The following papers were presented at the American Pomological Society workshop, "The Current Fruit and Nut Cultivar Situation," in conjunction with the American Society for Horticultural Science meetings July 27, 1980, at Colorado State University, Ft. Collins, Colorado.

Current Citrus Cultivar Situation in California and Arizona

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The cultivar situation in general, and in California and Arizona particularly, has been quite static. Few new cultivars have been introduced and, with the exception of one or two, none have been planted to any extent.

In California the total acreage of all citrus is approximately 288,000 (3). Oranges [*C. Sinensis* (L.) Osbeck] with 192,000, account for the largest part of this acreage. Navel oranges, 115,000, and Valencia orange, 76,000, dominate. Miscellaneous seedy sweet oranges and Blood oranges account for the balance of 1,000 acres. Considerable increase in acreage occurred between 1967 and 1978 with a much larger percentage of the new acreage being planted to navel oranges (Table 1). Acreage planted per year decreased rapidly from 1967 and has been at a maintenance level since 1973 (Fig. 1). In Arizona there are approximately 16,000 acres of oranges, of which 10,000 are Navel oranges, 5,000 Valencias and 1,000 miscellaneous sweet oranges (2).

Within the two major categories of Navel and Valencia, some fairly significant shifts have been made in the last 10 years.

Beginning in about 1950 when exocortis sensitive rootstocks began to be used widely because they were tolerant to tristeza virus, nucellar budlines became widely used because they were free of the exocortis viron. Many old clonal budlines carried exocortis, and the exocortis status of all others was unknown. As a result, much of the orange acreage planted during the large-scale plantings from about 1950 to 1970 was planted to Frost navel orange. Much of the Va-

Table 1. Changes in acreage of major cultivars in California 1967 to 1978.

	Existing 1967		Planted 1967-68		Existing 1978	
Cultivar	Acres	%	Acres	%	Acres	%
Navel	87,800	56	27,000	77	114,800	60
Valencia	68,400	44	8,000	23	76,400	40
	156,200		35,000		191,200	
Lisbon	8,800	32	18,500	58	27,300	46
Eureka	18,800	68	13,400	42	32,200	54
	27,600		31,900		59,500	
Marsh	6,500	65	4,100	28	10,600	43
Pigmented	3,500	35	10,700	72	14,200	57
	10,000		14,800		24,800	

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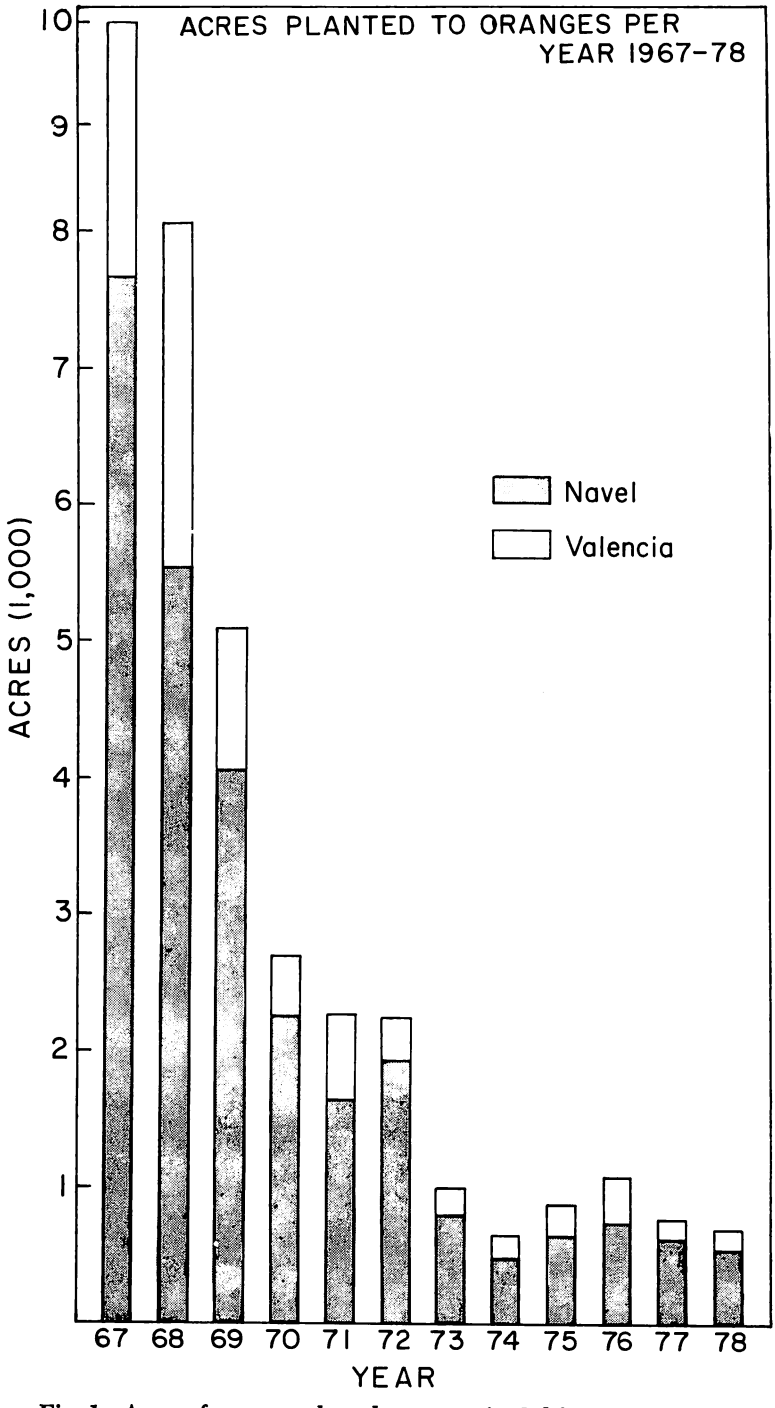

Fig. 1. Acres of oranges planted per year in California, 1967-78.

lencia acreage utilized 4 nucellar budlines; Frost, Olinda, Cutter, and Campbell (5).

As old clonal budlines were indexed and either found free of exocortis and other bud transmissible diseases or were cleared by shoot-tip micrografting, they were entered into budwood registration programs. As a result, a clone known as Parent (4) has become the most widely utilized navel orange clone in California.

Because of its origin in the San Joaquin Valley and its reputation for being early maturing, Atwood Navel (4) has been planted fairly consistently over the last ten years. Fisher Navel (8) has gained in popularity in the last six years because of reports of earlier maturity. A strain trial that has just begun to fruit indicates that the Dream Navel may be earlier than all other navels now being utilized. Two new patented navel orange clones, Skagg's Bonanza and Tule Gold, are also being planted to some extent. Both are reported to be earlier maturing and precocious in bearing. In Arizona, a nucellar budline selected by R. Hilgeman at the Yuma station of the University of Arizona continues to be of interest in the Phoenix area.

The nucellar budlines of Valencia continue to be widely used, but there is some use of one old clone Valencia.

None of the miscellaneous orange (5) cultivars that have been introduced through the California Citrus Clonal Protection Program (CCCPP), or the USDA Program, has been used commerciallv. A few are still of interest for additional testing. Salustiana is a mid-season cultivar, maturing in San Joaquin Valley about late January. Fruit size may be too small. Cadenera is later than Salustiana, but earlier than Valencia. Fruit quality of both varieties is good. Two "blood" oranges, Moro and Tarocco, have enough pigmentation to be of interest. However, the market for blood oranges appears to be limited.

The principal lemon groups [C. limon (L.) Burm.] are Eureka and Lisbon, with several "strains" of each being grown (6). Lisbon lemons are being grown both in the main coastal region of California and in the desert areas of California and Arizona. Eureka types are mainly confined to the coastal areas.

Planting of lemons has fluctuated widely in response to market demand. Planting was generally heavy for a period of about 10 years (1965-1975), with a rapid decrease beginning in 1976 (Fig. 2). The acreage more than doubled in that 10 year period (Table 1). As of 1978 there were about 32,000 acres of Eureka and 27,000 acres of Lisbon in California (3). Arizona had about 20,000 acres (2). Based on budwood distribution from CCCPP, Allen Eureka is the most popular Eureka strain and Limoniera 8A, the most popular Lisbon strain. Frost Lisbon has been widely used, particularly in the San Joaquin Valley. Because Frost Lisbon develops sieve tube necrosis (9), other strains are being tried in the San Joaquin Valley. Arizona growers also have shifted to other Lisbon strains. With few exceptions, all nucellar budlines of Eureka lemons have been used since the 1950's. With the more vigorous Lisbon, old clone budlines are still used in some strains. Essentially all old budline sources of lemons are infected with exocortis. This has not been a major problem because exocortis sensitive rootstocks have not been used. However, several Lisbon sources have now been established through shoot-tip micrografting procedures that eliminates exocortis. These budlines may have an advantage over younger nucellar budlines that continue to be excessively thorny and vigorous for many years.

Grapefruit (*C. paradisi* Macf.) acreage also more than doubled from 1966 to 1976 (Table 1). Plantings of Marsh were fairly consistent over the period, but plantings of Redblush fluctuated

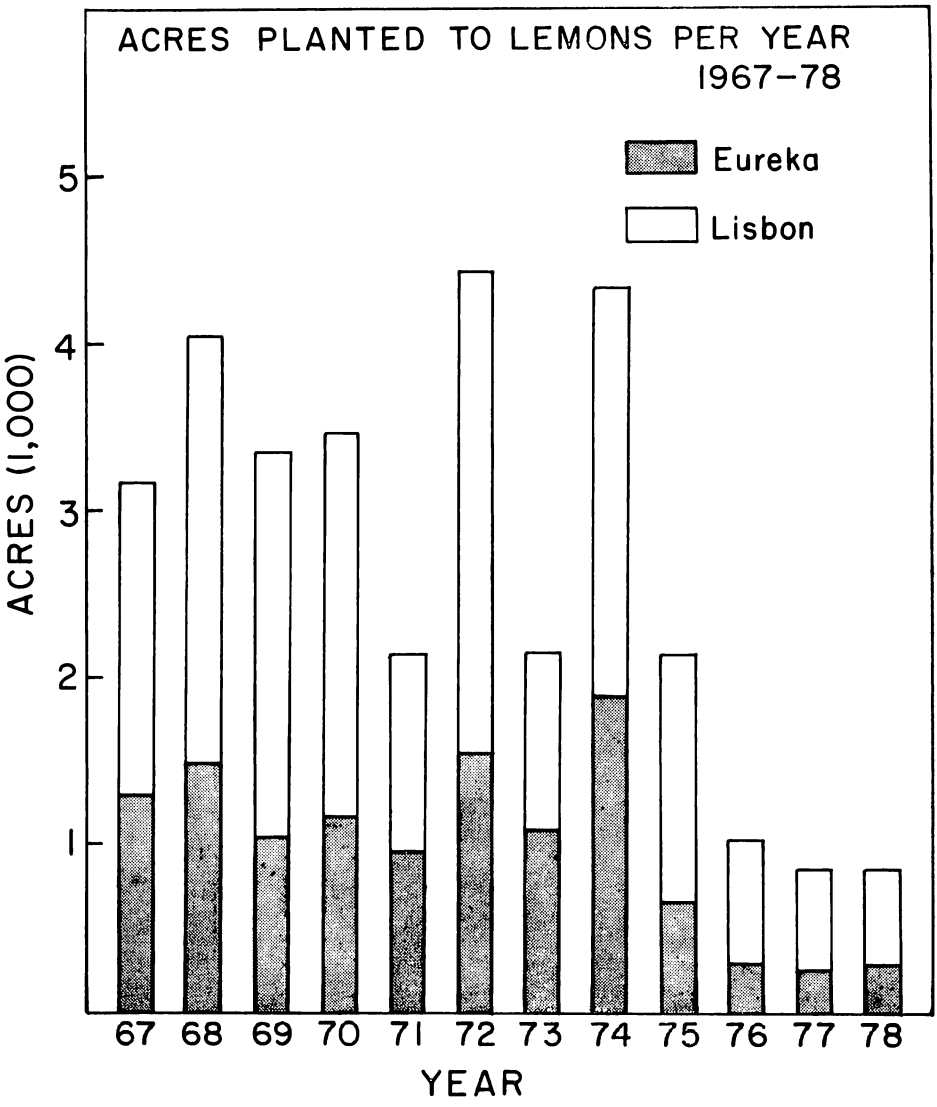

Fig. 2. Acres of lemons planted per year in California, 1967-78.

from year to year, but usually were higher than Marsh (Fig. 3). Currently, there are about 15,000 acres of Redblush and other pigmented cultivars and 10,000 Marsh in California (3). Arizona has about 5,000 acres of each type (2). New plantings have been declining since 1976. A source of Marsh, known as "Reed," has been the main budwood source for nonpigmented grapefruit in California. However, tests at the Lindcove field sta-

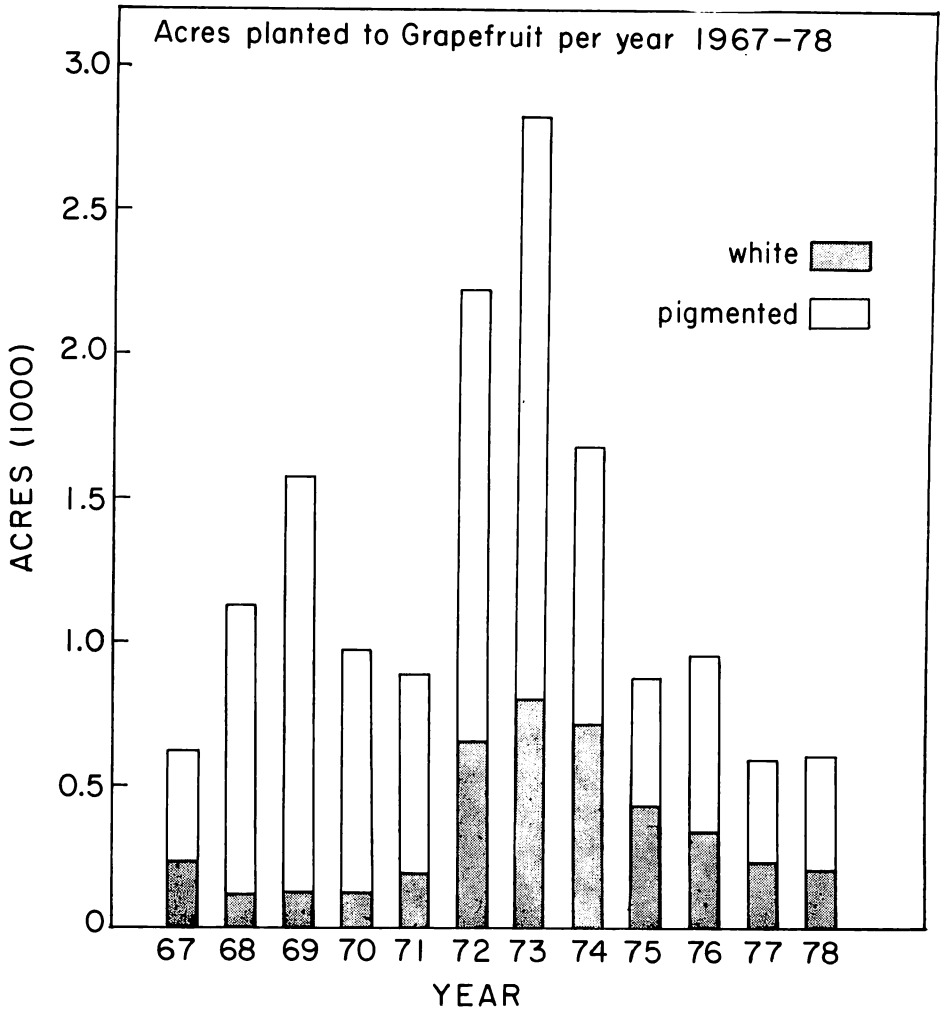

Fig. 3. Acres of grapefruit planted per year in California, 1967-78.

tion have been unable to demonstrate the superiority of Reed over several other bud sources.

A nucellar budline of Redblush, CRC #3, has been the most widely used pigmented source because of its freedom from bud transmissible diseases and its availability when no other disease-free sources were available. Shambar (7) originated as a sport of Marsh in 1936. In some years it may have better pigmentation then Redblush, but otherwise appears identical. It is being used to a limited ex-

tent. There is also a small amount of Thompson, a seedy pigmented cultivar, being grown.

Star Ruby, the very deep pigmented cultivar, has not been utilized because of erratic, adverse growth habit and yield. Trees planted in 1977 at Lindcove from a bud source that has cleared indexing procedures, have begun to fruit and currently look promising (8). However, several more years of testing are needed before budwood can be released.

Of the many miscellaneous cultivars available, Minneola tangelo (*C. paradisi* X *C. reticulata* Blanco) has the greatest acreage with about 4,000 acres in California (3). Acreages of Dancy tangerine (*C. reticulata*) has been almost constant at about 1,000 acres for the past 15 years. Algerian (*C. reticulata*) has been constant or has declined slightly with only about 500 acres. Fairchild, [*C. reticulata* X (*C. paradisi* X *C. reticulata*)] introduced in 1964 (1), has been increasing in acreage in the Coachella Valley and now amounts to about 1,000 acres.

Satsuma (*C. reticulata*) acreage has been stable since about 1970 at slightly over 800 acres, mostly in the San Joaquin Valley. Temple tangor (parentage unknown), now called Royal Mandarin, in California, has also been stable at about 900 acres since 1967 with the plantings mostly in Coachella Valley. There are small plantings of Kinnow (*C. reticulata*) and other hybrid mandarins.

The total acreage of mandarins and miscellaneous cultivars in Arizona is slightly less than 4,000 (2). Cultivars include Minneola, Dancy, and Kinnow.

About 600 acres of limes are planted in California (3), almost entirely to Bearss [*C. aurantifolia* (Christm.)].

A wide variety of cultivars is propagated for the home garden trade. In total this is a large market, but any one cultivar accounts for only a small part. Even in this home garden market, oranges account for the largest share because they are well known and widely available.

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