

Short Note 10.1

Commercial Citrus Production and Related Measures

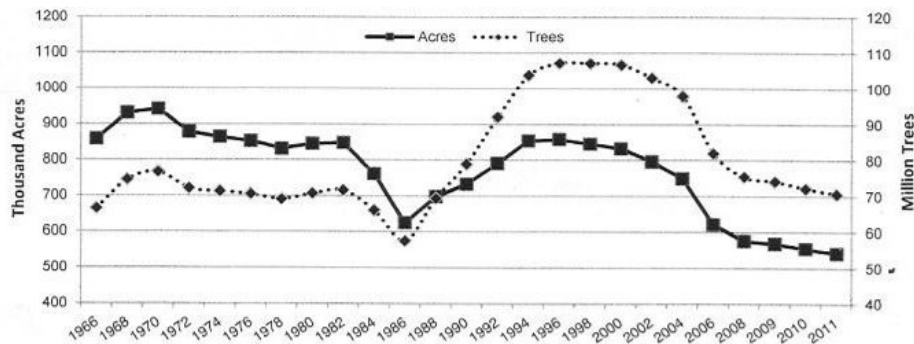
There may be the impression that the citrus industry is on the verge of collapse, with all the pests and diseases in Florida. In addition, there are the occasional freezes, tropical storms or hurricanes which can lay ruin to thousand of acres of farm land. However, the federal government helps bail out the grove owners through subsidized crop insurance. In this section, a short summary of the citrus industry in terms of acreage, production, value, employment and state taxes is provided based on USDA reports and other reports.

Citrus Acreage and Production

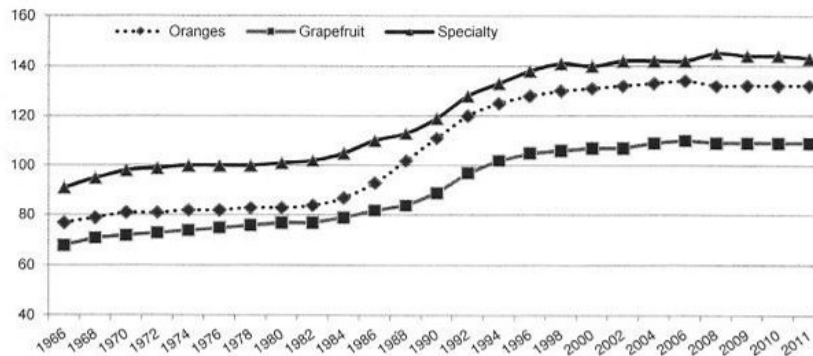
Historically, the number of commercial citrus trees in Florida has significant periods of increases and declines as shown in Figure 1. This figure is based on data from the 2012 USDA National Agricultural Statistical Service (NASS) report from data collected by FDACS, Department of Fruits and Vegetables.

Figure 1: Commercial Citrus Trees, Acres and Trees per Acre, 1966 to 2011

Commercial Citrus Trees and Acres — Florida: Survey Years 1966 – 2011



Commercial Citrus Trees per Acre, by Type — Florida: Survey Years 1966 - 2011



Two sustained periods of decreasing tree counts and acreage are evident in Figure 1 — the first from 1966 to 1980 and the second one from 1999 to 2011. In between these periods, there was approximately 19 years of increasing trees counts and acreage. Tree counts increased at a faster rate than acreage due to an increase in planting density, particularly from 1990 to 1998 as shown in the lower graph of Figure 1. By 1999, planting densities reached plateau in the range of 110 to 145 citrus/ acres, depending on the cultivar and the declining trend resumed.

From the 2001 - 2002 to the 2006 - 2007 growing season, the citrus bearing acreage declined by approximately 30%. The loss of citrus bearing acreage from the 1998-1999 to 2006 - 2007 was approximately 222 thousand acres or 346 square miles. The CCEP destroyed 88 thousand acres of commercial groves, which is 40% of the total loss. Hurricanes in August and September 2004, and one in October 2005, also account for much of the decline.

A total of 150 thousand acres were lost from 2004 to 2006 according to the 2015 Citrus Inventory report. The 2015 Citrus Inventory report also shows a relatively low level of new planting following the destructive hurricanes and the end of the CCEP. Annual new plantings range from 8.3 to 22.2 thousand acres per year for 2008 to 2014, strongly suggesting that grove owners did not fully use either crop insurance money or the compensation received for the destruction of their groves to replant citrus. This is in contrast to the massive plantings of 66 to 55 thousand acres per year in the period 1988 to 1994 after the losses due to freezes in the prior 5 years. Note, prior to 2008, surveys were completed biennial, so the new planting are stated in terms of average annual changes by dividing the numbers by two.

There has been any public report identifying the exact locations of the 88 thousand acres lost during the CCEP. The CCEP Comprehensive Report provides the total acres destroyed by county. A valid report should show on maps, where the 1900-ft eradication circles were in the citrus groves. There is no reports which showed what happened after eradication - where they replanted, sold off to developers or other crops planted? The eradication circle locations would be very interesting, because if the circles were located at the edges of the grove, this would show some devious grove owners were purposely located trees to benefit the sale of property at the government's expense.

The Florida Agricultural Statistical Commercial Citrus Inventory has been conducted using aerial photography of the groves. There seems a serious disconnect existed during the CCEP program between the USDA/APHIS based in Beltsville, MD which reimbursed grove owners to use the same aerial photography to verify the eradication of grove trees. Compensation for grove owners' lost trees should have been provided only after the grove owner could prove through bona fide nursery stock purchases, that replanting of citrus would occur.

The tables of data from the report are provided on the supporting documents website. Links to relevant USDA and UF/IFAS websites can also be found on the supporting documents website. Short notes are provided on the website to clarify the various means of quantifying production (tonnes, number of fruit, boxes and cartons) and other topics.

On-Tree Valuations

The USDA/ NASS Reports provide estimates of the value of production to the grove owner. The term "on-tree" relates to fruit returns to the grower after the costs of picking, hauling, and packing has been removed. The on-tree value is not an estimate of net cash flow, as there are also other expenses such as administrative overhead excluded from these estimates. On-tree values may be considered an upper limit estimate of net cash flow before state and federal taxes, if there are no other revenue streams to consider. Citrus groves may lease some of their acreage, in which case the on-tree value might be less than cash flow.

Citrus which is sold as fresh fruit demands a higher price than fruit sold for juice processing. In 2013-2014, approximately 5% of all oranges and 43% of all grapefruit were sold as fresh fruit on a weight basis. On-tree values for oranges (processed and fresh) is 7.58 per box while on-tree value for grapefruit is 6.44 per box. On-tree values based on weight also show oranges have higher on-tree value than grapefruit. This leads to the observation that even though more grapefruit production is sold as fresh fruit, it still provides similar or slightly less on-tree values to the grove owner than oranges. Every growing season is different, so this observation is based strictly on USDA estimates for the most recent data crop year for all varieties of citrus. The USDA/ NASS report provides extensive details on on-tree values, depending on the region of the Florida, type of citrus variety and crop year. The report does not provide details on the sale price per box and the costs to grove owners in terms of picking, hauling and packing estimates, used to estimate on-tree values.

As shown in Table 1, peak production years do not coincide with peak on-tree values. This likely reflects the increase in the market prices, subject to the supply and demand. The peak years for production occurred in the 2003 to 2004 growing season, yet the peak on-tree value occurred in 2011 to 2012 season.

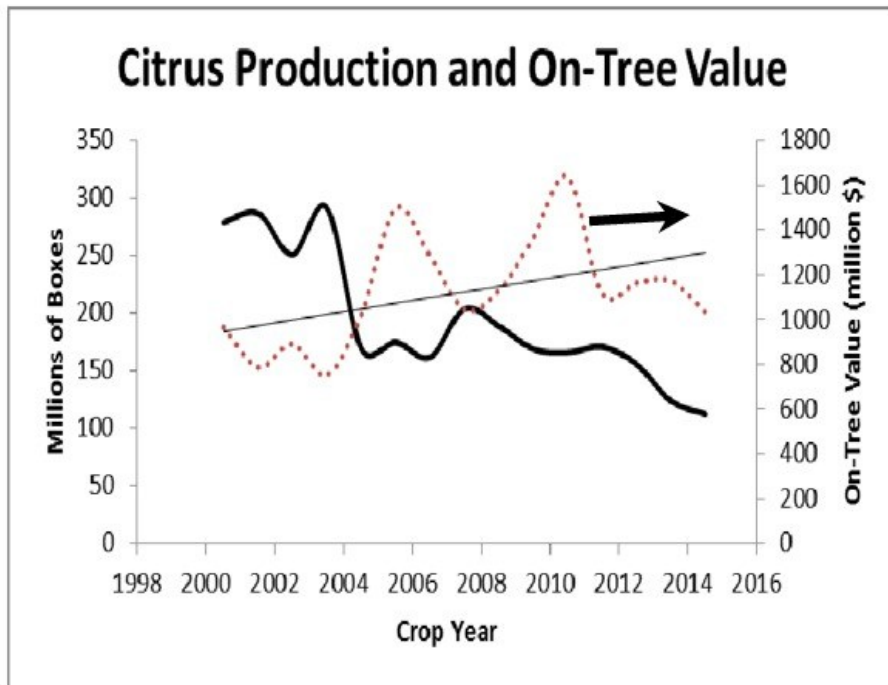
Table 1: Production and On-Tree Value

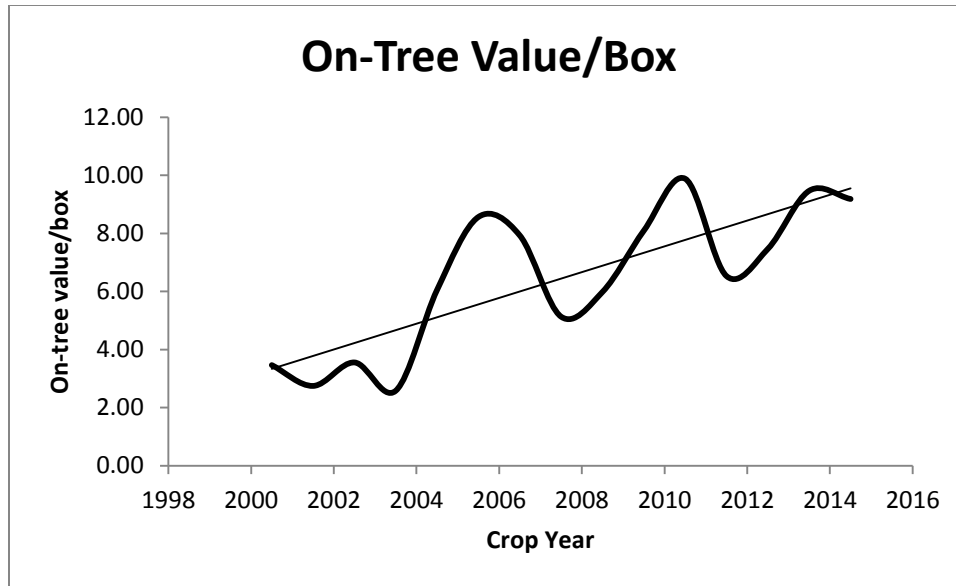
Crop year	Production (million boxes)	On-Tree Value (million dollars)	Value/box (\$/box)
2000-2001	279	966	3.46
2001-2002	287	788	2.75
2002-2003	251	892	3.55
2003-2004	292	754	2.58
2004-2005	169	1024	6.06
2005-2006	175	1499	8.57
2006-2007	162	1284	7.93
2007-2008	204	1046	5.13
2008-2009	189	1131	5.98
2009-2010	169	1368	8.09
2010-2011	166	1640	9.88
2011-2012	171	1116	6.53
2012-2013	156	1165	7.47
2013-2014	124	946	7.64

Citrus production for the period 2000- 2015 has been declining, while the general trend for on-tree values is positive as shown in Figure 2. The trend line shown in Figure 2, is based on linear regression. For display and trend calculation purposes, data values were plotted at the mid-year point (i.e. 2013- 2014 was plotted at 2013.5) and a smoothed curve was drawn between points. Preliminary estimates of production and on-tree value for the growing season 2014- 2015 of 112.6 million boxes and 1034 million dollars, respectively are included in this plot.

Alternative data interpretations are possible. If the trend is drawn from the peak crop year of 2010- 2011, then both citrus production and on-tree value trends would be decidedly negative.

Figure 2: Citrus Production, On-Tree Value and On-Tree Value per Box





The positive trend of on-tree values/box over the last 15 years, indicates that the increase in citrus prices has more than compensated for the decline in citrus acreage.

Economic Impact

The on-tree estimates should not be confused with the economic impact of the citrus industry. The estimates of economic impacts have been calculated in the range of 9 to 10 billion dollars annually. This is in stark contrast to the on-tree estimates of less than 1.0 billion dollars in the most recent estimate.

The economic impact of the citrus industry are calculated by the UF/ IFAS economists based on an input-output analysis software, IMPLAN, a product of the Implan Group LLC. The concept of input-output analysis is simple, that as payments are made by grove owners, such as wages, these funds stimulate more economic activity, and thus inputs such as wages result in outputs such as consumer spending. Input-output analysis has been effectively used in support of projects, such as a transportation system or municipal park, whose benefits are likely to benefit the general public. It is not likely a metric used by grove owners in deciding whether to increase or reduce planting. The on-tree value, which is closer to a cash flow calculation, would seem more appropriate.

As noted previously, a total of 222 thousand acres were lost from the growing season of 1998-1999 to 2006- 2007. The decline has continued based on preliminary estimates for 2015. The real economic impact of the citrus industry is a transition from farm lands to housing developments. If we consider development on approximately quarter acre plots, then 222 thousand acres, provided land for roughly 888,000 new homes. To put in perspective, 222 thousand acres is about 1/3 the size of Miami-Dade county.

As a government planning tool, input-output (IO) analysis has been shown to be beneficial, but it should not be used with unreasonable assumptions. The NASS report clearly shows that the farmable acreage

has been contracting for many years. The loss of 222 thousand acres did not result in vacant land. It was used either to grow more profitable crops, or more likely for new residential/ commercial developments. IO analysis in this case should be a comparative one, namely to determine the impact of converting some of the farm land to residential/ business developments. There are many other issues associated with development such as environmental impact and infrastructure which government agencies at all levels must evaluate.

Unfortunately, economic impact analysis is used more by citrus industry groups like Florida Citrus Mutual, to rally for or against certain policies, which in their opinion would either sustain or threaten the demise of a “9 billion dollar” industry. The economic impact reports and other related information on the IMPLAN program are provided on the supporting documents website.

Employment

Economic impact analysis also has been used to calculate how many jobs are created by the citrus industry. The most recent estimate was employment of 123,000 people on a part-time or full time basis, involved either directly or indirectly with all facets of the citrus industry.

The problem with the above estimate, is the same as with economic impact values. It is based on an assumed multiplier of economic impact to employment. It is not based on employee records, of full time employees working in the groves.

Most of the groves are private, so surveys could only be done on a voluntary basis. However, one of the largest citrus growers according to their financial statement filed with the Security and Exchange Commission in Florida is Alico Farms, which is a listed on the US stock market exchange under symbol ALCO. According to its 10-K filing for fiscal year 2015, Alico produced 10.5 million boxes of citrus on 46.8 thousand acres. It has 346 full time employees, or 7.4 employee per thousand acre. The 10-K filing states that the producing citrus acreage is 32.1 thousand acres, resulting in 10.8 employees per thousand acres. Scaling up to the approximately 515 thousand citrus bearing acres, results in manpower estimates of 3872 to 5551 full time employees.

In round numbers, it is estimated that 4,000 to 6,000 full time workers are directly employed by grove owners. At harvest time, the work force increases as the groves will contract for a crew on a part-time basis. It has been reported that these workers are paid less than minimum wages and as many as 50% are undocumented.

Also, as production declines, the agricultural service industry, also would suffer. So, perhaps the work force is several times higher than 4,000 to 6,000 employees. Harvesting is becoming more mechanized with new equipment designed to shake citrus fruit from the tree. So, the part time harvesting crews may also be slowly put out of business with this automation.

As with the economic impact estimate, the IO analysis identifies a labor force that lose their jobs if the loss of acreage resulted in vacant land. In reality, there may be an increase in the labor force if the acreage becomes residential/ commercial developments.

Concluding Remarks

This short note expands on the discussion within Chapter 10. Both citrus acreage and the number of commercial trees have been on a decline since year 2000. Production has declined in every growing season since the 2007 - 2008 growing season. The loss of production has been offset by price increases. There is an upward trend in the overall on-tree value. The on-tree value for citrus in the most current reported growing season (2013 to 2014) is 946 million dollars.

An economic impact value of 9 to 10 billion dollars has been calculated using input-output analysis. In general, this would be economic loss that would occur if the citrus industry collapse, and no other business took its place.

In fact, the groves are being replaced by new homes and the construction industry employs far more workers than the citrus industry. The National Association of Home Builders (NAHB) estimates every 100 new homes generates an economic impact of 28.7 million dollars and 394 jobs. Consider most homes are built on $\frac{1}{4}$ acre lots, the economic impact of converting 515,000 acres to homes is a gain of 592 billion dollars. The NAHB economic impact in terms of jobs would be 8.1 million jobs.

The NAHB is not exactly an unbiased source for economic impact analysis, but even if the above estimates are off by an order of magnitude, the economic analysis favors converting groves to housing.

