

UPLAND COTTON RESULTS AND SPINNING PERFORMANCE

Warner D. Fisher, Plant Breeder, Lee S. Stith, Plant Breeder,
and E. H. Pressley, Plant Breeder

The Season

The 1968 cotton crop on the University Experiment Stations, like most of the commercial crop, was marked by an unusually early boll set and much lighter pink bollworm damage than anticipated. Favorable weather undoubtedly contributed to the good early set of bolls. A severe outbreak of cotton leaf perforator in September resulted in very few late season bolls reaching maturity. At the Cotton Research Center, the crop maturity distribution was determined for four varieties of cotton by picking the cotton four times at two-week intervals and calculating the percentage of the total crop picked at each harvest. The results are shown below in Table 1:

Table 1
Percent of Crop Harvested by Date
Cotton Research Center - 1968

Variety	Percent of Crop Picked				Yield Seed Cotton/Acre
	Sept. 1	Sept. 15	Oct. 1	Oct. 15	
Deltapine 16	23.1	66.0	93.0	100	3988
Hopicala	16.8	51.6	86.3	100	3398
6218	27.4	66.9	87.1	100	3069
6401	26.8	67.3	91.1	100	3251

The most remarkable feature of these data is that the harvest was complete by October 15. The biggest difference among varieties came in mid-September when Deltapine 16 had matured two-thirds of its crop and Hopicala just one-half. By October 1 this difference was very small, and harvest was complete for all varieties two weeks later. When boll maturation periods are considered along with the picking results, it becomes obvious that at least 90% of the cotton crop was set from flowers appearing by August 1.

Regional Tests

The Regional Variety Test was grown at Yuma, Phoenix, and Marana in 1968. As previously mentioned, the crop was unusually early and insect damage was light. At Marana where Verticillium wilt is often a problem, losses were light because wilt appeared late in the season, and the crop matured early. Yields for the three locations are given as seed cotton per acre in Table 2. Stoneville 7A and Deltapine 16 were the top yielders, ranking first and second at all locations.

Table 2

Regional Variety Tests
Yield - Seed Cotton Per Acre
Arizona - 1968

Variety	LBS. SEED COTTON PER ACRE					
	Phoenix	Rank	Yuma	Rank	Marana	Rank
Stoneville 7A	4304	1	5887	1	3196	1
Deltapine 16	4115	2	5268	2	3184	2
Coker 201	3479	3	4885	6	2616	13
Hopicala	3415	4	4250	11	2643	10
6206 (Ariz.)	3328	5	5059	3	2839	4
12302-89 (Calif.)	3302	6	5000	5	2830	5
1517V	3229	7	4508	8	2614	14
S-155 (Calif.)	3183	8	4157	13	2602	15
1517D	3128	9	4213	12	2631	11
6401 (Ariz.)	3119	10	----	--	2673	9
Acala Imperial	3087	11	4683	7	2762	6
12302-589B (Calif.)	3040	12	5050	4	2631	12
SJ-1	2959	13	4505	9	2676	8
6218 (Ariz.)	2782	14	4496	10	2851	3
Acala 3080 (N. Mex.)	2762	15	3696	16	2373	17
6420 (Ariz.)	2509	16	4023	14	2729	7
5915 (Ariz.)	2483	17	3749	15	2507	16
Paymaster 54B	2483	18	3211	17	2100	18

Commercial Varieties

A supplemental variety test including several strains from commercial sources was grown at Phoenix and Marana. Yields in pounds seed cotton per acre are given in Table 3. Stoneville 213 produced top yields in both tests.

New Mexico Strains Tests

The New Mexico Strain Test (Table 4) is conducted in cooperation with the New Mexico Agricultural Experiment Station to evaluate potential varieties for Graham and Cochise Counties. These two counties are in the El Paso Cotton Classing District which demands the Acala 1517 quality fiber. These Acala Varieties or strains possess some wilt tolerance, which is the reason for including them at Marana, which is not in the marketing territory.

Yarn Strength and Spinning Performance

The spinning performance data (Table 5) includes four commercially produced varieties plus four Arizona strains. The Arizona strain 6218 is comparable to Hopicala but earlier and has been higher yielding in preliminary trials.

Table 3

Supplemental Variety Tests
Yield - Seed Cotton Per Acre
Arizona - 1968

Variety	LBS. SEED COTTON/ACRE			
	Phoenix	Rank	Marana	Rank
Stoneville 213	3990	1	3074	1
Stoneville 508-9117	3816	2	2845	3
Stoneville 508-9083	3723	3	2673	8
Stoneville 508-9195	3485	4	2795	4
Coker 4104	3409	5	2949	2
Coker 413-504	3406	6	2714	7
6401 (Ariz.)	3273	7	2557	11
McNair 6306	3206	8	2510	13
McNair 6416	3110	9	2753	5
McNair 6207	2834	10	2664	9
Paymaster 909A	2471	11	2599	10
Paymaster 909	2454	12	2340	16
W 15-6-68	----	--	2545	12
W 15-7	----	--	2468	14
Coker 502	----	--	2391	15
Hopicala	----	--	2735	6

Table 4

New Mexico Strain Test
Arizona - 1968

Strain	Lint % ¹	LINT PER ACRE (Lbs.)			
		Safford ²	Rank	Marana ³	Rank
Hopicala	38.5	1425	1	1069	3
B-4364	36.7	1329	2	1050	7
1517	38.7	1278	3	1122	1
Acala 1517 D	36.1	1274	4	956	14
1479	38.8	1255	5	1051	6
9575	37.0	1252	6	1068	5
1422	37.8	1250	7	1031	11
9746	37.4	1238	8	1106	2
Acala 1517 V	38.0	1235	9	1010	13
688	38.2	1235	9	1046	9
1142	37.9	1235	9	1037	10
9450	38.8	1219	12	1069	3
B-4373	37.5	1204	13	1011	12
3080	37.7	1200	14	846	16
1128	37.8	1104	15	1047	8
Acala 1517 BR-2	36.5	1099	16	881	15

¹ Lint percent calculated on samples from Curtis Farm, Safford. Same

² percents used for both Marana and Safford Locations.

³ Based on two harvests: 10/22, 11/18 - no wilt.

³ One harvest only: 10/22 - light wilt.

Table 5

Spinning Performance - Arizona Grown Cotton
Commercial Varieties and Arizona Strains
1968 Crop¹

Strain	Yarn Strength and Grade				Break Factor	Fiber Length		Yarn Appear Index	Yarn Imperfections		% P & C Waste
	22's	Gr	50's	GI		2.5% Span	Unit		22's	50's	
Hopicala	147	A	57	C+	3042	1.15	50	115	17	13	11.77
6218 - Ariz.	145	A	57	B	3020	1.17	48	120	14	10	12.63
5915 - Ariz.	147	A	57	C+	3042	1.22	49	115	16	11	10.42
6206 - Ariz.	151	A	60	B	3161	1.11	51	120	8	7	7.79
6401 - Ariz.	134	A	49	B	2699	1.14	48	120	10	8	8.78
Acala Imperial	133	A	50	C+	2713	1.17	47	115	11	10	11.97
Coker 413	129	A	48	C+	2619	1.22	48	115	11	8	8.60
Deltapine 16	119	A	44	C+	2409	1.16	48	115	10	8	7.78

¹ Samples grown at Cotton Research Center, Phoenix, Arizona; and spun by Texas A & M University AMS Spinning Laboratory.

The 5915 and 6206 both possess more wilt tolerance than Hopicala, but the 5915 has not yielded as well, and the 6206 is a little short for the Arizona market.

The 6401 selection is comparable to Acala Imperial in earliness and has yielded more in preliminary trials. The spinning data indicates 6401 has a yarn strength equal to Acala Imperial, higher yarn appearance index, and lower picker and card waste percentage.

Deltapine 16 and Coker 413 are commercial varieties that exhibit improved fiber qualities as compared to the widely grown southeastern varieties.

* * * * *

PIMA COTTON IMPROVEMENT

Carl V. Feaster, Research Agronomist, U.S.D.A.
E. L. Turcotte, Research Geneticist, U.S.D.A.

The Regional Pima Test was grown at six locations in Arizona in 1968. The test included Pima S-2, Pima S-3, Pima S-4, and five experimental strains. Strains P15-14, P15-27, P19 and P20 were derived from the program at Phoenix, and 126-1 was developed by Drs. Bryan and Muramoto at Tucson. The locations where these tests were grown vary in elevation from approximately 1200 to 3000 feet. Yields from these tests are reported in Tables 1 and 2.

Table 1 includes yield data from the low-elevation locations--Phoenix (1200'), Tempe (1200'), and Coolidge (1500'). At these locations the two strains (P15-14 and P15-27) derived from Pima S-4 background material and P19 averaged slightly higher in yield than Pima S-4. Strain P15-27 and Pima S-4 have similar plant types, but P15-14 is slightly taller and higher fruiting. P19 also is slightly taller and higher-fruiting than Pima S-4. All three of these strains have performed well at the low elevations since they were first evaluated for yield in 1965. P20 is considerably taller and later than Pima S-4, but it appeared to be somewhat favored by the generally good-fruiting season at the lower elevations in 1968. In most years, P20 probably would not perform as well at these locations. Strain 126-1 appeared less well adapted at lower elevations than at the higher--possibly it has less heat tolerance than Pima S-4 and related material. Pima S-3 generally is too rank and late for low-elevation conditions.

Table 2 includes yield data from the medium- and high-elevation locations. P19 also averaged high in yield at these locations. Its slightly taller plant and higher fruiting seemed to give it a slight advantage over Pima S-4. Strain 126-1 averaged similar in yield to Pima S-4. It is early and low fruiting. P15-27 and especially P15-14 yielded only fair at the higher elevations. P20--similar to Pima S-3 in plant growth and lateness--was slightly more productive