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PACKINGHOUSE NEWSLETTER

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PRACTICAL ASPECTS OF FILM WRAPPING

Presented as a talk at Citrus Packinghouse Day, September 8, 1982

The shrink-wrapping of citrus fruit is a relatively new experimental program for fresh citrus, which is being tried in several areas of the world. It has been tried in Japan in rather primitive form to prevent spread of mold spores while storing prior to packing. A more sophisticated wrapping of each fruit has been tried in Australia to try to hold fruit for the off-season for domestic use. Israel is experimenting to prevent spread of decay, possible shipping without refrigeration, and weight control of fruit.

We began experimenting during the 1981-82 season with both Interior and Indian River fruit. Market tests were made with film from DuPont at Gracewood Packing Company, and from W. R. Grace at Lake Garfield Citrus Growers. Some fruit was shipped before the freeze, however, most tests were done after the freeze. Consequently, it was very inconclusive as to the end results. Some tests, both domestically and in Europe, were excellent, other arrivals were poor. Some consumer reaction was very good, while others were noncommittal, or negative.

Obviously, the wrapping of each individual fruit is not cheap. We figure roughly 30¢ per carton on grapefruit and 40¢ per carton on oranges or easy-peel fruit. There have to be very positive reasons to commercially wrap each individual fruit with this type of expense. We visualize the reasons as follows, and not necessarily in this particular order:

1) We are striving to find out if the shelf life of fruit can be greatly extended. We have had some tests in which grapefruit and Valencia oranges have been kept for three months, or longer, with no serious problems. Obviously, we are setting up a very high humidity situation around each fruit which eliminates any shriveling, or stem-end aging, which is typical in long storage holding. If we are able to store grapefruit in April and bring it out in July in good condition, or if Valencias stored in early May could be brought out in July, August, or early September, in better condition than regular storage we would certainly have prolonged the season and increased profits.

2) In the event of some decayed fruit within each carton, we can drastically reduce the spread of mold spores from one fruit to another. This factor is extremely

important in reducing total decay. It becomes even more important in fruit going to long distant markets, or in storage fruit where containment of fruit decay, particularly due to punctures which are not seen on the grading table. Lemons, particularly, need some help along these lines, as well as oranges and grapefruit for export or storage.

3) We are trying to determine whether it might be possible to eliminate refrigeration in the shipping of fruit to market. We have very little conclusive data on this subject, except to note with cool nights it is done in Australia. Also, our very unscientific tests done here in Florida show some possible capabilities. Here, again, it is obvious the higher humidity around each fruit is valuable as a holding aid.

4) The use of shrink-film around each fruit almost totally prevents a loss of weight through transpiration. This, of course, becomes very important in the markets where fruit is sold by weight as in France and other European markets. It is quite easy to have at least a 3% weight loss in fruit which, if prevented, could correlate to a savings of about 30¢ per carton. In this case, the cost would be almost self-liquidating.

5) We have found that in long storage, or export, when fruit is waxed and wrapped there is a change of sugar to alcohol, which then gives a slight off-flavor to fruit. Since there is no weight loss with shrink-wrapping of non-waxed fruit, it appears we could eliminate waxing expense with no bad side effects.

6) Brand identification with shrink-wrapped fruit is at its peak. It is obviously superior to stamping or decaling for brand presentation. The consistent brand pattern allows at least two, and probably three brand impressions on each fruit.

7) One of the big advantages in wrapped fruit in the super market is the advantage of telling the difference between Ruby Red and white grapefruit. We often hear super market people complain the check-out has a problem distinguishing between the two and, therefore, price them all at the same price. We use red print for Rubies and blue print for Marsh seedless.

8) There are other obvious advantages, such as impressing the consumer about cleanliness of the fruit. No buyer would complain about the shine on fruit as each fruit would give a brightness which is magnified under the supermarket lights. In-store decay is easily disposed of without any mess.

Machine capability, at present, without huge expense would allow about 1,500 cartons per machine per 8-hour day with three men. Weldotron seems to be the United States' leader in this field in machine capability. It must be set up as a separate packing operation with constant fruit flow from a fruit hopper in order to obtain reasonable efficiency. Should this become a big field there is machinery available to do volume wrapping in fast time.

We have found shrink-wrapping of easy-peel, or Reticulata fruit, to be unsatisfactory because of increased decay, although we wish to pursue these varieties further this season. Best results appear possible for grapefruit and round oranges. Grapefruit leads oranges in keeping quality.

Consumer response has been one of curiosity. Generally, reports about appearance are very favorable. The interest in fruit cleanliness is strong. The consumer interest in keeping is slight as they shop often and don't want to store or keep fruit for any length of time. Some respond well to the "no wax" idea.

We will be doing tests again this season on all varieties, with particular interest on grapefruit for export and oranges domestically. Also, repeating Reticulata variety tests to see if we can get better results. At this stage we see shrink-wrapping as a use for special situations only. I am referring to gift fruit packing, premium fruit, and possibly storage oranges. Also, extended tests in export shipments. It is too expensive for routine domestic sales at this time.

We feel that at the present this is still very much experimental, but the **potential** is exciting enough to pursue these test areas in fair volume to gain some absolute conclusions this coming season. It is an exciting concept that adds *class and* prestige to our citrus fruit, and in this competitive time in the fruit business, may insure additional sales.

Don Lins
Executive Vice President
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BOOK REVIEW

Product Manual - Handling and Storage Practices for Fresh Fruit and Vegetables by H. G. Debney, K. J. Blacker, B. J. Redding and B. J. Watkins. 1980.

This 118-page book, copyrighted by the Australian United Fresh Fruit and Vegetable Association, is a comprehensive illustrated text of the current state of the art for handling at least 81 listed Fresh Fruits and Vegetables. The illustrations are informative and sometimes delightfully memorable as in the drawing (below) for pressure damage. The illustration (below) of ideal vs. real palletization certainly applies to citrus in cartons from any production area.

The Product Manual has eleven tabulated sections: Deterioration, Temperature Management, Humidity, Controlled Ripening, Atmosphere Control, Operation of Facilities, Packaging and Handling, Transport, Product Section, Home Storage and Miscellaneous.

Having a distrust of the category "miscellaneous" I turned immediately to that section to find three parts. The Glossary defines such terms as enthalpy, entropy and eutectic. The Conversion Factors include units we all know and some others like coulomb, weber, tesla, pascal, centipoise and stilb. Finally, this section includes the approximate respiration rates of some fresh fruits and vegetables held at their correct storage temperatures - broccoli respire over 11 times as much as oranges, and oranges respire over three times as much as plums. This reviewer concedes that miscellaneous is an acceptable term for a very useful section.

The volume is relatively free of errors. When a typesetting error was noted in a table giving cooling times, the authors quickly responded with the correct values. The format is loose leaf allowing added or replaced pages including corrections and new technology. See Available Publications for the cost of this Product Manual and the annual cost of update sheets.

The Australian authors and artists have made this Product Manual easy to read, factual and memorable. It lacks an index which would be a worthy addition to be included in the annual update pages.

(See page 4 for figures)

Will Wardowski
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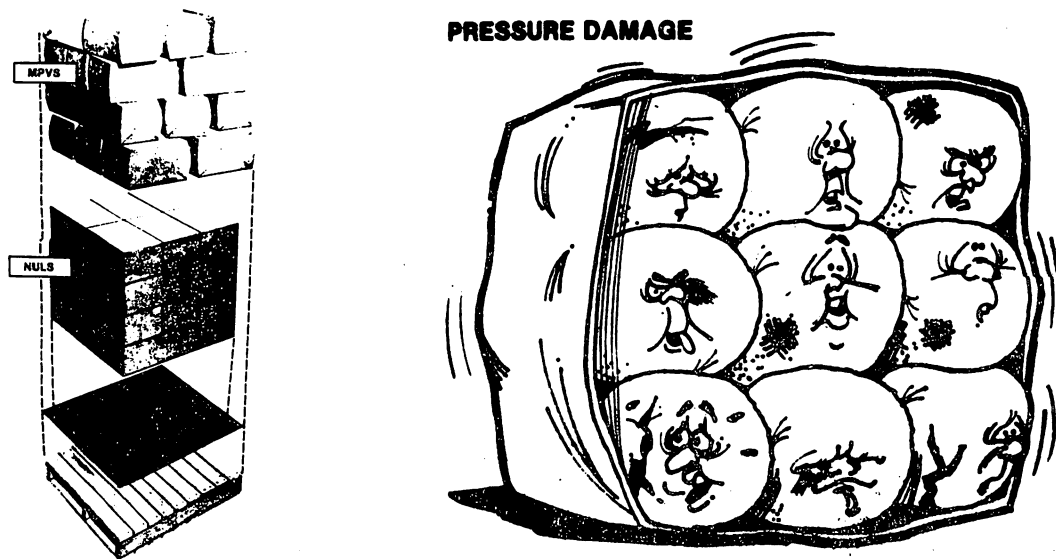


Fig. 1. This illustrates the allowance which must be made in package design to ensure that efficient palletisation is obtained. NULS (net unit load size) represents the theoretical length and width dimensions of all packages in a layer without any allowances for bulge, misstacking etc. MPVS (Maximum plan view size) represents the maximum length and width dimensions of the unit load to provide high palletising efficiency without overhang. This includes net unit load size, plus allowances for stacking irregularity, packing bulge, compression and settling bulge and unitisation devices.

AVAILABLE PUBLICATIONS

Available from Dr. W. Wardowski, AREC, 700 Expt. Sta. Rd., Lake Alfred, FL 33850

"Twenty-first Annual Citrus Packinghouse Day," W. F. Wardowski. (ed.). (Program and Abstracts.)

"CAST - Related testimony on the food safety amendments of 1981." Spec. Publ. No. 11. Council for Agricultural Science and Technology. August 1982. 60 pages.

Available from the Committee of Direction of Fruit Marketing (C.O.D.), P. O. Box 19 Brisbane Markets, Queensland, Australia 4106

"Product Manual - Handling and Storage Practices for Fresh Fruit and Vegetables" by H. G. Debney, K. J. Blacker, B. J. Redding and B. J. Watkins. 118 Pages, 1980. The loose-leaf format allows updated information on replacement pages for an annual fee. Cost: A\$45.00 or US\$50.00. Overseas postage A\$6.00 or US\$6.50 (Surface Mail). Annual fee for update sheets A\$10.00 or US\$10.50.

A\$ = Australian dollars, US\$ = United States dollars. See review in this Newsletter. Editor.

This newsletter is published at a cost of \$85.26 or 6 cents per copy, to give the latest news to the packinghouse industry.

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