



# POSTHARVEST HANDLING OF 'LAKATAN' AND 'LATUNDAN' BANANAS

# POSTHARVEST HANDLING OF 'LAKATAN' AND 'LATUNDAN' BANANAS

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# Importance of Banana

- Source of income
- Nutritional and functional properties
  - ✓ Energy source
  - ✓ High in iron and Vit.B
  - ✓ Brain power
  - ✓ High in fiber



# The need to maintain quality

- Quality – combination of attributes, properties or characteristics that give a commodity value in terms of its intended use (Kader and Rolle, 2005)
  - ✓ Appearance – color, shape
  - ✓ Texture – firmness, softness
  - ✓ Flavor – taste
  - ✓ Nutritional value
  - ✓ Safety - contamination





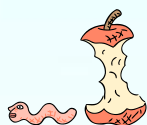
# Perceptions of quality of stakeholders

**P  
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**High yield  
Pest resistant  
Ease of harvest**



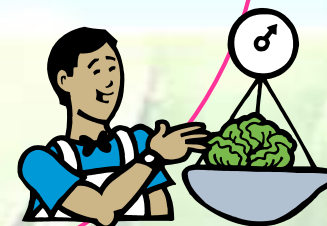
**Shipping  
quality**



**Firmness  
Appearance**

**Long  
storage life**

**Trader**



**Fresh  
Good flavor  
Safe  
Nutritious**



**Consumer**

# Determinants of quality

## ✓ Preharvest factors

- Variety
- Environmental factors (temperature, rainfall)
- Production practices (fertilization, irrigation, pest management)



# Determinants of quality

✓ Postharvest factors



Are they dead or alive?





*If a banana does not reach the consumer, it is as good as if it has not been produced at all.*



Overripe



Decayed



Mechanically damaged



# Determinants of quality

- ✓ Postharvest factors

## The Triangle of Postharvest Interaction

### Environmental Factors

- Temperature
- Humidity
- Gases

### Biological Factors

- Insect Pests
- Bacteria, molds (fungi)
- Humans

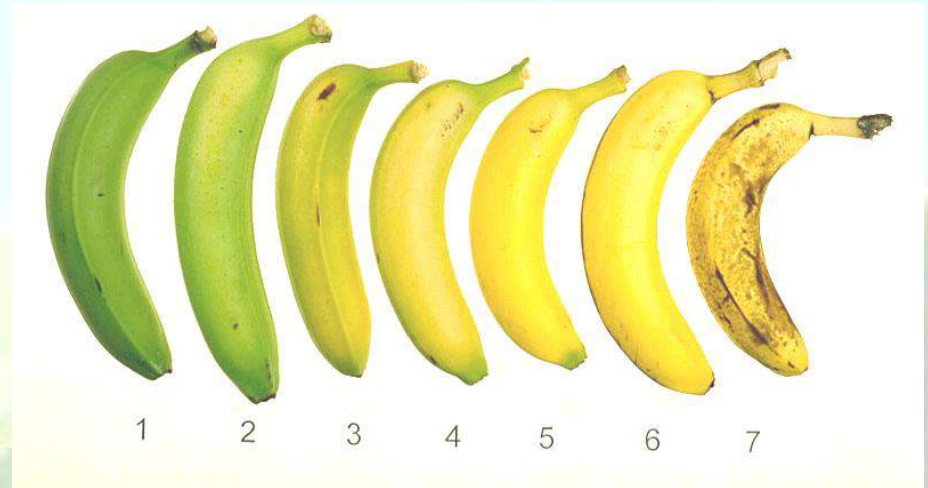
### Quality

### Commodity

- Morpho-anatomy
- Physiological status
- Levels of chemical constituents

# Characteristics of bananas affecting postharvest life

- Energy requiring
- Continuous state of change



# Characteristics of bananas affecting postharvest life

- High water content = Shriveling = Weight loss





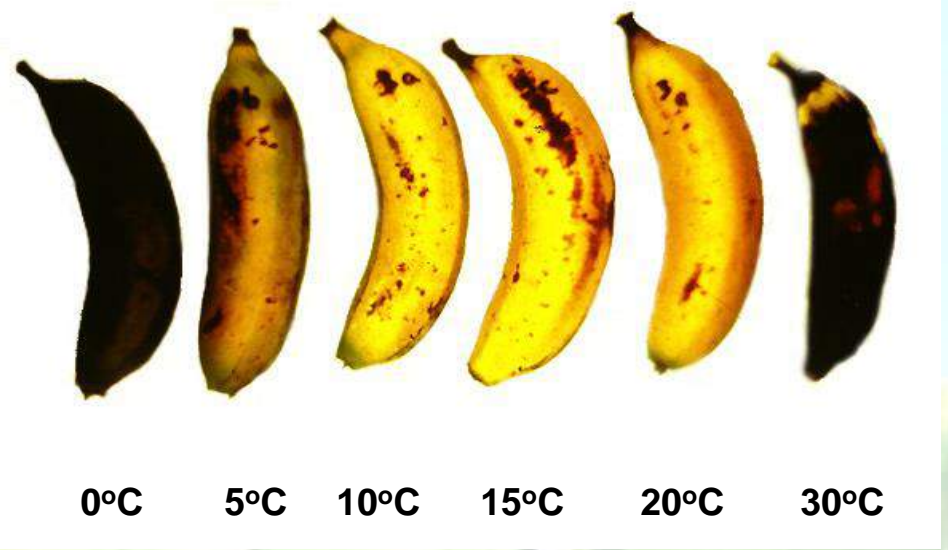
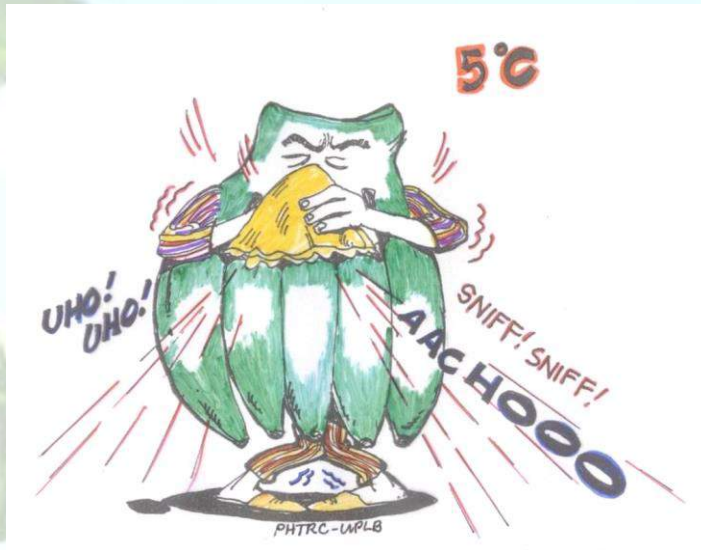
# Characteristics of bananas affecting postharvest life

- Susceptible to attack of insects and disease-causing organisms



# Characteristics of bananas affecting postharvest life

- Responsive to its environment



# Characteristics of bananas affecting postharvest life

- Prone to injury





# Maturity and Harvesting

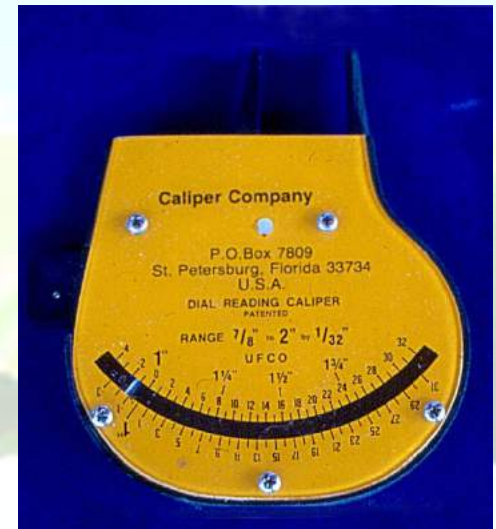
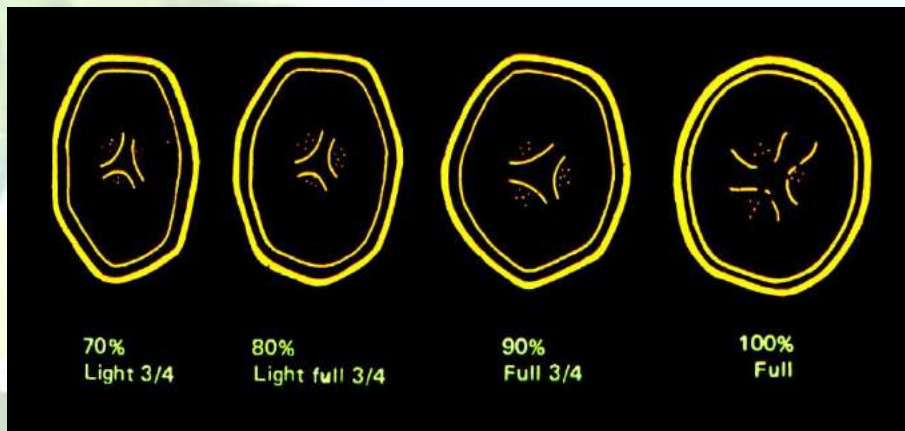
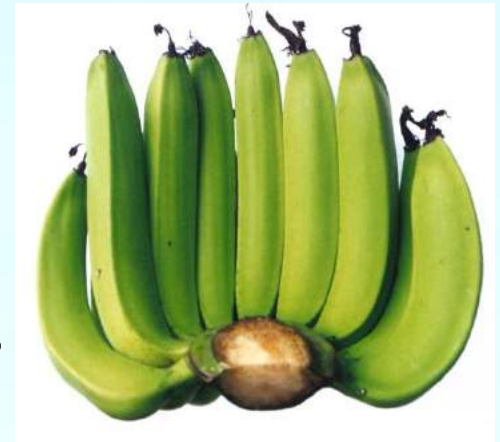
- Importance of harvesting at proper stage of maturity
  - ✓ Better quality
  - ✓ Longer postharvest life
  - ✓ Resistant to stresses
  - ✓ Maximum fruit size



# Maturity and Harvesting

- Maturity indices

- ✓ Visual
- ✓ Change in shape = angularity of fingers
- ✓ Drying of leaves
- ✓ Appearance of false hands



# Maturity and Harvesting

- Computation
- Recommended harvest maturity

<b>Cultivar</b>	<b>Weeks from flower shooting</b>
Senorita	6-8
Latundan	9-11
Lakatan	12-14
Bungulan	12-14
Cavendish	13-15
Saba	20-24





# Maturity and Harvesting

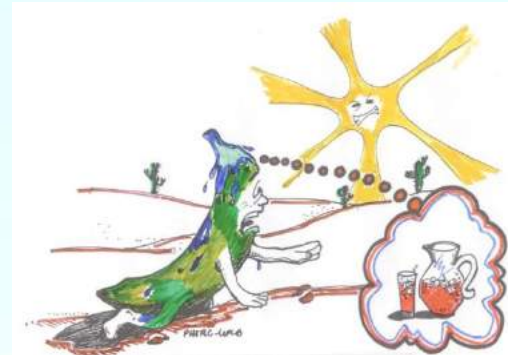
## Harvesting method

- For cultivars with large bunches:  
two persons must do harvesting  
one person to cut the trunk and one  
person to catch fruit
- For cultivars with small bunches:  
cut peduncle from the tree,  
retain stalk for easy handling



# Harvesting and Field Handling

- ✓ Keep fruits in a shaded area or cover with leaves
- ✓ Do not place fruits directly on ground
- ✓ Avoid latex flow on fruits





# Market Preparation

- ✓ Dehanding – removal of the hands from the bunch
  - Use sharp knife or appropriate tool
  - Avoid latex flow on the fruit





# Market Preparation

- ✓ Deflowering - dried floral parts are source of disease and should be removed



# Market Preparation

## ✓ Trimming





# Market Preparation

- ✓ Sorting: cull out fruits with defects, diseases and injuries

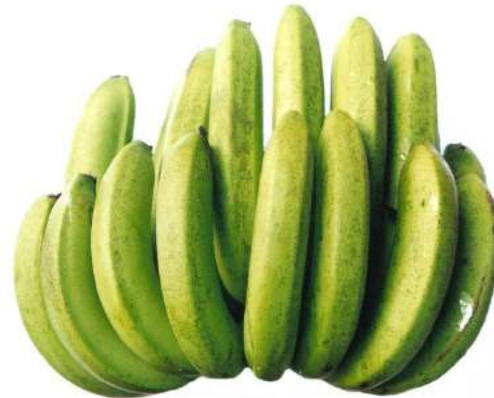




# Market Preparation

- ✓ Washing – water or 1% alum solution (100 grams alum or tawas per 10L of water)

Purpose: to remove dirt and prevent latex staining



# Market Preparation

- ✓ Air dry fruits before packing





# Packaging

- Functions of a package
  - ✓ Protect
  - ✓ Contain
  - ✓ Inform
  - ✓ Sell





# Packaging and Transport

- Over- and underpacking lead to bruising and compression



# Transport

- ✓ Provide adequate ventilation
- ✓ Reduce load on bottom fruit
- ✓ Transport during the cooler part of the day





# Transport —bulk loading

✓TLC



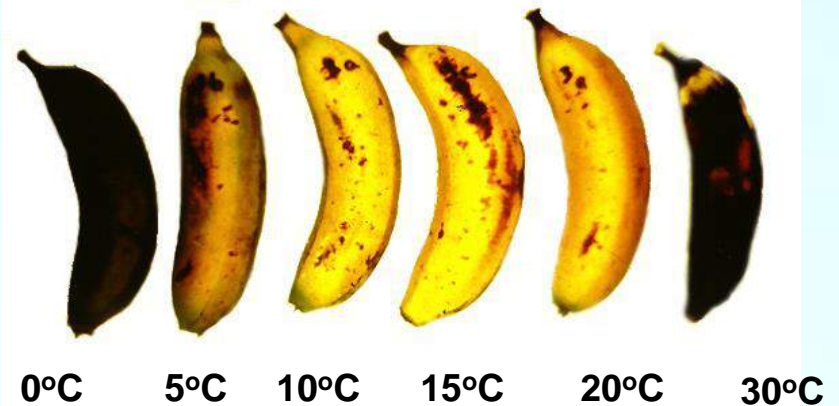


# Regulation of Ripening

- ✓ Storage techniques to prevent ripening
- Low temperature storage



✓ Optimum temperature is 13°C



✓ Storage below 13°C leads to chilling injury



# Regulation of Ripening

- ✓ Storage techniques to prevent ripening
  - Modified atmosphere packaging (MAP)
  - Lakatan Banana – 0.05 mm thick polyethylene bag
  - 30 days at ambient condition





# Regulation of Ripening

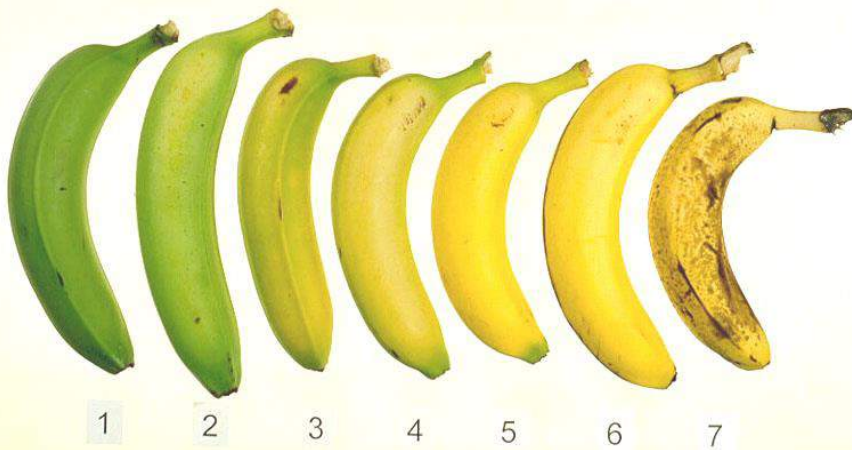
- ✓ Treatment with 1-methylcyclopropene (1-MCP)
- 1-MCP inhibits ethylene action thus delays ripening





# Regulation of Ripening

- Bananas command a higher price at the ripe stage



# Regulation of Ripening

✓ Treatment with ethylene





# Regulation of Ripening

- ✓ Treatment with ethylene from ethephon
  - ethylene – releasing chemical
  - 2 –chloroethyl phosphonic acid  
(CEPA : Ethephon)
- ✓ Small scale ripening/ degreening operations
  - Concentration: 500-5000 ppm

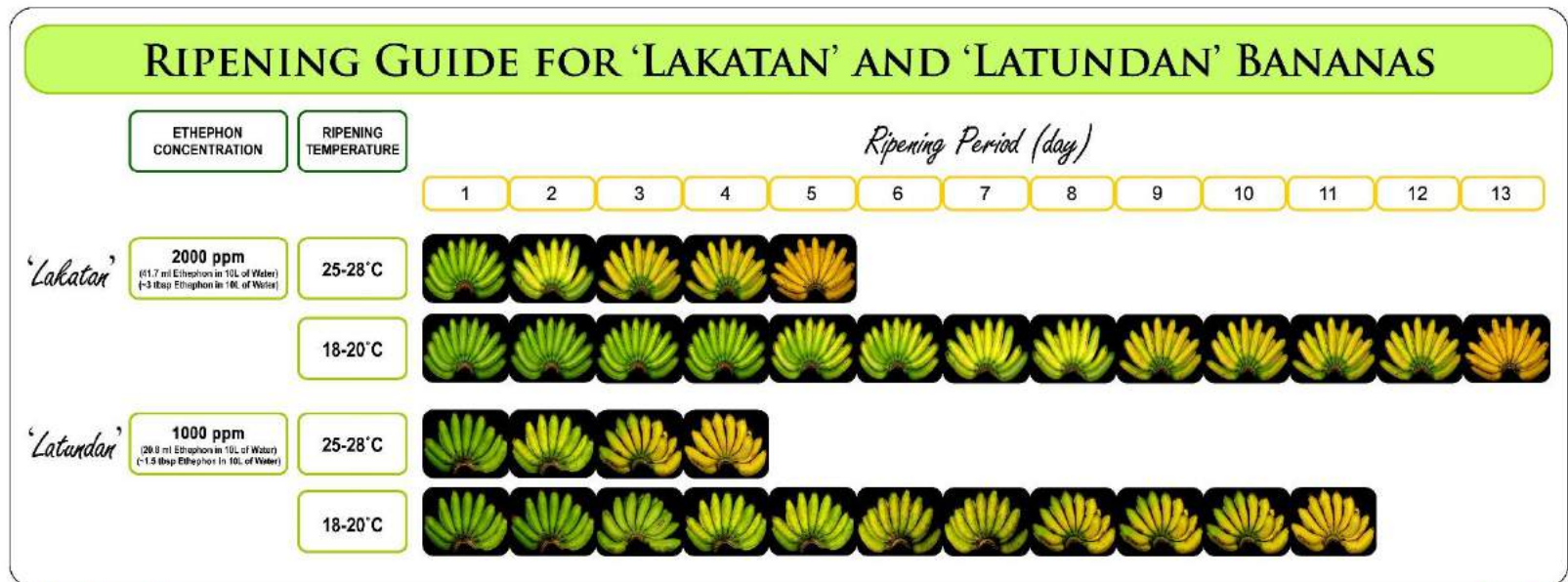


- ✓ Methods of application
  - dipping
  - spraying
  - ethylene released in a confined space



# Regulation of Ripening

## ✓ Treatment with ethephon

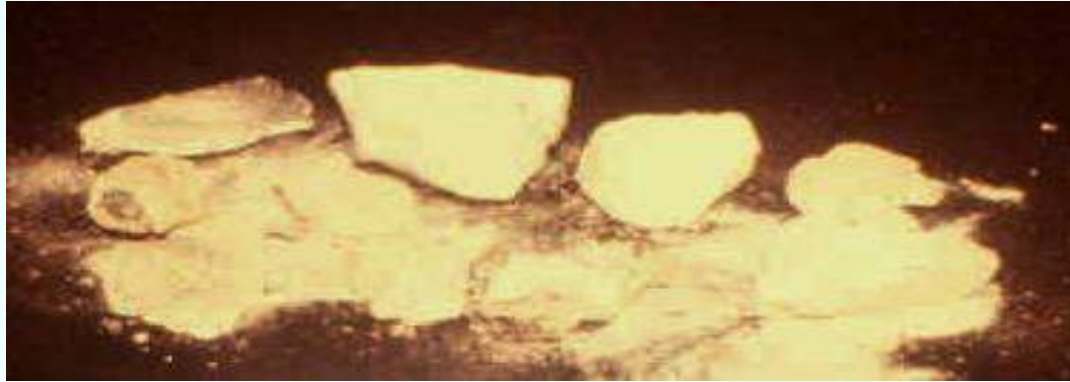


• Prepared by: E.B. Espinosa, W.L. Abusito and D.C.R. Hilario, 2008. Postharvest and Seed Sciences Division, Crop Science Cluster, College of Agriculture, University of the Philippines Los Baños, Laguna. Tel. No.: 01 49 536-3138, 536-2444; 536-5283. Telefax No.: 01 49 538-3259. Email: [etephon@up.edu.ph](mailto:etephon@up.edu.ph)  
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# Regulation of Ripening

- ✓ Treatment with calcium carbide



# Regulation of Ripening

- External sources of ethylene







**Thank you!**



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