

High Plains Root-Knot Nematode Variety Trial Results, 2016



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Trials were planted at Seminole (20 May), Lamesa (23 May), Brownfield (24 May), and Levelland (26 May). Plots were four rows wide (40-inch centers), and 36 feet long. Data collected included plant stands, galls (caused by root-knot nematodes), root-knot nematode density in August, and yield. The Seminole and Brownfield sites had moderate to high pressure from root-knot; the Lamesa site had low to moderate pressure; and the Levelland site had very low pressure from root-knot nematode. Varieties were arranged in a randomized complete block design with six replications per variety. PHY 499WRF and NG 3406B2XF served as susceptible checks in these trials.

Table 1. Results from variety trial conducted near Seminole

Variety ¹	Plants /foot	Galls /Root	Root-Knot Nematodes /500cc soil	Lbs of Lint/ acre	Lint Turnout (%)
ST 4946GLB2	2.17	1.2	6,168 a-d ³	1,449	29.8
PHY 499WRF	2.52	1.6	7,728 abc	1,443	29.1
BX 1739GLT	1.87	1.1	16,344 abc	1,434	32.2
BX 1736GLT	1.94	1.2	4,608 a-d	1,430	30.3
FM 1911GLT	2.76	1.3	15,912 abc	1,426	31.4
DP 16R247NRB2XF	1.06	0.7	2,208 cde	1,419	28.7
PHY 417WRF	2.07	0.4	212 f	1,379	28.9
DP 16R252NRB2XF	0.98	0.6	3,096 b-e	1,361	29.7
DP 1558NRB2RF	1.12	1.6	2,592 b-e	1,355	26.4
PHY 487WRF	2.53	1.1	1,080 e	1,349	27.9
DP 1454NRB2RF	0.80	1.6	2,256 de	1,332	28.7
NG 3406B2XF	2.68	2.3	22,920 ab	1,295	29.5
BX 1733GLT	2.27	1.5	12,504 abc	1,256	27.5
FM 2011GT	2.64	1.6	6,084 a-d	1,239	28.9
BX 1774GLTP	2.36	2.2	12,000 abc	1,191	27.1
PHY 308WRF	3.09	1.4	9,624 abc	1,175	24.0
DP 16R225NRB2XF	0.31	0.3	1,824 cde	----- ⁴	26.8
BX 1737GLT	2.67	2.4	31,680 a	1,018	26.7
BX 1775GLTP	2.54	2.1	13,608 ab	817	25.4
<i>MSD(0.05)²</i>	<i>0.34</i>	<i>1.8</i>		<i>163</i>	<i>0.0238</i>

¹BX is an experimental line from Bayer CropSciences; DP is Deltapine; FM is Fibermax; NG is NexGen; PHY is Phytogen; and ST is Stoneville.

²MSD is minimum significant difference at P=0.05.

³Nematode densities were LOG10 transformed to determine statistical differences.

⁴Only one replication of this variety had a sufficient stand to harvest so yield is not presented.

Table 2. Results from a variety trial conducted near Brownfield

Variety¹	Plants /foot	Galls³ /Root	Root-Knot Nematodes /500cc soil³	Lbs of Lint/ acre	Lint Turnout (%)
BX 1736GLT	2.25	83 a	1,848 ab	877	28.5
DP 1558NRB2RF	1.86	52 ab	1,056 ab	798	28.7
BX 1735GLT	2.33	50 ab	307 bc	779	27.1
FM 1911GLT	2.38	54 a	1,740 ab	693	28.3
ST 4946GLB2	2.19	73 a	180 c	672	26.8
PHY 417WRF	2.21	25 b	793 ab	635	27.2
PHY 499WRF	2.19	67 a	5,220 a	462	24.8
<i>MSD (0.05)²</i>				126	

¹BX is an experimental line from Bayer CropSciences; DP is Deltapine; FM is Fibermax; PHY is Phytogen; and ST is Stoneville.

²MSD is minimum significant difference at P=0.05.

³Nematode densities were LOG10 transformed and galls were square root transformed to determine statistical differences. There were pigweed problems at this site and some of the reproduction could have been on the pigweed rather than the variety.

Table 3. Results from a variety trial conducted near Lamesa

Variety¹	Plants /foot	Galls /Root	Root-Knot Nematodes /500cc soil³	Lbs of Lint/ acre	Lint Turnout (%)
FM 1911GLT	2.43	3.10	3,790 a-e	1,148	28.9
FM 2011GT	2.65	2.53	2,520 c-f	1,121	27.4
BX 1722GL	2.35	5.13	13,360 abc	999	28.2
BX 1735GLT	2.07	2.52	1,393 d-g	950	24.7
BX 1736GLT	2.29	4.02	1,883 e-i	935	27.0
NG 3406B2XF	2.62	4.85	13,460 ab	903	27.4
BX 1774GLTP	2.43	5.32	18,430 a	899	27.4
PHY 308WRF	2.69	2.45	1,233 e-i	890	25.1
ST 4946GLB2	1.98	2.42	1,800 e-i	853	24.1
BX 1739GLT	2.17	3.00	9,113 a-d	806	28.6
DP 16R247NRB2XF	1.86	1.43	620 f-i	787	27.3
PHY 417WRF	1.76	1.85	60 j	779	26.3
DP 16R251NRB2XF	1.81	2.09	287 ghi	761	23.8
PHY 487WRF	2.20	3.15	637 hij	733	23.5
PHY 499WRF	2.06	2.38	3,360 b-f	721	25.4
DP 1558NRB2RF	1.83	2.72	493 ij	719	25.1
DP 16R228NRB2XF	1.62	2.23	337 ghi	700	25.2
BX 1733GLT	2.00	2.45	4,897 e-h	598	23.4
DP 1454NRB2RF	1.56	3.73	1,340 ghi	512	25.2
<i>MSD(0.05)²</i>	0.26	2.61		99	

¹BX is an experimental line from Bayer CropSciences; DP is Deltapine; FM is Fibermax; NG is NexGen; PHY is Phytogen; and ST is Stoneville.

²MSD is minimum significant difference at P=0.05.

³Nematode densities were LOG10 transformed to determine statistical differences.

Table 4. Results from a variety trial conducted near Levelland

Variety¹	Plants /foot	Root-Knot Nematodes /500cc soil	Lbs of Lint/ acre	Lint Turnout (%)
FM 2011GT	3.42	0	1,003	30.2
DP 16R251NRB2XF	3.13	0	996	33.0
DP 16R225NRB2XF	2.93	0	968	31.0
BX 1722GL	3.22	73	961	31.8
DP 16R228NRB2XF	2.38	17	947	30.7
DP 16R252NRB2XF	3.06	0	912	31.4
ST 4946GLB2	3.09	0	973	30.8
PHY 487WRF	3.63	0	884	29.4
PHY 308WRF	3.78	40	866	27.6
NG 3406B2XF	3.54	100	849	30.1
PHY 417WRF	3.06	0	844	31.7
BX 1773GLTP	3.56	40	834	29.8
FM 1911GLT	3.41	33	871	30.2
PHY 499WRF	3.36	0	891	29.1
BX 1736GLT	3.38	57	715	29.4
<i>MSD(0.05)²</i>	<i>0.24</i>		<i>106</i>	

¹BX is an experimental line from Bayer CropSciences; DP is Deltapine; FM is Fibermax; NG is NexGen; PHY is Phytogen; and ST is Stoneville.

²MSD is minimum significant difference at P=0.05.

Additional studies were conducted evaluating the yield response of different varieties to irrigation, the seed treatment nematicides Aeris and/or the in-furrow nematicide Velum® Total. Trials were conducted at the AG-CARES Research Farm near Lamesa, the Texas Tech Quaker Farm, as well as grower locations in Lubbock and Gaines counties.

Table 5. Lint yield of eight cultivars and four advanced breeding lines for three different irrigation rates at AG-CARES in 2016[†]

Cultivar	Irrigation level			Cultivar mean	
	Low	Base	High		
----- Lint yield (lb ac ⁻¹) -----					
ST 4946 GLB2	1,151	1,454	1,573	1,392	a
FM 2011 GT	1,082	1,331	1,566	1,326	ab
NG 1511 B2RF	972	1,358	1,384	1,238	bc
FM 1911 GLT	900	1,258	1,450	1,203	cd
DP 16R252 NRB2XF	1,020	1,295	1,241	1,185	cd
DP 1558 NRB2RF	1,035	1,277	1,242	1,185	cd
DP 16R247 NRB2XF	1,034	1,116	1,181	1,110	de
PHY 417 WRF	870	1,084	1,206	1,053	e
PHY 427 WRF	909	1,126	1,092	1,042	ef
PHY 499 WRF	903	1,050	1,086	1,013	efg
BX 1736 GLT	736	991	1,110	946	fg
BX 1735 GLT	809	964	1,040	838	g
Irrigation mean	952 C	1,192 B	1,264 A		

[†]Values within a column or row followed by the same lower or upper case letters, respectively are not significantly different ($P < 0.05$). Data are the means of four replications.

Table 6. Lint yield of eight cotton cultivars and four advanced breeding lines in response to Velum® Total (Lubbock Co.)[†]

Cultivar	Velum® Total Rate		Cultivar means
	0 fl oz ac⁻¹	18 fl oz ac⁻¹	
FM 2011 GT	2,202	2,453	2,327 a
ST 4946 GLB2	2,138	2,418	2,278 a
PHY 499 WRF	2,204	2,224	2,214 a
NG 1511 B2RF	2,045	2,381	2,213 a
BX 1735 GLT	1,997	2,309	2,153 ab
PHY 427 WRF	2,030	2,231	2,130 ab
FM 1911 GLT	1,808	1,992	1,900 c
DP 1558 NRB2RF	1,614	1,800	1,707 c
BX 1736 GLT	1,683	1,696	1,690 c
DP 16R247 NRB2XF	1,663	1,712	1,688 c
PHY 417 WRF	1,604	1,771	1,688 c
DP 16R252 NRB2XF	1,601	1,758	1,680 c
Velum® Total means	1,883 B	2,062 A	

[†]Data were combined for analysis (n=8) and difference between varieties are denoted by different letters ($P<0.05$).

Table 7. Effect of Velum® Total, AeriS® seed applied nematicide and cultivar on lint yield at three locations[†]

Main effects	Trial 1		Trial 2		Trial 3	
Velum® Total	----- Lint yield (lb ac ⁻¹) -----					
0 fl oz	1,406	A	2,231	A	1,321	B
10 fl oz	1,447	A	2,209	A	1,361	AB
14 fl oz	1,387	A	2,184	A	1,446	A
18 fl oz	1,345	A	2,165	A	1,456	A
Cultivar						
ST 4946 GLB2	1,468	a	2,366	a	1,625	a
FM 2484 B2F	1,476	a	2,175	b	1,369	b
FM 2011 GT	1,322	b	2,124	b	1,331	b
FM 1900 GLT	1,307	b	2,123	b	1,267	b
Seed treatment						
Base fungicide	1,439	z	2,187	z	1,386	z
Aeris nematicide	1,353	z	2,207	z	1,409	z

[†]Values within a column or row followed by the same lower or upper case letters, respectively are not significantly different ($P < 0.05$). Data are the means of four replications. (Trial 1 = Quaker Farm, no nematode disease pressure; Trial 2 = Lubbock Co., moderate nematode pressure; and Trial 3 = Gaines Co., high nematode pressure).