Banana Ripening

Quality of Ripe Banana Depends On:
- Harvest maturity (more mature = better quality)
- Minimizing abrasions and bruising
- Reducing postharvest water stress
- Proper temperature management
- Optimizing ripening conditions
- Expedited handling between ripening and consumption

Ripening Conditions for Bananas
- Fruit temperature: 14 to 18°C (58-65°F)
- Relative humidity: 90-95%
- Ethylene concentration: 100 ppm
- Duration of ethylene: 24-48 hours
- Carbon dioxide: Adequate air exchange to prevent CO₂ above 1%

Ethylene Induces Ripening of Various Banana and Plantain Cultivars

Maturity is based on finger caliber and shape
Note the 5-Fold Increase in Respiration Rate (Carbon dioxide production) as Bananas Ripen from Stage 1 or 2 to Stage 4.
Low Relative Humidity Induces Browning of Surface Abrasions on Bananas

Delaying Ripening of Bananas

Manipulation of ripening temperature
Keep in 2 to 5% O₂ + 2 to 5% CO₂ at 15°C (59°F)
Use 1-MCP (delays 1-3 days, delays “sugar spotting”)

Extending Yellow-life of Bananas by Modified Atmospheres

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Ripening time (days)</th>
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</thead>
<tbody>
<tr>
<td>65°F</td>
<td>vent to control CO₂</td>
</tr>
<tr>
<td>C₂H₄</td>
<td>soft pulp above 65°F</td>
</tr>
<tr>
<td>4 day cycle</td>
<td></td>
</tr>
<tr>
<td>7 day cycle</td>
<td></td>
</tr>
<tr>
<td>55°F</td>
<td>chilling below 56°F</td>
</tr>
</tbody>
</table>

Banana Temperature
Effect of Temperature on Deterioration of Bananas

Chilling Injury Symptoms

Bronzing of Fingers (dull color)
Discoloration on inner side of peel
Other symptoms: failure to ripen; flesh browning (in severe cases)

Effect of Temperature on Development of Chilling Injury Symptoms

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Thank you for your attention