Post-harvest Management, Research and Development

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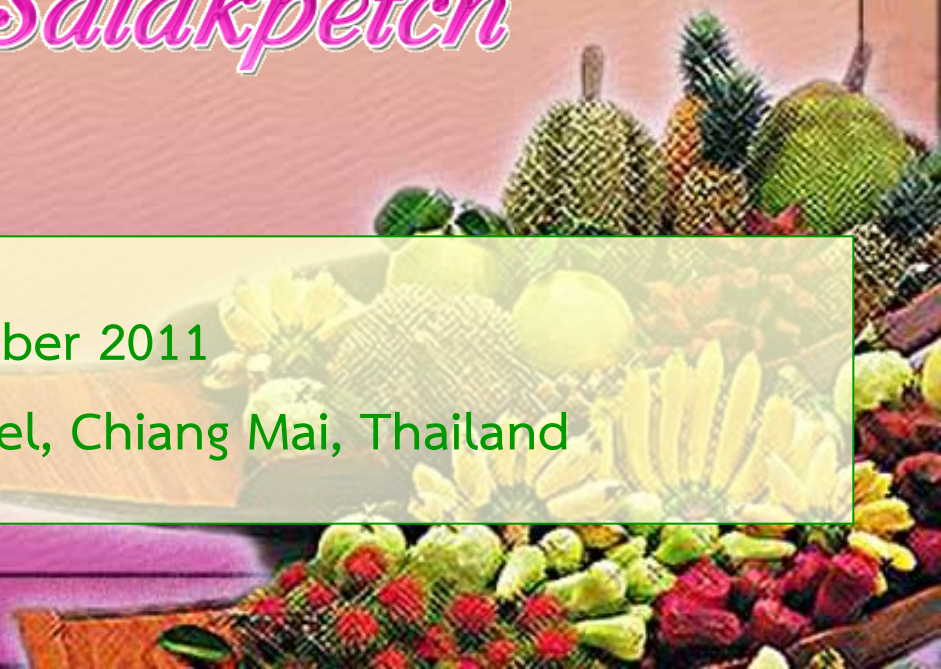


Goals of PH R&D: Consumers' certainty

- Visual appearance & sensory experience
- Safe, healthy and nutritious produces
- Sustainability of production system (environmentally friendly)

Goals of PH R&D:

Fresh produce marketers

- To avoid negative impact of variable quality through production line esp. PH management

Quality management of fresh fruits and vegetables (Shewfelt and Prussia, 2009)

- Maintained in recognizable form
- Variability of response to storage conditions
- Great factor in quality losses come from latent damages

Aim of Post harvest management

- To maximize the value of fruit & vegetable after harvest by adding in successive stages up to consumption

Factors affect Post-harvest losses

Internal factors:

1. Transpiration
   - Weight losses
   - Internal quality (e.g. texture)
   - External appearance (e.g. wilting)
2. Respiration
   - Climacteric VS. Non-climacteric

Factors affect Post-harvest losses

Internal factors:

3. Ethylene production

4. Biochemical changes of fresh produce

5. Growth & Development of fresh produce

Factors affect Post-harvest losses

External factors:

1. Temperature
2. Moisture
3. Atmosphere
4. Light & Gravity
5. Disease and Insects

To control external factors (temp. & moisture)

...to reduce changes of internal factors

...to get appropriate PH technology

General steps of post harvest management

(Sydney Post harvest laboratory)

Understanding produce maturity

- Physiological maturity
- Horticultural maturity

→ Depends on final uses

General steps of post harvest management

- Harvesting handling

- Care taken during harvesting to reduce bruises and other injuries lead to less losses and enhanced value of fresh produce after harvest

General steps of post harvest management

- Pre-cooling

- Harvested produce should be promptly transferred to packing shed to quickly remove field heat which reduces PH life of produce *(hydro-cooling, forced air cooling and packing with ice etc.)*

General steps of post harvest management

Cool storage

- The most important tool to extend storage life of fresh produce

General steps of post harvest management

Quality control

- To improve consistency of quality and freshness of produce to satisfy consumers

Modified Atmospheric Packaging (MAP) Research in Rambutan

Fresh rambutan can be kept for 23 days at

- 10 °C
- 500 g- and 1,000 g-L-LDPE bags
- OTR rate 2,600 ml $m^{-2}day^{-1}$
- Water vapor transmission rate 4.56 g $m^{-2}day^{-1}$
- Flushed with 5:5 O_2:CO_2

Fresh rambutan can be kept for 26 days at

- 10 °C
- 500 g- and 1,000 g-HDPE bags
- OTR rate 5,688 ml $m^{-2}day^{-1}$
- Water vapor transmission rate 6.7 g $m^{-2}day^{-1}$
- Flushed with 5:5 O_2:CO_2

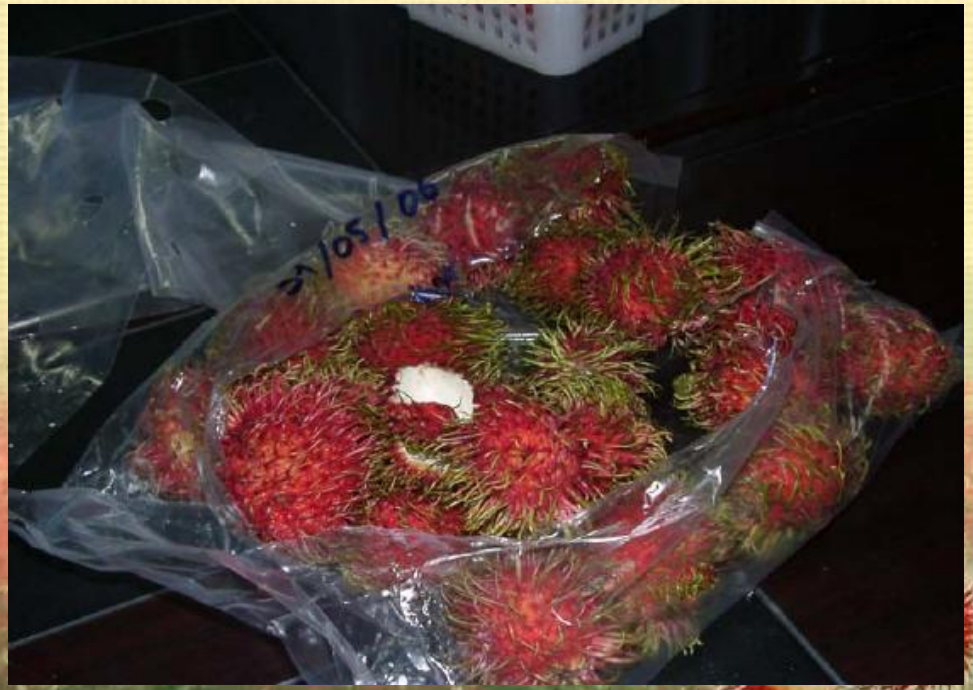
Advanced Fresh Air Management (AFAM+) Research in Rambutan

Fresh rambutan was kept in refrigerated marine container with AFAM+ at 12 °C, 96% RH, 12% CO_2 9% O_2 and 15 m^3/hr ventilation

❋ Outer appearance and eating quality of rambutan at 15 to 18 days after keeping in AFAM+ reefer were commercial acceptance

★ Outer appearance
3 days after
transporting by air

★ Outer appearance
8 days after
transporting by sea
with AFAM+ reefer



Post-harvest management: Rambutan

- Harvest with care

- Appropriate harvesting index

(green and yellow skin

with red blush, red hair

with green end)

Post-harvest management: Rambutan

- Clean with chlorine solution and dried before packing
- LLDPE (Linear Low Density Polyethylene) bag,20 micron thick with specific value of OTR, CTR and WVTR
- Store in 14-15 °C

Post-harvest management: Rambutan

- Outer appearance and eating quality at 21 days after storing in refrigerated marine container at 15 °C were marketable acceptance

Post harvest management beneficiary

- Increased export earnings
- Extend the availability of fresh produce through the year
- Reduced quality disorders or losses

Post harvest and Processing Research and Development Office

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