



# Small Farm News

Small Farm Center • Cooperative Extension • University of California

## Conference for small specialty crops growers

Information about new markets, new tools and new crops will be showcased at the 2007 Specialty Crops Conference, organized by the University of California Small Farm Program. The two-day event includes a day of conference presentations Dec. 12 at UC Davis, followed by a limited-seats bus tour of Bay Area markets Dec. 13.

“Finding a niche is how many small-scale farmers survive and thrive,” said Dr. Shermain Hardesty, director of the UC Small Farm Program. “Whether that means differentiating themselves by growing a unique type of fruit, or finding new ways to sell their products—we want to provide farmers of specialty crops the best tools available to make profitable decisions.”

Conference presentations will include discussions of enterprise screening tools, alternative marketing channels, planting based on market outlooks, and consumer preferences for colors and flavors—lead by farm advisors and staff of the UC Small Farm Program. Josef Brinckmann of Traditional Medicinals will share his insight on the market for American-grown botanicals, and UC researchers will showcase their latest field research on blueberries, pitahaya fruit, and other specialty fruits and vegetables. Dr. Devon Zagory, director of the new Center for Produce Safety at UC Davis, will present on the critical topics of food safety and postharvest handling.

The Bay Area market bus tour will introduce farmers to a

### 2007 Specialty Crops Conference

#### Day 1 Presentations

**When:** Dec. 12, 9 a.m.

**Where:** UC Davis, ARC

**How much:** \$20 registration

#### Day 2 Bus market tour

**Leaves:** Dec. 12, 7 p.m.,

UC Davis ARC parking lot

**Where to:** Bay Area markets

**Returns:** Dec. 13

**How much:** \$20 registration

(\$40 total for both days)

### Registration form on p. 11



Some small-scale California farmers have found success with southern highbush blueberries, and more growers are investing in the relatively new crop.

## Changing blueberry market needs careful attention

By Shermain Hardesty, SFP Director

Blueberries have become an important specialty crop alternative for many growers in California. As new producers continue to enter the blueberry market, an examination of trends and opportunities may help California producers better strategize for success.

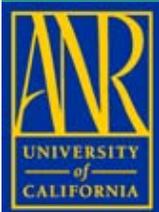
Although they have been cultivated in California for the commercial market only since the mid 1990s, blueberries were long an important native crop to the indigenous peoples of North America. Hybrid plantings were first established in New Jersey in the early 1900s. The industry expanded significantly during the 1930s when several improved varieties were introduced in North Carolina and Washington. By 2006, less than a quarter of the nation's commercial blueberry production was from wild plants.

The value of U.S. blueberry production increased five-fold between 1993 and 2006 to \$558 million, while cultivated acreage increased by 45 percent. Michigan is still the leading blueberry state, producing slightly less than a quarter of the nation's total crop in 2006. Per capita consumption of blueberries among U.S. consumers rose from 0.4 pounds in 1990 (0.1 pounds fresh, 0.3 pounds processed) to 0.8 pounds in 2005 (0.4 pounds each of

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## Consumers pay for more than produce: They buy trust, too

I am rushing to write this column because I am headed out to a meeting regarding value chains in agriculture. Value chains link producers with food system partners who share similar values, such as sustainable agricultural practices and fair returns to producers. While traditional business relationships are often framed in win-lose terms that create mistrust, producers and their food system partners who are engaged in value chains recognize the mutual reliance in their relationships.



Shermain Hardesty

The value chain concept makes me realize how much trust is involved in our food system. Successful value chains require trust between the various businesses involved—producers, processors, distributors, grocers and food service establishments. Yet consumers are also seeking various forms of trust as they

purchase food—trust that they are paying a fair price, and trust that their food was produced using ecologically sound practices and with fair treatment of farm laborers. These days, consumers are also seeking assurance that their food is safe to eat.

In pre-industrial societies, most farmers sold their products directly to consumers at village markets. These direct relationships dissolved as agriculture became industrialized. More recently, corner grocery stores were displaced by chain supermarkets and many mom-and-pop restaurants closed because they could not compete with regional and national restaurant chains.

Now, many consumers want to put a face on the food they eat and are seeking out locally produced foods. The number of farmers markets continues to increase, numerous grocery stores are promoting their locally grown produce, and many restaurants and other food service establishments are developing local food programs. Much of this is attributable to consumers' need of assurance that the

food they are consuming is safe—free of pathogens such as *E. coli* and salmonella, as well as pesticide residues. In a research report released this September by the Leopold Center for Sustainable Agriculture, 70 percent of respondents stated that they believe that foods produced locally—rather than foods that have traveled across the country—are healthier, even though there is little evidence to back this up.

We must protect consumers' trust in locally produced foods. It is incumbent on all of us involved in the food system—researchers, farm advisors, regulators, producers, packers, truckers, grocers and food service workers—to ensure the safety of the food we eat. Maybe we'll need to charge consumers a bit more to ensure the safety of their food, but we shouldn't cut corners just to keep food prices low. Food prices in the United States are the lowest among all developed nations. Consumers need to be educated that they may need to pay more to ensure the quality of the food they eat.

*Shermain D Hardesty*

## program news

**Hands-on field instruction** was the focus of three classes in October held for irrigators, foremen and growers in Watsonville and Salinas, organized by **Aziz Baameur**, Small Farm advisor for Santa Clara, Santa Cruz and San Benito Counties, and Michael Cahn, of UCCE Monterey County. Each course was taught in Spanish and English, with full attendance at 35 participants for each class. Two of the courses focused on fertigation and the other on drip irrigation techniques for sloping land.

**A new cost study** examines growing Protea flowers in San Diego County. The study was produced by UC Cooperative Extension and UC Davis researchers, including **Ramiro Lobo**, Small Farm advisor in San Diego County, and **Shermain Hardesty**, SFP director. "Sample Costs to Establish and Produce Protea" is available online at <http://coststudies.ucdavis.edu>, at UC Cooperative Extension offices or by calling (530) 752-1517.

**Strawberry nutrition and fertilization** were the topics of a presentation made by **Mark Gaskell**, Small Farm advisor for Santa Barbara and San Luis Obispo Counties, to Spanish-speaking growers as part of a meeting organized by Hugh Smith on Sept. 20.

**Comparing agricultural cooperatives** to investor-owned firms is the subject of a recent article in *California Agriculture* by **Shermain Hardesty**, SFP director and UCCE specialist, along with Vikas D. Salgia, of UC Davis. "Most West Coast agricultural cooperatives are financially competitive" is available at <http://calag.ucop.edu>.

**Mini Watermelon Field Day** included a tasting and presentations Sept. 6 at the Kearney Research & Extension Center in Parlier, organized by Small Farm advisor **Richard Molinar**. The event and Molinar's watermelon research were featured in an article in the *Fresno Bee*. For more details, see Molinar's advisor update on p. 4.

**How visitors find out about agritourism** was the subject of the Small Farm Center's latest research brief, "Information Channels Reaching Agricultural and On-Farm Nature Tourism Visitors" by **Kristin Reynolds**, SFP program representative. The brief is available online at [www.sfc.ucdavis.edu/agritourism/agtourbrief0701.pdf](http://www.sfc.ucdavis.edu/agritourism/agtourbrief0701.pdf) or in print by calling (530) 752-8136.

**Bravo Lake Botanical Gardens** were featured in a segment on ABC-30 news on Sept. 20 in relation to a community pepper tasting held by **Manuel Jimenez**, Small Farm advisor for Tulare County.

## Blueberry — FROM PAGE 1

fresh and processed).

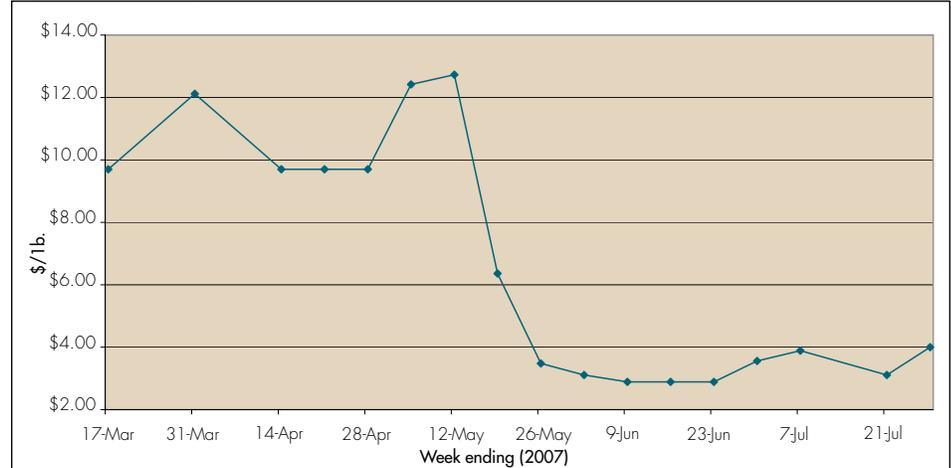
Both convenience and health factors have contributed to the growing demand for blueberries. Blueberries more recently have been labeled a “superfood” for their high amounts of anthocyanins, which give blueberries their color. These antioxidants may help prevent heart and urinary tract diseases and stop memory loss. Blueberries are also considered to have anti-inflammatory properties. A cup of blueberries contains 14 mg of Vitamin C and 0.8 mg of Vitamin E.

Blueberry production statistics for California have been reported only since 2005. Reported harvested acreage rose from 2,000 acres in 2005 to 2,300 in 2006. The California Blueberry Association estimates planted acreage to be 4,500 to 5,000 acres. A recent article in the Los Angeles Times reported that blueberry acreage in Ventura County is expected to double to more than 600 acres over the next year. Since a stand of blueberries takes five years to reach full production, these numbers suggest California farmers’ recent investments in blueberry acreage will yield a considerable increase in market supply in the coming years.

In 2006, California’s blueberry growers earned \$33 million for their crop. Although almost half of the nation’s blueberry production is processed, all of California’s production is marketed fresh. Prices paid to growers averaged \$3.28 per pound in 2006, compared to \$4.46 per pound in 2005 when production was about 10 percent lower. The prices reported in Market News by USDA’s Agricultural Market Service (<http://marketnews.usda.gov/portal/fv>) for the San Francisco terminal market

“Expected increases in blueberry production in California could pressure prices further downward, unless demand grows significantly.”

Figure 1. “Low” prices of CA blueberries at San Francisco Terminal Market.



fluctuated significantly, as indicated in figure 1 for California’s 2007 crop.

Coastal growers market their blueberries from February through June and are able to capture the highest prices for most of their marketing season. As production in the San Joaquin Valley peaks during the summer, prices drop significantly; in 2007, the reported prices at the San Francisco terminal market fell to a low of \$2.89 per pound (\$13 for a flat of 12 6-ounce packages) by the first full week in June. Prices then rose to \$4 per pound by the end of July as California’s season ended.

After California’s 2007 season ended, the price per pound increased, as the blueberries were sold in smaller and smaller packages. Terminal market prices for blueberries from Oregon and British Columbia ranged between \$2 and \$3 per pound for 1-pint packages during August. They rose into the \$4-\$5 per pound range for 6-ounce packages during September. By mid-October, they had increased to over

\$15 per pound for 4.4-ounce packages as supplies tapered off.

Expected increases in blueberry production in California could pressure prices further downward, unless demand grows significantly. Even producers of organic blueberries have expressed concern about product flooding the market and pushing prices downward.

Yet opportunities still exist for market growth, in terms of demand. Many consumers in California are still not familiar with blueberries. Export market opportunities, particularly in Asia, are being developed. The California Blueberry Association was formed in 2005 in an effort to provide a unified voice for growers and enable growers to exchange information on cultural practices and market windows.

Producers may benefit by pursuing further collaboration, such as coordinating the flow of their berries into the market, rather than depressing prices by competing against each other. Growers have made significant investments to establish their plantings, and they need to monitor and manage market conditions carefully.



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The Small Farm Center links those who need information on small-scale farming with those who have information. The center produces publications in addition to this newsletter; sponsors conferences and seminars; maintains a library of research; and responds to requests for information.

## Notes from the field



**Manuel Jimenez**  
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During August and September, my activities included a presentation on specialty crops for the San Joaquin Valley to approximately 130 pest control advisors, and several field tours of my blueberry and tropical crops trials at Kearney Research and Extension Center.

Tours of the Bravo Lake Botanical Gardens were provided to the community of Huron, the Exeter Garden Club and the Bakersfield Garden Club. I provided an interview of the chili demonstrations at Bravo Lake with Dale Yurong of ABC's Channel 30. At the gardens, we also hosted 320 FFA students as part of the "Futures in Agriculture Conference" organized by the local nursery industry.

I also continued my research on guava and papaya. We conducted brix testing of 15 guava varieties and collected data on fruit maturity. We also finished pruning nearly three acres of blueberry trials and began planning for the 2008 research projects. I participated in a planning meeting with the California Blueberry Growers Associations' research committee to discuss and prioritize research efforts. I also helped review data for a California Agriculture article on blueberry postharvest evaluations, conducted by Dr. Carlos Crisostos and staff.



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Ben Faber and I have initiated new trials with lychee and longan with several treatments to try to improve fruit retention. We have been doing pruning and drought stress on different dates in late summer and fall. We are also monitoring flowering and fruiting chronology on the different varieties at different sites.

We've started new on-farm trials with gooseberry, as well as red and black currants, to be maintained by a cooperating grower. Tissue-cultured tea plants were also transplanted to the greenhouse for upcoming field trials with tea.

Data collection and analysis is in process from field trials of raspberry and blackberry plants. Summaries of that data and of blueberry field trial data will be included in presentations for future meetings. Eta Takele, Faber, and I have been working on cost studies for organic and conventional blueberry production on coastal southern California.

Off-season organic and conventional blueberry growers have begun their fall harvest. The fall market window for blueberries is attractive for off-season growers because production has ended in the northern United States and Canada.

I also gave Spanish-language presentations to strawberry growers, and at a Farm Water Quality Plan short course.



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In August, I organized a meeting on weed management for Chinese growers in

Santa Clara County. Talks and handouts were translated into Chinese, thanks to the support of the Small Farm Program.

More than 35 people attended the three-hour workshop held in San Martin. The event included an indoor presentation on weed biology, family grouping, and specific weed identification. The talks also included different weed control methods including herbicide use, cultural methods such as cultivating, deep plowing, seed burial, alternative methods that include flaming, and different plastics and color plastic mulches. The workshop concluded with a hands-on demonstration of backpack sprayer calibration and proper use. I cooperated with my colleague Maria De La Fuente and the local Agricultural Commissioner's office on this workshop.

I also continued work on an organic blueberry trial, analyzing data from plot harvest and tasting panels—in cooperation with Maria Giovanni. We also partnered with local Master Gardeners for a tasting panel to evaluate sensory attributes of 14 personal watermelon hybrids.



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August and September have been spent working on keeping up with our field trials. I've worked on summer pruning with the blueberry trials and setting up trellis systems for blackberry and raspberry trials.

I have also been working on the pitahaya trial. I helped organize the Pitahaya/ Dragon Fruit Festival and Field Day held Sept. 15. Right now we are conducting a pitahaya variety trial, but I am also collecting plant material. We want to extract the plants' DNA and start working on the genotypes, in order to develop and keep track of which varieties are truly different from each other and which are not.



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Over the last couple of months, I continued an assessment of urban agriculture issues in Alameda County. To date, I have interviewed garden coordinators and farm managers from 20 inner city and suburban gardens and farms.

The next phase of the research will include interviews with small-scale growers surrounding the cities of Alameda County.

I also continued work on outreach to women farmers and ranchers. A workshop for women producers is currently planned for the 2008 California Small Farm Conference. The workshop topics and format will be based on a survey of women farmers and ranchers conducted at farming conferences in 2007. Comments or questions about this workshop are welcomed by e-mail or phone.



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The 61 people attending the specialty crops field day at UC Kearney Research and Education Center learned about 23 varieties of mini watermelons we had in a

replicated trial—examining rind thickness, flesh color, yields, sizes, and more. In addition, we looked at lemongrass and Chinese eggplant trials, and observed jujubes, capers, bunching and bitter eggplants, peanuts, sunchokes, nopales, sugarcane, schezwan pepper trees, and others.

Michael Yang and I have also been conducting a survey of all Southeast Asian farmers in the county to collect information on ethnicity, acres, crops, and other information. Currently we have over 800 individual farms plotted on a wall map and specific information about each farmer.

We finished our eighth year with our biweekly Hmong radio broadcasts. This is a collaboration with USDA FSA and RMA to provide current and important information to Hmong farmers in the San Joaquin Valley.

## San Joaquin's great 'squirrel harvester' retires after 20 years with UCCE

By Brenda Dawson,  
SFP Communications Coordinator

It doesn't take long for Benny Fouché's storytelling to reveal that he's unique. With his experiences in the Vietnam War, his travels to Spanish-speaking countries, his interest in all things agricultural and his passion for helping an array of people—the recently retired farm advisor is a true individual.

Among the prime accomplishments of his 20-year career with University of California is being available to help any grower with almost any problem.

"It's an old-fashioned thing that doesn't get a lot of promotion these days—one-on-one consultations and farm calls," Fouché said. "But I think it's extremely important for small farmers. They want a warm person to go to their field and talk about their problems with them."

UC Cooperative Extension, San Joaquin County director Mick Canevari agreed that one of Fouché's strengths has been his dedication to his farming clients.

"I think what makes Benny special is he's taken a real personal interest in his clientele," Canevari said. "It's not just a professional interest, but it's a personal interest to see that they got whatever the university resources could provide to make this industry successful."

It's that focus on helping each individual farmer that characterized the Small Farm Program advisor's work in San Joaquin County. Days before his Sept. 14 retirement, Fouché took a look back at his agricultural career.

As Fouché tells it, the Vietnam War played an important role in his becoming a Small Farm advisor in San Joaquin County.

"My growers and I are largely a byproduct of the fallout of the disaster in Southeast Asia," he said, noting that a large percentage of his clients are Southeast Asian and refugee farmers. "The same war that propelled them here, kind of propelled



Small Farm Advisor Benny Fouché tends a specialty pepper variety trial in September.

me here."

After serving in the war, Fouché was unsure of where his life might go—until he found a gardening class at CSU Fresno, and realized he could apply his skills in science, technology and math to agriculture.

"When I grew up helping my father farm in Virginia, I never thought of agriculture as a viable occupation," he recalled.

He went on to earn bachelor's and master's degrees in plant science from CSU Fresno, while working as an owner and operator of Round Mountain Farms near Sanger. Before joining UCCE, he spent several years teaching adults in an agricultural vocational setting, followed by work as a research technician at a private chemical company.

Fouché began working with UCCE as a staff research associate at Berkeley in 1987, where he conducted field trials and worked with two entomologists. In 1996 he moved to the San Joaquin County office, where he worked until his retirement as the small farms and specialty crops advisor.

"Over the course of time,

Benny has developed a tremendous program for small farms and limited-resource farmers (in San Joaquin County)," Canevari said. "He's taken it from a program that was an idea 12 years ago to now a full-fledged, in-depth program where I would say 90 percent of the clientele is brand-new to Cooperative Extension."

His accomplishments as a farm advisor include field research that found new solutions to weed and insect management, and farm outreach that helped many growers implement these new practices—of-

A  
closer  
look at...  
Benny Fouché's  
career as a small  
farm advisor

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## Closer Look

**Advisor retires** — FROM PAGE 5

ten reducing the application of chemicals from pounds-per-acre to ounces-per-acre, and with safer materials.

David Saelee, a Mien strawberry grower, claimed his growing operation “wouldn’t be successful” were it not for Fouché’s advice. A couple of years ago, the farm advisor convinced him to use black plastic instead of clear to cover his family’s four acres of strawberry plants and better eliminate weeds.

“It saved us like 75 percent of the work—that’s very important,” Saelee said. “We’ve been doing these strawberries in San Joaquin County for the last 7-8 years and he’s been helping us so much. Whenever we have something to discuss, we just call Benny.”

Fouché also made advances in weed control options for organic production using natural acids and oils, as well as flame and solarization techniques. He partnered with California Certified Organic Farmers and the Going Organic project to help mentor growers interested in organic options for weed control.

Fouché’s pest management research found that growers could use a small amount of synthetic pyrethroid to protect against garden centipede in tomato plants, a safer and cheaper alternative to using organophosphates. He also found

lower toxicity alternatives to using organophosphate insecticides against southern fire ants and pavement ants in the almond industry. Fouché pioneered work with nicotinoids, which he considers an “extremely safe” option for use on wire worm, a

pest that chews on the roots of a variety of fruit and vegetable plants, including cucumbers, tomatoes, melons, radishes, beets and potatoes.

In addition, Fouché conducted numerous field trials in specialty fruit and vegetable varieties, including blueberries, peppers and Asian vegetables. His focus on crop development of specialty and heirloom varieties was aimed at helping small-scale farmers differentiate themselves in the marketplace.

Grower Roger Sitkin partnered with Fouché for blueberry as well as papaya



*Benny Fouché visits the blueberry variety trial at Roger Sitkin's Old Dog Ranch days before retiring.*

and banana trials. Though he called the blueberry trials “quite successful,” Sitkin has decided not to plant blueberries on his 150 acres, and also learned that growing bananas and papayas wasn’t a good idea for Old Dog Ranch. But he said Fouché’s creative approaches to problem solving and his commitment to family farms were a point of connection between the farm advisor and the farmer.

“He’s a true individual—I doubt other farm advisors would rescue baby rattlesnakes,” Sitkin said, recalling an incident when Fouché drove a young rattlesnake home with him instead of leaving it for the farmer to destroy. “He’s really curious about stuff.

There aren’t too many people that have the sensitivity to want to work with (limited-resource farmers) and also be an avid squirrel hunter, of all things.”

It appears Fouché’s agricultural pursuits extend to his weekends, some of which he’s spent hunting squirrels on farmland as a hobby, earning him the title of “squirrel harvester” around the office. The good-humored farm advisor also farms his own land on an island in the delta and has even tried his hand at wine-making.

Fouché’s personal and professional

goals also overlapped when it came to learning Spanish. In order to better aid California’s Spanish-speaking farmers, he took language classes, volunteered in Central America for the U.S. Agency for International Development, and has even taken sabbatical leaves to Costa Rica and to Ecuador to work with small farmers there.

“Thinking, living and learning in another language is both very difficult and very stimulating for me,” Fouché said.

From the man who is pleased when research results surprise him—and cites his desire for new experiences as a reason to retire—perhaps it is no surprise that pursuing more volunteer opportunities in Spanish-speaking countries is on Fouché’s to-do list now that he’s retired. Also on the list? Dancing lessons with his wife, working with his father’s business in Virginia, and perhaps consulting with asparagus and blueberry growers regarding agricultural problems he hasn’t yet solved.

But for now, the Small Farm Program—and San Joaquin’s small-scale farmers—are short one unique farm advisor.

“He told me he’s going to retire, and I just hate to hear that from him,” said Saelee, his former client. “But we just have no choice. Hopefully the University (Cooperative) Extension will someday find someone as good as Benny Fouché.”

**Check out reports from Fouché’s latest field trials, including blueberry variety trials and research on controlling grape vine mealybug, on pages 9 & 10.**

## Update on lychee and longan field trials and plantings in Southern California

By Mark Gaskell, SFP advisor, UCCE Santa Barbara & San Luis Obispo Counties and Ben Faber, UCCE Ventura & Santa Barbara Counties

In 1998, we initiated field trials with lychee (*Litchi chinensis*) and longan (*Dimocarpus longan*) to evaluate as alternative new commercial orchard crops for central and southern California. Growing U.S. and world demand and stable high prices for these crops make them desirable as potential new crops for California. Lychee and to a lesser extent longan, have been attempted and grown on a small scale in different parts of southern California for more than 100 years, but they have never developed as successful commercial crops. They are challenging crops to grow and despite the fact that they are produced domestically and in regions world-wide, yield and production consistency continue today as problems in all growing areas. Currently lychees are produced in Florida and Hawaii, and the fruit is imported from Israel, Mexico, and China. There are also additional commercial plantings in Thailand, Australia, Spain, and India.

Initially, the field trials were established at selected sites of San Luis Obispo and Santa Barbara Counties using Brewster and Mauritius lychees and Kohala longans. These were the only lychee and longan cultivars available at that time from California nurseries. In 2000 and 2001, we were able to expand the number of planted sites and the number of cultivars with grant funding from the California Department of Food and Agriculture. Later funding from a USDA Specialty Crops grant program enabled us to import additional lychee and longan cultivars from Hawaii and Australia. The plants imported from Australia were required to pass through a two-year plant quarantine program but by 2005, we were able to plant out the cultivars listed in table 1 at different sites from San Luis Obispo County to San Diego, including Santa Barbara, Ventura, Los Angeles, Riverside and San Diego Counties.

Table 1. Field trial cultivars

Lychee Cultivars	Longan Cultivars
Brewster	Kohala
Mauritius	Biew Kiew
Bengal	Diamond River
Emperor	Haew
Hak Ip	Illiau
Kwai Mai Red	E Wai
Kwai Mai Pink	Tigers Eye
Wai Chee	Sri Chompoo
Souey Tung	
Kaimana	
Sah Keng	
Fay Zee Siu	
Salathiel	

### Lychee status

Lychees in California appear generally to be adapted to avocado production areas with some restrictions. Lychees tolerate about the same amount of cold as avocados, but in some areas lychees may survive and grow but may require more heat units for normal fruit set and ripening.



This lychee orchard in Ventura County is five years old.

It is still early to say which lychee cultivars are most productive and best adapted in California. Brewster appears to be as vigorous as any of the cultivars but the Brewster trees are also some of the oldest thus far in trial plantings. There appear to be differences also among trees within a cultivar in their flowering and fruiting vigor but the trees are still young and those differences may just be due to plant size. In reports from China where lychees are native and long an important traditional crop, selected trees are used for propagation and farmers often take cuttings of productive trees from farm to farm. Our experience with lychees in California is still so recent and limited that it is difficult to make clear conclusions.

Even the larger lychee trees are thus far very inconsistent for flowering and fruit set. We have observed overall relatively poor and inconsistent flowering on all of the cultivars at all sites. There are frequent reports in the science literature of poor and inconsistent flowering and fruit set by lychee in most growing areas around the world. In California, we also see instances where we have vigorous flowering and fruit set, but a high excision or fruit abortion rate prevents profitable harvest. The causes may vary from site to site since there are many factors that can potentially limit lychee flowering and fruit set.

We have noted that some trees of some cultivars are particularly productive and more consistent from year to year. The cultivars of lychee and longan are all a result of vegetative propagation and it is not unreasonable that they may not be completely uniform genetically. There is the possibility that over time there has been inadvertent selection by nurseries for plants that propagate readily rather than more productive plants. In areas of China and other countries where lychee and longan are extensively grown, emphasis is on the most productive trees for propagation. Commercial nurseries on the other hand often emphasize the more vigorous vegetative trees for propagation and this may affect the flowering and fruit by those trees.

— CONTINUED ON PAGE 8

## Research

**Lychee, longan** — FROM PAGE 7

Experience from Hawaii over the 20-25 years that they have attempted lychee fruit production indicates:

- 1) They needed to develop their own cultivar—in this case, Kaimana—that produced best in Hawaiian conditions;
- 2) They are still limited in some areas because of lack of chill hours; and
- 3) Consistent fruit production even by Kaimana requires a regime of specific cultural practices to promote consistent fruit production.

Dr. Francis Zee, of the USDA Clonal Germplasm Lab at the Pacific Basin Agricultural Center in Hilo, Hawaii, reviewed some of the critical cultural practices for lychee production in Hawaii at the annual meeting of the Hawaiian Tropical Fruit Growers in October 2006. Francis emphasized the need to synchronize vegetative “flushing” growth to condition the tree for flowering. This conditioning comes from pruning, controlling nutrients, and a period of water stress by restricted irrigation. Francis stated that only a “mature” leaf flush is receptive to the cold induction necessary for flowering. It is also important to severely restrict soil nitrogen to restrict excessive vegetative flushing during the winter cold induction period. He emphasized using foliar nutrient application to keep leaves healthy but limit overall nutrient uptake.

Francis knows California and feels that similar cultural practices should work also in California. He feels our cooler winter night temperatures should improve lychee production once the other conditions are also satisfied. It is important to remember that lychees are native to an area in China that is characterized by warm, humid summers and cold, dry winters. These are markedly different from those in California where our dry summers and wet winters confound flowering and fruit production. We need to isolate the critical factors for lychee fruiting and manipulate cultural practices to provide those conditions.

Lychees overall are slow-growing and more difficult to establish compared to longan (and many other subtropical fruits). Six to eight years are required for lychee to reach the first production. Thus far, most lychees are propagated by air-layers (marcots) in California and this creates special root architecture with primarily a weak, fibrous root system concentrated at the surface. Lychee plants should be pruned aggressively to keep the height below



*Lychee trees reach first production after 6-8 years.*

**Recommendations for lychee management**

Dr. Francis Zee’s recommendations for lychee management are the following:

- Selecting the best variety for the climate is an important first step.
- Only mature shoots respond to cold induction. Flower induction occurs during cool dry weather on buds from mature leaf flushes with low nitrogen content. The order of importance is: low temp > N > water stress.
- Shoots need to be a healthy size for good flowering and fruiting—about 8-10 inches long with a minimum girth of 3/8 inches. Smaller shoots are not productive.
- Low nitrogen is important for flowering. High potassium is beneficial.
- Using foliar fertilizer avoids the problem of residual N in soil that may be released at the wrong time.

The idea is to induce a synchronized vegetative flush after harvest which will mature in time for cold induction and result in terminal shoots with

optimal characteristics for flower and fruit production. This is achieved through pruning along with nutrient and water management.

The specific recommendations for Hawaii are:

1. Prune all shoots 8-12 inches from the tip at harvest.
2. Apply foliar fertilizer immediately after pruning. (See the recommended composition below.)
3. Let leaves mature. They need to mature in time for cold weather.
4. Withhold fertilizer until young fruit is pea size, then a high K fertilizer such as Banana Super (10-5-40) can be applied to the soil.
5. Maintain even moisture through fruit sizing.

The recommended foliar fertilizer in 100 gallons of water is the following:

- 3 lbs 20-20-20 plus micros
- 1 quart soluble B, Ca solution
- ½ quart liquid iron

Apply this mix thoroughly to the tree canopy approximately 3 gallons per tree.

about 12 ft. (4 m) to facilitate harvest. For more specifics of lychee management, see the text pullout.

Trials are currently underway to evaluate these cultural practices on lychee flowering and fruit set in California.

**Longan Status**

Longans overall are easier to establish, more vigorous, and more resilient than lychees. Longans flower more vigorously and consistently than lychees, but still suffer from problems with fruit retention. They also tend to be alternate bearing. Some of the alternate bearing characteristics are likely tied to their longer fruiting cycle in cool California coastal conditions. The fruit matures relatively late and there is limited time for pruning and synchronizing the flush.

Longans have produced commercial quantities and quality of fruit on multiple sites but thus far the fruiting has been in alternate years. Much of the field trial work needed with longans is related to how to manipulate cultural practices to improve flowering and especially fruit retention. It would also be valuable to determine if there are pruning or other cultural practices to advance flowering following harvest late in the year. This would allow time for the plant to flower and fruit again the following season. There are fruit retention spray materials and other hormonal materials that are being evaluated with longans and these may offer some promise also.

—From *Central Coast Agriculture Highlights*, July 2007, UCCE Santa Barbara

# Blueberry Variety Trial Report 2007 (San Joaquin County)

By Benny Fouché, SFP advisor, UCCE San Joaquin County and Alex Acosta, UCCE San Joaquin County  
In Cooperation with Roger Sitkin, grower

Two trials were evaluated this year for yields of marketable blueberries on four-year-old plants. The Bellota location is on the east side of San Joaquin County and has cooler evenings than the Roberts Island planting. Both locations experienced winter chilling hours in excess of 1,000 hours this winter.

At the Bellota location, the replicated varieties should be representative of what a grower could expect to achieve in yields under normal conditions for plants in the ground four years. The observational plants at Bellota were not growing under optimum conditions so those plants were used primarily to evaluate the fruit for flavor and to record the timing of the harvest. The plants in Bellota are growing in a sandy loam soil mixed with a large amount of fir wood waste. The irrigation water is acidified to a Ph 5 with acetic acid.

At the Roberts Island location the observational varieties duplicate those planted in Bellota with the exception of the harvest being approximately two weeks earlier. The plants on Roberts Island are growing in a Sacramento clay soil mixed with a large amount of fir wood waste. The irrigation water is also acidified to a Ph 5 with acetic acid.

Other than weed seeds blowing into the plots and the constant threat of gopher intrusions, the only pests observed this year in Bellota were European earwigs that became established in the fruit bunches. If the earwigs were knocked from the fruit clusters onto the ground mulch, they were effectively controlled by an OMRI-certified bait containing spinosad.

Some slugs appeared at the Roberts Island location and were controlled with the same bait that also contained iron phosphate. Birds were excluded in both locations with permanent netting covering a steel frame.

For the first time European honey bees were placed in close proximity to the research plantings. Last year's poor production on the Earliblue variety can probably be attributed to the lack of pollination. Observations this year on the fruit yields and size indicate that the addition of adequate numbers of pollinators in blueber-



Blueberry varieties were tested at this site near Bellota, and at a site on Roberts Island.

Figure 1. Blueberry harvest date, average of three replications, Bellota, CA 2007.

Variety	May 30	June 3	June 5	June 18	June 26	July 3	July 10	July 16	July 23	July 30	Aug 6	Aug 13
Earliblue												
Spartan												
Bluecrop												
Chandler												
Ozark Blue												
Elliot												

Table 1. Mean grams per bush Bellota, CA 2007

Variety	Mean Grams
Earliblue	1726a
Bluecrop	1572a
Spartan	1504a
Elliot	1593a
Chandler	2359b
Ozarkblue	2888c

Means followed by the same letter are not statistically different from each other by least significant difference,  $\alpha = 0.05$

Figure 2. Blueberry bloom period, Roberts Island, CA 2007.

Variety	February		March				April				
	3	4	1	2	3	4	1	2	3	4	
Earlyblue											
Spartan											
Santa Fe											
Emerald											
Blue Crisp											
Duke											
Blue Crop											
Ozark blue											
Chandler											
Elliot											

■ Bloom period    ⊗ Full bloom

ries can be beneficial. While some varieties may not benefit from additional pollination, it is a common practice in many of the blueberry growing areas of the county to keep two to four hives of honey bees per acre near the blueberries during the bloom period. Bumble bees are very effective pollinators of blueberries, but the species produced commercially, and used in tomato greenhouses, is not available for use in open fields in California.

Research

# Control of Vine Mealybug (*Planococcus ficus*) in Wine Grapes

By Benny Fouché, SFP advisor, UCCE San Joaquin County  
Paul Verdegaal and Alex Acosta, UCCE San Joaquin County

## Introduction

Vine mealybug infestations are being found in many of the vineyards in the Lodi-Woodbridge area of Northern California. The mealybugs produce a sugary excretion that drops on the grape bunches and gives rise to a black sooty mold. They can also weaken the vine by their feeding. The pest is more aggressive, has more generations than other mealybugs, and is spreading to new areas rapidly. See the UC IPM Pest Management Guidelines for Grapes for a complete description of the pest and management options. Also available is ANR Publication 8152, "Vine Mealybug, What you Should Know." This study was initiated so that growers could gain an insight on two new materials, Venom and Movento and their potential for use in controlling of the mealybugs.

Much thanks goes to Mark Shimozaki for technical help and locating the infestation. Thanks also to Lange Twins for providing the site and working around the research plot this year.

## Materials and Methods

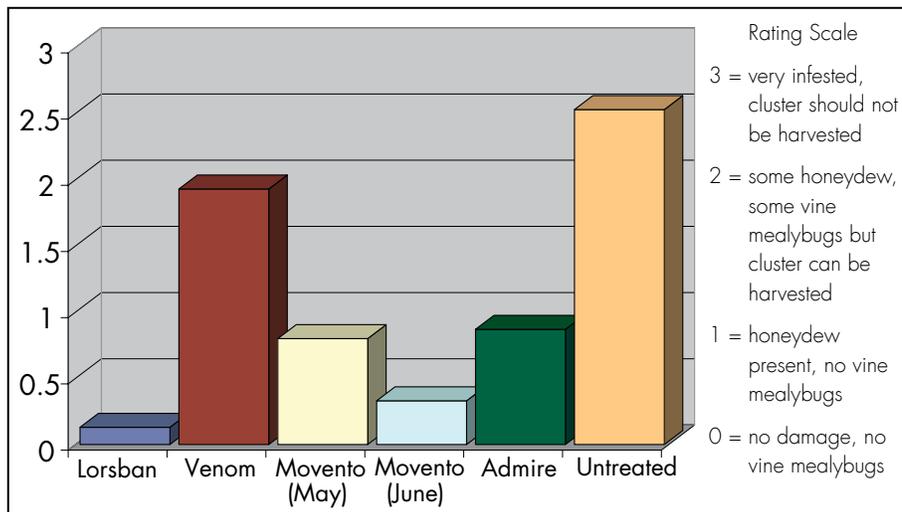
Due to a limited number of infested vines, the applications were limited, see table 1.

The foliar applications on Sauvignon Blanc wine grapes were made with a CO<sub>2</sub> backpack sprayer using a single 8002 flat fan nozzle. The volume of carrier was 150 gallons per acre for the delayed dormant application and 80 gallons per acre for the post bloom and early berry set applications. The soil applications were made just prior to an irrigation event. The amount of material was separated into two parts and placed approximately 6 inches deep in the soil below a drip emitter on each side of the experimental vine. Due to the limited number of vines available

Table 1. Treatment materials and methods

Product	Active Ingredient	Amount	Type & Timing
Lorsban 4E	chlorpyrifos	64 oz/acre	Foliar, Delayed Dormant,
Venom 70G	dinotefuron	6 oz/acre	Soil, Post Bloom, 21 May
Movento 240 SG	spirotetramat	5 oz/acre	Foliar, Post Bloom, 21 May
Movento 240 SC	spirotetramat	8 oz/acre	Foliar, Early Berry Set, 20 June
Admire Pro	imadacloprid	14 oz/acre	Soil, Early Berry Set, 16 June
Untreated Control			

Figure 1. Mean rating value for treatments July 31, 2007.



for study, single vines were used for each treatment and evaluation of control. For each week of evaluation, five clusters were evaluated and then removed from the vine. The clusters were selected based on their location near the cordon or proximity to any visible mealybugs on the nearby woody material. This biased the evaluation for the worst possible situation, unlike a random sample. At the same time this method also biased the data in the opposite direction by removing the worst infested clusters from the test vine on a weekly basis. It's likely that the rating in the second week, July 10, reflected the previous removal of the worst bunches, making it difficult to find infested clusters the week after that.

Table 2. Mean rating, average of three replications

Product	Application	July 3	July 10	July 24	July 31
Untreated		2.0 <sup>a</sup>	2.1 <sup>a</sup>	2.7 <sup>a</sup>	2.5 <sup>a</sup>
Lorsban 4E	Foliar 21 March	0.0 <sup>b</sup>	0.0 <sup>b</sup>	0.3 <sup>c</sup>	0.1 <sup>b</sup>
Venom 70G	Soil 21 May	1.6 <sup>a</sup>	0.7 <sup>b</sup>	1.8 <sup>ab</sup>	1.9 <sup>a</sup>
Movento 240 SC	Foliar 21 May	0.3 <sup>b</sup>	0.7 <sup>b</sup>	0.9 <sup>bc</sup>	0.8 <sup>b</sup>
Movento 240 SG	Foliar 20 June	0.7 <sup>b</sup>	0.3 <sup>b</sup>	0.1 <sup>c</sup>	0.3 <sup>b</sup>
Admire Pro	Soil 16 June	0.7 <sup>b</sup>	0.7 <sup>b</sup>	0.5 <sup>c</sup>	0.9 <sup>b</sup>

Within columns, means followed by the same letters are not significantly different from each other by least significant difference,  $\alpha = 0.1$ .

## Results and Discussion

The delayed dormant application of Lorsban provided the highest level of control for the first two weeks of trial, with no vine mealybugs found in the test vines. The Admire Pro and Movento provided the next best level of control in this experiment. Admire Pro is currently registered in grapes, but the Movento is not. The registration in grapes for Movento is expected early next year. The Venom treatment did not provide the level of control of the other materials early in the trial; however that level of control held for the duration of the test, while all the other treatments weakened, including the Lorsban.

**Specialty crops** — FROM PAGE 1

variety of marketing opportunities open to small-scale, specialty crops producers. Stops on the bus tour include the San Francisco Wholesale Produce Market, Berkeley Farmers Market, Monterey Market, Innovative Foods, and the new Whole Foods Market in Oakland.

The conference will begin 9 a.m. Dec. 12 at UC Davis Activities and Recreation Center, Rooms A and B. Presentations are expected to last until 5 p.m. The tour bus will leave at 7 p.m. Dec. 12 for an overnight stay, in order to get an early start on the Bay Area market bus tour Dec. 13. The market bus tour is expected to return to UC Davis late in the afternoon of Dec. 13.

Registration for each day of the conference will cost only \$20, though space is limited for the second day's market bus tour to the first 20 registrants. Lunch is included in the conference registration costs, as are bus, meals and lodging in the costs of the market bus tour registration. The deadline to register is Dec. 5.

Parking passes will be available at the conference. To get to the UC Davis Activities and Recreation Center from Interstate 80 in either direction, take Highway 113 north to Hutchison Drive. Turn right on Hutchison, then left on LaRue Road. Turn right on Orchard Road and proceed into parking lot 25. The ARC is on the west side of the parking lot.

For more information, see the registration form below, or otherwise call (530) 752-8136, e-mail [sfcenter@ucdavis.edu](mailto:sfcenter@ucdavis.edu) or visit [www.sfc.ucdavis.edu](http://www.sfc.ucdavis.edu).

**PEDRO ILIC AGRICULTURE AWARD**

**Know an outstanding farmer or educator?**

Nominate him or her for the Pedro Ilic Awards!

Winners of the 2008 Pedro Ilic Awards will be honored at the California Small Farm Conference, February 24-26. Honorees will also receive a scholarship to the conference.

Pedro Ilic, for whom the awards are named, was one of the first farm advisors to focus his talents on small-scale, minority growers, and was also an original advisor of the UC Small Farm Program. The annual awards honor both an educator and a farmer who embody characteristics that helped make Ilic a successful advisor and advocate for small-scale farmers.

A successful nominee would:

- envision what can be done and have the imagination, energy, and intellect to translate that vision into a successful activity;
- be part of the solution, not of the problem; critical in thinking, but constructive in approach;
- be an advocate and risk taker;
- be an effective teacher, instill self-esteem in others and constantly encourage others;
- be a dedicated professional who believes in his or her work;
- have determination, exuberance, high energy, and genuine friendliness for all people, with the conviction that the smallest is as important as the biggest;
- have high personal and family values.

The deadline for nominations is Jan. 10, 2008.

Find the nomination form at [www.sfc.ucdavis.edu/ilic.pdf](http://www.sfc.ucdavis.edu/ilic.pdf).



**2007 Specialty Crops Conference**  
Registration form

Participation in the market bus tour will be limited to the first 20 registered. Please fill out this form and mail to Small Farm Center, One Shields Ave., Davis, CA 95616 or fax to (530) 752-7716. This form is can also be downloaded from [www.sfc.ucdavis.edu/register.pdf](http://www.sfc.ucdavis.edu/register.pdf) and mailed. Deadline for registration is Dec. 5.

Name \_\_\_\_\_

Position/Title \_\_\_\_\_

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## Conference organizers collaborate to offer latest info to small-scale farmers



Many of the UC Small Farm Program's farm advisors and staff members will be sharing their research, experiences and expertise during the 2008 California Small Farm Conference's workshops, tours and short courses. Make sure to take this opportunity to meet them—if you haven't already!

Expert collaborators from throughout California have come together to offer information to the state's small-scale farmers. Workshops have been grouped by topic, with tracks focusing on information related to new farmers, experienced farmers, agricultural hot topics, marketing strategies, farmers markets, finance issues and government resources.

Some of the workshops the SFP will be participating in are "Personal Risk Management and Networking for Women Farmers and Ranchers," and "New Specialty and Ethnic Crops," among others.

The first day of the conference will also include short courses lead by our advisors, including "Small Farm Food Safety," "Hoop Houses and Other Season Extension Opportunities," and "Specialty Crop Innovations and Conservation Tour."