



BREADFRUIT INSTITUTE



Diane Ragone, PhD, Director

PROGRESS REPORT - Winter 2015

Plant a Tree of Life Project Year 2: From Local to Global

The Breadfruit Institute (BFI) wrapped up the second year of our Plant a Tree of Life –Grow ‘Ulu project, distributing 5,715 breadfruit trees—16% more trees than in Year 1. A total of 3,500 trees went to recipients in the Hawaiian Islands. Hawaii Island (573), Kauai (120), Maui (144), Molokai (287), and Oahu (2,376). In addition to the Ma’afala variety, we provided three new varieties, Otea, Piipiia, and Puaa. A total of 76 organizations and groups participated, including schools, churches, health centers, cultural alliances, community associations, farms, and numerous organizations that work with native Hawaiians, Pacific Islanders, low-income residents, and other constituencies.



Hawaii

Since the project commenced in 2012, more than 200 organizations and groups helped us deliver 8,288 breadfruit trees to the Aloha State. Oahu, the focal point for the project, received 68% of the total. The Waianae Coast was our highest priority. It is one of the poorest and most at-risk communities on Oahu with 23% of the residents living below the poverty level. It has the highest percentage (31%) of native Hawaiians and other Pacific islanders in the state. There is much interest in growing more breadfruit trees for food sustainability, nutritious food, and cultural connections. We’re proud to have provided Waianae communities with nearly 2,000 breadfruit trees.



Liberia



Haiti



Samoa



Zambia

Thanks to generous support from the Ceres Trust, we expanded the project internationally and distributed 2,215 trees of three varieties, Ma’afala, Piipiia, and Puaa from the South Pacific to central Africa.

- Liberia: 1,000 breadfruit trees were planted through a partnership between First Avenue International (FAI), BFI, and Global Breadfruit. FAI collaborated with universities and agriculture authorities for program oversight, nursery space, and conducted training and distribution to recipients.
- Haiti: Trees That Feed Foundation received 1,000 trees for distribution in Haiti. The trees were designated for the Smallholder Farmers Alliance, which works with small-scale farmers to plant trees and promote sustainable agriculture.
- American Samoa & Samoa: BFI Director Diane Ragone hand-carried 75 Piipiia trees to the Director of Agriculture in Pago Pago. She then travelled to Samoa and personally delivered 40 Aveloloa trees, specially grown by Global Breadfruit for this purpose. This is the first indigenous variety to be returned to its home country. Aveloloa is becoming uncommon in Samoa due to devastating hurricanes in the past 20 years and the 2009 tsunami.
- Zambia: 100 breadfruit trees made their debut—and history—when they arrived in Zambia in October. The Breadfruit Institute donated the trees to Lloyd Lukama Kasela, a teacher and founder of “Planting a Future for Zambia.” Each family in Lloyd’s village received a tree, along with schools, churches, farms, and an orphanage.

Much of the work of the Breadfruit Institute is supported by grants and contributions. We continue to seek additional funding to accomplish our mission. You can help us in this critical endeavor.

To make a donation, please visit: <http://ntbg.org/breadfruit/donate/plantatree.php>

The Science of Breadfruit

The collaborative micropropagation research project with Dr. Susan Murch at the University of British Columbia Okanagan has been a major scientific focus since 2004. The project develops micropropagation protocols for varieties, and targets the rarest and “at risk” varieties in our collection. Her laboratory provides critical duplication of breadfruit germplasm. Research also continues on selected nutrient-rich varieties, and ones that will provide an extended fruiting season for propagation and distribution by Cultivaris/Global Breadfruit through our Global Hunger Initiative.



Toneno was successfully cultured for the first time in 2014. This salt-tolerant variety is a rich source of iron and will complement the fruiting season of other varieties.

BFI researchers work with Dr. Murch and other on various studies to expand our knowledge of breadfruit. These include: DNA fingerprinting, identifying soil biota associated with breadfruit trees, analyzing the essential amino acids composition of protein; studying the morphology and chemistry of male breadfruit flowers; and documenting production and yields of varieties in the McBryde Garden.



These studies help provide new insights into the genetic and morphological changes that occurred during domestication, help visualize the diversity that exists across geographical regions, and create a framework for variety identification and germplasm conservation.

Another exciting collaboration is the establishment of a research orchard with 64 Ma’afala trees at the Kauai Community College under the direction of Dr. Sharad Marahatta. This project aims to answer many agronomic questions such as fertilizers, including organic products, use of cover crops, and interplanting with other crops and plants for optimal tree growth, health, and yield.

Giving back to Samoa

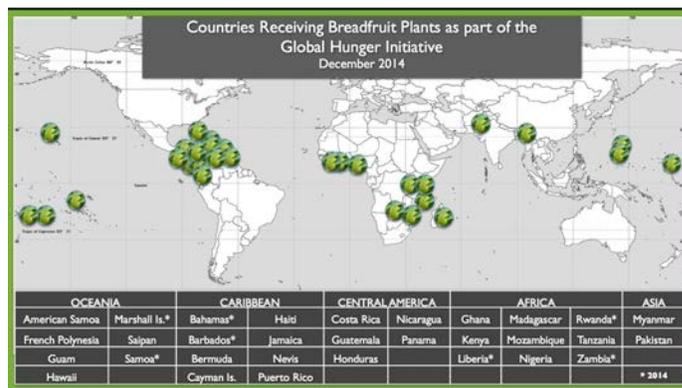
In July, Director Ragone, traveled to Samoa and presented a check of \$12,240 to the Acting Prime Minister, Fonotote Pierre Laufofo. The check represents royalties resulting from the sale of Samoan breadfruit trees through a model benefit-sharing agreement between the Samoan government and the National Tropical Botanical Garden. 50% of the revenues NTBG receives for every tree of a Samoan variety sold by Global Breadfruit goes back to Samoa.



Samoa gave back to Hawaii to benefit new research. 20 kg of breadfruit flour from Natural Foods International Ltd. in Apia was delivered to Honolulu for the Regional Breadfruit Initiative. This project aims to produce and export flour to support Pacific Island residents and economies.

Global Hunger Initiative

Since 2009, more than 54,000 breadfruit trees have been delivered to 31 countries



2014 was an incredible year for the Breadfruit Institute and our partners in the Global Hunger Initiative. Six countries received breadfruit trees for the first time: Bahamas, Barbados, Samoa, Republic of the Marshall Islands, Rwanda, and Zambia. Seven more countries received shipments of trees for a second or third time.

Research Publications

- Liu, Jones, Murch & Ragone. Crop productivity, yield, and seasonality of breadfruit (*Artocarpus* spp.) *Moraceae. Fruits*.
- Ragone. Plant a Tree of Life. *Inside Agroforestry*.
- Hart, Gorzelak, Ragone & Murch. Arbuscular mycorrhizal fungal succession in a long-lived perennial. *Botany*.

Breadfruit in the News

Breadfruit and the work of the Breadfruit Institute and collaborators received worldwide media coverage.

- *New Scientist*. “Wonder Food.”
- *Paris Review*. “Fruit Mutiny.”
- *Physics Today*. “Agents of Change.”
- *National Geographic*. “Breadfruit: Tree of Life for a Hungry Planet.”
- *Honolulu Star-Advertiser*. “From bland to grand.”
- *Garden Island Newspaper*. “The ins and outs of breadfruit.”
- *Samoa Observer*. “Landmark Deal: Samoa reaps benefits from humble breadfruit.”
- *TIME Magazine*. “Forget Kale. Try these three REAL Superfoods.”
- *Al Jazeera America*. “Diversify food now!”
- *Daily Nation, Kenya*. “Wonder fruit that can help fight food crisis.”
- *ABC Radio Australia*. “Samoan breadfruit leading in tackling hunger world wide.”

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