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Cost of Production for Processed Oranges in Central Florida in 2023/24

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This article presents estimates for the cost of production per acre for processed oranges grown in Central Florida in 2023/24. The estimates were obtained by surveying growers regarding the costs of their production programs, which allows reporting representative estimates of the current grove caretaking practices, input combinations, and costs. This is important because, since the outbreak of HLB, growers have been changing their practices from season to season in an attempt to cope with the disease. Thus, surveying growers allows not only to report estimates that closely reflect their cost but also to track the changes they make to their cultural practices. However, the cost estimates below do not represent any individual operation. Instead, their purpose is to serve as a benchmark.

The number of acres managed by the combined operations of the sample of participating growers accounted for approximately 3,700 acres; representing 4% of the acreage devoted to oranges in central Florida, which was estimated at 103,559 (USDA-NASS 2024). The questionnaire asked growers to provide annual, per acre costs by program for a "typical" irrigated, mature grove (10+ years old), including costs related to their tree replacement program.

Table 1 shows the cultural cost of production by program. The estimates include both the cost of materials and the cost associated with their application. The total cost for weed management —which includes chemical and mechanical mowing as well as herbicides— was $347.00 per acre. At $569.00 per acre, foliar sprays represented the largest cost. Fertilizer was the second-largest expense at $559.33 per acre. The expense for pruning was $22.50 per acre, while that for irrigation was $256.67 per acre. This season the expense for OTC trunk injections was $206.67 per acre. Adding all the costs listed above, the cultural cost of growing oranges for processing without tree replacement was $1,961.17 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 ten trees per acre during 2023/24. The total cost of tree replacement, including tree removal, site preparation, and supplemental care of those ten young trees was estimated at $296.67 per acre. Adding such figure to the total cost above adds up to a total production cost with tree replacement of $2,257.83 per acre.

Figure 1 depicts a double pie chart. The larger pie shows the cost of each program as well as the percentage relative to the total 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 $97.67 per acre (which represented 4% of the cultural cost of production); fungicides accounted for $78.67 per acre (4%); foliar nutritionals for $216.67 per acre (10%); ground application totaled $176 per acre (8%).

In addition to cultural costs, growers typically incur in other costs when managing

their groves. Those costs include management, regulatory, and opportunity costs and totaled $587.61 per acre. Table 2 shows the total cost of production for processed oranges grown in central Florida during 2023/24 was $2,845.45 per acre. Based on this estimate, the break-even prices per box and per pound solids 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 were estimated at $4.49 for early and mid-season and $4.53 for Valencias. The calculations in Table 3 also include the Florida Department of Citrus (FDOC) assessment of $0.12 per box for the 2023/24 season. Thus, for example, the on-tree and delivered-in break-even prices for early and mid-season for covering the total costs of production with yield at 75 boxes per acre were $8.43 and $9.46 per pound solids, respectively. For Valencias, the on-tree and delivered-in break-even prices for covering the total costs of production with yield at 75 boxes per acre were $7.42 and $8.33 per pound solids, respectively.

Summary

This article presents a summary of the 2023/24 costs of production for processed oranges grown in central Florida. The methodology to collect the data consisted of surveying growers directly to reflect their costs. The main change this season was the adoption of oxytetracycline injections to treat HLB infected trees. The cultural cost and total cost of production for processed oranges this season were $2,257.83 per acre and $2,845.45 per acre, respectively. Typical users of these estimates 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. 2024. Commercial Citrus Inventory 2024.

Table 1. Cultural Costs of Production per Acre for Processed Oranges Grown in Central Florida, 2023/24

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 ($)
Cultural Costs				
Weed Management				
Mowing (Chemical & mechanical)	6	35.00	75.00	110.00
Herbicides	4	176.67	60.33	237.00
Total Weed Management Costs				347.00
Foliar Sprays				
Insecticides		97.67		
Fungicides		78.67		393.00
Nutritionals		216.67		
Application:				
Ground	6		176.00	176.00
Total Foliar Sprays Costs				569.00
Bactericides Injections	1	41.67	165.00	206.67
Total Bactericides Injections				206.67
Fertilizer				
Ground/Dry Fertilizer	3	298.33	50.67	349.00
Fertigation/Liquid Fertilizer	9	195.00	15.33	210.33
Total Fertilizer Costs				559.33
Pruning				
Topping & Hedging	1		15.00	15.00
Chop/Mow Brush	1		7.50	7.50
Total Pruning Costs				22.50
Irrigation				
Irrigation System[1]				139.00
Fuel for pump				117.67
Total Irrigation Costs				256.67
Total Cultural Production Costs without Tree Replacement				**1,961.17**
Tree Replacement (10 trees):				
Tree Removal (Clip-shear; use front-end loader)				51.67
Site Preparation and Plant Tree (Includes reset trees)				145.00
Supplemental Fertilizer, Sprays, Sprout, etc. (Trees 1-3 years old)				100.00
Total Tree Replacement Costs				296.67
Total Cultural Costs with Tree Replacement				**2,257.83**

[1] Irrigation system includes: maintenance and repairs to emitters, clean ditches, ditch and canal maintenance, water control

Table 2. Total Costs of Production per Acre for Processed Oranges Grown in Central Florida, 2023/24

		Total Cost per acre ($)
Total Cultural Costs		2,257.83
Other Costs	Interest on Operating (Cultural) Costs	112.89
	Management Cost	44.00
	Property Tax/Water Management Assessment	28.73
	Interest on Average Capital Investment	401.99
Total Other Costs		587.61
Total Costs		**2,845.45**

Table 3. Break-Even Price per Box and per Pound Solids for Processed Oranges Grown in Central Florida, 2023/24

A. Early and Mid-Season Oranges

	Yield (boxes per acre)								
	50	**75**	**100**	**125**	**150**	**175**	**200**	**225**	**250**
	dollars per acre								
Cost of Production per acre	2845	2845	2845	2845	2845	2845	2845	2845	2845
Pick and Haul per acre ($4.49/box)	225	337	449	561	674	786	898	1010	1123
FDOC assessment ($0.12/box)	6	9	12	15	18	21	24	27	30
Total Delivered-in Cost per acre	**3076**	**3191**	**3306**	**3422**	**3537**	**3652**	**3767**	**3883**	**3998**

Break-even Price:	$ per box								
On-tree	56.91	37.94	28.45	22.76	18.97	16.26	14.23	12.65	11.38
Delivered-in	61.52	42.55	33.06	27.37	23.58	20.87	18.84	17.26	15.99

Break-even Price:[1]	$ per pound solids								
On-tree	12.65	8.43	6.32	5.06	4.22	3.61	3.16	2.81	2.53
Delivered-in	13.67	9.46	7.35	6.08	5.24	4.64	4.19	3.83	3.55

Assumes 4.50 pound solids per box based on Florida Department of Citrus (FDOC) Processor Statistical Report for the 2023/24 season

B. Valencia Oranges

	Yield (boxes per acre)								
	50	**75**	**100**	**125**	**150**	**175**	**200**	**225**	**250**
	dollars per acre								
Cost of Production per acre	2845	2845	2845	2845	2845	2845	2845	2845	2845
Pick and Haul per acre ($4.53/box)	227	340	453	566	680	793	906	1019	1133
FDOC assessment ($0.12/box)	6	9	12	15	18	21	24	27	30
Total Delivered-in Cost per acre	**3077.9**	**3194**	**3310**	**3427**	**3543**	**3659**	**3775**	**3892**	**4008**

Break-even Price:	$ per box								
On-tree	56.91	37.94	28.45	22.76	18.97	16.26	14.23	12.65	11.38
Delivered-in	61.56	42.59	33.10	27.41	23.62	20.91	18.88	17.30	16.03

Break-even Price:[1]	$ per pound solids								
On-tree	11.14	7.42	5.57	4.45	3.71	3.18	2.78	2.47	2.23
Delivered-in	12.05	8.33	6.48	5.36	4.62	4.09	3.69	3.38	3.14

[1]Assumes 5.11 pound solids per box based on Florida Department of Citrus (FDOC) Processor Statistical Report for the 2023/24 season

Figure 1. Cultural Costs of Production (in dollars per acre) for Processed Oranges Grown in Central Florida, 2023/24