Newsletter No. 18

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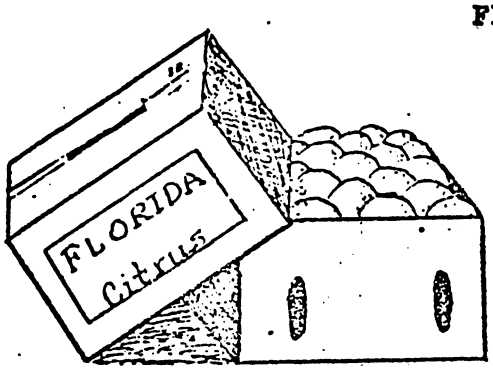
Citrus Station Mimeo Report CES 69-14
November 18, 1968
650-WG-Lake Alfred, Florida

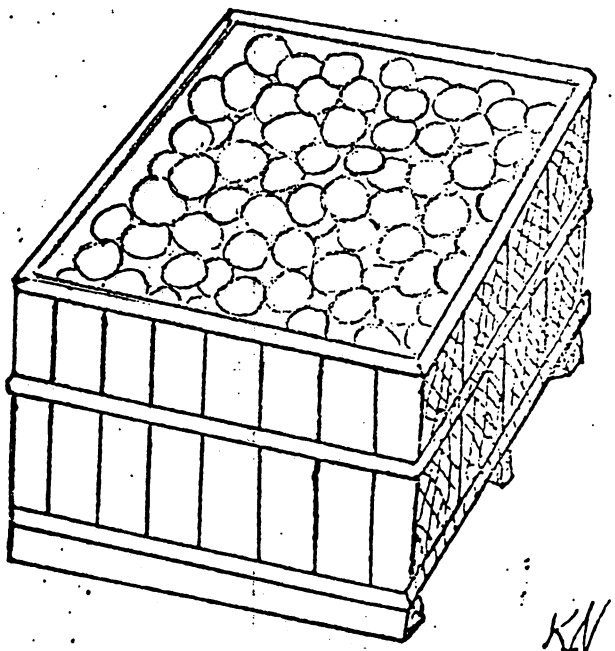
UNIVERSITY OF FLORIDA INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES

and

FLORIDA CITRUS COMMISSION



Packinghouse Newsletter



Harvesting and Handling Section
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Citrus Experiment Station
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(Complimentary to members of the Florida Fresh Citrus Shippers Association. Others wishing to receive this newsletter, send a dozen stamped preaddressed envelopes to the above address.)

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Harvesting and Handling Section

P A C K I N G H O U S E N E W S L E T T E R

LET'S MAKE EVERY FRUIT PAY ITS WAY

With the start of a new season it seems well to review some general principles for merchandising Florida citrus fruit from tree to consumer with minimum losses and maximum profits. These fruits are alive, breathing and subject to diseases like any other living organism. They are grown and shipped to make money, which they can do most effectively only if handled properly.

Shippers

1. Reduce time between picking and waxing to the absolute minimum. An extra hour under drying conditions between tree and waxer may mean a day off the life span of an orange.

2. Until waxed, fruit should be kept in shade, if out doors, and in high humidity, if indoors.

3. Follow recommended procedures for fungicide applications. Remember that residue analyses are proof that a fungicide has been used, but the fungicide residue does not relate directly to degree of decay control. (See Packinghouse Newsletters Nos. 13, Jan. 68 and 15, June 68).

4. Follow recommended degreening procedures carefully (See below).

5. Do not overfill shipping containers. This is a major cause of mechanical damage and consequent decay.

6. If packing in polyethylene bags use large hole bags (150 ½-inch holes) and ventilated cartons.

7. Ship promptly. Specialty fruits should be refrigerated. Oranges benefit from refrigeration down to 36-40° F. Early grapefruit may suffer severe peel injury from refrigeration temperatures below 50° F.

8. Brace "piggy-back" loads for backward shifting. Conventional truck loading allows only for forward and lateral shifting. "Piggys" often travel backwards and severe damage to the load occurs when not braced against movement towards the rear of the truck.

Receivers

1. In handling bagged citrus, understand how and when precipitation of moisture occurs. When warm packed fruit is put into refrigerated conditions, moisture migrates out of the package and precipitation does not occur. When packages are moved out of refrigerated conditions, moisture moves into the package and will not evaporate until after the bags are removed from the cartons---and then only very slowly unless the bags are extremely well ventilated. (As far as

Florida citrus is concerned, poly bags are only useful to hold the holes together!)

2. In-store or terminal market consumer packaging.

a. Use maximum package ventilation. Bags should be large-hole type or net. Film-wrapped tray packs should be open-end sleeve packs or should use perforated film.

b. Packaging, returning to refrigerated storage, and then out again to store conditions invites condensation problems. If this is done, use wire baskets or open crates as master containers if possible.

c. Specialty fruits (tangerines, Temples, tangelos, Murcotts) have limited display life without refrigeration. Do not pre-package too far ahead. Keep displays shallow in depth to ensure rapid turn over. If oranges and grapefruit are handled as advised, they should keep well enough to justify large displays. They are NOT, however, "hardware items".

3. Wholesalers and retailers experiencing problems with keeping quality of Florida fruit are urged to communicate with the nearest Florida Citrus Commission merchandising representative. They are our "eyes and ears" in the market place. If they cannot alert us to current problems, we cannot help solve them.

DEGREENING CITRUS FRUIT

Degreening, although necessary at times because the edible portion of the fruit is mature before the peel develops the characteristic color for the variety, tends to impair keeping quality. Degreening with ethylene removes the green color, but does not add color to the fruit. Degreen as short a time as possible. Ethylene increases the respiration rate of the fruit, resulting in a shorter shelf life.

Temperature. Fastest degreening occurs at about 85° F. Florida Citrus Commission Regulation 105-1.13 states, "The temperature of the coloring-room or enclosure containing fruit which are in the process of being degreened, shall be so controlled and regulated that the temperature of said coloring-room or enclosure shall at no time be allowed to exceed 85 degrees Fahrenheit by the application of heat, except when the added heat comes from steam released into the atmosphere to increase humidity."

Ethylene Concentration. When using the bubble system of applying ethylene, use approximately 1 bubble for every 10 field box capacity of the room. Ethylene applicators should be adjusted so the concentration of ethylene within the room is between 1 and 5 ppm. (If ethylene is a little high, increase ventilation rather than cutting back on ethylene delivery).

Humidity. Maintain the humidity in degreening roomsat 88% to 92% relative humidity. With a good air movement over the thermometer bulbs, this is a 2 to 3 degree spread between the wet and dry bulb thermometers. (If air movement around the thermometers is poor, use a 1 to 2 degree spread). Maintain humidity by addition of steam when required.

Oil spotting (oleocellosis) of navels and Parson Brown oranges can be held to a minimum by holding the humidity higher (1 to 2 degree spread). Moisture on the fruit will not delay degreening of these varieties. Grapefruit, however, will not degreen well when wet or moist.

Humidity control is essential during degreening. This is particularly so when outside conditions are cold or dry. If citrus fruit is degreened at lower humidity than recommended, the following things usually happen:

1. Decay increases.
2. Stem-end rind breakdown develops.
3. Fruit becomes soft.
4. There will be a decrease in average size.

Ventilation. Addition of fresh air during degreening is essential to prevent delay in degreening due to a buildup of carbon dioxide (which is given off by the fruit during degreening). This is best done by having a small, but constant, intake of fresh air into each degreening room. This should amount to about one complete change of air in the room per hour. Do not ventilate rooms by opening doors or curtains as this lowers the temperature, the ethylene concentration and humidity level are lost, and condensation on the fruit may occur. Not only is time lost until optimum degreening conditions are restored, but an unnecessary and unhelpful labor cost is involved.

A.A. McCornack
Florida Citrus Commission

Special Warning on Robinson Tangerines

Correctly handled, Robinsons can give almost 100% pack-outs. However, disastrous losses have been encountered by ignoring these two important rules:

1. Do not pick without an orange color break.
2. Do not degreen over 36 hours.

It is not "practical" to ignore these two rules. Robinsons withour a color break degreen to a pale yellow that does not make grade. This variety is susceptible to a form of decay (Colletotrichum or "anthracnose") that hardly bothers other varieties, but can almost wipe out Robinson tangerines degreened for periods in excess of 36 hours.

AVAILABLE PUBLICATIONS

Available from the Harvesting and Handling Section, C.E.S.

"Thiabendazole, an Experimental Fungicide for Fresh Citrus Fruit", 1967. A.A. McCornack and G. Eldon Brown. Proc. Fla. State Hort. Soc. 80: 232-237.

"Experimental fungicides applied preharvest for control of postharvest decay in Florida citrus fruit, 1968. G. Eldon Brown. Plant Disease Reporter, 52: 844-847.

"Chemical Abscission Studies of Citrus Fruit", 1967. W.C. Wilson. Proc. Fla. State Hort. Soc. 80: 227:231.

"Anatomical and Histochemical Studies of Abscission of Oranges", 1968. W.C. Wilson and C.H. Hendershott. Proc. Amer. Soc. Hort. Sci. 92: 203-210.

"Citrus Tissue Culture as a means of Studying the Metabolism of Carotenoids and Chlorophyll", 1967. M.F. Oberbacher. Proc. Fla. State Hort. Soc. 80: 254-257.

"Simulated Marketing Tests with Prepackaged Citrus", 1967. W. Grierson and F.W. Hayward. Proc. Fla. State Hort. Soc. 80: 237-241.

"Harvesting and Market Preparation Techniques for Florida Lemons", 1968. W. Grierson. Proc. Amer. Soc. Hort. Sci. 92: 797-806.

"Respiration, Internal Atmosphere, and Ethylene Evolution of Citrus Fruit", 1968. H.M. Vines, W. Grierson, and G.J. Edwards, 1968. Proc. Amer. Soc. Hort. Sci. 92: 227-234.

"A Colormetric Method for 2-Aminobutane and its Applications", 1967. F.W. Hayward and W. Grierson. Proc. Fla. State Hort. Soc. 80: 305-308.

"Studies on the Aroma of Intact Hamlin Oranges", 1968. John A. Attaway and M.F. Oberbacher. Journal of Food Science, 33: 287-289.

Available from Agricultural Publications, University Hall, University of California, Berkely, California, 94720:

"California Oranges: Acreages and Production Trends, Costs, and Returns", 1968. Robert C. Rock and Robert G. Platt. University of California Agri. Ext. Service Pamphlet AXT-237.