UF IFAS Extension UNIVERSITY of FLORIDA

FE1078

Cost of Producing Fresh Market Grapefruit in Indian River in 2018/19[1]

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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 2018/19. The data was collected during a production committee meeting of the Indian River Citrus League in May 2019. Five grapefruit growers participated in the survey, bringing a completed survey form to the meeting that had been distributed to them beforehand. The area managed by their combined operations accounts for approximately 18,085 acres. The acreage for grapefruit in the Indian River region in 2018 was estimated at 22,562 (USDA-NASS 2019). Thus, the sample of growers represented 80% of the acreage devoted to grapefruit in that region.

The survey form 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. During the meeting each grower used a "clicker" or remote device to enter the costs for each caretaking program. Using clickers to collect the data kept the process anonymous and confidential.

Surveying a panel of growers to obtain the costs of their production programs allows me to report estimates that closely reflect growers' costs and cultural practices. This is particularly important because, since huanglongbing (HLB; citrus greening)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 figures below were obtained by computing the weighted average of the responses by the acreage of each of the participating growers.

Table 1 shows the cultural costs of production by program. Such estimates include both the costs of materials and their application. The total for weed management, which includes chemical and mechanical mowing as well as herbicides, was $227.04 per acre. At $1,176.80 per acre, foliar sprays represented the largest production cost. Fertilizer was the second largest expense at $582.10 per acre. The expense for pruning was $104.44 per acre, while that for irrigation was $214.45 per acre. The cost of canker control was $30.08 per acre. Adding all the costs listed above, the cultural cost of growing fresh grapefruit in the Indian River region during 2018/19 without tree replacement was $2,334.91 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 three trees per acre during 2018/19. The total cost of tree replacement, including tree removal, site preparation, and care of those young trees was estimated at $150.62 per acre. Adding this figure to the total cost above yields a total production cost with tree replacement of $2,485.53 per acre.

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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 for a total of $1,176.80 per acre. Insecticides accounted for $233.00 per acre and represented 9% of the cultural cost of production; fungicides accounted for $229.80 per acre (9%); foliar nutritionals for $223.80 per acre (9%); bactericides for $65 per acre (3%); aerial application for $5.20 per acre (0.21%); ground application of materials for $420.00 per acre (17%).

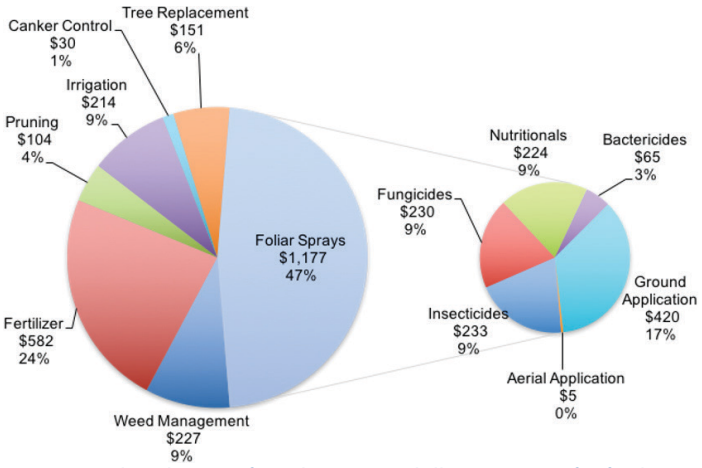

Figure 1. Cultural costs of production (in dollars per acre) for fresh market grapefruit grown in Indian River, Florida, 2018/19.

Figure 2 shows a comparison of the cost of the main production programs in 2018/19 relative to the previous season. The main changes in cultural practices compared to the previous season are as follows. First, growers are no longer coordinating sprays, so the spending in Citrus Health Management Areas is zero. Second, there was an increase in tree-replacement spending: on average, growers replaced three trees per acre instead of one as in the previous season. Third, for a second consecutive year, growers reduced their spending in bactericides; growers reported spending, on average, $65 per acre, down from $95 last season.

In addition to cultural costs, growers typically must incur other costs when managing their groves; these other costs include management, regulatory, and opportunity costs. Table 2 shows the estimated total cost of production for fresh grapefruit growers in Indian River during 2018/19 was $3,010.21 per acre. Based on this 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 later assumes harvesting costs per box for fresh grapefruit were $2.99. 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 300 boxes per acre were $10.39 and $12.40 per box, respectively.

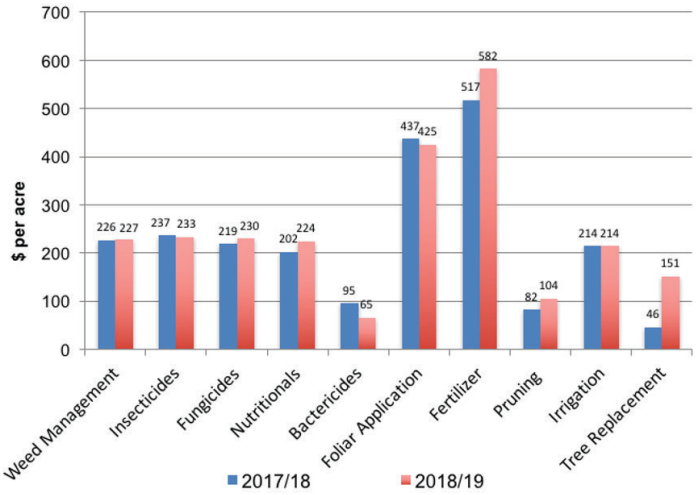

Figure 2. Cost of production by program for fresh market grapefruit grown in Indian River, Florida, 2017/18 vs. 2018/19.

Summary

This article presents a summary of the costs of production for fresh market grapefruit grown in the Indian River region during 2018/19. The methodology chosen to collect the data consisted of surveying growers directly to closely reflect growers' costs in the era of HLB. The main changes this season were the halting of coordinated insecticide sprays, the increase of spending in tree replacement, and the decrease of spending on bactericides. The total cost of production for fresh grapefruit in Indian River during 2018/19 was $3,010.21 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.

Reference

USDA-NASS. 2019. Florida Citrus Statistics 2017/18.

Table 1. Cultural Costs of Production per Acre for Fresh Market Grapefruit Grown in Indian River, Florida, 2018/19.

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 ($)
	Production/cultural costs			
Weed management				
Mowing (chemical and mechanical)	8	4.88	76.16	81.03
Herbicides	4	69.95	76.06	146.01
Total weed management costs				227.04
Foliar sprays				
Insecticides		233.00		233.00
Fungicides		229.80		229.80
Nutritionals		223.80		223.80
Bactericides		65.00		65.00
Application				
Ground	11		420.00	420.00
Aerial	1		5.20	5.20
Total foliar sprays costs				1,176.80
Fertilizer				
Ground/dry fertilizer	3	236.00	33.20	269.20
Fertigation/liquid fertilizer	16	281.40	31.50	312.90
Total fertilizer costs				582.10
Pruning				
Topping, hedging and skirting	1		104.44	104.44
Total pruning costs				104.44
Irrigation				
Irrigation system[1]				174.16
Fuel for pump				40.30
Total irrigation costs				214.45
Canker control costs[2]				30.08
Total production/cultural costs without tree replacement				**2,334.91**
Tree replacement (3 tree)				
Tree removal (clip-shear; use front-end loader)				23.25
Site preparation and plant tree (includes reset trees)				53.93
Supplemental fertilizer, sprays, sprout, etc. (trees 1–3 years old)				73.44
Total tree replacement costs				150.62
Total production/cultural costs with tree replacement				2,485.53

[1] Irrigation system includes: Maintenance and repairs to emitters, clean ditches, ditch and canal maintenance, water control
[2] 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, 2018/19.

	Cost per acre ($)
Total cultural cost of Production	2,485.53
Other costs	
Interest on operating (cultural) costs	124.28
Management cost	74.45
Property tax/water Management tax	18.50
Fly protocol	34.89
Water drainage district Assessment	107.00
Interest on average capital Investment	165.57
Total other costs	524.68
Total grower costs	**3,010.21**

Table 3. Break-Even Price per Box for Fresh Market Grapefruit Grown in Indian River, Florida, 2018/19.

	Yield (boxes per acre)								
	175	**200**	**225**	**250**	**275**	**300**	**325**	**350**	**375**
	Dollars per acre								
Cost of production	3010	3010	3010	3010	3010	3010	3010	3010	3010
Pick and haul	511	584	657	730	802	875	948	1021	1094
FDOC assessment	12	14	16	18	19	21	23	25	26
Total delivered-in cost	**3533**	**3608**	**3683**	**3757**	**3832**	**3907**	**3981**	**4056**	**4131**
Break-even price[1]	**Dollars per box**								
On-tree	25.02	20.63	17.22	14.49	12.25	10.39	8.82	7.47	6.29
Delivered-in	27.03	22.64	19.23	16.50	14.27	12.40	10.83	9.48	8.31

[1]Assumes 58% packout, 16% field run, price of eliminations $9.13/box and $10.92/box for field run