

# UCCE APPROVED PIMA VARIETY TRIALS

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## 1998 Studies

The objectives of these studies with Pima are to evaluate approved varieties under different environmental conditions and management. The studies are part of a regional Beltwide Pima variety evaluation that includes Texas, New Mexico, Arizona and California, and are supported in part through the California Crop Improvement Association. In addition to five grower fields, two UCCE Research Center test locations were used in the 1998 trials, the West Side and Shafter Research and Extension Centers of the University of California. The West Side location is in a clay loam soil with an soil profile largely unrestricted to rooting to a depth of 6 feet or more, while the Shafter location is a sandy loam soil with surface infiltration problems which limit mid- and late-season irrigation water penetration and effective rooting depth to 2 to 3 feet in the mid- to late-season. Seven approved Pima varieties were included in the test: S-7 (the current standard), S-6, CH-252, Conquistador and Oro Blanco. Both trials were a completely randomized design with four replications, with all varieties planted in 40 inch rows in four-row plots 280 feet in length.

In order to provide a reasonable limit on the number of varieties in the tests, the entries include newly-approved varieties for the current year, varieties released last year that are in their second year of testing, plus the top 4 or 5 previously-approved varieties (in terms of planted acreage). The new varieties are the focus of the tests, but they only remain in the tests for the first two years following release unless that variety moves into the top 4 or 5 varieties in planted acreage. Released varieties also may not show up in the tests if the seed companies request that the variety is for a special market and don't want it in multiple location testing, or when inadequate seed supplies exist for large-scale testing.

The number of test locations was expanded considerably in 1998 in response to increasing interest in Pima plantings and the desire for a broader base of information on varietal performance. Pima variety trials are supported in part through grants from the California Crop Improvement Association. Approved Pima varieties included in the tests are shown in Table 1 and 2. Results for the four varieties grown at seven locations are shown in Table 1, while data for the seven varieties in the four locations are shown in Table 2.

Across all locations and varieties, 791 lbs of lint per acre were produced in the Pima Approved Variety Trials this year, compared with 1703 lbs/acre in 1997 and 1256 lbs/acre in 1996 trials. Planting dates in 1998 trials ranged from April 17 to May 9, and plants in most locations suffered from delayed development and flowering due to cool conditions that prevailed into mid-June. Pest

problems (lygus in many locations, spider mites in two locations) were major causes of early and mid-season losses in many locations, resulting in poor boll retention at many sites.

Lint quality was generally very good. In the 4-location trials which included all seven approved varieties, micronaire averaged 4.07 (ranged from a low of 3.90 in Phy-57 to a high of 4.13 in Oro Blanco), length averaged 1.36 inches (ranging from a low of 1.34 in S-6 to a high of 1.38 in Oro Blanco) and strength averaged 41.4 g/tex (ranging from a low of 39.3 in S-6 to a high of 42.5 in Conquistador).

Table 1. Lint yields (in lbs/acre) by test location and average gin turnout for each variety in 1998 Pima Approved Variety Trial (7 locations with 4 varieties evaluated).

Variety	40 inch Shafter REC	40 inch West Side REC	40 inch Kern Co.	38 inch Tulare Co.	38 inch Tulare Co.	38 inch Fresno Co.	40 inch Fresno Co.	Mean Lint Yield (lbs lint / acre)	Mean Lint Yield (as % of S-7)	Mean Gin Turn- out (%)
S-7	960	873	814	1110	597	738	843	848	100	29.4
CH- 252	657	666	621	781	307	689	797	646	76	29.6
DP- HTO	971	939	857	1078	618	752	850	866	102	33.2
Phy-57	832	905	880	863	490	737	976	812	96	28.7
MEAN	855	846	793	958	503	729	867	793		30.2
LSD 0.05	220	89	73	141	110	33	119	34		
C.V. (%)	16.1	6.6	5.7	7.3	13.7	2.8	8.6	7.1		
P	0.034	0.000	0.000	0.003	0.001	0.010	0.040	0.000		

C.V. = coefficient of variation; P = probability

VARIETY by LOCATION interaction (for yields): (LSD 0.05 = 126; C.V. (%) = 11.3; P = 0.002)

These tests do not perform the same function as the Pima Advanced Strain screening trials or limited large-scale tests done as part of the San Joaquin Valley Cotton Board trials coordinated by Dr. Dick Bassett of the University of CA. The Cotton Board tests are used to initially collect information on yield and quality performance of varieties entered in the Approved Pima variety program. Those entries have one year in screening trials, followed by two years of field trials at three field locations. Entries with acceptable yields and quality (relative to the current standard, S-7) can be recommended for "Approval" by the San Joaquin Valley Cotton Board.

The tests supported by this project give growers a continuously-updated comparison of newly-available varieties versus those varieties which have been available for one or more years. This data base has been significantly improved in 1998 by increasing the number of test locations to include 7 sites, instead of the 3 locations used in 1996 or 2 locations used in 1997. Grower confidence in the utility of these tests has been improved with this marked increase in number of locations, and we hope to continue this expanded testing in the future. This is particularly important in light of continuing increases in Pima acreage expected for 1999 .

### 1999 Studies

Six county test sites were selected for the 1999 County Approved Pima Variety trials. Even though very cool, sometimes wet conditions occurred during the entire month of March and the first few days of April, most of the test plots were planted between April 13 and April 22. Four of the tests are large-scale evaluations at grower sites in Kern, Kings, Fresno, and Merced counties. At these locations, trials range from 800 foot runs to 2600 foot run lengths. Four replications were used at all locations. In addition, there are two smaller tests at both the University of CA Shafter Research and Extension Center and the West Side Research and Extension Center. Even in these smaller tests, plot sizes remain 300 feet in length by four rows in width.

A total of six Pima varieties were planted at each of the large-scale county test sites, including S-7 (the SJVCB "standard", DP-HTO, CH-252, Phytogen-57, DP-White Pima and UA-4. Only "approved" varieties according to the San Joaquin Valley Cotton Board were included in these trials. The San Joaquin Valley Cotton Board has adopted a standard for naming non-approved Pima varieties; they will be called "California Pima" varieties. Eight varieties were included in smaller-scale tests at the West Side and Shafter Research and Extension Center sites, including DP-HTO, S-7, CH-252, DP-White Pima, Phytogen-57, UA-4, S-6 and Conquistador. These last two varieties (S-6 and Conquistador) were included in the two field station trials this year at the request of the coordinator (Dr. Richard Percy, USDA-ARS, Maricopa, AZ) of the National Standards Pima test, to include key varieties entered in the National Standards trials in other states.

Table 2. Lint yields (in lbs/acre) by test location and average gin turnout for each variety in 1998 Pima Approved Variety Trial (4 locations with 7 varieties evaluated).

Variety	40 inch Shafter REC	40 inch West Side REC	38 inch Fresno Co.	40 inch Fresno Co.	Mean Lint Yield (lbs lint / acre)	Mean Lint Yield (as % of S-7)	Mean Gin Turnout (%)	Mean Lint Yield in 1994- 1997 UCCE Tests (as % of S-7)
S-7	960	873	738	843	853	100	29.3	100
CH-252	657	666	689	797	702	82	29.6	95 *
Oro Blanco	658	689	729	752	707	83	30.2	91
Conquis tador	963	798	683	805	812	95	28.8	99
S-6	796	629	673	752	712	83	30.1	90
DP- HTO	971	939	752	850	878	103	32.9	94 *
Phy-57	832	905	737	976	862	101	28.8	101 *
MEAN	834	786	714	825	789		30.0	
LSD 0.05	168	107	53	87	68			
LSD 0.10								
C.V. ( %)	13.6	9.2	6.1	7.1	11.5			
P	0.001	0.000	0.100	0.001	0.000			

VARIETY by LOCATION Interaction (for yields): (LSD 0.05=NS; % C.V. = 2.8; P = 0.132)