

2014 Texas High Plains Verticillium wilt variety trial results



Dr. Terry Wheeler
Research Plant Pathologist
Texas A&M AgriLife Research
and

Dr. Jason Woodward
Extension Plant Pathologist
Texas A&M AgriLife Extension Service

TEXAS A&M
AGRI LIFE
EXTENSION

TEXAS A&M
AGRI LIFE
RESEARCH

Verticillium Wilt Variety Trials for 2014

Varieties and advanced breeding lines were obtained from All-Tex/DynaGro, Americot (NexGen), Monsanto (Deltapine), Bayer CropScience (FiberMax, Stoneville), and Dow Agrosciences (Phytogen). Sites were obtained with a history of Verticillium wilt. Two sites were in the northern part of the Southern High Plains (Plainview and Floydada), two sites were in the middle (Slaton and Ropesville), and two sites were in the southern part of the Southern High Plains (Seminole and Lamesa). The Lamesa site was lost due to poor emergence. An effort was made to match maturities of entries to sites. Each entry was initially planned for three sites. There were 7 entries listed as full-season maturity, and one southern site was lost. In addition, the third site was planted in June, so full-season entries were removed from that site, resulting in only one site for the longest maturing entries (Seminole). At each site, there were 32 entries planted in a randomized block design with four replications. Each plot was 36 ft long, 2 rows wide, on 40-inch centers. The variety FiberMax 2484B2F was included at all sites as a resistant check, FiberMax 9180B2F was included as an older resistant check, and Deltapine 0912B2RF as a susceptible check.

Data collected included plant stand, wilt incidence in late August, and defoliation in mid-September. At the Seminole site, there was a lot of defoliation due to drought or possibly some other factor in September, so no defoliation rating was taken at that site. Plots were harvested with a two-row cotton stripper, and samples were ginned to determine lint turnout and for HVI analysis.

To address relative ranking of varieties across all test sites, a relative wilt, relative defoliation, relative yield, and relative value (yield x loan value) rating was calculated. At each site, the wilt rating was divided by the average wilt rating of the entry with the highest amount of wilt, which would then have a relative wilt rating of 1. A similar statistic was also calculated for relative defoliation. A relative yield and value rating was calculated by dividing each plot yield and value by the highest average yield/value for a variety at that site. A mixed model analysis was run on the combined data across all sites, and least squares means were calculated. The 7 entries which were only tested in one location were removed from this calculation. The remaining entries were ranked from 1 to 49 for value, yield, wilt, and defoliation. A combined rank was calculated by the average of value, yield, wilt and defoliation ranks

Plainview was planted on 12 May, irrigated with a center pivot, and harvested on 25 November. Floydada was planted on 12 May, irrigated with a center pivot, and harvested on 8 December. Ropesville was planted on 15 May, irrigated with a center pivot, and harvested on 15 November. Slaton was planted on 2 June, irrigated with subsurface drip, and harvested on 9 November. Seminole was planted on 9 May, irrigated with a center pivot, and harvested on 16 October.

Table 1. Results from a Variety trial at Plainview under high Verticillium wilt pressure

Variety ^a	Yield X Loan (\$/acre)	Plants/ft row	Wilt (%)	Defoliation (%)	Turnout (%)	Yield (lbs lint/a)	Loan (\$/lb)
FM 2484B2F	806	3.12	22	22	31.0	1,510	0.534
NG 4111RF	715	1.84	36	35	29.4	1,337	0.535
FM 9180B2F	699	2.11	44	24	29.3	1,265	0.553
FM 1900GLT	682	2.20	46	21	33.0	1,280	0.533
FM 1830GLT	674	2.00	28	18	31.0	1,242	0.543
CT 14515B2RF	657	2.48	23	23	29.2	1,259	0.522
FM 9250GL	644	2.35	40	27	28.6	1,238	0.520
FM 1944GLB2	639	2.57	33	24	28.4	1,209	0.529
CT 13442B2RF	610	2.29	44	27	29.4	1,130	0.540
FM 2011GT	575	2.14	31	29	28.9	1,122	0.513
FM 2334GLT	568	1.49	23	20	26.7	1,098	0.518
CT 13464B2RF	548	2.43	26	21	27.9	1,113	0.493
DP 0912B2RF	546	2.15	35	31	31.5	1,045	0.523
FM 1320GL	521	1.54	38	24	27.0	941	0.554
FM 2007GLT	495	1.81	52	26	26.7	989	0.501
NG 2051B2RF	479	2.44	32	34	26.7	971	0.493
PHY 333WRF	479	2.62	34	37	26.3	948	0.505
PHY 222WRF	462	2.54	29	29	24.8	910	0.508
DP 1311B2RF	458	1.86	32	17	24.7	974	0.470
PHY 339WRF	450	2.24	39	23	26.2	910	0.494
DP 1410B2RF	436	2.35	29	29	29.5	975	0.447
NG 3306B2RF	434	2.09	44	34	27.2	870	0.499
CT 14944RF	425	1.60	53	27	30.6	826	0.514
DP 1137B2RF	417	2.15	52	42	26.9	789	0.528
CT 13014RF	407	1.34	54	35	28.8	792	0.514
DP 1321B2RF	407	1.94	41	35	27.0	810	0.503
DP 1219B2RF	399	1.51	36	23	24.8	779	0.513
PX 2034-03WRF	396	2.72	32	31	24.7	869	0.456
NG 1511B2RF	385	2.23	31	34	29.9	810	0.476
ST 5032GLT	374	2.74	38	42	27.7	775	0.483
DP 1212B2RF	364	1.97	42	51	26.1	701	0.519
CT 14923RF	213	1.32	60	50	28.2	434	0.490
MSD(0.05) ^b	65	0.38	10	8	3.5	126	0.084

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

Table 2. Fiber properties for varieties in a test in Plainview^c

Variety ^a	Mic	Length	Unif.	Strength	Elon	Rd	+b	Leaf
CT 13014RF	2.85	1.140	81.9	31.90	9.3	78.5	8.5	1.5
CT 13442B2RF	3.10	1.145	82.7	32.30	8.9	79.6	8.1	2.5
CT 13464B2RF	2.90	1.165	81.8	32.80	8.9	79.1	7.8	4.0
CT 14515B2RF	2.95	1.110	81.3	31.50	8.4	79.2	8.3	2.0
CT 14923RF	2.65	1.105	81.1	29.05	7.9	80.4	7.8	2.0
CT 14944RF	2.80	1.130	82.2	31.65	9.2	80.7	8.5	2.0
DP 0912B2RF	3.25	1.090	81.6	30.25	8.0	78.0	7.8	3.5
DP 1137B2RF	3.05	1.095	80.2	28.35	7.9	79.8	8.3	1.5
DP 1212B2RF	2.90	1.150	81.9	32.00	8.8	77.2	8.0	3.0
DP 1219B2RF	2.80	1.145	80.3	31.30	7.2	79.8	8.0	2.0
DP 1311B2RF	2.55	1.100	80.0	29.00	9.4	79.3	7.3	3.5
DP 1321B2RF	2.80	1.100	81.8	31.25	9.3	79.8	8.1	3.0
DP 1410B2RF	2.60	1.160	79.0	30.85	7.0	77.3	7.3	4.5
FM 1320GL	3.25	1.115	82.1	31.65	8.6	79.1	7.6	2.5
FM 1830GLT	3.15	1.205	82.4	33.40	6.9	80.7	7.4	2.0
FM 1900GLT	3.30	1.165	81.6	32.65	6.0	79.3	7.9	3.5
FM 1944GLB2	2.90	1.160	80.5	31.60	6.8	81.7	7.4	2.5
FM 2007GLT	2.75	1.165	81.4	31.35	7.8	81.7	7.2	3.0
FM 2011GT	2.95	1.115	80.8	30.65	7.7	81.1	7.4	3.5
FM 2334GLT	2.75	1.205	81.5	31.50	6.9	80.9	7.7	1.5
FM 2484B2F	3.10	1.175	81.5	31.55	6.8	81.7	7.5	2.0
FM 9180B2F	3.40	1.175	82.6	33.85	7.3	79.5	7.1	3.0
FM 9250GL	3.05	1.140	81.5	31.45	6.7	79.5	6.9	3.5
NG 1511B2RF	2.65	1.090	80.4	31.35	9.2	78.7	8.0	3.5
NG 2051B2RF	3.15	1.095	79.6	27.90	7.6	78.6	6.8	3.0
NG 3306B2RF	2.80	1.175	82.6	34.15	9.1	78.7	7.9	3.5
NG 4111RF	3.15	1.100	81.8	31.40	8.2	78.9	8.3	2.0
PHY 222WRF	2.90	1.115	81.5	29.85	10.1	79.3	7.8	2.5
PHY 333WRF	2.85	1.125	81.0	30.45	7.7	78.1	8.1	3.0
PHY 339WRF	2.85	1.150	81.5	31.20	8.2	79.2	7.3	2.5
PX 2034-03WRF	2.70	1.140	81.1	34.00	8.9	76.6	7.6	4.5
ST 5032GLT	2.60	1.150	79.9	31.20	7.9	79.2	8.0	3.0
MSD(0.05)	ns	0.029	1.6	1.69	0.7	1.5	0.5	ns

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cMic=micronaire; Unif=uniformity; Elon=elongation.

Table 3. Results from a variety trial at Floydada under low *Verticillium* wilt pressure

Variety ^a	Yield X Loan (\$/acre)	Plants / ft row	Wilt (%)	Defoliation (%)	Turn out (%)	Yield (lbs lint/a)	Loan (\$/lb)
FM 2484B2F	574	2.16	7	4	30.4	1,207	0.476
FM 2322GL	573	1.59	6	2	29.0	1,214	0.472
PHY 222WRF	541	2.28	4	14	27.2	1,029	0.526
FM 2011GT	503	2.11	7	9	30.0	1,163	0.433
FM 9180B2F	499	1.68	6	10	27.6	992	0.503
NG 4111RF	495	1.44	7	9	28.1	1,043	0.475
FM 2989GLB2	489	2.00	7	4	26.2	1,031	0.474
FM 1320GL	485	1.38	10	9	28.1	1,014	0.478
FM 9250GL	477	1.79	7	9	26.9	997	0.478
DP 1410B2RF	459	2.45	4	6	26.3	1,015	0.452
FM 2334GLT	426	1.56	5	5	28.4	950	0.448
NG 2051B2RF	418	1.68	6	8	21.9	880	0.474
PX 2042-02WRF	413	2.49	6	12	27.3	1,085	0.381
PX 2034-03WRF	409	2.75	6	9	25.1	993	0.412
DP 0912B2RF	408	1.79	7	11	28.2	878	0.465
FM 1900GLT	407	1.86	9	12	28.7	933	0.437
PHY 339WRF	401	1.71	5	12	27.7	919	0.436
PHY 333WRF	387	2.14	12	15	26.2	865	0.447
CT 13442B2RF	386	1.78	8	9	27.9	826	0.467
PX 2033-03WRF	386	2.61	7	11	21.9	886	0.435
NG 4012B2RF	373	1.51	8	8	24.0	796	0.468
FM 2007GLT	360	1.22	13	12	25.8	789	0.456
PHY 367WRF	346	1.48	5	15	24.7	811	0.426
DP 1133B2RF	338	1.43	9	10	24.1	742	0.455
DP 1212B2RF	338	1.58	8	15	27.1	804	0.420
DP 1219B2RF	338	1.46	6	10	29.6	773	0.437
DP 1311B2RF	327	1.45	5	8	25.7	789	0.415
NG 1511B2RF	317	1.58	4	13	25.2	681	0.466
CT 14944RF	295	1.07	6	14	30.6	670	0.440
ST 5289GLT	288	1.49	4	8	26.0	731	0.394
NG 3306B2RF	282	1.50	9	17	22.2	633	0.445
PHY 499WRF	242	2.14	9	15	23.4	597	0.405
MSD (0.05)	64	0.38	ns	6	ns	144	ns

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

Table 4. Fiber properties for varieties in a test in Floydada^c

Variety ^a	Mic	Length	Unif.	Strength	Elon	Rd	+b	Leaf
CT 13442B2RF	2.45	1.135	82.4	30.90	8.75	77.4	8.4	3.5
CT 14944RF	2.40	1.165	83.6	30.00	8.10	75.9	7.9	4.0
DP 0912B2RF	2.50	1.095	81.6	29.85	8.05	78.1	8.5	4.0
DP 1133B2RF	2.65	1.130	82.8	30.65	9.15	76.8	8.2	4.5
DP 1212B2RF	2.35	1.135	81.0	31.35	8.60	76.0	7.5	5.5
DP 1219B2RF	2.20	1.135	78.7	28.60	6.55	77.0	7.8	4.5
DP 1311B2RF	2.25	1.105	80.0	27.55	9.00	78.2	7.2	5.0
DP 1410B2RF	2.40	1.180	80.5	30.80	7.45	79.2	7.5	4.0
FM 1320GL	2.80	1.105	81.2	31.75	8.40	78.9	7.9	4.5
FM 1900GLT	2.40	1.170	81.8	31.85	6.15	77.6	7.4	4.0
FM 2007GLT	2.30	1.185	80.9	30.45	7.90	80.3	7.4	4.0
FM 2011GT	2.30	1.165	81.8	31.05	7.15	79.5	7.2	5.0
FM 2322GL	2.60	1.185	82.2	30.90	6.35	77.9	8.1	3.5
FM 2334GLT	2.55	1.215	82.5	31.70	7.20	78.2	7.8	4.0
FM 2484B2F	2.65	1.190	81.5	30.15	6.90	81.2	7.2	4.0
FM 2989GLB2	2.45	1.135	80.2	28.35	6.70	78.8	7.9	3.5
FM 9180B2F	2.70	1.145	82.4	33.30	7.55	80.5	7.1	3.0
FM 9250GL	2.70	1.165	81.2	31.20	6.60	78.8	6.8	5.0
NG 1511B2RF	2.25	1.095	80.3	28.75	8.20	77.5	8.1	2.5
NG 2051B2RF	2.45	1.120	79.5	28.25	7.50	80.0	7.4	3.5
NG 3306B2RF	2.15	1.170	81.8	31.55	8.25	77.6	8.0	4.5
NG 4012B2RF	2.25	1.120	80.2	30.40	7.05	78.6	8.7	3.0
NG 4111RF	2.35	1.120	81.4	31.15	7.95	78.9	8.5	3.0
PHY 222WRF	3.15	1.130	82.8	30.50	9.10	79.1	7.8	4.0
PHY 333WRF	2.55	1.150	81.9	30.30	7.45	77.3	8.1	5.0
PHY 339WRF	2.45	1.155	81.9	30.50	8.80	77.6	7.3	4.5
PHY 367WRF	2.45	1.120	81.4	29.55	8.20	76.2	8.1	5.0
PHY 499WRF	2.15	1.115	80.0	30.05	8.50	76.9	7.3	5.5
PX 2033-03WRF	2.40	1.155	82.2	32.40	9.25	76.3	6.9	4.5
PX 2034-03WRF	2.35	1.165	82.5	33.15	7.95	77.4	7.8	6.0
PX 2042-02WRF	2.50	1.235	83.0	33.00	7.15	73.6	7.2	6.0
ST5289GLT	2.40	1.125	79.9	27.85	7.05	76.8	7.3	6.0
MSD(0.05)	0.46	0.036	1.59	2.18	0.97	ns	0.72	ns

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cMic=micronaire; Unif=uniformity; Elon=elongation.

Table 5. Results from a variety trial at Ropesville under high Verticillium wilt pressure and low Root-knot Nematode pressure

Variety ^a	Yield X Loan (\$/a)	Plants / ft row	Wilt (%)	Defoliation (%)	RKN	Turn out (%)	Yield (lbs lint/a)	Loan (\$/lb)
FM 2989GLB2	533	2.52	27	24	7,410 ab	29.5	1,051	0.507
FM 2484B2F	513	2.76	31	23	4,920 abc	26.7	1,008	0.509
FM 1830GLT	458	1.72	28	21	5,970 abc	27.1	873	0.525
NG 4111RF	408	2.06	35	32	1,505 a-f	31.2	885	0.461
DP 1441RF	398	2.70	39	36	2,820 a-f	28.1	792	0.503
FM 9180B2F	370	2.59	41	35	2,310 a-e	26.4	699	0.529
CT 13464B2RF	364	2.68	30	24	1,410 b-f	27.0	800	0.455
PHY 339WRF	355	2.14	31	34	9,000 ab	30.0	749	0.474
DP 1410B2RF	343	2.80	35	38	10,050 a	25.3	682	0.503
FM 2011GT	338	2.73	31	44	420 c-f	24.3	746	0.453
ST 4747GLB2	337	2.76	29	30	3,060 a-d	25.0	765	0.441
FM 1320GL	335	1.44	56	37	1,200 def	25.2	711	0.471
PX 2042-02WRF	307	2.83	26	42	1,530 efg	20.7	666	0.461
FM 2007GLT	296	1.98	46	39	1,150 a-f	26.3	615	0.482
PX 2034-03WRF	284	3.20	26	52	1,410 b-f	24.4	638	0.446
ST 4946GLB2	282	2.80	36	50	795 c-f	27.0	662	0.426
DP 1219B2RF	276	1.83	34	29	3,630 a-f	23.0	561	0.492
PHY 367WRF	272	2.25	30	47	900 fg	28.2	656	0.415
FM 1944GLB2	261	2.75	36	36	1,795 a-f	21.7	607	0.430
PHY 222WRF	261	2.84	36	56	1,560 a-f	24.3	563	0.463
DP 1044B2RF	260	2.02	33	31	1,290 a-f	25.0	573	0.453
FM 1900GLT	260	2.45	43	37	2,635 a-f	23.9	575	0.451
DP 0912B2RF	247	2.45	30	42	1,050 b-f	22.7	523	0.471
DP 1137B2RF	240	1.68	49	39	3,630 a-e	25.0	491	0.489
ST 5032GLT	234	2.70	32	48	4,570 a-d	22.3	525	0.446
PHY 427WRF	224	2.81	33	54	300 h	24.2	539	0.416
PHY 333WRF	217	2.84	44	61	1,400 a-f	23.8	493	0.441
PHY 417WRF	215	2.77	31	51	240 gh	24.8	547	0.393
CT 13014RF	208	1.89	49	52	4,140 abc	29.9	496	0.419
DP 1321B2RF	182	2.30	36	48	1,920 a-f	17.5	422	0.431
PHY 495W3RF	147	2.51	28	50	950 b-f	21.1	354	0.413
CT 14923RF	120	1.99	50	69	1,620 efg	24.3	258	0.464
MSD(0.05)	63	0.30	12	14		5.2	140	ns

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cNematode counts (RKN) were transformed with LOG10 and mean separation tests were based on the transformed values. Entries with the same letters are not significantly ($P=0.05$) different.

Table 6. Fiber properties for varieties in a test in Ropesville^c

Variety ^a	Mic	Length	Unif.	Strength	Elon	Rd	+b	Leaf
CT 13014RF	2.30	1.135	81.7	31.00	9.1	72.9	8.5	5.0
CT 13464B2RF	2.75	1.190	82.4	33.75	8.8	75.2	7.9	4.5
CT 14923RF	2.20	1.140	80.7	30.75	8.3	76.5	8.7	3.5
DP 0912B2RF	2.45	1.085	80.5	31.45	8.5	75.4	8.6	6.0
DP 1044B2RF	2.35	1.100	80.2	29.85	8.9	77.4	8.9	4.0
DP 1137B2RF	2.60	1.090	80.6	29.25	9.0	78.0	9.4	2.0
DP 1219B2RF	2.70	1.135	79.9	30.90	7.2	76.7	9.0	1.5
DP 1321B2RF	2.35	1.095	80.0	30.35	9.3	73.7	8.8	4.0
DP 1410B2RF	2.60	1.165	80.2	30.95	7.6	73.3	7.5	6.5
DP 1441RF	2.95	1.085	81.3	31.30	9.9	76.7	8.9	3.5
FM 1320GL	2.65	1.090	80.1	31.45	8.9	76.3	8.9	3.5
FM 1830GLT	2.90	1.190	82.7	33.55	7.8	78.9	8.6	3.0
FM 1900GLT	2.55	1.145	80.7	30.90	7.7	75.9	8.7	5.0
FM 1944GLB2	2.30	1.155	80.3	31.10	7.4	77.8	7.9	5.0
FM 2007GLT	2.70	1.150	80.0	31.45	8.1	77.4	7.7	3.0
FM 2011GT	2.45	1.115	80.7	30.85	7.5	77.1	7.6	3.0
FM 2484B2F	3.00	1.205	82.6	33.10	7.2	77.3	7.8	3.5
FM 2989GLB2	2.90	1.115	81.5	30.30	6.8	77.8	8.0	3.5
FM 9180B2F	3.10	1.135	81.1	32.25	8.1	78.0	8.0	3.0
NG 4111RF	3.05	1.115	81.6	32.25	8.5	72.9	9.5	5.0
PHY 222WRF	2.60	1.100	81.5	29.75	9.7	75.4	8.7	4.5
PHY 333WRF	2.45	1.135	79.5	30.90	7.6	75.3	8.5	4.0
PHY 339WRF	2.55	1.135	81.2	31.95	7.5	77.1	8.7	4.0
PHY 367WRF	2.15	1.105	79.3	29.95	8.3	73.6	8.7	5.0
PHY 417WRF	2.35	1.100	80.3	29.50	8.7	74.5	8.7	6.0
PHY 427WRF	2.35	1.090	80.2	29.70	9.2	76.3	8.2	5.0
PHY 495W3RF	2.20	1.075	79.5	29.60	8.4	75.6	8.7	5.0
PX 2034-03WRF	2.60	1.155	82.4	34.55	8.2	75.1	8.5	4.5
PX 2042-02WRF	2.40	1.235	82.2	36.05	7.2	77.9	8.1	4.0
ST 4747GLB2	2.65	1.155	80.3	30.05	7.2	76.3	7.6	5.0
ST 4946GLB2	2.20	1.125	80.4	30.90	8.4	75.2	8.7	5.0
ST 5032GLT	2.20	1.135	78.9	29.90	8.0	76.8	8.6	4.0
MSD (0.05)	0.34	0.033	1.9	2.03	1.3	ns	0.9	ns

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cMic=micronaire; Unif=uniformity; Elon=elongation.

Table 7. Results from a variety trial at Slaton under low Verticillium wilt pressure and moderate Root-knot Nematode pressure

Variety ^a	Plants /ft row	Wilt (%)	Defoliation (%)	RKN ^c	Turn out (%)	Yield (bs lint/a)	Loan (\$/lb)	Yield X Loan (\$/a)
FM 2011GT	2.79	5	11	6,390 ab	32.8	1,832	0.560	1,026
DP 1311B2RF	2.46	11	18	2,590 abc	32.4	1,744	0.539	940
ST 4946GLB2	2.92	9	32	1,500 abc	30.6	1,637	0.521	853
FM 2484B2F	2.96	9	5	7,440 ab	29.9	1,514	0.562	850
DP 0912B2RF	2.74	14	27	8,975 ab	31.7	1,573	0.539	848
ST 4747GLB2	3.14	8	19	13,895 abc	29.2	1,576	0.533	840
PHY 367WRF	2.69	7	25	3,575 abc	28.0	1,475	0.560	826
DP 1212B2RF	2.75	14	50	4,730 abc	30.9	1,460	0.561	819
CT 14515B2RF	2.82	7	16	23,590 a	28.9	1,484	0.547	812
FM 9250GL	2.83	8	31	6,530 ab	29.2	1,511	0.536	810
NG 3306B2RF	2.53	17	33	9,140 ab	29.6	1,407	0.574	808
DP 1321B2RF	2.51	14	36	6,780 abc	32.0	1,434	0.562	806
FM 1320GL	2.23	9	41	5,355 ab	31.1	1,422	0.562	799
FM 1900GLT	2.58	15	29	5,010 abc	33.8	1,518	0.524	796
PX 2033-03WRF	3.05	12	24	4,145 ab	29.9	1,434	0.546	783
FM 2334GLT	2.26	8	9	13,920 ab	30.7	1,344	0.581	780
NG 1511B2RF	2.65	14	42	9,210 ab	32.4	1,424	0.544	775
DP 1133B2RF	2.75	13	22	4,215 abc	27.3	1,342	0.563	755
NG 4111RF	2.49	10	25	8,760 ab	29.8	1,318	0.572	754
FM 2322GL	2.50	7	13	4,350 ab	29.8	1,410	0.535	753
PHY 417WRF	3.00	12	31	200 c	30.2	1,445	0.521	752
DP 1410B2RF	3.00	11	9	9,450 ab	29.0	1,364	0.543	740
FM 9180B2F	2.64	14	19	13,650 ab	30.2	1,310	0.564	738
FM 2007GLT	2.24	21	17	6,120 ab	31.0	1,276	0.537	685
PHY 499WRF	2.88	13	38	5,100 ab	30.3	1,328	0.506	672
PHY 222WRF	2.84	12	43	2,750 bc	27.2	1,226	0.545	668
PX 2042-02WRF	3.06	8	20	3,270 ab	23.7	1,265	0.527	667
DP 1044B2RF	2.48	13	16	4,415 abc	27.4	1,251	0.520	651
FM 8270GLB2	2.82	9	30	8,280 ab	27.9	1,149	0.564	648
CT 13442B2RF	2.46	17	23	3,450 ab	30.6	1,147	0.564	647
PHY 495W3RF	3.00	14	42	6,220 ab	30.1	1,247	0.488	608
NG 2051B2RF	2.64	8	32	9,565 ab	26.3	1,141	0.523	596
MSD(0.05)	0.27	7	12		2.04	223	0.039	121

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cRoot-knot nematode/500 cm³ soil were transformed with LOG10 and mean separation tests were based on the transformed values. Entries with the same letters are not significantly ($P=0.05$) different.

Table 8. Fiber properties for varieties in a test in Slaton^c

Variety ^a	Mic	Length	Unif.	Strength	Elon	Rd	+b	Leaf
CT 13442B2RF	3.6	1.165	82.4	33.15	7.65	78.25	7.6	2.5
CT 14515B2RF	3.4	1.165	82.3	32.95	7.85	77.25	7.8	3.0
DP 0912B2RF	4.1	1.110	82.6	31.70	7.65	76.25	7.4	4.0
DP 1044B2RF	3.3	1.150	82.2	33.05	8.45	77.70	7.3	3.0
DP 1133B2RF	3.8	1.140	83.3	32.95	8.55	78.50	7.7	3.5
DP 1212B2RF	3.9	1.175	83.0	33.85	8.70	76.90	7.5	3.0
DP 1311B2RF	4.0	1.110	81.6	30.05	9.00	77.45	6.9	3.0
DP 1321B2RF	4.1	1.120	82.7	31.80	9.05	77.10	7.7	3.5
DP 1410B2RF	3.6	1.175	81.7	32.30	6.25	76.90	6.9	4.0
FM 1320GL	4.0	1.125	82.7	33.20	7.30	77.90	7.3	2.5
FM 1900GLT	3.9	1.160	82.5	33.95	5.80	73.85	6.6	4.0
FM 2007GLT	3.2	1.185	81.5	32.80	7.10	79.95	6.9	2.0
FM 2011GT	3.9	1.150	83.0	32.90	6.80	79.05	6.9	3.0
FM 2322GL	3.7	1.170	81.9	33.75	6.05	77.65	7.3	4.0
FM 2334GLT	3.8	1.215	82.9	33.05	6.55	81.40	7.3	2.0
FM 2484B2F	3.7	1.175	81.3	32.30	6.70	78.00	6.9	2.0
FM 8270GLB2	3.6	1.190	83.3	33.45	6.60	78.85	6.7	2.0
FM 9180B2F	4.0	1.160	82.9	33.95	6.50	80.00	6.8	2.5
FM 9250GL	3.4	1.165	81.4	33.40	5.85	77.75	6.6	3.5
NG 1511B2RF	3.7	1.110	82.7	32.75	8.85	76.95	7.5	3.5
NG 2051B2RF	3.7	1.135	80.9	30.25	6.35	75.45	6.3	4.0
NG 3306B2RF	3.6	1.205	83.9	34.65	8.20	78.80	7.5	2.5
NG 4111RF	4.0	1.120	82.6	32.65	8.05	78.80	7.9	2.0
PHY 222WRF	4.0	1.145	83.5	32.30	8.90	74.60	7.1	4.0
PHY 367WRF	3.6	1.130	82.3	32.30	8.10	76.95	8.1	3.0
PHY 417WRF	3.2	1.125	82.3	31.55	8.05	75.60	7.8	3.5
PHY 495W3RF	3.1	1.100	81.6	34.00	8.20	76.40	7.1	4.5
PHY 499WRF	3.7	1.105	82.6	33.35	8.80	75.45	7.6	5.5
PX 2033-03WRF	3.8	1.145	83.1	34.00	8.40	75.80	7.1	3.5
PX 2042-02WRF	3.4	1.260	83.7	36.15	6.55	74.80	7.2	4.0
ST 4747GLB2	3.8	1.155	82.2	31.00	5.80	78.30	6.3	4.0
ST 4946GLB2	3.8	1.145	82.7	34.50	7.60	76.30	7.4	5.0
MSD(0.05) ^b	0.5	0.025	1.1	1.26	0.55	2.39	0.5	2.3

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cMic=micronaire; Unif=uniformity; Elon=elongation.

Table 9. Results from a variety trial at Seminole under moderate Verticillium wilt pressure

Variety ^a	Plants/ ft row	Wilt (%)	Turnout (%)	Yield (lbs lint/a)	Loan (\$/lb)	Yield X Loan (\$/a)
CT 14515B2RF	2.07	29.0	32.0	1,467	0.541	794
FM 1830GLT	1.82	30.4	36.1	1,463	0.539	788
FM 2484B2F	2.34	17.2	32.0	1,416	0.537	761
CT 14944RF	1.54	43.1	36.9	1,348	0.564	760
DP 1441RF	2.25	35.1	32.7	1,451	0.522	757
DP 1454NRB2RF	1.56	34.1	33.9	1,295	0.570	738
DP 1359B2RF	2.19	32.9	33.2	1,302	0.558	726
CT 13014RF	1.69	37.0	35.1	1,286	0.553	711
DP 1311B2RF	1.50	28.8	32.7	1,269	0.558	708
ST 6448GLB2	1.78	31.7	33.1	1,230	0.575	707
NG 5315B2RF	1.45	54.1	32.5	1,196	0.578	691
DP 1252B2RF	1.25	49.3	36.0	1,176	0.574	675
FM 1944GLB2	2.11	26.2	29.6	1,292	0.519	670
DP 1321B2RF	2.02	26.6	31.9	1,207	0.547	659
FM 9180B2F	2.07	31.5	28.7	1,227	0.528	648
FM 1900GLT	1.85	40.2	31.9	1,271	0.508	646
DP 0912B2RF	2.28	26.7	31.4	1,241	0.516	640
PX 2034-03WRF	2.56	27.0	27.5	1,262	0.506	638
DP 1137B2RF	1.78	35.1	31.2	1,123	0.564	633
CT 13464B2RF	2.08	16.9	31.7	1,303	0.485	632
NG 4012B2RF	1.75	30.0	30.6	1,141	0.552	629
FM 1320GL	1.62	20.6	32.5	1,202	0.521	626
ST 5289GLT	1.77	30.1	33.0	1,178	0.524	617
DP 1044B2RF	2.02	29.8	30.9	1,183	0.504	597
ST 4747GLB2	2.42	16.3	29.2	1,305	0.452	590
PHY 575WRF	1.99	56.8	28.4	1,153	0.510	588
PHY 599WRF	1.03	63.8	30.9	1,084	0.532	577
PHY 367WRF	1.75	35.3	29.3	1,222	0.468	572
CT 14923RF	1.65	48.9	31.8	1,085	0.517	561
PHY 427WRF	2.08	28.2	28.7	1,126	0.483	544
PHY 417WRF	2.41	24.3	30.0	1,146	0.474	543
FM 8270GLB2	2.38	12.5	27.8	1,014	0.491	497
MSD(0.05) ^b	0.32	17.1	2.2	184	0.054	88

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

Table 10. Fiber properties for varieties in a test in Seminole^c

Variety ^a	Mic	Length	Unif.	Strength	Elon	Rd	+b	Leaf
CT 13014RF	3.50	1.160	83.20	35.15	8.75	77.25	7.90	3.5
CT 13464B2RF	3.15	1.200	83.50	35.70	8.05	74.20	7.55	5.0
CT 14515B2RF	3.25	1.130	82.65	34.95	8.90	76.10	8.35	2.5
CT 14923RF	3.15	1.135	82.30	30.90	8.15	74.50	8.20	3.0
CT 14944RF	3.50	1.150	82.75	34.10	8.90	78.05	8.20	2.0
DP 0912B2RF	3.60	1.095	82.20	32.75	8.20	74.15	7.75	4.5
DP 1044B2RF	3.05	1.135	81.45	33.90	8.80	75.00	8.00	3.5
DP 1137B2RF	3.70	1.115	82.85	31.60	8.50	77.45	8.55	3.0
DP 1252B2RF	3.95	1.130	82.10	32.70	8.70	78.80	8.70	2.0
DP 1311B2RF	3.65	1.115	82.15	32.20	8.85	76.60	7.60	3.0
DP 1321B2RF	3.45	1.130	82.25	32.90	9.00	76.30	8.10	3.5
DP 1359B2RF	3.45	1.165	81.35	34.80	6.90	76.50	8.30	2.0
DP 1441RF	3.25	1.125	82.55	34.70	9.15	75.40	8.00	2.5
DP 1454NRB2RF	3.60	1.120	81.70	32.55	8.20	76.85	8.30	2.0
FM 1320GL	3.65	1.095	81.05	33.30	7.85	72.90	7.85	4.0
FM 1830GLT	3.65	1.220	82.95	35.10	6.50	74.65	7.35	3.5
FM 1900GLT	3.20	1.190	82.55	36.15	5.55	73.60	7.20	4.0
FM 1944GLB2	3.25	1.165	81.45	33.35	6.55	77.65	7.20	3.0
FM 2484B2F	3.10	1.175	82.65	33.30	7.95	79.05	7.55	2.5
FM 8270GLB2	2.70	1.165	82.85	33.95	6.25	77.70	7.25	3.5
FM 9180B2F	3.40	1.170	82.50	35.70	6.50	75.40	7.10	3.5
NG 4012B2RF	3.40	1.115	81.95	33.10	6.65	76.20	8.20	2.5
NG 5315B2RF	3.60	1.145	82.95	32.30	9.05	79.00	8.25	2.0
PHY 367WRF	2.85	1.130	82.35	33.55	8.20	75.20	8.40	4.5
PHY 417WRF	2.75	1.120	81.95	33.20	8.65	74.80	8.45	3.5
PHY 427WRF	2.90	1.145	82.00	33.65	8.25	75.15	8.00	4.5
PHY 575WRF	2.90	1.165	82.55	34.05	7.85	77.15	7.95	2.5
PHY 599WRF	3.25	1.180	82.50	34.50	7.50	77.90	7.70	2.5
PX 2034-03WRF	3.15	1.180	83.40	36.20	7.95	72.35	7.90	4.5
ST 4747GLB2	3.05	1.175	81.90	32.15	6.20	73.65	6.70	6.0
ST 5289GLT	3.45	1.120	81.15	32.35	6.85	74.70	7.20	4.0
ST 6448GLB2	3.55	1.185	82.45	32.05	6.55	77.90	8.25	1.5
MSD(0.05) ^b	0.57	0.032	2.05	1.50	0.64	2.33	0.45	2.2

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bMSD(0.05) is the minimum significant difference between entries at $P=0.05$.

^cMic=micronaire; Unif=uniformity; Elon=elongation.

Table 11. Ranking of varieties and breeding lines by relative yield, value, wilt, and defoliation (defol.)

Variety ^a	Rel value	Rank value	Rel yield ^b	Rank yield	Rel wilt	Rank wilt	Rel defol.	Rank defol	Average rank ^c
FM 2484B2F	0.950	2	0.954	2	0.423	7	0.283	3	3.50
FM 2322GL	0.836	7	0.864	7	0.406	5	0.193	1	5.00
FM 2989GLB2	0.988	1	0.990	1	0.486	18	0.281	2	5.50
FM 1830GLT	0.916	3	0.905	3	0.478	17	0.331	5	7.00
CT 14515B2RF	0.827	8	0.847	8	0.411	6	0.405	9	7.75
CT 13464B2RF	0.740	11	0.817	10	0.405	4	0.383	7	8.00
FM 2011GT	0.838	6	0.890	4	0.432	9	0.489	16	8.75
FM 2334GLT	0.735	13	0.755	18	0.360	2	0.289	4	9.25
ST 4747GLB2	0.715	17	0.810	11	0.386	3	0.424	12	10.75
DP 1410B2RF	0.708	18	0.755	17	0.449	11	0.408	10	14.00
NG 4111RF	0.845	5	0.864	6	0.538	27	0.549	23	15.25
DP 1311B2RF	0.704	19	0.751	20	0.498	19	0.379	6	16.00
DP 1441RF	0.851	4	0.872	5	0.633	37	0.514	19	16.25
FM 9250GL	0.806	9	0.829	9	0.530	26	0.560	25	17.25
FM 1944GLB2	0.729	14	0.772	15	0.527	24	0.500	17	17.50
FM 9180B2F	0.793	10	0.778	13	0.624	35	0.487	15	18.25
PX 2042-02WRF	0.672	25	0.767	16	0.431	8	0.571	27	19.00
PHY 339WRF	0.702	20	0.752	19	0.504	22	0.540	22	20.75
ST 4946GLB2	0.718	16	0.806	12	0.500	21	0.694	36	21.25
PX 2034-03WRF	0.649	27	0.729	23	0.471	14	0.624	31	23.75
FM 1320GL	0.737	12	0.750	21	0.630	36	0.592	28	24.25
FM 1900GLT	0.726	15	0.775	14	0.711	42	0.565	26	24.25
PX 2033-03WRF	0.687	23	0.735	22	0.555	31	0.559	24	25.00
NG 2051B2RF	0.633	31	0.671	30	0.443	10	0.593	29	25.00
PHY 367WRF	0.645	29	0.721	25	0.468	13	0.686	34	25.25
DP 0912B2RF	0.697	21	0.726	24	0.552	30	0.597	30	26.25
NG 4012B2RF	0.654	26	0.650	34	0.611	34	0.422	11	26.25
PHY 222WRF	0.696	22	0.700	26	0.475	16	0.768	42	26.50
ST 5289GLT	0.573	43	0.636	40	0.463	12	0.451	13	27.00
DP 1044B2RF	0.607	38	0.664	31	0.561	32	0.399	8	27.25
CT 13442B2RF	0.686	24	0.692	27	0.714	43	0.514	18	28.00
DP 1219B2RF	0.594	41	0.622	43	0.520	23	0.479	14	30.25
DP 1133B2RF	0.632	32	0.651	33	0.657	40	0.523	20	31.25
PHY 417WRF	0.589	42	0.683	28	0.500	20	0.692	35	31.25
FM 8270GLB2	0.538	46	0.577	47	0.358	1	0.641	32	31.50
FM 2007GLT	0.646	28	0.681	29	0.904	49	0.527	21	31.75
NG 1511B2RF	0.595	40	0.632	41	0.472	15	0.763	41	34.25
CT 14944RF	0.641	30	0.648	35	0.706	41	0.653	33	34.75
DP 1321B2RF	0.617	35	0.640	38	0.593	33	0.713	38	36.00
PHY 427WRF	0.554	44	0.637	39	0.530	25	0.771	43	37.75

PHY 333WRF	0.619	33	0.662	32	0.738	45	0.806	46	39.00
CT 13014RF	0.617	34	0.643	37	0.780	47	0.722	39	39.25
DP 1212B2RF	0.612	36	0.648	36	0.644	39	0.953	48	39.75
ST 5032GLT	0.546	45	0.598	45	0.542	29	0.762	40	39.75
DP 1137B2RF	0.609	37	0.604	44	0.759	46	0.698	37	41.00
NG 3306B2RF	0.605	39	0.629	42	0.735	44	0.779	44	42.25
PHY 495W3RF	0.472	48	0.549	48	0.542	28	0.797	45	42.25
PHY 499WRF	0.508	47	0.587	46	0.639	38	0.823	47	44.50
CT 14923RF	0.418	49	0.440	49	0.883	48	0.990	49	48.75

^aCT = breeding line from All-Tex/DynaGro; DP = Deltapine; FM = FiberMax; NG = NexGen; PHY = Phytogen; PX = breeding line from Phytogen; ST = Stoneville.

^bRelative yield was calculated by dividing the yield from each plot by the highest average yield for an entry at that site. Relative wilt and relative defoliation were calculated by dividing the wilt or defoliation for a site by the highest average wilt or defoliation for an entry at that site.

^cCombined ranking was calculated by adding the ranking of yield, value, wilt and defoliation, and dividing by 4.