

## The California Citrus Industry

W. P. Bitters

California was destined to become a citrus producing area from the very moment the Spanish padres entered what is now California in 1769. This was nearly 200 years after citrus was first introduced into Florida when St. Augustine was founded in 1565. The Spanish padres spread citrus northward by seed from mission to mission as they slowly colonized northward in their expansion from Mexico. The first actual orange orchard consisted of a few seedlings planted in 1803 at San Gabriel Mission. The first commercial orchard was planted in 1834 at Los Angeles by Louis Vignes. The famous Wolfskill orchard in downtown Los Angeles was planted in 1841. All of the orchards which followed were also seedling orchards. The 'Washington' navel orange was introduced into Riverside, California in 1873 and the 'Valencia' orange at San Gabriel in 1876. Both were superior varieties to anything previously grown. Thus arose the first named varieties which led to the necessity of propagation by budding rather than seeds. These introductions not only emphasized the importance of varietal selection but the success of the varieties gave impetus to the plant introduction program. The Southern Pacific Railroad was completed to Los Angeles in 1876 and the first carload of citrus fruit was shipped from the Wolfskill orchard in 1877. Up until this time only a few hundred acres of seedling trees existed. The primary purpose in growing fruit was to supply fresh fruit by shipping it northward to San Francisco and then into the mother lode country where the miners market was very lucrative. The improved cultivars that the 'Washington' navel and the 'Valencia' provided plus the means of shipping by railroad to the profitable markets of the midwest and east stimulated new plantings. Soil, water, and climate were most favorable and rapid expansion of plantings took place throughout the Los Angeles basin. During the late 1800's and early 1900's the Florida and California citrus acreages developed parallel to one another with Florida holding the edge in acreage and California maintaining a slight edge in production. The last year California's citrus acreage exceeded Florida's was in the 1931-32 season when California had 249,600 acres and Florida had 246,500 acres. Since that time Florida's acreage has greatly exceeded that of California. However, California's production exceeded that of Florida's in 1944-45 when it produced 76,880,000 boxes to 69,350,000 boxes for Florida. Now, of course, California produces about 1/4 as much fruit as Florida, last year's figure being roughly 65,000,000 boxes for California and 225,000,000 boxes for Florida. In 1945-46 California had its peak acreage of 330,088 acres with 7,958 non-bearing acres. Roughly speaking 2-1/2% of the acreage was non-bearing at that time. Immediately after the war, due to the increased pressures of industry and urbanization, the inroads of tristeza, and tree and fruit losses as a result of the freezes of 1948 and 1949 the change in citrus acreage was very abrupt. In a single year, 1948, the state lost nearly 30,000 acres of bearing citrus and the acreage plummeted to a low of 230,357 acres by 1956. Since new plantings were made during the period, the net loss of bearing acreage was greater than 100,000 acres. In fact, from 1948-60, the most dynamic period, the net loss of bearing trees was 136,126 acres. In 1946 the principal citrus producing counties in California were Orange with 77,683 acres, Los Angeles with 56,651 acres and San Bernardino with 46,983 acres. As of 1972, the latest date for which figures are available, Orange County had 14,531 acres, a loss of 63,152 acres, Los Angeles had 2,628 acres, a loss of 54,023 acres, and San Bernardino 17,909 acres, a loss of 29,074. Thus these 3 counties from the period of 1946-1972 had a net loss of 146,249 acres. In 1946 southern California produced 84.2% of the state's acreage but as of 1972 it grew only 51.1% of the state's acreage with continued decline in acreage expected. These losses in acreage had to be offset by acreage gains elsewhere. Some of these gains took place in outlying counties of the Los Angeles basin. Thus, Riverside County increased from 27,218 acres to 53,681 acres, a gain of 26,463 acres, and Ventura County increased from 39,415 acres to 50,808 acres, a gain of 11,393 acres. The biggest gains, however, occurred in central California where Tulare County increased from 39,975 acres to 93,013 acres, a gain of 53,839 acres; Kern County increased from 1,491 acres to 27,839 acres, a gain of 26,348 acres; Fresno County increased from 3,613 acres to 24,789 acres, a gain of 21,176 acres and Madera from 0 acres to 4,062 acres. There, of course, have been smaller gains elsewhere. As of 1972 California has 64,887 non-bearing acres, about 20% of the total acreage. The bulk of these non-bearing acres lie in central California. The point I am trying to make is that the citrus industry is shifting from southern California to central California. Central California, which possessed only 16% of the acreage in 1946 now has nearly 50% of the acreage as of 1972. Moreover, yields are generally heavier in central California than southern California so that yield wise, central California now produces more than half of the total crop produced in California. This geographical shift in acreage may have a tremendous impact on the season of fruit maturity and marketing procedures as they now exist.

California's citrus area is divided into 4 fairly distinct climatic zones in which there is a wide range in diurnal temperatures, maximum and minimum temperature, and humidity. These climatic zones result in a wide range in degree of fruitfulness of varieties, their size and shape, quality, season of maturity and other fruit aspects. For practical purposes these climatic zones are referred to as Coastal, Interior Valleys, Desert, and Central Valley. The western part of the Los Angeles basin is thus Coastal and the eastern part is Interior. Between climatic zones seasons of maturity might vary from a few weeks to several

several months with a maximum variation of from 4 to 6 months depending on variety. Florida for example might have a difference of 2 weeks in time of maturity throughout the state. The wide range in season of maturity in California has spread out the marketing period for a variety such as the navel or 'Valencia' orange to cover a period of as long as 9 months with some overlap at the beginning and end of each season. This has resulted in more orderly marketing and more economic prices and minimized the need for additional varieties since fresh fruit is available for market the year around. However, in recent years as just stated, the increased urbanization and industrialization of the Coastal and Interior valleys has greatly minimized the planted acreage there and in future years could effect the complete elimination of such plantings. This means that more fruit will be grown in fewer climatic zones with less variation in maturity. To put it briefly the so-called late holding districts will be lost to the industry. This will destroy the advantage California had in once being able to grow early- and late-maturing varieties in a mid-late to late holding district. To hold fruit longer than previous practices allowed within a given climatic zone results in a serious deterioration of quality. This has been offset somewhat through the use of good cultural practices, improved rootstocks, and the use of growth regulators. The best way to extend the season within a given district is thru the selection of new cultivars. This extension must be done in both directions with the use of earlier- and later-maturing cultivars. With the navel orange some success has been obtained with earlier strains such as the 'Tulegold' and 'Bonanza' which are being widely planted and the use of the 'Newhall' which is seeing little planting. Little success has been achieved with a late-holding navel or a better quality late-holding 'Valencia'. There is an acute awareness of these problems and efforts are being made to alleviate them. To accomplish this end the 'Lane Late' navel has been recently introduced from Australia and we hope soon to have it in quarantine and a little later, available for field testing. 'Lane' navel purportedly matures as much as 6 months later than a standard navel. The 'Perry Valencias' have perhaps some value as a later-holding 'Valencia'. It must be remembered that California's market is primarily a fresh fruit market and this fruit must have both eye appeal and consumer acceptance.

Let's take another look at the acreage figures for 1946 when the maximum plantings comprised 330,088 acres. At that time there were 92,038 acres of navels which included miscellaneous sweet oranges and tangerines for 28% of the total acreage. There were 153,608 acres of 'Valencias' or 47% of the total acreage. Grapefruit consisted of 14,839 acres or only 4% of the total. Lemon acreage was 68,848 acres or 21% of the total. Limes accounted for less than 1% of the total acreage. The acreage figures for 1972 show a 41% increase in navel acreage since 1946 for a total of 129,331 acres or 41% of the 1972 acreage. 'Valencia' orange acreage has dropped to 94,635 acres in 1972, a loss of 38% since 1946 and now comprising only 30% of the total. Clearly we are growing many more navels than ever before and many less acres of 'Valencias'. This reflects the tremendous loss in southern California acreage. Grapefruit now makes up 6% of the total acreage or 18,897 acres up 27% over the 1946 figure. A good part of this is summer grapefruit. Lemons with 59,778 acres consist of 19% of the total acreage and represent a loss of 13% from 1946 figures. There were no previous figures for tangerines but they with 13,826 acres now make up 4% of the total 1972 acreage. There has thus been a major increase in navel acreage, slight increases in grapefruit and tangerine acreage, a major loss in 'Valencia' orange acreage and a moderate loss in lemon acreage.

It must again be pointed out that California currently has 1/4 of its acreage 64,887 in non-bearing acres but also that much of its bearing acreage is also of an age where it has not reached full production. Therefore, production within the next few years is expected to increase materially. A projection made by Dr. R. C. Rock, Economist, Agricultural Extension, University of California at Riverside gives some insight as to just what might be expected in the next few years, projecting to 1978. While some figures are for California/Arizona I will try and emphasize the California side of the picture. Oranges produced in these 2 states, the bulk of which come from California, provide approximately 60% of all oranges marketed in fresh form in the United States. About 80% of California's fruit ends up in the fresh fruit market and about 20% goes to products. In 1971-72 California's tree crop in carload equivalents, each carload of oranges equalling 1000 cartons of 37-1/2 lbs net, was 41,600 cars of navels. The projected figure to 1977-78 is 62,300 carloads, a change of 48%. This is broken down to 54,200 cars for northern California and 8,100 cars for southern California clearly pointing out the preponderance of navel orange production in the central California area. The 'Valencia' picture is slightly different. The 1971-72 figure was for 38,600 cars which is projected to 52,000 cars by 1977-78, a change of 25%. Southern California will still produce more 'Valencias' than northern California by a rate of 28,000 cars to 24,000 cars but the difference between them is rapidly decreasing and it is just a question of time before northern California becomes the principal producer. This will have quite an effect on the late-holding 'Valencias' associated with southern California's crop.

California accounts for over 90% of the total U.S. lemon production, the remainder is in Arizona. The bulk of the lemon production is in southern California. Overall lemon shipments are expected to increase from 31,900 cars to 53,500 cars, a percent change of 67%. Grapefruit is not a major variety grown in California. It is divided essentially into desert grapefruit

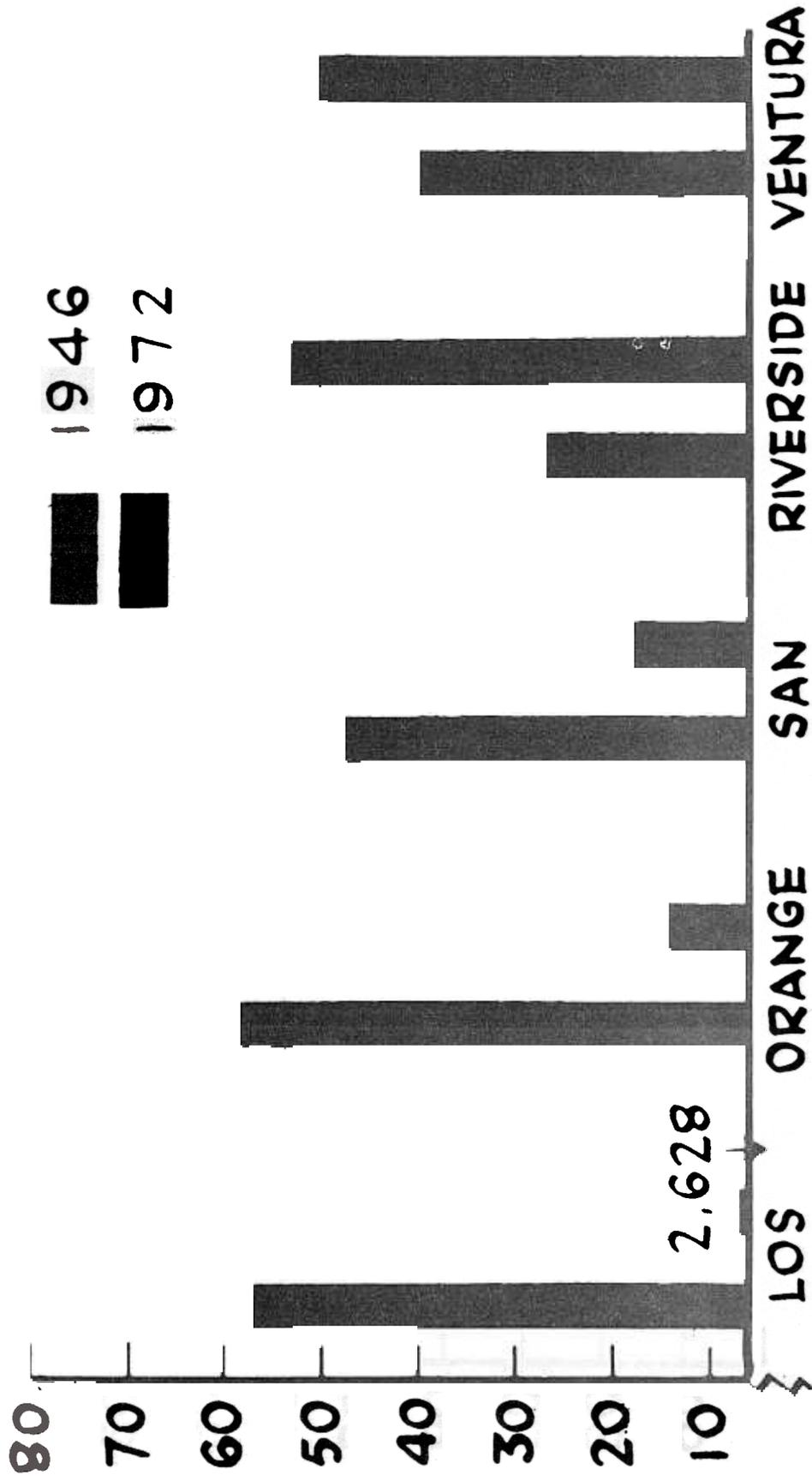
and summer grapefruit. The desert grapefruit has about 3 times the production as the summer grapefruit. Overall the 1971-72 shipments were 15,700 cars expected to increase to 23,000 cars, a percent change of 46%. By far the smallest crops grown in California are the tangerine, tangelo and tangor group. Current production is 1,667 cars, expected to increase to 2800 cars, a percent change of 68%.

These production figures as Rock says are "based on estimated acreage, production, yield per acre trends, and other relevant economic and cultural factors". On the other side the impact of a major freeze or the inroads of certain diseases may greatly modify acreages and grower returns. One thing is for certain and that is that California citrus industry, while not as large as Florida's is a vital factor to contend with. Major increases in acreage are not anticipated. Acreage will probably stabilize somewhere between 300,000 and 325,000 acres, approximately where it is now. Losses in southern California acreage can be expected and will be offset by increased plantings in the central Valley. The size of individual holdings is gradually increasing and is now double or triple that of the thirties and forties. Many of the new plantings are substantial in size consisting of a 1000 acres or more. More and more, absentee owners are also involved with a marked increase in farm management services. While there are still many thousands of acres in the central Valley which could be planted to citrus, it is doubted present economics warrant it.



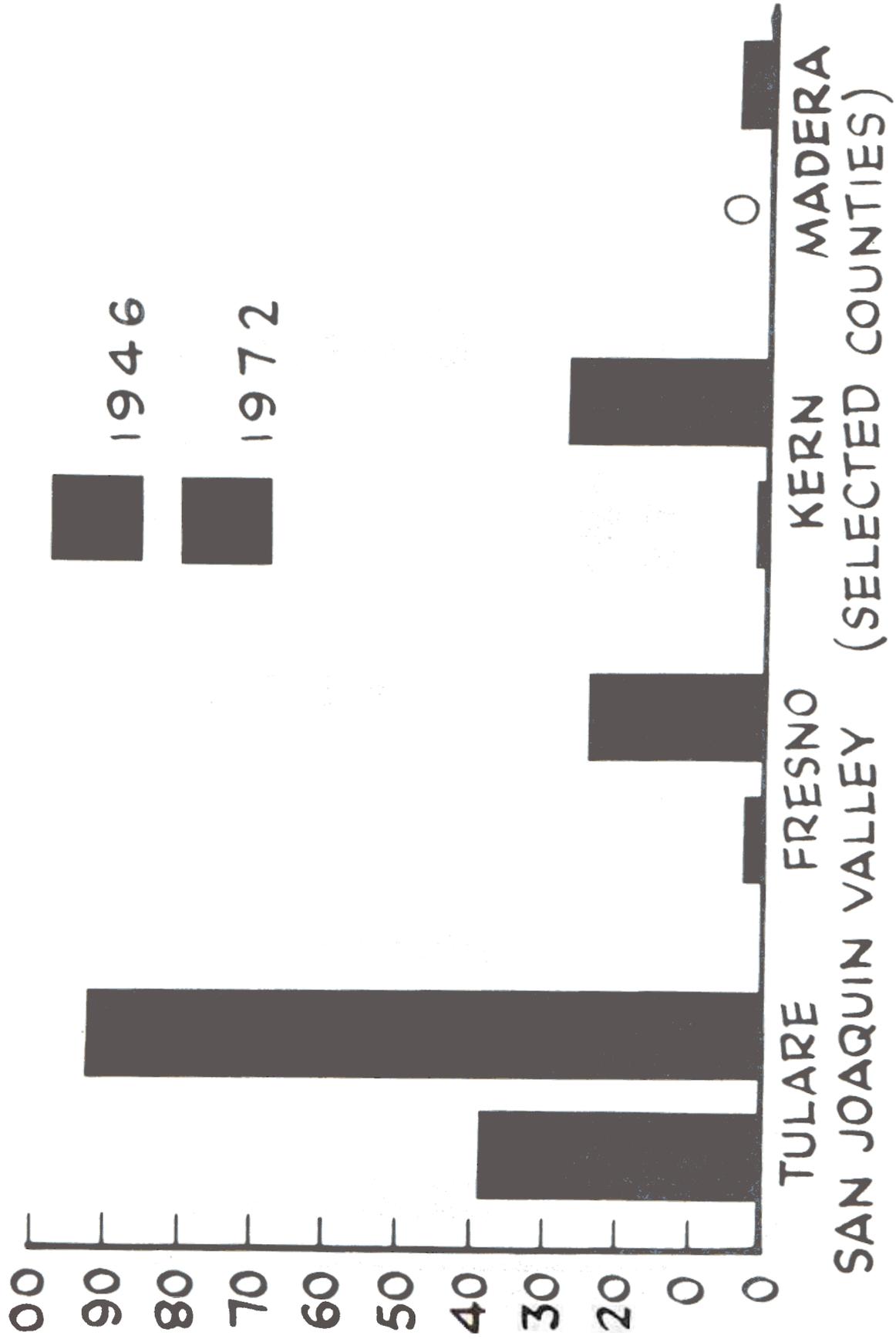
Principal citrus producing areas of California

# CITRUS ACREAGE (1000'S)



SOUTHERN CALIF. (SELECTED COUNTIES)

CITRUS ACREAGE 000 S



# 5 YR. PROJ. OF CALIF.-ARIZ. ORANGE PRO.

NOTE: STND. CARLD. = 33 1/2 TB. NET

AVERAGE	PROJECTION	%
1969-70/	1977-78	CHANGE
1971-72		

## TREE CROP IN 1000 CARLOAD EQUIVALENTS

NAVEL ORANGE			
CENT. & NTH. CALIF.	34.5	54.2	+ 57
SOUTHERN CALIF.	7.1	8.1	+ 13
ARIZ.-CA. DES. VAL.	1.2	1.3	+ 12
INDUSTRY TOTAL	<u>42.8</u>	<u>63.6</u>	<u>+ 48</u>

## VALENCIA ORANGE

CENT. & NTH. CALIF.	15.5	24.0	+ 55
SOUTHERN CALIF.	23.1	28.0	+ 21
ARIZ.- CA. DES. VAL.	7.8	6.0	- 23

INDUSTRY TOTAL	<u>46.4</u>	<u>58.0</u>	<u>+ 25</u>
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NOTE: STND. CARLD. = 1,000 CRTNS. OF 37 1/2 LB. NET

# 5 YR. PROJECTION OF CALIF.-ARIZ. GRAPEFRUIT PRODUCTION

DISTRICT	AVERAGE		PROJECTION 1977-78	% CHANGE
	1969-70/ 1971-72			
TREE CROP IN 1,000 CARLOAD EQUIVALENTS				
DESERT G'FRUIT *	11.9		17.0	+ 43
SUMMER G'FRUIT **	3.8		6.0	+ 56
INDUSTRY TOTAL	15.7		23.0	+ 46

WINTER FRUIT GROWN IN ARIZ. & DESERT VALLEYS  
OF CALIF. \*121-15 1971-75 1971-78 CHANCE

SUMMER FRUIT GROWN IN CALIF. \*\*  
NOTE: STND. CARLD. = 1,000 CRTNS. OF 33.5 LB. NET,  
CALIF. - 32 LBS. NET, ARIZ. CHANCE b50

SOURCE: CALIF.-ARIZ. CITRUS LEAGUE

**5 YR. PRO. ECTIO.  
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**CALIF.-ARIZ.  
TANGOR PROD**

STATE	AVERAGE		PROJECTION	LOAD EQUIVALENTS	CHANGE
	1969-70/	1971-72			

CA	1,667	2,800	+ 68
ARIZONA	776	1,550	+ 100
INDUSTRY TOTAL	2,443	4,350	+ 78

**NOTE: STND. CARLD. = 1,000 CRTNS. OF 37½ LB. NET**

**SOURCE: CITRUS LEAGUE**

# 5 YR. PROJECTION OF CALIF.-ARIZ. LEMON PRODUCTION

DISTRICT	AVERAGE		PROJECTION 1977-78	% CHANGE
	1969-70/ 1971-72			
TREE CROP IN 1,000 CARLOAD EQUIVALENTS				
CENTRAL CALIF.	1.6	4.5		+ 174
SOUTHERN CALIF.	23.7	30.0		+ 27
ARIZ.-CA. DES. VAL.	<u>6.6</u>	<u>19.0</u>		<u>+ 188</u>
INDUSTRY TOTAL	31.9	53.5		+ 67

NOTE: STND. CARLD. = 1,000 CRTNS. OF 38 LBS. NET

SOURCE: CALIF.-ARIZ. CITRUS LEAGUE

## SHIFT IN VARIETIES

<u>VARIETY</u>	<u>TOTAL ACREAGE</u>	<u>1946</u>	<u>1972</u>	<u>% CHANGE</u>
NAVEL & MISC.	92,038	129,966	+41.2	
VALENCIA	153,608	94,635	-38.4	
LEMON	68,848	59,778	-13.2	
GRAPEFRUIT	14,839	18,897	+27.3	
LIME	755	486	-35.6	
TANGERINES	—	7,376	—	
TANGELOS	—	5,376	—	
TANGORS	—	1,364	—	