Challenges Faced by Miami-Dade County Vegetable Growers in 2015

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The year 2015 was very tough for vegetable growers in Miami-Dade County: an extreme drought during the summer but a very wet winter, especially the excess rainfall which occurred from the end of November to early December due to the severe impact of El Niño, which caused a lot of problems for local growers. This abnormal weather caused a significant loss to growers for vegetable yield and revenue because it led to out-of-control in diseases and insects. Moreover, an outbreak of Oriental Fruit Fly (OFF) in the county affected 98 square miles of the agricultural area. OFF has up to 435 plant hosts, which resulted in a state eradication program lasting from 26 Aug. 2015, through 13 Feb. 2016. A large number of vegetable crops were affected, such as tomato, peppers, eggplants, strawberry, beans, squash, and bitter melon. Fortunately, the combined efforts and excellent collaborations among federal and state authorities, University of Florida IFAS scientists, extension faculty, county personnel, the local community, growers and industry representatives, the eradication program for the Oriental Fruit Fly has been successful. This has protected not only Miami-Dade County’s $1.6 billion agricultural industry, but also the whole state of Florida’s $123 billion agricultural industry. The purpose of this publication is to summarize the major challenges local vegetable growers faced and the government assistance programs launched in 2015.

EXTRAORDINARY DROUGHT DURING THE RAINY SUMMER. Vegetable growers in Miami-Dade County experienced an extremely challenging year in 2015. The extraordinary drought due to El Niño during the rainy summer season caused a substantial yield loss. For instance, a total of 33.45 in. of rain was recorded between 1 May and 17 Oct. in Miami-Dade County, which was 10.28 inches below the normal (Fig. 1) (MSFNWSFO, 2015). Miami-Dade County is referred the “winter bread basket” or “winter salad bowl” of the U.S. Most vegetables are produced during the winter for fresh market consumption. However, some vegetables, such as sweetpotatoes, eggplants, chile peppers, and Asian vegetables are grown during the summer as well. Insufficient soil moisture due to a lack of rainfall severely limited crop growth and development and even caused plant death.

To help growers struggle with this problem, on 17 July 2015, the U.S. Small Business Administration announced an assistance program called Federal Economic Injury Disaster Loans for small businesses, small agricultural cooperatives and other small businesses engaged in agriculture as a result of the drought with an effective date beginning 7 July 2015. The disaster declaration included 6 counties in Florida, including Miami-Dade.

EXCESSIVE RAIN DURING THE WINTER DRY SEASON. Winter is normally the dry season in South Florida, so vegetable growers have to use sophisticated irrigation systems to maintain normal growth and development of their crops. However, from Nov. 2015 through Jan. 2016, South Florida averaged 16.22 in. of rain, which was the highest total for this three-month period since recordkeeping began in 1932 (SFWMD, 2016). Official records from local airports reported that total rainfall in Dec. 2015 was 18.43 in.—the wettest December since records began, and broke the previous December record of 14.92 in., which was set in 1942.

Based on data (FAWN, 2016) for Homestead itself, the monthly total rainfall was 12 in. in Dec. 2015, compared 1.8 inches for normal years (Fig. 1). In addition, a single rainfall with as much as 8.92–10 in. of rain fell in a 24-h period, which caused severe flooding of fields, and resulted in agricultural losses in the millions of dollars (SFWMD, 2016). One grower said that he had only seen flooding affecting his crops so severely before, and that about 75% of his crop was jeopardized.

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Fig. 1. Rainfall in 2015 vs. the 30-year average in Homestead, FL.
With such an extremely heavy rainfall, a lot of crops were under the water for several days (Fig. 2). One sweet corn field became a real “lake” for a few days. For sweet corn and some fast growing crops, such as green beans and squash, growers had to replant them but for slower growing crops, such as tomatoes, peppers, and eggplants, there was not enough time left in the growing season to replant. The excessive rain and flooding caused a lot of diseases, such as *Phytophthora capsici*, *Phytophthora* blight, *Pythium*, *Fusarium* root rot, and bacterial spots, etc., which led to huge yield losses (Figs. 3 and 4).

As a result of the losses, USDA secretary, Thomas Vilsack designated Miami-Dade County as a primary natural disaster area based on a request from the USDA’s Farm Service Agency (FSA) (McAvoy, 2016).

**OUTBREAK OF ORIENTAL FRUIT FLY.** An outbreak of Oriental Fruit Fly in Miami-Dade County began from 26 Aug. 2015. The Oriental Fruit Fly, *Bactrocera dorsalis*, is one of the world’s most destructive pests and poses a significant threat to Florida’s agricultural industry, which is worth $123 billion and provides 2 million jobs. In Miami-Dade alone, the overall agricultural production generates more than $1.6 billion as annual economic impact and supports more than 11,000 jobs (FDACS, 2015). This species has massive plant host range of 435 plants including fruits and vegetables. An adult fly can travel as far as 20 miles, and a female fly can lay as many as 600 eggs in 30 days (Wasilewski, 2015).

A total of 158 flies were detected by 10 Oct. 2015, but the eradication period was extended to 13 Feb. 2016, to allow 3-life cycles of the fly to be completed. The outbreak of Oriental Fruit Fly has affected local growers severely. For instance, Core Areas were designated within 200 meters (220 yards) of locations where any larval or mature female fly was found. Host plants within the core area had to be stripped off, dumped in an appropriate way, and the soil had to be trenched with a specific pesticide – Warrior II® (Lambda-cyhalothrin). The area within 0.5 miles in radius or 0.8 square miles of wherever any fly was trapped was called a Quarantine Area. In the quarantine area, excluding the core area, growers had to sign compliance agreements with Florida Department of Agriculture and Consumer Services—Division of Plant Industry (FDACS-DPI) personnel and treat host crops with specific pesticides, namely GF-120 Naturalyte, Malathion 8 Aquamul or Gowan Malathion 8 Flowable mixed with Nu-lure insect bait, for 30 days before harvest.

Many workshops for fruit and vegetable growers and the supporting industries discussing methods of eradicating the Oriental Fruit Fly were held beginning the day when flies were first detected. On 15 Sept. 2015, the State Agriculture Commissioner Adam Putnam declared a state of agricultural emergency for the Oriental Fruit Fly infestation (FDACS, 2015), and on 21 Sept., a Town Hall meeting was organized in Homestead, Miami-Dade County, for growers to meet with the Commissioner and other FDACS and federal (U.S. Department of Agriculture – Animal-Plant Health Inspection Service) officials. Two specific workshops just focusing on vegetable growers were held in September and October 2015. An aerial spray of GF-120 Naturalyte over 16 square miles in and around the core area took place during the nights of 2–3 Oct. 2015. There was a large number of phone calls and walk-in visitors at the Miami-Dade County Extension office and mass media was involved. Local efforts and collaborations enabled around 1400 growers to sign compliance agreements and treat their crops appropriately. As a result, the Oriental Fruit Fly has been successfully eradicated from Miami-Dade County.

**Conclusion**

Natural climate conditions, e.g., El Niño, brought a lot of challenges to vegetable growers in Miami-Dade County and South Florida. For instance, an extraordinary drought in the rainy season combined with an extremely wet period and flooding during the winter vegetable growing season caused numerous problems and concerns. The outbreak of an invasive insect, the Oriental Fruit Fly, occurred in the county right before and during the vegetable growing season made the situation much worse. To
help growers alleviate pressure on yield loss, great efforts and extensive collaborations were the key for the success.

**Literature Cited**


