Breadfruit (Artocarpus altilis), Production in Fiji

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Fiji
Breadfruit – Introduction

- Breadfruit – Mulberry family, Moraceae.
- Originating in the South Pacific and that was eventually spread to the rest of Oceania.
British and French navigators introduced few varieties to Caribbean islands during the late 18th century and today it is grown in some 90 countries throughout South and Southeast Asia, the Pacific Ocean, the Caribbean, Central America and Africa.
Why Breadfruit?

- **CARBOHYDRATE**  53% to 76%
  - $\alpha$ 1,4 glucose  AMYLOSE
  - $\alpha$ 1,4: $\alpha$1,4,6  AMYLOPECTIN
  - $\alpha$ 1,2

- **FIBRE**  4.9%

- **PROTEIN**  1.05% to 1.3%
<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pantothenic acid</td>
<td>0.5</td>
</tr>
<tr>
<td>Vitamin B1 (thiamine)</td>
<td>0.2</td>
</tr>
<tr>
<td>Niacin</td>
<td>0.9</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>0.1</td>
</tr>
<tr>
<td>Choline</td>
<td>9.81</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>29.1</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>0.1</td>
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</tbody>
</table>
MINERAL CONTENT OF BREADFRUIT (PER 100g)

- Phosphorus: 30 mg
- Calcium: 17.1 mg
- Sodium: 2.0 mg
- Potassium: 490.3 mg
- Iron: 0.5 mg
- Magnesium: 25 mg
- Zinc: 0.1 mg
- Copper: 0.13 mg
- Manganese: 0.11 mg
Fiji has been at the forefront of breadfruit research and development regionally and internationally.
In 1966 Dominiko Koroveibau named 70 breadfruit varieties in Fiji.

The characterization included documentation of the morphological characteristics of the fruits, leaves, length of the male flowers, fruiting time, and the food value of each variety.
Breadfruit Diversity
An evaluation of marcotting techniques on breadfruit (Artocarpus altilis) variety “Balekana ni Samoa for improved multiplication of planting material in Fiji

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6. MSc Student, University of the South Pacific, Fiji.
Root suckers
Marcotting
Distribution of germplasm to neighbouring countries

SPC CePaCT
ACIAR-PARDI
Distribution to Pacific countries
Focus was on controlling fruit fly.

Worked carried out High Temperature Forced Air Treatment

Nature Way Cooperative (Fiji) Ltd.


Grandison Gordon


Grandison Gordon

Refining the export supply chain (2003–2005)

FIJI BREADFRUIT QUALITY GUIDELINES

FOR FRESH EXPORT

VARIETIES

UTO DINA

BALE KANA

ROT

DEEP BRUISE

SUNBURN

SURFACE BRUISE

BROWN STEM

MEALY BUG

STEM LENGTH

140 mm
130 mm
120 mm
110 mm
100 mm
90 mm
80 mm

SAP STAIN

PACKAGING

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A Manual for the Growing and Marketing of Breadfruit for Export

October 2005
1st National Breadfruit Conference at Legalega Research Station (2005)
Participants from Africa (Benin, Ghana, Nigeria, Tanzania), the Seychelles, the Caribbean (Trinidad and Jamaica), Sri Lanka, and the Pacific (Fiji, Pohnpei [Federated States of Micronesia], Hawaii, Kiribati, New Caledonia, Papua New Guinea, Samoa, Tonga, Tuvalu, and Vanuatu), and Australia.
Fiji Institute of Agricultural Science

National Breadfruit Symposium

“Breadfruit for Economic Growth and Food Security”

May 27th, 2015
Tokatoka Resort, Nadi
Production Systems

- Agroforestry program in traditional food gardens.

- Integration of breadfruit into commercial agroforestry systems – timber and fruit trees.

- Integration of breadfruit into commercial orchards with intercropping (linear or square).
Market and Market Opportunities

- Local municipal market
Exports

- New Zealand
- Australia
- USA
Processing

- Breadfruit Flour Processing
Value-added Products

- Samoas's Favourite Chips
- Ulu Chips (Breadfruit)
- Fried Ulu Chips
• The US gluten free existing and market demand projections.
• Agroforestry benefits of breadfruit
• Food security and health benefits of breadfruit
• Entrepreneurial opportunities from breadfruit, processing and by-products.
Future R & D

- Additional Planting Materials to Scale up Production (Tissue culture, root suckers, marcotting)
Explore commercial viability of sea freight exports by developing postharvest protocols

- Preliminary research so far conducted show that storage at non-chilling temp. 12 degrees Celsius inhibit ripening with rot development the limiting factor. Av post harvest life was about 21 days.
Systematic studies on the effect on rot development at low temperature of fungicides that are currently acceptable in NZ and Australia. (Range of concentrations and dip times at a range of temperature is required).

Research is required to determine the extent of sugar accumulation during low temperature storage.
Breadfruit - crop of the future!

- Ability of breadfruit to secure food energy from the atmosphere, thanks to large leaves and canopy, also relatively undemanding of soil.
- High tolerance to climate extremes.
- Well suited to inter-cropping.
- High yielding in biomasses that can be converted to high quality gluten free flour & paste products.
Regarding food if a man plant ten (breadfruit) trees in his life, which he can do in about an hour, he would completely fulfill his duty to his own as well as future generations”

Sir Joseph Banks 1769
Acknowledgement

- Ministry of Agriculture – Fiji
- Pacific Breadfruit Project
- Naturesway Cooperative
- Secretariat of the Pacific Community
- Fiji Institute of Agricultural Science
THANK YOU