

II. THE EFFECT OF PLANTING DATE, WEATHER CONDITIONS AND IN-FURROW FUNGICIDE ON EMERGENCE AND GROWTH OF COTTON (TAREC Research farm)

A. PURPOSE: To determine the effect of planting date on seedling disease and the response to in-furrow fungicide in Virginia

B. EXPERIMENTAL DESIGN:

1. Split-plot with planting date in main plots and in-furrow fungicide in subplots
2. Subplots of two, 30-ft rows spaced 36 in. apart
3. Fifteen-ft alleyways between blocks
4. Seven replications in a randomized complete block

C. VARIETY, GERMINATION RATE AND PLANTING DATE (MAINPLOTS): DP449BR Lot 2B4E490621A, Treatment Code 2 (Allegiance + Lorsban 30FL + RTU Baytan + Thiram FL); warm germ 93%, cool germ 849%. Seed were planted at a rate of 3.5 seed/ft and 0.5 to 0.75 in. depth.

1. Apr 6
2. April 12
3. Apr 20
4. Apr 27
5. May 3
6. May 11
7. May 18

D. TREATMENT AND RATE/1000 ft of row

1. Quadris 2.08F 0.6 fl oz + Ridomil Gold 0.12 fl oz/1000 ft of row
2. Untreated check

E. ADDITIONAL INFORMATION:

1. Location: TAREC Research farm, 1045 Hare Rd., Suffolk
2. Crop history: peanut 2004, cotton 2003, peanut 2002
3. Land preparation: rip-strip tilled
4. Soil fertility report (Dec 2004):

pH.....	5.9	K	34 ppm
Ca	209 ppm	Zn.....	0.5 ppm
Mg.....	23 ppm	Mn.....	2.2 ppm
P	31 ppm	Soil type.....	Kenansville loamy sand
5. Herbicide: Cotoran 1 qt + Prowl 1 pt/A (7 Apr)
Roundup Ultra Max 22 fl oz/A (2 May, 27 May, 14 Jun)
MSMA 1 qt + Envoke 0.15 oz + Caparol 1.5 pt/A directed spray (12 Jul)
6. Insecticide: Temik 15G 5 lb/A (at planting)
Orthene 97S 6 oz/A (27 May, 14 Jun)
Baythroid 2E 2 fl oz/A (5 Aug, 11 Aug)
7. Growth regulator: Pentia 8 fl oz/A (Plant dates 1-5: 7 Jul, Plant dates 1-7: 22 Jul)
Pix Plus 8 fl oz/A (Plant dates 1-7: 5 Aug)
8. Defoliant/Boll opener: Finish 1 qt + Def 6 oz + Dropp 0.1 lb/A (29 Sep)
9. Fertilization: 9-15-36 330 lb/A (31 Mar)
Liquid boron 1 qt/A (21 Jun, 5 Jul)
32% N 30 lb/A (21 Jun, 5 Jul)
10. Harvest date: 18 Oct 2005

Table 7. Weather conditions after planting.

Planting date	Days after planting								Total
	0	1	2	3	4	5	6	7	
<u>Rainfall (in.)*</u>									
Apr 6.....	0.00	0.11	0.35	0.01	0.00	0.00	0.06	0.37	0.90
Apr 12.....	0.06	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.43
Apr 20.....	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.12
Apr 27.....	0.00	0.00	0.13	0.00	0.16	0.00	0.00	0.00	0.29
May 3.....	0.00	0.00	0.01	1.71	0.00	0.00	0.00	0.00	1.72
May 11.....	0.00	0.00	0.00	0.00	0.69	0.26	0.00	0.03	0.98
May 18.....	0.03	0.08	0.52	0.00	0.00	0.00	0.26	0.09	0.98
<u>Soil Temp.</u>									<u>Ave</u>
Apr 6.....	58.5	60.3	61.4	59.2	57.1	57.6	55.1	52.2	57.7
Apr 12.....	55.1	52.2	52.8	53.1	52.7	54.3	57.4	60.5	54.8
Apr 20.....	62.6	63.7	63.3	63.5	57.8	57.2	57.3	60.4	60.7
Apr 27.....	60.4	60.8	60.2	62.0	64.1	61.5	61.9	60.8	61.5
May 3.....	61.9	60.8	60.3	57.2	58.4	61.3	62.7	64.1	60.8
May 11.....	65.8	68.1	65.9	66.0	68.0	68.7	68.0	67.1	67.2
May 18.....	67.1	66.2	66.2	66.0	66.0	68.2	66.5	63.3	66.2

* Rainfall and soil temperature were recorded by an electronic weather monitor adjacent to the field site. Soil temperature was measured at 4-in. depth under managed turf.

Table 8. Accumulated degree days (DD₆₀) and rainfall from planting through harvest (Oct 18).

Planting date	DD ₆₀	Rainfall (in.)
Apr 6.....	2361	22.03
Apr 12.....	2337	21.56
Apr 20.....	2318	21.13
Apr 27.....	2284	21.01
May 3.....	2261	20.72
May 11.....	2236	19.00
May 18.....	2180	18.05

* Data from Peanut/Cotton InfoNet (www.ipm.vt.edu/InfoNet) weather station at TAREC Research farm.

Table 9. Effect of planting date and in-furrow fungicide on emergence and plant height of cotton.

Plant date, treatment and rate/1000 ft of row	Plants/ft ¹		Plant height (in.) ²		
	2 wk AP	4 wk AP	Jun 20	Jul 13	Aug 1
Apr 6					
Quadris + Ridomil Gold....	0.1	0.2	7.0	21.2	30.5*
Untreated check.....	0.0	0.6	7.1	20.9	32.4
April 12					
Quadris + Ridomil Gold....	0.1	0.6	7.1	21.6	30.2
Untreated check.....	0.1	0.7	7.3	21.8	29.7
Apr 20					
Quadris + Ridomil Gold....	0.9	1.4	8.2	23.8	30.8
Untreated check.....	0.7	1.3	7.8	23.6	30.8
Apr 27					
Quadris + Ridomil Gold....	1.2	1.9	7.1	22.0	29.3*
Untreated check.....	1.3	1.9	7.4	21.8	28.2
May 3					
Quadris + Ridomil Gold....	1.5	1.6	7.1	22.5	29.8
Untreated check.....	1.6	1.7	7.0	21.9	29.9
May 11					
Quadris + Ridomil Gold....	2.0	2.0	6.1	22.5	31.8
Untreated check.....	2.0	2.1	5.7	22.5	31.7
May 18					
Quadris + Ridomil Gold....	1.4*	1.5*	4.6*	20.5	31.0
Untreated check.....	1.0	1.1	3.9	19.5	30.9
Plant date mean					
Apr 6.....	0.0	0.2	6.7 b	21.1 c	31.4
April 12.....	0.1	0.6	7.2 b	21.7 bc	29.9
Apr 20.....	0.8	1.3	8.0 a	23.7 a	30.8
Apr 27.....	1.2	1.9	7.3 b	21.9 bc	28.8
May 3.....	1.6	1.7	7.1 b	22.2 b	29.8
May 11.....	2.0	2.0	5.9 c	22.5 b	31.8
May 18.....	1.2	1.3	4.3 d	20.0 d	30.9
Treatment mean					
Quadris + Ridomil Gold....	1.0	1.3	6.7	20.0	30.5
Untreated check.....	1.0	1.3	6.5	21.7	30.5
Split-plot analysis					
Plant date.....	.0001	.0001	.0001	.0125	.1044
Treatment.....	.3106	.5584	.3564	.1479	.9416
Plant date x treatment.....	.0085	.0135	.1395	.8782	.0177

¹ Determined from counts of two, 30-ft rows per plot (AP=after planting).² Determined from measurement of six plants per plot (Jun 20) and four plants/plot (Jul 13, Aug 1).

Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date.

Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls test (P=0.05).

Table 10. Effect of planting date and in-furrow fungicide on flower counts, number of nodes and open bolls in cotton.

Plant date, treatment and rate/1000 ft of row	Flowers/12 ft of row ¹			Nodes/plant ²		Open bolls ³ (Sep 7)
	Jul 14	Jul 22	Aug 1	Jul 13	Aug 1	
Apr 6						
Quadris + Ridomil Gold .	0.7	3.3*	26.6	13.4	18.0	2.8
Untreated check	1.1	4.3	26.2	13.5	18.3	3.6
April 12						
Quadris + Ridomil Gold .	2.0	10.2	30.6	12.7	16.2	2.8
Untreated check	3.0	12.8	40.9	12.5	16.0	3.1
Apr 20						
Quadris + Ridomil Gold .	3.6	16.2	44.0	12.3	15.1	3.1
Untreated check	3.5	15.3	45.4	12.0	15.3	2.9
Apr 27						
Quadris + Ridomil Gold .	0.7	12.7*	31.7	10.7	13.5	1.9
Untreated check	1.0	15.6	35.0	10.8	13.3	2.0
May 3						
Quadris + Ridomil Gold .	0.4	11.8	34.3	11.2	14.0	1.0
Untreated check	0.2	12.0	34.4	10.9	13.5	1.0
May 11						
Quadris + Ridomil Gold .	0.0	7.2	33.0	10.5	13.3	0.7*
Untreated check	0.0	5.4	39.9	10.6	13.5	0.4
May 18						
Quadris + Ridomil Gold .	0.0	0.5	24.9	10.4	14.2	0.0
Untreated check	0.0	0.3	25.3	10.1	13.9	0.0
Plant date mean						
Apr 6	0.9 c	3.8 d	26.4 bc	13.4 a	18.2 a	3.2 a
April 12	2.5 b	11.5 b	35.7 b	12.6 b	16.1 b	2.9 a
Apr 20	3.5 a	15.8 a	44.7 a	12.1 b	15.2 c	3.0 a
Apr 27	0.9 c	14.1 a	33.4 bc	10.8 cd	13.4 d	2.0 b
May 3	0.3 d	11.9 b	34.4 bc	11.0 c	13.8 d	1.0 c
May 11	0.0 d	6.3 c	36.4 b	10.6 cd	13.4 d	0.6 cd
May 18	0.0 d	0.4 e	25.1 c	10.3 d	14.1 d	0.0 d
Treatment mean						
Quadris + Ridomil Gold .	1.0	8.9	32.1	11.6	14.9	1.8
Untreated check	1.2	9.4	35.3	11.5	14.8	1.9
Split-plot analysis						
Plant date .....	.0001	.0001	.0001	.0001	.0001	.0001
Treatment .....	.1324	.2636	.1023	.4992	.6281	.6248
Plant date x treatment .....	.1998	.0900	.7004	.8076	.7051	.6148

¹ Determined from counts of two, 6-ft sections in each row.

² Determined from measurement of six plants per plot (Jun 20) and four plant/plot (Jul 13, Aug 1).

³ Determined from counts of four plants per plot.

Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date.

Means followed by the same letter(s) in a column are not significantly different according to Student-Newman-Keuls test (P=0.05).

Table 11. Effect of planting date and in-furrow fungicide on yield of cotton.

Plant date, treatment and rate/1000 ft of row	Yield	
	lb/A ¹	bales/A ²
Apr 6		
Quadris + Ridomil Gold	1737	1.48
Untreated check	1530	1.30
April 12		
Quadris + Ridomil Gold	2892	2.50
Untreated check	2842	2.46
Apr 20		
Quadris + Ridomil Gold	3751	3.32
Untreated check	3704	3.28
Apr 27		
Quadris + Ridomil Gold	3286	2.91
Untreated check	3321	2.94
May 3		
Quadris + Ridomil Gold	3542	3.14
Untreated check	3208	2.84
May 11		
Quadris + Ridomil Gold	3196	2.76
Untreated check	3041	2.63
May 18		
Quadris + Ridomil Gold	2432 *	1.98 *
Untreated check	2100	1.71
Plant date mean		
Apr 6	1634 e	1.39 e
April 12	2867 c	2.48 c
Apr 20	3728 a	3.30 a
Apr 27	3303 b	2.92 b
May 3	3375 b	2.99 b
May 11	3118 bc	2.70 bc
May 18	2266 d	1.84 d
Treatment mean		
Quadris + Ridomil Gold	2977 a	2.58 a
Untreated check	2821 b	2.45 b
Split-plot analysis		
Plant date .....	.0001	.0001
Treatment .....	.0479	.0500
Plant date x treatment .....	.7990	.8081

¹ Weight (lb/A) includes lint + seed.² Bales/A are based on weight of lint which was determined by ginning 1 lb samples from each variety. One bale = 480 lb of lint. Plots were harvested on 18 Oct 2005. Asterisk (*) denotes statistical significance from untreated check (LSD, P=0.05) on a given plant date. Means followed by the same letter(s) in a column and group are not significantly different according to Student-Newman-Keuls test (P=0.05).