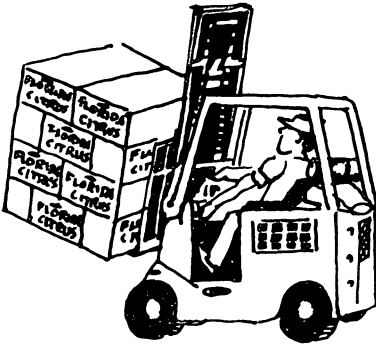


Florida Cooperative Extension Service

PACKINGHOUSE NEWSLETTER



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Key Word Index Degreening, Economics, Export, Fungicide Regulations,
Japan, Marketing, Pallet Boxes, Wind Scar.

FUNGICIDES ON SHIPMENTS TO JAPAN

Too much emphasis cannot be put on adhering exactly to the rules for additives for countries to which fruit is exported. For Japan the only fungicide allowed is diphenyl (see Packinghouse Newsletter No. 48, Oct., 1972). The following is from a letter from Jr. Hirotoishi Kitagawa, Kagawa University, dated April 9, 1975.

"....o-phenylphenol has been reported on grapefruit imported from Florida. The Japanese Ministry of Public Welfare has ordered it not to be moved and this is being investigated in haste.....if o-phenylphenol is found on the fruit, it will be a big problem again."

o-Phenylphenol is, of course, the residue from the use of Dovicide A (SOPP). Check with your suppliers to see that a small amount is not present in "non-fungicidal" soaps and waxes as is commonly done to keep down possible mold growth.

Bill Grierson
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TIPS ON PALLET BOXES

The time of year is approaching when many shippers will be replenishing their supplies of pallet boxes. These represent quite a considerable investment and the cheapest box to buy can be the most expensive in the long run. Some points to remember when buying pallet boxes.

Wood preservative

It is very poor economy to buy untreated pallet boxes. The only wood preservative on which we have seen full FDA approval plus adequate testing data from the USDA Forest Products Laboratory is copper-8-quinolinolate. It is better to dip the assembled box, rather than dip the wood before making up the box. (If you have untreated boxes and want to dip them yourselves, it is easier to do so handling them with a Lightning Loader than with a lift truck because the hydraulic arm holds them under so they do not have to be weighted).

If spared excessive mayhem by lift truck drivers, adequate wood treatment can about double the life of a box.

Ventilation

Slots cut in the sides of plywood pallet boxes increase the cost of making the box and shorten its life expectancy. For those using horizontal-airflow degreening rooms based on the designs developed at AREC, Lake Alfred, these slots are not only useless, but can even slightly lower the efficiency of degreening.

Tests with smoke-gun and velometer showed that it just was not possible to blow air into a pallet box, even with slatted-type boxes. On the other hand, blowing air through the channels formed by the pallets caused an induced air movement that draws air up from the box below. (Engineers will recognise this as Venturi action). Completely closing the sides of the boxes helped the action, which depends on adequate ventilation in the bottom of the pallet box. Box bottoms of bull-nosed 3" slats, spaced 5/8" apart provide about 20% open area. This seems to do an excellent job. So, if you have modern, horizontal-airflow degreening rooms, and if you are ordering plywood pallet boxes, TELL THE MANUFACTURER NOT TO CUT SLOTS IN THE SIDES.

Strength

The two most important points with regard to strength are that the bottom should be rigid and the top stringers (when picked up by a Lightning Loader or similar hoist) must be strong. If the bottom of the box can flex when the full box is lifted, the consequent distortion will damage fruit in the bottom. (When such damage is noted, it is almost invariably, but erroneously, attributed to the depth of fruit in the box).

In assembling the component sides and bottom, staple fastening tends to be stronger than nailing. Plain nails (for either original construction or repair are unsatisfactory as they work out of the wood. Helically threaded nails are more suitable than cement coated nails. (The Wood Research Laboratory at Virginia Polytechnic has done exhaustive tests and reports that the strongest nailing was with an Auto-Nailer using knurled 15- or 16-gauge wire).

The top stringers by which the boxes are lifted should be of straight grained, seasoned hardwood. If light angle iron is used to protect the stringer where the loader clasps it, pierce the horizontal surface with a cutting torch before putting the angle iron on the box. That way, the "fingers" of the loader do not slip.

Corner braces MUST NOT PROTRUDE. If they do, the box is apt to be torn open when corner braces catch on each other as the lift truck driver moves one pallet box past another.

Size

We have found no advantage in using pallet boxes smaller than the standard 10-box size even when handling tangerines and other specialty fruits. In fruit damage studies, box flexing, over-loading of boxes and roughness in filling and emptying the pallet boxes were far more important than depth of fruit.

A "10-box" pallet box is NOT ten times the cubic capacity of the 4,800 cubic inch field box. A 48,000 cubic inch pallet box holds 11 boxes of fruit due to fewer corners and no partitions. A true 10-box capacity is 43,500 cubic inches. In the pallet boxes that are becoming standard today, there are internal measurements of 42" x 42" by 26-1/2" deep, of which only 24.6 inches should be filled with fruit, leaving about 2" headspace over and above the 43,500 cu. ins. capacity. Marking four corners or four sides at the proper fill level helps to avoid over-filling of pallet boxes which results in damaged fruit and hinders degreening.

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FLORIDA 'VALENCIAS' 98.6% SOUND IN CHICAGO

A report on marketing losses at the wholesale, retail and consumer levels in the Chicago area has just been published by the USDA (see Available Publications). Summarized below is the discussion on the losses for Florida Valencia oranges. The data for the study was compiled from July 1966 through November 1969. The authors concluded that the data were still valid measurements of losses at the wholesale, retail, and consumer levels.

At the wholesale level, the average loss was 1.4%. Most of this waste was due to fungal diseases. Green mold was the principal cause of delay. Anthracnose, Alternaria rot, stem-end rot and Fusarium were also causes. Physiological disorders accounting for 0.4%, were considerably less than fungal diseases. The principal causes were rind breakdown and a puffy condition of large sized fruit. Losses from physical injury from bruising and mechanical injury were minor, contributing only 0.1% of losses.

Losses at the retail and consumer level were dominated by parasitic disease losses. Total retail losses were 0.8% of which 86% were fungal losses. Total consumer losses were 3.7% of which 88% were fungal losses. Green and blue mold rots and stem-end rot were the leading causes. Consumer losses from decay were 3.5 times greater than wholesale losses, and 4.5 times that of retail.

At all levels, the physical injuries to oranges were minor. Of the other commodities surveyed (apples, lettuce, peaches, potatoes and strawberries) physical injuries were the dominant cause of market loss. Only oranges were the exception.*

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*Editorial comment

This illustrates the wisdom of the Florida regulation stipulating the use of an FDA approved fungicide.

DEGREENING ROOM SAFETY

Ethylene is explosive at very high concentrations (about 27,000 to 360,000 ppm) while we recommend very low concentrations (1 to 5 ppm). However, precautions should be taken to insure correct handling of compressed gas cylinders and the associated ethylene metering equipment. Compressed gas cylinders and ethylene lines should be placed out of the traffic pattern of lift trucks and general bustling activity and properly secured according to OSHA and Florida Department of Commerce regulations and recommendations. Also, the metering device(s) should be securely attached in a position so that it is unlikely to be damaged.

Plastic film is inexpensive and used elsewhere for degreening room curtains, but it is also flammable and is not recommended. We recommend curtain materials that are less likely to be ignited with a cigarette, dropped match, or spark.

The Florida citrus industry has an excellent record for degreening room safety. Attention to details such as these will insure a continuation of that record.

Will Wardowski
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This newsletter is published monthly at a cost of \$81.85, or .82 cents per copy, to give the latest news to the packinghouse industry.

WIND SCAR

Citrus wind scar and pest management practices - One of the first major fruit blemishes to develop each season is wind scar. This damage occurs when the young fruit rub against leaves or limbs during the first 3 months of development after bloom. Winds greater than 10 mph are needed for damage to occur. At the present time, insect damage is not considered to be responsible for any part of the wind scar damage. A project is now underway to relate wind speeds and duration to the amount of wind scar in a given season. The ability of the grower to know early in the season if he will have a severe wind scar problem should be helpful in management decisions. He can more easily decide whether to carry out a minimum spray program the remainder of the year and sell his citrus to processing or in a low wind scar year he may wish to expend more money on pest control and maintain more of his acreage with a fresh fruit sales potential. Growers should know which of their groves tend to have less wind scar damage year after year. These may be protected sites from wind or the reduced wind scar may be related to tree age, hedging or some other factor(s). For whatever reason(s), these groves should be the ones to receive more intensive pest control for fresh fruit marketing.

from Citrus Pest Management Newsletter
March 5, 1975
Gene Albrigo
University of Florida
AREC, Lake Alfred

AVAILABLE PUBLICATIONS

Available from Dr. W. F. Wardowski, AREC, P. O. Box 1088, Lake Alfred, FL 33850

"Removal of sodium o-phenylphenate and other phenolic contaminants from packinghouse effluents" by M. A. Ismail and W. F. Wardowski. HortScience 9(6):597-598. December 1974.

Available from B. L. Tugwell, S.A. Department of Agriculture, Box 1671 G.P.O., Adelaide, South Australia 5001

"New techniques in gas colouring citrus" by K. Gillespie and B. L. Tugwell. Department of Agriculture, South Australia Special Bulletin No. 4.75.

Available from Superintendent of Documents, US Government Printing Office, Washington, DC 20402

"Marketing losses of selected fruits and vegetables, at wholesale, retail, and consumer levels in the Chicago area" by W. R. Wright and B. A. Billeter. MRR 1017, USDA. Jan. 1975. Price 45¢.

Available from AVI Publishing Co., P. O. Box 831, Westport, CT 06880

Handling, transportation and storage of fruits and vegetables, Vol. 2 - fruits and tree nuts, by A. L. Ryall and Wilbert T. Pentzer. 545 pp. 1974. Price \$34.00.

Postharvest physiology handling and utilization of tropical and subtropical fruits and vegetables, by E. B. Pantastico. 560 pp. 1975. Price \$39.00.

Available from Dr. E. George Stern, Wood Research Laboratory, College of Agriculture, Virginia Polytechnic Institute, Blacksburg, VA 24061

"Design of nailed structures" by E. George Stern and Paul W. Stoneburner, V.P.I. Engineering Experiment Station Bulletin No. 81. (Note: Dr. Stern is sending us copies of all their latest bulletins, and we will list those of particular interest to citrus shippers in a later newsletter).


W. Wardowski, Editor
Assoc. Horticulturist