Factors Influencing Quality of Early Season Citrus

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Citrus Grown Around the World
- Citrus is number one fruit crop.
- Grown in over 100 countries.
- Florida is second in orange production.
- Florida is first in grapefruit production.

Citrus Growing Areas:
- Subtropical and tropical regions
  - Hot rainy summers
  - Warm winter nights
- Desert and Mediterranean Regions
  - Hot dry summers
  - Cool-wet winters
  - Cold winter nights

Citrus Fruit Characteristics
- Tropical and Sub-Tropical
  - Yellow to Green
  - Thin peel
  - High sugar
  - Low acid
  - High juice content
- Desert and Mediterranean
  - Excellent color
  - Thick peel
  - Lower sugar
  - Higher acid
  - Lower juice content

Early Season Florida Citrus
Green color is the major cause of low pack-out
- Matures early (Aug - Sept)
- Peel is green and easily injured.
- Requires longer degreening.
- Susceptible to decay.
- Subject to disorders.
- Short shelf life.

Early Season Diseases and Disorders
In the life cycle of citrus fruit, quality begins at:

- Harvest
- Packing
- Bloom
- Shipping

Important Preharvest Care

- Proper control of diseases and insects (melanose, greasy spot, Alternaria and rust mites).
- Hedge and top prune: deadwood is primary source of Diplodia inoculum.
- Reduce nitrogen fertilizers.
- Apply preharvest fungicides.
- Avoid excessive irrigation prior to harvest.

Harvesting: Do's and Don’ts

- Allow sufficient color break at harvest to minimize degreening.
- Do not harvest after heavy rain to minimize mechanical injury and oil spotting.
- Clipping may be desirable in specialty varieties.
- Do not pick fruit off the ground.

Drenching and Cooling

- Helps reduce Stem-End Rot.
- Maintain pH at 6.5-7 and 50-100 ppm free chlorine in drench mix.
- Maintain proper conc. of TBZ or Imazalil.
- Cool fruit to 50°F if packing is delayed beyond 24 hours.

Degreening Parameters

- Temperature: 85°F
- R. Humidity: 90 - 96%
- Ethylene: 5 ppm
- Air Circulation: 10 cfm/box capacity
- Air Exchange: One/hr.
- Time: ???

Degreening Problems

- Increased decay due to high Ethylene conc. and longer degreening time.
- Weight loss and shriveling due to low R.H.
- Inefficient degreening due to inadequate ventilation/ high CO₂ levels.

Solution:
Monitor DG parameters and keep records.
Packinghouse Operations:

- Measures to reduce decay
  - Minimize mechanical injury
    - Condition brush beds and minimize brushing time.
    - Assess injury to fruit on packing line.
  - Apply TBZ and Imazalil.
  - Maintain dryer temperature below 140°F

- Measures to reduce peel disorder
  - Apply Carnauba or Polyethylene wax for better gas exchange.
  - Refrigerate immediately after packing.
    - Oranges and Specialty fruit at 40°F.
    - Grapefruit at 45 - 55°F.
  - Minimize degreening time.
Non Fungicidal Measures to Reduce Decay (G.E. Brown. 1988)
- Lower inoculum level in the grove.
- Minimize deadwood (pruning).
- Good production practices.
- Good Sanitation in the Packinghouse.
  - Reduces green and blue mold and Sour Rot.
  - Disinfect Packinghouse equipment.
  - Minimize injury to fruit.
- Refrigerate to delay senescence and reduce decay.

Less Degreening is Better
- Peel is more mature.
- Less decay.
- Less peel disorders.
- Better tasting fruit.
- Longer shelf life.
- Satisfied consumer.
- Better grower returns.

Quality Control Rule of Thumb
Do not pick citrus until degreening can be successfully achieved in 48 hours or less.