

# BREADFRUIT INSTITUTE

## WINTER & SPRING PROGRESS REPORT | 2019



The National Tropical Botanical Garden (NTBG) is dedicated to tropical plant research, conservation, and education. NTBG's Breadfruit Institute ([www.breadfruit.org](http://www.breadfruit.org)), established in 2003, is the global leader in efforts to use breadfruit diversity to support food security, regenerative agriculture, and income generation for smallholder farmers in the tropics. The Breadfruit Institute manages the world's largest collection of breadfruit, vital to research, conservation and education. More than 300 trees of 150 varieties make up a living germplasm repository.

### Global Hunger Initiative Update



Dr. Sylvester Elikana Anami, Senior Research Fellow at Jomo Kenyatta University of Agriculture & Technology in Nairobi provided a progress report on the 5,000 breadfruit trees received in December 2016 and distributed throughout the country April-June 2017. Many of the trees were provided to schools with the assistance of Rural Outreach Africa, directed by Prof. Ruth Onianga'o. These trees were propagated and shipped from the Cultivaris facility in Germany as part of the 50,000 tree project funded by Mr. Douglas Kinney.

### Farewell to the Director of Global Initiatives



Over the past three and a half years, the Breadfruit Institute has benefited from the guidance and connections provided by Mr. Roger Still, who has served on contract in support of our global initiatives. He helped facilitate global breadfruit tree shipments, forged a partnership with Patagonia Provisions that led to our Regenerative Organic Breadfruit Agroforestry demonstration at McBryde Garden, and guided pilot regenerative organic projects in Jamaica, Puerto Rico, and Costa Rica. He has worked with consultants and partners globally to enhance food security, conservation, and sustainable and regenerative organic agriculture through breadfruit agroforestry. Mr. Still departed the institute at the end of June to continue consulting closer to home in Missouri. We wish him the best of luck and graciously thank him for his time, dedication, and support.

### Cultivaris Update



In 2008, NTBG entered into an agreement with Cultivaris NA—a company founded by Garry Grueber and Dr. Axel Feldhoff in Germany and Josh Schneider in the USA—to propagate selected varieties of breadfruit from our conservation collection for global distribution. That work entails establishing and maintaining clean disease-indexed stock cultures in a tissue culture facility in Germany managed by Dr. Feldhoff. Production facilities in various countries, including the USA, subsequently propagate and wean plants for shipping. Cultivaris has undergone a re-organization and in January 2019, we entered into a new agreement with Cultivaris GmbH, to further this essential work. **(cont.)**



**BREADFRUIT INSTITUTE - NATIONAL TROPICAL BOTANICAL GARDEN**

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(Continued from previous page)

In addition to continuing a royalty payment to NTBG for each tree sold globally, they are developing breadfruit as an ornamental plant. This will help raise awareness of breadfruit and its role in food security to a wider audience and directly support the Global Hunger Initiative as Cultivaris will donate trees - based on tree sales - towards that endeavor.

### Breadfruit Agroforestry Advancement in Puerto Rico



Interest in revitalizing breadfruit for food security and economic development is growing throughout Puerto Rico with farmers embracing agroforestry practices. Numerous entrepreneurs are bringing products, such as flour and tostadas, to market. The institute has helped foster local initiatives for several years through distribution of breadfruit trees, workshops on regenerative agriculture practices, and agroforestry pilot projects. Dan Rudoy, a regenerative farming expert, has served as the institute’s point person. Plantings established at a small private farm last December are flourishing with pumpkin, sweet potato, and perennial peanut after a good rainy season. In June 2019, plantings were installed at additional farms.

### Breadfruit Agroforestry Enhancement



Large, colorful Interpretive signs about Regenerative Organic Breadfruit Agroforestry (ROBA), breadfruit, and the Breadfruit Institute, as well as smaller signs about the four agroforestry themes, designed by Lisa Brochu’s Heartfelt Associates, were installed throughout the demonstration area. Funded by grants from Patagonia Provisions and HDOA, the signs are intended to complement and supplement interpretive signage in McBryde Garden and enhance the visitor experience.

### Fieldwork & Research

#### Meion Accessioning

Dr. Diane Ragone prepared the Meion variety for a herbarium voucher from the breadfruit collection in McBryde Garden. Dr. Ragone rescued this variety from an abandoned collection in Micronesia in 1999. This specimen is carefully arranged and tightly pressed in a plant press where it will be dried, recorded, and stored at the National Tropical Botanical Garden’s Herbarium PTBG on Kauai. The herbarium voucher will be used for future reference in breadfruit research and will be a permanent record of breadfruit diversity. The herbarium preserves several hundred breadfruit vouchers from throughout the Pacific Islands.



#### ROBA Soil Sampling

Dr. Jonathan Deenik, Soil Fertility & Soil Quality Specialist, and his team from University of Hawaii gathered soil samples in the ROBA to test soil types and health conditions. Using the Hawaii Soil Atlas, which Dr. Deenik helped develop, they were able to see exactly what soil types are in the ROBA. A soil report will be finalized after further research and analysis.



#### Kupu’s Bokashi Project

BFI’s KUPU member, Lucy Caine, completed her Bokashi and Berkeley Method composting project in the ROBA. She is analyzing the data for a poster presentation at the Hawai’i Conservation Conference on Oahu in July. Lucy utilized food waste and fallen breadfruit for both methods to create a closed-loop system. Her project included 21 test plots--each a square meter--located throughout the demonstration in which specific plants were grown and monitored and soil conditions were tested.



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## Education & Community Outreach

The Breadfruit Institute's community outreach and education activities promote conservation and use of breadfruit, reforestation, agroforestry and regenerative organic agriculture. Various education groups are able to have experiential learning by working and discussing regenerative organic methods while in the Regenerative Organic Breadfruit Agroforestry in McBryde Garden. The project is funded by a grant from Patagonia Provisions.

### SWCD

The Kauai Soil Water Conservation District (SWCD) group had a site visit at the ROBA led by BFI's Director, Dr. Diane Ragone, and Project Manager & Research Technician, Noel Dickinson. SWCD helps local farmers and land managers protect their natural resources by providing technical, financial, and educational resources.



### Environmental Journalists

The institute hosted NTBG's Environmental Journalists program in the ROBA and provided a delicious breadfruit lunch. The journalists received an in-depth lecture by Dr. Ragone while observing breadfruit trees and the agroforestry model on-site. The five-day program provides an intensive background in tropical ecology and conservation, and environmental issues to professional journalists in various media outlets.



### Waimea High School

The Breadfruit Institute participated in Waimea High School's 2nd Community Annual Health Fair over the weekend. The institute provided information on breadfruit nutrition, food preparation, and delicious recipes to try.

## From Sea to Tree - Hubbards Supports the Breadfruit Institute



Mr. Dave Hubbard, co-owner of [Hubbards](#), a Kauai-based company, presented a check to Dr. Ragone to support the Global Hunger Initiative. Hubbards donates 2% of their Dubzero swim fin profits towards food security and reforestation through the distribution of breadfruit trees around the world. Aside from being a professional bodyboarder (and multiple-time World Champion), Dave has been a volunteer at the institute since 2012 and received NTBG's Volunteer of the Year Award in 2017. He helps with critical tasks such as breadfruit harvest, tree care, educational outreach, data entry, and delivers harvests to the Kauai Independent Food Bank. Thank you Hubbards for your generous contribution and co-branding your product with NTBG's Breadfruit Institute!

## Scientific Presentations



### 4th World Congress on Agroforestry

More than 1200 people from 97 countries convened in France in May to present new research and share ideas for implementation of this agricultural technique that is good for food security, biodiversity, the climate, and more. One topic gaining extra attention at this

Congress was the involvement of the private sector in boosting agroforestry's implementation worldwide. Dr. Craig Elevitch gave a talk on "Designing generalizable agroforestry standards for regenerative agriculture" presenting the results of a 2018 paper on this topic in the journal *Sustainability* by CR Elevitch, DN Mazoli and D Ragone.



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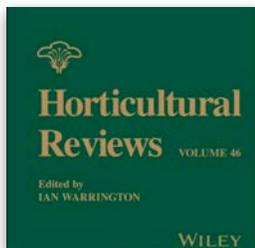
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## Scientific Publications



An international team of authors from three countries (University of Hawaii, Breadfruit Institute, NTBG, and Northwestern University & Chicago Botanic Garden [USA]; University of the West Indies [Trinidad & Tobago]; and the University of Guelph [Canada] published an in-depth paper “Grow us our daily bread: A review of breadfruit cultivation in traditional and contemporary systems” in Horticultural Reviews. The authors, NK Lincoln, D Ragone, NJC Zerega, LB Roberts-Nkrumah, M Merlin, and AMP Jones, utilized more than 600 research papers and their expert knowledge of breadfruit to prepare this manuscript.



Photo by Carmen L. Nochera

A new research paper on breadfruit in *Foods* “Development of a breadfruit flour pasta product” by Carmen L. Nochera and Diane Ragone was published in March. The breadfruit pasta was successfully made using the Ma’afala variety and is gluten-free, nutritious, and affordable to make. For more information on breadfruit pasta, download the article at <https://www.mdpi.com/2304-8158/8/3/110>.



Dr. Marin Lysak’s paper on “Assessing consumer acceptance and willingness to pay for novel value-added products made from breadfruit in the Hawaiian Islands” was published in the June issue of *Sustainability; Food Systems – The Importance of Consumption*. Dr. Lysak conducted three product taste tests and surveys in Hilo and Kona, Hawaii Island and Kahului, Maui to determine consumers’ interest in buying breadfruit value-added products. She has spent the last 3 to 4 years conducting studying on breadfruit in Hawaii. She also worked extensively with the Breadfruit Institute by conducting surveys of 1,200 people who received breadfruit trees through of our Plant a Tree of Life project. Access the article at the following site: <https://www.mdpi.com/2071-1050/11/11/3135>.

## Media Coverage

Hokuao Pellegrino and Dr. Diane Ragone explain the importance of breadfruit in Hawaii for “cultural preservation” and food security in NBC News online article “Bok choy and breadfruit: How traditional crops fit a food secure future.” Check out <https://www.nbcnews.com/news/asian-america/bok-choy-bread-fruit-how-traditional-crops-fit-food-secure-n999051> for more information.



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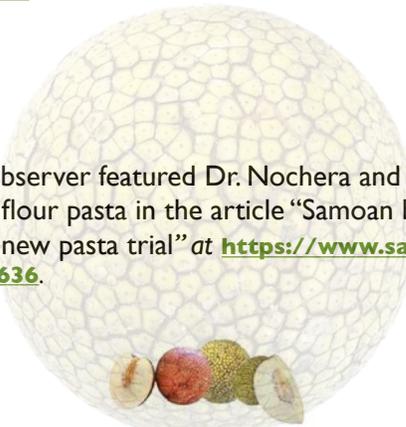
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Samoan breadfruit variety used for successful new pasta trial



Breadfruit Institute Director, Diane Ragone has 20 years experience assessing breadfruit and its possibilities. Photo: Instagram

Samoan Observer featured Dr. Nochera and Dr. Ragone’s research paper on breadfruit flour pasta in the article “Samoan breadfruit variety used for successful new pasta trial” at <https://www.samoobserver.ws/category/samoa/39636>.



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