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PACKINGHOUSE NEWSLETTER

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All previous and present Packinghouse Newsletters (PHNL) are available on the Internet at the University of Florida's postharvest web site (<http://postharvest.ifas.ufl.edu>) and can also be accessed through our citrus resources web site (<http://flcitrus.ifas.ufl.edu>). E-mail delivery of this newsletter arrives sometimes a month before the printed version. To receive e-mail delivery, simply contact the editor (see contact information above).

New Fungicide Registrations and Their Impact on Postharvest Decay Control of Citrus

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Introduction. Postharvest decay is one of the most important factors affecting the market life of fresh Florida citrus. An effective postharvest decay control program is critical for maximizing quality retention and ultimately net returns for fresh citrus. Currently in Florida, citrus postharvest decay control is an integrated procedure using synthetic fungicides as the core component. Imazalil, thiabendazole (TBZ) and sodium o-phenylphenate (SOPP) are the only synthetic fungicides available to the citrus industry for the control of a wide array of postharvest fungal diseases. These three fungicides have been periodically reviewed by the EPA and their future availability is affected by increasingly restrictive regulations and the development of pathogen fungicide resistance. Currently there are no effective alternatives to these fungicides. Obviously, new fungicides are needed by the fresh citrus industry to maintain and improve the current postharvest disease management system.

Current status of TBZ and Imazalil re-registration by the EPA. The re-registration of TBZ has been cleared, and the re-registration of Imazalil will be completed this year by the EPA. This means that TBZ and Imazalil will continue to be available for postharvest treatment of citrus for decay control. In both cases, the Florida Department of Citrus (FDOC) actively supported re-registration to help ensure that these critical fungicides continue to be available to the industry.

Current registration status of new fungicides. Three new fungicides with different modes of action will likely be registered within the next few years for the postharvest treatments of different fruits including citrus. They are PH066 (pyrimethanil), Scholar (fludioxonil), and Abound (azoxystrobin). PH066 is from Janssen Pharmaceutica Inc. which also manufactures Imazalil, and Scholar and Abound are both from Syngenta Inc. which also manufactures TBZ. PH066 is scheduled to be reviewed by the EPA in 2003, and Abound and Scholar have been scheduled to be reviewed in 2004. After establishing minimum residue levels, PH066 could be labeled in 2004 and Abound and Scholar could be labeled in 2005. Following EPA registration, extensive work still must be completed by the companies and citrus organizations such as the California Citrus Quality Control Council and the FDOC to establish tolerances in major export markets such as Japan, Canada and the European Union. The FDOC has been working directly with the chemical companies and California citrus pathologists to evaluate the efficacy and best application method of the new chemicals, and to support their registrations by the EPA.

Chemistries of the new fungicides and their role in managing pathogen fungicide resistance. The trend in EPA pesticide registration is to focus on new, safer and reduced risk chemistries and the EPA has classified these three new chemicals as reduced risk compounds. The new compounds have different modes of action from those currently registered. Registration of these new fungicides will also provide more tools for citrus postharvest decay control and fungicide resistance management. The chemical companies are also pursuing registration of formulations containing combinations of different chemicals such as PH066/Imazalil (Janssen), TBZ/Imazalil (Janssen), and Abound/Scholar (Syngenta) to prevent or slow the development of fungicide resistance since each of these new formulations would provide at least two modes of action simultaneously on treated fruit.

Effectiveness of the new fungicides compared to current fungicides. Tests conducted by FDOC scientists indicate that all three new fungicides effectively control green mold postharvest. Scholar is also effective for controlling stem-end rot and appears to be a suitable alternative to TBZ and Imazalil in Florida. In general, however, the new chemicals appear less effective than Imazalil and TBZ for the control of green mold and stem-end rot, respectively.

Decisions on use of the current and new fungicides. The registrations of the three new fungicides will not replace the current fungicides (TBZ, Imazalil and SOPP), but will provide additional chemical tools for postharvest decay control and the management of pathogen resistance. Often, stem-end rot and green mold are the most important diseases in Florida and both TBZ and Imazalil are excellent materials for controlling both stem-end rot and green mold. There also are no obvious TBZ and Imazalil resistance problems reported in Florida packinghouses. Therefore, TBZ and Imazalil should still be the first choices for postharvest treatments in Florida. The costs of the new fungicides will likely be similar to or higher than Imazalil. These new chemicals could obviously become important to the Florida fresh citrus industry if TBZ or Imazalil is removed due to new restrictive regulations or becomes less effective due to the development of severe pathogen resistance.

Internet Resources for Citrus Packers

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Rapid access to timely, unbiased information is vital to maintaining competitive citrus packing and shipping operations. Ten years ago, one often needed to travel to the nearest university or college library, search through the stacks of printed literature, and then stand in line at the copier to obtain scientific and extension publications or recommendations. Recently, however, computer technology and on-line resources have become much more extensive and easier to access. The Internet provides 24-hour access to the most up-to-date information covering:

- Harvesting and postharvest handling recommendations.
- Basic information about the biology of perishable horticultural produce.
- The technology used in postharvest handling.
- Newsletters with full-color illustrations.
- Searchable databases with access to the complete text of many papers and articles.
- E-mail links to people with additional information on a subject.
- Postharvest resources – where to find suppliers of equipment & services.

To start with, consider the information provided at the following on-line sites:

The University of Florida Postharvest Programs and Information website (<http://postharvest.ifas.ufl.edu>). At this site, one can search for a wide variety of information using key words or by using the topical index. In each section, information from UF sources is featured, but links to other university/government organizations and selected commercial sites are also provided. Links to sites other than UF/IFAS sites are provided as a service and do not imply endorsement of information or products. The site also contains an extensive list of postharvest service and equipment suppliers. A key feature of the site is access to the complete library of Packinghouse Newsletters. Information in the newsletters can be accessed through the search engine or through an index. The site also includes contact information for UF, FDOC, and USDA scientists involved in postharvest research and/or extension in Florida.

The Florida Department of Citrus Postharvest Citrus Information Guide (<http://www.fdocitrus.com/>) provides a variety of information including citrus decay, peel disorders, degreening, storage, cold treatment for quarantine purposes, food safety, maturity standards, fresh squeezed juice and other postharvest topics of interest to Florida fresh citrus growers and packers. The site includes a hot link titled Search Database which enables anyone accessing the site to obtain information on specific disease or disorder by simply entering the name of the problem and clicking to see a detailed account and a color picture of the topic requested. A complete set of FDOC Fact Sheets on postharvest diseases is also included in the site.

The Postharvest Technology Research and Information Center at the University of California, Davis (<http://postharvest.ucdavis.edu/>) houses an extensive database of “Produce Facts” sheets, product compatibility tables for shipping mixed loads of produce, information on the use of controlled atmospheres, and a wide variety of other postharvest materials. Included is a collection of publications that can be ordered and an extensive list of selected postharvest references that can be

viewed or downloaded. The site also houses a Postharvest Resource Directory that lists a large number of suppliers of postharvest equipment and services.

The USDA Agriculture Handbook Number 66 entitled, "The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks" has been completely revised and updated and is available in its entirety on the Internet at <http://postharvest.ifas.ufl.edu/>. This handbook is an extensive collection of postharvest information covering everything from the general postharvest biology and technology of horticultural crops to specific handling recommendations for 138 different products.

The South Australian Research and Development Institute (SARDI) website (<http://www.sardi.sa.gov.au/horticulture/index.html>) highlights postharvest projects and information on temperate and semi-tropical fruits (esp. citrus, grapes, and apricots) predominant in South Australia. Included at the website is a large section covering postharvest handling of citrus and access to their Citrus Packer Newsletters dating back to 1979.

Forty-Second Annual Citrus Packinghouse Day

Thursday, August 21, 2003

Citrus Research and Education Center

700 Experiment Station Road, Lake Alfred, FL 33850

Be sure to attend Citrus Packinghouse Day on August 21st. Registration opens at 8:30 AM and the program begins at 9:30 AM. This year we have several important issues that will be addressed. Leading members of industry and scientists from the University of Florida, the Florida Department of Citrus, and the University of California will present practical and applied information of interest to your business.

This year's keynote speaker is Dr. Mary Lu Arpaia from the University of California who will discuss recent changes in the California citrus industry. Other topics presented will include:

- Factors influencing the arrival quality of early season citrus.
- Food safety issues for Florida citrus packinghouses.
- Factors influencing fruit shape (e.g. sheepnosing).
- Fungicide options for the future.
- New citrus varieties for the fresh market.
- Fresh citrus overview: what's the market, who's the competition and where's the future?

Because of a generous donation from DECCO/Cerexagri, Inc., an excellent lunch will again be provided to the first 200 people to register at the door. Be sure to stop by DECCO's exhibitor booth to say thanks! Representatives from more than 30 companies will be on hand to provide valuable information for your business. An exhibitor list will be provided including the names, addresses, telephone numbers and products sold. \$250 in door prizes will also be given away.

For more information on Citrus Packinghouse Day, contact Dr. Mark Ritenour, UF/IFAS Indian River Research and Education Center, (772) 468-3922, Ext. 167 or by e-mail: mritenour@ifas.ufl.edu.