

INSTITUTE OF FOOD AND  
AGRICULTURAL SCIENCES  
UNIVERSITY OF FLORIDA

FLORIDA  
COOPERATIVE  
EXTENSION SERVICE

## PACKINGHOUSE NEWSLETTER

W. Wardowski, Editor  
AREC  
Post Office Box 1088  
Lake Alfred, FL 33850  
Phone (813) 956-1151

Packinghouse Newsletter No. 93  
May 12, 1978

Key Word Index Canker, Diphenyl, Lemons.

### FRESH LEMONS

The Florida fresh lemon season will soon begin. Several general comments can answer the most commonly asked questions. More detail may be found in Bulletin 184 and Circular 410 (see Available Publications).

#### Harvesting & Hauling

It takes good management and good pickers to get fresh lemons from the tree to the packinghouse undamaged. There is no case of "being practical" meaning to avoid the scrupulous harvesting that is necessary to ensure a high pack-out of fresh lemons. Everything spent on growing the crop and setting up the packinghouse is lost if in the few seconds it takes to pick a fruit the oil cells are broken, and they break very, very easily.

Oil spotting (oleocellosis) is a particularly bad problem for lemons when they are turgid following rain, irrigation, or early morning dew (a particularly hazardous situation). A pressure tester is used to determine the pressure to rupture the peel oil cells (RORP) in order to determine when the lemons may be harvested safely (Circular 410). Small deciduous fruit picking bags that hold about 45 lbs. of fruit should be used, NOT the large Florida citrus picking bags. Lemons are the only citrus fruit that benefit from a delay after harvest---they should sit in pallet boxes in the field overnight, to be loaded and transported the next day.

#### Maturity Standards

Although maturity is seldom a problem for Florida lemons, care should be taken that each crop meets the 30% juice volume requirement before picking.

#### Curing or Degreening?

Curing is the safe method for removing the green color by holding the fruit 2 to 3 weeks at 60°F and 95% relative humidity. The fruit produce tiny amounts of ethylene which slowly degreen them. During curing, lemons usually gain in extractable juice. Only recently has lemon degreening been attempted successfully with added ethylene, and

then with extreme caution due to the hazard of increased decay from ethylene (see Available Publications, articles by Barmore, Wheaton, and McCornack). Exact control of very low ethylene levels is vital, as is a preharvest Benlate spray, a predegreening drench with a benzimidazole fungicide (Benlate or TBZ) or both. Degreening lemons assumes a risk of more decay but offers the benefit of faster handling (days vs. weeks for curing).

Market Preparation

Pregrading prior to curing can eliminate unmarketable sizes plus obviously blemished fruit but should not be done until pressure test (RORP) is up to about 7 lbs. Following curing, lemons must be washed, and receive an additional fungicide treatment. Packing with diphenyl pads is recommended. Lemons generally are handled like other citrus fruits but, especially for smaller stores, must often be held for longer periods in the marketing process than for other citrus.

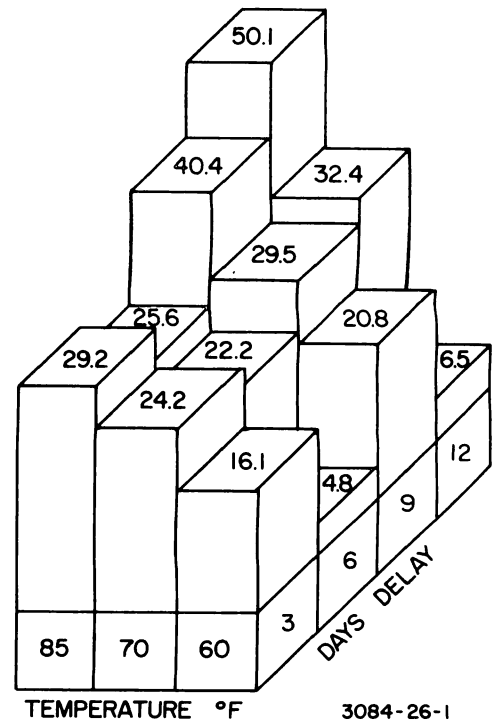
Will Wardowski  
Extension Service  
Lake Alfred

Bill Grierson  
AREC, IFAS  
Lake Alfred

GRAPEFRUIT DIPHENYL RESIDUES

The illustration below represents the amount of diphenyl residues in parts per million (ppm) in Indian River grapefruit during a February and March 1978 test. Days delayed at three temperatures before simulated sea voyage conditions at 55°F for four weeks are shown with higher residues for higher temperatures during the prevoyage delays, and generally higher residues for longer prevoyage delays. These fruit were packed in standard cartons with two standard diphenyl pads per carton.

Other tests attempting to obtain diphenyl residues over the Japanese tolerance of 70 ppm were not successful in that no conditions could be found to promote excessive residues. The one condition that could not be tested at that time is seasonal variability, especially early season variability of grapefruit diphenyl residues. That condition will be tested this season.



Bill Grierson  
AREC, IFAS

Will Wardowski  
Extension Service

Jerry Ting  
Florida Department of Citrus  
Lake Alfred

USDA REDIRECTS RESEARCH

The U.S. Department of Agriculture plans to give increased research emphasis to human nutrition, food safety, energy conservation, small farm production and integrated pest management according to Assistant Secretary of Agriculture M. Rupert Cutler.

However, the increase in the above research areas is being offset by reductions in other research projects, and the Department of Agriculture's budget for FY 1979 has materially cut marketing, processing and distribution research and extension budgets. The Agricultural Research Service program budget is up \$7.2 million representing an increase in human nutrition research of \$7.8 million. Marketing and processing research is cut \$9.4 million while crop production research is increased \$5 million and soils research increased \$3.9 million.

In the Cooperative State Research Service, which supports state college research, Hatch Act funds were cut \$11 million, and the requirement that 20% of Hatch Act funds be spent for marketing research was rescinded, so it is likely the major share of this cut will be taken by the states in marketing activities. The Extension Service budget was cut \$7 million, and it is unlikely any other agency or state will pick up marketing research.

ARS programs cut include all transportation and packaging research; wholesaling, retailing and institutional marketing; food marketing assistance in the inner-cities or rural areas; urban wholesale markets; the agribusiness program to help set up rural food business; transportation, refrigeration and sanitation; packaging and distribution. The transportation and packaging of horticultural crops at Yakima, Washington and transport refrigeration research at Orlando, Florida will also be cut out.

With the American farmer protesting farm prices below the cost of production, with high consumer food prices, escalating marketing costs, and a need for expanded exports to offset a record negative balance of payments, we believe it is a real mistake to make major cuts in marketing and distribution research and extension services.

A good way to let USDA know how you feel about the allocation of research funds is to contact your Senators and Congressmen and suggest that USDA reconsider their research priorities.

The PMA Report  
Volume 10, No. 6  
March 24, 1978

CITRUS CANCKER SEMINAR

A seminar on citrus canker will be held at the Agricultural Research and Education Center 2:30 PM, Wednesday, June 7, 1978 following the Florida Citrus Packers meeting that day. Dr. E. P. DuCharme and Dr. R. E. Stall will discuss this serious disease which few of us in Florida have seen.

Will Wardowski  
Extension Service  
Lake Alfred

AVAILABLE PUBLICATIONS

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

"Lemon production and utilization in Florida" by D. P. H. Tucker and W. F. Wardowski. Fla. Coop. Ext. Serv. Bull. 184. June, 1973.

"Oil spotting (oleocellosis) of citrus fruit" by W. F. Wardowski, A. A. McCornack and W. Grierson. Fla. Coop. Ext. Serv. Circ. 410. July, 1976.

"Ethylene degreening of 'Bearss' lemons" by C. R. Barmore, T. A. Wheaton and A. A. McCornack. HortScience 11(6):588-590. 1976.

"Accelerating the market preparation of Florida lemons with ethylene degreening" by C. R. Barmore, T. A. Wheaton and A. A. McCornack. The Citrus Industry 57:38,40,42,45. September, 1976.

Available from Vegetable Crops Department, University of California, Davis, CA 95616

"Postharvest handling and physiology of horticultural crops--A list of selected references" by Adel A. Kader, Leonard L. Morris and James A. Klaustermeyer. Vegetable Crops Series 169, May, 1976. 43 pages, 633 references under 12 major categories.

Available from Dow Chemical U.S.A., Midland, MI 48640

"Silent Autumn--A case for pesticides and Farm Chemicals" by Henry Lewert. 1977. 20 pages.

Available from Ben Abbitt, AREC, P. O. Box 1088, Lake Alfred, FL 33850

"A comparison of spray costs and fruit packout for minimum and maximum spray programs for grapefruit and temples" by Ben Abbitt, J. O. Whiteside and L. G. Albrigo. Citrus & Vegetable Magazine, March, 1978.

Available from Dr. R. Kilmer, Food & Resource Economics Department, 1157 McCarty Hall University of Florida, Gainesville, FL 32611

"A variance component approach to industry cost analysis" by R. L. Kilmer and D. S. Tilley, Staff Paper 82, April, 1978. (Based on Florida citrus packinghouses).

Available from Dr. R. F. Kasmire, Agricultural Extension Service, Dept. of Vegetable Crops, Mann Laboratory, University of California, Davis, CA 95616

"Review: temperature, the most important factor" by F. G. Mitchell and R. F. Kasmire. Fruit and Vegetables Perishables Handling (Newsletter) Issue No. 39, March, 1978. 12 pages.

This newsletter is published at a cost of \$86.70 or 7.8 cents per copy, to give the latest news to the packinghouse industry.

*W. Wardowski*  
W. Wardowski, Editor  
Associate Professor  
Extension Horticulturist