INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
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FLORIDA COOPERATIVE EXTENSION SERVICE

# PACKINGHOUSE NEWSLETTER

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Key Word Index Decay Control, Decay Fungi, EDB, Fumigation, Stem-end Rot

## STEM-END ROT IN THE FALL OF 1984

What is stem-end rot?

Stem-end rot is caused by two fungi, Diplodia natalensis and Phomopsis citri. Diplodia is most commonly a problem early in the season during degreening, and Phomopsis will be found during the cooler fall, winter and spring months.

How does stem-end rot infect citrus fruit?

The fungi produce spores while growing on dead wood on the tree. The spores are splashed onto small fruit by rain where they infect the button, but do not normally develop into decay until the mature fruit are harvested. In seasons following a freeze, there is more dead wood in trees, and therefore more stem-end rot spores to infect the fruit. Some citrus production areas of Florida were not affected by the December 1983 freeze, whereas some areas were so badly damaged that there will be no fruit in the 1984-85 season.

Why the concern about stem-end rot during the degreening season?

Diplodia is enhanced by degreening conditions and grows well in warmer early-season temperatures. As much as 20 to 30% of early season degreened fruit may develop stem-end rot even if fungicides are applied, particularly if applied after 72 hours of degreening.

What are control measures in the grove?

For those areas where the freeze resulted in increased dead wood and a fruit crop will be harvested during the next two seasons, problems with stem-end rot can be anticipated. In most cases, it is not practical to remove and burn all the dead wood in a grove although that would be helpful. An application of Benlate as a grove spray at 1 to 2 lbs/acre one day to 3 weeks before harvest is helpful during the degreening season.

What are control measures in the packinghouse?

Stem-end rot spores are not normally produced on healthy or infected fruit and therefore are not air or water borne in the packinghouse. Both types of stem-end rots are controlled by the benzimidazole fungicides, Benlate (benomyl) and TBZ (thiabendazole). Benlate or TBZ can be applied as a water spray before the wax at 600 ppm and 1000 ppm respectively, or at twice these rates in water emulsion waxes. During the degreening season, it would be a good idea to additionally apply Benlate or TBZ before degreening in a pallet box drench, or to apply Benlate as a grove spray (above). The predegreening application will help to protect the fruit during the degreening process.

Other decay control precautions should be practiced. For example, careful harvesting and handling, good sanitation practices and additional fungicides will help reduce stem-end rot as well as other decays. Good sanitation practices include simple housekeeping by removing trash and especially decayed fruit from the packinghouse and keeping the packingline and pallet boxes clean. Packed fruit with decay should not be repacked in the packinghouse.

Are there any precautions about the use of fungicides?

Label instructions should be followed for the use of any pesticide. The application nozzles need to be checked frequently to be sure that they are operating correctly. Any fungicide used must have specific approval for use on citrus in the country (including the United States) where the fruit is to be marketed.

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## LAST MINUTE REMINDERS

The Twenty-third Annual Citrus Packinghouse Day is scheduled Wednesday, September 5, 1984 at the Citrus Research and Education Center, Lake Alfred. The talks will be in the morning, followed by a lunch and afternoon equipment displays. This program is jointly sponsored by the University of Florida, the Florida Department of Citrus and the Florida Citrus Packers.

The 1984 Florida Citrus Growers' Institute and Trade Show is scheduled September 11-12, 1984 at the Lakeland Civic Center. Questions regarding facilities and equipment space allocations, etc. should be directed to Ms. Dottie Partin at the Ag. Center, 1702 Highway 17-98 S., Bartow, FL 33830, phone (813) 533-0765 or Mr. David McKeeman, Grove Equipment Service, Inc., P. O. Box 68, Alturas, FL 33820, phone (813) 537-1742.

## ETHYLENE DIBROMIDE (EDB)

EDB has been used for many years to fumigate citrus and other fruits shipped between areas with warm climates within the USA, exported to certain countries and imported into the USA. The use of EDB *on fruit* consumed in the USA to prevent the spread of certain tropical species of fruit flies will be cancelled by September 1, 1984.

The American Council on Science and Health (ACSH) recently published a 27 page booklet reviewing the uses of, the hazards of and actions against EDB (see available publications). The following excerpts are from the ACSH booklet.

Position Statement

ACSH strongly agrees with EPA's setting of tolerance levels for EDB in consumer foods (these were long overdue) but believes that the complete ban on the grain-related uses of EDB and the impending ban for its use on fruit are serious mistakes. Therefore, ACSH recommends that the ban on grain-related uses of EDB be lifted and the proposed ban of the use of EDB in the fumigation of fruit be postponed until and unless a suitable replacement is found.

Conclusion

Many consumers and representatives of the media have a very poor understanding of the nature of American agriculture. We have one of the best, most varied, reliable, and efficient food supply systems in the world, and we tend to take it for granted. We expect our fruits, vegetables, and grains to be robust and free from insect parts and blemishes and to be there in the supermarkets when we want them. We assume that Mother Nature meant it to be that way and overlook the technological advances in agriculture, food processing, and distribution that have brought about our continuing victory over insect infestation and the threat of famine.

This is especially true of the role played in modern agriculture by chemistry and toxicology. The word "chemical" today has been given a negative image, and unrealistic absolute choices such as "safe" vs. "unsafe" are dangled before consumers as though a condition of zero risk were actually attainable if only we wanted it badly enough.

But that is an unrealistic view. For it is impossible to prove that any product or practice is utterly risk-free. Instead, it is a fact of life that toxins and carcinogens are omnipresent in the natural, as well as man-made, environment in ehich we exist. In coming to terms with this unalterable fact, we can do no better than to listen to this wisdom from an earlier age, "Sola dosis facit venenum" - "Only the dose makes the poison" (Paracelsus, 1564).

Will Wardowski
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## AVAILABLE PUBLICATIONS

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

"Observations on citrus in China" by W. F. Wardowski and J. M. Bonnell. Proc. Fla. State Hort. Soc. 96:361-366.

"Physiological disorders of citrus fruits" by W. Grierson. Proc. Int. Soc. Citriculture pp. 764-767. 1981.

Available from American Council on Science and Health, 47 Maple Street, Summit, NJ 07091

"Ethylene dibromide (EDB)" by W. R. Havender. 27 pages. Price $2.00.

"Pesticides in your home and graden" by the Staff, ACSH. 26 pages. Price $2.00.

Available from Dr. H. J. Kaplan, Pennwalt Corporation, P. O. Box 120, Monrovia, California 91016

"Tolerance of citrus pathogens to current packinghouse treatment" by H. J. Kaplan, B. A. Dave, and J. F. Petrie. Proc. Int. Soc. Citriculture. pp. 788-791. 1981.

Available from Dr. S. Ben-Yehoshua, Agricultural Research Organization, The Volcani Center, P. O. Box 6, Bet Dagan, Israel

"High-density polyethylene wrap improves wound healing and lengthens shelf-life of mechanically harvested grapefruit" by A. Golomb, S. Ben-Yehoshua, and Y. Sarig. J. Amer. Soc. Hort. Sci. 109(2):155-159. 1984.

This newsletter is published at a cost of $97.08 or 7 cents per copy, to give the latest news to the packinghouse industry.

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