Proc. Fla. State Hort. Soc. 131:26–28. 2018.

Estimates of Financial Costs to Growers as a Result of Hurricane Irma

Jeff Wasielewski*[1], Jonathan H. Crane[2], and Edward A. Evans[2]

[1]*Miami-Dade County Extension, University of Florida/IFAS, 18710 SW 280th St., Homestead, FL 33030*

[2]*Tropical Research and Education Center, University of Florida/IFAS, 18905 SW 280th St., Homestead, FL 33031*

Additional index words. fruit loss, Hurricane Irma, fruit production

On 7 September 2017, Hurricane Irma was located southeast of Miami-Dade County and tied for the second strongest Atlantic storm of all time as a Category 5 storm with 185 mph winds. It was the first Atlantic storm to ever sustain this strength for 24 hours. As Irma approached mainland Florida, the most vulnerable residents of Miami-Dade County were placed under mandatory evacuation orders, while avocado and other tropical fruit growers in South Florida began to prepare for the worst. On 10 and 11 September 2017, Hurricane Irma grazed Miami-Dade County and made landfall as a Category 3 storm on the west coast of Florida just south of Naples in Marco Island. The sheer size and slow pace of Irma, however, allowed powerful and damaging winds to pummel the tropical fruit growers of South Florida and their trees for more than 15 hours. Sustained high winds and wet conditions caused a high number of trees to become uprooted or structurally damaged. In the days following Irma, it was estimated that 50% of Miami-Dade County's 7600 acres of avocados had already been harvested before the storm hit but there was an 80 to 90% fruit loss of the remaining crop. This study looked at the economic effects of Hurricane Irma on the avocado industry by surveying six of the largest avocado growers by acreage. Rehabilitation cost of trees, crop loss, and collateral damage by the deadly avocado disease laurel wilt was surveyed and calculated.

On 7 Sept. 2017, Hurricane Irma was located south east of Miami-Dade County and tied for the second strongest Atlantic storm of all time as a Category 5 storm with 185 mph winds (Almukhtar et al., 2017). It was the first Atlantic storm to ever sustain this strength for 24 hours. As Irma approached mainland Florida, the most vulnerable residents of Miami-Dade County were placed under mandatory evacuation orders, avocado and other tropical fruit growers in South Florida began to prepare for the worst. Irma ended up missing a direct hit on Miami-Dade County and was a Category 1 storm on the east coast (e.g., Miami-Dade) but a category 3 storm on the west coast of Florida just south of Naples on Marco Island. The sheer size and slow pace of Irma, however, allowed powerful and damaging winds to pummel the tropical fruit growers of South Florida and their trees for more than 15 hours. Although structural damage to homes and business was relatively minimal, tree damage was not. Sustained high winds and wet conditions caused a high number of trees to become uprooted or structurally damaged (Fig. 1). The majority of Florida's avocado industry is located in Miami-Dade County and is a >$100 million-dollar industry. In the days following Irma, it was estimated that 50% of Miami-Dade County's 7600 acres of avocados had already been harvested before the storm hit but 80 to 90% of the remaining crop was lost due to the storm (C. LaPradd, unpublished data).

Materials and Methods

This study looked at the economic effects of Hurricane Irma on the avocado industry by surveying six of the largest avocado growers by acreage. Rehabilitation cost of trees, crop loss, and collateral damage by the deadly avocado disease, laurel wilt, was surveyed and calculated. It should be noted that the study focuses mainly on the direct losses and does not take into con-

Fig. 1. Damage to an avocado grove caused by Hurricane Irma. Photo Credit, Jeff Wasielewski

*Corresponding author. Email: jwaisielewski@ufl.edu

Table 1. Florida avocado production by selected years prior to and after Hurricane Irma, Sept. 2017.[z]

	Bushels of fruit per month (1 bu = 55 lbs)						
Season/Months	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
2014–15	218,583	167,571	86,570	73,582	47,380	17,494	2340
2015–16	140,929	114,235	80,621	79,661	50,489	14,031	2713
2016–17	166,227	110,954	88,214	64,973	26,665	4423	272
Average for 2014–17	175,246	130,920	85,135	72,739	41,511	11,983	1775
2017-18	48,805	4970	3589	927	3732	817	909
% of previous average crop for that month	28	4	4	1	9	1	51
Percentage crop was down	72	96	96	99	91	99	49

[z]Data from the Avocado Administration Committee, 2018.

sideration the multiplier or spillover effects that result from the interdependencies among industries and the associated primary factors of production.

Six of the largest avocado growers in Miami-Dade County were contacted by phone and asked the following questions: How many avocado acres did you manage prior to Hurricane Irma hitting Miami-Dade County? What percentage of your avocado crop was already harvested before the storm hit? What percentage of your crop was lost due to the storm? What percentage of your crop remained on the tree and was harvested? Do you have an estimate of how many trees fell over? How much time did it take to rehabilitate the trees (to prop up and prune)? Do you think the storm damage has increased ambrosia beetle activity? Do you think the storm damage has increased the incidence of laurel wilt? How many years until you feel your groves will be recovered from Irma?

Results and Discussion

The list that follows includes the responses of the six avocado growers that were surveyed, along with averages where applicable. The total amount of acres controlled by the six growers is 4290 (about 61% of the commercial acreage in Miami-Dade County).

How many avocado acres did you manage prior to Hurricane Irma making landfall on South Florida? The answers were: 90, 250, 350, 600, 1500, and 1500 for a total of 4290 acres.

What percentage of your avocado crop was already harvested before the storm hit? The answers were: 60% 40%, 50%, 35%, 60%, and 60%, respectively. The average of these six answers is 50% of the avocado crop had been harvested.

What percentage of your crop was lost due to the storm? The answers were: 35%, 55%, 45%, 60%, 40%, and 40%, respectively. The average of these six answers is 45%. With a 45% loss of production, we can estimate that about 400,000 bushels were lost. Based on the data provided by USDA Economic Research Service (USDA-ERS) the average price paid by packinghouses to the growers for the two prior marketing seasons was $21.46/bu. This suggests an estimated loss to growers of $8,584,000 ($21.46/bu × 400,000 bu = $8,584,000).

What percentage of your crop remained on the tree and was harvested? The answers were: 0%, 5%, 5%, 5%, 0%, and 0%. The average of these six answers is 2.5%.

Do you have an estimate of how many trees fell over? The answers were: 1400, 750, 3500, 7000, 45,000, and 39,000. The total number of trees that fell was 96,650 trees (~967 acres).

How much time did it take to rehabilitate the trees (to prop up and prune)? The answers were: 8 months, 2 months, 2 months, 2 months, 3 months, and 2 months. The average of these six answers is 3.2 months.

Do you think the storm damage has increased ambrosia beetle activity? The answers were: absolutely, not sure, yes, yes, no, and yes. The feeling among most growers is that ambrosia beetle and laurel wilt activity did spike after Hurricane Irma.

Do you think the storm damage has increased the incidence of laurel wilt? The answers were: yes, not sure, yes, yes, no, and yes. Reporting of new laurel wilt outbreaks increased post-storm.

How many years until you feel your groves will be recovered from Irma? The answers were: 4–5 years, 6–7 years, 2 years, 3 years, 1 year, and one grower said his acreage would never recover because of continued damage from ambrosia beetles and laurel wilt.

According to this survey, there was a 50% crop loss, but if you look at the monthly and yearly Florida Avocado Administrative Committee reports (Table 1) (FACAR 2018), for some months, losses were up to 99%. In addition, if you compare the average industry crop production for April, May, and June (2014–15 through 2017–18 season) with production in April, May, and June 2018, production was down 40% in April, 100% in May, and 94% in June. In addition, tree stress and damage caused by Hurricane Irma affected the 2018 fruit set, yield and timing of the crop (J. Crane personal communication, 11 July 2018; Spann, 2017). Hurricane Irma caused major economic damage to the avocado industry in Miami-Dade County and may have spurred a higher incidence of ambrosia beetle activity and the deadly disease known as laurel wilt.

Conclusions

The growers surveyed for this study represent just over 60% of the avocado acreage in Miami-Dade County. They lost an estimated $8,584,000 due to crop loss. This number does not take into account the added costs of resetting trees, clean up of downed branches, and the value of trees destroyed by the storm, which have been estimated at $350 per mature tree (Evans and Crane, 2016). While we were not able to quantify a number, some workers were without income due to fruit loss as there was a diminished need for harvesters. Post-storm there may have been an increase in grove costs due to an uptick in laurel wilt outbreaks resulting in increased spraying for ambrosia beetles and removal of dead trees. All in all, Hurricane Irma was a powerful economic blow to the avocado growers of South Florida and one that will not soon be forgotten.

Literature Cited

Almukhtar, S., J. Ashkenas, M. Bloch, L. Buchanan, A. Carlsen, J.C. Lee, A. Pearce, S. Peçanha, A. Singhvi, J. Ward, and K. Yourish. 2017. Maps: Tracking Hurricane Irma's Path Over Florida. New York Times, 11 Sept. 2017. Accessed 16 June 2018. < https://www.nytimes.com/interactive/2017/09/05/us/hurricane-irma-map.html>.

Evans, E.A. and J.H. Crane. 2016. Estimates of the replacement costs of commercial and backyard avocado trees in south Florida. Food and Resource Economics Dept., UF/IFAS Extension. 3 p. Accessed 16 June 2018. <http://edis.ifas.ufl.edu/fe825>.

FACAR 2018. Florida Avocado Committee Administration Report. Mar. 2018. Homestead, FL.

Spann, T. 2017. Florida's avocado industry hard hit by Hurricane Irma. From the Grove. Winter 2017:47–48 Accessed 16 June 2018. <https://www.californiaavocadogrowers.com/sites/default/files/documents/19-Floridas-Avocado-Industry-Hit-Hard-by-Hurricane-Irma-Winter-17.pdf>