

## Harvesting Charges for Florida Citrus, 2016/17

Ariel Singerman, Marina Burani-Arouca, Stephen H. Futch, Robert Ranieri<sup>1</sup>  
University of Florida, IFAS, CREC, Lake Alfred, FL

This article summarizes the charges for harvesting citrus in Florida during the 2016/17 season. The estimates we provide are key for computing on-tree prices and to estimate economic returns to citrus growers. Our estimates are based on a survey of harvesters we conducted in May 2017. A total of 15 harvesters participated in the survey. The combined reported harvested area of all participants accounted for 79,996 acres, representing 18% of total citrus bearing acreage in Florida.

Since citrus harvesting is manual and labor intensive, the cost of labor is a key component of harvesting. A large proportion of the labor used for harvesting citrus in Florida is hired under the H-2A temporary agricultural program. The program allows hiring non-US citizens to work on farms during the harvesting season. The wage rate for people hired in Florida under the H-2A program, known as the Adverse Effect on Wage Rates (AEWR) was \$11.20 per hour in 2017. In comparison, Florida's minimum wage in 2017 was \$8.10 per hour. However, there are additional mandatory costs associated with employee compensation; those include social security, unemployment tax, and workers' compensation insurance. Some of these costs are relevant only when employing domestic workers, whereas other costs are relevant when employing domestic or H-2A workers.

According to regulations, the domestic minimum wage is applicable only if the entire harvesting crew is composed by domestic workers. If any H-2A workers are employed, the employer must provide the same benefits to domestic and foreign workers. Thus, if a company employs both H-2A and domestic workers, then the employer must pay all of their workers the highest of: the AEWR; the federal or Florida's minimum wage (whichever is higher); the applicable prevailing wage; the agreed-upon collective bargaining rate. Generally, the highest wage is the AEWR. In addition, harvesting companies using the H-2A program also incur in costs related to housing, in-bound and out-bound transportation for workers, recruitment, as well as administrative costs associated with the guest worker program.

Since domestic harvesting workers are in short supply, harvesting companies often end up employing a majority of H-2A workers. Among the companies we surveyed, the average proportion of their harvesting crews hired under the H-2A program was 89%. In fact, eight out of the thirteen companies that responded to this question reported that 100% of their crews were hired under H-2A. The lowest proportion of H-2A workers hired by any single company in our sample was 20%, but it was also the company reporting the smallest harvested area. The rest of them all reported their crews were composed by at least 75% of H-2A workers. Therefore, these costs associated with employing H-2A workers are embedded in the harvesting charges presented in this report.

---

<sup>1</sup> Ariel Singerman, Assistant Professor, Food and Resource Economics Department, Citrus Research and Education Center, Lake Alfred, FL. Marina Burani-Arouca, Economics Extension Coordinator, Citrus Research and Education Center, Lake Alfred, FL. Stephen H. Futch, Multi-county Extension Agent, Citrus Research and Education Center, Lake Alfred, FL. Robert Ranieri, Graduate Student, Food and Resource Economics Department, Gainesville, FL.

Harvesting charges are classified into picking, roadsiding, and hauling, as shown in Figure 1. We collected data to obtain estimates for each of the three categories. The average, minimum, and maximum for picking, roadsiding, and hauling charges are presented in Table 1 by variety, for both fresh and processed fruit. We also included in table 1 the percentage change since last season.

Average picking charges for all varieties showed a marginal increase of 1% for fresh fruit and 4% for processed fruit compared to the 2015/16 season. However, picking charges for some varieties showed substantial changes relative to last season. As shown in table 1, the average for fresh Early and Mid-season oranges picking charges was \$1.32/box, up 11% compared to last season. Such increase was due to the minimum picking charge reported this year being \$1.30/box, up from \$1.10/box last season. The average picking charge for processed Early and Mid-season oranges was \$1.30/box, down 5% compared to last season, which is likely due to the different sample of harvesters that responded to the survey this year. The same applies to the small changes observed in average picking charges for Valencia oranges.

As also shown in table 1, the average picking charge for processed Pink/Red Grapefruit was estimated at \$1.16/box, up 15% compared to 2015/16. This increase was due to the maximum picking charge reported this year being \$1.85/box, up from \$1.10/box last season. At \$1.70/box, processed tangelos showed the largest decrease (-21%) in picking charges compared to 2015/16. The average picking charge for tangerines was \$2.48/box, up 42% compared to last season. Both tangelos and tangerines are the varieties for which we obtained the lowest number of survey responses. Thus, the relative low number of responses for those two varieties contributes to a larger variation when computing average charges.

Average roadsiding charges for all varieties of fresh and processed fruit showed a decrease of 4% and an increase of 5%, respectively, compared to last year. Specifically, the average roadsiding charges for Early and Mid-season oranges did not change significantly. Contrastingly, Valencia oranges harvested after May 15 for fresh and processed this season were \$1.24 and \$1.12/box, respectively; both showing a decrease larger than 10% compared to last season. This is due to the few responses we had obtained last year for this variety. As it was the case with picking charges, tangelos and tangerines also show the largest percentage change in roadsiding charges compared to last season.

Average hauling charges for all varieties of fresh and processed fruit have increased 10% and 5%, respectively, compared to last season. The average charges for hauling fresh fruit more than 50 miles have increased more than 10% compared to 2015/16, and so has the average charge for hauling processed fruit more than 100 miles. We also collected data regarding the average hauling distance of fruit, which was estimated at 65 miles, down from 91 miles in the 2015/16 season.

An additional component of the total harvesting charge can be the cost to tarp the hauling trailer. All trailers hauling citrus fruit from regions of Florida where citrus black spot is present, are required to be tarped. Citrus black spot is a fungal disease that affects yield and fruit quality and it was first detected in Florida in March 2010 (Dewdney et al., 2016). Quarantined regions

include parts of Lee, Collier, and Hendry counties. Polk County also has a small quarantined area in its southernmost area (Rollins et al., 2016). According to the responses we obtained in our survey, the average time to install and remove the tarp from the trailer was 57 minutes, and the additional cost was \$21.00 per load.

In table 2 we present the estimates for the average total harvesting charges by variety, for fresh and processed fruit, using the hauling charges for 51-80 miles. The average total harvesting charges for fresh and processed oranges were \$3.28 and \$3.16 per box, respectively. For grapefruit, the average total harvesting charges were \$2.65 and \$2.90 per box for fresh and processed fruit, respectively, whereas for specialty fruit the charges were \$4.46 and \$4.73 per box. The significantly higher charges for harvesting specialty fruit may be attributed to the extra labor needed to clip, pick, and handle these thin peel varieties so that the fruit is not damaged. Moreover, hauling costs for processed specialty fruit can typically be higher than those for other processed varieties because they are not shipped in a fully loaded trailer to prevent the fruit on the bottom from becoming crushed from the weight of fruit loaded on top.

Typically, the charges for fresh fruit picking and roadsiding are higher than those for processed fruit. However, both last season and this season we found the opposite for Valencia oranges, Pink/Red grapefruit, White/Marsh Grapefruit, and Tangerines. A possible explanation for this seemingly counterintuitive finding could be that as the impact of Huanglongbing (HLB) increases, only the blocks with trees having lower infection levels yield fruit that qualifies for the fresh market. Since those trees are likely to have more fruit, the cost of harvesting such blocks is lower. Contrastingly, as the number of blocks with trees that have a higher infection level increases, and the volume of fruit they yield is lower, harvesting costs of such blocks increases.

The cost of harvesting citrus on a per box basis has been increasing in the last few years. The negative effect of HLB on fruit production can sensibly be argued to be a main contributor to such increase. As a result of the disease's impact on production, the Florida citrus industry has begun a consolidating process, and harvesting companies are no exception. In addition, lower volume and size of fruit reduces harvesting productivity per block and thereby increases costs per box. However, it is worth noting that since yields have been declining in the last few years, the average cost of harvesting per acre – as a percentage of the total delivered-in cost – has decreased from approximately 45% in 2004/05 to 21% in 2016/17.

## References

- Dewdney, M. M., T.S. Schubert, M.R. Estes, P.D. Roberts, N.A. Peres. 2016. 2016 Florida Citrus Pest Management Guide: Ch. 19 Citrus Black Spot. <http://edis.ifas.ufl.edu/cg088>
- Rollins J., N. Wang, K. Zhang, M. Dewdney. 2016. Citrus Black Spot Update. University of Florida IFAS. Citrus Expo 2016. [http://www.crec.ifas.ufl.edu/extension/CitrusExpo/2016/Rollins\\_expo2016.pdf](http://www.crec.ifas.ufl.edu/extension/CitrusExpo/2016/Rollins_expo2016.pdf)

Table 1. Estimated Average Picking, Roadsiding, and Hauling Charges for Florida Citrus, 2016/17

Picking Charges	Fresh Fruit				Processed Fruit			
	Min.	Max.	Average	Change from 2015/16	Min.	Max.	Average	Change from 2015/16
	\$/box				\$/box			
Early and Mid-season Oranges	1.30	1.35	1.32	11%	1.05	2.00	1.30	-5%
Valencia Oranges	1.15	1.43	1.32	6%	1.05	2.05	1.43	2%
Valencia Oranges (after May 15)	1.20	1.50	1.33	-4%	1.10	2.10	1.42	-10%
Pink/Red Grapefruit	0.75	1.00	0.87	4%	0.85	1.85	1.16	15%
White/Marsh Grapefruit	0.85	0.96	0.92	5%	1.00	1.30	1.13	8%
Tangelos	1.66	2.10	1.92	-5%	1.40	2.00	1.70	-21%
Tangerines (including Temples)	1.50	2.50	2.06	-6%	1.95	3.00	2.48	42%
Average for all varieties				1%				4%

  

Roadsiding Charges	Min.	Max.	Average	Change from 2015/16	Min.	Max.	Average	Change from 2015/16
	\$/box				\$/box			
	Early and Mid-season Oranges	1.10	1.44	1.31	10%	0.96	1.50	1.09
Valencia Oranges	0.98	1.50	1.26	-2%	0.96	2.25	1.20	4%
Valencia Oranges (after May 15)	1.08	1.52	1.24	-17%	1.00	1.32	1.12	-11%
Pink/Red Grapefruit	1.01	1.19	1.09	7%	0.90	1.84	1.15	13%
White/Marsh Grapefruit	1.11	1.19	1.15	15%	0.90	1.34	1.03	1%
Tangelos	1.25	2.24	1.71	-19%	1.15	1.50	1.33	2%
Tangerines (including Temples)	1.35	2.19	1.76	-22%	1.26	2.50	1.95	22%
Average for all varieties				-4%				5%

  

Hauling Charges	Average All Varieties	Change from 2015/16	Average All Varieties	Change from 2015/16
	\$/box		\$/box	
0-30 miles	0.48	1%	0.44	0%
31-50 miles	0.55	7%	0.52	-3%
51-80 miles	0.68	13%	0.65	5%
81-100 miles	0.83	15%	0.68	-3%
100+ miles	1.00	14%	0.80	25%
	Average	10%	Average	5%

Table 2. Estimated Average of Total Harvesting Charges for Florida Citrus, 2016/17<sup>1</sup>

	<b>Fresh Fruit</b>	<b>Processed Fruit</b>
	<i>\$/box</i>	<i>\$/box</i>
Early and Mid-season Oranges	3.30	3.03
Valencia Oranges	3.25	3.27
Valencia Oranges (after May 15)	3.25	3.19
<i>Sweet Oranges Average<sup>2</sup></i>	<i>3.28</i>	<i>3.16</i>
Pink/Red Grapefruit	2.64	2.95
White/Marsh Grapefruit	2.74	2.80
<i>Grapefruit Average<sup>2</sup></i>	<i>2.65</i>	<i>2.90</i>
Tangelos	4.31	3.67
Tangerines (including Temples)	4.50	5.08
<i>Specialty Citrus Average<sup>2</sup></i>	<i>4.46</i>	<i>4.73</i>

<sup>1</sup>Assuming hauling costs for 51-80 miles of \$0.68 per box for fresh fruit and \$0.65 per box for processing fruit.

<sup>2</sup>Weighted average by production at state level for fresh and processing markets based on the USDA-NASS 2015/16 Florida Citrus Statistics.