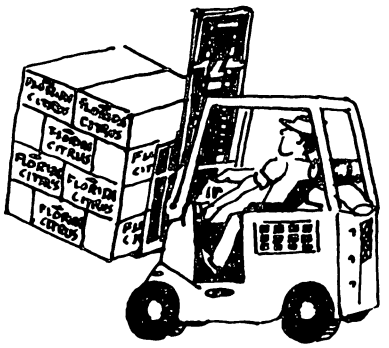

Florida Cooperative Extension Service

PACKINGHOUSE NEWSLETTER

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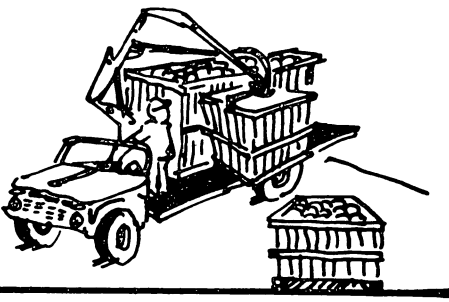

Packinghouse Newsletter No. 75 September 19, 1975

Key Word Index Aflatoxins, Arsenic, Degreening, Ethylene Analyzer, Lemons, Peel Injury, Tangerines.

WARNING ON ROBINSONS!

If a test sample of 'Robinson' tangerines will not degreen to a deep orange in 36 hours, LEAVE THEM ON THE TREE. Early season high prices tend to make for considerable color blindness in judging "deep orange" and the error can be expensive. Pale yellow Robinsons suffer a prohibitive amount of handling injury and any Robinsons left in degreening over 36 hours suffer severely from anthracnose rot.

Will Wardowski
Extension Service
Lake Alfred

DEGREENING LEMONS

Until now, we have advised very strongly against use of ethylene to degreen Florida lemons because of its action in stimulating Diplodia stem-end rot. Benlate (benomyl) and TBZ (thiabendazole) have proved so effective against Diplodia stem-end rot and Penicillium molds (resistant molds may be a problem in the future) that we have had our first small scale commercial trial with ethylene-degreened lemons. If you decide to degreen lemons with ethylene, observe the following points:

1. Lemons must have 30% juice content before picking.
2. Apply Benlate both preharvest and Benlate or TBZ postharvest after degreening.
3. Keep ethylene concentration below 5 parts per million.
4. Ethylene treatment should not exceed 36 hours.
5. Only lemons grown for the fresh fruit market should be ethylene treated.

6. Pack lemons immediately after degreening.

7. Do not export ethylene degreened lemons until storage tests at 55°F have been made to determine keeping quality.

Charles R. Barmore
T. Adair Wheaton
W. Grierson
AREC, Lake Alfred

HOW HAZARDOUS ARE MOLDS ON CITRUS FRUITS?

Some concern has been caused by news items in trade journals stating that molds on citrus fruits can develop aflatoxins, which are very poisonous indeed and virulent cancer producing agents. One recently published account says: "A potential health hazard might exist if consumers remove only surface mold from citrus fruits. Food researchers say that poisons produced by mold on the surface of grapefruit, lemons, limes, and oranges can penetrate to the edible part after just three days of incubation.....If eaten in sufficient amounts, these poisons can produce illness and death."

Let us put the matter in perspective. Almost any food can support growth of toxin-producing molds, of which Aspergillus flavus and Aspergillus parasiticus are the most dangerous. Moldy peanuts are considered the greatest hazard and common molds on grain products include several that can produce such toxins. Their presence was first discovered in following up on losses of farm animals, particularly turkeys, that had been fed moldy peanut meal.

However, aflatoxin producing molds on citrus fruits are rare, the only published instance of Aspergillus flavus being found on citrus fruit was reported in Puerto Rico way back in 1918. Aspergillus niger, an entirely different species from Aspergillus flavus or Aspergillus parasiticus, is one that occasionally causes decay of citrus fruit. However, this decay has probably only been seen at Lake Alfred a total of 10 times over the last 10 years. More importantly, Aspergillus niger has not been implicated in any case of aflatoxin poisoning. Aflatoxin is not produced by the fungi usually causing decay of our citrus fruits such as green mold, stem-end rot, black rot, sour rot, or anthracnose.

In the original research cited by the newspaper articles, the fruit were first sandpapered to provide injuries required for surface growth, then inoculated with spores of Aspergillus flavus and Aspergillus parasiticus. We do not quibble with the fact that these fungi will produce aflatoxins in citrus fruits, but we do seriously object to the inference that aflatoxin poisoning is a potential hazard to consumers of fresh citrus. This is particularly so as decay spreads so swiftly through a citrus fruit that a moldy fruit is not salvageable. All of us have, at some time, cut a moldy piece out of an apple. We have never seen anyone even attempt this with a citrus fruit.

Obviously, like any other frozen or canned foods, citrus products can go bad once opened, and these should always be discarded. But for fresh fruit, the best assurance with regard to potential hazards from such toxins are Florida cattle, which for successive generations, have been happily munching on the citrus cull pile.

A. A. McCornack
G. Eldon Brown
Florida Department of Citrus
Lake Alfred

Bill Grierson
AREC, IFAS
Lake Alfred

ETHYLENE ANALYZER ACCURACY

The standard ethylene analyzer owned by most Florida citrus packers has proven to be a valuable tool. It is compact, accurate, inexpensive, saves enough ethylene to pay for itself and helps to maintain fruit quality. After reading an article on this in our last issue, Jim Ellis (see Creativity Award, below) asked that we check the accuracy of his and other ethylene analyzers. We will check the accuracy of an ethylene analyzer for any citrus packer who delivers his unit and two unused low range ethylene tubes to us. Be sure that your analyzer is clearly labeled with the owner's name and address. One-day turn around may be possible, but some cases a week may be necessary.

Will Wardowski
Extension Service
Lake Alfred

FLORIDA COOPERATIVE EXTENSION SERVICE

PACKINGHOUSE NEWSLETTER

Creativity Award

This is to certify that JIM ELLIS is recognized as being the citrus packer contributing the most to Packinghouse Newsletter with constructive criticism over a period of several years. His contributions include the Key Word Index and Packers' Corner, both of which enhance the value of Packinghouse Newsletter.

Awarded at Packinghouse Day September 3, 1975

Will Wardowski, Editor	Bill Grierson, Head	Bill Strickland
Extension Service	Harvesting & Handling Section	General Manager
AREC, Lake Alfred	AREC, Lake Alfred	FFCSA, Lakeland

IS ARSENIC NECESSARY TO NUTRITION?

Preliminary research indicates a possibility that arsenic may play a role in human nutrition. Dr. Forrest H. Nielsen, a USDA, ARS, chemist, recently reported results of investigations to the Federation of American Societies for Experimental Biology.

Nielsen fed pregnant rats a diet with as little arsenic as 30 ppb. Control rats received the same feed supplemented to increase the arsenic concentration to approximately 5 ppm, a 167-fold increase. To induce arsenic deficiencies, the diet was formulated from dried skim milk, acid-washed ground corn, and corn oil.

Laboratory rats deprived of arsenic evidenced slow growth rates, dark-colored spleens containing 50 per cent more iron, and rough hair. Off-spring of arsenic

deprived rats had red blood cells which broke down more easily in salt solution than red blood cells of control rats.

Many foods, including fruits, vegetables, and cereals, contain less than 0.5 ppm arsenic and rarely more than 1 ppm. Food products from animals generally have low arsenic levels except those of marine origin which contain from 2 to 8 ppm.

Experiments were conducted at the ARS Human Nutrition Laboratory, Grand Fork, N.D., as a preliminary step toward studying the role of arsenic in human nutrition.

Food Product Development©
Vol. 9(4):94. May 1975

AVAILABLE PUBLICATIONS

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

"Fourteenth Annual Citrus Packinghouse Day Program and Abstracts" September 3, 1975.

"Phenolic content during healing of 'Valencia' orange peel under high humidity" by M. A. Ismail and G. E. Brown. J. Amer. Soc. Hort. Sci. 100(3):249-251. May 1975.

"Humidity in horticulture" by W. Grierson and W. F. Wardowski. HortScience 10(4):356-360. Aug. 1975.

"Chilling injury and decay of grapefruit as affected by thiabendazole, benomyl, and CO_2" by W. F. Wardowski, L. G. Albrigo, W. Grierson, C. R. Barmore and T. A. Wheaton. HortScience 10(4):381-383. Aug. 1975.

Available from U.S. Horticultural Research Center, USDA, 2120 Camden Road, Orlando, FL 32804

"Effects of maturity, storage, and ethylene on the induction of carotenoid synthesis in citrus fruits by 2-(4-chlorophenylthio)-triethylamine (CPTA)" by Otto L. Jahn and Roger Young. J. Amer. Soc. Hort. Sci. 100(3):244-246. May 1975.

"The floor - a common denominator for refrigerated transport problems" by W. F. Goddard. Int. Inst. Refrig. Comm. D2:39-49. 1974.

Available from Farrar, Straus and Giroux, 19 Union Square West, New York, NY 10003

Oranges by John McPhee. Now available in paperback $2.95.

This newsletter is published at a cost of $81.85, or 8.2 cents per copy, to give the latest news to the packinghouse industry.

W. Wardowski, Editor
Associate Professor-
Extension Horticulturist