



Economic Contributions of the Florida Citrus Industry in 2014-15 and for 80 Million Boxes Orange Production

Report to the Florida Department of Citrus

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Summary

Methodology. The economic impacts of the Florida citrus industry were evaluated for FY 2014-15 and for a hypothetical scenario of 80 million box orange crop in comparison with previous estimates for FY 2007-08 and FY 2012-13. Information on citrus fruit production, packed fresh fruit shipments, and processed citrus juices and by-product volumes and prices were taken from reports by the USDA-National Agricultural Statistics Services (NASS), Florida Agricultural Statistics Service (FASS), Florida Department of Citrus (FDOC) Economic and Market Research Department, the Florida Citrus Processors Association, and other industry sources. The regional economic contributions of the Florida citrus industry were evaluated using the *IMPLAN* regional economic modeling system and associated databases (IMPLAN Group, LLC), to estimate the economic multipliers that capture the additional economic activity generated by re-spending of income in the local economy arising from the sale of Florida citrus products. Four industry sectors in *IMPLAN* were used to analyze the Florida citrus industry: fruit farming (sector #4), frozen foods (#53), canned fruit and vegetables (#54), and wholesale trade (#319). The output value of each major type of product was specified as an impact event in the appropriate industry sector: fresh market citrus fruit in the fruit farming sector, packed fresh citrus fruit in the wholesale trade sector, frozen citrus juices (FCOJ) in the frozen foods sector, and chilled or shelf-stable single strength NFC citrus juices in the canned (bottled) food sector. In addition to orange and grapefruit juices, the Florida citrus processing industry produces byproducts of citrus pulp, meal, molasses, and essential oils, and values of these by-products were assigned to the two processing sectors based on relationships previously determined for FY 2012-13, and in proportion to their primary product values. Also, the export and local consumption values of citrus juice and byproducts were treated separately; only the direct impacts were considered for local consumption, since these values do not represent a change in overall regional economic activity. Refer to the recent sponsored project report for a complete description of the data sources and analytical methodology¹. Prices for citrus fruit and processed juices under the 80 million box orange crop scenario were estimated using the World Orange Juice model².

Citrus Fruit Production. The total volume of citrus fruit production in Florida in FY 2014-15 was projected at 112.3 million boxes, based on the latest available forecast by USDA-NASS (Table 1). The grower value of Florida citrus fruit, based on delivered prices, was \$1.533 billion, of which fruit for processing was valued at \$1.327 billion and fresh fruit was valued at \$206 million (Table 1). The value of fresh fruit shipped from packinghouses is estimated at \$332 million. The packinghouse wholesale margin on fresh packed fruit is \$125 million, representing the difference between what is paid by packinghouses (delivered prices) and the value of

¹ Hodges, A.W., M. Rahmani, T.J Stevens and T.H. Spreen. Economic Impacts of the Florida Citrus Industry in 2012-13. Sponsored project report to the Florida Department of Citrus. University of Florida, Food and Resource Economics Department, Gainesville, FL. Dec. 19, 2014, 39 pages, available at: http://www.fred.ifas.ufl.edu/economic-impact-analysis/pdf/Economic_Impacts_Florida_Citrus_Industry_2012-13.pdf

² Spreen, Thomas H., Charlene Brewster, and Mark G. Brown. The Free Trade Area of the Americas and the world processed orange market. *Journal of Agricultural and Applied Economics* 35(2003): 107-26.

shipped fruit (F.O.B. prices). For the 80 million box orange crop scenario, the total grower value would be \$1.259 billion and the fresh fruit packinghouse margin would be \$101 million (Table 1).

Table 1. Florida citrus fruit production volume and value for FY 2014-15 (projected) and 80 million box orange crop scenario

Citrus Type	Volume Fresh	Volume Processed	Total	Grower value fresh fruit	Grower value processed fruit	Total Grower value	FOB value fresh packed fruit	Packinghouse Operating Margin
----- 1000 boxes -----				----- \$1000 -----				
Fiscal Year 2014-15 (projected)								
Oranges	4,000	92,400	96,400	\$61,507	\$1,277,269	\$1,338,776	\$103,747	\$42,240
Grapefruit	5,742	7,158	12,900	\$93,833	\$36,481	\$130,314	\$154,239	\$60,406
Specialty	1,738	1,280	3,018	\$50,978	\$12,933	\$63,911	\$73,635	\$22,657
Total	<u>11,480</u>	<u>100,838</u>	<u>112,318</u>	<u>\$206,318</u>	<u>\$1,326,683</u>	<u>\$1,533,001</u>	<u>\$331,621</u>	<u>\$125,303</u>
80 Million Box Orange Crop Scenario								
Oranges	3,000	77,000	80,000	\$61,320	\$1,022,310	\$1,083,630	\$93,000	\$31,680
Grapefruit	4,690	6,745	11,435	\$81,506	\$35,483	\$116,989	\$130,844	\$49,339
Specialty	1,566	1,216	2,782	\$46,134	\$12,491	\$58,626	\$66,555	\$20,421
Total	<u>9,256</u>	<u>84,961</u>	<u>94,217</u>	<u>\$188,960</u>	<u>\$1,070,284</u>	<u>\$1,259,244</u>	<u>\$290,399</u>	<u>\$101,439</u>

Source: USDA-NASS estimates, April 2015; FDOC Outlook, March 2015.

Citrus Juice Processing. Florida citrus juice processing volumes and values for the current year and hypothetical scenario are presented in Table 2. Based on Florida citrus processor statistics as of week 32 of the 2014-15 production year (May 22, 2015), it is estimated that a total of 829 million SSE gallons of citrus juice will be produced, including 785 million gallons of orange juice and 44 million gallons of grapefruit juice, comprised of 422 million gallons as NFC (canned) product, 283 million gallons as frozen bulk product, 84 million gallons frozen packaged product, and 39 million gallons NFC bulk product. Processor gross values were estimated using an average wholesale price for bulk juice sales, and average retail values for packaged products, less an assumed 40 percent retail markup, based on information from Florida citrus processor statistics (FDOC). The total FOB processor value of citrus juice in FY 2014-15 is \$2.636 billion. In-state sales of packaged frozen and canned citrus juices represented 14.53 percent and 8.09 percent of total production, respectively, based on Nielson retail scanner data from 2012-13 (FDOC), while all bulk juice was assumed to be shipped out-of-state to packaging firms. The total value of packaged and bulk citrus juice shipped from Florida to other states and foreign countries was estimated at \$2.337 billion, or 89 percent of total citrus juice sales.

Table 2. Florida citrus processor volume and value for FY 2014-15 (projected) and 80 million box orange crop scenario

Type, Form	Forecast 2014/15					80 M box crop scenario				
	Million SS Gal	Unit Retail Value	Mark-up	FOB Value/gal (\$)	Gross FOB Value (M\$)	Million SS Gal	Unit Retail Value	Mark-up	FOB Value/gal (\$)	Gross FOB Value (M\$)
<u>Orange Juice</u>										
Frozen-bulk	258.6	\$1.30	0%	\$1.30	\$336	232.5	\$1.37	0%	\$1.37	\$319
Frozen-packaged	83.8	\$5.00	40%	\$3.00	\$251	75.4	\$5.25	40%	\$3.15	\$237
	<u>342.4</u>				<u>\$588</u>	<u>307.9</u>				<u>\$556</u>
NFC (canned)-bulk	35.3	\$2.50	0%	\$2.50	\$88	31.8	\$2.63	0%	\$2.63	\$84
NFC (canned)-packaged	407.1	\$7.57	40%	\$4.54	\$1,849	366.1	\$7.95	40%	\$4.77	\$1,746
	<u>442.4</u>				<u>\$1,937</u>	<u>397.8</u>				<u>\$1,830</u>
Total OJ	<u>784.8</u>				<u>\$2,525</u>	<u>706.5</u>				<u>\$2,386</u>
<u>Grapefruit Juice</u>										
Frozen-bulk	24.8	\$1.40	0%	\$1.40	\$35	23.5	\$1.44	0%	\$1.44	\$34
Frozen-packaged	0.2	\$5.42	40%	\$3.25	\$1	0.2	\$5.56	40%	\$3.34	\$1
	<u>25.0</u>				<u>\$35</u>	<u>23.7</u>				<u>\$34</u>
NFC (canned)-bulk	4.0	\$1.75	0%	\$1.75	\$7	3.7	\$1.79	0%	\$1.79	\$7
NFC (canned)-packaged	15.1	\$7.63	40%	\$4.58	\$69	14.3	\$7.82	40%	\$4.70	\$67
	<u>19.0</u>				<u>\$76</u>	<u>18.0</u>				<u>\$74</u>
Total GJ	<u>43.9</u>				<u>\$111</u>	<u>41.7</u>				<u>\$108</u>
Total Orange and Grapefruit Juice	<u>828.8</u>				<u>\$2,636</u>	<u>747.4</u>				<u>\$2,494</u>

Source: FDOC, Economic and Market Research Department, May 2015.

FPS Report #32, 2014/15 Season, extrapolated to project full season; movement converted from PS to SSG.

For the 80 million box orange crop scenario, total orange and grapefruit juice production volume was estimated at 747 million SS gallons, and processor value was estimated at \$2.494 billion, or 5.4 percent lower than for FY 2014-15 (Table 2). This value reflected average FOB prices 5.0% to 5.4% higher for orange juice, and 2.3% to 2.9% higher for grapefruit juice, compared to FY 2014-15 values, based on simulation results from the World Orange Juice model.

Processed citrus by-products were collectively valued at \$109 million for FY 2014-15 and \$91 million for the 80 million box orange crop scenario.

Economic Impacts. Total economic impact estimates for the Florida citrus industry in FY 2014-15 and for the 80 million box orange crop scenario are summarized in Table 3. For FY 2014-15, the total output or revenue impact of the industry is projected at \$9.882 billion, including \$3.900 billion from citrus fruit production, \$5.685 billion from citrus juice and byproducts manufacturing, and \$296 million from fresh citrus marketing margins. Employment impacts of the citrus industry in the 2014-15 season are projected at 56,446 fulltime and part-time jobs, while value added contributions to Gross Domestic Product (GDP) are estimated at \$4.999 billion, and labor income impacts (employee wages, salaries, benefits, business owner income) are estimated at \$3.055 billion.

Table 3. Projected economic contributions of the Florida citrus industry in FY 2014-15 and for the 80 million box orange crop scenario

Industry Activity	Impact Type (Multiplier Effect)	FY 2014-15 (projected)				80 million box orange crop scenario			
		Employment (Jobs)	Labor Income (Mn\$)	Value Added (Mn\$)	Industry Output (Mn\$)	Employment (Jobs)	Labor Income (Mn\$)	Value Added (Mn\$)	Industry Output (Mn\$)
Fruit Production	Direct	8,305	\$530.2	\$819.8	\$1,533.0	6,822	\$435.5	\$673.4	\$1,259.2
	Indirect	5,804	\$192.3	\$232.1	\$398.0	4,767	\$158.0	\$190.6	\$326.9
	Induced	15,012	\$749.2	\$1,261.7	\$1,969.2	12,331	\$615.4	\$1,036.4	\$1,617.6
	Total	29,121	\$1,471.7	\$2,313.6	\$3,900.2	23,920	\$1,208.9	\$1,900.5	\$3,203.8
Citrus Juice Manufacturing (exports, local sales, by-products)	Direct	5,251	\$391.9	\$701.6	\$2,745.2	3,613	\$275.5	\$523.7	\$2,070.6
	Indirect	4,720	\$300.1	\$489.3	\$924.3	3,462	\$219.2	\$358.3	\$689.6
	Induced	15,458	\$775.7	\$1,296.9	\$2,015.3	11,135	\$559.0	\$934.4	\$1,452.5
	Total	25,429	\$1,467.7	\$2,487.8	\$5,684.9	18,211	\$1,053.6	\$1,816.4	\$4,212.6
Fresh Fruit Packinghouse Operating Margin (exports and local sales)	Direct	569	\$47.3	\$86.7	\$125.3	461	\$38.3	\$70.2	\$101.4
	Indirect	189	\$10.4	\$16.1	\$25.6	153	\$8.4	\$13.0	\$20.7
	Induced	1,138	\$57.5	\$94.7	\$145.5	921	\$46.6	\$76.7	\$117.8
	Total	1,896	\$115.3	\$197.4	\$296.4	1,535	\$93.3	\$159.8	\$240.0
Total All Applicable Activities		56,446	\$3,054.7	\$4,998.9	\$9,881.6	43,667	\$2,355.9	\$3,876.8	\$7,656.3

Total impact for all activities includes only direct effects of in-state juice sales and processor by-product sales; all other activities are assumed to be new final demand. Values in millions 2015 dollars. Employment represents fulltime and part-time jobs. Source: Implan software and Florida data, 2012 customized model; FDOC processor statistics and production estimates.

For the 80 million box orange crop scenario, the total output or revenue impact of the industry is projected at \$7.656 billion, including \$3.204 billion from citrus fruit production, \$4.213 billion from citrus juice and byproducts manufacturing, and \$240 million from fresh citrus marketing margins. Under this scenario, the employment impact is 43,667 jobs, value added impact is \$3.877 billion, and labor income impact is \$2.356 billion. Note that these estimates include the indirect multiplier effects of supply chain purchases and induced multiplier effects of consumer spending by employee households and governments for the export (out-of-

state) share of industry sales that represent new final demand to the Florida economy, but direct effects only for in-state sales.

Trends in Production and Economic Contributions. Charts showing the trend in Florida citrus industry fruit production and economic contributions in FY 2007-08, 2012-13, 2014-15 and the 80 million box orange crop scenario are presented in the figures below. In comparison to FY 2007-08, which represents the baseline condition prior to widespread infestation of citrus greening (HLB) disease in Florida, total citrus fruit production has declined by 23% in FY 2012-13, 45% in FY 2014-15, and 58% under the 80 million box orange crop scenario (Figure 1). Estimated output impacts declined by 14%, 31% and 47%, respectively, in constant 2015 dollar terms (Figure 2). Employment impacts declined by 18%, 30% and 46%, respectively (Figure 3). Value added impacts declined by 16%, 31% and 47%, respectively (Figure 4).

Figure 1. Trend in Florida citrus fruit production

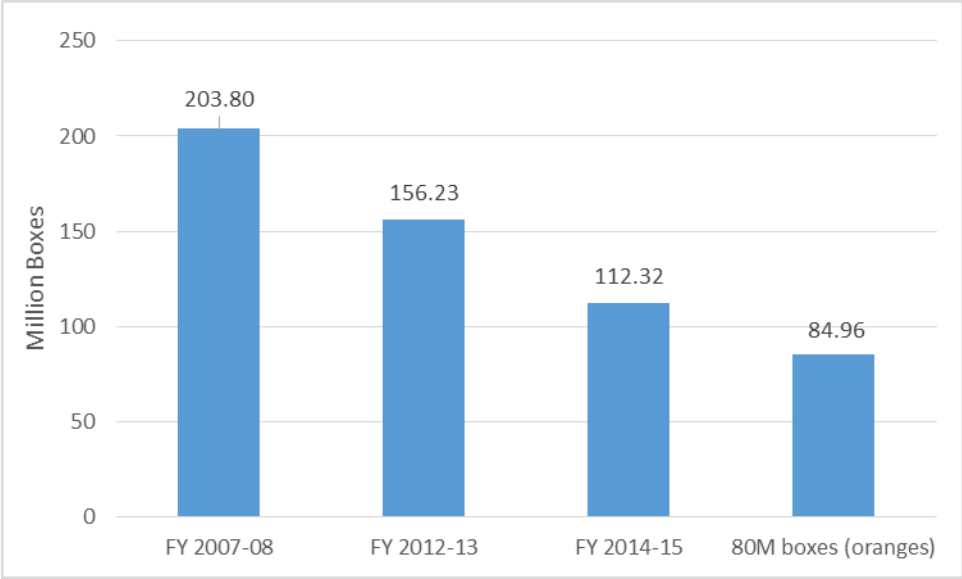


Figure 2. Trend in Florida citrus industry output contributions

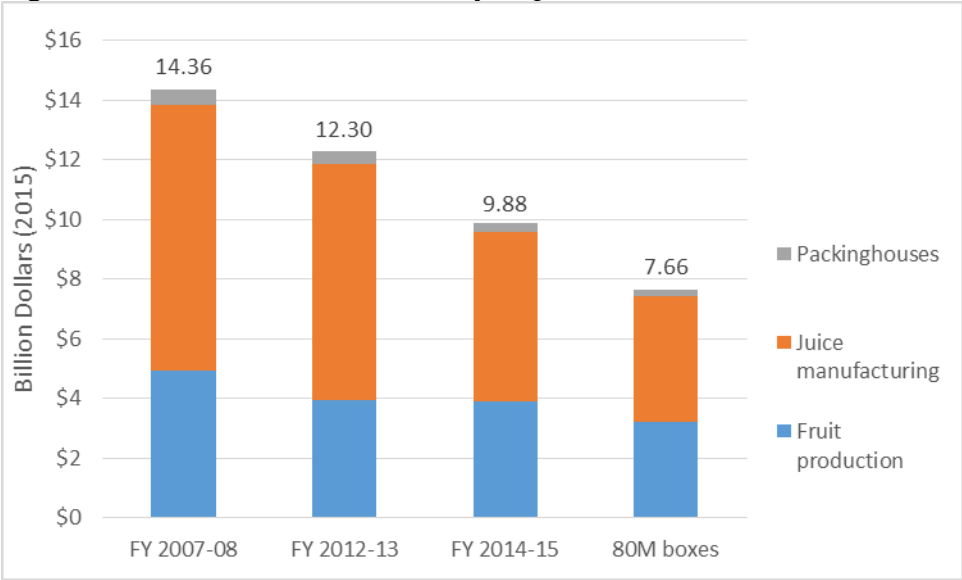


Figure 3. Trend in Florida citrus industry employment contributions

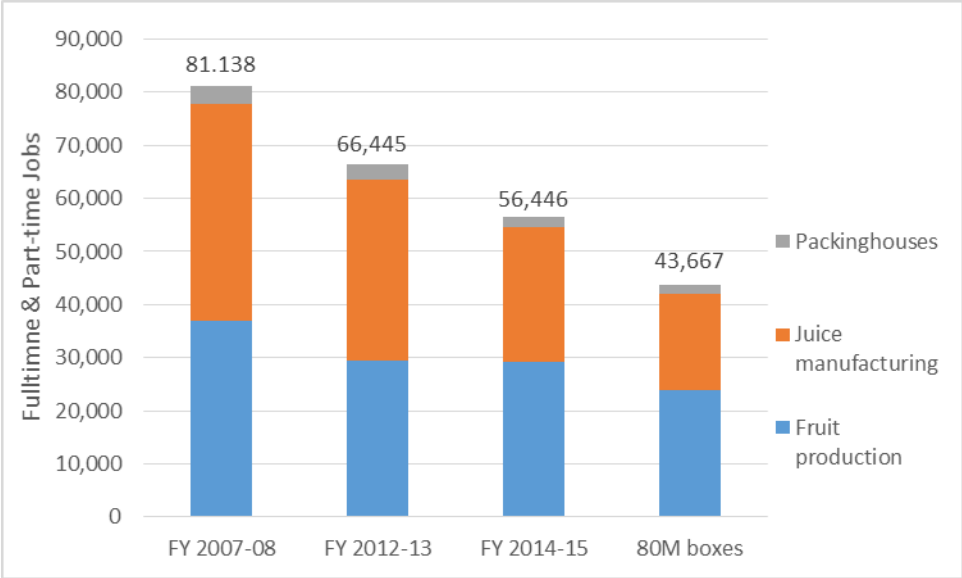


Figure 4. Trend in Florida citrus industry value added (GDP) contributions

