Rate /A	No. Sprays*	Disease Rating
Control	---	5.7 a
Enclosure 4E 2 pt/A	2	5.1 bc
Enclosure 4E 2 pt/A	4	5.4 ab
Enclosure 4E 2 pt/A	6	4.9 cd
Headline 9 fl oz	2	4.5 d
Quadris 6 fl oz	2	5.2 bc
Quadris 6 fl oz	3	5.3 abc

* Scheduled

Syngenta Fungicides for Target Spot Control – GC 2013

Treatments	Jul 15	Jul 29	Aug 14	Aug 26	AUDPC
Control	1.0	3.6 a	5.8 a	6.8 a	188 a
Headline 6 fl oz (2x)*	1.0	2.7 a-d	5.0 bc	6.1 ab	159 b-d
Quadris 6 fl oz (2x)*	1.0	2.9 a-d	4.8 cd	5.4 c-e	154 b-d
Quadris Top 8 fl oz (2x)*	1.0	2.7 a-e	4.9 cd	6.0 b	155 b-d
A20760 6.7 fl oz (2X)*	1.0	2.3 c-e	5.0 bc	5.9 bc	150 c-e
A15457 10.3 fl oz (2X)*	1.0	3.2 ab	5.0 bc	6.4 ab	168 a-c
A18126 4.76 fl oz (2X)*	1.0	3.0 a-c	5.3 bc	6.1 ab	167 a-c
Actigard 0.7 oz*	1.0	3.3 ab	5.4 ab	6.4 ab	174 ab
Actigard 7 oz + Quadris (2x)*	1.0	2.4 b-e	5.1 bc	5.8 b-d	153 b-e
Actigard 0.7 oz + A18126 (2x)*	1.0	2.5 b-e	5.0 bc	5.7 b-e	153 b-e
Headline 12 fl oz (3x)**	1.0	2.0 de	4.4 de	5.1 e	132 ef

*Applied 3rd and 6th week of bloom; **Applied 2nd, 4th, and 6th week of bloom.

Cheminova Target Spot Study – GC 2013

Treatments and Timing (wk of bloom)	Aug 26
Control	6.4 a
Topguard 14 fl oz + Koverall 2 lb (PS, 2nd, 4th)	5.3 d
Topguard 28 fl oz (2nd wk)	5.3 d
Topguard 14 fl oz (PS, 2nd, 4th)	5.4 cd
Headline 12 fl oz (PS, 2nd, 4th)	5.8 bcd
Fontelis 24 fl oz (2nd and 4th)	5.9 bc
Fontelis 16 fl oz (2nd and 4th)	5.7 bcd
Topguard 14 fl oz (2nd wk)	5.7 bcd

BASF Target Spot Study – GC 2013

Treatments and Timing (wk of bloom)	Aug 26
Control	5.7 a
Twinline 8.5 fl oz (2nd and 4th wk)	4.5 bcd
Headline 6 fl oz (2nd and 4th wk)	4.4 cd
Headline 12 fl oz (2nd and 4th wk)	4.4 cd
Priaxor fb Headline AMP (2nd and 4th wk)	4.4 cd
Priaxor 4 fl oz (2nd and 4th wk)	4.3 d
Sercadis 4.5 fl oz (2nd and 4thwk)	4.4 cd
Muscle 7.2 fl oz (2nd and 4th wk)	4.9 b

Application Timing for Target Spot Control – GC, Aug 26 2013

Phytogen 499		
Fungicide	Timing (wk of bloom)	TS Rating
Headline	PHS + 2nd wk	6.2 a
Headline	2nd & 4th wk	5.2 ab
Headline	4th & 6th wk	4.5 cde
Headline	6th & 8th wk	5.2 ab
Bravo WS	2 wks (4x)	5.0 bcd
Bravo WS + Headline	2 wks (4x)	4.3 ef
Control	---	6.2 a

DPL 1252		
Fungicide	Timing (wk of bloom)	TS Rating
Headline	PHS + 2nd wk	4.9 bcd
Headline	2nd & 4th wk	4.4 def
Headline	4th & 6th wk	3.9 f
Headline	6th & 8th wk	4.4 def
Bravo WS	2 wks (4x)	4.1 ef
Bravo WS + Headline	2 wks (4x)	4.0 f
Control	---	5.1 bc

Application Timing for Target Spot Control GC 2013 - Final

Phytogen 499		
Fungicide	Timing (wk of bloom)	TS Rating
Headline	PHS + 2nd wk	6.7
Headline	2nd & 4th wk	6.4
Headline	4th & 6th wk	5.8
Headline	6th & 8th wk	5.7
Bravo WS	2 wks (4x)	5.5
Bravo WS + Headline	2 wks (4x)	5.7
Control	---	7.0

DPL 1252		
Fungicide	Timing (wk of bloom)	TS Rating
Headline	PHS + 2nd wk	5.9
Headline	2nd & 4th wk	5.1
Headline	4th & 6th wk	5.0
Headline	6th & 8th wk	5.1
Bravo WS	2 wks (4x)	5.2
Bravo WS + Headline	2 wks (4x)	4.8
Control	---	6.0

Fungicide placement and control of target spot on cotton – BARU 2013

Nozzle Arrangement	Jul 24	Aug 15	Aug 27	Sep 10
Broadcast	1.4 a	3.0 b	4.0 b	4.9
Drops	1.3 a	2.5 b	3.5 c	4.6
Control	1.4 a	3.9 c	4.6 a	5.7

Fungicide Placement and Target Spot Control – BARU 2013

Cotton Variety	Fungicide	Target Spot	
Phytogen 499	Control	5.1 a	6.5
	Headline 9 fl oz	4.3 bc	5.5
	Quadris 9 fl oz	4.6 b	5.8
DPL 1252	Control	3.9 c	4.8
	Headline 9 fl oz	2.6 e	3.5
	Quadris 9 fl oz	3.4 d	4.3

Fungicide placement and control of target spot on cotton – Field Crops Unit 2013

Nozzle Arrangement	Aug 6	Aug 13	Aug 31	Sept 6
Broadcast	2.6 ab	3.8 a	4.4 b	4.6 b
Drop	2.4 b	3.8 a	4.2 b	4.6 b
Control	3.0 a	3.9 a	4.9 a	5.5 a

Cotton variety impacts target spot intensity – Field Crops Unit 2013

Cotton Variety	Aug 6	Aug 13	Aug 31	Sept 6
Phytogen 499	2.9 a	4.0 a	4.9 a	5.4 a
DPL 1252	2.4 b	3.6 b	3.9 b	4.1 b

Fungicide placement for target spot control – FC 2013

Fungicide	Aug 31	Sep 6
Control	4.9 a	5.6 a
Headline 9 fl oz	4.0 c	4.3 c
Quadris 9 fl oz	4.5 b	4.9 b

Target Spot Study Results - 2013

- Disease following same pattern in South AL as was seen in 2012.
- Considerable TS in Central AL studies.
- Limited Target Spot in TN Valley.
- Varieties differ in their susceptibility to TS with results similar to those seen in 2012.
- Fungicide efficacy is marginal with Headline often having an advantage.
- No ‘silver bullet’ among candidate fungicides.
- Little advantage from additional fungicide applications.
- Fine tuning application timing and placement may help enhance target spot control.
- Tillage and rotation impacts appear minimal.

Comparison of Recommended Fungicides for Target Spot Control on Two Cotton Varieties – GC 2013

Treatments and Timing (wk of bloom)	Aug 20	Aug 26
Control	5.3 a	5.1 a
Twinline 7 fl oz (2nd, 4th, and 6th wk)	3.8 c	4.2 bc
Twinline 8.5 fl oz (2nd, 4th, and 6th wk)	4.2 bc	4.3 bc
Headline 6 fl oz (2nd and 4th wk)	4.0 bc	4.5 bc
Headline 9 fl oz (2nd and 4th wk)	4.1 bc	4.1 c
Headline 12 fl oz (2nd and 4th wk)	3.9 c	4.1 c
Quadris 6 fl oz (2nd and 4th wk)	4.5 b	4.6 b
Quadris 9 fl oz (2nd, 4th, and 6th wk)	4.2 bc	4.4 bc