



—Scientific Note—

An Introduction to a Breadfruit Grove in Big Pine Key, Florida

MICHELLE LEONARD-MULARZ^{1*}, RUSSELL FIELDING², PATRICK GARVEY³

¹University of Florida, IFAS, Monroe County Extension Service, Key West, FL

²Coastal Carolina University, HTC Honors College, Conway, SC

³Grimal Grove, Big Pine Key, FL

Breadfruit (*Artocarpus altilis*), whose origin may be from the Malay Archipelago, but is best known from the South Pacific, is frost intolerant and grows only in truly tropical regions (70 to 100 °F), an annual rainfall of 80 to 100 inches and 70 to 80% relative humidity.

In 2013, Patrick Garvey purchased Grimal Grove in Big Pine Key, FL (USDA hardiness zones 11a to 11b), the southernmost tropical fruit park in the United States. He began an intense volunteer program to restore the abandoned property that had become a dump site (Garvey, 2016) working with The Growing Hope Initiative, a non-profit organization which engages and transforms sustainable communities. Grimal Grove is in the lower Keys, about 97 miles southwest of mainland Florida. Elevation is 6–7 ft; mean annual precipitation ~50 in, most occurring between May and October. (Gato, et. al. 1991, CoCoRaHS, 1998). The soil in this area is a very gravelly loam formed from oolitic limestone, with depths from 0–4 inches a pH of 7.4–8.4 (Hurt, et. al., 1995). Permeability is moderately rapid, though flooding can occur during tidal fluctuations and spring tides.

Large raised beds, originally created by the grove's original owner Adolf Grimal, help support the tropical fruit forest that was re-planted by Garvey after years of neglect. In 2017, just as the grove was beginning to thrive, Hurricane Irma, a powerful category 4 hurricane, made landfall on Cudjoe Key, just 10 miles to the south, leveling almost all the trees on the property; a 3-ft saltwater storm surge engulfed the property. One of the few trees that survived, was a 'Ma'afala' breadfruit gifted to Garvey in 2014. Irma topped the tree to just 7 ft from its previous height of 20 ft. Within 18 months, the tree was fruiting again. In 2021, Garvey harvested approximately 200 breadfruit from this single tree.

Current Production

Today, there are approximately 30 breadfruit trees on the 2.5-acre property with plans to expand. Most of the trees are the coastal variety 'Ma'afala', which is more drought and salt tolerant, but also include five 'White' and one each of 'Ulu fiti', 'Puaa', and 'Mei'. 'Ma'afala' outperforms the other varieties. Propagation can be challenging with air layering being most successful. Depending on the time of year and rainfall, air layers are ready to be removed from the parent tree in 6 weeks to 2.5 months.

Trees receive very little supplemental water except for 10 min on a drip irrigation system twice a day, which is essential the first year after planting. Trees are fertilized twice a year with an 8–3–9 proprietary fruit blend and are mulched regularly with a utility mulch that is a mix of tropical hardwoods. Pest pressures have been minimal to non-existent.

Interest in the breadfruit grove continues to grow. Garvey has received requests from three different wholesale nurseries in South and Southwest Florida for finished air layers and 3-gal trees. Currently, he has 150 potted trees ranging from 3- to 15-gal and 150 air layers. Garvey is also the South Florida distributor for Mutiny Island Vodka, a breadfruit-based vodka company based in St. Croix, USVI. Mutiny Island Vodka uses breadfruit to help reduce world hunger and build food secure communities in collaboration with The Breadfruit Institute and Trees that Feed Foundation. Discussions underway for a potential breadfruit distillery in Key West.

Future Potential

Grimal Grove is a case study of potential future breadfruit production in south Florida as climate change contributes to rising temperatures and disruption of food availability. Garvey is encouraging people to plant more breadfruit trees with the hope of generating more local interest in the fruit and creating economic opportunities. A study is underway in eight South Florida counties with 32 backyard breadfruit growers.

Literature Cited

- CoCoRaHS. 1998. The community collaborative rain, hail, and snow network. <<https://www.cocorahs.org/>>. Accessed: 10 Oct. 2021.
- Garvey, P. 2016. Saving the Grimal Grove, restoring a legendary tropical fruit collection and establishing Grimal Grove as the southernmost tropical fruit park. Proc. Fla. State Hort. Soc. 129:35–36.
- Gato, J. and D. Gallagher (Eds.). 1991. The Monroe County environmental story. The Monroe County Environmental Task Force.
- Hurt, G.W., C.V. Noble, and R.W. Drew. 1995. Soil survey of Monroe County, Keys Area, Florida. Nat. Res. Conserv. Serv., United States Dept. Agric. <https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/florida/FL687/0/Monroe-Keys.pdf>. Accessed: 10 Sept. 2021.

*Corresponding author. Email: mularz-michelle@monroecounty-fl.gov