

# Cost of Production for Processed Oranges in Southwest Florida, 2014/15 <sup>1</sup>

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## Introduction

This article presents the cost of production per acre for processed oranges in southwest Florida 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 Survey

A total of twelve growers participated in the data collection process. Eight growers attended a meeting at the UF/IFAS Extension Hendry County office in June of 2015, while another four growers submitted their responses by mail. The number of acres managed by their combined operations accounted for approximately 32,400 acres. The acreage for oranges in southwest Florida during 2014 was estimated at 265,927 (USDA/NASS 2014). Thus, the combined acreage of the surveyed growers represents 12% of the total acreage devoted to oranges in that region.

Growers brought a completed survey form to the 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' costs since they typically get discounts for bulk purchases that would not be accounted for otherwise.



The data collection process at the UF/IFAS Extension Hendry County office was completely anonymous and confidential. During the meeting, growers operated a remote-control device that allowed them to 'click-in' the costs for each caretaking activity included in the survey. One of the main advantages of this surveying methodology was that growers did not need to submit their completed forms, which is useful to ensure their anonymity; there is no way to trace the answers back to any individual operation. The estimates below were obtained by averaging the responses submitted by the group of participating growers.

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Table 1 shows the costs of production by program. The estimates include both the cost of materials and the costs associated with their application. The total cost for weed management—which includes chemical and mechanical mowing, as well as herbicides—was \$248.19 per acre. At \$666.00 per acre, foliar sprays were the largest expense in grove caretaking. Fertilizer was the second largest expense at \$486.96 per acre. Citrus Health Management Areas (CHMA) sprays accounted for \$20.55 per acre. The expense for pruning was \$31.50 per acre, while that for irrigation was \$198.14 per acre. Adding all the costs listed above, the cultural cost of growing oranges for processing during 2014/15 without tree replacement was \$1,651.33 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 nine trees per acre during 2014/15. The total cost of tree replacement, including tree removal, site preparation, and care of the reset trees was estimated at \$346.77 per acre. Adding the reset cost to the cultural cost yields a total production cost with tree replacement of \$1,998.10 per acre.

The Florida citrus industry currently faces the challenges imposed by huanglongbing (HLB, citrus greening); growers have responded to the disease by adjusting their production inputs to varying 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. This table shows the average cost of production per acre and standard deviation for the two largest expenses: foliar sprays and fertilizer. All the other costs included in Table 1 are combined in Table 2 under “Other Costs”. Column 1 shows the average costs while columns 2 and 3 are obtained by subtracting and adding the value of the standard deviation from column 1, respectively. As shown at the bottom of Table 2, the low (high) level of caretaking for processed oranges totals \$1,465.91 (\$2,579.14).

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 management, regulatory, and opportunity costs. Thus, the total cost of production for processed oranges totals \$2,444.41 per acre. Based on this estimate, the break-even prices per box for different levels of yield are presented in Table 4. Break-even prices are calculated on an on-tree and delivered-in basis. The latter assumes harvesting costs per box are \$2.55, which is based on the results of the survey entitled *2014/15 Picking, Roadsiding, and Hauling Charges for Florida Citrus*. The calculations in Table 4 also include the FDOC assessment

of \$0.20 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 250 boxes per acre are \$1.60 and \$2.05 per pound solids, respectively.

## Summary

This article presented a summary of the 2014/15 costs of production for processed oranges in southwest Florida. The methodology chosen to collect the data was different from that used in previous years and consisted of surveying growers directly. The current approach more accurately reflects growers’ costs in the era of HLB, which has introduced greater variation in the levels of spending on caretaking practices across citrus growers. The total cost of production for processed oranges with tree replacement in 2014/15 was \$2,444.41 per acre.

## Reference

United States Department of Agriculture, National Agricultural Statistics Service (USDA/NASS). 2014. *Commercial Citrus Inventory: Preliminary Report*. Maitland, FL: Florida Department of Agricultural Services.

Table 1. Cultural costs of production per acre for processed oranges in southwest Florida, 2014/15.

Costs for 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 & mechanical)	5	3.82	57.55	61.37
Herbicides	3	114.64	72.17	186.81
Total Weed Management Costs				248.19
<u>Foliar Sprays</u>				
Insecticides		233.87		233.87
Fungicides		119.73		119.73
Nutritionals		162.50		162.50
Application:				
Ground	5		122.43	122.43
Aerial	3		27.46	27.46
Total Foliar Sprays Costs				666.00
CHMAs Sprays	3		20.55	20.55
Total CHMAs Sprays Costs				56.65
<u>Fertilizer</u>				
Ground/Dry Fertilizer	3	338.55	31.06	369.61
Fertigation/Liquid Fertilizer	4	89.24	28.11	117.35
Total Fertilizer Costs				469.80
<u>Pruning</u>				
Topping & Hedging	1		31.50	31.50
Total Pruning Costs				31.50
<u>Irrigation</u>				
Irrigation System <sup>1</sup>				76.14
Fuel for pump				122.00
Total Irrigation Costs				198.14
<b>Total Cultural Costs without Tree Replacement</b>				<b>1651.33</b>
<u>Tree Replacement (9 trees):</u>				
Tree Removal (Clip-shear; use front-end loader)				61.20
Site Preparation and Tree Planting (includes reset trees)				110.52
Supplemental Fertilizer, Sprays, Sprout, etc. (Trees 1–3 years old)				175.05
Total Tree Replacement Costs				346.77
<b>Total Cultural Costs with Tree Replacement</b>				<b>1998.10</b>
<sup>1</sup> Irrigation system includes maintenance and repairs to emitters, clean ditches, ditch and canal maintenance, and water control.				

Table 2. Different levels of caretaking for processed oranges in southwest Florida, 2014/15.

	(1)	(2)	(3)
	Average Cost	Low -1 SD	High +1 SD
	\$/acre		
<b>Foliar Sprays</b>			
Insecticides	233.87	194.03	273.71
Fungicides	119.73	68.97	170.50
Nutritionals	162.51	100.94	224.07
Ground Application	122.43	93.92	150.94
Aerial Application	27.46	9.48	45.44
Total Foliar Sprays Costs	666.00	467.35	864.66
<b>Fertilizer</b>			
Ground/Dry Fertilizer	338.55	138.66	538.44
Application Cost	31.06	14.77	47.34
Fertigation/Liquid Fertilizer	89.24	0.00	203.85
Application Cost	28.11	0.00	79.70
Total Fertilizer Costs	486.96	153.43	869.33
<b>Other costs</b> (Weed Management, Pruning, etc.) <sup>1</sup>	845.14	845.14	845.14
<b>Total Production Cost with Tree Replacement</b>	<b>1998.10</b>	<b>1465.91</b>	<b>2579.14</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 processed oranges in southwest Florida, 2014/15.

Total Cultural Costs with Tree Replacement	1998.10
<b>Other Costs</b>	
Interest on Operating (Cultural) Costs	99.91
Management Cost	63.34
Property Tax/Water Management Assessment	28.73
Interest on Average Capital Investment	254.34
Total Other Costs	446.31
<b>Total Costs</b>	<b>2444.41</b>

Table 4. Break-even price per box for processed oranges in southwest Florida, 2014/15.

	Yield (boxes per acre)								
	175	200	225	250	275	300	325	350	375
	<i>dollars per acre</i>								
Cost of Production Per Acre	2444	2444	2444	2444	2444	2444	2444	2444	2444
Pick and Haul (\$2.55/box)	446	510	574	638	701	765	829	893	956
FDOC Assessment (\$0.20/box)	35	40	45	50	55	60	65	70	75
<b>Total Delivered-in Cost Per Acre</b>	<b>2926</b>	<b>2994</b>	<b>3063</b>	<b>3132</b>	<b>3201</b>	<b>3269</b>	<b>3338</b>	<b>3407</b>	<b>3476</b>
<b>Break-even Price:</b>	<i>dollars per box</i>								
On-tree	13.97	12.22	10.86	9.78	8.89	8.15	7.52	6.98	6.52
Delivered-in	16.72	14.97	13.61	12.53	11.64	10.90	10.27	9.73	9.27
<b>Break-even Price:<sup>1</sup></b>	<i>dollars per pound solids</i>								
On-tree	2.29	2.00	1.78	1.60	1.45	1.33	1.23	1.14	1.07
Delivered-in	2.74	2.45	2.23	2.05	1.90	1.78	1.68	1.59	1.52

<sup>1</sup> Assumes 6.11 pounds solids per box based on Florida Department of Citrus (FDOC) Processor Statistical Report for the 2014/15 season.