

**INSTITUTE OF FOOD AND
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**FLORIDA
COOPERATIVE
EXTENSION SERVICE**

PACKINGHOUSE NEWSLETTER



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TWO FACULTY MEMBERS LEAVE

Two members of the Fresh Fruit Working Group at Lake Alfred have resigned. The loss of two faculty members from a small nucleus of research workers will reduce our ability to address industry problems, especially as the position vacated by Dr. Bill Grierson over two years ago is still vacant.

Al Purvis became Chairman, Department of Horticulture, Louisiana State University, Baton Rouge. He was at Lake Alfred for eight years and worked on several research projects including chilling injury of grapefruit and film wrapping.

Charles Barmore took a position with the Cryovac Division, W. R. Grace & Co. in Duncan, South Carolina. His new title is Manager, Applications Laboratory. He was at Lake Alfred for thirteen years and his work included degreening, film wrapping and decay physiology.

Hopefully one faculty position can be filled this summer or fall. Faculty working primarily on fresh fruit at Lake Alfred are:

Dr. G. E. Brown, Florida Department of Citrus
Dr. M. A. Ismail, Florida Department of Citrus
Dr. W. M. Miller, University of Florida, Research
Dr. W. F. Wardowski, University of Florida, Extension

Do not hesitate to call on us. We will do our best to continue to serve the Florida fresh citrus fruit industry.

Will Wardowski
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DEGREENING

Questions continue to be asked about degreening, and now that both Bill Grierson and Art Raynor are retired there are few people who can answer them. Most of the answers can be found in Extension Circular 389 and Packinghouse Newsletters 5 and 45. A couple of changes have been made and a few additional suggestions may be helpful. These ideas were derived from experience and research and some of them have not been published elsewhere.

The continuously running horizontal air flow design rooms first conceived by Dr. W. Grierson at this Center, and refined by commercial experience are far superior to the old central stack system. The horizontal air flow system degreens fruit faster and more uniformly with more fruit per square foot of floor space. Time saved is money saved, especially in the early fall when the degreening capacity is frequently the limiting factor to supplying markets.

Internal air circulation should be a minimum of 100 cfm against 1/2 inch minimum static pressure per Florida pallet box (900 lbs or 408 kg oranges). Adequate air circulation is essential for fast degreening.

The horizontal air flow rooms are gradually loaded with fruit so that the heat requirements are now known to be adequate at 0.2 BTU per cfm (cubic feet per minute of inside air circulation). Commercial Florida degreening rooms have been successfully operating for eight seasons with 0.2 BTU/cfm (the previous standard was 0.5 BTU/cfm in Packinghouse Newsletter No. 5). Our suggested one fresh air change per hour still holds, but in Israel half that is being used successfully (under their conditions), thus reducing the requirement for heat (85 F) and humidity (90-96%) added inside the room.

Ethylene levels of 10 ppm and 1 to 5 ppm have been recommended over the years. Recent research indicates that 5 ppm is probably a good compromise now that the Florida citrus industry is capable of measuring and maintaining an accurate level. One ppm will degreen, but it may take longer than the other rates. Excessive ethylene results in monetary losses of increased decay and ethylene use.

Wall ducts direct the air to channels formed by the pallets and avoid air being wasted by short circuiting between stacks of pallets. Wall ducts save energy by reducing wasted air movement. Care should be taken to avoid restrictions (usually out of sight at the top back of a horizontal air flow room) that create air flows in excess of 1500 linear feet per minute. Faster linear air movement creates turbulence and wastes energy.

Radiator coils should be kept clean, a feat easier said than done. Dirt on coils acts as an insulator in the wrong place, thus reducing efficiency. Radiators have been completely clogged with wax when the waxer was adjacent to the dryer and the wax fumes were drawn in by the radiator fans. Also, pulling air through a radiator is said to use about 28% less energy than pushing the air through a radiator.

Insulation (see Packinghouse Newsletter No. 100) is the obvious way to conserve heat. About two inches of insulating wall board on outside walls is standard in metal Florida degreening rooms. Cement block walls do not require added insulation. The underside of degreening roofs should also be insulated.

Insulation prevents the condensation of needed humidity on these inside surfaces. The inside of cement block walls should be painted with a latex paint to reduce moisture migration.

All equipment should have easy access. For example, a catwalk for overhead equipment will make the fans, radiators, etc. more accessible and therefore more consistently maintained.

The best degreening is fast degreening, both for fruit quality and for energy savings. Properly sized and maintained equipment will result in greater efficiency with less chance for error.

Will Wardowski
Extension Service
Lake Alfred

CITRUS PACKINGHOUSE DAY

The Twenty-fourth Annual Citrus Packinghouse Day is scheduled for Wednesday, September 4, 1985 at the Citrus Research and Education Center, Lake Alfred. This meeting is usually attended by 250 to 300 people interested in citrus packinghouses. Talks and displays will be presented by scientists and citrus packers on a variety of timely topics.

The talks are scheduled in the morning, followed by lunch and afternoon equipment displays. Commercial companies are encouraged to reserve space soon by contacting Dr. Bill Miller or me, 700 Experiment Station Road, Lake Alfred, FL 33850, phone (813) 956-1151. Those with commercial displays will be referred to the Florida Citrus Packers for table rentals and any special needs.

The program is jointly sponsored by the University of Florida, the Florida Department of Citrus and the Florida Citrus Packers. Those attending Citrus Packinghouse Day represent most of the fresh citrus fruit packed in Florida. Anyone is welcome to attend. There is no cost, except for lunch and commercial equipment displays.

Will Wardowski
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AVAILABLE PUBLICATIONS

Available from Dr. W. Wardowski, CREC, 700 Experiment Station Road, Lake Alfred, FL 33850

"Atmospheric levels of ethylene dibromide at Florida citrus fumigation stations and port warehouses" by M. A. Ismail and J. O. Craig. Proc. Fla. State Hort. Soc. 96:358-360. 1983.

"Postharvest creasing of Robinson tangerines as affected by harvest date, pectinesterase activity and calcium content" by S. Nagy, M. Marshall, W. F. Wardowski and R. L. Rouseff. Journal of Hort. Sci. 60(1):137-140. 1985.

Available from Dr. W. Wardowski, CREC, 700 Experiment Station Road, Lake Alfred, FL 33850

"Influence of ethylene on increased susceptibility of oranges to Diplodia natalensis" by C. R. Barmore and G. E. Brown. Plant Disease 69(3):228-230. 1985.

"Florida citrus spray guide" by J. L. Knapp, D. P. H. Tucker and T. R. Fasulo. Univ. of Fla. Extension Circular 393-K. Jan. 1985.

"Pesticides and plant growth regulators registered for use on Florida citrus, 1985" by J. L. Knapp, D. P. H. Tucker, T. R. Fasulo and W. F. Wardowski. Univ. of Fla. Fact Sheet ENT-55B. Dec. 1984.

"The effects of the December-January 1983-84 freezes upon the citrus industry in eleven Florida counties: responses from packinghouses, processing plants, property tax assessors, and lending institutions" by L. C. Polopolus, R. P. Muraro, W. F. Wardowski and S. Moon. Univ. of Fla. Food and Resource Econ. Dept. Staff Paper 267. Jan. 1985.

"Citrus packinghouse response to the December 1983 freezes" by W. F. Wardowski, L. C. Polopolus and R. P. Muraro. Citrus and Vegetable Magazine 48(7): 16, 18, 32, 33. April 1985.

Available from L. A. Risse, USDA, 2120 Camden Road, Orlando, FL 32803

"Export handbook for U. S. agricultural products" by C. J. Nicholas. USDA Office of Transportation, Agr. Handbook No. 593. 154 pages. Revised March 1985.

Available from J. Whigham, Division of Fruit & Vegetable Inspection, P. O. Box 1072, Winter Haven, FL 33880

"1983-84 Season Annual Report"

Available from Dr. R. L. Kilmer, University of Florida, Food and Resource Economics Department, Gainesville, FL 32611

"Indian River citrus packinghouse location: a dynamic programming approach" by R. L. Kilmer and T. Spreen. Technical Bulletin No. 848. 36 pp.

Available from Dr. R. P. Beilock, University of Florida, Food and Resource Economics Department, Gainesville, FL 32611

"Shipping by piggyback: a potential alternative for Florida product transportation" by Richard Beilock. Bulletin No. 839. 36 pp.

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