

## 2014/15 Indian River Cost of Production for Fresh Grapefruit

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This article presents the cost of production per acre for growing Fresh Grapefruit in the Indian River region during 2014/15. The cost estimates below do not represent any individual operation. Instead, their purpose is to serve as a benchmark for the Florida citrus industry. Typical users of these estimates include growers, consultants, property appraisers and researchers.

The data was collected during a Production Committee meeting at the Indian River Citrus League in mid-March, 2015. Five grapefruit growers participated in the survey. The number of acres managed by their combined operations accounts for approximately 15,000 acres. The acreage for grapefruit in the Indian River region in 2014 was estimated at 33,979 (USDA-NASS, 2014). Thus, the sample of growers represented 44% of the acreage devoted to grapefruit in that region.

Growers brought a completed survey form to the Production Committee meeting that had been distributed to them beforehand. The questionnaire asked growers to provide annual, per acre costs by program for a “typical” irrigated, mature grove (10+ years old), including resets. By surveying growers regarding the costs of their caretaking programs — as opposed to surveying chemical companies to obtain the retail cost of materials — the figures reported here better reflect growers’ cost. This is so because growers typically get discounts for bulk purchases that would not be accounted for otherwise.

The data collection process was completely anonymous and confidential. During the meeting each grower was distributed a “clicker” or remote control. In this way, growers “clicked-in” what their costs were for each caretaking program included in the survey. One of the main advantages of this surveying methodology is that growers do not need to submit their completed forms, which is useful to reassure their anonymity and the fact that there is no possible tracing back to any individual operation. The estimates below were obtained by averaging the responses submitted by the group of participating growers.

Table 1 shows the costs of production by program. The estimates include both the costs of materials and the cost associated with their application. The total for weed management – which includes chemical and mechanical mowing as well as herbicides – was \$196.60 per acre. At \$1,300.40 per acre, foliar sprays were the largest expense in grove caretaking. Fertilizer was the second largest expense at \$452.55 per acre. Coordinated sprays accounted for \$14.75 per acre; this category is likely to become more important (i.e.: larger) next year, as CHMAs get organized in the Indian River. The expense for pruning was \$78.90 per acre, while that for irrigation was \$117.83 per acre. The cost of canker control was \$86.40 per acre.

Adding all the costs listed above, the cultural cost of growing Fresh Grapefruit during 2014/15 without tree replacement was \$2,247.43 per acre.

Growers were also asked to provide details regarding their reset practices, including the number of trees replaced in their groves. On average, growers replaced six trees per acre during 2014/15. The total cost of tree replacement, including tree removal, site preparation, and care of young trees for those six trees was estimated at \$231.18 per acre. Adding such figure to the total cost above yields a total production cost with tree replacement of \$2,478.61 per acre.

The Florida citrus industry currently faces the challenges imposed by Huanglongbing (HLB, citrus greening), and growers have responded to it by adjusting their inputs to various degrees. Thus, there are currently different levels of spending in grove caretaking. To provide a range for those levels without disclosing individual grower data, we performed the computations presented in Table 2. Such table shows the average cost of production per acre and standard deviation for the two largest expenses: foliar sprays and fertilizer. All other costs included in Table 1 are listed under "Other programs costs". Column 1 shows the average costs while Column 2 presents the value of the standard deviation for each listed program. Columns 3 and 4 were obtained by subtracting and adding column 2 from column 1, respectively. As shown at the bottom of Table 2, a low (high) level of caretaking for Fresh Grapefruit totaled \$1,920.01 (\$3,037.01).

Table 3 shows the total costs growers incurred during 2014/15. That is, the cultural cost of production with tree replacement presented in Table 1 plus other costs such as management, regulatory and opportunity costs. The total cost of production for Fresh Grapefruit adds up to \$3,073.38 per acre. Based on such estimate, the break-even prices per box for different levels of yield are presented in Table 4. Break-even prices were calculated on an on-tree and delivered-in basis. The later assumes harvesting costs per box were \$2.20, which is based on the results of the survey "2014/15 Picking, Roadsiding, and Hauling Charges for Florida Citrus". The calculations in Table 4 also include the FDOC assessment of \$0.27 per box for the 2014/15 season. Thus, for example, the on-tree and delivered-in break-even prices for covering the total costs of production with yield at 350 boxes per acre were \$8.78 and \$11.25 per box.

### **Summary**

This article presents a summary of the 2014/15 costs of production for Fresh Grapefruit in the Indian River region. The methodology chosen to collect the data was different from that used in previous years and consisted of surveying growers directly. The current approach intends to closely reflect growers' costs in the era of HLB, which has introduced more variation and levels of spending in caretaking practices across citrus growers. The total cost of production for Fresh Grapefruit with tree replacement in 2014/15 was \$3,073.38 per acre.

### References:

USDA-NASS. 2014. Commercial Citrus Inventory: Preliminary Report.

Table 1. Cultural Costs of Production per Acre for Fresh Market Grapefruit Grown in Indian River, 2014/15

Costs represent a mature grove (10+ years old) including resets

	Number of Applications	Materials Cost per acre (\$)	Application Cost per acre (\$)	Total Cost per acre (\$)
<b>Cultural Costs</b>				
<u>Weed Management</u>				
Mowing (Chemical & mechanic)	7	10.40	57.40	67.80
Herbicides	4	74.20	54.60	128.80
<b>Total Weed Management Costs</b>				<b>196.60</b>
<u>Foliar Sprays</u>				
Insecticides		299.60		299.60
Fungicides		240.00		240.00
Nutritionals		330.40		330.40
Application:				
Ground	11		413.40	413.40
Aerial	1		17.00	17.00
<b>Total Foliar Sprays Costs</b>				<b>1300.40</b>
Coordinated Sprays - Aerial	2		14.75	14.75
<b>Total Coordinated Sprays Costs</b>				<b>14.75</b>
<u>Fertilizer</u>				
Ground/Dry Fertilizer	2	267.00	20.60	287.60
Fertigation/Liquid Fertilizer	20	151.20	13.75	164.95
<b>Total Fertilizer Costs</b>				<b>452.55</b>
<u>Pruning</u>				
Topping & Hedging	1		52.40	52.40
Raise Skirts of Trees	1		26.50	26.50
<b>Total Pruning Costs</b>				<b>78.90</b>
<u>Irrigation</u>				
Irrigation System <sup>1</sup>				75.00
Fuel for pump				42.83
<b>Total Irrigation Costs</b>				<b>117.83</b>
<b>Canker Control Costs<sup>2</sup></b>				<b>86.40</b>
<b>Total Cultural Costs without Tree Replacement</b>				<b>2247.43</b>
<u>Tree Replacement (6 trees):</u>				
Tree Removal (Clip-shear; use front-end loader)				40.80
Site Preparation and Plant Tree (includes reset trees)				73.68
Supplemental Fertilizer, Sprays, Sprout, etc. (Trees 1-3 years old)				116.70
<b>Total Tree Replacement Costs</b>				<b>231.18</b>
<b>Total Cultural Costs with Tree Replacement</b>				<b>2478.61</b>

<sup>1</sup> Irrigation System Includes: Maintenance and Repairs to Emitters, Clean Ditches, Ditch and Canal Maintenance, Water Control

<sup>2</sup> Canker Control Includes: Clean Blocks Before Certification and Harvesting; Inspections before "Canker Free" Certifications; Mandatory Citrus Canker Decontamination Costs

Table 2. Different Levels of Caretaking for Fresh Market Grapefruit Grown in Indian River, 2014/15

	(1) Average Cost	(2) Standard deviation (std dev.) value	(3) -1 std dev.	(4) +1 std dev.
<u>Foliar Sprays</u>	\$/acre		\$/acre	
Insecticides	299.60	90.20	209.40	389.80
Fungicides	240.00	47.05	192.95	287.05
Nutritionals	330.40	91.77	238.63	422.17
Ground Application	413.40	51.75	361.65	465.15
Aerial Application	17.00	5.10	11.90	22.10
<b>Total Foliar Sprays Costs</b>	<b>1300.40</b>		<b>1014.52</b>	<b>1586.28</b>
<u>Fertilizer</u>				
Ground/Dry Fertilizer	267.00	180.69	86.31	447.69
Application Cost	20.60	6.18	14.42	26.78
Fertigation/Liquid Fertilizer	151.20	77.10	74.10	228.30
Application Cost	13.75	8.75	5.00	22.50
<b>Total Fertilizer Costs</b>	<b>452.55</b>		<b>179.82</b>	<b>725.28</b>
Other cost (Weed Mgmt, Pruning, etc.) <sup>1</sup>	725.66		725.66	725.66
<b>Total Production Cost with Tree Replacement</b>	<b>2478.61</b>		<b>1920.01</b>	<b>3037.21</b>

<sup>1</sup> This refers to the costs of programs included in Table 1 excluding Foliar Sprays and Fertilizer

Table 3. Total Costs of Production per Acre for Fresh Market Grapefruit Grown in Indian River, 2014/15

<u>Total Cultural Costs with Tree Replacement</u>	2478.61
<u>Other Costs</u> Interest on Operating (Cultural) Costs	123.93
Management Cost	75.00
Property Tax/Water Management Tax	18.50
Fly protocol	16.00
Water Drainage District Assessment	107.00
Interest on Average Capital Investment	254.34
<b>Total Other Costs</b>	<b>594.77</b>
<b>Total Grower Costs</b>	<b>3073.38</b>

Table 4. 2014/15 Break-Even Price per box for Fresh Market Grapefruit Grown in Indian River

	Yield (boxes per acre)								
	250	275	300	325	350	375	400	425	450
	<i>dollars per acre</i>								
Cost of Production per acre	3073.38	3073.38	3073.38	3073.38	3073.38	3073.38	3073.38	3073.38	3073.38
Pick and Haul (\$2.20/box)	550	605	660	715	770	825	880	935	990
FDOC assessment (\$0.27/box)	68	74	81	88	95	101	108	115	122
<b>Total Delivered-in Cost per acre</b>	<b>3,691</b>	<b>3,753</b>	<b>3,814</b>	<b>3,876</b>	<b>3,938</b>	<b>4,000</b>	<b>4,061</b>	<b>4,123</b>	<b>4,185</b>
<b>Break-even Price:</b>									
	<b>\$ per box</b>								
On-tree	12.29	11.18	10.24	9.46	8.78	8.20	7.68	7.23	6.83
Delivered-in	14.76	13.65	12.71	11.93	11.25	10.67	10.15	9.70	9.30