

XXIX. SUSCEPTIBILITY OF VIRGINIA- AND RUNNER-TYPE CULTIVARS OF PEANUT TO TOMATO SPOTTED WILT VIRUS (Wyne Farm, Suffolk)

A. PURPOSE: To determine the value of TSWV resistance in new runner-type cultivars and compare the disease response and yield to virginia-type cultivars

B. EXPERIMENTAL DESIGN:

1. Four randomized complete blocks
2. Ten-ft alleyways between blocks
3. Two, 35-ft rows per plot with 36-in. row spacing
4. Seeding rate of 3 to 4 seed/ft of row

C. CULTIVARS (V = virginia-type; R = runner-type)

1. Andru II (R)
2. ANorden (R)
3. Carver (R)
4. DP-1 (R)
5. Georgia Green (R)
6. Georgia-01R (R)
7. Georgia-02C (R)
8. Hull (R)
9. GA-03L (R)
10. AP-3 (R)
11. C99R (R)
12. AgraTech VC2 (V)
13. Georgia Hi O/L (V)
14. Gregory (V)
15. NC-V11 (V)
16. Champs (V)
17. VA 98R (V)
18. Perry (V)
19. NC 12C (V)
20. Wilson (V)
21. N00098 OL (V)
22. N01013 T (V)
23. N02006 (V)
24. GA 002506 (V)

D. ADDITIONAL INFORMATION:

1. Location: Wyne Farm, Lummis Rd., Suffolk
2. Crop history: Cotton 2004
3. Planting date: 5 May 2005
4. Soil fertility report (Dec. 2004)

pH.....	6.1
Ca	320 ppm
Mg	50 ppm
P	25 ppm
K.....	63 ppm
Zn	0.9 ppm
Mn	1.9 ppm
Soil type	Nansemond fine sandy loam

5. Herbicide:
 - Pre-plant - Dual II Magnum 1 pt + Prowl 1.5 pt/A (21 Apr)
 - Pre-emergence - Dual II Magnum 1 pt + Strongarm 0.45 fl oz/A (13 May)
6. Insecticide: Temik 15G 7 lb/A in furrow (5 May)
 - Orthene 97S 6 oz/A (27 May, 7 Jun)
 - Lorsban 15G 13 lb/A (27 Jun)
7. Acaricide: Danitol 6 fl oz/A (22 Aug)
8. *Cylindrocladium* black rot control: Vapam 7.5 gal/A (21 Apr)
9. Leaf spot control: Bravo WS 1.5 pt (18 Jul, 2 Aug, 22 Sep), Headline 9 fl oz/A (22 Aug)
10. Additional crop management:
 - a. Liquid Mn 1 qt/A (18 Jul, 2 Aug)
 - b. Landplaster: Peanut Maker 1500 lb/A (22 Jun)
 - c. Cultivation: 27 Jun
11. Harvest date: 18 Oct (virginia-type); 29 Oct (runner-type)

Table 100. Plant populations and incidence of tomato spotted wilt virus (TSWV) in field plots of runner- and virginia-types cultivars of peanut

Cultivar and type	Plants/ft ¹ (Jun 7)	TSWV ²				TSWV taproot test ³ (% +)
		Jun 20	Jul 6	Jul 21	Aug 24	
Runner type						
Andru II	2.35 e-g	0.5	6.0	5.3 f-h	8.5 fg	--
ANorden	2.45 d-g	0.5	2.8	5.0 f-h	8.3 fg	--
Carver	2.54 c-f	1.8	4.0	8.3 c-g	21.0 a-d	--
DP-1	2.28 fg	1.3	2.0	5.3 f-h	13.5 c-g	--
Georgia Green	2.69 c-e	0.3	3.8	7.5 c-h	7.5 g	15 bc
Georgia-01R	2.18 g	1.0	2.5	2.5 h	10.5 e-g	--
Georgia-02C	2.48 d-g	1.8	4.0	7.5 c-h	9.3 e-g	--
Hull	2.48 d-g	1.5	5.8	7.0 d-h	7.8 g	9 c
GA-03L	2.23 fg	0.5	3.8	5.0 f-h	8.5 fg	18 bc
AP-3	2.63 c-e	1.0	6.0	4.3 gh	6.0 g	--
C99R	2.51 d-g	0.8	2.3	5.3 f-h	9.8 e-g	--
Virginia type						
AgraTech VC2	2.28 fg	0.3	4.5	8.3 c-g	12.0 d-g	--
Georgia Hi O/L ...	2.55 c-f	1.0	7.5	5.8 e-h	6.3 g	--
Gregory	2.49 d-g	2.0	6.0	10.3 b-f	18.5 b-e	16 bc
NC-V11	2.27 fg	2.5	4.3	13.0 a-c	22.0 a-c	--
Champs	3.35 a	0.8	4.3	9.3 b-g	18.0 b-f	--
VA 98R	2.86 bc	1.8	5.8	17.3 a	22.8 a-c	--
Perry	2.40 d-g	2.0	6.5	11.3 b-e	29.3 a	38 a
NC 12C	2.65 c-e	1.8	7.0	14.3 ab	23.8 ab	--
Wilson	3.12 ab	1.3	4.5	11.5 b-d	15.3 b-g	21 b
N00098 OL	2.54 c-f	1.3	4.3	9.0 b-g	20.5 a-d	--
N01013 T	2.47 d-g	1.0	3.3	7.5 c-h	13.8 c-g	--
N02006	2.71 cd	2.8	4.3	10.3 b-f	14.0 b-g	--
GA 002506	2.69 c-e	1.3	2.5	5.0 f-h	9.3 e-g	--
LSD.....	0.35	n.s.	n.s.	5.5	10.0	10

¹ Determined from counts of two, 35-ft rows per plot.

² Number of symptomatic plants per plot.

³ Three varieties each of virginia- and runner-types were selected for taproot assays. Taproots from 20 randomly selected plants per plot were subjected to an Agdia TSWV immunoassay test when plots were inverted into windrows (virginia-type: 6 Oct, runner-type: 20 Oct).

Means followed by the same letter(s) in a column are not significantly different according to Fisher's protected LSD (P=0.05). "n.s." =not significant.

Table 101. Main stem height, disease incidence and maturity in peanut cultivars.

Cultivar and type	Mainstem height (in.) ¹ (Aug 15)	Sclerotinia blight ² (Aug 24)	Stem rot ² (Aug 24)	CBR ³ (Pre- harvest)	% mature ⁴		
					Sep 9	Sep 28	Oct 10
Runner type							
Andru II	12.3 g-k	0.3	1.3	18.3 a-c	7.3	52.5	54.6
ANorden	12.2 g-k	0.5	1.8	25.3 a	43.9	70.9	70.6
Carver	12.4 f-k	0.8	1.8	16.5 b-d	8.6	44.5	48.5
DP-1	11.1 i-k	0.3	1.5	10.3 d-i	9.4	32.5	44.5
Georgia Green	11.5 h-k	0.0	5.3	23.5 ab	31.1	61.0	80.9
Georgia-01R	11.8 h-k	0.3	2.0	9.3 d-i	11.0	45.8	36.1
Georgia-02C	13.2 d-h	0.5	1.8	10.3 d-i	9.7	31.3	44.6
Hull	10.7 k	0.5	3.0	11.5 c-h	10.8	40.1	45.3
GA-03L	14.0 d-g	0.3	0.3	13.5 c-f	34.8	85.2	69.0
AP-3	15.0 cd	0.8	1.8	22.3 ab	13.6	59.0	55.6
C99R	12.8 e-j	0.5	2.0	13.8 c-e	16.3	50.0	69.6
Virginia type							
AgraTech VC2 ...	12.6 f-k	0.8	0.3	6.3 f-i	24.4	59.6	--
Georgia Hi O/L ..	10.8 jk	0.0	2.5	7.0 e-i	17.9	59.3	--
Gregory	16.1 bc	0.0	1.8	8.3 e-i	25.7	39.4	--
NC-V11	14.7 c-e	0.0	2.5	14.0 c-e	17.8	48.3	--
Champs	13.1 d-i	0.3	1.8	8.8 e-i	36.2	73.4	--
VA 98R	14.1 c-g	0.3	1.5	13.8 c-e	29.7	56.7	--
Perry	15.1 cd	0.0	0.5	4.0 i	27.0	45.1	--
NC 12C	18.7 a	1.0	2.0	5.5 g-i	15.6	48.7	--
Wilson	14.7 c-e	0.5	1.5	12.5 c-g	37.7	53.2	--
N00098 OL	14.4 c-f	0.8	2.8	9.8 d-i	25.6	51.6	--
N01013 T	16.1 bc	0.3	2.5	5.0 hi	19.2	49.6	--
N02006	17.6 ab	0.8	3.3	9.5 d-i	36.6	69.3	--
GA 002506	12.6 f-k	0.8	1.5	7.8 e-i	3.8	9.9	19.7
LSD.....	2.0	n.s.	n.s.	7.4	--	--	--

¹ Data represent measurements of four plants per plot.

² Counts of infection centers in the two center rows of each plot or a total of 70 ft of row. An infection center was a point of active growth by the causal fungus and included 6 in. on either side of that point.

³ Number of symptomatic plants per plot. Virginia-type cultivars were rated on 5 Oct; runner-types were rated on 16 Oct.

⁴ Percentages of whole pods with mesocarp tissues either black or brown. Virginia types were dug on 5 Oct, except GA 002506 because of its late maturity.

Means followed by the same letter(s) in a column are not significantly different according to Fisher's protected LSD test (P=0.05).

Table 102 Yield and value of peanut cultivars.

Cultivar and type	Yield* (lb/A)	Value** (\$/A)
Runner type		
Andru II	3687 fg	633 hi
ANorden	3547 g	615 hi
Carver	4185 c-g	733 gh
DP-1	4042 e-g	606 i
Georgia Green	4056 e-g	725 f-i
Georgia-01R	4479 be	770 e-g
Georgia-02C	4431 b-e	808 c-g
Hull	4322 b-f	691 g-i
GA-03L	4691 b-e	793 d-g
AP-3	4126 d-g	684 g-i
C99R	4707 b-e	802 d-g
Virginia type		
AgraTech VC2	4688 b-e	803 d-g
Georgia Hi O/L	5014 ab	983 ab
Gregory	4826 a-d	865 b-e
NC-V11	4625 b-e	828 c-f
Champs	4537 b-e	836 c-f
VA 98R	4223 c-g	787 e-g
Perry	5492 a	1034 a
NC 12C	4537 b-e	817 c-f
Wilson	4524 b-e	793 d-g
N00098 OL	4311 b-f	765 e-g
N01013 T	5002 ab	911 a-d
N02006	4549 b-e	827 c-f
GA 002506	4858 a-c	928 a-c
LSD	704	125

* Yields of peanuts with 7% moisture. Virginia types were dug on 5 Oct, except for GA 002506 which was dug with the runner types on Oct 20. Virginia types were combined on 18 Oct, and runner-type peanuts were combined on 29 Oct.

** Composite samples of pods from four replications of each cultivar were graded to determine the loan market value which was multiplied by yield to estimate value at farm gate (\$/A).

Means followed by the same letter(s) in a column are not significantly different according to Fisher's Protected LSD (P=0.05).

Table 103. Grade characteristics of peanut cultivars.

Cultivar and type	%*								Value** (¢/lb)
	FM	LSK	FAN	ELK	SS	OK	DK	SMK	
Runner type									
Andru II	0	1	--	--	5	6	0	65	17.17720
ANorden	1	2	--	--	4	6	0	67	17.34667
Carver	0	2	--	--	3	5	1	69	17.51540
DP-1	1	2	--	--	1	13	0	58	14.99515
Georgia Green	0	1	--	--	3	5	0	70	17.87020
Georgia-01R	1	4	--	--	5	4	1	67	17.19091
Georgia-02C	0	1	--	--	5	4	1	70	18.23660
Hull	0	1	--	--	3	9	0	61	15.98920
GA-03L	0	1	--	--	2	5	0	67	16.91000
AP-3	1	1	--	--	2	7	0	65	16.57232
C99R	1	2	--	--	2	5	1	68	17.04303
Virginia type									
AgraTech VC2	1	0	59	29	1	4	2	66	17.11992
Georgia Hi O/L ...	1	3	77	66	3	1	2	74	19.60993
Gregory	1	2	95	58	2	2	1	67	17.91773
NC-V11	1	1	63	43	2	3	2	68	17.91393
Champs	0	1	54	91	1	2	2	68	18.43093
VA 98R	1	1	87	50	2	2	1	70	18.62894
Perry	1	0	92	54	2	2	0	70	18.82004
NC 12C	1	2	92	58	2	2	2	68	17.99856
Wilson	1	0	87	46	2	3	1	65	17.52010
N00098 OL	1	2	97	58	2	2	2	67	17.75366
N01013 T	1	1	85	51	1	3	1	69	18.22183
N02006	1	0	94	59	1	1	2	69	18.17003
GA 002506	1	2	81	54	9	2	1	66	19.11030

* Data are from a composite sample from four reps of each variety. FM=foreign material, LSK=loose shelled kernels, FAN=fancy sized in-shell, ELK=extra large kernels, SS=sound splits, OK=other kernels, DK=damaged kernels, SMK=sound mature kernels. Fancy sized in-shell and extra large kernel grade characteristics do not apply to runner-type peanuts.

** Value (¢/lb) represents the market value of peanuts based on the loan rate.

Table 104. Summary comparison of runner and virginia-type cultivars.

Type mean	Plants/ft ¹ (Jun 7)	TSWV ²		CBR ²		Yield ⁴ (lb/A)	Value ⁵	
		Jul 21	Aug 24	(Pre-harvest)	% mature ³ (Sep 28)		¢/lb	\$/A
Runner type.....	2.44 b	5.7 b	10.0 b	15.8 a	52.1	4207 b	16.99	715 b
Virginia type	2.64 a	10.2 a	17.3 a	8.6 b	51.1	4706 a	18.25	860 a
LSD.....	0.13	1.8	3.3	2.6	--	226	--	44

¹ Determined from counts of two, 35-ft rows per plot.

² Number of symptomatic plants per plot.

³ Percentages of whole pods with mesocarp tissues either black or brown.

⁴ Yield of peanuts with 7% moisture. Virginia types peanuts were dug on 5 Oct and harvested on 18 Oct; runner types were dug on 20 Oct and harvested on 29 Oct 2005.

⁵ Value (¢/lb) is market value based on the loan rate for peanuts and value (\$/A) = (lb/A) x (¢/lb).

Means followed by the same letter(s) are not significantly different according to Fisher's Protected LSD (P=0.05).