

IRRIGATED COTTON TESTS ON THE HIGH PLAINS, 1959

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SUMMARY

Sixteen varieties were grown in replicated tests at four locations on the High Plains in 1959. The locations were near Brownfield, Lubbock, Plainview and Kress and represent the major soil types of the area as well as the range of climatic conditions.

Rex and Austin were the highest yielding varieties at all locations, followed by Empire WR, Gregg, Lankart Sel. 57 and Blightmaster. Rex, Austin, Gregg and Blightmaster are tolerant to bacterial blight (angular leaf spot). This probably was an important factor in the relatively high yields of these varieties.

In the Lubbock test, which was severely damaged by hail, Lockett 88 was the top yielding variety.

Introduction

Irrigated cotton variety tests were conducted at four locations on the High Plains in 1959. The same 16 varieties were grown in each replicated experiment.

Climatic conditions during the planting season were generally favorable. May had slightly above-average rainfall and temperatures, but June had below-average temperatures combined with above-average rainfall, hail and sandstorms. An estimated 600,000 acres of cotton on the High Plains were replanted in June primarily as a result of these factors. Temperatures in July also were below average but rainfall was nearly normal. August and September were exceptionally favorable for the development of irrigated cotton since the temperatures were slightly higher than average and rainfall was considerably below average.

Conditions during October, November and December were almost optimum for harvesting with little rainfall during this period.

Cotton diseases were unusually severe over the entire cotton growing area. Seedling diseases and ascochyta (wet-weather) blight were especially severe in the early part of the season as a result of the low temperatures and high frequency of rainfall. Bacterial blight became prevalent later in the season and caused considerable damage to the cotton, particularly to the less-tolerant varieties. Verticillium wilt also caused some yield reduction over the area.

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Bacterial blight was particularly damaging in the Brownfield test and Verticillium wilt was light to moderate in the Plainview test.

Insect infestations were light in all tests. The Plainview and Lubbock tests were the only ones in which control measures were used. These measures were necessary only for early-season infestations of thrips.

Other pertinent information about the tests is given in Table 1.

Results

The results of the 1959 tests are given in Tables 2 through 5.

In general, the Empire types (Austin, Empire WR and Rex) were the higher yielding varieties; Brazos, Western Stormproof and Deltapine TPSA had the lowest average yields.

It is perhaps more than a coincidence that the bacterial blight-tolerant varieties--Rex, Austin, Gregg and Blightmaster--were generally among the highest yielding varieties in the tests.

A combined statistical analysis for all four locations showed that the varietal performance differed from location to location. This variety-location interaction indicates that the variety grown should be selected on the basis of the soil type and climatic conditions of a given location.

The relative merits of a variety can be determined best by growing it over a period of years. Period-of-years summaries for four locations are given in Tables 6 through 9.

At the Lubbock, Welch-Brownfield and Tulia-Kress locations, Gregg had the highest average yield over all years reported. Austin had the highest average yield at Plainview.

Empire WR, Western Stormproof, Lankart Sel. 57 and Paymaster 101 were above the average in yield over all the tests.

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Table 1. General information pertaining to the 1959 irrigated cotton variety tests

Location	Soil type	Fertilizer	Planting date	Stand	May-October			Harvest		Remarks
					Irrigations No.	Inches	rainfall, inches	Date	Method	
Brownfield- E.H. Farrar farm	Amarillo loamy fine sand	40-60-0	5-5	Good	4	14.5	9.35	11-9	Machine stripping	Severe bacterial blight infestation
Lubbock- Substation No.8	Amarillo fine sandy loam	40-60-0	4-27	Skippy	2	10.0	15.00	11-16	Machine stripping	Hail June 22
Kress- Travis Dyer farm	Pullman silty clay loam	60-80-0	5-1	Skippy	2	10.0	15.80	11-18	Machine stripping	Hail June 5
Plainview- Paymaster farms	Pullman silty clay loam	40-100-45	5-18	Good	3	14.0	8.96	10-24 11-25	Hand snapping	Light to moderate Verticillium wilt infestation

Table 2. Summary of 1959 irrigated cotton variety test at Brownfield

Variety	Yield, pounds of lint per acre	Lint %		Grade	Staple length, 32nd's Micro- inch naire		Earli- ness ^{1/}
		Picked	Stripped				
Rex	806	37	26	SIM	29	3.9	81
Austin	796	39	27	SIM	30	4.1	72
Gregg	772	37	26	SIM /	28	4.3	78
Blightmaster	700	38	26	M	26	4.7	54
Lankart Sel. 57	700	40	27	M	30	4.5	67
Paymaster 101	680	38	27	M	28	3.6	89
Empire WR	672	37	25	SIM	30	4.0	65
Dunn 24	648	36	25	SIM /	28	3.7	48
Lockett 88	638	37	27	SIM /	30	4.4	63
Northern Star 11	634	37	25	SIM /	29	4.1	68
Western Stormproof	626	37	26	M	29	3.4	67
Paymaster 54B	602	40	26	SIM /	28	4.0	84
Deltapine TFSA	600	38	24	SIM	31	3.9	57
Brazos	598	38	24	SIM	28	3.8	55
Acala 1517C	594	40	24	SIM	31	3.5	43
Acala 1517BR-1	574	40	23	SIM	32	3.7	65
LSD: .05	52						
.01	70						

^{1/} Earliness is the percentage of the crop opened by October 5.

Table 3. Summary of 1959 irrigated cotton variety test at Lubbock

Variety	Yield, pounds of lint per acre	Lint %		Grade	Staple length, 32nd's Micro- inch naire		Earli- ness ^{1/}
		Picked	Stripped				
Lockett 88	506	33	25	M /	28	3.8	73
Empire WR	504	33	24	M	30	3.7	80
Blightmaster	496	32	24	M /	28	4.1	94
Gregg	488	35	24	M /	26	3.8	93
Rex	474	36	24	SIM	30	3.8	77
Lankart Sel. 57	464	35	25	SM	29	4.1	71
Austin	452	35	24	SIM	29	3.7	86
Acala 1517BR-1	446	35	23	M	31	3.6	66
Brazos	442	35	23	M /	28	3.4	66
Dunn 24	438	34	25	SM	29	3.7	78
Paymaster 54B	438	34	25	SIM	29	3.8	95
Western Stormproof	430	37	27	SM	28	3.5	83
Acala 1517C	426	32	22	M /	32	3.4	71
Northern Star 11	414	33	23	M /	30	3.8	78
Deltapine TFSA	378	34	23	M /	29	3.4	64
Paymaster 101	372	34	26	SIM	29	3.6	90
LSD: .05	81						
.01	108						

^{1/} Earliness is the percentage of the crop open by October 26.

Table 4. Summary of 1959 irrigated variety test at Kress

Variety	Yield, pounds of lint per acre	Lint %		Grade	Staple length, 32nd's inch	Micro- naire	Earli- ness ^{1/}
		Picked	Stripped				
Rex	526	34	26	SLM /	28	3.1	71
Empire WR	514	31	26	SLM	31	3.0	56
Blightmaster	498	35	25	M	29	3.3	88
Austin	488	33	24	SLM /	29	3.2	70
Gregg	448	34	24	SLM /	29	2.9	77
Acala 1517C	440	35	24	SLM	30	3.2	61
Northern Star 11	440	35	24	SLM /	30	3.5	80
Lockett 88	436	33	27	M	26	3.2	61
Lankart Sel. 57	430	31	27	M	30	3.9	53
Brazos	428	33	24	SLM	31	3.2	55
Acala 1517BR-1	428	33	24	SLM /	30	3.2	60
Paymaster 101	410	33	26	M	30	3.4	79
Deltapine TPFA	390	29	22	SLM	30	3.1	46
Paymaster 54B	378	31	23	SLM /	29	3.1	92
Western Stormproof	356	32	26	SM	28	3.1	50
Dunn 24	314	34	24	M	28	3.2	49
ISD: .05	59						
.01	79						

^{1/} Earliness is the percentage of the crop open by October 21.

Table 5. Summary of 1959 irrigated cotton variety test at Plainview

Variety	Yield, pounds of lint per acre	Lint %		Grade	Staple length, 32nd's inch	Earliness ^{1/}
		Picked	Pulled			
Rex	1021	37	27	SLM	34	60
Austin	1021	39	29	SLM	34	59
Empire WR	1006	37	27	SLM	33	60
Lankart Sel. 57	925	39	29	M	33	60
Acala 1517C	891	36	28	SLM /	34	46
Paymaster 101	886	40	30	M	31	76
Paymaster 54B	883	40	30	SLM	32	78
Acala 1517BR-1	873	38	28	M	35	54
Dunn 24	833	38	30	SLM /	30	52
Gregg	823	38	29	SLM /	31	71
Lockett 88	809	38	30	SLM /	30	60
Northern Star 11	799	38	28	SLM /	32	67
Blightmaster	778	39	30	M	32	67
Deltapine TPFA	768	38	28	SLM	32	56
Western Stormproof	759	40	31	M	31	50
Brazos	734	37	28	SLM /	33	58
ISD: .05	133					
.01	150					

^{1/} Earliness is the percentage of the crop open by October 24.

Table 7. Summary of irrigated cotton variety tests at Lubbock for 1956-59

Table 6. Summary of irrigated variety tests for 1957 at Welch, and for 1958 and 1959 at Brownfield

Variety	Yield, pounds of lint per acre				Comparable averages			
	1957	1958	1959	Comparable average	Lint %, stripped	Staple length, 32nd's inch	Micronaire	Earliness ^{1/}
Gregg	735	778	772	762	27	29	4.1	79
Lankart Sel. 57	679	871	700	750	28	30	4.3	60
Western Stormproof	561	1045	626	744	28	30	3.4	60
Empire WR	689	838	672	733	26	31	3.7	62
Lockett 88	704	852	638	731	28	29	3.9	60
Paymaster 101	629	834	680	714	28	29	3.7	78
Blightmaster	571	856	700	709	26	30	3.8	54
Northern Star 11	656	772	634	687	25	30	3.8	72
Deltapine TPFA	533	916	600	683	26	31	3.7	58
Acala 1517BR-1	596	656	574	609	24	33	3.6	56
Austin		845	796	782	27	30	3.8	74
Acala 1517C		756	594	636	25	33	3.2	54
ISD: .05	81	172	52					

^{1/} Percentage of the crop open on a specific date, 1958 and 1959 only.

Table 7. Summary of irrigated cotton variety tests at Lubbock for 1956-59

Variety	Yield, pounds of lint per acre				Comparable average	Comparable averages			
	1956	1957	1958	1959		Lint %, stripped	Staple length, 32nd's inch	Micro-naire ^{1/}	Earliness ^{2/}
Gregg	742	767	862	488	715	26	30	4.0	81
Lankart Sel. 57	775	708	671	464	655	26	30	4.1	55
Western Stormproof	758	669	757	430	653	27	30	3.6	53
Empire WR	751	665	692	504	653	25	30	3.6	66
Paymaster 54B	810	608	716	438	643	26	30	3.7	86
Paymaster 101	741	692	718	372	631	27	30	3.6	80
Deltapine TPFA	773	675	699	378	631	24	31	3.3	53
Acala 1517C	728	724	618	426	625	24	33	3.2	56
Blightmaster	711	647	638	496	623	25	30	3.6	64
Northern Star 11	619	669	659	414	590	25	31	3.6	57
Lockett 88		641	797	506	681	27	29	3.6	59
Acala 1517BR-1			572	446	577	24	33	3.3	57
LSD: .05	56	54	98	81					

1/ Average for 1957, 1958 and 1959 only.
 2/ Percentage of crop open on a specific date.

Table 8. Summary of irrigated variety tests for 1957-58 at Tulia and 1959 at Kress

Variety	Yield, pounds of lint per acre				Comparable averages		
	1957	1958	1959	Comparable Average	Lint %, stripped	Staple length, 32nd's inch	Micro-naire
Gregg	531	886	448	622	26	30	3.5
Lockett 88	421	942	436	600	27	28	3.2
Empire WR	320	865	514	566	23	31	3.0
Western Stormproof	302	947	356	535	24	28	3.0
Northern Star 11	340	810	440	530	23	30	3.3
Paymaster 101	484	695	410	530	25	28	3.2
Lankart Sel. 57	329	817	430	525	24	30	3.6
Paymaster 54B	485	708	378	524	24	29	3.2
Blightmaster	294	751	498	514	23	29	3.1
Rex		784	526	587	24	30	3.2
Acala 1517C	447		440	573	24	29	3.2
Austin		743	488	548	24	29	3.3
Acala 1517BR-1		724	428	509	23	31	3.0
Deltapine TPFA		698	390	477	22	32	3.0
ESD: .05	44	122	59				

Table 9. Summary of irrigated variety tests at Plainview for 1957-59

Variety	Yield, pounds of lint per acre				Lint % pulled	Staple length, 32nd's inch	Earliness ^{1/}
	1957	1958	1959	Average			
Austin	493	858	1021	791	30	32	57
Empire WR	419	858	1006	761	28	33	50
Paymaster 54B	590	780	883	751	30	31	75
Paymaster 101	430	749	886	688	30	31	76
Lankart Sel. 57	306	766	925	666	29	32	58
Gregg	396	754	823	658	30	31	70
Northern Star 11	332	680	799	604	28	32	57
Acala 1517BR-1	338	576	873	596	28	34	48
Blightmaster	280	721	778	593	29	32	57
Acala 1517C	276	555	891	574	28	34	49
Western Stormproof	236	678	759	558	30	31	53
Lockett 88	222	621	809	551	29	30	57
Deltapine TPFA	245	580	768	531	28	32	53
ESD: .05	84	70	133				

^{1/} Percentage of crop open on a specific date.