

# TREE OF LIFE

by Janet L. Leopold, Editor

An article in the Winter 2006 issue of *The Bulletin* offered a glimpse into the beginnings of the humanitarian effort undertaken by the Breadfruit Institute to make this nutritious fruit available in countries where food security is at catastrophic levels.

The author recently sat down with the Institute's director, **Dr. Diane Ragone**, with a series of questions on that initiative.

## *What is the Breadfruit Institute's Global Hunger Initiative?*

In a nutshell, it's to offer a new way to address hunger by making good quality breadfruit varieties available in tropical and subtropical countries. Every 3.6 seconds someone dies of hunger. Breadfruit could provide a solution to this horrific problem.

## *Why the tropics?*

Out of the estimated 1 billion people on the planet who are malnourished, more than 80% of these hungry live in tropical and subtropical regions. Breadfruit is a tropical plant.

## *Why breadfruit versus an already readily available crop like rice?*

It's a good solution because it's a tree. Breadfruit is easy to grow in a wide range of ecological conditions. Compared to an annual field crop like corn or rice, it doesn't require constant replanting and it is much less labor intensive, mainly only requiring occasional pruning to make harvesting easier. Production is vertical, so it requires less land, resulting in a higher yield per acre, and does well on hillsides or slopes. The trees contribute to the quality of the environment, provide shade, help prevent soil erosion, and create microclimates for other plants and organisms.

Breadfruit is a highly sustainable crop. It may take 3-4 years to bear fruit but then it produces for decades. A single breadfruit tree can



◀ A flat of breadfruit plants ready for shipment. *Photo courtesy of Josh Schneider, Global Breadfruit*

produce 300 to 450 pounds of food per year. It's high in energy and carbohydrates and is a good source of fiber, calcium, copper, iron, magnesium, potassium, thiamine, and niacin. Some varieties are good sources of anti-oxidants and carotenoids. Breadfruit is versatile; you can use it at all stages of development. And research is being done to make it into flour.

By planting more than one variety, you can extend the season when fruits can be harvested. Five or so varieties may mean close to year-round production.

### *How are you making breadfruit trees available?*

The Institute is doing this through strategic partnerships. We provide the initial material from our collections that have been developed over time from extensive field exploration in the Pacific islands. Many of these varieties are unique to a particular island group, so before we turn over any materials for mass-propagation we work with the individual governments to sign memoranda-of-agreement for benefit-sharing to support agriculture programs, conservation and research on crop plants, and capacity building in those countries.

The traditional method for cultivating breadfruit is very slow. So during the past seven years, the work that needed to be done to even *consider* the possibility of mass propagation was in the laboratory. We have a long-standing partnership with the University of British

Columbia, Guelph. Dr. Susan Murch there had developed ways to grow over 50 plant species *in vitro*. Her team has now developed protocols for growing 10 varieties of breadfruit *in vitro*, which set the stage for our next step.

That was to turn to people who are knowledgeable in and have the capacity for mass production and worldwide distribution. We signed an agreement with Cultivaris, LLC in San Diego, California and Germany; the members of its team have over 30 years experience in bringing new crops to market and they have production facilities throughout various parts of the world. They've formed a Global Breadfruit division and are in the process of developing the next set of protocols necessary to produce large numbers of plants — how to take a limited number of buds and use *in vitro* methods to create more buds, get those buds to produce shoots, then help those shoots develop roots, and finally wean them (a process where the rooted plants are first introduced into potting media). Right now they are at the rooting stage with two varieties. It is how a single bud from one of our trees can be turned into thousands and thousands of healthy, uniform-sized plants.

*How do you envision these trees getting into the hands of local farmers?*

The Institute is a member of the Alliance to End Hunger, a coalition of 70 corporations, non-profit organizations, universities, individuals, and religious groups, working together to create real change for hungry people. And we're communicating directly with government agencies and non-governmental organizations dedicated to achieving food security.

We've been contacted by close to 50 countries thus far. They would not only fund and distribute large quantities of plants within their countries, but also provide the best chance of success through educating the farmers through various agricultural programs.

Here the Institute can also help because of the years of studies and considerable data that we've collected, processed, and published.

*Have you done any smaller scale pilot projects along these lines?*

We started with a small one in Honduras through Sustainable Harvest International a few years ago where we initially tried shipping plantlets direct from in vitro. Unfortunately, the success rate was not good using that method. But it did tell us what direction we needed to go. We hope to continue working with them using this new method. We also have a pilot project in Jamaica with about 50 weaned plants through the Trees that Feed Foundation, and are working with the ARN Foundation which plans to do a project in Haiti.

*The Institute is part of the NTBG. How does that help?*

Well, it all started when the Garden had the foresight to create a long-term collection at Kahanu Garden which, although remote, has excellent climate conditions for breadfruit. The collection now includes nearly 120 varieties, the most comprehensive repository of breadfruit in existence. Some of these varieties have already disappeared in their countries of origin, so germplasm conservation is a vital part of what we do. We've replicated some of the varieties in the McBryde Garden. NTBG formed the Institute in 2002; it's based adjacent to the McBryde Garden at Headquarters. It's the perfect jumping off point to the rest of the South Pacific, while our garden, in Florida, The Kampong, is right next to the Caribbean.

*You've devoted most of your adult life to breadfruit. You must get great professional and personal satisfaction from these exciting developments.*

Most assuredly. I am proud of the work I've done to conserve breadfruit diversity and knowledge about breadfruit. This initiative will take those accomplishments to a new level. So many people have played a role in this and I know we're all eager to see the end result. I can picture healthy breadfruit trees creating healthy people.

This piece was just one of the articles featured in the print magazine  
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