

Blueberry Variety Trial at UCSC Farm Bears Promising Fruit

The experimental planting of 15 blueberry varieties at the UCSC Farm came back strong after last winter's freeze, bearing plenty of fruit in late spring and early summer for taste tests, the Farm and Garden's roadside stand, and Community Supported Agriculture (CSA) shareholders.

Blueberries are a potentially lucrative crop for small-scale organic growers—a successful organic crop can generate \$30,000–\$50,000 gross, per acre, in direct and retail sales. UCSC Farm manager Jim Leap, along with UC Cooperative Extension farm advisors Aziz Baameur and Mark Bolda, established the variety trial of 180 plants at the UCSC Farm in January 2004 to find out what varieties would perform best under Central Coast growing conditions. This was the second year that the blueberries had borne fruit; Farm staff stripped flowers the first two cropping seasons to encourage plant establishment.

After this year's harvest, Leap is unequivocal in his enthusiasm for Southmoon, one of 13 southern high-bush varieties being trialed along with 2 northern high-bush varieties. Says Leap, "If you want the grower's perspective I would have to say, hands down, that for our specific location Southmoon is absolutely number one at this early stage of the trial. Our 'on farm,' informal flavor tests conducted this year very clearly placed Southmoon significantly above the other varieties."

Although not the heaviest yielding of the plants in the study (see figure 1), Leap points out Southmoon's superiority in other important factors that are sometimes difficult to quantify: ease of harvest, ease of pruning/shaping, and

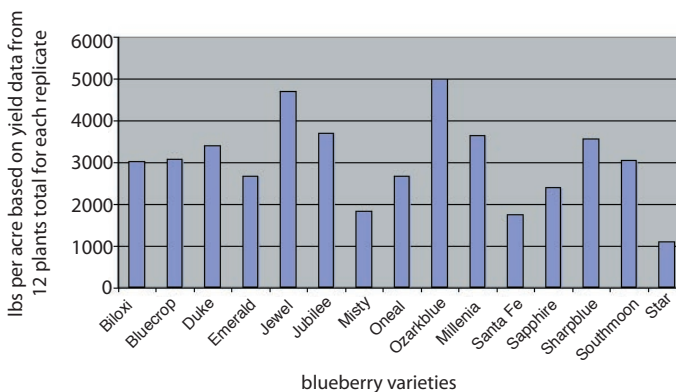


Figure 1. Total 2007 yield from all replicates in the organic blueberry variety trial, UCSC Farm. Data reflect all replicates (3 plants/replicate x 4 replicates/variety). Plants are on 3 x 9 foot spacing = 1613 plants/acre.



Field production manager Julie Stultz prunes a blueberry plant in the organic variety trial at the UCSC Farm.

adaptation to climate. "Some of the other varieties are very challenging to harvest due to things like dense foliage [Emerald], a tendency to 'cling' to the plant [Bluecrop, Jubilee] and uneven ripening [Oneal]," says Leap.

A more formal evaluation by a tasting panel ranked the variety Sharpblue at the top based on both physical (weight, size) and sensory (taste, appearance) attributes, followed by Jewel, Southmoon, Ozarkblue, and Santa Fe. Baameur notes that all of these data are preliminary and it will take at least another year or two before the research team is ready to make formal recommendations.

CLIMATE, SOIL ACIDITY PRESENT CHALLENGES

Many of the varieties aren't adjusting to the UCSC Farm's marine-influenced climate. "Right now [October 18th] many varieties are extremely confused about what season they're in," says Leap, noting that there are lots of fruiting buds being initiated on some varieties (Bluecrop, Duke, Emerald, Misty, Ozarkblue), others have both fruiting buds and blooms (Santa Fe, Sharpblue, Star), and some varieties have fruiting buds, blooms and fruit (Biloxi, Jubilee, Oneal, Sapphire). "Only three varieties are actually heading gracefully into dormancy right now. Those are Jewel, Millennia

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and Southmoon,” says Leap, though he notes that this trend could potentially vary from year to year based on different chill hours and other factors.

The research group has also found that the higher chill requirements (1,000 hours) for the northern high-bush varieties (Duke and Bluecrop) render them impractical for the Central Coast’s climate. “Interestingly these two varieties are the only two that give the appearance of complete dormancy during the winter,” says Leap. However, the researchers found that the northern varieties tend to set fruit prior to leaf set and the fruit is almost completely tasteless.

Thankfully, that wasn’t the case with most of the varieties: the fresh berries were a hit with CSA members and shoppers at the Farm & Garden’s twice-weekly roadside stand. “They were impressed with the amazing flavor of fresh blueberries,” says Leap, who explains that commercially available berries in this area typically come from Chile and Argentina during the winter months and from Oregon and the Central Valley during the early summer months. “That means that the freshly harvested fruit has a distinct advantage in the market,” says Leap.

Although the blueberries that perform well have proved both popular and profitable, the cost of establishing, maintaining, and protecting the plantings may be a deterrent. Getting the soil’s acidity to a level high enough for blueberries to thrive—and keeping it there—is a challenge in a setting such as the UCSC Farm, with its relatively low-acid

soil. In a recent *California Agriculture* article (Oct–Dec 2007), Leap noted that inexpensive sulfuric acid can be applied to conventionally managed blueberry fields, but he has had to buy vinegar approved by the Organic Materials Review Institute (OMRI) for use in certified organic systems (see table 1 for production costs).

“We’ve been injecting vinegar with each irrigation. Before we planted, we applied a lot of soil sulfur and acidic soil amendments, but we still need the vinegar, and buying it in 55-gallon containers and trucking them in here might turn out to be prohibitively expensive,” he says. This year Leap also had to put up bird netting to protect the fruit.

Despite these drawbacks, Central Coast growers have shown considerable interest in adding blueberries to their cropping systems. Although they’re unlikely to displace the Central Coast’s profitable strawberry and raspberry crops, blueberries could find a profitable niche in smaller, more diversified Central Coast operations for marketing through CSA projects and farmers’ markets. “This would be especially applicable if a site’s soil was naturally acidic to begin with,” says Leap, who notes that given the short (6-week) production window, blueberries would need to be a small part of a much more diverse cropping system. “I’d recommend blueberries to small-scale organic producers as long as they fully understand the risks, the costs and the challenges.”

–MARTHA BROWN

Table 1: Initial fixed and annual costs associated with blueberry variety trial at the UCSC Farm.

Initial fixed costs*	.16 acres	per acre	Notes
Plants (200@4.25)	\$850	\$5,312.50	1 gallon grow bag/current price
Stakes for bird netting (24@\$7.40)	\$177.60	\$1,110.00	10 foot “T” posts
Bird netting	\$502	\$3,137.50	
Wire for bird netting (1,500 feet)	\$240	\$1,500.00	1/16 coated wire
T post “toppers” (24)	\$24	\$150.00	
Sulfur (400 lbs@.30/lb)	\$120		
Mulch (48 yards @ \$10/yard)	\$480	\$3,000.00	
1/2” poly drip lines (2,000 feet)	\$239.00	\$1,493.75	pressure compensating .4 gal/100 ft
Irrigation header	\$100	\$625	does not include fertilizer injector
Total	\$2,733	\$17,078.75	

*fixed costs associated with larger plantings will decrease due to economies of scale

Annual costs**	.16 acres	per acre	notes
Irrigation water (31,950 gallons 3rd year)	\$83.07	\$519.19	current rate = \$0.0026 (\$ per gal)
Vinegar (50.5 gallons 3rd year)	\$275	\$1,718.75	does not include transportation costs
Mulch (\$10/yard)	\$150	\$937.50	
Phytamin (10 gallons 3rd year)	\$71.80	\$448.75	
Total	\$579.87	\$3,624.19	

** annual costs such as water, vinegar and liquid fertilizers will go up as plant size increases until about year 5