

Lemon Fruit Quality Studied

comparative tests made of several new strains frequently used to avoid some diseases prevalent in old line Eurekas

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To avoid the lemon tree diseases of Dry Bark and Lemon Tree Collapse—so prevalent in the old line Eureka strains—new strains have come into use in Santa Barbara County within the past 10 years.

A study of the quality of the fruit produced by some of the newer strains included one old line Eureka—the Thornton—recognized to be of superior fruit quality. Two new Eureka nucellar types—the main types planted in recent years—and four Lisbon type strains—which appear to produce longer-lived trees than the Eureka nucellars but have not been evaluated in Santa Barbara County for their fruit quality—were the new strains tested.

The fruit for the tests came from a 1950 planting on land previously used for walnuts. The number of trees used varied from 14 to 20 for each selection.

Two test picks were kept separate from the orchard pick through storage. The picks were made on May 13 and July 18, 1957, and account for approximately one third of the season's fruit.

Each strain selection was washed and sample graded. The fruit was stored by color separation—maturity—for the normal time for each color. The longest were the dark-greens of the May 13 pick that were stored over five months. Two 10-fruit random samples were taken for laboratory determinations from each strain and color separation just before the fruit was packed.

A past serious infestation of red scale in the test orchard showed up on the fruit of both picks and contributed to the larger than normal elimination at

grading. No significant difference in scale could be observed among the eight selections.

The fruit from the pick of July 18 showed about 2% of sunburn on each of the three Eureka type lots but none on the Lisbon type strains.

Decay in storage was not a serious factor. Small numbers of decayed fruit, blue green and alternaria rots, were observed in Thornton, Monroe-on-sweet-rootstock, Frost Nucellar Eureka, and Cook Nucellar Eureka.

The total yield for the two picks presented in the table shows the relationship between field box yields and cartons of first grade fruit.

The quality of the fruit of the Prior 14-18 and the Frost Nucellar Lisbon appeared to be about equal to the Eureka types, long used as the standard lemon for coastal areas. However, the poor bearing record of the Prior 14-18 in Santa Barbara County would eliminate that strain for new plantings. Of the Lisbon types tested, only the Frost Lisbon appears satisfactory from the fruit quality point of view.

The Monroe and Hales on sweet rootstock showed good packout records. But they were low in juice and acid and therefore inferior in over-all fruit quality. The Monroe on grapefruit root produced fruit that gave both a poor packout and low laboratory rating. This combination is a heavy yielder of total fruit but gives no more first grade fruit than other good selections.

Of the Eurekas tested, the old line Thornton excelled in fruit quality, but

it is a weak, diseased tree. There was no difference in fruit quality between the two Eureka nucellars tested—Frost and Cook—indicating that both are good Eureka type selections.

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Laboratory Determinations of Lemon Fruit Quality

Weighted average of samples taken from storage of eight strain-rootstock combinations under test

Strain/Rootstock	Rind thickness Av. mm.	Juice % by volume	Citric acid Lbs./ton
Old Line Eureka			
Thornton/Bishop Swt.	5.0	33.7	44.6
Nucellar Eurekas			
Frost/Bishop Swt. ...	5.0	32.4	45.4
Cook/Bishop Swt. ...	5.0	32.4	45.1
Old Line Lisbons			
Monroe 1-7/Bishop Swt.	5.6	28.6	40.2
Monroe 1-7/Stow Gpft.	5.4	29.9	42.5
Prior 14-18/Bishop Swt.	4.9	31.9	44.1
Hales #2/Bishop Swt.	5.6	29.1	39.6
Nucellar Lisbon			
Frost/Stow Gpft.	5.1	31.4	44.3

ROOTSTOCKS

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of half vermiculite and half perlite for about 40 days for the fall collections and 24 days for the spring collections before planting.

Rooting of Marianna 2624 cuttings was considerably promoted by IBA applications. Such benefits were very pronounced with cuttings taken in the spring; in fact, practically no rooting was obtained otherwise. With IBA-treated cuttings there was no appreciable difference between those taken and planted in the fall or in the spring. Best rooting, by far, however, was obtained with cuttings taken in mid-November, stored for six weeks at 60°F, when roots became

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Sample Grading of Lemons
Weighted average of picks of May 13 and July 18, 1957, for eight strain-rootstock combinations from 8-year-old trees

Strain/Rootstock	Packout		Color	Av. size fruits per carton	Yield per tree	
	Fresh %	First grade %			Field boxes	First grade cartons
Old Line Eureka						
Thornton/Bishop Swt.	87	73	82	167	2.7	2.4
Nucellar Eurekas						
Frost/Bishop Swt.	84	64	92	162	2.3	1.8
Cook/Bishop Swt.	85	64	85	166	2.3	1.7
Old Line Lisbons						
Monroe 1-7/Bishop Swt.	84	71	83	167	2.5	2.1
Monroe 1-7/Stow Gpft.	70	53	77	175	3.6	2.3
Prior 14-18/Bishop Swt.	84	69	94	168	1.3	1.2
Hales #2/Bishop Swt.	89	72	81	167	1.7	1.6
Nucellar Lisbon						
Frost/Stow Gpft.	80	65	81	168	2.8	2.2