

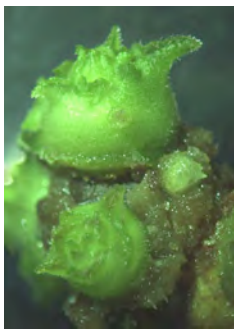
BREADFRUIT INSTITUTE REPORT 2004

Diane Ragone PhD

The Breadfruit Institute achieved memorable successes in 2004, the most notable being firming the organization's financial base. Activity during the busy and productive year included submitting a myriad of grant proposals to government agencies and private foundations; sharing the results of research and activities through publications, presentations, and the Institute Website; expanding understanding of breadfruit diversity by evaluating and describing the breadfruit collection at Kahanu Garden; undertaking a field expedition to Tahiti; initiating *in vitro* (tissue culture) propagation studies to alleviate world hunger; promoting the use of breadfruit as a nutritious and delicious food through research on nutritional composition; and hosting a breadfruit cook-off during the annual Aloha Festival at Hana. What follows is a brief description of several more notable Institute endeavors.

TISSUE CULTURE PROJECT

In collaboration with the University of Guelph in Ontario, Canada, and the Secretariat of the Pacific Community's Regional Germplasm Centre (RGC) in Fiji, the Breadfruit Institute is studying 20 core cultivars to develop *in vitro* propagation methods and to determine the virus



status of breadfruit. The goal of these projects is to conserve breadfruit germplasm in tissue culture and mass produce plants to distribute to tropical countries that need a more sustainable food supply. Dr. Susan Murch at the University of Guelph, Canada, is testing all 20 core varieties and *has successfully achieved regeneration of plantlets, the critical first step to mass produce breadfruit.* The RGC currently has root cuttings from 18 of the 20 core cultivars and will use the developing buds and shoots for tissue culture studies. Valerie Tuia, RGC Curator, is conducting this research under the direction of Dr. Mary Taylor and will carry out the virus indexing with the Plant Biotechnology Group, Science Research Centre, Queensland

University of Technology, Australia. Funding for these programs came through a three-year grant from the USDA Foreign Agriculture Service. Funding for the tissue culture work also was received from Trustees Doug Kinney, Tina Freeman and an anonymous donor.

2004 BREADFRUIT COOKOFF

The Breadfruit Cookoff, a delectable and popular event at the annual Aloha Festivals in Hana, occurred this year on October 9. Twenty-two dishes were entered in four categories—appetizers, soups & salads, main dishes, and desserts—with ulu ice cream, soup, spring rolls, wontons, chowder, and cakes topping the list. The creativity displayed by contestants was impressive and the results show that breadfruit has vast untapped culinary potential. With this year's additions, we now have more than 100 breadfruit recipes and the makings of a unique cookbook.



TAHITI EXPEDITION

November featured a two-week expedition to Tahiti, the culmination of an endeavor begun in 1985 to document and salvage neglected regional breadfruit collections. This project, sponsored by a USDA Germplasm Exchange Grant, and a 2002 trip to Samoa resulted in the acquisition of

12 cultivars from the now-abandoned SPC collection on Upolu. Despite extensive archival research in various libraries on Tahiti and meetings with long-time agriculture department staff, NTBG scientists Dr. Diane Ragone and Dr. Dave Lorence were unable to discover any evidence of a regional collection. During a visit to Raiatea and Tahaa they had the pleasure of working with several islanders who first assisted Dr. Ragone with breadfruit collecting in 1987. After the 1987 visit, agriculture agent George Colomes began documenting and conserving local breadfruit cultivars. He also planted a duplicate collection on Raiatea. Unfortunately, since Mr. Colomes'



retirement, the agriculture department no longer maintains the plantings and more than half of the trees have died, a situation that reaffirms the importance of the NTBG collection in conserving breadfruit cultivars. Several cultivars collected during the 1987 expedition that now thrive at Kahanu Garden can no longer be found on their home island. During the recently completed trip, 13 rare or exceptional cultivars not currently represented in the NTBG collection were located. Tahiti and breadfruit are synonymous and it was shocking to see how quickly traditional knowledge and diversity about breadfruit is declining there. Several government officials and private organizations we spoke to during the 2004 trip are very interested in conserving traditional knowledge and breadfruit cultivars. As a result, we will be working to develop programs and seeking funding for collaborative research projects in the near future.

FIELD STATION

Thanks to the generosity of the Fred Baldwin Memorial Foundation and an anonymous donor, funding has been secured to construct a field station at Kahanu Garden. This much-needed facility will provide a secure and mosquito-proof work area to conduct breadfruit collection research as well as providing space for workshops, training courses, and research staff. Plans for the station should be completed before the end of the current year followed by the permitting process then construction of the station in 2005.

DESCRIPTION AND DOCUMENTATION PROJECT

The complete NTBG breadfruit collection is being documented with detailed descriptions and color photographs. Implementation of this long-term research has been contingent on the vagaries of weather and fruiting cycles of the trees. In 2005 we will reach the tenth year of seasonality studies that record production cycles. Julie White, Research Technician, has been responsible for the description portion of the project, which involves weighing and measuring fruits and recording 150 morphological characters for nearly 200 mature and fruiting trees. Extensive photographic work for an illustrated Web-based catalog has been done with the assistance of NTBG Fellow Jim Wiseman. Photographs have been completed for 120 trees.

WEBSITE



The Breadfruit Institute Website (www.breadfruit.org) has raised the visibility of breadfruit for a growing global audience. On December 1, 2004, the Website had received more than 11,300 hits. In addition, a Google search on “breadfruit institute” resulted in almost 350 hits, including a diverse array of Websites that link back to the Breadfruit Institute Website.

PROPOSALS SUBMITTED

Organization	Amount	Project	Status
Fred Baldwin Memorial Foundation	\$5,000	Field station	awarded
Tower Foundation	\$10,000	Operating support, over 3 years*	awarded
USDA Foreign Agriculture Service	\$35,500	Tissue Culture, over 3 years	awarded
Wallace Genetic Foundation	\$25,000	Operating support, 2005*	awarded
Buck Foundation	\$6,000	Breadfruit cookoff/cookbook	denied
Conservation Food & Health Fdn.	\$15,000	Tissue Culture	denied
Weyerhaeuser Family Foundation	\$20,000	Pacific Partnerships	denied
USDA/NPGS	\$15,000	Germplasm evaluation*	submitted

* 100% operations – budget relieving

Mahalo to the many Trustees, Fellows, and others who have generously supported the Institute.

PRESENTATIONS

Global Crop Diversity Trust, Rome	University of Guelph, Ontario, Canada
International Congress for Ethnobiology, UK	Virginia Tech, Blacksburg
International Plant Genetic Resources Institute, Rome	Virginia Western CC, Roanoke

PUBLICATIONS

- Ragone, D. 2004. *Artocarpus altilis* (breadfruit). In: C.R. Elevitch (Ed.). Species Profiles for Pacific Island Agroforestry. URL: <http://www.traditionaltree.org>. Permanent Agriculture Resources (PAR), Holualoa, Hawai'i.
- Ragone, D. 2004. *Artocarpus camansi* (breadnut). In: C.R. Elevitch (Ed.). Species Profiles for Pacific Island Agroforestry.
- Ragone, D. & H. Manner. 2004. *Artocarpus mariannensis* (dugdug). In: C.R. Elevitch (Ed.). Species Profiles for Pacific Island Agroforestry.
- Ragone, D. G. Tavana, J. M. Stevens, P.A. Stewart, R. Stone, P.M. Cox, and P.A. Cox. 2004. Nomenclature of breadfruit cultivars in Samoa: saliency, ambiguity, and mononymality. *Journal of Ethnobiology* 24(1): 33-49.
- Zerega, N.Y.C., D. Ragone, and T.J. Motley. 2004. Complex origins of breadfruit: implications for human migrations in Oceania. *American Journal of Botany* 91(5): 760-766.



PUBLICITY/ARTICLES ABOUT BREADFRUIT

GeneFlow, November 2004. The breadfruit mutiny. (www.ipgri.cgiar.org)

Ken, Winter 2004. Breadfruit mystery solved.

Plant Talk, October 2004. News from the National Tropical Botanical Garden: Breadfruit Institute.