



INSTITUTE OF FOOD AND  
AGRICULTURAL SCIENCES  
UNIVERSITY OF FLORIDA

FLORIDA  
COOPERATIVE  
EXTENSION SERVICE

## PACKINGHOUSE NEWSLETTER

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### PACKERS' CORNER

#### USING A WATER TYPE FROZEN FRUIT SEPARATOR

We at Orange-co were successful in our efforts to separate frozen grapefruit with a water separator this season. I would like for you to know of our experience since you share your vast storehouse of knowledge with so many people in the industry.

After looking at all available machinery, reading all available material and talking to the old timers in the industry, we asked Marvin Brown of Auburndale, Florida to fabricate a unit exactly like the one built by Mt. Dora Growers Co-op at Mt. Dora, Fla. This was the only unit that had successfully separated grapefruit previously as far as we could tell.

As soon as our unit was installed and we were able to operate it, we made the following changes which we felt were helpful:

(1) In order to move the sound grapefruit under the divider, we had to increase the water flow by 40%. In doing so we had to increase the horsepower from 15hp to 20hp. (Since we had a spare 25hp motor available we used it.)

(2) In addition to the hinged adjustment on the leading edge of the divider, we capped this with a 6" nose iron which is also adjustable.

(3) The adjusting screw which controls the raising and lowering of the leading edge of the divider was extended to the area in which the supervisor operated the unit.

(4) We installed a small belt over the center of our pre-grading table so that our graders could remove all fruit larger than a size 32. We soon realized that the large fruit was inside fruit and was not usually damaged by the freeze. This fruit was routed around the separator.

(5) We modified the drain by welding a 4" nipple at the level we wanted a constant overflow. This overflow keeps the trash floated off the top of the water. We welded a 4" nipple in the side of the tank near the bottom and attached a thin flexible hose which when in the raised position it acted as a valve and when it was lowered it would empty the tank rapidly. It is also less expensive than a 4" valve.

In a period of about five weeks we dumped 103,344 - 1-3/5 bushel boxes of fruit through our separator. We recouped 66,122 boxes or 64%. This fruit was all grapefruit with the exception of 20,053 boxes which were valencias.

The good fruit was caught in pallet boxes and subsequently run through our machinery routinely.

Some of the things which made this venture successful are as follows:

- (1) Crops with freeze damage to more than 40% of the fruit were usually not considered a good investment to try and separate. Exceptions were when the price of Indian River Reds were bringing \$4.50 to \$5.00 per carton.
- (2) A representative sample was taken after the fruit was unloaded into the storage area and if this crop cut less than 16% of the fruit dry, we would not separate it but process it as good fruit since grading and sizing usually eliminated over half of this dry fruit.
- (3) The fruit was washed and pre-graded prior to separation. This kept our tank much cleaner and removed rotten fruit.
- (4) CONSTANT, GOOD, CAPABLE SUPERVISION is a must. We kept two of our best supervisors on this unit most of the time. Constant sampling and constant adjustment is necessary. We figure that we had an average of 15% good fruit mixed with our dry fruit and about 10% to 15% dry fruit mixed with our good fruit.
- (5) Since we had to have an employee open and close the gate which filled the pallet boxes, we decided to have this employee lay a piece of plywood diagonally from the bottom far corner of the pallet box to the top of the near edge of the pallet box. This was pulled out after one or two boxes of fruit was in the box to prevent damage to fruit falling into the box.
- (6) The fruit "lowerator" (pipe slat conveyor which lowers fruit to the bottom of the tank) carried the fruit down on the inlet side rather than over the top as is conventionally done. This method releases the fruit lower in the tank and tends to sweep them in the direction of the water flow. Less damage is incurred with this method also.
- (7) By increasing the water velocity by 40%, we were able to dump up to 1,000 boxes of fruit per hour. The rate of dump varied with the severity of damage.
- (8) All dividers were made of 3/8" rods and this is good as it allows you to see the flow of the fruit and correct problems that exist. We did cover the rods which restrained the fruit from going to the dry side. We used a steel plate here so that when the fruit came to this point the water current would be diverted to the direction you wanted the fruit to move instead of the fruit trying to follow the flow of the water which was straight ahead through the rods.
- (9) There are two baffles located near the bottom of the curved end of the tank. These are mounted on an offset shaft which is in bearings. There are adjustment levers attached to these so that they may be properly adjusted. We feel much expense could be eliminated by welding an angle to the sides of the tank and welding these baffles directly to them. Once the correct angle is established, no adjustment needs to be made. These baffles have a lot to do with the uniform flow of the water.

(10) The baffle wall that is constructed of 4" square tubing seems to eliminate turbulence in the water flow. This baffle could be made of round pipe and be as effective in our opinion.

(11) We drained our tank every night and used a high pressure hose to clean it. We feel this eliminates the build up of fungi and bacteria. Also, you are better able to see the movement of the fruit in cleaner water.

Sufficient to say the rewards far outweighed the problems. We can say definitely, "Grapefruit can be separated."

B. Ed Shores, Vice President  
Orange-co of Florida, Inc.

The above is a June 2, 1977 letter from Ed Shores to Bill Grierson. It is well written and timely today. Those not familiar with frozen fruit separators might obtain more information in Circular 372 on frozen fruit separators (see Available Publications).

Editor

#### ACTION PROPOSED ON EDB RPAR

EPA has proposed regulatory actions that will affect use of products containing ethylene dibromide (EDB) in a preliminary notice of determination as Position Document 2/3 (PD 2/3) on the Rebuttable Presumption Against Registration (RPAR) of products containing the pesticide. Assistant Administrator Steve Jellinek has signed the PD, and publication of a notice in the Federal Register is expected within two weeks.

The Agency's preliminary decision is to: (1) immediately cancel registrations for fumigation of stored grains, spot fumigation of grain milling machinery, and fumigation of felled logs for control of bark beetles; (2) to permit use for post-harvest fumigation of citrus, tropical fruits, and vegetables until mid-1983 to allow time for the introduction of alternative treatment methods; and (3) to allow continued registration, subject to certain restrictions, label modifications, and data requirements, for the remaining uses which are: pre-plant fumigation of soil, stored beehive fumigation, fumigation of nursery stock for the control of Japanese beetles, and vault fumigation of stored clothing and furniture. Use of EDB to fumigate for termite control remains in effect, but the Agency said it will make a further determination on this use at the same time it decides on regulatory action needed for a number of pesticides used for this purpose.

The EDB RPAR actions are based on EPA's determination that this chemical causes cancer, genetic damage and reproductive disorders in laboratory test animals. The Federal Register notice will announce the availability of the position document (PD-2/3), which sets forth in detail the reasons and factual bases for the proposed regulatory actions and provides for a 30-day comment period before the Agency's final determination is announced. The Federal Register notice should be published in about two weeks.\* (EPA, OPP Weekly Report, December 3, 1980).

\* Fed. Reg. Vol. 45, No. 239, pages 81515-81524, Wednesday, December 10, 1980.

FREEZE DAMAGED FRUIT SEMINAR

9AM - 12Noon

WEDNESDAY, FEBRUARY 4, 1981

AGRICULTURAL RESEARCH &amp; EDUCATION CENTER

LAKE ALFRED

The separation of freeze damaged citrus fruit will be the subject of a seminar, Wednesday, February 4, 1981, 9AM - 12Noon at the Agricultural Research and Education Center, Lake Alfred, Florida. This seminar for machinery operators, mechanics and managers is jointly sponsored by the IFAS Extension Service and the Florida Citrus Packers. Program participants will include members of the Extension Service, University of Florida and Florida Department of Citrus research staffs, Florida Citrus Packers Association, and the Division of Fruit and Vegetable Inspection.

Attention will be given to the inspection, grading, and separation of freeze damaged citrus fruits. The principles of the operation of both oil-emulsion and water fruit separators will be discussed with particular attention to compliance with recent federal regulations.

Will Wardowski  
Extension Service  
Lake Alfred

FROZEN FRUIT IS NOT POISONOUS!

We are once again hearing the old wives' tale that frozen fruit are poisonous and, in particular, that the white hesperidin crystals that form between the segments are poisonous. This is simply not so.

Freezing damages the cell membranes to the extent that the moisture can evaporate from the frozen area. Immature fruit that remain on the tree may "heal" to a marked extent, the healthy segments compressing the dried out area into a very small space. Fruit that is mature at time of freezing cannot do this. It will be first mushy and later have hollow areas (but without shrivelling, because the membranes allow the water to escape freely), but it will not be unwholesome.


Will Wardowski	Bill Grierson
Extension Service	AREC
Lake Alfred	Lake Alfred

AVAILABLE PUBLICATIONS

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

"Separation and grading of freeze damaged citrus fruits" by W. F. Wardowski and W. Grierson. Fla. Coop. Ext. Serv. Circ. 372. April 1972.

This newsletter is published at a cost of \$80.40 or 7¢ cents per copy, to give the latest news to the packinghouse industry.

  
W. Wardowski, Editor  
Professor  
Extension Horticulturist