Table 5. Leaf nutrient concentrations in 1980 of interstem apple trees in the regional planting established in 1976.

		% Dry Wt.					ppm						
Cultivar	Rootstock	N	P	K	Ca	Mg	Mn	Fe	B	Cu	Zn	Al	NA
Sturdeespur	MM111	2.38a*	.16ab	.99b	1.20	.30	87a	106	32	2.9	27	121ab	36b
	Antonovka	2.29ab	.18a	1.11a	1.20	.31	83ab	119	34	3.1	27	109b	38b
	Ottawa 11	2.26bc	.17ab	1.07ab	1.36	.28	70bc	130	33	3.6	25	106b	48a
Empire	MM111	2.25bc	.16b	.99b	1.14	.30	89a	112	35	3.0	29	128a	32bc
	Antonovka	2.16c	.16b	1.06ab	1.16	.29	66c	109	32	2.5	23	135a	32bc
	Ottawa 11	2.22bc	.17ab	1.10a	1.26	.29	69bc	88	30	2.7	23	128a	28c

*Means in columns without a letter in common are statistically different (Duncan's Multiple Range p = .05).

Current Status and Recent Trends in Florida Citrus Scion Cultivars

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Additional index words: variety, orange, grapefruit, tangerine, tangelo, lime, lemon.

ABSTRACT

The major citrus scion cultivars in Florida are listed by quantity and relative age as of January 1980. The most important type of citrus is the sweet orange, followed by grapefruit. Florida produces 79% of the U.S. orange crop and 74% of the grapefruit crop. Ninety-four percent of the orange crop and 63% of the grapefruit crop is processed, and the remainder is marketed fresh. The number of citrus trees in Florida declined steadily from the record high in 1969 until the 1978-79 reporting period, when the number increased. Florida now has more grapefruit trees than in 1969 but substantially fewer orange trees. These orange and grapefruit trees produce more fruit per acre than similar trees in California, Texas, or Arizona. During 1978-79 the number of Temple, tangelo, and tangerine trees declined. In spite of the decrease in numbers of trees, Florida growers harvested a record crop of 12.4 million tons of citrus in the 1979-80 season.

The commercially important cultivars in any citrus production area vary with climate, soils, marketing methods, and other factors. The purpose of this report is to list major scion cultivars by quantity and relative age in Florida. The number of trees is the most useful comparison, because the average number of trees per acre varies with the cultivar. Trees are divided into four age groups. In Florida, citrus trees 1-4 years old are considered nonbearing. The latest tree inventory was completed by January 1980 (1). Data in this paper were calculated from this tree inventory and the 1980 citrus summary (2). A similar paper was recently published with older data for Florida and Texas (3).

The most important type of citrus in Florida is the sweet orange (*Citrus sinensis* (L.) Osbeck, which comprised 73.6% of the total trees. The major Florida orange cultivars are shown in Table 1. Hamlin, Parson Brown, and navels are considered early oranges (15 million trees or 181,311 acres). The number of Hamlin trees has increased by 433,000 during the past 2 years.

[1]Agricultural Research Service, U. S. Department of Agriculture, 2120 Camden Road, Orlando, Florida 32803.

Pineapple and seedlings are midseason oranges (10 million trees or 127,371 acres), whereas most of the late oranges (23.6 million trees or 287,884 acres) are Valencia. About 2.5 million or 28,383 acres are young trees that have not yet been identified by cultivar. The total number of orange trees is 52 million (627,174 acres). The average number of orange trees per acre in Florida is 83. During the 5 seasons 1975-76 through 1979-80, an average acre of bearing Florida orange trees produced 14 short tons of fruit per season. The early and midseason cultivars produced 338 90-lb. boxes and the late or Valencia produced 281 boxes per acre. During the same period, 94% of the orange crop was processed and 6% was marketed fresh. Florida produced 79% of the total U.S. orange crop. During the same period, the average per-acre orange production in California was 9.4 tons, in Texas 8.8 tons, and in Arizona 6.4 tons.

The latest inventory of Florida grapefruit (*C. paradisi* Macf.) trees, Table 2, shows that Marsh is the most extensively planted cultivar (67,973 acres). Redblush (Ruby) and Thompson are reported together as pink seedless (44,163 acres) in Florida records, although the former cultivar is the most extensively planted. About 12.7% of Florida grapefruit cultivars are ones with seedy fruit. There are 10.8 million grapefruit trees (139,144 acres) planted in Florida, an increase of 1.9 million trees since 1969. During the past 5 seasons, 63% of Florida grapefruit was processed and 37% marketed fresh. The average acre of Florida grapefruit has 77 trees. Average yield of grapefruit per acre of bearing Florida trees was 17.9 tons. The average yield of Marsh trees was 455 85-lb. boxes, whereas the yield of pink seedless was 389 boxes. Part of the difference in yield may be due to a higher percentage of pink seedless trees in the younger age groups (Table 2). Grapefruit yields in California were 13.2 tons, in Texas 11.3 tons, and 9.0 tons per acre in Arizona. From 1975-76 through 1979-80, Florida produced 74% of the U.S. grapefruit crop.

There are 1.6 million Temple (*C. reticulata* Blanco hybrid) trees (18,470 acres) planted in Florida (Table 3). Fifty-eight percent of the Temple fruit is processed. The number of Temple trees declined significantly

Table 1. Florida orange trees by cultivar and age as of January 1980.[1]

Age (yr.)	Hamlin	Parson Brown	Navel	Pineapple	Late (Val.)	Unidentified	Total oranges
	(1,000 trees)						
1-3	467	15	38	195	584	2,403	3,738
4-8	1,037	85	92	807	1,866	129	4,030
9-12	725	72	116	767	1,446	1	3,147
12+	9,380	2,238	739	7,773	19,688	2	41,062
Total	11,609	2,410	985	9,542	23,584	2,535	51,977
Change (2 yr.)	+433	−22	+64	+19	−37	+848	+1,134

[1]Source: Commercial Citrus Inventory, Florida Crop and Livestock Reporting Service, Orlando, Florida.

Table 2. Florida grapefruit trees by cultivar and age as of January 1980.[1]

Age (yr.)	Marsh Seedless	Pink[2] Seedless	Seedy[3]	Uniden-tified	Total grapefruit
			(1,000 trees)		
1-3	39	279	13	623	955
4-8	805	1,063	106	24	1,999
9-12	611	401	61	5	1,078
12+	3,806	1,745	1,183	3	6,737
Total	5,261	3,488	1,363	655	10,769
Change (2 yr.)	−8	+371	−77	+68	+356

[1]Source: Commercial Citrus Inventory, Florida Crop and Livestock Reporting Service, Orlando, Florida.
[2]Mostly Redblush (Ruby), but some Thompson.
[3]Mostly Duncan, but a few Foster and Triumph.

Table 3. Florida Temple, tangelo, and K-Early trees by cultivar and age in 1980.[1]

Age (yr.)	Temple	Orlando tangelo	Minneola tangelo	Nova tangelo	K-Early
			(1,000 trees)		
1-3	14	8	5	1	0
4-8	44	29	10	25	1
9-12	73	101	18	91	1
12+	1,454	1,099	155	71	106
Total	1,585	1,237	188	188	108
Change (2 yr.)	−61	−47	−1	−14	−5

[1]Source: Commercial Citrus Inventory, Florida Crop and Livestock Reporting Service, Orlando, Florida.

Table 4. Florida tangerine and tangerine hybrid trees by cultivar and age in 1980.[1]

Age (yr.)	Dancy tangerine	Robinson tangerine	Murcott Honey tangerine	Page, Lee Osceola hybrids[2]	Satsuma mandarin
			(1,000 trees)		
1-3	7	16	30	1	0
4-8	26	87	28	5	1
9-12	45	224	57	32	4
12+	695	323	785	77	83
Total	773	650	900	115	88
Change (2 yr.)	−88	−13	−2	−2	−8

[1]Source: Commercial Citrus Inventory, Florida Crop and Livestock Reporting Service, Orlando, Florida.
[2]Mostly Page, followed by Lee and a few Osceola trees.

during the past 2 years. During the past 5 seasons, the average Temple crop has been 260 90-lb. boxes per acre. About 1.6 million tangelo (hybrids of *C. reticulata* and *C. paradisi*) trees (17,643 acres) are planted in Florida. Orlando is the major cultivar, followed by equal numbers of Nova and Minneola. During the past 5 seasons, 61% of the tangelo fruit was processed. During this period the average tangelo yield was 289 90-lb. boxes per acre. K-Early, a hybrid of unknown parentage but similar to the tangelo, accounts for 108,000 trees (1,080 acres), most of which are older than 12 years.

The number of Dancy (*C. reticulata*) tangerine trees (on 10,126 acres, Table 4) exceeds that of Robinson [*C. reticulata* X (*C. paradisi* X *C. reticulata*)] (5,552 acres). However, the difference in numbers of trees is not as great as the difference in acreage. During the past 2 years, the inventory of each cultivar was reduced, but Dancy showed the greatest reduction (88,000 trees). Most of the Dancy trees are older than 12 years, whereas most of the Robinson trees are younger than 12 years. Fruit of these cultivars are harvested during the fall to early winter, and about 38% are processed. The average tangerine yield was 209 95-lb. boxes per acre. Most of the 900,000 Murcott Honey (*C. sinensis* X *C. reticulata* hybrid?) tangerine trees (8,569 acres) are also more than 12 years old. Murcott Honey fruit matures later than the other tangerines. During an average season, 49% of this fruit was processed and 51% marketed fresh. The average yield was 236 95-lb. boxes per acre. Separate data for Page, Lee, and Osceola, hybrids of tangerine and tangelo, are not available; however, Page is the most extensively planted, followed by Lee and a small quantity of Osceola. There are 88,000 satsuma (*C. reticulata*) mandarin trees (986 acres) and 13,700 Ponkan (*C. reticulata*) trees (158 acres) in Florida.

Florida groves contain approximately 1 million lime trees (6,539 acres) (Table 5), and nearly all are Tahiti (Persian), *C. aurantifolia* (Christm.) Swing. There has been a significant increase in lime trees during the past 2 years. Most of the true lemons in Florida are Bearss, *C. limon* (L.) Burm. f. (483,000 trees or 4,141 acres), whereas there are 231,000 Meyer (*C. limon* X *C. sinensis* ?) lemon trees (1,355 acres). Most of the Meyer trees are more than 12 years old. Nearly 250,000 trees (or 2,480 acres) of miscellaneous cultivars are planted in Florida.

In January 1980, the total number of citrus trees in Florida was 70,652,400 and 75.8% were more than 12 years old. These occupied 845,283 acres, a gross increase of 1.7% in acreage since the 1978 inventory. Until 1978-79, there had been a continual decrease in acreage and tree count since 1969, when the inventory indicated 76.7 million trees (941,471 acres). During this 11-year period there was an increase of 1.9 million grapefruit trees, but decreases of 5.8 million orange trees and 2 million trees of other cultivars, for a net decrease of 6.0 million trees. Decreases resulted from tree losses due to freezes and diseases, urban development and abandonment coupled with poor fruit prices that discouraged replanting and replacement of missing trees. Fruit prices have been higher since the 1978 tree census, and tree and grove replacement have increased substantially.

The average Florida citrus crop during the 5 seasons 1975-76 through 1979-80 was 11.16 million short tons of fruit (2). For comparison, the average California citrus crop during this period was 2.75 million tons. The

Table 5. Florida limes, lemons, and all citrus by age as of January 1980.[1]

Age (yr.)	Limes[2]	True lemons[3]	Meyer lemons	All citrus
	(1,000 trees)			
1-3	401	40	2	5,239
4-8	179	145	13	6,691
9-12	156	114	2	5,167
12+	323	184	214	53,555
Total	1,059	483	231	70,652
Change (2 yr.)	+268	−47	−10	+1,515

[1]Source: Commercial Citrus Inventory, Florida Crop and Livestock Reporting Service, Orlando, Florida.
[2]Predominantly Tahiti (Persian).
[3]Predominantly Bearss.

1979-80 crop was 12.4 million tons, the largest Florida citrus crop ever harvested. There was a significant trend to closer in-the-row tree spacing beginning in the late 1960's (4). During the past 5 years, nearly 50% of the trees planted were used as resets in existing groves. However, there has been an increase in number of trees per acre in many recent plantings. Only 24% of the trees are less than 13 years old. The average numbers of trees per acre by type in 1969 and in 1980, respectively, are: oranges 80 and 83, grapefruit 71 and 77, other types 97 and 101, and all types 81 and 84 per acre.

Literature Cited

1. Florida Agricultural Statistics: Commercial Citrus Inventory, 1980, Florida Crop and Livestock Reporting Service, Orlando, FL.
2. Florida Agricultural Statistics: Citrus Summary 1980. Florida Crop and Livestock Reporting Service, Orlando, FL.
3. Hearn, C. Jack. 1981. Citrus scion cultivars in Florida and Texas. *Fruit Var. Jour.* 35(2):44-48.
4. Tucker, D. P. H., and T. Adair Wheaton. 1978. Trends in higher citrus planting densities. *Proc. Fla. State Hort. Soc.* 91:36-40.