



*Produced by  
The Communications Unit  
Ministry of Agriculture, Forestry &  
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# Pitaya (Dragon Fruit) Production and Processing in St. Vincent and the Grenadines



Contributed by  
The Taiwan Technical Mission  
& Ministry of Agriculture,  
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2. Get the quantities of white sugar, pectin powder and Citric acid ready to be added to the pre-mix. Sterilize glass bottles by dipping in hot water at 100°C for 5 mins.



3. Place the blended pulp (the premix) and a little water in a pot and cook well. Ensure it boils, then add white sugar, pectin powder, citric acid and preservative. Stir gently while it gradually dissolves. Leave to cook for another 10 - 15 mins.



4. When the mixture begins to gel (Jam formed), remove it from the heat. Test for jelling by placing a few droplets of the mixture from the spoon into cold water. If it stays together, its ready. Or, use a thermometer to dip in the mixture. A reading of 104°C is adequate.

5. Use a 75% alcohol solution to again sterilize the glass bottles. Pour the mixture into the sterilized bottles, seal with caps.



6. Place the sealed bottles upside down to release any gas that may be inside. Stand bottles right side up and leave to cool down at room temperature over night.

# Pitaya (Dragon Fruit)

## Production and Processing in St. Vincent and the Grenadines

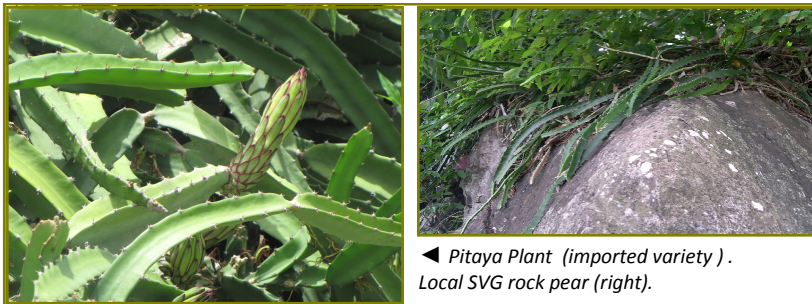
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Ministry Of Agriculture, Forestry & Fisheries

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# 1. BACKGROUND

<b>Family</b>	<b>Cactaceae</b>
<b>Scientific Name</b>	<i>Hylocereus undatus</i>
<b>Common Name</b>	<u>English</u> : Strawberry pear, Dragon fruit, Night blooming cereus. <u>Spanish</u> : Pitahaya, Tuna, Nopal, Pitajaya. <u>St. Vincent and the Grenadines</u> : Mountain pear or Rock pear.
<b>Origin</b>	South, Central and North America.
<b>Climate</b>	Pitaya grows well in tropical and subtropical climates .

## Description



Pitaya are fast-growing, perennial, vine-like cacti. They have triangular (3-sided), green, fleshy, jointed, many-branched stems. Each stem segment has 3 flat, wavy wings, with corneous margins and may have 1-3 small spines, or are spineless. The stem section of pitaya forms aerial roots which adhere to the surface upon which they grow or climb.

## Flower

The pitaya flower is white, extremely showy, edible, fragrant and bell shaped, about 1ft long and 9 inches wide. It is a night blooming flower. Unopened flower buds can be cooked and eaten as a vegetable; opened flowers can be used for tea.

# PITAYA JAM PRODUCTION

## Composition of Ingredients

<b>Pitaya</b>	<b>28%</b>
<b>Water</b>	<b>16.5%</b>
<b>White sugar</b>	<b>50%</b>
<b>Pectin powder</b>	<b>5%</b>
<b>Citric acid</b>	<b>0.5%</b>
<b>Sobic acid</b>	<b>0.05%</b> (preservative)

## Method

### 1. Fruit preparation:

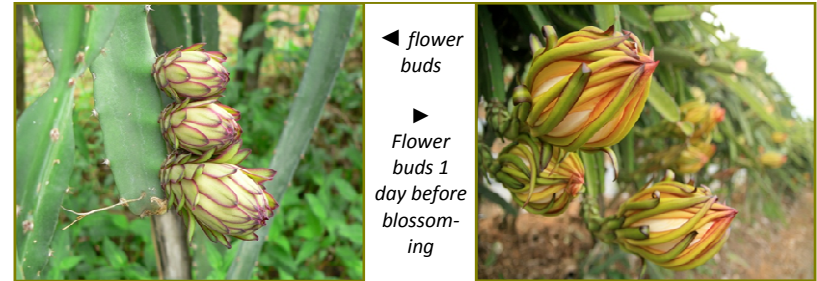


- Select mature fruits.
- Wash, peel and extract the pulp.
- Add water and gently pulverize.
- Mesh into pulp, then blend with water gently (pre-mix)





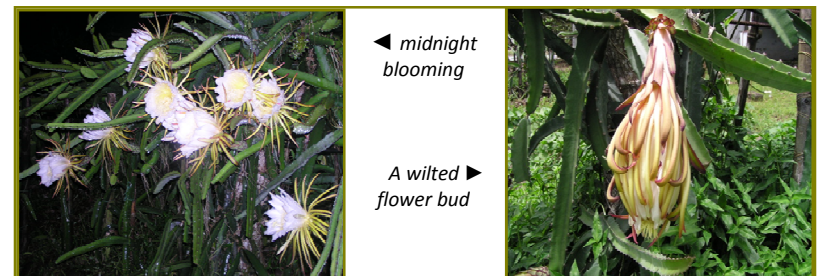
### 3. PROCESSING



#### Pollination

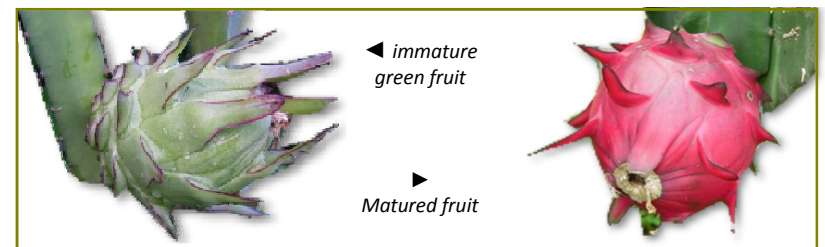
Artificial cross pollination between the different types planted, ensures better fruit set and size. To ensure good fruit production, plant 2 or 3 different species.

To artificially pollinate a plant, use a paint brush to transfer the pollen grains to the stigma early in the morning, or during the evenings before the flowers close.



#### Fruit

The fruit is a fleshy berry, which is oblong with red and yellow scaly peel. The flesh may be red or white depending on the species. Seeds are very small, numerous and black, embedded within the flesh. The red flesh varieties contain lycopene which is a natural antioxidant known to fight cancer, heart disease, and lowers blood pressure.



## 2. PRODUCTION

### Varieties



Several species with varying skin and pulp colors, such as red skin/red pulp, red skin/white pulp and yellow skin/white pulp are produced in St. Vincent and the Grenadines.

### Propagation

Seedlings are slow growing, and unreliable for propagation - Healthy mature stem segments of 6 - 15 inches are used. A slanted cut is made at the stem base, this is left in a shaded area for about 5-7 days to dry and heal before being planted out directly in the field.



### Grading and Packaging

When grading and packaging, always use fruits of the same specie, size and colour. Strongly built cartons with a layer of cushioning material is best. Set the pitaya fruits in the same direction; use paper to put a second layer of fruits in the carton. Do not pack more than 4-5 layers in a carton.



### Nutritional Value

The red flesh is rich in antioxidants. The pitaya fruit is rich in vitamins and minerals.

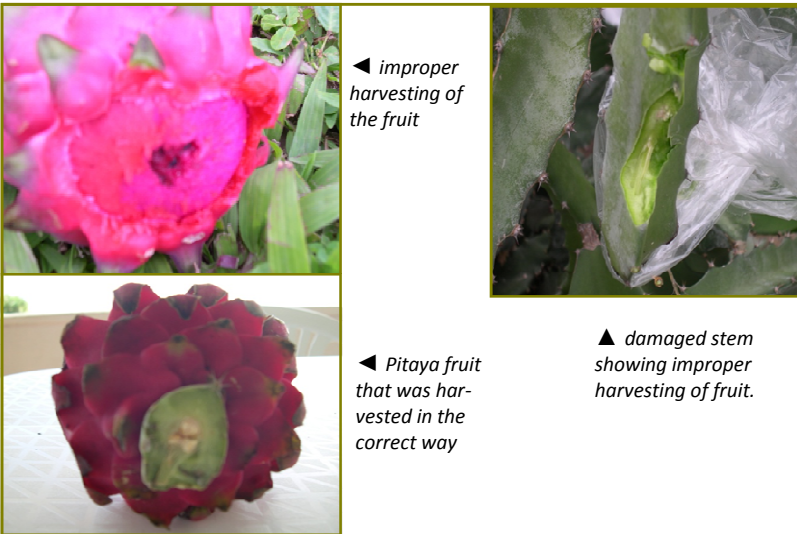
Pitaya Fruit: Nutritional value per 100g			
Ash	0.68g.	Iron	0.65mg
Carotene	0.012g.	Fat	0.6g.
Phosphorus	36.1g.	Fiber	0.9g
Protein	0.229g.	Water	83.0g.
Calcium	8.8mg.	Riboflavin	0.045mg.
Niacin	0.43mg.	Ascorbic	9.0mg.



## Harvesting

Forty to forty-five days (40-45 days) after fruit set, the mature fruit turns a full red or yellow colour. Pitaya fruits are due for harvesting when a hole appears inside the cavity of the fruit and the wings turn red. Some species are thorny and wearing a pair of leather gloves at harvesting is recommended. The fruits are to be carefully removed from the plants taking care not to damage the skin. In St. Vincent and the Grenadines, harvesting lasts from June to November with approximately 5-6 cycles of harvests per year.

Pitaya fruits can be kept at room temperature for more than 7 days, and in plastic bags in the refrigerator for about 24 days.



## Crop Yields

At the Taiwan Mission Orange Hill demonstration farm where concrete posts are used, about 20-30 lbs of fruits per year is produced. Fruit size range from about ½ - ¾ lbs. (what is acreage at the farm?)

Production potential in Taiwan was estimated at 14 700 - 24 500 pounds per acre.



◀ Varied size of fruits harvested at the Taiwan Mission Farm at Orange Hill

## Site Selection

Pitaya plants should be planted in an open well-lit sunny area for best growth and fruit production.

## Soil

Pitaya can be grown in a wide range of soils. Soils that are well drained and high in organic matter are recommended.

## Wind

Avoid windy areas as strong consistent winds can damage the trellises or other types of support provided for the stems.

## Spacing



Plants are spaced:  
**With the concrete posts -**  
 WR 8ft X 10ft BR  
**With fence or wall -**  
 WR 4ft X 4ft BR

◀ Plants lined at 8 X 10 ft.  
 Posts are 8 X 9 ft. apart

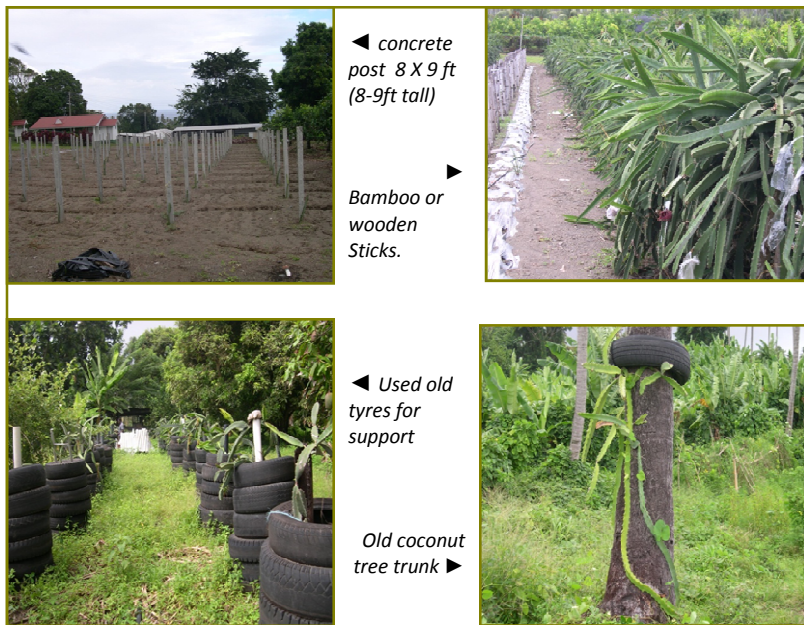
## Planting

Plant the cured cuttings directly into the soil at a depth of at least 1½ - 2 inches. Provide a stake as support for the new plants, e.g. wooden or concrete posts, a wall or a fence.

## Support Structures

Pitaya plants grow quite large, spreading outward from the main stem. A strong support structure should be established to avoid snapping of the matured plant parts.

In St. Vincent, the type of support structures used are concrete posts, bamboo or wooden sticks, old tyres, coconut trees, fence and rock or wall.



## Fertilizing

Well composted manure 1-2 lbs/plant at planting, (beginning in April) and every four months after. Do not apply more than 3 ½ -5 oz NPK fertilizer per plant per year.

## Irrigation

Pitaya belong to the Cactus family and tolerate dry conditions. A dry period is necessary for the plant to flower, however as the fruit matures, water is needed to increase the fruit set and fruit weight.

## Weeding

Weeds close to the plant should be removed manually. Use a herbicide with a shield for weeds along the inter row space.

## Training

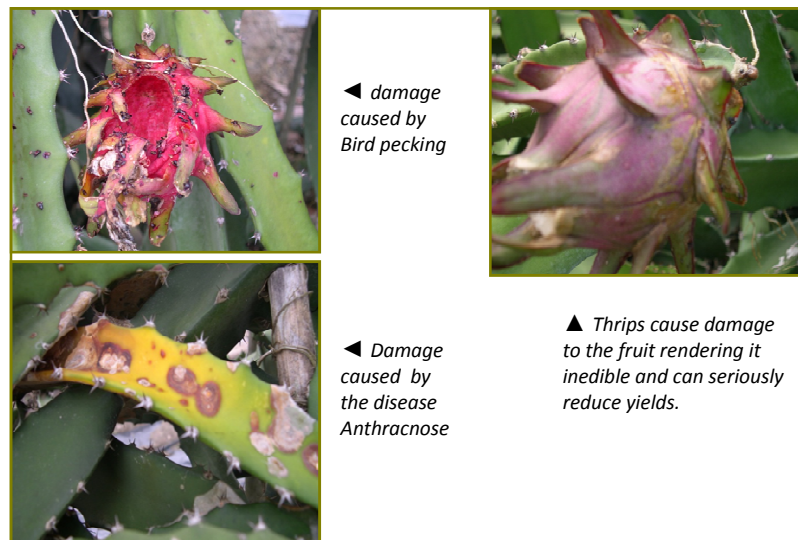
The main stem has to be trained for it to be able to use the support structure. Tie the stem to the support structure as it grows. Once this stem reaches the top of the support, cut the tips to induce branching and tie again to the support.

## Pruning

Pruning may induce flowering and stem branching. Pruning is done to remove all damaged, diseased or dead stem and any stem that touches the soil. Pruning is also done after harvesting is completed or it can be done 1 - 3 times per year.

## Pests and Diseases

Birds, thrips and mealybugs present some damage for pitaya. Anthracnose is the major disease that is of concern.



## Physiological Problems

1. During the rainy season, particularly so in areas with sandy soil, the mature pitaya fruits must be harvested on time to prevent the fruits from absorbing excess water which causes them to split open.
2. Always use a shield when applying gramoxone or any herbicide to avoid damaging the plant.

