

CURRENT STATUS OF THE TEXAS CITRUS INDUSTRY

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Abstract. The Christmas Freeze of 1983 brought below-freezing temperatures for over 60 continuous hours, with a minimum of 17° F for several hours Christmas morning, and maxima of no more than 24° on both Christmas Eve and Christmas Day. The Texas citrus industry's 70,000 acres was devastated; over 70% of the season's crop was lost, with no production in 1984-85 and only very limited production expected in 1985-86.

Approximately 30% (21,000 acres) of citrus were cleared and/or converted to other use, some of which will be replanted to citrus as nursery trees become available. Nearly 10,000 acres are apparently abandoned. Consequently, about 38,600 gross acres of citrus remain in the Valley. However, some 22% of the trees in these orchards are dead or missing, leaving the industry with only 30,600 net acres of citrus.

Based on nursery inventories of budlings, seedlings, and imported seeds, the potential exists for replanting 25,000 to 30,000 acres within the next 2 years, which would result in a Texas industry in the range of 55,000 acres.

The Christmas freeze of 1983 was probably the most damaging on record for the Texas citrus industry. Temperatures throughout the citrus area of the Lower Rio Grande Valley were below freezing for 60 consecutive hours, from just before midnight on 23 Dec. until noon on 26 Dec. There were 7 hours below 20°F on 25 Dec., culminating in a minimum of 17°F. Moreover, a second major cold air mass arrived in the Valley on 29 Dec., bringing another 29 hours below freezing and a minimum of 21°F on 30 Dec.

Approximately 76% of the total 1983-84 grapefruit crop and 40% of the orange crop were destroyed despite salvage efforts for processing. The crop loss was estimated at \$66 million by the Texas Valley Citrus Committee.

Reliable estimates of tree damage and loss were not available for months. Citrus field-nurseries were killed to the ground, thereby delaying replanting until root sprouts could be rebudded or new rootstocks could be grown from seed, as enclosed container nurseries were few. All orchards were severely damaged or worse, and all trees that survived were severely dehorned or cut back to the main trunk.

Some orchards were pruned too early and trees were subsequently removed. Others were pruned in accordance with recommendations, but trees continued to die in 1985, partly due to a subsequent freeze of 25°F on 25 Jan. 1985.

The Texas Agricultural Extension Service worked closely with the citrus industry and other agencies to analyze and evaluate the Texas citrus industry and its future prospects (1). The results of this study are used widely within the industry and provide the basis of knowledge concerning the current status of the Texas citrus industry.

Texas Citrus Acreage—January, 1985

The 1985 Texas Citrus Tree Inventory conducted and reported by the Texas Crop and Livestock Reporting Service provides the official record of Texas citrus acreage (2). The current status of the pre-freeze citrus acreage is presented in Table 1. In 1985, 29,168 net acres of the original 69,192 acres of grapefruit and oranges were undergoing rehabilitation, representing a 58% decline in acreage. However rehabilitating trees occupy 37,271 gross acres, as shown by 8,103 net acres of dead or missing trees. Moreover, 9,789 acres had received no visible care since the freeze and were considered abandoned. Finally, 20,878 acres of citrus were cleared and converted to other land use. Conversion has been primarily to other agriculture, principally vegetables and agronomic crops, but an undetermined acreage was converted to residential or commercial use and is permanently lost to future citrus production.

The net acreage of grapefruit and oranges are presented by variety and age in Table 2. Only 936 acres of trees aged 1-3 years were salvaged; thus 1,254 acres of new trees were planted after the freeze (Table 1). The majority of trees being rehabilitated are those over age 13, as would be expected due to their larger trunks and scaffolds which should permit more rapid regrowth and return to production. Overall, there are 19,100 net acres of grapefruit and 11,380 net acres of oranges.

Type and variety of citrus is perhaps more interesting in terms of relative percentages before and after the freeze (Table 3). The overall percentage of grapefruit decreased slightly after the freeze, which indicates that a slightly higher proportion of the orange acreage was retained.

Within grapefruit, percentage of both pink and white grapefruit declined as expected, with both 'Ruby Red' and 'Star Ruby' percentages increasing. The slight increase in percentage of 'Star Ruby' retained is surprising in view of its generally erratic production history. This may reflect grower optimism based on relatively higher prices paid for 'Star Ruby' fruit and a more rapid return to production due to generally larger size and density of 'Star Ruby' trees. It should be noted that 'Ruby Red' grapefruit acreage includes a number of other red grapefruit cultivars that are very similar to 'Ruby Red'. Moreover, the deeper red varieties such as 'Henderson' and 'Ray Ruby' are also included as 'Ruby Red'.

Early and midseason oranges are principally 'Marrs', 'Pineapple', 'Hamlin' and a number of navel oranges, although small acreages of some other varieties are grown. Texas citrus industry observers were concerned that 'Val-

Table 1. Current situation of 1983 prefreeze grapefruit-orange acreage^a.

	%	Acres
Rehabilitating	42.2	29,168
Replanted	1.8	1,254
Dead/missing trees	11.7	8,103
Abandoned	14.1	9,789
Cleared/converted	30.2	20,878
	100.0	69,192

^aSource: Report on the Rio Grande Valley Citrus Industry (1).

Table 2. Net acreage of grapefruit and oranges, by age and variety, 1 Jan. 1985².

Age	Grapefruit					Oranges		
	Ruby Red	Star Ruby	Pink	White	Total	Early & midseason	Valencia	Total
1-3	1,245	28	—	—	1,273	669	248	917
4-8	2,101	298	—	—	2,399	90	103	193
9-12	3,744	1,265	30	3	5,042	526	196	722
13+	9,549	461	159	227	10,396	4,989	4,559	9,548
Total	16,639	2,052	189	230	19,110	6,274	5,106	11,380
Net bearing acreage	15,394	2,024	189	230	17,837	5,605	4,858	10,463

²Source: 1985 Texas Citrus Tree Inventory (2).Table 3. Percentage of acreage, by variety and type, prefreeze and postfreeze².

	Grapefruit					Oranges		
	Ruby Red	Star Ruby	Pink	White	Total citrus	Early & midseason	Valencia	Total citrus
1983	84.2	10.1	3.3	2.4	64.3	58.3	41.7	35.7
1985	87.1	10.7	1.0	1.2	62.7	55.1	44.9	37.3

²Source: Report on the Rio Grande Valley Citrus Industry (1).

encia' orange acreage would decline dramatically, but the 'Valencia' share of the total orange acreage actually increased. However, nearly 90% of the retained 'Valencia' acreage is older than 13 years, so this concern may yet be realized as replacement orchards are planted.

Production Potential

There was no commercial citrus production in Texas in the 1984-85 season. The 1985-86 season forecast for oranges is 20,000 tons (1 ton = 22.2 Florida boxes), which is about 8% of pre-freeze levels for the industry as a whole, or about 20% of normal when adjusted for reduced acreage.

The current forecast for grapefruit is also 20,000 tons (1 ton = 23.5 Florida boxes), which represents only 4% of prefreeze levels for the industry or about 10% of normal when adjusted for reduced acreage. Grapefruit bloom and set were much lighter than expected, and damage by grackles resulted in extensive fruit damage and fruit drop. Also, a freeze of 25°F (at Weslaco, TX) on 21 Jan. 1985, caused more damage to orchards in the Upper Valley area, as some growers there reported complete death of rehabilitating trees.

Potential Acreage

The 1985 Texas Citrus Tree Inventory included a comprehensive survey of citrus nurseries to provide a sound basis for predicting the near-term size and varietal mix of the Texas citrus industry. The data for trees already-budded as of 25 Jan. 1985, and for rootstocks to be budded before July, 1985, are presented in Table 4.

It is tempting to speculate about the significance of these data, but it should be noted that these data represent only the first phase of initial replanting and the apparent trends may not be valid over the next few years.

Budded trees. Preliminary indications are that the grapefruit to orange ratio will decrease. In 1985, the nur-

series trees ratio is 54:46 as compared to a 63:37 ratio of existing acreage. Newer, deeper red varieties represent 80% of the 609,700 available grapefruit trees, which supports the general consensus that the so-called "super-reds" will ultimately replace the traditional 'Ruby Red'.

The nursery ratio of 86:14 early and mid-season oranges to 'Valencia' is in marked contrast to the 55:45 ratio of existing acreage. Apparently, growers plan to reset existing 'Valencia' orchards, but show no indications of planting new 'Valencia' orchards. 'Marrs', a productive early orange used both in fresh markets and processing, accounts for over 60% of the 519,200 available orange trees.

Table 4. Already-budded citrus trees to be delivered by June 1986 and rootstocks available for budding before July 1985².

Type	No. of trees (1,000's)
Grapefruit	
Ruby Red	93.1
Star Ruby	23.9
Henderson/Ray Ruby	320.3
Rio Red	168.2
Other	4.2
Total	609.7
Orange	
Marrs	320.7
Navels	97.0
Pineapple	22.8
Hamlin	5.8
Valencia	71.1
Other	1.8
Total	519.2
Other citrus	96.5
Total, all citrus	1,225.4
Buddable rootstocks	
Field	700.8
Container	547.4
Total	1,248.2

²Source: 1985 Texas Citrus Tree Inventory (2).

The total 1.22 million budded nursery trees should be adequate to set about 10,000 acres at current populations of 121 trees per acre.

Rootstocks. Sour orange accounts for 98.5% of available rootstocks, although a few trees are being budded onto 'Carrizo' citrange and 'Swingle' citrumelo. It is significant that a large proportion of the rootstocks are container-grown, indicating that Texas citrus nurseries are quickly moving toward acceptance of the many advantages afforded by growing trees in containers inside heatable structures.

The 1.25 million rootstock seedlings should yield about 1.0 million budded trees for 1986 planting, both as new orchards and resets. At the current average population of 121 trees per acre, there should be enough trees to plant about 8,000 acres by the end of 1986.

Rootstock seed. The citrus canker quarantine in Florida and the freeze loss of Texas rootstock seed-producing trees permit the estimation of future rootstock numbers, inasmuch as virtually all seed in 1985 were imported under a permit system. Some 1,075 quarts of seed were imported from Florida.

These seed should generate about 1.4 million budded trees through mid-1987, assuming 2,200 seed per quart and 60% plantable trees. Consequently, enough trees should develop to plant another 11,000 acres at current spacings.

Potential acreage. Combining budded trees, rootstocks and seed potentials indicate about 3.6 million nursery trees available to plant approximately 29,000 net acres of citrus by mid-1987. These trees would increase the total acreage of Texas citrus to about 59,000 acres within 2 years. However, adjustments must be made for certain factors which will negatively affect total acreage.

There has been considerable discussion of higher density plantings, but there is no reliable evidence as to the number of acres or trees which will be replanted at closer spacings. Some existing orchards have been interset with new trees, as growers attempt to obtain some fruit production from their freeze-damaged trees while the intersets that will become the new orchard are maturing. Too, some growers are resetting 2 or more trees in spaces where 1 or more trees were removed.

Moreover, numerous trees in existing orchards continue to die and some orchards present during the inventory have since been removed. Industry sources guess that as many as 5,000 or more additional net acres of trees have been lost since the inventory.

A significant number of nursery trees will be marketed for residential planting throughout South Texas, but there is no reliable estimate of that quantity. Finally, nursery production has been reported to be off due to lower than normal seed germination and lower budding success.

Consequently, it is possible that the 1987 Texas citrus inventory will be closer to 50,000 acres than to 59,000. These uncertainties, however, in combination with the industry's need for more accurate data, are responsible for the decision by the Texas Crop and Livestock Reporting Service to update the inventory of Texas citrus nurseries to July 1986.

Literature Cited

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ECONOMIC FACTORS AFFECTING POSTFREEZE PRODUCTION DECISIONS IN THE FLORIDA CITRUS INDUSTRY

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Abstract. As a result of the Dec. 1983 and Jan. 1985 freezes, Florida's citrus industry is in a state of flux. Increased competition in the orange juice market and erosion of the U.S. tariff on citrus juices will necessitate increased efficiency in order to compete with other supply sources. Central to production decisions is the relative efficiency of Florida versus other supply sources. In addition, recent freezes have caused growers to question the relative advantages of production in northern

and southern locations. The long-run aspect of investment in citrus necessitates the development of future estimates of relative production costs for the competing regions in the state. This paper discusses the relative costs of production, provides detailed budgets, and identifies some of the important risk factors associated with production in the two areas.

The Florida citrus industry sustained a record 4 freezes in 5 years between 1980-81 and 1984-85. Since 1982, total Florida citrus acreage has been reduced by 24% from 845,300 to 642,900 acres. The Florida Crop and Livestock Reporting Service (FCLRS) 1984 commercial citrus inventory, as updated in 1985, also indicates that there are 11.2 million fewer orange trees than in 1982, a reduction of 20.9%. Comparisons for the same time period reveal that there are 900,000 fewer grapefruit trees, an 8.3% decrease.

Prior to recent freezes, Florida generally supplied about 85-90% of the orange juice marketed in the United States. However, as a result of freeze damage there have

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