Florida Citrus Production Trends 2012-13 Through 2020-21

Economic and Market Research Department
Florida Department of Citrus

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Introduction

This report provides production projections for Florida round oranges, grapefruit and specialty citrus for the 2012-13 through 2020-21 seasons. Production in upcoming years will depend on a number of factors difficult to predict. Important assumptions are made on acre-loss rates, planting rates and yields per acre. Citrus diseases, notably greening and canker, are key factors that will impact production. Although uncertainty exists on greening's impact over the projection period, significant progress is being made in controlling this disease, an important factor considered in developing the scenarios in this report.

The production projections are based on the Florida Agricultural Statistics Service (FASS) commercial citrus inventory released in September, 2010. The inventory reports number of trees and acres, by age, 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. Future production is estimated by applying average yields to projected acreage, by age.

The projections in this report are intended to indicate the trends in production as opposed to production in any given season. The same average yields, by age, are used in estimating production in each season to obtain the trend (many factors determine yields in a given season, and this analysis does not attempt to estimate season-specific yields) . Yields, however, can vary significantly from year to year (e.g., for oranges, the 95% confidence interval is about +/- 20% around the trend based on yield variation alone). Hence, for each of the upcoming seasons considered, actual yields could be significantly different than the average yields used here, with the result that the season's production

projection in this report may be significantly different than the actual production that occurs. Given this issue, production projections are not provided for the upcoming 2011-12 season. The first forecasts for 2011-12 will be made in October, 2011, by the USDA, FASS.

HLB Background and Update

The citrus industry in Florida, as well as a number of other citrus-growing regions in the world, including Brazil, have been struggling with the citrus disease Huanglongbing (HLB) or greening. This disease eventually kills citrus trees and has the potential to devastate the Florida citrus industry. HLB infection rates vary significantly across regions in Florida with near 100% infection in some areas and relatively little infection in other areas. An industry estimate of the statewide incidence of HLB in 2009 was 8% to 9%, but the current incidence could be higher, around 18%.[1] Major research on HLB is ongoing, and grower practices are evolving as more is learned about the disease. The ultimate goal is to develop disease-resistant trees, but it is assumed in this report that fully achieving this goal, including supplying resistant trees to growers and having a significant impact on production, will not occur over the ten-year projection period considered here.

Despite the dire side of HLB, growers are finding reason for hope. Grower practices to manage HLB have made significant progress, increasing the likelihood that Florida may be able to maintain its citrus production at a viable level.

HLB is spread by psyllids, small insects that feed on citrus leaves and tender new growth. These insects have been a major focus of the research. Spray programs have been developed that have

[1] http://www.irchlb.org/hlb.aspx

effectively suppressed psyllid populations and HLB in some areas. Growers have joined together to form Citrus Health Management Areas (CHMAs) that have conducted large spray programs, increasing their effectiveness. It is important that spray programs cover all citrus groves, as well as abandoned citrus acreage. Bad neighbors not spraying may harbor psyllid populations that continue to be a source of HLB infection. Grower adoption of new practices is not universal, with large growers having tended to adopt new practices to deal with HLB faster than smaller ones.

The recommended approach to dealing with HLB is: 1) inspect groves thoroughly and frequently for the presence of HLB, 2) remove infected trees, and 3) conduct an aggressive psyllid control program. Experience with this approach indicates that it can be effective where practiced, given the initial spread of HLB is limited. HLB may not be completely eliminated where this approach is taken, but the disease appears to be controlled to an extent that allows survival.

In groves where HLB is relatively widespread, the above approach may not be economically viable. With removal of HLB-positive trees, production and revenue losses may be too great to remain in business. Many growers facing this latter situation have taken an alternative approach that focuses on keeping HLB trees in production, using various nutritional programs. Psyllid control is still important for this approach. When a single or a few branches on a tree are infected with HLB, the tree can survive and be productive for some time, provided the rate of spread of HLB to the non-infected branches is significantly reduced. Control of the psyllids keeps the infection rate down and enhances the chances that this outcome will occur.[2]

[2] A possible problem may be that a high HLB infection rate in an area may result in a higher percentage of the psyllid population carrying the disease, and, even though the psyllid population may be reduced significantly, the surviving psyllids may largely be carriers that continue to infect trees further, hastening their decline.

Given the progress in controlling psyllid populations and HLB, planting activity is occurring. In some areas, new plantings are primarily in solid blocks, including replanting of some acreage previously lost under the canker eradication program. Trees are being planted in areas where HLB infection rates are relatively low, as well as some other areas with higher infection rates but with effective control of psyllid populations. In addition to solid-set plantings, resetting of trees is occurring in some areas of the State where there has been success in suppressing the psyllid. Alternative land uses are limited in many areas, particularly with the relatively weak real estate market, and keeping land in citrus production is still the best use of that land in these areas.

The progress in control of psyllid populations discussed above has a major bearing on the assumptions that underlie the citrus production projections of this report. The advances in grove care practices suggest more optimistic assumptions compared to some of the assumptions made in previous reports. Given better control of psyllid populations and reduced HLB infection rates in many areas, and the likelihood that more areas may eventually have similar success, the projections in this report are based on more moderate tree loss and higher planting rates than assumed in some of the scenarios considered in previous reports.

Overview of the 2010 Commercial Citrus Inventory

The *2010 Commercial Citrus Inventory* shows that Florida's total citrus acreage decreased by 2.6% from 568.8 thousand acres in 2009 to 554.0 thousand acres in 2010 (Table 1). Similarly, the number of citrus trees decreased by 2.6% from 74.1 million in 2009 to72.1 million in 2010. Tree density in 2009 and 2010 was constant at 130.3 tree per acre. 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.

The FASS commercial citrus inventory indicates that the population of bearing and nonbearing round-orange trees decreased by 1.9% from 65.0 million in 2009 to 63.8 million in 2010. As indicated in Table 5, the orange tree population has become relatively mature compared to the decade following the 1980s freezes when planting levels were high. The orange tree population may continue to mature in the upcoming years, depending on planting levels, as well as loss rates across tree ages.

The total number of bearing and nonbearing grapefruit trees decreased 7.1% from 5.9 million in 2009 to 5.5 million in 2010. The 2010 grapefruit tree population is also relatively mature (Table 6). The age distribution for grapefruit trees by variety and by Indian River versus Interior regions is shown in Table 7.

The 2010 inventory indicates that the number of specialty citrus (tangelos and tangerines) acres and trees decreased by 9.4% and 9.8%, respectively, from 2009 to 2010. Like oranges and grapefruit, the specialty tree population is relatively mature (Table 8).

Methodology and Assumptions

The production estimates discussed in this report are based on projecting the acreage in 25 tree-age categories for the upcoming ten seasons, by variety. Projections are reported for oranges, grapefruit, and specialty citrus.[3] Assumed annual acreage loss and planting rates are used to project

[3] These projections are based on separate estimates for early and midseason oranges, late oranges, white seedless grapefruit including a small amount of seedy grapefruit, red and pink seedless grapefruit, tangelos and tangerines.

citrus acreage from year to year, and average yields per acre by tree age are applied to the projected acreage to obtain production estimates. Yields by age of tree are not reported for specialty citrus (tangelos and tangerines), and regression equations relating historical specialty citrus production to acreage by age were used to project production in this case.

Planting Assumptions

The projections are dependent on assumed future acreage-planting rates. Average planting levels by variety, based on the commercial citrus inventories, are shown in Table 9. Significant declines in planting levels have occurred in recent years with the destruction of nursery trees exposed to citrus canker, re-establishment of the nursery industry in screen houses, and the risk of planting in an HLB environment. In past reports, citrus prices have been important factors in projecting planting levels, but, recently, the risk of losing new plantings to HLB appears to have become a primary factor underlying many grower planting decisions. Thus, the planting assumptions for the scenarios considered here are not directly linked to prices. Higher prices, though, can be expected with lower production resulting from HLB (demand constant), supporting the higher planting assumptions made.

Three planting scenarios are considered in this report. The first scenario assumes the planting level will be half the replacement level (the number of trees lost). This assumption roughly corresponds to the average planting level in recent years. The second and third scenarios assume planting levels are higher at three-fourths and 100% of the replacement level, respectively. It is assumed nurseries will be able to supply the trees required, although the current number of nursery trees in inventory may not be sufficient to accommodate some of the high-planting scenarios in the immediate upcoming years. These scenarios, thus, require that nurseries respond relatively quickly to grower demand for trees.

Tree/Acre-Loss Assumptions

Acreage- and tree-loss rates have declined since the high loss rates that occurred during the first half of the last decade (Table 10). Major factors underlying the high loss rates included diseases, the canker eradication program, the hurricanes that struck the citrus-growing regions of Florida during that period, and alternative land uses and real estate development.

Three orange loss-rate assumptions are considered here: 1) future loss rates are relatively moderate as occurred in the last few years, 2) loss rates are 50% higher than the recent rates, and 3) loss rates are double recent rates. The different assumptions are intended to account for loss-rate uncertainty, given the HLB situation. With relatively wide use of nutritional programs to deal with HLB, the loss of HLB-positive trees may be relatively low in immediate upcoming years, but at some point in time the HLB infection rate in groves under such programs may increase significantly making those groves economically unviable. At that point, trees may be pushed and the groves may be replanted, provided prices are sufficient to cover costs.

Loss rates are assumed to be lowest for young trees, highest for middle-age trees and more moderate for older trees as indicated in the footnotes of the tables showing the projections.

Yield Assumptions

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 over the 2007-08 through 2009-10 period were assumed for all projections. These yields were applied to acreage that was not affected by citrus canker. For acreage with citrus canker, yields were reduced by10.0% for early and midseason oranges, 5.0% for

Valencia oranges, and 20.0% for grapefruit. A history of tree yields reported by FASS are shown in Tables 11 and 12.

Production Estimates

The orange and grapefruit production projections are shown in Tables 13 and 14. The table footnotes describe assumptions. The low tree loss scenarios suggest production levels may be moderately declining to somewhat flat over the next ten years. A key assumption is that groves under nutritional programs will largely be kept in production. The higher loss rate scenarios, provided to account for the uncertainty of the latter assumption, indicate the possibility of more severe production declines.

It is difficult to attach probabilities to the different orange and grapefruit production scenarios in Tables 13 and 14, but the relatively low-acreage-loss scenarios (first set of three scenarios on the left-hand-side of the tables) may have the highest probability of occurrence to the extent psyllid populations and HLB can be controlled, planting activity increases and nutritional programs are effective. Progress in dealing with production problems along with decisions being made by many growers to invest in new plantings support the more optimistic scenarios.

Projections for specialty citrus, under the assumption of moderate losses and replacement planting levels, are shown in Table 15. The projection trends for specialty citrus are similar to those for oranges and grapefruit based on the same assumptions.

Conclusions

Citrus greening as well as canker pose major threats to Florida citrus production. Although it is difficult to predict their impact on production in the next ten years, there are positive signs suggesting that Florida citrus production can be maintained at a viable level. Psyllid populations are being better controlled in many areas, and plantings are occurring. Grower coordination through CHMAs of large-scale spray programs to suppress psyllids is occurring. Based on this report's scenarios that attempt to take these developments into account, Florida orange production is projected to be relatively flat to moderately declining over the next ten years. Further into the future, there is hope of developing HLB-resistant trees which would be expected to have significant positive impacts on Florida citrus production levels, and costs and returns.

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
2006	621.4	-17.0	81.9	-16.4	131.8
2008	576.6	-7.2	75.4	-8.0	130.7
2009	568.8	-1.3	74.1	-1.7	130.3
2010	554.0	-2.6	72.1	-2.6	130.3

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	132.2
2006	529.2	-15.0	70.9	-14.6	133.9
2008[a]	496.5	-11.3	65.8	-7.2	132.5
2009[a]	492.5	-.8	65.0	-1.2	132.0
2010[a]	483.4	-1.8	63.8	-1.9	131.9

[a] Includes Temples oranges; in prior years, Temple oranges included with specialty citrus.

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
2006	63.4	-28.8	6.97	-28.5	109.9
2008	56.9	-10.3	6.24	-10.5	109.7
2009	53.9	-5.3	5.86	-6.1	108.8
2010	50.2	-6.8	5.45	-7.1	108.5

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
2006	26,098	-22.2	3.7	-22.5	141.59
2008	22,920	-12.2	3.2	-12.3	141.37
2006[b]	23,556		3.4		144.42
2008[b]	20,780	-11.8	3.0	-11.9	144.24
2009[b]	20,233	-2.6	2.9	-3.0	143.64
2010[b]	18,340	-9.4	2.6	-9.8	143.00

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

[b] Excludes Temple oranges; beginning in 2008, Temple oranges included with round oranges.

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
2006	6.9	9.4	10.1	17.1	44.9	11.5	70,849.4	65,954.4
2008[a]	6.1	8.2	10.1	13.3	49.7	12.5	65,775.3	61,740.6
2009[a]	6.5	7.6	9.3	14.7	48.8	13.1	64,992.7	60,752.9
2010[a]	6.6	6.7	9.7	14.6	48.6	13.8	63,776.7	59,560.8

[a] Includes Temple oranges.
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
2006	6.1	5.9	3.8	18.5	41.8	23.8	6,971.4	6,543.2
2008	4.0	6.9	4.3	7.7	50.8	26.2	6,241.0	5,989.7
2009	3.9	6.3	4.8	6.4	49.8	28.8	5,861.0	5,633.8
2010	4.5	5.5	5.5	5.7	50.1	28.8	5,445.9	5,201.0

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

Table 7. Age distribution of Florida grapefruit trees by marketing district and variety, 2010 inventory.

District/Variety	Tree Age						Total Trees
	≤2	3-5	6-8	9-13	14-23	≥24	
	- - - - - - - - - - - - - - - - - %[a] - - - - - - - - - - - - - - - -						- thousand -
Indian River							
White Seedless[b]	1.0	1.4	5.4	8.9	49.6	33.9	1,132
Red & Pink Seedless	4.6	7.8	5.5	4.3	42.0	35.8	2,826
TOTAL	**3.6**	**5.9**	**5.4**	**5.6**	**44.2**	**35.2**	**3,958**
Interior							
White Seedless[b]	1.7	1.4	6.7	5.3	58.0	26.9	362
Red & Pink Seedless	8.5	5.2	5.3	6.0	68.2	6.8	1,127
TOTAL	**6.9**	**4.2**	**5.7**	**5.9**	**65.7**	**11.6**	**1,488**

[a]Percentages may not total 100 due to rounding.
[b]Includes seedy grapefruit.
SOURCE: Florida Agricultural Statistics Service, *2010 Commercial Citrus Inventory.*

Table 8. Age distribution of Florida specialty citrus trees by variety, 2010 inventory.

Variety	Tree Age						Total Trees
	≤2	3-5	6-8	9-13	14-23	≥24	
	- % -						- thousand -
Tangelos	.9	4.4	6.3	9.6	64.2	14.7	598.2
Tangerines	1.9	3.3	4.1	13.7	69.7	7.3	2,024.4
TOTAL	**1.7**	**3.5**	**4.6**	**12.8**	**68.5**	**8.9**	**2,622.6**

SOURCE: Florida Agricultural Statistics Service, *2010 Commercial Citrus Inventory.*

Table 9. Average annual citrus plantings by variety.[a]

Variety[c]	Annual Plantings[b] 1000 Trees						
	2000	2002	2004	2006	2008	2009	2010
ORANGES							
Early & Midseason	1,044	1,195	1,250	896	703	698	651
Late	1,771	1,518	1,272	762	642	715	696
TOTAL	2,815	2,713	2,522	1,632	1,345	1,413	1,347
GRAPEFRUIT							
Indian River							
White Seedless[d]	56	53	85	19	2	5	4
Red & Pink Seedless	52	68	144	102	53	37	44
Interior							
White Seedless[d]	8	7	7	4	2	3	2
Red & Pink Seedless	39	26	24	18	27	32	32
TOTAL	155	154	260	143	84	76	82
SPECIALTY							
Tangelos	17	10	32	10	4	2	2
Tangerines	84	55	39	20	22	14	13
TOTAL	110	71	79	32	26	16	15

[a] Based on various *Commercial Citrus Inventories*.

[b] Calculated as non-bearing trees divided by 3.

[c] Orange trees and acres listed as "unidentified" by the FASS were allocated between orange varieties 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.

[d] Includes seedy.

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

Variety	94-96	96-98	98-00	00-02	02-04	04-06	06-08	08-09	09-10	10-11[b]
	Annual Tree Loss Rate (%)[c]									
ORANGES[d]	1.2	1.9	2.3	3.8	4.3	9.3	5.6	3.5	3.8	4.1
GRAPEFRUIT[e]										
Indian River	1.5	3.0	4.8	5.8	9.5	17.2	5.7	6.5	10.1	8.4
Interior	2.3	7.4	9.3	9.4	10.8	16.6	8.5	8.2	5.7	8.4
SPECIALTY[f]										
Tangelos	4.3	5.2	5.6	8.3	8.2	16.2	8.8	2.2	10.9	NA
Tangerines	2.1	4.1	5.6	6.6	9.6	10.8	6.5	3.6	10.9	NA
	Annual Acre Loss Rate (%)[b]									
ORANGES[d]	2.2	2.3	2.7	4.2	4.8	9.7	5.2	3.1	3.7	NA
GRAPEFRUIT[e]										
Indian River	2.4	3.5	5.5	6.1	10.2	17.4	5.3	5.7	9.5	NA
Interior	2.8	7.9	9.6	8.8	11.7	16.2	8.9	7.7	5.7	NA
SPECIALTY[f]										
Tangelos	4.7	5.6	5.6	9.2	10.3	15.3	8.4	2.3	10.4	NA
Tangerines	3.0	4.5	5.5	6.7	9.8	10.6	6.4	3.1	10.5	NA

[a]Losses due to all factors.

[b]Based on the bearing trees reported in *Citrus October Forecast, Maturity Test Results and Fruit Size*, Florida Agricultural Statistics Service, October 8, 2010.

[c]Based on various *Commercial Citrus Inventories*.

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

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

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

Table 11. Average orange yields by age.

Season	Early and Midseason Oranges						Late Oranges					
	3-5	6-8	9-13	14-23	24+	wt avg[a]	3-5	6-8	9-13	14-23	24+	wt avg[a]
	1-3/5 bushel boxes per tree											
1992-93	1.8	3.4	4.6	5.0	6.0	4.7	1.4	2.4	3.3	3.9	4.2	3.5
1993-94	1.4	3.2	3.8	4.5	5.2	4.1	1.0	2.0	2.7	3.5	4.0	3.1
1994-95	1.2	3.1	4.1	4.6	5.2	4.2	1.4	2.7	2.5	3.6	4.2	3.3
1995-96	1.3	2.9	3.8	4.1	4.9	3.8	1.2	2.0	2.5	3.2	4.0	2.9
1996-97	1.3	2.8	3.7	5.1	5.3	4.4	1.1	2.3	2.5	3.3	4.2	3.0
1997-98	1.3	2.7	3.8	4.8	5.3	4.2	1.1	2.2	2.6	3.8	4.9	3.4
1998-99	0.8	1.9	2.9	3.8	4.2	3.3	0.8	1.5	1.9	2.2	3.2	2.1
1999-00	0.9	2.1	3.4	4.7	5.2	4.0	0.9	1.7	2.4	3.1	4.5	2.9
2000-01	1.0	2.0	3.2	4.2	4.6	3.6	0.9	1.7	2.3	2.7	3.7	2.6
2001-02	1.4	1.8	3.0	4.2	5.2	3.7	0.9	1.7	2.4	2.8	4.5	2.7
2002-03	0.7	1.8	2.7	3.8	4.3	3.3	1.0	1.6	1.9	2.6	4.0	2.5
2003-04	1.8	1.9	3.2	4.1	5.3	3.7	1.7	2.1	2.5	3.0	5.1	3.0
2004-05	1.2	1.7	2.2	2.9	2.8	2.5	1.1	1.2	1.7	2.0	2.1	1.8
2005-06	1.8	1.8	2.0	2.8	3.7	2.7	0.8	1.8	1.8	2.1	3.0	2.1
2006-07	1.1	1.8	1.8	2.5	3.6	2.4	0.6	1.5	1.5	1.9	2.7	1.8
2007-08	0.8	1.9	2.5	3.4	4.8	3.1	0.7	2.1	2.5	2.5	4.1	2.6
2008-09	1.2	1.8	2.9	3.5	4.7	3.2	0.9	1.8	2.3	2.3	3.4	2.3
2009-10	1.0	1.8	2.1	2.8	4.0	2.7	1.0	1.4	2.0	1.9	2.9	1.9

[a] Weighted average based on 2009-10 tree distribution.

SOURCE: Florida Agricultural Statistics Service.

Table 12. Average grapefruit yields by age.

Season	White Grapefruit						Colored Grapefruit					
	3-5	6-8	9-13	14-23	24+	wt avg[a]	3-5	6-8	9-13	14-23	24+	wt avg[a]
	1-3/5 bushel boxes per tree											
1992-93	2.3	3.9	7.5	7.1	7.0	6.9	2.5	4.9	5.6	5.7	6.4	5.6
1993-94	2.2	3.6	4.4	6.6	6.7	6.2	2.3	3.7	4.6	4.6	5.4	4.6
1994-95	3.2	2.5	5.2	7.1	6.4	6.4	2.0	3.5	4.9	5.3	5.1	4.9
1995-96	2.0	4.3	3.5	6.3	5.7	5.7	2.7	3.5	5.1	4.0	5.4	4.3
1996-97	2.3	4.8	3.3	6.7	6.3	6.1	1.6	3.8	4.8	5.7	5.6	5.2
1997-98	1.7	4.2	5.2	8.0	5.3	6.6	2.3	2.8	4.2	5.4	5.2	4.9
1998-99	1.5	3.1	4.2	4.8	5.0	4.7	1.7	3.2	3.5	4.7	4.8	4.4
1999-00	1.3	3.1	4.6	5.2	6.3	5.3	1.4	2.9	4.2	5.3	5.7	4.9
2000-01	2.2	2.9	3.8	7.1	5.4	6.0	1.8	3.3	3.6	4.7	4.9	4.4
2001-02	1.3	3.3	3.6	7.0	5.8	6.0	2.0	2.3	3.9	4.7	5.2	4.5
2002-03	1.9	3.0	3.2	4.8	5.3	4.7	1.6	1.8	3.0	4.0	4.8	3.9
2003-04	2.5	3.5	3.5	4.4	6.9	5.1	2.9	3.5	3.6	4.6	6.0	4.8
2004-05	1.0	0.8	1.1	1.4	1.3	1.3	0.8	2.0	2.2	1.9	1.5	1.7
2005-06	1.9	2.5	3.0	2.3	3.8	2.9	0.3	1.2	2.9	3.1	3.8	3.0
2006-07	0.3	2.9	4.0	4.2	5.9	4.6	1.0	2.7	3.4	4.2	5.9	4.3
2007-08	1.6	4.1	3.2	4.5	6.3	4.9	1.6	2.9	3.2	4.0	6.3	4.4
2008-09	1.1	2.3	2.8	3.8	5.1	4.0	1.4	1.3	2.8	3.7	5.2	3.8
2009-10	0.9	1.9	3.3	3.7	5.4	4.1	1.3	3.0	2.8	3.6	5.3	3.8

[a] Weighted average based on 2009-10 tree distribution.

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

Table 13. Florida orange production projections, actual for 2007-08 through 2009-10, FASS January estimate for 2010-11, and FDOC estimates for 2012-13 through 2020-21, Based on Average Yields.[a]

Season	LOSS								
	Low[b]			Middle[b]			High[b]		
	PLANTING								
	Low[c]	Middle[d]	High[e]	Low[c]	Middle[d]	High[e]	Low[c]	Middle[d]	High[e]
	million boxes								
2007-08	170	170	170	170	170	170	170	170	170
2008-09	163	162	162	162	162	162	162	162	162
2009-10	134	134	134	134	134	134	134	134	134
2010-11	140	140	140	140	140	140	140	140	140
2012-13[f]	144	144	144	138	138	138	132	132	132
2013-14	142	142	143	133	134	134	125	125	126
2014-15	140	141	142	129	130	131	119	120	121
2015-16	139	140	141	125	127	129	113	115	117
2016-17	137	139	141	122	124	127	108	111	114
2017-18	134	137	140	118	122	125	103	107	111
2018-19	132	136	140	114	119	124	99	104	109
2019-20	130	135	140	111	117	123	94	101	108
2020-21	128	134	139	108	114	122	90	98	106
avg. loss[g]	-3.9%	-3.9%	-3.9%	-5.9%	-5.8%	-5.8%	-7.9%	-7.8%	-7.7%
avg. plant.[h]	1.8	1.8	2.5	1.6	2.6	3.7	2.1	3.4	4.9

[a] Assumes yields are average from 2007-08 through 2009-10; for acreage with citrus canker, yields were reduced by 10.0% for early and midseason oranges, 5.0% for Valencia oranges.

[b] Assumes loss rates vary by age, lowest for young trees (0-3 yrs), highest for middle age tree (4-11 yrs) and more moderate for older trees (12-24 yrs), given incidence of HLB.

[c] Half of replacement planting level (roughly average planting level).

[d] Three-fourths of replacement planting level.

[e] Replacement planting level.

[f] A forecast for 2011-12 will be made in October, 2011, by the USDA, Florida Agricultural Statistics Service.

[g] Unweighted average acre loss rate per year (%) over projection period.

[h] Unweighted average million trees planted per year over projection period.

Table 14. Florida grapefruit production projections, actual for 2007-08 through 2009-10, FASS January estimate for 2010-11, and FDOC estimates for 2012-13 through 2020-21, based on average yields.[a]

Season	LOSS								
	Low[b]			Middle[b]			High[b]		
	PLANTING								
	Low[c]	Middle[d]	High[e]	Low[c]	Middle[d]	High[e]	Low[c]	Middle[d]	High[e]
	million boxes								
2007-08	27	27	27	27	27	27	27	27	27
2008-09	22	22	22	22	22	22	22	22	22
2009-10	20	20	20	20	20	20	20	20	20
2010-11	20	20	20	20	20	20	20	20	20
2012-13[f]	18	18	18	17	17	17	17	17	17
2013-14	18	18	19	17	17	18	16	16	17
2014-15	18	18	19	17	17	18	16	16	17
2015-16	18	18	19	17	17	18	15	16	17
2016-17	18	18	19	16	17	17	15	15	16
2017-18	18	18	19	16	17	18	14	15	17
2018-19	17	18	19	16	16	18	14	15	17
2019-20	17	18	19	15	16	18	13	14	17
2020-21	17	17	19	15	16	19	13	14	18
avg. loss[g]	-3.0%	-3.0%	-2.9%	-4.4%	-4.4%	-4.1%	-5.8%	-5.8%	-5.2%
avg. plant.[h]	0.04	0.05	0.21	0.11	0.10	0.47	0.14	0.15	0.77

[a] Assumes yields are average from 2007-08 through 2009-10; for acreage with citrus canker, yields were reduced by 20.0%.

[b] Assumes loss rates vary by age, lowest for young trees (0-3 yrs), highest for middle age tree (4-11 yrs) and more moderate for older trees (12-24 yrs), given incidence of HLB.

[c] Quarter of replacement planting level (roughly average planting level).

[d] Half of replacement planting level.

[e] Replacement planting level.

[f] A forecast for 2011-12 will be made in October, 2011, by the USDA, Florida Agricultural Statistics Service.

[g] Unweighted average acre loss rate per year (%) over projection period.

[h] Unweighted average million trees planted per year over projection period.

Table 15. Florida specialty production projections, actual for 2007-08 through 2009-10, FASS January estimate for 2010-11, and FDOC estimates for 2012-13 through 2020-21.[a]

Season	Tangelos	Tangerines	TOTAL
	- - - - - - - - - - - - - - million boxes - - - - - - - - - - - - - -		
2007-08	1.5	5.5	7.0
2008-09	1.2	3.9	5.0
2009-10	.9	4.5	5.4
2010-11	1.1	4.4	5.5
2012-13[b]	1.2	4.1	5.3
2013-14	1.2	4.0	5.2
2014-15	1.2	3.9	5.1
2015-16	1.2	3.9	5.1
2016-17	1.2	3.9	5.0
2017-18	1.2	3.8	5.0
2018-19	1.1	3.8	5.0
2019-20	1.1	3.8	4.9
2020-21	1.1	3.8	4.9

[a] Assumes the acreage loss rates for each variety is 4% per year and replacement plantings.
[b] A forecast for 2011-12 will be made in October, 2011, by the USDA, Florida Agricultural Statistics Service.