



Ethylene Control is taking another step forward, along with other fresh fruit and vegetable industry leaders by establishing its own site on the World Wide Web. You can now e-mail us at Ethylene@qnis.net for your convenience. In the near future, you can get up-to-date information about the latest ethylene control developments when you sign onto our new web site which is still under construction at: <http://www.ethylenecontrol.com> please accept our sincere best wishes for a safe and prosperous New Year.



Upcoming Events

California Farm Conference Trade Show - Feb. 22-25 Riverside, California

United Fresh Fruit & Vegetable Assn. 93rd Annual Convention - Feb. 22-24 Orlando, Florida

Washington State Horticultural Assn. Post harvest Conference - March 11-12 Wenatchee, Washington

Malcomb's Fresh Re-Pack Serves the West

Malcomb's Fresh Re-Pack Co., Inc., of Denver was started nearly a decade ago by the late Dan Malcomb and his wife, Sue. Today, Sue (Wale) leads the company as president; Kevin Malcomb, vice president of operations; and Steve Deits, vice president of finance and sales.

"We founded the company with the intention of providing the produce industry with specific, top quality products and services," Sue said. "Dan was with us the first five years when growth was rapid and development of programs extremely crucial. He had been produce director and head buyer at Nobel/ Sysco in Denver and was well known in the produce industry."

After 9 years, Malcomb's employs about 100 people full-time, who repack and process a variety of fresh and pre-cut fruits and vegetables for shipment throughout Colorado and Western states. They handle bananas and tomatoes; have a fresh-cut fruit program which focuses on cantaloupe, honeydews and watermelons, and offer different mixes that include red grapes, kiwi, oranges and strawberries; and fresh-cut vegetables, including onions, peppers, carrots, celery, broccoli and cauliflower.

Malcomb's does whole peeled oranges and grapefruit and sells melons in halves and quarters, wrapped with forks and/or spoons for retail outlets. Retailers can get a special mix to order if they want a special cut or rebag Malcomb's pre-cut produce under their own private labels.

"This firm is excited to be expanding in the fresh cut fruit and vegetable business and continues to research and explore the latest in food industry technology and marketing developments. Our leadership likes to be innovative and try new things to meet the changing needs of customers," she said.

"These past four years our management team has invested a lot of time and energy to develop and define internal programs and products."

Malcomb's supplies a large variety of produce items to Sysco, the largest food distributor in the U.S. food service industry. Sysco distributes their produce to restaurants, hospitals, schools, prisons and other large institutions. The firm also provides fresh cut fruits and vegetables to Albertson's, Safeway, Cub Foods and King Soopers. When the company first started ripening and packing tomatoes, then processing fresh cut

vegetables.

Malcomb's has traditionally handled large volumes of produce, taking it from master cases and repacking it into smaller lots for shipment to retailers. They also do reconditioning work. Part of Malcomb's success has been the way the company handles its fruit. Since they have always been interested in managing ethylene, they place Ethylene Control's individual sachets in their tomato flats assuring customers of the freshest arrivals possible.

Certain branded items Malcomb handles are shipped with EC sachets, along with a letter to their customers explaining what ethylene control products do. A good ethylene control program is one of several tools that has enabled them to keep produce quality high and help get the most out of the fresh fruit and vegetables they repack and process into value added products.

Malcomb's stated purpose is to support, succeed and excel in every area, both inside the firm and out in the community. Likewise, Malcomb's qualifies as a Sysco-approved firm, in keeping their standards at the highest possible levels.

Fuji Apples: Maintaining Post harvest Quality

Fuji apples growers who store their own apples might learn something from the University of California, Davis, Post harvest Outreach program. According to UC officials, the optimum temperature in storage is $0 + 1^{\circ}\text{C}$ ($32 + 2^{\circ}\text{F}$); highest freezing point is -1.5°C (29.3°F). The optimum relative humidity is 90 to 95%.

Ethylene can accelerate senescence and loss of firmness, and a reduction in ethylene concentration may reduce susceptibility to scald. The rates of ethylene production is usually 2 to 4 :l/kg per hour at 0°C (32°F).

New Products & Uses

Dave Biswell helped develop a new patented Chlorine Dioxide product which has been tested by a California university and is currently undergoing commercial testing in several California facilities. The CLO2 product adds another weapon to the Ethylene Control arsenal that will help packers, repackers, shippers and retail outlets maintain the quality of their fruits and vegetables. The product kills molds and bacteria. It will possibly be a replacement for formaldehyde in citrus and for SO2 gassing in grapes. The industry will be notified when the product is ready for commercial use in the near future.

Storage Scald: A Concern In Apples

For as long as apples have been stored and marketed commercially, storage scald has been a serious concern for apple growers, says Beth Mitcham, University of California, Davis, Department of Pomology.

In a recent article published in the Perishables Handling newsletter, Mitcham pointed out that susceptibility to storage scald varies with the variety of apple, environment and cultural practices. Granny Smith, Rome Beauty, Delicious, Winesap, and Yellow Newtown are very susceptible. Gala and Fuji are considered moderately susceptible.

Incidence and severity of storage scald is favored by hot, dry weather before harvest, immature fruit at

harvest, high nitrogen and low calcium concentrations in the fruit, and inadequate ventilation in storage rooms or in packages.

Symptoms: Irregular brown patches of dead skin which can become rough when severe, developing within 3 to 7 days upon warming of the fruit following cold storage. Symptoms may be visible in cold storage until after 3 months. The warm temperatures do not cause the scald but allow symptoms to develop from previous injury which occurred during cold storage.

Ethylene promotes the formation of alpha-farnesene and oxygen is required to oxidize alpha-farnesene to conjugated trienes. Both ethylene scrubbing and low-oxygen storage reduce the incidence of storage scald, says Mitcham.

Control: For many years, proper harvest maturity, ventilation in cold storage and 15% mineral oil wraps were the only methods available for scald control and control was incomplete. Today, the most common method used to control scald is application of an antioxidant immediately after harvest. Diphenylamine (DPA) is commonly used. Ethoxyquin is also effective for some varieties, but can cause damage to some apple varieties (check label for recommendations). Antioxidants should be applied within one week of harvest for maximum control. Wait 16 hours after DPA application before cooling of fruit (unless bitter pit is a great concern as cooling delays can increase bitter pit incidence). Low oxygen controlled atmosphere storage can provide a non-chemical control method in some cases.

Waterberry: Table Grape Headache

Pete Christensen, viticulture expert at UC Kearney Agricultural Center near Parlier, says that many table grape cultivars are susceptible to Waterberry. However, the malady is most common with Thompson Seedless, Flame, Calmeria and Queen. The disorder also affects wine and raisin grapes.

Severely affected vines can have nearly 100% of the clusters showing some symptoms and with a 50% crop loss in pack-out. More commonly, crop losses are in the range of 5 to 20% in affected vineyards. Labor to trim affected berries from cluster is an additional cost factor, Christensen said.

Waterberry is thought to be a physiological disorder which appears more in certain cultivars, years, and individual vineyards. It is associated with fruit ripening and most often begins to develop shortly after veraison.

There is no known control. However, it is recommended to avoid over fertilization with nitrogen. Foliar nutrient sprays of N should be avoided in Waterberry-prone vineyards. Likewise, ammonium or urea fertilizers should not be applied via drip irrigation near the beginning of or during fruit ripening. Trellising and canopy management practices may be beneficial.





What People Are Saying...

"At certain times, we would throw out more bananas than we would sell. The fruit simply ripened too fast and would not hold."

Watson Food Service, Lubbock, Texas, George Hardwich, produce manager

"After seeing the EC-3 filtration system working in California, we installed our own unit and are already seeing a big difference in the holding quality of our pears."

Pride Packing Company, Wapato, Washington, Sherry White, warehouse manager

"Adams County Five Star School District in Colorado used EC filters in their walk-in cold box and discovered they no longer had to throw away large amounts of produce on Monday morning because it didn't spoil over the weekend as it had in the past."

Shamrock Foods, Denver, Colorado, Don Middaugh, produce manager