

## Cotton - Nematode Variety Trials 2022

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For all trials, plots were 35 feet long (40-inch centers) and two rows wide, and entries were repeated four times (randomized).

Dawson County: This was a root-knot nematode site with low to moderate nematode pressure. The test was planted on 12 May and harvested on 1 November. The highest yields were associated with PHY 411 W3FE (1,077 lbs lint/a) which has 2-gene nematode resistance, a PhytoGen experimental line, and PHY 350 W3FE (942 lbs/a), which has partial nematode resistance (Table 1). An indication that nematode pressure was not that high is seen by the next highest yielding varieties, which were susceptible to root-knot nematode (NG 4190 B3XF (933 lbs/a), Armor 9371 B3XF (919 lbs/a), and FM 2498GLT (909 lbs/a)). Plots were sampled for nematodes in August, and the lowest nematode counts were all associated with varieties that are resistant to root-knot nematode. Loan value was negatively affected by high micronaire. Of the 32 entries, 29 had micronaire values in the discount range (5.0 and greater). The entry with the longest fiber (1.26 inches) was DP 1646 B2XF, and the entry with the highest fiber strength ratings was DP 2143NR B3XF (Table 2).

Terry County: This was a site which had previously had root-knot nematode pressure. However, there was almost no root-knot nematodes present in 2022, so the results are mainly to identify how well root-knot nematode resistant varieties yield compared to susceptible varieties, when the nematode population is low or absent. The test was planted on 18 May and harvested on 11 November. The top three yielding varieties were all susceptible to root-knot nematode (ST 4993B3XF (930 lbs/a), DP 2038 B3XF (754 lbs/a), and NG 5711 B3XF (719 lbs/a)), and the fourth highest yield was with DP 2141NR B3XF (600 lbs/a) which does have high root-knot nematode resistance (2-gene resistance) (Table 3). Of the 14 entries in this test, the rank of the three nematode resistant varieties for yield was 4<sup>th</sup>, 10<sup>th</sup>, and 13<sup>th</sup>. All varieties had micronaire in the high discount range (Table 4). NG 4936 B3XF had the best fiber length (1.21 inches) and ST 5600B2X had the best fiber strength (34.4).

Lubbock County: This is a reniform nematode site, with moderate reniform nematode pressure. The test was planted on 16 May and harvested on 17 November. The highest yielding entries were PHY 411 W3FE (900 lbs/a) and PHY 332 W3FE (815 lbs/a) (Table 5). All the reniform nematode resistant entries yielded higher than the susceptible varieties. The highest yielding susceptible variety was the conventional line developed from University of Arkansas UA 103 (455 lbs/a). Micronaire was highly discounted for PHY 443 W3FE and DP 2141NR B3XF and discounted also for DP 2143NR B3XF and PHY 205 W3FE (Table 6). Fiber length was highest (1.18 inches) for DP 2143NR B3XF, and fiber strength was highest (33.1) for UA 103.

Table 1. Variety trial in Dawson County with root-knot nematode (RK).

Variety <sup>1</sup>	Lint Yield (lbs/a)	Loan (\$/lb)	Value (Yield x Loan)	Turn Out (%)	Plants /foot row	RK	LRK <sup>2</sup>	RK <sup>3</sup> Rating
PHY 411 W3FE	1,077	0.4950	532.87	32.4	1.62	150	1.19	RR
PX1140Z383-04W3FE	949	0.5245	497.88	28.5	1.65	85	0.63	PR
PHY 350 W3FE	942	0.5308	500.01	31.5	1.55	445	1.98	PR
NG 4190 B3XF	933	0.5463	509.43	31.0	2.60	2,990	3.02	S
AR 9371 B3XF	919	0.5213	478.95	33.9	2.13	4,625	3.65	S
FM 2498GLT	909	0.5265	478.33	32.3	2.18	6,650	3.61	S
PHY 400 W3FE	902	0.5010	452.03	31.1	1.91	900	2.55	PR
PHY 545 W3FE	898	0.5018	450.74	33.5	1.55	60	0.60	RR
FM 1621GL	879	0.5050	443.77	31.3	1.47	450	1.98	PR
AR 9512 B3XF	872	0.5165	450.26	30.5	1.80	2,045	2.94	S
DP 2127 B3XF	867	0.5375	465.75	31.7	1.95	1,030	2.30	S
AR22x424B3XF	858	0.5463	468.59	30.7	2.46	860	2.70	S
DP 1646 B2XF	853	0.5498	469.12	33.2	1.76	715	1.49	S
PHY 480 W3FE	850	0.5315	451.51	31.4	1.57	25	0.50	RR
PHY 332 W3FE	844	0.5233	441.54	29.6	1.75	0	0.00	RR
ST 4946GLB2	835	0.5245	438.09	29.8	1.42	2,995	2.58	PR
FM 2398GLTP	824	0.5270	434.38	29.7	1.69	1,290	2.33	S
PX1122A215-04W3FE	824	0.5438	447.82	30.6	1.64	2,670	2.65	PR
AR22x323XF	789	0.5223	411.83	30.2	1.29	795	2.01	S
NG 4098 B3XF	787	0.5463	429.94	28.9	1.50	535	2.03	S
NG 5150 B3XF	783	0.5245	410.68	32.3	1.16	575	2.00	S
NG 3299 B3XF	770	0.5300	407.84	31.5	1.58	1,590	2.42	S
PHY 394 W3FE	758	0.5450	413.25	26.7	1.71	0	0.00	RR
ST 5600B2XF	754	0.5185	390.82	31.7	1.23	30	0.52	PR
AR 9442XF	752	0.5338	401.29	30.7	1.07	4,515	2.56	S
PHY 443 W3FE	750	0.5180	388.24	28.8	1.56	1,895	1.73	RR
DP 2143NR B3XF	743	0.5195	385.99	31.3	1.13	120	1.16	RR
DP 2038 B3XF	727	0.5148	374.13	32.2	1.51	485	2.09	S
BX2394B3XF	715	0.5150	367.97	31.2	2.24	5,765	3.59	S
PHY 205 W3FE	714	0.4925	351.52	29.0	1.66	925	1.54	RR
DP 2141NR B3XF	571	0.5305	302.79	29.8	0.90	0	0.00	RR
FM 1730GLTP	481	0.5270	253.49	29.0	0.96	1,805	2.44	PR
Prob>F	0.020	0.001	0.025	10.0	0.019	0.003	0.0001	
MSD (0.05)	332	2.77	177.91		1.18	4,233	2.03	

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, PHY=Phytogen, PX is experimental line for Phytogen, ST=Stoneville.

<sup>2</sup>LRK is LOG10(Root-knot nematode/500 cm<sup>3</sup> soil).

<sup>3</sup>RK rating is the nematode rating based on company description and experience in testing these varieties. RR is 2-gene resistance, PR is partial resistance, and S is susceptible.

Table 2. Fiber<sup>2</sup> properties from varieties in a Dawson County trial.

Variety <sup>1</sup>	Mic.	Length	Unif.	Strength	Elon.	Rd	+b	Leaf
AR22x323XF	5.42	1.14	81.4	31.2	5.5	78.1	7.6	3.0
AR22x424B3XF	5.13	1.20	83.1	32.8	6.3	77.2	7.9	4.0
AR 9371 B3XF	5.68	1.14	82.0	29.8	6.0	77.9	7.6	3.0
AR 9442 XF	5.16	1.19	83.3	31.8	6.8	77.2	7.7	3.5
AR 9512 B3XF	5.36	1.14	81.7	34.4	5.5	77.6	7.5	3.5
BX2394B3XF	5.19	1.10	81.7	30.8	6.3	77.4	8.0	3.5
DP 1646 B2XF	5.16	1.26	83.0	31.2	7.1	79.6	7.5	3.0
DP 2038 B3XF	5.37	1.10	81.3	31.0	6.1	78.2	7.9	3.0
DP 2127 B3XF	5.26	1.18	83.0	31.5	5.9	79.1	7.8	3.0
DP 2141NR B3XF	5.68	1.19	82.2	34.1	6.3	77.0	8.4	3.0
DP 2143NR B3XF	5.72	1.21	83.2	36.4	6.0	76.5	8.0	4.0
FM 1621GL	5.41	1.15	82.9	34.9	5.6	74.4	7.4	5.0
FM 1730GLTP	5.56	1.14	82.1	34.4	5.4	78.5	7.4	3.5
FM 2398GLTP	5.55	1.16	82.7	32.4	5.9	78.9	8.0	2.5
FM 2498GLT	5.96	1.14	81.6	33.8	5.7	78.3	7.9	3.0
NG 3299 B3XF	5.58	1.13	82.8	35.4	5.8	79.1	8.1	2.0
NG 4098 B3XF	4.71	1.24	82.9	35.0	6.0	74.2	8.0	5.5
NG 4190 B3XF	5.05	1.22	84.0	32.1	6.0	78.5	8.0	3.5
NG 5150 B3XF	5.55	1.17	81.1	29.5	6.0	78.5	8.1	2.5
PHY 205 W3FE	5.34	1.06	80.4	31.5	5.7	77.1	8.1	3.5
PHY 332 W3FE	5.31	1.19	83.6	34.6	6.5	75.5	8.6	4.0
PHY 350 W3FE	5.30	1.13	82.7	31.4	6.4	77.2	8.1	3.5
PHY 394 W3FE	4.90	1.19	81.4	32.5	5.7	76.3	7.8	4.0
PHY 400 W3FE	5.57	1.10	81.2	31.9	5.9	77.4	7.8	3.5
PHY 411 W3FE	5.44	1.13	82.8	32.4	6.6	72.7	7.8	4.5
PHY 443 W3FE	5.48	1.15	83.0	32.8	6.4	76.6	8.5	2.5
PHY 480 W3FE	5.24	1.11	83.1	31.5	7.2	76.3	8.6	3.5
PHY 545 W3FE	5.34	1.10	82.2	32.5	6.7	76.6	8.1	3.5
PX1122A215-04W3FE	4.99	1.11	81.8	33.9	5.9	77.5	8.0	3.5
PX1140Z383-04W3FE	5.06	1.16	82.1	33.0	6.5	74.1	8.4	4.5
ST 4946GLB2	5.39	1.13	82.3	33.7	6.7	75.9	8.3	4.0
ST 5600B2XF	5.72	1.18	83.1	33.5	6.7	75.5	8.5	4.0
Prob>F	0.001	0.001	0.017	0.001	0.001	0.02	0.001	0.002
MSD (0.05)	0.29	0.04	2.1	2.0	0.5	4.1	0.6	1.4

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, PHY=Phytogen, PX is experimental line for Phytogen, ST=Stoneville.

<sup>2</sup>Mic=micronaire, Unif=uniformity, Elon=elongation.

Table 3. Variety trial in Terry County in a field with very low root-knot nematode (RK) pressure.

Variety	Lint Yield (lbs/a)	Loan (\$/lb)	Value (Yield X Loan)	Plants /foot Row	Turn Out (%)	RK	RK <sup>2</sup> Rating
ST 4993 B3XF	930	0.4943	459.83	2.60	27.5	30	S
DP 2038 B3XF	754	0.4845	365.07	2.14	28.4	60	S
NG 5711 B3XF	719	0.5155	370.39	2.46	26.2	210	S
DP 2141NR B3XF	600	0.5053	303.05	2.14	24.4	0	RR
NG 4936 B3XF	581	0.5040	292.95	2.26	26.3	570	S
NG 3956 B3XF	577	0.4758	274.30	3.53	25.6	30	S
NG 3195 B3XF	550	0.4925	271.00	2.30	30.2	0	S
AR 9512 B3XF	540	0.4993	269.38	2.36	25.5	330	S
DP 2127 B3XF	536	0.4920	263.84	2.13	28.2	0	S
DP 2143NR B3XF	513	0.4605	236.01	2.39	26.3	0	RR
DP 2020 B3XF	493	0.5003	246.65	2.64	25.3	0	S
BX2398B3XF	450	0.5020	226.03	2.38	21.8	180	S
ST 5600B2XF	449	0.5070	227.39	2.81	22.7	0	PR
DP 1820 B3XF	422	0.5015	211.39	2.19	22.5	0	S
Prob>F	0.028	0.035	0.0251	0.0001	0.451	0.699	
MSD (0.05)	331	0.0300	162.24	0.35			

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, ST is Stoneville.

<sup>2</sup>RK rating is the nematode rating based on company description and experience in testing these varieties. RR is 2-gene resistance, PR is partial resistance, and S is susceptible.

Table 4. Fiber properties<sup>2</sup> for varieties from a trial in Terry County.

Variety <sup>1</sup>	Mic.	Length	Unif.	Strength	Elon.	Rd	+b	Leaf
AR 9512 B3XF	5.48	1.11	80.6	33.6	5.5	74.4	7.2	5.0
BX2398B3XF	5.78	1.16	80.7	29.8	6.5	76.3	7.4	4.0
DP 1820 B3XF	5.56	1.16	79.5	33.4	5.4	73.0	7.7	5.5
DP 2020 B3XF	5.34	1.12	79.6	29.8	5.6	74.2	7.2	5.5
DP 2038 B3XF	5.61	1.07	79.5	30.4	6.2	76.2	7.6	4.5
DP 2127 B3XF	5.99	1.11	80.8	30.3	6.0	75.7	6.9	4.0
DP 2141NR B3XF	5.78	1.18	81.2	32.5	6.1	73.2	7.5	5.0
DP 2143NR B3XF	5.96	1.13	79.3	31.5	6.1	72.3	7.2	5.5
NG 3195 B3XF	5.59	1.09	80.7	30.2	5.8	75.8	6.9	4.5
NG 3956 B3XF	5.60	1.08	79.2	30.3	6.5	73.5	8.0	4.0
NG 4936 B3XF	5.55	1.21	82.0	30.3	7.0	76.1	6.9	4.0
NG 5711 B3XF	5.32	1.16	80.8	31.2	6.8	76.7	7.7	4.0
ST 4993B3XF	5.81	1.09	81.3	32.5	6.4	75.4	7.7	4.0
ST 5600B2XF	5.79	1.20	82.2	34.4	6.8	72.8	8.0	4.5
Prob>F	0.021	0.007	0.5	0.004	0.001	0.001	0.001	0.009
MSD (0.05)	0.40	0.07		2.3	0.2	1.6	0.4	1.0

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, ST=Stoneville.

<sup>2</sup>Mic=micronaire, Unif=uniformity, Elon=elongation.

Table 5. A variety trial in a reniform nematode field in Lubbock County.

Variety <sup>1</sup>	Lint yield (lbs/a)	Yield X Loan	Loan Value (\$/lb)	Reniform /100 cm <sup>3</sup> soil	Plants /foot row	Turn out (%)	Reniform Rating <sup>2</sup>
PHY 411 W3FE	900	483.75	53.75	190	2.13	28.2	R
PHY 332 W3FE	815	463.06	56.80	270	2.44	25.4	R
DP 2143NR B3XF	753	411.13	54.58	240	1.64	27.1	R
PHY 443 W3FE	748	396.91	53.08	80	1.84	27.6	R
DP 2141NR B3XF	610	320.61	52.58	100	1.72	25.9	R
PHY 205 W3FE	560	272.77	48.73	390	2.23	24.7	R
UA 103	455	252.07	55.40	440	2.20	29.6	S
DP 2115 B3XF	323	167.22	51.73	600	1.88	34.6	S
DP 393	318	176.47	55.45	350	1.86	25.6	S
FM 1621GL	312	150.51	48.20	450	1.68	30.8	S
NG 3195 B3XF	259	138.25	53.43	135	1.79	27.7	S
DP 2012 B3XF	239	125.65	52.63	540	1.90	27.9	S
Prob>F	0.001	0.001	0.001	0.006	0.001	0.024	
MSD (0.05)	117	63.55	2.98	318	0.34	0.055	

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, ST is Stoneville, UA is a variety developed at University of Arkansas and available through Seed Source Genetics

<sup>2</sup>Reniform rating is the nematode rating based on company description and experience in testing these varieties. R= resistance and S is susceptible.

Table 6. Fiber properties for a variety test in a reniform nematode field in Lubbock County.

Variety <sup>1</sup>	Micro-naire	Length	Uniform-ity	Strength	Elonga-tion	Rd	b	Leaf
DP 2012 B3XF	4.63	1.08	80.1	28.7	5.7	80.1	7.1	2.5
DP 2115 B3XF	4.91	1.07	80.4	29.3	6.5	80.3	7.3	2.0
DP 2141NR B3XF	5.49	1.13	81.2	32.2	6.9	80.0	7.3	2.5
DP 2143NR B3XF	5.10	1.18	81.9	32.8	6.8	79.8	7.0	3.0
DP 393	4.74	1.11	81.4	31.7	6.2	79.7	7.0	2.0
FM 1621GL	4.93	1.03	79.9	30.3	5.8	77.8	7.2	3.0
NG 3195 B3XF	4.64	1.09	80.3	29.5	5.9	80.6	6.6	1.5
PHY 205 W3FE	5.10	1.03	81.7	31.7	5.9	80.8	7.0	3.0
PHY 332 W3FE	4.89	1.16	81.2	31.5	6.9	80.0	7.9	2.5
PHY 411 W3FE	4.86	1.09	81.3	32.0	6.8	82.9	6.6	2.5
PHY 443 W3FE	5.31	1.12	81.3	32.0	6.7	79.6	7.5	2.5
UA 103	4.85	1.16	81.9	33.1	6.7	79.9	6.5	3.5
Prob>F	0.001	0.001	0.062	0.001	0.001	0.014	0.001	0.387
MSD (0.05)	0.032	0.04		1.9	0.3	1.9	0.3	

<sup>1</sup>AR=Armor, BX is experimental line for BASF, DP=Deltapine, FM=Fibermax, NG=NexGen, ST is Stoneville, UA is a variety developed at University of Arkansas and available through Seed Source Genetics.