

## Cost of Production for Fresh Market Grapefruit Grown in Indian River, 2022/23

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In this article, I present the cost of production per acre for growing fresh grapefruit in the Indian River region during 2022/23. The estimates were obtained by surveying growers by mail regarding the costs of their production programs, which allows reporting representative estimates of the current grove caretaking practices, input combinations, and costs in commercial operations. This is particularly important because, since HLB was found, growers have been modifying their practices from year to year in an attempt to cope with the disease. However, the cost estimates below do not represent any individual operation. Instead, their purpose is to serve as a benchmark for the Florida citrus industry.

The number of acres managed by the combined operations of the sample of participating growers accounted for approximately 9,500 acres; representing 72% of the acreage devoted to grapefruit in Indian River, which was estimated at 13,110 (USDA-NASS, 2023). The questionnaire asked growers to provide annual, per acre costs by program for a “typical” irrigated, mature grapefruit grove (10+ years old) with fruit marketed to the fresh market, including costs related to their tree replacement program. The figures below were obtained by computing the weighted average of the responses by the acreage of each of the growers.

Table 1 shows the cultural costs of production by program. Such estimates include both the costs of materials and their application. From Table 1, the total for weed management – which includes chemical and mechanical mowing as well as herbicides – was \$278.17 per acre. At \$1,355.43 per acre, foliar sprays represented the largest production cost. Fertilizer was the second largest expense at \$512.00 per acre. The expense for pruning was \$82.83 per acre, while that for irrigation was \$191.33 per acre. The cost per acre of canker control was \$66.67 and that of sub-contracted labor \$50.00. New this season is the expense of oxytetracycline injection, which was \$223.33 per acre. Adding all the costs listed above, the cultural cost of growing fresh grapefruit in the Indian River during 2022/23 without tree replacement was \$2,829.76 per acre. Growers were also asked to provide details regarding their reset practices but they are currently not re-planting.

Figure 1 depicts a double pie chart. The larger pie shows the cost of each program as well as the percentage relative to the cultural production costs with tree replacement. The smaller pie in Figure 1 provides greater detail regarding the individual components included in foliar sprays. Insecticides accounted for \$269 per acre and represented 10% of the cultural cost of production; fungicides accounted for \$226 per acre (8%); foliar nutritionals for \$262 per acre (9%); bactericides for \$24 per acre (1%); ground application of materials for \$459 per acre (16%); biostimulants \$47 per acre (2%), and adjuvants \$69 per acre (2%).

In addition to cultural costs, growers typically have to incur in other costs when managing their groves; those costs include management, regulatory, and opportunity costs, which in 2022/23 accounted for \$980.25 per acre. Thus, table 2 shows the estimated total

cost of production for fresh grapefruit growers in Indian River during 2022/23 was \$3,810.01 per acre. Based on such estimate, the break-even prices per box for different levels of yield are presented in Table 3. Break-even prices were calculated on an on-tree and delivered-in basis. The latter takes into account that harvesting costs per box for fresh grapefruit were estimated at \$3.46. The calculations in Table 3 also include the Florida Department of Citrus (FDOC) assessment of \$0.07 per box for grapefruit. Thus, for example, the on-tree and delivered-in break-even prices for covering the total costs of production with yield at 200 boxes per acre were \$27.09 and \$28.93 per box, respectively.

### **Summary**

This article presents a summary of the costs of production for fresh market grapefruit grown in the Indian River region during 2022/23. The methodology to collect the data consisted of surveying growers directly to closely reflect growers' costs in the era of HLB. The main change this season was the adoption of oxytetracycline injections to treat HLB infected trees. The total cost of production for fresh grapefruit in Indian River during 2022/23 was \$3,810.01 per acre. Typical users of the estimates presented herein include growers and consultants, who use them as a benchmark; property appraisers, who use them to compute the taxes for property owners; and researchers, who use the estimates to evaluate the economic feasibility of potential new technologies.

### **References:**

USDA-NASS. 2023. Commercial Citrus Inventory 2022/23.

Table 1. Cultural Costs of Production per Acre for Fresh Market Grapefruit Grown in Indian River, Florida, 2022/23

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>Production/Cultural Costs</b>				
<u>Weed Management</u>				
Mowing (Chemical & mechanical)	6	0.83	62.33	63.17
Herbicides	4	140.33	74.67	215.00
<b>Total Weed Management Costs</b>				<b>278.17</b>
<u>Foliar Sprays</u>				
Insecticides		269.00		269.00
Fungicides		226.00		226.00
Nutritionals		262.33		262.33
Adjuvants		68.50		68.50
Biostimulants		46.58		46.58
Bactericides		23.68		23.68
Application:				
Ground	10		459.33	459.33
<b>Total Foliar Sprays Costs</b>				<b>1,355.43</b>
Bactericides Injection	1	88.33	135.00	223.33
<b>Total Bactericides Injection</b>				<b>223.33</b>
<u>Fertilizer</u>				
Ground/Dry Fertilizer	3	287.00	36.00	323.00
Fertigation/Liquid Fertilizer	12	165.67	23.33	189.00
<b>Total Fertilizer Costs</b>				<b>512.00</b>
<u>Pruning</u>				
Topping, Hedging & Skirting	1		82.83	82.83
<b>Total Pruning Costs</b>				<b>82.33</b>
<u>Irrigation</u>				
Irrigation System <sup>1</sup>				191.33
Fuel for pump				70.00
<b>Total Irrigation Costs</b>				<b>261.33</b>
<b>Canker Control Costs<sup>2</sup></b>				<b>66.67</b>
<b>Grove Sub-contracted Labor</b>				<b>50.00</b>
<b>Total Production/Cultural Costs without Tree Replacement</b>				<b>2,829.76</b>
<u>Tree Replacement (0 trees):</u>				
<b>Total Tree Replacement Costs</b>				<b>0.00</b>
<b>Total Production/Cultural Costs with Tree Replacement</b>				<b>2,829.76</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. Total Costs of Production per Acre for Fresh Market Grapefruit Grown in Indian River, Florida, 2022/23

	Cost per acre (\$)
<u>Total Cultural Cost of Production</u>	2,829.76
<u>Other Costs</u>	
Interest on Operating (Cultural) Costs	141.49
Management Cost	162.63
Property Tax/Water Management Tax	18.50
Fly protocol	35.00
Water Drainage District Assessment	107.00
Interest on Average Capital Investment	515.63
<u>Total Other Costs</u>	980.25
<b>Total Grower Costs</b>	<b>3,810.01</b>

Table 3. Break-Even Price per Box for Fresh Market Grapefruit Grown in Indian River, Florida, 2022/23

	Yield (boxes per acre)								
	125	150	175	200	225	250	275	300	325
	<i>dollars per acre</i>								
Cost of Production per acre	3810	3810	3810	3810	3810	3810	3810	3810	3810
Pick and Haul	370	444	518	592	666	740	814	888	962
FDOC assessment (\$0.07/box)	9	11	12	14	16	18	19	21	23
<b>Total Delivered-in Cost per acre</b>	<b>4,189</b>	<b>4,265</b>	<b>4,340</b>	<b>4,416</b>	<b>4,492</b>	<b>4,568</b>	<b>4,643</b>	<b>4,719</b>	<b>4,795</b>
	<i>\$ per box</i>								
<u>Break-even Price for Fresh GF:</u>									
On-tree	49.50	39.54	32.42	27.09	22.94	19.62	16.90	14.64	12.72
Delivered-in	51.34	41.38	34.27	28.93	24.78	21.46	18.74	16.48	14.57

Assuming: 55% packout, 7% field run, (on-tree) price of eliminations \$10.59/box and \$11.64/box for field run

Figure 1. Cultural Costs of Production (in dollars per acre) for Fresh Market Grapefruit Grown in Indian River, Florida, 2022/23

