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## Introduction

Lakatan is the most popular dessert banana in the Philippines and the most highly priced variety in domestic markets. It is extensively grown in backyards and commercial farms all over the country. Lakatan flowers 9-10 months from planting and fruits can be harvested 3 months after flowering. It grows to an average height of 3 meters with leaves in erect habit and compact bunch hanging vertically. The fruits are medium to large weighing 110-112 grams per fruit. The peel is orange-yellow when ripe, thick and adherent to the pulp. The pulp is pale orange-yellow, firm, sweet, aromatic, excellent in eating quality and have high carotene content.

## Production Technologies

### Site Selection

1. Choose an area with access to irrigation water.
2. The site should not be previously planted with Fusarium Wilt and Moko disease infected plants.

### Soil and Climatic Requirements

1. Deep, friable and well drained loam soil with high organic matter content (2% or above) and pH ranging from 5-7.
2. An elevation at sea level up to 1,000 meters above sea level.
3. Areas with not more than three months of distinct dry season.

### Selection of Planting Materials

1. Use ready to plant disease-free tissue cultured plantlets (five-leaf stage) which are robust and green and sourced-out from recognized and reputable nurseries.
2. If suckers are preferred, obtain sword suckers from healthy mother plants.

### Land Preparation

1. Clear the land by removing shrubs, weeds and other materials.
2. Plow and harrow once if the area is previously planted with other crops but not necessary if planted to coconut, provided that planting holes are bigger and deeper
3. Plow twice and harrow once if the area is newly opened..
5. Lay-out the field in a square system of planting at a distance of 2 m x 2.5 m (2,000 plantlets/ha).
6. Dig holes about 35 cm deep and 35 cm wide for open area or 45 cm deep and 45 cm wide if under coconut.

#### PREPARATION OF PLANTING MATERIALS

1. Select only plump and well-developed seeds.
2. Carefully remove the flesh adhering to the seed.
3. Germinate the seeds in light loamy soils or in germination beds with sawdust.
4. Germinated seedlings are ready for potting in 8" x 11" x .003 plastic bag when the first pair of leaves have developed
5. At 12-18 months from pricking, the rootstocks are ready for asexual propagation and at 6-12 months after grafting, the asexually propagated plants are ready for field planting.

- Remove or sort out fruits with bruises, scabs, scars, oversized or undersized, and small or malformed fingers.
- Weigh fruits carefully
- Pack the fruits using either soft wood crates or cartons (18-20 kgs capacity) lined with cool and durable leaf sheaths, banana leaves, polyethylene plastic sheets or newspaper



## Three-years Estimated Cost & Return of a One-Hectare Lakatan Banana Farm

Items	Year 1	Year 2	Year 3	Total
<b>Harvestable Fruits (kg)</b>	<b>21,600</b>	<b>43,200</b>	<b>23,040</b>	<b>87,840</b>
<b>Gross Income (P)</b>	<b>432,000</b>	<b>864,000</b>	<b>460,800</b>	<b>1,756,800</b>
<b>Production Cost (P)</b>	<b>263,360</b>	<b>166,400</b>	<b>147,660</b>	<b>577,420</b>
Establishment	64,060			64,060
Care & Maintenance				
- Weeding & Cultivation	4,400	3,200	4,400	12,000
- Fertilization	77,650	74,300	74,300	226,250
- Irrigation	4,000	4,800	4,800	13,600
- Sucker Management	1,600	1,600	1,600	4,800
- Mat Sanitation	2,300	2,400	2,400	7,100
Bunch Management	65,750	31,600	22,460	119,810
Managing Pests & Diseases	39,050	41,300	34,100	114,450
Harvesting	4,550	7,200	3,600	15,350
<b>Yearly Net Income (P)</b>	<b>168,640</b>	<b>697,600</b>	<b>313,140</b>	<b>1,179,380</b>
<b>ROI (%)</b>	<b>64</b>	<b>419</b>	<b>212</b>	<b>204</b>
<b>Cumulative Production Cost</b>	<b>263,360</b>	<b>429,760</b>	<b>577,420</b>	
<b>Cumulative Net Income</b>	<b>168,640</b>	<b>866,240</b>	<b>1,179,380</b>	
<b>Cumulative ROI(%)</b>	<b>64</b>	<b>201.56</b>	<b>204</b>	

#### Assumptions:

Fruits Farm Gate Price =P20.00/kg; Production costs include cost of supplies and materials and cost of labor (P200/MID & P300/MAD. Plant population = 2000 hills/ha which will decrease by 20% in the 2<sup>nd</sup> and 3<sup>rd</sup> year; Harvesting will be done at weekly interval from the last month of Year 1 and beyond.(60% of the plant crop will be harvested in the first year and the remaining 40% will be in the second year.

### Insect Pests

Aphids, mites, mealy bugs

- Do regular weeding and stem and mat sanitation.
- Remove all possible hosts of insect pests.
- Spray infested plants with insecticides including those healthy-looking plants within the surrounding.
- Monitor and inspect regularly for pests occurrence.

### Harvesting

- Harvest 12-14 months from shooting or when the angularity of fingers are 90-100% full.

- Harvest the bunch preferably in the morning.

Lakatan fruits with 90-100% full angularity of fingers.



- Cut the pseudostem slowly and partially about 1/3 from the top for the bunch to fall slowly.
- Cut the peduncle 30 cms from the first hand for easy handling and prevent fruit stains due to dropped latex.
- Pile dried banana leaves on the ground that will serve as cushion for newly harvested bananas to prevent or minimize bruises and infection.
- Put a cushion in the hauler's shoulder in carrying the bananas to the packing shed.

### Postharvest Handling

- Dehand the bunch with dehanding tools leaving as much crown as possible in the hand and avoid bruising the fruits.
- Dip dehanded fruits in a washing/delatexing tank containing water and alum solution (10 g of alum per liter of water).



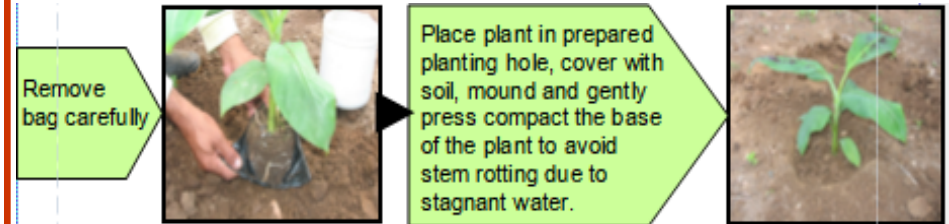
Washing/delatexing of fruits

### Field Planting

1. Handle plantlets properly by placing in slightly shaded areas and avoid injuries on the plants.
2. Plant early morning or late afternoon.
3. Plant during or at the onset of the rainy season or anytime of the year if there is irrigation.
4. Transplant plantlets using the following steps:
5. Replant immediately if there are dead plants.

### Fertilization Guide

- Apply fertilizer before irrigating or when there is enough moisture.



- Cover the fertilizer with soil after application.

Application Time	Kind & Fertilization Rate per Mat	Method of Application
Before planting	100 g Complete Fertilizer (14-14-14) plus 1 kg Organic fertilizer (chicken dung)	Basal
2-3 months after planting	25-30 g 14-14-14 plus 25-30 g Ammonium Sulfate (21-0-0)	Ring (20 cm from the plants)
4-6 months after planting	100-120 g 21-0-0 plus 100-120 g Muriate of Potash (0-0-60)	Ring (20 cm from the plants)
7-9 months after planting	200 g 46-0-0 plus 300 g 0-0-60	Ring (40 cm from the plants)
10 months and onwards	350 g 46-0-0 plus 350 g 0-0-60	Ring (40 cm from the plants)

Source: Banana (*Musa* spp.) Production Guide, BPI-DNCRDC, 2012. (Unpublished)



Basal application of Fertilization



Ring application of Fertilization

### Water Management

1. Water the plants immediately after planting.
2. Irrigate the plants with ready source of water during dry periods.
3. Construct drainage canals if necessary.

### Weed Control

1. Remove weeds around the base of the mat within a radius of 60-75 cm without damaging the root system of the mother plant and the suckers.
2. Mulch with any readily available materials such as rice straws, cut banana leaves and pseudostem, etc. on the base of the plants to minimize the growth of weeds as well as preserve soil moisture. Do not use infected plant parts as mulch.

### Sucker Management

### Stem and Mat Sanitation



1. Select 1-2 healthy suckers to be maintained 3 months after planting.



2. Remove unwanted or developing suckers at 3 weeks interval.

1. Remove old, diseased leaves and bracts.
2. Deleaf when more than 50% of the leaf blade is not functional and maintain at least 10-12 functional leaves until flowering.
3. Place cut leaves along the base of the plants to serve as mulches and fertilizer when decomposed.



De-leafing



Cut leaves placed in between rows of banana mats.

### Fruit/Bunch Management

1. Start spraying the fruit bunch with fungicides/insecticides when 1-2 hands appear at weekly interval up to removal of male bud.
2. Remove the male bud when the false hand appears.
3. Remove flower remnants, withered styles and perianth that persist at the distal end of the fingers before fruit bagging.
4. Bag the bunch after the emergence of the last hand to protect from pest damage and injuries.
5. Tie on the bunch colored strips or ribbon from the time of bagging for fruit age management.
6. Put props to provide ample support on developing bunch.



Spraying of bunch



Deflowering



Propping and bagging of bunch

### Pest and Disease Management

Common Pests and Diseases	Control Management
<b>Diseases</b> Banana Bunchy Top Virus (BBTV), Banana Bract Mosaic Virus (BBMV), Sigatoka, Fusarium Wilt and Moko	<ul style="list-style-type: none"><li>• Use disease-free planting materials.</li><li>• Immediately eradicate plants infected with BBTV, Fusarium wilt and Moko.</li><li>• Use <i>Trichoderma harzianum</i> as biological control against Fusarium wilt.</li><li>• Cut Sigatoka infected leaves when 50% of the leaf area is infected.</li><li>• Avoid planting of intercrops that could be alternate hosts for aphids that are carrier of virus diseases.</li><li>• Maintain proper sanitation.</li><li>• Monitor and inspect regularly for disease occurrence.</li></ul>