BREEDING RESEARCH WITH LONG STAPLE COTTON

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The objective of the long staple cotton breeding program has been to develop breeding methodology whereby desirable characteristics such as high yields, good agronomic traits and superior spinning qualities can be incorporated into one strain.

Experimental #126-1, our most promising line was extensively tested in 1969. It was entered in the USDA, ARS Regional Advanced Strain Test for long staple cottons. We tested Experimental #126-1 in a replicated test with Pima S-4 at Marana, Arizona. Results of the Marana test showed no significant differences in yield between Pima S-4 and Experimental #126-1; however, the latter was ready for harvesting two weeks before Pima S-4.

Observations were made on a seed increase field planted with Experimental #126-1at Farmers Investment Company (FICO), at Sahuarita, Arizona. Preliminary yield figures reported showed that 7,753 lbs. of lintwere harvested from 14.2 acres on November 22, 1969. Gin turn-out was 33.3%. The grower reported that the field was ready for harvesting the first week in November, early for this area.

Fiber and spinning data gathered over the last few years indicate no significant differences in lint qualities between Experimental #126-1 and Pima S-4. Since Experimental #126-1 is an earlier maturing strain than Pima S-4, with no differences in yield or lint qualities, it has been submitted for consideration for release as a commercial variety.

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AGRICULTURAL EXTENSION SERVICE ON-FARM TEST DEMONSTRATIONS

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The on-farm testing program is a cooperative effort between growers, University of Arizona Extension Service personnel and commerical seed concerns. The tests provide on-farm yield and lint information for varieties and various cultural practices.

Cochise County

Short Staple

Joe Smith--Pearce   Agricultural Extension Agent-Carmy Page

Variety	Total (Lint lb per acre)	Pick	Lint First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micro-naire
Stoneville 213	1150	1st	64.1	38.8	1.16	2.96	4.10
		2nd		35.3	1.16	2.91	2.80
Coker 310	1148	1st	63.0	40.5	1.19	3.27	4.17
		2nd		38.5	1.16	3.21	3.33
1517D	1122	1st	64.6	37.3	1.25	3.65	4.02
		2nd		36.6	1.20	3.50	3.45
Hopicala	1079	1st	62.5	39.6	1.13	3.79	4.20
		2nd		39.1	1.13	3.35	3.54
1517-70	1078	1st	71.2	38.3	1.18	3.61	3.75
		2nd		36.9	1.12	3.04	3.23
Coker 417	1075	1st	64.4	38.7	1.18	3.13	3.62
		2nd		38.0	1.10	3.12	2.85
DPL-16	1050	1st	55.5	39.4	1.10	3.25	3.98
		2nd		37.4	1.10	3.01	3.13
DPL-5826	989	1st	60.5	38.7	1.11	3.41	4.14
		2nd		39.0	1.10	3.18	3.58
Stoneville 208	896	1st	61.9	39.7	1.18	3.25	3.36
		2nd		38.2	1.11	2.98	2.83

Crop History

Elevation:	4200 feet
Planted:	4/9/69
Harvested:	First pick - 10/17/69 Second pick - 11/14/69
Previous Crop:	Cotton
Soil Type:	Silt Loam
Irrigation:	Pre-irrigated March 10 and subsequent irrigations on 5/15, 6/10, 7/20, 8/6, 8/25, 9/9
Source and Quality of Water:	Well, good quality
Fertilizer:	5/20 sidedressed with 80 lb N/acre as NH_3
Insect Control:	4 lb/A Thimet granules
Weed Control:	1/2 lb/A Treflan and hoed once
Disease Problems and Control:	Two lb/A Dithane 78 for rust
Area Harvested for Test:	Four 38-inch rows 950 feet in length

Summary

Test objective was to compare nine varieties for yield and quality. Yields ranged from 1150 lb. to 896 lb. lint per acre with quality running in the average range for the 1969 season.

SHORT STAPLE VARIETY TRIAL 1/

Joe Smith--Pearce — Agricultural Extension Agent--Carmy Page

Variety	Pick	Yield Lint (lb/A)	Lint First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micro-naire
Coker 310	1st	1020	85.0	36.9	1.09		4.57
	2nd			36.7	1.09	2.76	3.00
Stoneville 213	1st	997	86.9	36.6	1.09		4.56
	2nd			33.0	1.04	2.79	2.60
Coker 413	1st	994	86.9	36.3	1.10		4.06
	2nd			37.5	1.04	2.68	2.70
Hopicala	1st	992	88.0	37.2	1.12		4.27
	2nd			38.7	1.14	3.30	2.90
DPL·16	1st	976	78.3	35.2	1.09		4.27
	2nd			37.2	1.14	2.71	2.90
1517-D	1st	974	88.1	35.1	1.15		4.20
Foundation	2nd			36.1	1.19	3.42	2.85
Stoneville 7A	1st	926	83.3	34.5	1.12		4.30
	2nd			34.9	1.04	2.59	2.50
DPL-5826	1st	911	84.4	34.9	1.13		4.32
	2nd			37.9	1.05	3.05	2.85

1/ Yield data was based on a bulk wt of 16 rows for 1st pick and 4 rows for 2nd pick. Yield and quality data for 1st pick from the gin, 2nd pick data run at the University of Arizona lab.

Crop History

Elevation:	4200 feet
Planted:	4/17/69
Harvested:	First pick - 10/20/69 Second pick - 11/20/69
Soil Type:	Clay loam
Previous Crop:	Grain sorghum
Irrigation:	Pre-irrigated and subsequent irrigations on 5/30, 6/20, 7/20, 9/8
Source and Quality of Water:	Well, good quality
Method of Irrigation:	Every other row (wheel rows)
Fertilizer:	South - 40 lb N/acre and 115 lb P_2O_5/acre as 18-46-0 preplant North - 45 lb N/acre and 115 lb P_2O_5/acre as 18-46-0 preplant
Weed Control:	Treflan preplant 1/2 lb/A, rolling cultivator 5/29 and 6/9 and hoed 6/20 and once in August
Insect Control:	1/2 pt/A Dieldrin early July for lygus

Disease Control:	Sprayed for rust early July with 1/2 lb/A of Dithane 78
Row Width:	38 inches
Row Length:	2414 feet
Plot Size:	4 rows

Summary

This variety test compared eight varieties for yield and quality. The yields ranged from 1020 to 911 lb lint per acre and average quality.

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SHORT STAPLE VARIETY TRIAL 1/

Bob Colvin--Eden   Agricultural Extension Agent--John Sears

Variety	Yield Lint (lb/A)	Lint First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micro-naire
DPL-16	1604	75.7	38.2	1.18	3.09	4.25
			38.3	1.12	3.03	3.33
Hopicala	1526	84.8	38.7	1.15	3.58	4.15
			38.1	1.12	3.66	3.23
1517 V	1490	87.6	39.3	1.25	3.57	3.90
			38.1	1.18	3.54	3.15
1517 D	1428	83.9	34.3	1.27	3.82	4.20
			35.9	1.21	3.71	3.05
Stroman 3	1410	89.2	36.6	1.24	3.65	3.90
			35.9	1.17	3.72	2.95
Stroman 254	1227	90.0	37.0	1.16	3.73	3.90
			34.5	1.13	3.62	2.75

1/ First number in the column for each variety is for the first picking and second number is for the second picking.

Crop History

Elevation:	2900 feet
Planted:	4/11/69
Harvested:	First pick - 10/13/69 Second pick - 11/21/69
Previous Crop:	Alfalfa, two year old stand
Soil Type:	Clay loam
Irrigation:	Pre-irrigated, first irrigation 6/1 and continued every 15 days until 8/15
Source and Quality of Water:	Well, poor quality (sodium)
Fertilizer:	None
Insect Control:	Seed treated with Thimet
Weed Control:	Preplant 1 lb/A Treflan and 2 lb/A Caparol
Defoliation:	10/3 with Sodium Chlorate, very effective
Disease Problems:	Moderate verticillium wilt in test
Plot Size:	Four 38-inch rows 840 feet in length

Summary

This test contained six varieties which were compared for yield and quality. Yields ranged from 1604 to 1227 lb lint per acre. Yields for all varieties were 300 to 400 lb above the four-year average. Quality was average or above for the season.

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SHORT STAPLE VARIETY TRIAL

Pinal County

Barlett Farm--Coolidge	Agricultural Extension Agent--Sam Stedman
DPL 5826	1509 lb lint
DPL 16	1260 lb lint
Stoneville 213	1208 lb lint

Planted: April 14
Harvested: First pick - 12/3

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SHORT STAPLE VARIETY TRIAL 1/

Alfred Clonts--Sanchez — Argicultural Extension Agent--John Sears

Variety	Pick	Yield seed cotton (lb/A)	Seed Cotton First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micronaire
Hopicala	1st	2714	84.0				
	2nd			41.7	1.07	3.48	3.68
1517 D	1st	2517	80.9				
	2nd			39.3	1.17	3.71	3.40
DPL-16	1st	2457	81.9				
	2nd			38.8	1.15	3.63	3.50
1517 V	1st	2358	82.2				
	2nd			40.6	1.07	3.05	3.83

1/ Quality data available on second picking only.

Crop History

Elevation: 2900 feet
Planted: 4/10/69
Harvested: First pick - 10/14/69
Second pick - 11/24/69

Previous Crop:	Cotton
Soil Type:	Clay loam
Irrigation:	Pre-irrigated and subsequent irrigation on 6/1, 6/15, 7/1, 7/15, 8/5 Total water applied 4 acre feet
Source and Quality of Water:	Well, good quality
Fertilizer:	25 lb/N acre as NH_3
Weed Control:	None
Disease Control:	None
Area Harvested for Test:	Two 38-inch rows 1170 feet in length

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SHORT STAPLE VARIETY TRIAL 1/

Lee Hunt--Thatcher — Agricultural Extension Agent--John Sears

Variety	Lint First Pick (%)	Total Lint lb/acre	Lint (%)	Length (UHM)	Strength (Pressley 1/8")	Micronaire
Hopicala	83.4	1624	39.9	1.15	3.76	4.45
			40.1	1.13	3.52	3.80
1517 C	86.8	1427	37.9	1.23	3.76	4.00
			38.1	1.15	3.54	3.53

1/ First number in the column for each variety is for the first picking and second number the second picking.

Crop History

Elevation:	2900 feet
Planted:	4/15/69
Harvested:	First pick - 10/7/69 Second pick - 11/19/69
Previous Crop:	Grain sorghum and oats
Soil Type:	Clay loam
Irrigation:	Pre-irrigated, and four other irrigations the last of which was on August 15. Total water applied 3 acre feet
Method of Irrigation:	Every other row
Source and Quality of Water:	Well, fair quality (sodium)
Fertilizer:	48 lb N/A and 60 lb P_2O_5/A as 16-20-0 in December at time of planting oats (cover crop)
Insect Control:	1 lb/A Treflan preplant and hoed twice
Disease Control:	None
Area Harvested for Test:	Four 38-inch rows 950 feet in length

Summary

Two varieties were compared in this test for yield and quality. Yields averaged approximately 2/3 of a bale higher than the four-year average and quality was higher than average.

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Graham County

Yield of variety tests conducted in Graham County from 1966 to 1969.

Long Staple Yield (lb lint/A)

Variety	1966	1967	1968	1969	Ave.
S-4	806	754	929	825	839
S-3	828	677	874	696	754
S-2	794	591	762	788	749
126-1-1	-	519	838	-	732

Short Staple Yield (lb lint/A)

Variety	1966	1967	1968	1969	Ave.
DPL-16	-	-	1047	1604	1326
Hopicala	1286	1100	1255	1575	1311
1517V	1146	957	1162	1490	1143
1517D	1100	897	1016	1428	1073
1517C	698	-	-	1427	1063

LONG STAPLE VARIETY TRIAL

Bob Colvin--Eden — Agricultural Extension Agent--John Sears

Variety	Pick	Total Lint (lb/acre)	Lint First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micro-naire
S-2	1st	513	90.0	38.7	1.29	4.67	4.00
	2nd			36.1	1.23	4.45	3.15
S-3	1st	387	88.9	35.5	1.39	4.56	3.50
	2nd			37.3	1.29	4.20	3.33
S-4	1st	474	87.7	37.9	1.35	4.77	3.95
	2nd			38.1	1.30	4.63	3.50

Crop History

Elevation:	2900 feet
Planted:	4/1/69
Harvested:	First pick - 11/21/69 Second pick - 12/2/69
Previous Crop:	Cotton, two years
Soil Type:	Clay loam
Irrigation:	Pre-irrigated, first irrigation 6/1 and continued every 15 days until 8/20
Source and Quality of Water:	Well, poor quality (sodium)
Fertilizer:	None
Insect Control:	Sprayed for stinkbugs and pink bollworms third week of August
Weed Control:	Preplant 2 pounds Caparol and 1 pound Treflan
Area Harvested for Test:	Two 38-inch rows 1267 feet in length

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LONG STAPLE VARIETY TRIAL

Lee Hunt--Thatcher — Agricultural Extension Agent--John Sears

Varieties	Pick	Total Lint (lb/A)	Lint First Pick (%)	Turnout (%)	Length (UHM)	Strength (Pressley 1/8")	Micro-naire
S-4	1st	1176	81.0	39.3	1.30	4.73	4.45
	2nd			37.4	1.32	4.56	3.45
S-2	1st	1063	78.7	38.9	1.30	4.71	4.10
	2nd			37.6	1.31	4.42	3.48
S-3	1st	906	72.7	36.7	1.30	4.39	3.95
	2nd			36.7	1.30	4.43	3.13

Crop History

Elevation:	2900 feet
Planted:	4/15/69
Harvested:	First pick - 10/27/69 Second pick - 12/2/69
Previous Crop:	Alfalfa, several years
Soil Type:	Silty clay loam
Irrigation:	Pre-irrigated and subsequent irrigation on 6/10, 7/1, 7/30, 8/17
Method of Irrigation:	Every other furrow
Source and Quality of Water:	Well, fair quality (sodium)
Fertilizer:	None
Defoliant:	Sodium Chlorate, moderately effective
Weed Control:	1 lb/A Treflan - preplant
Insect Problem:	Slight pink bollworm infestation late in season, no control
Disease Problem:	Moderate root rot in trial
Area Harvested for Test:	Two 38-inch rows 2180 feet in length

Summary

Pima S-4 was top yielder of this variety test with 1176 lb of lint/A. The test compared three varieties common to the area. Yields were above the four year average as was quality.