QUALITY CONTROL FOR A FLORIDA CITRUS PACKINGHOUSE

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The Florida citrus industry is entering a new phase in this post-freeze era. A significant shift in citrus acreage from the north to warmer locations in south and southwest Florida have already taken place and is expected to intensify (Freie and Young 1989; Hall and Bowers 1989). New high density plantings (Whitney and Wheaton 1984) coupled with use of fertigation practices (Koo and Smajstrala 1984) will help increase yield per acre and bring groves into production at an early tree age and may have an impact on fruit keeping quality. Continued increase in consumption of fresh fruits and vegetables may also lead to a shift in planting to new varieties such as the AmberSweet and Sunburst and increased acreage of specialty citrus fruit (tangerines, tangelos and Temples), which are usually more vulnerable to physical injury and require greater care in harvesting and handling.

Florida citrus is well known for its excellent internal quality. Because of the warm climate and rainfall, Florida citrus fruit has thin peel, high juice and sugar contents and lower acid levels than comparable fruit grown in arid climates, e.g., California, Arizona and Mediterranean citrus growing areas (Soule and Grierson 1986). On the other hand, Florida citrus tend to be pale yellow in color on the outside and carries many scars and blemishes due to summer rainstorms and the many pests and diseases which thrive in

subtropical climate. When Florida oranges are placed side by side in supermarket bins next to California citrus, difference in appearance is very striking. Florida fruit are usually wind-scarred and blemished with symptoms of melanose, rust mite and greasy spot

If Florida is to effectively compete in the world-wide market for fresh citrus, Florida growers, packers and shippers must place greater emphasis on those preharvest cultural practices and postharvest handling methods which will improve external fruit quality and extend its shelf life.

We believe that Florida citrus growers can produce fruit with good external appearance and excellent internal quality if the available information on pest control and cultural practices are applied properly and at the proper time.

Quality cannot be maintained without systematic and consistent quality control practices. In order to institute a successful quality control program, one must be able to monitor, measure, and maintain records of key parameters important to the preservation of quality. Extensive quality control programs are applied to citrus packing operations in California, Arizona, Israel, South Africa and Morocco, while in Florida few programs are in place.

This paper presents a general listing of important quality parameters between harvesting and packing for monitoring by a citrus packinghouses. It is presented here

as the Citrus Packinghouse Quality Control Checklist[1], a guide to the packinghouse manager from which to choose parameters for gradual implementation. For example, in the first year of instituting a quality control program, one start by monitoring important factors in drenching degreening, washing, color-add, fungicide application waxing, and fruit drying. Other parameters may be added to the program in subsequent years. A successful quality control program will require the full-time effort of a well-trained employee and must be implemented continuously not just when problems arise.

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CITRUS PACKINGHOUSE QUALITY CONTROL CHECKLIST

Date _____
Observer _____
Packinghouse _____

1. Picking Information

   Grove

   Variety

   Picking Crew

   Harvest Date _____

   Has fruit been treated with preharvest Benlate spray?
   Date _____

   Pallet bin condition _____

   Predegreening drench chlorine (ppm) _____ pH _____
   TBZ (ppm) _____

2. Degreening

   Temperature wet/dry _____/_____ (hourly)

   Relative humidity _____ %
   Humidity system operation _____ (hourly)

   Ethylene concentration ppm

   Degreening time hours

3. Packingline Equipment

   Dump rate box/hr. Even flow from dump

   Stems being removed effectively

   Culls being removed effectively

   Decay type(s)

   Chlorine Spray

   Cl_2 _____ ppm
   pH _____
   Time

Presizer

Sizes being packed _____
Sizes being removed _____

Washer

# of brushes _____ width _____
Brush speed _____ rpm
Rinse effective _____
Rinse gal/min _____
Soap _____ with SOPP
Time _____ sec.

Pregrade

# of graders _____
% fruit being discarded ___
Cannery _____ %
Culls _____ %
Decay _____ %, Other %
Fruit/grader/hour _____

Water Elimination

# of brushes _____
# of donuts _____
Brush speed _____ rpm
Flick (Flipper) Bars in use _____
Time in water eliminator _____ sec
Effective water removal __

Fungicide Application

Brush speed __ rpm
Residence time __ sec
Fungicide type __ ppm _____
Fungicide volume __ ml/min
Nozzles clogged? _____
Field boxes/gal _____
Fruit volume controls

Prewax Dryer

Width _____ inches
Rollers/minute _____
Temperature _____ °F
Residence time _____ sec.
Fruit condition at discharge _____

Polisher

Temperature _____ °F
Brush speed _____ rpm
Wipeouts on? _____
Condition of fruit at discharge _____

Wax Applicator

Wax _____ fungicide in wax
Brush speed _____ rpm
Time on brushes _____ sec
brushes after wax application
Nozzles clogged?
Brush condition _____
Wax applicator type _____
Field boxes/gal _____
Fruit volume controls

Wax Dryer

Temperature _____ °F
Drying time _____ sec
Roller condition _____
Fruit condition at discharge _____
Number of turns _____
Method of turns

Final Grade

# of graders _____
Condition of grade table rollers _____
Fruit/grader/hour _____

Sizing

Type _____
Condition _____
Sizes _____

Packing

# of packers _____
Bulge _____ inches
Stack type (export or domestic) _____
Pallet type _____
# of Diphenyl pads _____