



Florida Cooperative Extension Service

PACKINGHOUSE NEWSLETTER



Institute of Food and Agricultural Sciences
University of Florida
P. O. Box 1088
AREC, Lake Alfred, Florida 33850
Phone 813/956-1151

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Pallet Boxes, Universal Product Code.

PALLET BOX WOOD PRESERVATIVE

Continued response to the article on pallet boxes in Packinghouse Newsletter No. 71 warrants additional information on wood preservatives. Copper-8-quinolinolate (Cu-8-Q) is the only wood preservative known to us that has full FDA approval plus adequate testing from the USDA Forest Products Laboratory. If you buy the undiluted concentrate, it should be diluted according to the manufacturer's instructions, usually 2 parts solvent to 1 part Cu-8-Q. The solvent should be an organic solvent that leaves no residue and no odor. The dip should be for at least one minute. See Packers' Corner, this issue, for a simplified dip system.

Will Wardowski
Extension Service

Bill Grierson
University of Florida
AREC, Lake Alfred

EFFICIENCY IN MANUALLY GRADING CITRUS FRUIT

The 1974 Citrus Packinghouse Day Program focused attention on grading efficiency through a presentation, "Slow Roll Grading -- A Packer's View" by Dick Birnie, Calavo Florida and a demonstration of grading table equipment including features mentioned in the talk. Mechanism of the grading table made it possible to vary rotation speed of rolls independently of their forward (translation) speed so that fruit could be made to turn forward, backward or not turn at all and revolutions of fruit per foot of travel could be regulated.

Research on manual grading efficiency was done by the USDA (Production and Marketing Administration) a number of years ago in cooperation with the University of California Institute of Engineering Research. The results were published in Marketing Research Report No. 45, "Visual Inspection of Products for Surface Characteristics in Grading Operations", June 1953. In a later contract with the Washington Apple Commission, the findings were specifically applied to grading of fruit and published as MRR No. 230, August, 1958.

The conclusions and recommendations are summarized below:

1. When fruit are moved along a table or conveyor belt past a grader for visual inspection, the fruit's speed of rotation while it is being moved, is a primary factor in inspection efficiency. Elongated fruit, which tend to roll about one axis, should be rotated at least 0.75 revolution per foot of forward movement. Round fruit, which roll about numerous axes, should be rotated about 1.6 revolutions per foot when from 3 to 5 rows are presented simultaneously.
2. Forward rotation (so that the motion of the top of the fruit is in the direction of forward motion) is desirable to avoid "belt sickness" which can occur when certain speeds of backward rotation are used.
3. When fruit are being inspected only for surface defects and color sorting is not involved, the optimum inspection rates are from 3 to 4 minutes per 1,000 fruit. If fruit are presented in 4 rows with a 4-inch spacing between specimens as they are fed onto the belt, these inspection rates would move fruit 21 to 28 feet per minute.
4. Fruit moving directly toward the grader yield better results than does side viewing for nearly all test conditions.
5. Fruit spaced at regular intervals along the grading table is preferable to haphazard spacing, from the viewpoints of both inspection efficiency and grader preference.
6. When fruit are viewed from the side (as in most Florida citrus packinghouses) most graders appear to prefer fruit movement from right to left rather than from left to right. This preference apparently has no connection with graders being right or left handed.
7. For fruit with a maximum diameter of 2-1/2 inches, four rows appear to be the optimum number that should be viewed simultaneously. There is reason to believe that this number of rows might not be correct for smaller or larger specimens which would decrease or increase the width of the area over which the grader's eyes must search.
8. Negligible effect on grading efficiency was observed with from 10 to 30% defective specimens (simulated grade-out or eliminations).
9. The use of mirrors increases grading efficiency for end defects, but reduces efficiency for peripheral defects. If the proportion of end defects to peripheral defects is not high, the use of mirrors reduces grading efficiency.
10. When inspectors must inspect for more than one defect, the over-all grading efficiency is decreased. Increasing the number of defects from one to two decreases the efficiency about 3 percent.
11. When round fruit are graded by side viewing, they should roll laterally at least 1 inch for each 5 inches of forward movement to assure that the entire surface of the specimen comes into the grader's view. Lateral movement is not considered to be a very important factor when fruit move directly toward the grader.
12. Grading tables which use the test conditions listed above can substantially reduce grading labor.
13. Workers have no difficulty in adapting themselves to equipment which provides the grading conditions described, and they prefer them over other methods.

Thanks to Earl Bowman, USDA, TFRD, Gainesville for this summary of MRR No. 45, and MRR No. 230.

Editor

FUMIGATION IN VAN CONTAINERS

The experience obtained last season in fumigating citrus for Japan is being written up in at least two separate reports. Meanwhile, this is just a brief item to clarify a point of considerable importance to exporters.

Fumigation damage, with consequent poor arrivals, was experienced in a number of van container shipments to Japan. Because of this, we have heard it said that van containers should not be used for trans-Pacific shipment. Far from it; diagnosis of the trouble indicated that it was nothing to do with trans-Pacific shipment in van containers but only with fumigation in van containers lacking adequate provision for ventilation after the fumigation. Both experiments and reports of commercial shipments indicated that the critical period was the half dozen or more hours immediately after fumigation. It is apparently rather easy to get EDB to penetrate into tightly stacked cartons. It is hard to get it out. Thus, when van containers lacking front and rear ventilation doors are closed up too soon after fumigation, damage can result. This in no way effects the case when fruit are fumigated in regular over-the-road-trucks with ventilation doors and then transferred to van containers at the dock side.

Bill Grierson
University of Florida
AREC, Lake Alfred

PACKER'S CORNERPALLET BOX DIP METHOD

The tank dip method of treating pallet boxes with a wood preservative has the limitation of needing some weight or means of holding the floating pallet box under the liquid. Realizing that most of the wood rot problems are in the bottom half of a pallet box, Mack Watson, Superintendent, Haines City CGA and Julian Sapp, Foreman, Consolidated Tomoka, Lake Placid each devised a simplified re-treatment tank (having already purchased treated pallet boxes). The tank, approach ramp and take away ramp are about 25 feet long with two steel rod tracks at Haines City and a metal ramp at Lake Placid on which the pallets ride. Pallet boxes are placed on one end by a lift truck and pushed forward by successive pallet boxes. The track slopes down into a dip tank with enough liquid to treat up to the entire pallet box at Haines City or the bottom 12 inches at Lake Placid, and then slopes up again. Liquid dripping off the freshly treated boxes runs back into the treatment tank. You would do well to view both tanks, incorporating the best features of each prior to building one. A tip from Mack Watson; do not locate on asphalt as a little spilled solvent will destroy asphalt.

Will Wardowski
Extension Service
AREC, Lake Alfred

UPC'S IMPACT ON PRODUCE

According to a recent survey by Chain Store Age magazine, introduction of the Universal Product Code (UPC) is going to affect operations in every department of the supermarket-and that definitely includes the produce department. Though UPC and its associated scanner system are still in the test stage, outlines of probable effects on the produce departments are already beginning to emerge.

The survey of produce directors of the nation's leading chains, co-ops and voluntari shows that most of them are already at work grappling with the expected consequences of UPC. Approximately one-third of the produce directors believe a shift to more prepackaged produce will be one of the most likely consequences of the advent of electronic scanning equipment.

Retailers would like to have as much of the prepacking as possible done by the growers and suppliers, but it's pretty certain that some packaging will still have to be done at central produce warehouses, and many items will wind up being packaged and encoded right on the store premises.

One chain is doing in-store printing of UPC labels as part of its test of the entire system. The chain interfaces an electronic scale with both a commodity labeler and a UPC printer modified for this application. Items sold by quantity, such as heads of lettuce and prepackaged celery and carrots, do not carry any human-readable tag, just a UPC label. Bulky items like watermelons are unencoded. Variable weight produce, such as packages of tomatoes, have both a commodity label and a UPC symbol.

Another chain is also testing the impact of UPC on the produce department. The chain sells its produce about half in bulk and half prepackaged, and except for items like potatoes and private label produce, most packaging is done at store level.

UPC labels are used only on prepackaged fixed-price items like potatoes. Random weight items such as a head of lettuce are given velocity code numbers. Cashiers ring the velocity code numbers manually and the computer automatically supplies the correct price. The item is listed with the proper price on the detailed check receipt.

Items like grapes, apples and other random weight items that cannot be fixed-priced, are weighed manually in the produce department, rung up manually by the checker, and appear on the tape as "produce."

A third chain uses a different approach. A master code book at each checkstand lists produce items alphabetically and by number, but not by price. Fast moving items get the lowest code numbers. Each cashier is provided daily with a card showing current items and their prices, in case a customer asks for this information. Produce is weighed on an electronic scale connected to the checkstand, and the proper code from the book is entered into the register at the same time. A readout over the scale gives the total poundage, while the register tape gives the name of the item, its cost per pound and the total price.

All in all, UPC implementation doesn't appear to present many technical problems, though a smoother system for processing random weight items would be a boon. The few stores which are experimenting with UPC in the produce department believe that the data which the electronic front end systems can generate will result in a tighter control of inventory and therefore a smoother-running--and more profitable department.

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AVAILABLE PUBLICATIONS

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

"Packinghouse Newsletter Index" for issues 1 - 73.

This newsletter is published at a cost of \$81.85, or 8.2 cents per copy, to give the latest news to the packinghouse industry.

W. Wardowski, Editor
Assoc. Professor
Extension Horticulturist