Fiji Experience with fresh breadfruit exports
Protocol for fresh exports to New Zealand - 2000

Focus was on controlling fruit fly.
Worked carried out by Koronivia Research Station, Quarantine and NWC.
Commodity development framework

Nature Way Cooperative (Fiji) Ltd.

Grandison Gordon
South Pacific Trade Commission, New Zealand.

Grandison Gordon

In 2001 breadfruit sales in Samoa were approximately 40% of taro sales. On this basis it could be concluded that the potential market for fresh breadfruit in New Zealand is around 40% of taro exports to that market.

Fig. 1: A comparison of breadfruit and taro sales at the Fugalei market (monthly average of Friday availability)
Refining the export supply chain (2003-2005)

Public, private partnership driven by NWC
Exporter, farmer involvement
Applied research
Farmer friendly training materials
Refining the export supply chain (2003-2005)
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National Breadfruit Conference at Legalega Research Station (2005)
A Manual
for the
Growing and Marketing
of Breadfruit for Export

October 2005
Fiji Fresh Export Supply Research
(2011 - 2015)
Issues with current chain

Physical damage and sap stains

Research questions
1. Where is it occurring?
2. How big of a problem is it?
Supply chain assessment for causes of physical damage – National Exports

1. Harvest by hand
2. Dropped into tarpauline
3. Stem end covered with tissue and left on ground to drain sap
4. Transport from bush to farmers house
5. Fruit graded and washed
6. Transport to NWC
7. Arrive at NWC
8. High Temp Forced Air
9. Packing line
10. Packed fruit

S1
S2
S3
S4
S5
Despite all of this work – export performance has been very disappointing.
Continuity of supply is the major constraint to commercial breadfruit industry development.
Other constraints facing the fresh breadfruit exports in Fiji

- Seasonality of breadfruit
- The stringent quarantine requirements to carry out numerous sprays for fruit flies (compliance and quality issues)
- High cost and capacity constraints of airfreight (sea freight will be required)
Conclusions

• There is a large market for fresh breadfruit in New Zealand other accessible markets (Australia & US)
• Supply must come from commercial orchard production
• Quarantine issues such as bait spraying must be addressed
• Research on breadfruit varieties and extending season for the production and supply
• Obtaining market access for Australia and US
Vinaka
Breadfruit Postharvest / Product Development Research

By the Scientific Research Organisation of Samoa (SROS)

“Positive thinking achieves positive results”

Pacific Breadfruit Roundtable – Tonga September 2016
SROS Brief Background

• Established by an Act of Parliament in July 2006

• A Public Beneficiary Body – core funded by Government & reliant on external funding for technical & research projects

• Contribute to national economy and community livelihoods through R & D and value adding to local produce

• Four technical divisions
  • Food Science & Technology (product development)
  • Plant & Postharvest Technologies
  • Environment & Renewable Energy
  • Technical Services (IANZ accredited chemical and microbiological testing services- food safety and nutritional content etc)
Fruit Facts

- Seasonal, perishable fresh produce
- Climacteric - high respiration rates upon ripening
- Inverse relationship between respiration & postharvest-life
- Fruits abundant and under utilised
- Export by air not economical – low volumes & costly

SO WHAT WE NEED for postharvest research is..

- Preservation method to prolong fruit shelf life without affecting quality to allow exportation by sea
Postharvest Research

Manipulation & Controlling of atmosphere in direct contact with food

- Concentrations of gases
  - O2 - lower levels slow respiration
  - CO2 - higher levels slow respiration & prevents growth spoilage microorganisms
  - N - slow ripening

- Temperature - controls respiration & other metabolic reactions
- Humidity - controls transpiration

- Physical and chemical treatments (adjunct technology)

Method may involve manipulation of only one or combination of two or all three factors
Project Objective

• Objective
  – To prolong the keeping quality of breadfruit by controlling the atmosphere in which it was stored, to allow economical export by sea

• Aim
  – slow loss of quality or spoilage breadfruits
    • by determining the optimum storage conditions
      – Gas mix, temperature, packaging
      – harvesting conditions & pre-treatment before storage
Experiments focused on..

• The effect of temperature (25oC & 14oC) on the postharvest quality of Breadfruit
• To study the climacteric pattern of respiration
• The effect of precooling conditions – using water, ice and air
• The effect of shrink wrapping
• The effect of leaving or removing stem when harvested
• Varietal differences – Maafala and Puou
ACIAR Fruit Tree Project

– Provide funding to continue and complete the initial postharvest studies for breadfruit
  • Do more replicate studies, multi-locational collection and cover both islands

– Also study the following:
  • Systematic studies on the effect on rot development at low temperatures in conjunction with fungicides that are currently acceptable in New Zealand and Australia.
  • Determine the extent of sugar accumulation during low temperature storage and reduction. Conduct consumer testing with non-Polynesians to determine whether there is a different taste acceptability pattern.
  • Assess whether fruit are comparatively more prone to rotting when harvested during the wet season compared to the dry.
Target for Postharvest shelf life...

• Minimum shelf life needed - 28 days
  – Harvesting based on shipping schedule
    • harvest, pack, -7 days max
    • Holding time at wharf – max 3 days
    • Shipping time – 10 days max
    • Clearance – 3 days max
    • Marketing -5 days

• If not sold in time – all goes to waste!