MEASURES OF PERFORMANCE FOR DIFFERENT SEED STOCKS OF ACALA 4-42 COTTON AT FOUR TEST SITES

Seed stock	Lint/ acre (lb)	Lint (%)	U.H.M. (inch)	U.R. (%)	T_1 (g./ grex)
CHOWCHILLA (Northern Test Site)					
1957 W.T.	967.2	38.1	1.16	88	2.36
1958 P.T.	934.3	37.9	1.15	88	2.28
N. 1959 G.T.	1005.6	38.0	1.16	89	2.36
S. 1959 G.T.	939.8	38.4	1.16	89	2.30
E. 1959 G.T.	1011.1	38.6	1.16	86	2.28
W. 1959 G.T.	997.4	38.0	1.19	89	2.28
Average	979.3	38.2	1.16	89	2.31
C. V. %	5.8	1.9	2.4	1.4	1.9
SHAFTER (Southern Test Site)					
1957 W.T.	1295.5	37.3	1.17	88	2.21
1958 P.T.	1288.7	36.8	1.18	87	2.25
N. 1959 G.T.	1320.8	37.7	1.19	88	2.21
S. 1959 G.T.	1284.1	38.2	1.17	88	2.26
E. 1959 G.T.	1380.4	38.2	1.17	88	2.28
W. 1959 G.T.	1295.5	37.1	1.18	87	2.20
Average	1311.6	37.5	1.18	88	2.23
C. V. %	5.2	1.9	2.2	1.3	3.0
FARMERSVILLE (Eastern Test Site)					
1957 W.T.	1131.6	38.3	1.14	89	2.29
1958 P.T.	1153.9	38.8	1.12	89	2.25
N. 1959 G.T.	1149.0	38.5	1.14	88	2.33
S. 1959 G.T.	1100.6	38.6	1.11	88	2.23
E. 1959 G.T.	1154.8	38.2	1.13	88	2.26
W. 1959 G.T.	1120.0	38.9	1.14	88	2.29
Average	1134.5	38.5	1.13	88	2.28
C. V. %	4.9	0.5	2.0	1.5	2.6
U. C. WEST SIDE FIELD STATION (Western Test Site)					
1957 W.T.	1228.4	37.1	1.17	88	2.32
1958 P.T.	1213.1	37.5	1.16	88	2.41
N. 1959 G.T.	1191.4	36.7	1.18	90	2.30
S. 1959 G.T.	1224.0	37.0	1.20	89	2.32
E. 1959 G.T.	1194.7	36.9	1.18	90	2.32
W. 1959 G.T.	1193.5	36.6	1.15	87	2.32
Average	1207.5	37.0	1.17	89	2.33
C. V. %	4.0	1.1	2.1	0.3	2.3
FOUR TEST SITE AVERAGES					
1957 W.T.	1155.7	37.7	1.16	88	2.30
1958 P.T.	1147.5	37.8	1.15	88	2.30
N. 1959 G.T.	1166.7	37.7	1.17	89	2.30
S. 1959 G.T.	1137.1	38.0	1.16	88	2.28
E. 1959 G.T.	1185.5	38.0	1.16	88	2.28
W. 1959 G.T.	1151.6	37.6	1.16	88	2.27
Average	1157.4	37.8	1.16	88	2.29
C. V. %	2.3	0.9	1.7	0.8	1.6

significantly, however, for all production measurements except fiber length, U. R. (uniformity ratio).

Lint yield per acre at the test sites varied significantly with production at Chowchilla, 979.3 lb; Shafter 1311.6 lb; Farmersville, 1134.5 lb; and U. C. West Side Field Station, 1207.5 pounds per acre. These yields follow the established trend, namely, that the southern and western parts of the San Joaquin Valley generally yield more than the northern or eastern sections. Lint percentages at Chowchilla (38.2) and Farmersville (38.5) were not significantly different, but they were both significantly higher than either Shafter (37.5) or U. C. West Side Field Station (37.0). The fact that these data show highest lint yield is not associated with highest lint per cent is a relationship that has frequently been noted by breeders in attempting to improve cotton yields.

For fiber length, upper half mean (U.H.M.), Chowchilla at 1.16 inches; Shafter, 1.18; and U. C. West Side Field Station, 1.17 were not significantly different, but all three differed significantly from Farmersville, 1.13 inches. For fiber strength index (T_1) Chowchilla at 2.31, U. C. West Side Field Station (2.33), and Farmersville (2.28) were not significantly different and Farmersville and Shafter (2.23) were not significantly different, but Chowchilla and U. C. West Side Field Station were significantly different from Shafter.

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ORANGE LEAF ANALYSIS

LEAF ANALYSIS STANDARDS for macroelements of orange trees in California can be expected to differ when 4- to 6-month-old leaves are taken from nonfruiting or fruiting terminals. These conclusions are based on a recent study of 22 representative orange orchards extending from the Mexican border to Ivanhoe, California.

In 16 orchards there was a difference of 0.2 per cent or more K, and in 10 orchards, a difference of 0.3 per cent or more K in dry matter of leaves from nonfruiting than from fruiting terminals, while in 15 of the 22 orchards there was a difference of 0.02 per cent or more P in dry matter of leaves from nonfruiting than from fruiting terminals. In 17 orchards there was a difference of 0.3 per cent or more N, and in 11 orchards, a difference of 0.4 per cent or more N in dry matter of leaves from nonfruiting than from fruiting terminals. Without exception, higher amounts of the three elements noted above were found in leaves of nonfruiting terminals.

Highly significant differences were obtained for all the macroelements except Na. Significantly higher amounts of N, K, P, and S were found in leaves from nonfruiting terminals, while significantly higher amounts of Ca, Mg, and Cl were found in leaves from fruiting terminals.

The results of this study indicate that selection of leaves from nonfruiting or fruiting terminals is an important factor to consider when using leaf analysis as a diagnostic guide for the nutrient status of orange trees.—*R. B. Harding, Associate Chemist; T. M. Ryan, Laboratory Technician II; and G. R. Bradford, Associate Specialist, Department of Soils and Plant Nutrition, University of California Citrus Research Center and Agricultural Experiment Station, Riverside.*

FRESH-SEED DORMANCY IN ANNUAL GRASSES

MANY ANNUAL GRASSES of the California range produce seed, which upon maturity, exhibits pronounced dormancy resulting in delayed germination. If the seed is stored from three to six months, this dormancy gradually disappears. The intensity of the seed dormancy in a given species has been observed to vary considerably from year to year and among locations of seed production. Investigators have considered that some environmental condition is related to this behavior.

Recent studies on the effect of high temperature stress at critical stages of development have provided some promising leads. When red brome is subjected, at the 2-leaf stage, to a heat stress at 130°F air temperature for 3 to 5 hours, increased dormancy is obtained in the seed later matured on these plants. Increased duration of stress increases the magnitude of this dormancy. Likewise, red brome seedlings subjected to periods of 1 to 3 weeks at 90°F in a growth chamber yield dormant seed upon maturity. This dormancy subsides during seed storage at about the same rate as that dormancy found in seed lots collected from native stands.

These findings suggest that temperature conditions prevailing during early seedling growth may influence the degree of dormancy obtained in the seed later matured on the plant.—*Horton M. Laude, Department of Agronomy, University of California, Davis.*