Tree Crops

1. Avocado
2. Breadfruit
3. Citrus
4. Cocoa
5. Coconut
6. Mango
7. Plantain

TECHNOLOGY PACKS

BREADFRUIT

November 2015

Background

Production decisions concerning how much effort and resources to invest and which farming practices to follow, have consequences and create opportunities for the farm affecting production levels, input costs, time constraints, and the potentially size of the operation. They also may have implications for resource use and environmental quality.

Numerous information exist on the various aspects of production and handling/ marketing of crops and livestock, the majority of which are outdated, not easily understood and lacking the where with all for addressing present day challenges such as good agricultural practices (GAPs) and food safety and climate change that impact on the environment and rural livelihoods. These issues are also closely related to the importance of the role of primary producers in increasing the earnings of all actors along the value chain in supporting the development of a commercially viable and sustainable agricultural industry.

The production of high quality and easily understood information packages is critical as this forms a basis for farmers to obtain financing from lending institutions and to efficiently increase their production through the availability of modern technology. This will also result in a reduction of rural unemployment and will greatly help in alleviating poverty and other associated social ills.

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Introduction

This Technological Package (Tech Pack) deals with the production and postharvest aspects of breadfruit, *Artocarpus altilis.*

Breadfruit, locally called "bois pain" is a tropical plant which originated in Polynesia. It was introduced into the Caribbean from Tahiti in the 1790s. In St. Lucia the fruit is primarily used boiled or roasted but is also fried. It is grown in a variety of farming systems, mainly intercropped with other agricultural crops, particularly banana and coconuts.

Plate 1 Breadfruit

Breadfruit is an important economic crop in St. Lucia both in terms of food security and also as a foreign exchange earner. In recent years production has been declining and exports have dropped significantly from just over 400 tons in 2011 to under 100 tons in 2013. Production has dwindled mainly due to the passage of hurricanes and Tropical storms. The revitalization of the breadfruit subsector is important for the regaining of former levels of food and nutrition security and export earnings.

Varieties

Three varieties are recommended, the local varieties "White Heart" and "Yellow Heart," and the foreign Ma'afala cultivar which produces a shorter more compact tree than the local varieties.

Propagation

Methods of propagation include:

a. Transplanting suckers which spring up naturally from the roots
b. Root cuttings or stem cuttings taken from root shoots
c. Tissue culture plantlets (Plate 2)
d. Grafted plants (breadfruit on breadnut seedlings).

Plate 2 Tissue culture breadfruit plantlets
Source: http://ntbg.org/breadfruit/research/bfi_projects.php

Site Selection

Use locations with an average annual rainfall of 60 - 120 inches (1500 - 3000 mm). Soils should be deep, fertile, well drained with a pH between 6.1 - 7.4. Trees located close to a river bear almost year round, otherwise production is seasonal.

Land Preparation, Planting and Spacing

Prepare planting holes at least 3 feet x 3 feet (1 m x 1 m) and 1½ feet (45 cm) deep. Place the plants in the holes and fill with a 1:1 mixture of soil and pen manure or compost and also 1 ounce (30 g) of triple super phosphate. Firm the soil thoroughly to remove all air pockets. Heap some soil around the plant to prevent waterlogging in the planting hole. To provide adequate room and sunlight for maximum tree growth planting holes should be spaced at least 25 feet (7.5 m) apart from each other or from existing trees whether these are breadfruit or another type of tree.

Fertilization

Application of commercially available NPK fertilizer is useful to maintain high production. One year after planting apply ½ lb (225 g) per plant and repeat every year until start of bearing when the rate should be increased to ¾ lb (350 g)/year. When the tree is 6 years old the rate can be increased to 2 lb (1 kg)/year.

Pests and Diseases

In St. Lucia there are no serious pest and diseases affecting breadfruit. However, CARDI has reported that bee stings on the fruit can lead to secondary infection which results in rotting.

Height Management

Manage tree height by pruning the main stem to about 6 feet (2 m). Cut back leading branches every 3 - 4 years to maintain low growth (Plate 3). The Ma'afala cultivar requires much less pruning than the normal tall varieties (Plate 4).

Plate 3 Pruned breadfruit tree
Source:https://raygrogan.files.wordpress.com/2009/09/ulu-stubby-trimmed-to-small- tree.jpg?w=300&h=225

Plate 4 Ma'afala breadfruit tree
Source:https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQ07eKfHF7EST8l01-yRkcfxwopH5CPjj91wvM-413HFxVeTmcXDnA

Harvesting

- Harvest fruit on the day of shipment, or on the previous day for the local market as no cool storage facilities are available
- Harvest mature fruits in the early part of the day to avoid build-up of field heat
- Harvest fruit with the aid of a picking pole and bag (kali), Plate 5.

Plate 5 A kali

Post Harvesting

- Immediately after harvesting, trim fruit stems with a sharp knife leaving the stem flush with the level of the fruit shoulders or slightly protruding (up to ¾ inch, 1.5 cm); depending on the exporter the stem may not be trimmed
- Place fruit on the ground with the stems downwards to allow the latex to drain
- Remove fruits that are immature, undersized, damaged, ripe, or fruits with stems completely removed
- Place fruits in field crates and transport carefully to avoid damage
- To remove field heat quickly and extend shelf life keep fruits in ice boxes with cool water while being transported to the pack-house
- Wash fruits in a bleach solution 1 teaspoon bleach/gallon (5 ml/4 L) of water
- Using a pointed object to remove latex and insects from base of stem

- Grade fruits according to size: small, medium and large, with small having a weight of 3 lb (1.4 kg), medium 4 – 5 lb (1.8 – 2.3 kg) and large over 5 lb (2.3 kg)
- Wrap fruits in damp paper and place individually in polythene bags, Plate 6
- Pack in cardboard cartons to a minimum fruit weight of 40 lb (18 kg)
- Store fruits only for a few hours at room temperature as they await export.
- A variety of processed products can be made from breadfruit, e.g. flour, bread, cakes, pastries, pasta, chips, etc.

Plate 6 Wrapping breadfruit in paper and polyethylene bags