Florida Citrus Production Trends 2005-06 Through 2014-15

Economic and Market Research Department
Florida Department of Citrus

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To enhance the welfare of the Florida citrus growers and the groves they operate.

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Prepared by:

ECONOMIC AND MARKET RESEARCH DEPARTMENT
FLORIDA DEPARTMENT OF CITRUS

P.O. Box 110249
Gainesville, Florida 32611-0249 USA
Phone: 352-392-1874
FAX: 352-392-8634
E-Mail: MGBrown@ifas.ufl.edu
Web Site: www.floridajuice.com

Executive Summary

The purpose of this document is to present a long-range production forecast for industry participants to use as a guideline for their individual planning and decision-making purposes. Long-range forecasts are developed using mathematical calculations of average yields and assumptions regarding tree mortality and planting rates. Although the confidence levels for the long-range trends are high, forecasts for specific point-in-time estimates are far less accurate and unreliable. The events (hurricanes and subsequent weather) of 2004 have had immediate and will have long-lasting effects on the Florida citrus industry. We have attempted to provide insight into the forecasts that would account for specific hurricane related impacts, however, at this time it is not known how yields and tree mortality will be different from the average historical assumptions used in this document. Further,

- The production projections are based on average yields during the last decade and variation from these averages could be relatively large. For example, if 1998-99 yields are used to project 2005-06 orange production, an estimate of 176 million boxes is obtained, while if 1999-00 yields are used, an estimate of 248 million boxes is obtained. If 2002-03 yields are used to project 2005-06 grapefruit production, an estimate of 27.5 million boxes is obtained, while if 1997-98 yields are used an estimate of 34.5 million boxes is obtained.

- From 2002 to 2004, Florida's orange, grapefruit and specialty acreage decreased by 4.0%, 15.6% and 15.8%, respectively.

- Above normal tree loss rates have been occurring as a result of diseases like Tristeza and, in some cases, past low grower prices. In this report, the acreage and tree loss rates in 2004-05 are assumed to continue at relatively high levels due to the impacts of the 2004 hurricanes and the continued effects of Tristeza. Tristeza is also assumed to continue to result in above average loss rates for several more years into the future, with its effect tapering off. Tree loss rates may also be relatively high in upcoming years as a result of the spread of citrus canker.

- Production in upcoming years is estimated by applying average historical yields per acre to projected acres, by age.

- Orange production is estimated to increase from 220.6 in 2005-06 to 238.5 million boxes in 2014-15, assuming replacement planting levels.

- Grapefruit production is estimated to range from 29.0 to 31.6 million boxes over the next several years and then increase to 38.6 million boxes in 2014-15, assuming increased planting levels.

- Based on scenarios assuming greater acre losses due to citrus canker, orange and grapefruit production levels are estimated to range from 212.3 to 218.0 million boxes and 27.6 to 33.5 million boxes, respectively, over the next ten years.

- Specialty citrus production is projected to range from 6 to 8 million boxes over the next ten years.

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Florida Citrus Production Trends 2005-06 Through 2014-15*

Introduction

This report presents production estimates for Florida round oranges, grapefruit and specialty citrus for the 2005-06 through 2014-15 seasons. The estimates are based on the Florida Agricultural Statistics Service (FASS) biennial commercial citrus inventory for 2004. This survey was done before hurricanes Charley, Frances and Jeanne struck Florida's citrus growing regions, and does not reflect tree losses due to this series of events. In this report, relatively high tree loss rates were assumed in the 2004-05 season to reflect the expected impacts of these hurricanes, as well as the progression of the citrus disease Tristeza. However the effects from the hurricanes on yield, or overall tree health, are unknown and therefore not factored into these forecasts.

The biennial inventory reports numbers of trees and acres by age of trees for different varieties of citrus. These data are combined with FASS yield data on boxes of fruit per tree by age to estimate yields per acre, and future production is estimated by applying these estimated yields to projected acreage, by age.[1]

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*By Mark G. Brown, research economist, Florida Department of Citrus, Gainesville, Florida.

[1] This method has been referred to as the acre method in past reports. Another method to project production is the tree method which applies average boxes of fruit per tree to projected trees, by age. The acre method was selected over the tree method because recently observed yields per acre, used in projecting production, are expected to more accurately reflect potential future yields than recently observed yields per tree. Increasing tree densities may negatively impact tree yields in upcoming years, making estimation of these yields and tree-based production projections problematic. Yields per acre are assumed to more fully reflect the impact of increasing tree densities. High tree densities have occurred in some of the younger age categories, and the observed acre yields for these age categories reflect the change in this factor. Older-age-category acre yields are assumed to be constrained by limited space and availability of sunshine, water and nutrients in the soil; historical yields are assumed to reflect these yields.

The production estimates in this report are estimates of potential production, as opposed to utilized production reported by FASS. Potential production is the fruit that could be utilized assuming favorable citrus prices, while utilized production is the amount of fruit actually entering certified fresh and processing channels, as well as noncertified channels. Some fruit has been abandoned rather than utilized in the past when grower prices were below harvest and post-harvest costs.[2]

Overview of the 2004 Commercial Citrus Inventory

The *2004 Commercial Citrus Inventory* shows Florida's total citrus acreage declined from 797.3 thousand acres in 2002 to 748.6 thousand acres in 2004, a 6.1% decrease (Table 1). Similarly, the number of citrus trees decreased by 5.1% from 103.2 million in 2002 to 97.9 million in 2004. Since 1996, the number of citrus acres and trees have declined by 12.7% and 8.6%, respectively. With acreage declining more than the tree population, the trend toward denser planting levels has continued with the average trees per acre at 130.8 in 2004. Acreage and tree inventory data for individual varieties of citrus—round oranges, grapefruit and specialty citrus—are shown in Tables 2, 3 and 4, respectively. Declines in acreage and trees have occurred across all these categories and are due to various factors including diseases such as tristeza, citrus canker and the citrus root weevil; conversion of land to non-agricultural uses, such as home sites, subdivisions and commercial development; and past low grower returns, notably for grapefruit.

[2] FASS reported abandonment of 3 million, 6 million, 6 million and 2 million boxes of grapefruit in 1995-96, 1996-97, 1997-98 and 2000-01, respectively.

The FASS commercial citrus inventory indicates that the population of bearing and nonbearing round-orange trees decreased 3.2% from 85.8 million in 2002 to 83.0 million in 2004. As indicated in Table 5, the orange tree population continues to mature, with 73.4% of the round-orange trees being greater than eight years old in 2004. The percentage of trees in the middle age category, greater than eight and less than 24 years old, is 61.4% and has steadily increased since 1992.

The total number of bearing and nonbearing grapefruit trees decreased 14.0% from 11.3 million in 2002 to 9.7 million in 2004. The grapefruit tree population has decreased by 35.5% since its high point of 15.1 million in 1996, reflecting disease problems, urban development pressures in the Indian River area and past low returns grapefruit growers had experienced. The grapefruit tree population also continues to age with 83.2% of the trees being greater than eight years old in 2004, versus 47.1% in 1996 (Table 6). The age distribution for grapefruit trees by variety and by Indian River versus Interior regions is shown in Table 7.

The 2004 inventory indicates that the number of specialty citrus (Temples, tangelos and tangerines) acres and trees decreased by 15.8% and 15.0%, respectively, from 2002 to 2004. This is the fourth census in a row that specialty acreage and tree levels have declined. Like oranges and grapefruit, the specialty tree population has matured with 80.7% of the trees being greater than eight years old in 2004 (Table 8).

Methodology

The production estimates discussed in this report are based on projecting the acreage in 25 tree-age categories for the upcoming ten seasons. Separate projections were made for early and

midseason oranges, late oranges, white seedless grapefruit,[3] red and pink seedless grapefruit, Temples, tangelos and tangerines.

The Florida production projections for oranges and grapefruit were based on projections for four regions to take into account variation across regions in potential acreage loss and planting rates, as well as yields. In particular, acreage losses due to the citrus tristeza virus and urban development are expected to vary by region. The four regions used in modeling production were the South, West, Indian River, and the North & Central.[4] These regions are roughly the same as those for which FASS reports yields per tree.

Planting Assumptions

The projections are dependent on assumed future acreage-planting rates. Average planting levels for 2000, 2002 and 2004 commercial citrus inventories are shown in Table 9. The average orange planting levels have been somewhat declining; although relatively low, the 2004 grapefruit level is up from the levels in the previous two inventories; and overall specialty planting levels continue to be relatively low (the trends in orange and grapefruit planting levels are reflected by the percentages of trees that are less than two years old in Tables 5 and 6). Over the projection period, various planting assumptions are considered—recent season-average levels, various multiples of the

[3] A small amount of seedy grapefruit is included with white seedless grapefruit.

[4] The regions included the following counties—South: Charlotte, Collier, Glades, Hendry, Lee and Okeechobee; West: DeSoto, Hardee, Hillsborough, Manatee, and Sarasota; Indian River: Indian River, St. Lucie, Martin, Palm Beach, Brevard, Volusia, and Flagler (parts of some counties are not included, as defined by FASS); North & Central: all other counties.

average levels, and replacement levels.[5] For the replacement planting assumption, acreage planting levels in the upcoming years are assumed to equal corresponding losses. Planting levels will depend on prices and grower returns, which, in turn, are related to juice inventory levels. To the extent juice inventories are reduced in upcoming years, prices and planting levels are expected to increase.

Tree/Acre Loss Assumptions

The citrus tristeza virus and the brown citrus aphid, which is an efficient vector in spreading this disease, are present in Florida. This situation has contributed to the recent acreage and tree losses and is expected to continue to have an impact on acreage and tree attrition rates in upcoming years. Trees on sour orange rootstock are vulnerable to tristeza, and this disease has the potential to kill most of the trees on this rootstock. Based on data from the Bureau of Citrus Budwood Registration and a survey of grapefruit in the Indian River Region,[6] an estimated 14% of the orange trees or about 12 million trees, and an estimated 42% of the grapefruit trees or about 5.3 million trees were on sour orange rootstock in 1999-00. Most of the trees on sour orange rootstock were planted in the 1980's and earlier, so that the surviving trees on this rootstock are in the most productive stage of their lives, and loss of these trees to tristeza would be expected to have a significant impact on total production. Although data on the incidence of tristeza are not available for 2004, production

[5] Planting levels are dependent on difficult-to-predict market conditions such as expected citrus prices and grower returns in upcoming years, which depend on future supplies and demands for Florida and competitive citrus products. Alternative planting scenarios are considered to roughly account for different market conditions in the future.

[6] The survey was conducted by Ed Stover, assistant professor, Indian River Research and Education Center, Institute of Food and Agricultural Sciences, University of Florida.

projections in this report are based on the estimates[7] that from 2000 to 2004, 8.8 million orange trees and 2.8 million grapefruit tree were lost to tristeza, leaving 3.2 million orange trees and 2.5 million grapefruit tree for phasing out. In this report, this remaining acreage with trees on sour orange rootstock is assumed to be lost during the next eight years.[8]

Other factors in addition to tristeza are also expected to result in acreage losses. Non-tristeza, acreage-loss rates were assumed based on loss rates implied by the commercial tree censuses (Table 10). The non-tristeza loss rates used in projecting production are assumed to follow those loss rates occurring in the mid 1990's, prior to the occurrence of relatively large tristeza losses. The historical acreage-loss rates tend to increase with the age of the trees on the acreage, and this tendency is assumed to continue over the projection period, i.e., the orange and grapefruit projections are based on non-tristeza acreage-loss rates which increase with age.

For oranges and grapefruit, the assumed loss rates vary by region. For the specialty citrus production projections, which were made at the State level, the loss rates were assumed to be flat across the age of the acreage. Over the projection period, the specialty citrus loss rates were initially set at relatively high levels consistent with recent losses and then were phased down to normal levels occurring in the 1990's.

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[7] The estimates were based on the difference between recent high loss rates and lower normal historical attrition rates.

[8] A logistic function was used to model the loss rate for trees on sour orange rootstock. This function allows the loss rate for this rootstock to increase relatively quickly in the first years when tristeza is spreading; then the loss rate levels off as the disease spreads to most of the trees on the rootstock.

Yield Assumptions: Projection Methodologies Based on Trees Versus Acres

Production estimates were made for each of the four regions defined above, and State estimates were obtained by summing the region estimates. For each region, the production estimates were made by multiplying the projected number of acres in each specific age category by the yield or number of boxes per acre for that age category and summing the results across age categories. Average yields per acre by age were used in making these estimates with no consideration made for the continued effects on overall tree health from the hurricanes of the Fall of 2004. The averages were based on yield data reported by FASS for 1993-94 through 2003-04 (Table 11). The FASS reports tree yields, as opposed to acre yields. The acre yields used in this report were obtained by multiplying the tree yields (boxes per tree) by the tree densities (trees per acre), by age.

In this study, yields per acre were assumed to more fully reflect the impact of increasing tree densities than yields per tree. The estimated acre yields for the younger age categories capture, to an extent, the impact of increasing tree densities, as these age categories have experienced increasing densities over the years underlying the estimates. Older-age-category acre yields are assumed to be constrained by the limited space in which trees must compete for sunshine, water and nutrients in the soil. Historical acre yields for the older age categories are assumed to reflect the yield potential for these age categories in upcoming years.

It should also be noted that abandonment of grapefruit in 1995-96, 1996-97, 1997-98 and 2000-01 negatively impacted grapefruit boxes of fruit per tree reported by FASS for those seasons. For each age category, FASS boxes of fruit per tree were calculated as that age category's utilized production divided by the number of trees in that age category, including trees that yielded abandoned fruit. Hence, estimates of grapefruit production based on mean FASS yields for the past

decade may understate potential production. To correct for this problem, reported grapefruit yields for the four seasons when abandonment occurred were adjusted upward by multiplying the reported yields times the ratio of potential production (utilized production plus reported abandonment by FASS) to utilized production. Separate adjustments were made for white and colored seedless grapefruit yields.

Round-Orange and Grapefruit Production Estimates

Potential production estimates for oranges and grapefruit were made based on a number of different planting assumptions. Table 12 shows estimates of potential orange production for four planting assumptions—(1) an average planting level based on acres planted from 2001 through 2003, (2) half the average level, (3) twice the average level, and (4) replacement plantings.

Regardless of planting assumption, orange production is estimated at 220.6 and 220.3 million boxes in 2005-06 and 2006-07, respectively, as it takes three years for the assumed newly planted trees to begin bearing fruit for commercial harvesting. (These results are part of the ten-year production trend estimates, and are unreliable as point estimates for the immediate upcoming years due to our lack of knowledge of the effects on yield from the hurricanes.) Afterwards, the projections vary with planting assumption. Assuming the average planting level, orange production increases to 233.0 million boxes in 2014-15. If the planting level is set at twice the average level, production increases to 270.2 million boxes; while the assumption of replacement plantings results in production increasing to 238.5 million boxes in ten years. The assumption of half the average planting level results in production decreasing to 214.4 million boxes in 2014-15. (Future planting rates will depend on upcoming season prices and associated juice inventory levels.)

Confidence intervals for these estimates indicate potentially large variation in production. For example, the 95% confidence interval for the orange production estimates assuming replacement planting levels ranged from ±22% to ±23% of the reported projections depending on season, based on yield variation alone. To illustrate this variation, if 1998-99 yields are used to project 2005-06 orange production, an estimate of 176 million boxes is obtained, while if 1999-00 yields are used an estimate of 248 million boxes results.

As discussed earlier, acre loss rates due to normal attrition (including losses due to citrus canker) and tristeza were assumed in making the orange estimates. However, to the extent citrus canker spreads in upcoming years, acre losses may be greater. Oranges production estimates assuming citrus canker increases the acre loss rates by .5%, 1.0% and 1.5% in 2004-05, 2005-06 and 2006-07 and thereafter, respectively, and replacement planting levels are provided in Table 13. These orange production estimates range from 212.3 to 218.2 million boxes over the ten year projection period or 3 to 20 million boxes less than the replacement orange estimates in Table 12.

What levels of future orange and orange-juice (OJ) demands are needed to be in balance with these estimates of orange production? Table 14 shows several scenarios of Florida OJ availability, movement and carryover (FCPA), for the replacement-planting orange production projections (unadjusted canker loss rate). Over the ten-year projection period, fresh orange utilization is assumed to be at 9.7 million boxes, similar to actual levels in recent years; boxes utilized for processing are converted to single strength equivalent (SSE) gallons using average juice yields over the last four seasons; while Florida OJ imports and miscellaneous supplies are set at the average from 1998-99 to 2003-04. Three different OJ movement assumptions are made—growth in movement over the projection period of 1.0%, 1.5% and 2.0%. For the 1.5% growth assumption,

ending OJ inventories in weeks of supply continue at about the level expected for 2004-05 (22.2 weeks) for several years and then decline to 14.1 weeks in 2014-15. If OJ movement grows by 1.0% (2.0%) ending inventories in 2014-15 are 28.7 weeks (.3 weeks). In the last several years of the projection period, the 2% movement growth scenario is not consistent with the underlying orange production scenario. It is simply provided to show at about what movement level the industry would run out of product (for this scenario, OJ prices would be expected to increase, slowing movement to the point where inventory levels would be acceptable). Thus, for these supply assumptions, the 1.5% growth rate in movement keeps supply and demand in rough balance over the first part of the projection period (over the last several years of the projection period, demand growth out paces supply growth, putting upward pressure on prices); while the 1.0% (2.0%) growth rate would result in an over (under) supply situation with downward (upward) pressure on prices.

U.S. presumed consumption estimates, corresponding to the Florida OJ estimates in Table 14, are shown in Table 15. The Florida inventory and production estimates of Table 14 are combined with a scenario for U.S. OJ imports and exports, and other U.S. OJ production. Per capita U.S. presumed consumption of OJ is estimated to increase from 5.0 to 5.2 SSE gallons from 2004-05 to 2014-15.

Turning to grapefruit, if planting levels were to continue at the average for the past three years, Florida grapefruit production is estimated to be relatively flat over the projection period at 28 to 32 million boxes (Table 16). If planting levels are assumed to be twice (four times) the average, grapefruit production is estimated to increase from 31.6 million boxes in 2005-06 to 34.2 (44.8) million boxes in 2014-15. With Tristeza expected to result in relatively high tree loss rates for the next several years, grapefruit production may decline somewhat for a few years and then recover.

If replacement plantings are assumed, production is estimated to increase to 37.5 million boxes in 2014-15. It is difficult to predict the grapefruit planting level. In some areas of the State such as parts of the Indian River, relatively high land values for alternative use may result in grapefruit acreage being sold for commercial or residential development. Nevertheless, relatively high fresh and processed on-tree prices for the current season and the possibility that prices may continue to be favorable for a while may result in above average grapefruit planting levels. A final scenario with high planting levels in the next few years assuming relatively high prices, followed by declining planting levels in the second half of the projection period assuming prices moderate with growing production is provided (four, three, two and one times the average planting level in 2004-05 and 2005-06, 2006-07 and 2007-08, 2008-09 and 2009-10, and 2010-11 and thereafter, respectively). The estimates for this scenario, referred to as the "phased" scenario, are similar to those for the replacement planting scenario with production reaching 38.6 million boxes in 2014-15.

The confidence intervals for the grapefruit production estimates are also relatively large. For example, the 95% confidence interval for the grapefruit production estimates assuming phased planting levels ranged from ±15% to ±18% of the reported projections depending on season, based on yield variation alone. If 2002-03 yields are used to project 2005-06 grapefruit production, an estimate of 27.5 million boxes is obtained, while if 1997-98 yields are used an estimate of 34.5 million boxes results.

Grapefruit production estimates assuming citrus canker increases the acre loss rates by .5%, 1.0% and 1.5% in 2004-05, 2005-06 and 2006-07 and thereafter, respectively, and phased planting levels are provided in Table 13. These estimates range from 27.6 to 33.5 million boxes over the projection period or .5 to 5.1 million boxes less than the phased grapefruit estimates in Table 16.

Table 17 shows what levels of future grapefruit and grapefruit-juice (GJ) demand are needed to be in balance with the grapefruit production estimates for the phased scenario (unadjusted canker loss rate). Over the projection period, fresh grapefruit utilization is assumed to recover to pre-hurricane levels; boxes utilized for processing are converted to SSE gallons using average juice yields over the last four seasons; and GJ imports are set at 4 million SSE gallons. Three different GJ movement assumptions are made—a base level (Scenario 1), and 1.5% (Scenario 2) and 2.5% (Scenario 3) above the base level. At the end of the 2004-05 season GJ inventories are expected to be historically tight at about 17 million SSE gallons or 11.9 weeks of supply. These compare with 33.3, 30.1 and 26.4 weeks supply in 2001-02, 2002-03 and 2003-04, respectively, prior to the hurricane reduced crop of 2004-05. GJ production over the first half of the projection period is expected to range from 80 to 88 million SSE gallons and then increase to about 110 million SSE gallons by 2014-15. Hence, GJ movement over the projection period is estimated to be much lower than the pre-hurricane levels (e.g., 130 million SSE gallons in 2003-04). The base scenario (Scenario 1) shows a set of relatively low movement estimates. These movement levels result in relatively low ending inventories suggesting that the potential for higher movement is limited. To the extent future movement is higher (Scenarios 2 and 3), ending inventories become progressively tighter. Overall, the estimates in Table 17 show that over the next ten years GJ supplies and consequent movement and inventory levels may be much lower compared to historical levels, suggesting continuation of favorable processed grapefruit on-tree prices.

Orange and Grapefruit Production Estimates by Variety

Oranges

Based on the replacement planting assumption, early and midseason orange production is projected to increase by an average annual rate of 1.2% over the ten-year projection period (Table 18). Late-orange production is projected to increase by an average annual rate of .6% over the projection period. In 2005-06, early and midseason oranges and late oranges are estimated to account for 46.4% and 53.6% of round-orange production, respectively; by 2014-15, these shares are estimated to moderately change to 47.5% for early and midseason oranges and 52.5% for late oranges.

Grapefruit

Based on the phased planting assumption, white seedless grapefruit production is projected to increase by an average annual rate of 1.6% over the projection period, while red seedless grapefruit production is projected to increase by an average annual rate of 2.6% (Table 18). Assuming Tristeza results in relatively high tree loss rates for the next several years, white and red seedless grapefruit production is estimated to decline somewhat for a few years and then recover. Grapefruit production projections for the Indian River versus Interior regions are provided in Table 19.

As discussed above, total GJ supplies may be relatively tight in upcoming years based on the estimates in this report. This tightness is expected for both red and white GJ (Table 20). For red GJ,

in particular, a shortfall in NFC production, indicated by CGJ/CSSJ utilization in the table, may occur.

Specialty Citrus Production Estimates

Specialty citrus production was projected using estimated equations which relate historical production to acres, by age. Potential specialty citrus production is estimated to be relatively flat at 7 to 8 million boxes over the ten-year projection period, assuming replacement planting levels. If average planting levels are assumed, specialty production decreases (Table 21).

Tangerine production is estimated to range from 4.7 to 5.4 million boxes over the next ten years, assuming replacement planting levels; production is estimated to decrease from 5.0 to 4.1 million boxes over this period if the average planting level were to occur. Temple production over the projection period is estimated at under 1 million boxes, while, while tangelo production is estimated to be relatively flat at 1.6 to 1.9 million boxes.

Concluding Comments

Florida's citrus acreage and tree population declined notably in 2004 as a result of high tree loss rates due to diseases such as Tristeza and other factors. Overall, from 2002 to 2004, citrus acreage decreased by 6.1%, with orange, grapefruit and specialty acreage declining by 4.0%,15.6% and 15.8%, respectively. These losses do not take into account the impacts of the 2004 hurricanes. In this report, the acreage and tree loss rates in 2004-05 are assumed to continue at relatively high levels due to the continued impacts of Tristeza and the impacts of the hurricanes. Tristeza is also

assumed to continue to result in above average loss rates for several more years into the future, with its effect tapering off.

The production estimates are based on average yields and indicate the trend in production for the planting and loss assumptions made. The point estimates are not meant as forecasts of production as yields could vary substantially from the average and planting and loss assumptions may not hold. The estimates for 2005-06, in particular, could be significantly different from what actually occurs due to the uncertain impacts of the hurricanes on yield.

Based on average yields and replacement planting levels, orange production is estimated to increase from 220.6 million boxes in 2005-06 to 238.5 million boxes in 2014-15, while grapefruit production is estimated to increase from 29.0 to 31.6 million boxes over the first part of the projection period and then to 38.6 million boxes by the end of the ten-year period; and specialty production is estimated at 7 to 8 million boxes.

TABLES

Table 1. Florida citrus acreage and tree numbers by commercial inventory.

Year of Inventory	Number of Acres	Percent Change from Previous Acre Inventory	Number of Trees	Percent Change from Previous Tree Inventory	Tree Density
	- thousand -	- % -	- million -	- % -	- trees/acre -
1966	858.1	--	66.4	--	77.4
1968	931.2	8.5	74.4	12.0	79.9
1970	941.5	1.1	76.7	3.1	81.5
1972	878.0	-6.7	72.1	-6.0	82.1
1974	864.1	-1.6	71.3	-1.1	82.5
1976	852.4	-1.4	70.5	-1.1	82.7
1978	831.2	-2.5	69.1	-2.0	83.1
1980	845.3	1.7	70.7	2.3	83.6
1982	847.9	8.5	71.6	1.3	84.4
1984	761.4	-10.2	66.0	-7.8	86.7
1986	624.5	-18.0	57.5	-12.9	92.1
1988	697.9	11.8	69.3	20.5	99.3
1990	732.8	5.0	78.9	13.9	107.7
1992	791.3	8.0	92.0	16.6	116.3
1994	853.7	7.9	103.7	12.7	121.5
1996	857.7	.5	107.1	3.2	124.9
1998	845.3	-1.4	107.1	NC	126.7
2000	832.3	-1.5	106.7	-.4	128.2
2002	797.3	-4.2	103.2	-3.3	129.4
2004	748.6	-6.1	97.9	-5.1	130.8

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 2. Florida round-orange acreage and tree numbers by commercial inventory.

Year of Inventory	Number of Acres	Percent Change from Previous Acre Inventory	Number of Trees	Percent Change from Previous Tree Inventory	Tree Density
	- thousand -	- % -	- million -	- % -	- trees/acre -
1966	695.8	--	53.8	--	77.3
1968	713.4	2.5	56.6	5.2	79.3
1970	715.8	.3	57.8	2.1	80.7
1972	659.4	-7.9	53.7	-7.0	81.4
1974	642.4	-2.6	52.5	-2.3	81.7
1976	628.6	-2.1	51.6	-1.8	82.1
1978	616.0	-2.0	50.8	-1.5	82.5
1980	627.2	1.8	52.0	2.2	82.9
1982	636.9	1.5	53.5	2.9	84.0
1984	574.0	-9.9	49.9	-6.8	86.9
1986	466.3	-18.8	43.5	-12.9	93.3
1988	536.7	15.1	54.5	25.5	101.5
1990	564.8	5.2	62.6	14.9	110.8
1992	608.6	7.8	72.8	16.3	119.6
1994	653.4	7.4	81.6	12.1	124.9
1996	656.6	.5	84.2	3.1	128.2
1998	658.4	.3	85.4	1.5	129.8
2000	665.5	1.1	87.2	2.1	131.0
2002	648.8	-2.5	85.8	-1.7	132.2
2004	622.8	-4.0	83.0	-3.2	133.2

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 3. Florida grapefruit acreage and tree numbers by commercial inventory.

Year of Inventory	Number of Acres	Percent Change from Previous Acre Inventory	Number of Trees	Percent Change from Previous Tree Inventory	Tree Density
	- thousand -	- % -	- million -	- % -	- trees/acre -
1966	103.2	--	7.10	--	68.8
1968	119.9	16.2	8.50	19.7	70.9
1970	124.1	3.5	8.92	4.9	71.9
1972	124.1	NC	9.01	.9	72.6
1974	130.3	5.0	9.65	7.0	74.1
1976	137.9	5.8	10.40	7.8	75.4
1978	136.3	-1.2	10.41	1.3	76.4
1980	139.9	2.6	10.77	3.4	77.0
1982	139.9	NC	10.83	.6	77.4
1984	134.7	-3.7	10.58	-2.3	78.5
1986	117.8	-12.5	9.62	-9.1	81.7
1988	119.6	1.5	10.08	4.7	84.3
1990	125.3	4.8	11.19	11.0	89.3
1992	135.2	7.9	13.12	17.2	97.0
1994	146.9	8.7	15.00	14.3	102.1
1996	144.4	-1.7	15.12	.8	104.7
1998	132.8	-8.0	14.08	-6.9	106.0
1999	121.3	-8.7	12.96	-7.9	106.9
2000	118.1	-2.6	12.67	-2.3	107.2
2002	105.5	-10.7	11.33	-10.6	107.4
2004	89.0	-15.6	9.75	-14.0	109.5

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 4. Florida specialty citrus[a] acreage and tree numbers by commercial inventory.

Year of Inventory	Number of Acres	Percent Change from Previous Acre Inventory	Number of Trees	Percent Change from Previous Tree Inventory	Tree Density
	- acres -	- % -	- million -	- % -	- trees/acre -
1970	82,767	--	7.6	--	91.48
1972	77,042	-6.9	7.1	-5.8	92.60
1974	74,446	-3.4	7.0	-2.1	93.84
1976	67,485	-9.4	6.2	-10.9	92.24
1978	62,723	-7.1	5.8	-7.1	92.23
1980	60,360	-3.8	5.6	-3.9	92.07
1982	55,163	-8.6	5.1	-8.8	91.88
1984	34,619	-37.2	3.2	-37.7	91.17
1986	30,155	-12.9	2.9	-7.7	96.60
1988	30,284	.4	3.0	4.1	100.09
1990	33,347	10.1	3.7	21.1	110.04
1992	37,507	12.5	4.6	24.0	121.36
1994	45,768	22.0	5.9	30.4	129.69
1996	50,950	11.3	7.0	17.1	136.40
1998	48,556	-4.7	6.7	-3.1	138.70
2000	45,355	-6.6	6.3	-6.4	139.00
2002	39,844	-12.2	5.6	-11.0	140.80
2004	33,547	-15.8	4.8	-15.0	142.14

[a]Temples, tangelos and tangerines; fallglo tangerines not included prior to 1996.

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 5. Age distribution of Florida round-orange trees by year of inventory.

Year of Inventory	Tree Age						Total Trees	Bearing Trees
	≤2	3-5	6-8	9-13	14-23	≥24		
	- % -						- - - - thousand - - - -	
1970	9.1	20.6	17.6	14.8	13.4	24.4	57,801.5	49,404.2
1972	5.5	11.1	20.2	22.0	14.1	27.0	53,731.1	49,786.5
1974	4.0	5.9	16.9	27.8	16.9	28.4	52,521.7	49,466.9
1976	4.0	4.8	7.5	29.7	24.1	29.8	51,595.3	48,373.8
1978	5.2	4.5	4.7	23.4	31.5	30.6	50,843.2	47,454.5
1980	7.2	4.7	3.8	13.0	39.1	32.2	51,977.8	47,366.3
1982	12.0	5.1	3.7	7.2	40.2	31.8	53,504.7	46,078.5
1984	17.5	7.1	4.5	5.8	35.2	29.9	49,884.7	39,777.7
1986	20.0	12.4	6.1	7.1	28.7	25.7	43,461.4	32,708.0
1988	30.7	13.9	7.8	5.7	17.7	24.1	54,536.6	35,537.3
1990	35.1	14.3	10.7	6.7	10.0	23.3	62,613.4	40,666.0
1992	31.9	23.4	9.9	8.4	6.7	19.7	72,826.3	49,577.1
1994	24.4	24.6	16.7	11.0	6.5	16.9	81,614.4	61,707.7
1996	10.5	26.9	24.0	14.7	8.2	15.7	84,155.4	75,286.6
1998	8.0	15.5	26.7	23.0	11.5	15.3	85,430.6	78,586.5
2000	9.7	7.2	21.4	33.7	13.6	14.4	87,200.1	78,721.0
2002	9.5	8.6	9.3	37.0	22.5	13.1	85,751.1	77,595.9
2004	9.1	9.4	8.1	29.0	32.4	12.0	82,987.5	75,391.7

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 6. Age distribution of Florida grapefruit trees by year of inventory.

Year of Inventory	Tree Age						Total Trees	Bearing Trees
	≤2	3-5	6-8	9-13	14-23	≥24		
	%						thousand	
1970	15.1	21.7	4.2	3.9	14.1	41.1	8,925.4	6,746.5
1972	6.9	21.9	14.0	5.5	10.6	41.1	9,012.7	8,032.1
1974	11.5	8.2	25.1	7.6	8.1	39.4	9,647.2	8,362.6
1976	13.9	7.9	13.3	20.8	6.8	37.2	10,398.1	8,598.9
1978	8.5	13.8	6.8	28.9	7.1	34.9	10,412.5	8,969.7
1980	8.9	10.5	10.7	21.6	15.8	32.5	10,768.7	9,586.2
1982	7.5	7.4	12.8	12.6	29.1	30.6	10,833.2	9,753.9
1984	11.4	6.7	7.5	15.7	32.1	26.7	10,582.9	9,192.8
1986	9.7	7.8	7.9	17.0	35.7	22.0	9,624.0	8,367.7
1988	11.0	9.7	6.5	13.8	38.3	20.7	10,081.2	8,654.7
1990	21.8	6.2	8.0	9.1	31.4	23.5	11,193.2	8,748.5
1992	27.2	14.0	5.5	8.6	19.1	25.6	13,119.2	9,556.9
1994	23.3	21.3	7.6	8.3	16.0	23.5	15,004.0	11,514.1
1996	9.8	25.3	17.8	8.2	15.3	23.6	15,116.9	13,632.8
1998	4.3	16.7	24.6	13.8	14.8	25.8	14,079.1	13,469.6
2000	3.7	6.2	22.7	27.2	13.6	26.7	12,668.6	12,204.1
2002	4.1	4.7	9.7	38.3	16.7	26.5	11,329.2	10,869.7
2004	8.0	4.0	4.9	32.1	27.0	24.1	9,748.3	8,967.9

SOURCE: Florida Agricultural Statistics Service, *Commercial Citrus Inventory,* various issues.

Table 7. Age distribution of Florida grapefruit trees by marketing district and variety, 2004 inventory.

District/Variety	Tree Age						Total Trees
	≤2	3-5	6-8	9-13	14-23	≥24	
	- - - - - - - - - - - - - - - - - - %[a] - - - - - - - - - - - - - - - - -						- thousand -
Indian River							
White Seedless[b]	9.8	3.8	9.8	27.4	15.9	33.4	2,614
Red & Pink Seedless	9.7	3.7	3.5	26.1	33.6	23.3	4,432
TOTAL	**9.8**	**3.7**	**5.8**	**26.6**	**27.0**	**27.1**	**7,047**
Interior							
White Seedless[b]	2.5	2.3	4.0	32.6	24.2	34.5	912
Red & Pink Seedless	4.0	5.8	1.6	53.2	28.5	6.9	1,790
TOTAL	**3.4**	**4.6**	**2.4**	**46.3**	**27.0**	**16.2**	**2,702**

[a]Percentages may not total 100 due to rounding.

[b]Includes seedy grapefruit.

SOURCE: Florida Agricultural Statistics Service, *2004 Commercial Citrus Inventory.*

Table 8. Age distribution of Florida specialty citrus trees by variety, 2004 inventory.

Variety	Tree Age						Total Trees
	≤2	3-5	6-8	9-13	14-23	≥24	
	- % -						- thousand -
Temples	4.8	4.4	7.9	10.6	19.6	52.7	413.0
Tangelos	6.9	5.7	7.2	35.4	26.8	18.0	1,129.6
Tangerines	3.7	7.0	8.7	52.1	24.1	4.4	3,225.7
TOTAL	**4.5**	**6.5**	**8.3**	**44.5**	**24.4**	**11.8**	**4,768.3**

SOURCE: Florida Agricultural Statistics Service, *2004 Commercial Citrus Inventory.*

Table 9. Average annual citrus plantings, by variety, 1997 through 2003.

Variety[a]	2000 Inventory[b]		2002 Inventory[b]		2004 Inventory[b]	
	1000 Trees	Acres	1000 Trees	Acres	1000 Trees	Acres
Oranges						
Early & Midseason	1,044	7,846	1,195	9,029	1,250	9,655
Late	1,771	13,194	1,518	11,578	1,272	9,612
TOTAL	**2,815**	**21,040**	**2,713**	**20,607**	**2,522**	**19,267**
Grapefruit						
Indian River						
White Seedless[c]	56	525	53	496	85	769
Red & Pink Seedless	52	464	68	579	144	1,217
Interior						
White Seedless[c]	8	86	7	78	7	71
Red & Pink Seedless	39	276	26	231	24	186
TOTAL	**155**	**1,351**	**154**	**1,384**	**260**	**2,243**
Specialty						
Temples	16	111	6	45	8	62
Tangelos	17	136	10	79	32	259
Tangerines	84	565	55	372	39	279
TOTAL	**110**	**757**	**71**	**496**	**79**	**600**

[a]Orange trees and acres listed as "unidentified" by the FASS were allocated between early and midseason oranges, late orange, Temples and tangelos in the same proportions as the identified proportions in calculating the averages. Grapefruit trees and acres listed as "unidentified" by the FASS were allocated between grapefruit varieties in the same proportions as the identified proportions in calculating the averages.

[b] Calculated as non-bearing trees or acres divided by 3 (years set for 2000: 1997, 1998 and 1999; years set for 2002: 1999, 2000 and 2001; years set for 2004: 2001, 2002 and 2003).

[c] Includes seedy.

Table 10. Historical citrus tree- and acreage-loss rates, by variety.[a]

Variety	Annual Loss Rate[b]									
	Trees					Acres				
	94-96	96-98	98-00	00-02	02-04	94-96	96-98	98-00	00-02	02-04
	- % -									
ORANGES[c]										
Early & Midseason	1.2	1.9	2.3	3.8	4.3	2.2	2.3	2.7	4.2	4.8
Late	1.2	1.9	2.3	3.8	4.3	2.2	2.3	2.7	4.2	4.8
GRAPEFRUIT[d]										
Indian River										
White Seedless[e]	1.5	3.0	4.8	5.8	9.5	2.4	3.5	5.5	6.1	10.2
Red & Pink Seedless	1.5	3.0	4.8	5.8	9.5	2.4	3.5	5.5	6.1	10.2
Interior										
White Seedless[e]	2.3	7.4	9.3	9.4	10.8	2.8	7.9	9.6	8.8	11.7
Red & Pink Seedless	2.3	7.4	9.3	9.4	10.8	2.8	7.9	9.6	8.8	11.7
SPECIALTY[f]										
Temples	3.2	4.9	4.8	10.8	16.8	3.9	5.7	5.3	12.2	15.4
Tangelos	4.3	5.2	5.6	8.3	8.2	4.7	5.6	5.6	9.2	10.3
Tangerines	2.1	4.1	5.6	6.6	9.6	3.0	4.5	5.5	6.7	9.8

[a]Losses are due to both tristeza and normal attrition. In 1999-2000, an estimated 12.0 million orange trees and 5.3 million grapefruit trees were on sour orange rootstock. From 1999 to 2004, an estimated 8.8 million orange trees and 2.8 million grapefruit trees were lost to tristeza, leaving an estimated 3.2 million orange trees and 2.5 million grapefruit trees for phasing out in the scenarios in this report.

[b]Based on 1994, 1996, 1998, 2000, 2002 and 2004 *Commercial Citrus Inventories*.

[c]One loss rate for round oranges (early and midseason and late oranges) was estimated due to the unidentified (by variety) young round-orange trees.

[d]One loss rate for seedless grapefruit was estimated due to the unidentified (by variety) young grapefruit trees.

[e]Includes seedy for the 1998 to 2004 period.

[f]Loss rates based on bearing trees or acres due to unidentified nonbearing specialty citrus.

Table 11. Average orange and grapefruit yields by age for 1993-94 through 2003-04 seasons.

Variety/District	Tree Age				
	3-5	6-8	6-13	14-23	24+
	- - - - - - - - - - estimated 1-3/5 bushel boxes per acre[a] - - - - - - - - - - - -				
ORANGES					
Early & Midseason					
Southern	163	344	470	487	489
West	155	323	465	543	553
Indian River	99	216	275	314	305
Central	159	331	473	602	617
Valencia					
Southern	143	273	331	364	450
West	203	324	382	389	437
Indian River	100	186	265	270	259
Central	131	259	346	480	570
GRAPEFRUIT					
White Seedless					
Southern	248	469	450	535	552
West	454	528	492	519	572
Indian River	181	358	420	475	478
Central	267	406	545	764	976
Red & Pink Seedless					
Southern	358	513	571	571	530
West	260	399	482	382	650
Indian River	181	338	427	460	447
Central	186	383	593	687	742

[a]Estimated as average trees per acre, based on data reported by FASS in various *Commercial Citrus Inventories*, times average boxes per tree, based on data reported by FASS in various *Citrus Summaries*. (Boxes per tree by age were obtained by linear interpolation of FASS yields for broad-age categories.) Yields estimated for 22 ages—ages 3 through 23 and 24 plus; age category yields in table are based on 2004 acre distribution.

Table 12. Orange production estimates[a].

Season	Planting Assumption							
	Average[b]		Half Average		Twice Average		Replacement	
	Prod.	Acre Loss Rate[c]	Prod.	Acre Loss Rate[c]	Prod.	Acre Loss Rate[c]	Prod.	Acre Loss Rate[c]
	million boxes	- % -	million boxes	- % -	million boxes	- % -	million boxes	- % -
2005-06	220.6	-4.4	220.6	-4.4	220.6	-4.3	220.6	-4.3
2006-07	220.3	-3.8	220.3	-3.9	220.3	-3.6	220.3	-3.7
2007-08	221.4	-3.2	220.6	-3.3	222.8	-3.0	222.2	-3.1
2008-09	223.8	-2.9	221.6	-3.1	228.2	-2.6	226.0	-2.8
2009-10	226.4	-2.8	222.3	-3.0	234.7	-2.5	229.9	-2.8
2010-11	228.8	-2.8	222.2	-3.1	241.8	-2.5	233.4	-2.8
2011-12	230.2	-2.9	220.9	-3.1	248.8	-2.5	235.6	-2.8
2012-13	231.7	-2.9	219.4	-3.2	256.2	-2.5	237.4	-2.9
2013-14	232.4	-2.9	217.1	-3.2	263.1	-2.5	238.1	-2.9
2014-15	233.0	-2.9	214.4	-3.3	270.2	-2.5	238.5	-2.9

[a] Assumes average yields.

[b] Average from 2001-2003.

[c] Loss rate due to normal attrition and tristeza.

Table 13. Estimated orange and grapefruit production, assuming increased canker losses[a].

Season	Oranges[b]		Grapefruit[c]	
	Production	Acre Loss Rate	Production	Acre Loss Rate
	million boxes	- % -	million boxes	- % -
2005-06	217.2	-5.3	31.1	-12.8
2006-07	213.5	-5.1	28.3	-9.2
2007-08	212.3	-4.5	27.6	-6.1
2008-09	213.3	-4.2	28.4	-4.4
2009-10	214.9	-4.1	29.6	-3.7
2010-11	216.6	-4.1	30.8	-3.5
2011-12	217.4	-4.1	32.0	-3.5
2012-13	218.2	-4.2	32.9	-3.5
2013-14	218.2	-4.2	33.4	-3.5
2014-15	218.0	-4.2	33.5	-3.6

[a] Assumes loss rates are .5%, 1.0% and 1.5% greater in 2004-05, 2005-06 and 2006-07 and thereafter, respectively, than the rates underlying the orange estimates in Table 12 and the grapefruit estimates in Table 15.

[b] Assumes average yields and replacement plantings.

[c] Assumes average yields and phased plantings.

Table 14. Florida orange-juice production, availability and movement scenarios.

Season	Oranges				Orange Juice (FCPA)						Scenario		
	Production	Utilization		Juice Yield[a]	Production[b]	Beginning Inventory	Imports[c]	Availability	Movement[d]	Ending Inventory[d]	1[d]	2[e]	3[f]
		Fresh	Processed										
	million boxes			SSE gal/box	million SSE gallons						ending inventory in weeks		
2001-02	230.0	9.4	220.6	6.30	1,415.0	670.4	133.7	2,219.1	1,553.2	665.9	22.3	22.3	22.3
2002-03	203.0	9.7	193.3	6.14	1,208.1	665.9	148.2	2,022.2	1,341.7	680.5	26.4	26.4	26.4
2003-04	242.0	9.7	232.3	6.18	1,452.4	680.5	96.4	2,229.3	1,438.6	790.7	29.1	29.1	29.1
2004-05p	162.0	7.7	154.3	6.19	967.1	794.8	180.3	1,942.2	1,361.7	580.5	22.2	22.2	22.2
2005-06e	220.6	9.7	210.9	6.20	1,325.0	580.5	165.2	2,070.7	1,460.2	610.6	21.7	21.4	22.1
2006-07e	220.3	9.7	210.6	6.20	1,323.3	610.6	165.2	2,099.1	1,482.1	617.0	21.6	20.7	22.6
2007-08e	222.2	9.7	212.5	6.20	1,334.9	617.0	165.2	2,117.1	1,504.3	612.8	21.2	19.4	23.0
2008-09e	226.0	9.7	216.3	6.20	1,358.5	612.8	165.2	2,136.5	1,526.9	609.6	20.8	17.9	23.7
2009-10e	229.9	9.7	220.2	6.20	1,383.0	609.6	165.2	2,157.8	1,549.8	608.0	20.4	16.2	24.7
2010-11e	233.4	9.7	223.7	6.20	1,404.4	608.0	165.2	2,177.7	1,573.0	604.6	20.0	14.3	26.0
2011-12e	235.6	9.7	225.9	6.20	1,418.2	604.6	165.2	2,188.0	1,596.6	591.4	19.3	11.8	27.1
2012-13e	237.4	9.7	227.7	6.20	1,429.3	591.4	165.2	2,185.9	1,620.6	565.4	18.1	8.8	28.0
2013-14e	238.1	9.7	228.4	6.20	1,433.8	565.4	165.2	2,164.3	1,644.9	519.4	16.4	5.0	28.6
2014-15e	238.5	9.7	228.8	6.20	1,436.1	519.4	165.2	2,120.7	1,669.6	451.1	14.1	0.3	28.7

[a] Weighted average of FCOJ and NFC.

[b] Includes production from specialty citrus. From 2005-06 through 2014-15, 2.7 million boxes of specialty citrus are assumed to be utilized in producing OJ.

[c] Includes other miscellaneous supplies; annual imports from 2005-06 and thereafter are set at the average from 1998-99 through 2002-03.

[d] Assumes 2005-06 movement is 1.5% above the 2003-04 level; movement in 2006-07 and thereafter is assumed to continue to grow by 1.5%.

[e] Assumes 2005-06 movement is 2.0% above the 2003-04 level; movement in 2006-07 and thereafter is assumed to continue to grow by 2.0%.

[f] Assumes 2005-06 movement is 1.0% above the 2003-04 level; movement in 2006-07 and thereafter is assumed to continue to grow by 1.0%.

Table 15. U.S. orange-juice supply and presumed consumption.

Season	Florida		Other U.S. Production[a]	United States		Florida Ending Inventory	Consumption	
	Beginning Inventory	Production		Imports[b]	Exports[c]		Presumed	Per Capita
	million SSE gallons							- gallons -
2001–02	670.4	1,415.0	32.4	188.8	181.2	665.9	1,459.6	5.1
2002-03	665.9	1,208.1	53.2	290.9	104.8	680.5	1,432.8	4.9
2003-04	680.5	1,452.4	32.9	222.3	123.0	790.7	1,474.4	5.0
2004-05p	794.8	967.1	48.4	317.0	104.0	580.5	1,442.7	4.8
2005-06e	580.5	1,325.0	41.7	285.4	120.0	610.6	1,502.1	5.0
2006-07e	610.6	1,323.3	41.7	285.4	120.0	617.0	1,524.0	5.0
2007-08e	617.0	1,334.9	41.7	285.4	120.0	612.8	1,546.2	5.0
2008-09e	612.8	1,358.5	41.7	285.4	120.0	609.6	1,568.8	5.0
2009-10e	609.6	1,383.0	41.7	285.4	120.0	608.0	1,591.7	5.1
2010-11e	608.0	1,404.4	41.7	285.4	120.0	604.6	1,614.9	5.1
2011-12e	604.6	1,418.2	41.7	285.4	120.0	591.4	1,638.5	5.1
2012-13e	591.4	1,429.3	41.7	285.4	120.0	565.4	1,662.5	5.1
2013-14e	565.4	1,433.8	41.7	285.4	120.0	519.4	1,686.8	5.1
2014-15e	519.4	1,436.1	41.7	285.4	120.0	451.1	1,711.5	5.2

[a]Other U.S. production from 2005-06 and thereafter are set at the average from 2001-02 through 2004-05.
[b]Annual imports from 2005-06 and thereafter are set at the average from 1998-99 through 2002-03.
[c]Annual exports from 2005-06 and thereafter based on recent export levels.

Table 16. Grapefruit production estimates[a].

Season	Planting Assumption									
	Average[b]		Twice Average		Four Times Average		Replacement		Phased[d]	
	Production	Acre Loss Rate[c]	Production	Acre Loss Rate[c]	Production	Acre Loss Rate[c]	Production	Acre Loss Rate[c]	Production	Acre Loss Rate[c]
	million boxes	- % -	million boxes	- % -	million boxes	- % -	million boxes	- % -	million boxes	- % -
2005-06	31.6	-12.9	31.6	-12.5	31.6	-11.9	31.6	-11.9	31.6	-11.9
2006-07	29.2	-9.2	29.2	-8.7	29.2	-7.8	29.2	-7.7	29.2	-7.8
2007-08	28.3	-5.8	28.5	-5.3	29.0	-4.6	29.1	-4.6	29.0	-4.7
2008-09	28.1	-3.8	28.8	-3.4	30.2	-2.8	30.7	-3.0	30.2	-2.9
2009-10	28.3	-2.9	29.6	-2.5	32.1	-2.1	32.6	-2.3	31.9	-2.2
2010-11	28.5	-2.6	30.5	-2.2	34.4	-1.8	34.3	-2.1	33.7	-2.0
2011-12	28.7	-2.5	31.5	-2.1	36.9	-1.7	35.6	-2.1	35.4	-2.0
2012-13	28.9	-2.5	32.4	-2.1	39.6	-1.7	36.6	-2.2	36.9	-2.0
2013-14	28.9	-2.5	33.3	-2.1	42.2	-1.7	37.2	-2.2	37.9	-2.1
2014-15	28.9	-2.5	34.2	-2.1	44.8	-1.6	37.5	-2.3	38.6	-2.1

[a] Assumes average yields.

[b] Average from 2001-2003.

[c] Loss rate due to normal attrition and tristeza.

[d] Four, three, two and one times the average planting level in 2004-05 and 2005-06, 2006-07 and 2007-08, 2008-09 and 2009-10, and 2010-11 and thereafter, respectively.

Table 17. Florida grapefruit-juice production, availability and movement scenarios.

Season	Grapefruit				Grapefruit Juice					Scenario		
	Production	Utilization		Juice Yield[a]	Production[b]	Beginning Inventory	Availability	Movement[c]	Ending Inventory[c]	1[c]	2[d]	3[e]
		Fresh	Processed									
	- - - - - million boxes - - - - -			SSE gal./box	- - - - - - - - - - million SSE gallons - - - - - - - - - -					ending inventory in weeks		
2001-02	46.7	17.4	29.3	5.09	149.1	76.5	225.6	137.5	88.1	33.3	33.3	33.3
2002-03	38.7	15.6	23.1	4.97	114.8	88.1	202.9	128.6	74.3	30.0	30.0	30.0
2003-04	40.9	16.6	24.3	4.96	120.5	74.3	194.8	130.1	64.7	26.4	26.4	26.4
2004-05p	13.0	9.1	3.9	5.13	28.0	65.0	93.0	75.7	17.3	11.9	11.9	11.9
2005-06e	31.6	15.2	16.4	5.04	86.8	17.3	104.1	83.7	20.4	12.6	11.7	11.1
2006-07e	29.2	14.0	15.2	5.04	80.5	20.4	100.8	79.7	21.1	13.8	12.0	10.8
2007-08e	29.0	13.9	15.1	5.04	79.9	21.1	101.0	79.7	21.3	13.9	11.4	9.7
2008-09e	30.2	14.5	15.7	5.04	83.2	21.3	104.5	81.7	22.8	14.5	11.2	9.1
2009-10e	31.9	15.3	16.6	5.04	87.6	22.8	110.4	83.7	26.7	16.6	12.6	10.0
2010-11e	33.7	16.2	17.6	5.04	92.5	26.7	119.2	88.7	30.5	17.9	13.3	10.3
2011-12e	35.4	17.0	18.5	5.04	96.9	30.5	127.4	93.7	33.7	18.7	13.6	10.2
2012-13e	36.9	17.2	19.7	5.04	103.4	33.7	137.0	98.7	38.3	20.2	14.5	10.8
2013-14e	37.9	17.4	20.6	5.04	107.6	38.3	145.9	103.7	42.2	21.2	15.0	10.9
2014-15e	38.6	17.6	21.0	5.04	109.9	42.2	152.1	108.7	43.4	20.7	14.1	9.7

[a] Weighted average of FCGJ and CGJ.

[b] Includes imports and miscellaneous supplies; assumes imports of 4 million SSE gallons from 2005-06 and thereafter.

[c] Base movement scenario.

[d] Assumes movement in 2005-06 and thereafter is 1.5% above that in Scenarios 1.

[e] Assumes movement in 2005-06 and thereafter is 2.5% above that in Scenarios 1.

Table 18. Estimated round-orange and grapefruit production by variety.

Season	Oranges[a]					Grapefruit[b]				
	Early & Midseason	Late	Total[c]	95% Confidence Interval[c]		White Seedless[d]	Red & Pink Seedless	Total	95% Confidence Interval[c]	
				Lower	Upper				Lower	Upper
	million boxes									
2005-06	102.3	118.2	220.6	172.7	268.5	12.0	19.6	31.6	26.7	36.5
2006-07	102.7	117.6	220.3	171.7	268.9	10.9	18.3	29.2	24.8	33.5
2007-08	104.0	118.2	222.2	172.9	271.4	10.7	18.3	29.0	24.4	33.6
2008-09	106.1	119.9	226.0	175.3	276.6	11.1	19.1	30.2	25.1	35.3
2009-10	108.3	121.6	229.9	177.9	281.9	11.7	20.2	31.9	26.5	37.3
2010-11	110.2	123.1	233.4	180.8	286.0	12.4	21.4	33.7	27.9	39.6
2011-12	111.7	123.9	235.6	182.8	288.4	13.0	22.5	35.4	29.2	41.7
2012-13	112.7	124.7	237.4	184.9	289.9	13.5	23.4	36.9	30.5	43.3
2013-14	113.2	124.9	238.1	186.0	290.2	13.7	24.2	37.9	31.6	44.3
2014-15	113.4	125.0	238.5	186.4	290.6	13.8	24.8	38.6	32.3	44.9

[a] Assumes average yields and replacement plantings.

[b] Assumes average yields and phased plantings (four, three, two and one times the average planting level in 2004-05 and 2005-06, 2006-07 and 2007-08, 2008-09 and 2009-10, and 2010-11 and thereafter, respectively).

[c] Due to yield variation only.

[d] Includes seedy grapefruit.

Table 19. Indian River versus Interior estimated grapefruit production[a].

Season	Average Plantings						Phased Plantings[b]					
	Indian River			Interior			Indian River			Interior		
	White[c]	Red	Total	White[c]	Red	Total	White[c]	Red	Total	White[c]	Red	Total
	million boxes											
2005-06	7.8	12.4	20.2	4.2	7.2	11.4	7.8	12.4	20.2	4.2	7.2	11.4
2006-07	7.2	11.4	18.7	3.6	6.9	10.5	7.2	11.4	18.7	3.6	6.9	10.5
2007-08	7.1	11.1	18.2	3.4	6.7	10.1	7.3	11.5	18.8	3.4	6.8	10.2
2008-09	7.2	11.2	18.3	3.2	6.6	9.8	7.8	12.3	20.0	3.3	6.9	10.2
2009-10	7.3	11.3	18.7	3.1	6.5	9.7	8.4	13.2	21.6	3.3	7.0	10.3
2010-11	7.4	11.6	19.0	3.1	6.5	9.5	9.1	14.3	23.4	3.3	7.1	10.4
2011-12	7.5	11.8	19.4	3.0	6.4	9.4	9.7	15.3	25.0	3.2	7.2	10.4
2012-13	7.6	12.1	19.7	2.9	6.3	9.2	10.3	16.2	26.5	3.2	7.2	10.4
2013-14	7.6	12.3	19.9	2.8	6.3	9.0	10.6	17.0	27.6	3.1	7.2	10.4
2014-15	7.6	12.5	20.1	2.7	6.1	8.8	10.8	17.6	28.4	3.0	7.2	10.2

[a] Assumes average yields.

[b] Four, three, two and one times the average planting level in 2004-05 and 2005-06, 2006-07 and 2007-08, 2008-09 and 2009-10, and 2010-11 and thereafter, respectively.

[c] Includes seedy grapefruit.

Table 20. White and red seedless grapefruit utilization scenarios.

Season	Crop			Fresh			Total Processed			FCGJ Processed			CGJ/CSSGJ Processed		
	White[a]	Red	Total	White[a]	Red	Total	White[a]	Red	Total	White[a]	Red	Total	White[a]	Red	Total
	million boxes														
1999-00	21.5	31.9	53.4	4.3	13.9	18.2	17.2	18.0	35.2	13.5	10.5	24.1	3.7	7.4	11.1
2000-01	18.7	27.3	46.0	4.0	13.5	17.5	14.7	13.8	28.5	12.6	8.6	21.2	2.1	5.2	7.3
2001-02	18.9	27.8	46.7	3.5	13.9	17.4	15.4	13.9	29.3	13.0	8.7	21.7	2.3	5.3	7.6
2002-03	16.2	22.5	38.7	3.2	12.4	15.6	13.0	10.1	23.1	9.8	6.2	16.0	3.2	3.9	7.2
2003-04	15.9	25.0	40.9	3.3	13.4	16.6	12.6	11.6	24.3	10.5	6.7	17.2	2.2	4.9	7.1
2004-05p	3.0	10.0	13.0	1.4	7.7	9.1	1.6	2.3	3.9	0.5	0.1	0.6	1.1	2.2	3.3
2005-06e	12.0	19.6	31.6	3.0	12.2	15.2	9.0	7.5	16.4	7.3	4.4	11.7	1.7	3.1	4.7
2006-07e	10.9	18.3	29.2	3.0	11.0	14.0	7.9	7.3	15.2	6.4	4.4	10.8	1.5	2.9	4.4
2007-08e	10.7	18.3	29.0	3.0	10.9	13.9	7.7	7.4	15.1	6.3	4.5	10.7	1.4	2.9	4.3
2008-09e	11.1	19.1	30.2	3.0	11.5	14.5	8.1	7.6	15.7	6.6	4.6	11.2	1.5	3.0	4.5
2009-10e	11.7	20.2	31.9	3.0	12.3	15.3	8.7	7.9	16.6	7.1	4.8	11.8	1.6	3.2	4.8
2010-11e	12.4	21.4	33.7	3.0	13.2	16.2	9.4	8.2	17.6	7.6	4.9	12.5	1.7	3.3	5.0
2011-12e	13.0	22.5	35.4	3.0	14.0	17.0	10.0	8.5	18.5	8.1	5.0	13.2	1.8	3.4	5.3
2012-13e	13.5	23.4	36.9	3.0	14.2	17.2	10.5	9.3	19.7	8.5	5.5	14.1	1.9	3.7	5.7
2013-14e	13.7	24.2	37.9	3.0	14.4	17.4	10.7	9.8	20.6	8.7	5.9	14.7	2.0	3.9	5.9
2014-15e	13.8	24.8	38.6	3.0	14.6	17.6	10.8	10.2	21.0	8.8	6.2	15.0	2.0	4.0	6.0

[a] Includes seedy.

Table 21. Estimated specialty citrus production by variety.[a]

Season	Planting Assumptions							
	Replacement[b]				Average[c]			
	Temples	Tangelos	Tangerines	Total	Temples	Tangelos	Tangerines	Total
	million boxes							
2005-06	.9	1.8	5.0	7.7	.9	1.8	5.0	7.7
2006-07	.9	1.7	4.8	7.4	.9	1.7	4.8	7.4
2007-08	.8	1.7	4.7	7.2	.8	1.7	4.6	7.1
2008-09	.8	1.7	4.7	7.2	.7	1.6	4.5	6.8
2009-10	.8	1.8	4.8	7.4	.7	1.6	4.4	6.7
2010-11	.8	1.8	5.0	7.6	.7	1.6	4.3	6.6
2011-12	.8	1.8	5.1	7.7	.6	1.6	4.3	6.5
2012-13	.8	1.9	5.2	7.9	.6	1.6	4.2	6.4
2013-14	.8	1.9	5.3	8.0	.6	1.6	4.2	6.4
2014-15	.8	1.9	5.4	8.1	.6	1.6	4.1	6.3

[a] Acre-loss rates for Temples are assumed to decline from 12% to 6% from 2004-05 to 2010-11 and thereafter. Acre-loss rates for Tangelos and tangerines are assumed to decline from 10% to 4% from 2004-05 to 2010-11 and thereafter.

[b] Acre plantings are assumed to be equal to acre losses.

[c] Average acres planted from 2001 to 2003.