



Result Demonstration/Applied Research Report

Mitchell County Dryland Roundup Ready Flex Cotton Variety Evaluation Nub Morris Farm, 2006

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Summary:

Nine cotton varieties were compared under similar growing conditions to determine which cotton varieties consistently have higher yields and favorable fiber qualities. All Roundup Ready Flex varieties performed well considering the severe drought conditions. Phytogen 485 WRF, Deltapine 147 RF, and NextGen 3550 RF topped this test in gross returns of \$424.44 per acre, \$421.43 per acre and \$417.02 per acre, respectively. Producers should keep in mind that these results can change under different field conditions, soil fertility and irrigation practices, so it is suggested that you look at the better cultivars on your farm for several seasons.

Objective:

Commercial cotton varieties require testing each year for determination of yield and fiber quality consistency. Through the use of a field test, a comparison is made of new cotton varieties to determine how they will perform under local conditions. Testing of said varieties within a geographic area of production is important to provide local producers with the latest information about varieties they may have high lint yields and good fiber qualities. Producers can then determine if any of the new varieties are more productive than the varieties currently used on their farms. Also, the demonstration research trial gives producers an opportunity to follow growth and development of the different cotton varieties throughout the growing season.

Materials and Methods:

Nine cotton varieties were planted using an eight row John Deere Maxi-Merge planter to plant 2 rows per variety in a strip test fashion. Each variety was randomly replicated four times using a Randomized Block Design. The following is a list of materials and methods used in this test.

Planting Date:	May 12, 2006
Seeding Rate:	1 seed every five inches which is approximately 3.6 lb per row acre
Planting Pattern:	2 planted 1 out on 40 inch rows
Previous Crop:	Cotton
Herbicides:	1) Trifluralin incorporated prior to planting at a 1.25 pint per acre rate 2) Roundup® Original Max applied at 26 ounces per acre on June 15 (fifth true leaf stage) and another 26 ounces applied July 20 3) Glystar Plus applied at 56 ounces per acre in October
Fertilizer:	125 pounds of 28-14-0-12 incorporated in March
Insecticides:	None
Harvest Date:	Hand harvested three replications on November 22, 2006

Results and Discussion:

All cotton varieties were planted in a two planted one out row pattern across the field. Yield was determined from three 13.1 row ft. hand samples. A two pound sample of seed cotton was ginned at Monsanto facilities in Idalou to determine the percent turnout of lint and seed. A sample of the ginned cotton was taken to the International Textile Center in Lubbock to have fiber properties determined using a HVI classing machine. This test provided additional information to see if increased costs of genetically modified cotton could be offset by additional lint production.

High temperatures and a severe drought this season severely stressed the cotton during the entire growing season. However, this dryland field is naturally sub-irrigated from the Lone Wolf Creek which probably provided additional subsoil moisture during the season.

In Table 1 there is no statistical difference (NSD) between number of plants per foot for the different cotton varieties. This indicates an overall good uniformity in plant populations in evaluating yield performance for the different cotton varieties.

Table 2 contains the yield and fiber quality information for each of the nine cotton varieties evaluated in this test. Based on 480 lb/bale cotton, lint yields of varieties evaluated in this dryland trial were between 1.0 to 1.32 bale cotton. All varieties performed well considering the severe drought conditions. Statistically, there were no significant differences among the varieties for lint yield, seed yield, % lint turnout, % seed turnout, CCC loan value, lint gross

return, seed gross return, and total gross return. Since the varieties had similar yield and lint quality then it would be improper to say that anyone variety was better than the other. There appears to be a difference of \$74.95 per acre between the highest and lowest values for total gross returns but since yields were not statistically different then the arrangement of the varieties could change the next time it was harvested.

All varieties had fairly good fiber qualities despite the poor growing conditions (Table 2). There was statistical difference shown in Micronaire and Uniformity but for the most part it is within the desired range for each. Fiber length ranged from 33 to 35 (32nds) which is very good considering the environmental challenges of the growing season. The main fiber quality difference that can be discussed is strength. The Phytogen 485 WRF and Stoneville 4664 RF had the strongest fibers at 30.83 grams/tex and 29.33 grams/tex, respectively. NexGen 3550 RF and Stoneville 4554 B2F were at the high end of the average strength category with 28.90 grams/tex and 28.80 grams/tex, respectively. Americot 1504 B2F, Americot 1532 B2F, Deltapine 143 RF, and Beltwide 4630 B2F had relatively low fiber strength.

Table 1. Plants per row ft. at harvest.

Variety	Plants per ft.
Phytogen 485 WRF	2.40
Deltapine 147 RF	2.53
NexGen 3550 RF	2.30
Stoneville 4554 B2F	2.07
Beltwide 4630 B2F	2.20
Americot 1504 B2F	2.20
Stoneville 4664 RF	2.23
Americot 1532 B2F	2.33
Deltapine 143 RF	2.37
LSD _{0.5} = 1.03	NSD

No significant differences (NSD) among the varieties according to Tukey's Studentized Range Test (P=0.05).

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Table 2. Agronomic Data from Nub Morris's Dryland Cotton Variety Test (Mitchell County, 2006).

Variety	Yield Per Acre				Fiber Quality						Lint	Seed	Total
	In Pounds		% Turnout		Color- Leaf	Fiber Length (staple)	Mic	Strength (gram/tex)	Uniformity	CCC	Gross	Gross	Gross
	Lint	Seed	Lint	Seed						Loan	Return	Return	Return
Phytogen 485 WRF	634	1129	26.7	47.7	312	34	4.90 a	30.83 a	83.9 a	54.15	342.59	81.85	424.44
Deltapine 147 RF	612	1098	26.7	47.8	212	35	4.40 b	27.03 bcd	81.1 bc	55.95	341.80	79.63	421.43
NexGen 3550 RF	626	1172	26.0	49.8	212	33	4.77	28.90 ab	82.0 abc	52.55	332.07	84.95	417.02
Stoneville 4554 B2F	596	1075	26.7	48.2	212	34	4.90 a	28.80 abc	83.2 ab	55.05	327.12	77.96	405.08
Beltwide 4630 B2F	555	1130	25.0	50.5	212	34	4.70	26.40 cd	83.3 ab	55.38	309.05	81.92	390.97
Americot 1504 B2F	563	1112	25.2	49.9	212	34	4.87 a	25.10 d	83.0 ab	54.40	307.58	80.65	388.23
Stoneville 4664 RF	571	1215	24.3	51.6	212	33	4.77	29.33 ab	81.4 abc	52.30	298.57	88.12	386.69
Americot 1532 B2F	533	1100	24.5	50.6	212	35	4.83 a	25.97 d	81.4 abc	55.72	297.27	79.74	377.01
Deltapine 143 RF	489	977	24.7	49.9	112	35	4.73	26.10 d	79.7 c	57.05	278.68	70.81	349.49
Prob (F)	NSD	NSD	NSD	NSD	-	NSD	0.0075	0.0001	0.0014	NSD	NSD	NSD	NSD

Means in a column followed by the same lower case letter do not differ significantly (P=0.05, Tukey's significant range test).

NSD = No Significant Difference (P=0.05, ANOVA, SAS Institute 1993).

Seed income calculated using a price of \$145 per ton.

Acknowledgments:

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- Dow Agrosiences who provided the Phytogen 485 WRF
- Delta and Pine Land Company who provided the Deltapine 147 RF and Deltapine 143 RF
- Stoneville Pedigreed Seed Company who provided the NexGen 3550 RF,
- Stoneville ST 4554 B2RF, and Stoneville ST 4664 RF
- Beltwide Cotton Genetics who provided the Beltwide 4630 B2RF
- Americot who provided the Americot 1504 B2RF and Americot 1532 B2RF

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.