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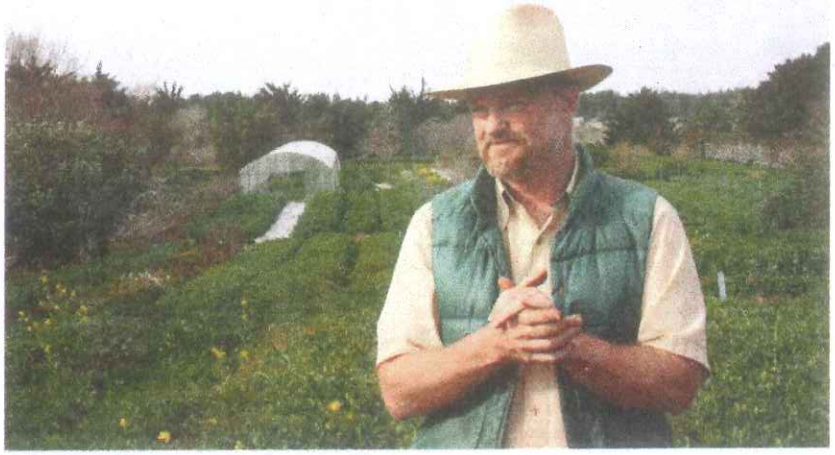

Photos/Bob Johnson

Joji Muramoto, far left, University of California, Santa Cruz, associate researcher, has been studying ways to control soil pathogens organically in strawberry fields. UC Santa Cruz Garden Manager Christof Bernau, above, said a six-month apprenticeship in organic farming at UCSC has graduated 1,400 students who became farmers, students at agricultural colleges or leaders of urban garden programs. Strawberries and an adjoining cover crop of mustard are shown at left.

UC Santa Cruz research focuses on organics

By Bob Johnson

For more than four decades the University of California, Santa Cruz, Farm and Garden program has paralleled the growth of the organic produce sector.

Organic FARMING

What began in the 1960s as a two-acre hillside organic garden intended to add a touch of charm to the coastal campus has evolved into one of the most reputable university organic farming research and teaching programs in the country.

At one area of the farm, researchers are searching for effective disease control systems for organic strawberry farmers, and for conventional strawberry farmers who find that buffer requirements leave them unable to fumigate areas of their fields.

"In a conventional field they have fumigation, so they can plant strawberries year after year. We have a seven-year rotation here," said Joji Muramoto, UCSC associate researcher.

But even a seven-year rotation is not always enough to protect strawberries against deadly soil pathogens, especially verticillium wilt.

Muramoto is comparing numerous organic methods of ridding the soil of strawberry disease pathogens with the support of the California Strawberry Commission, the U.S. Department of Agriculture Sustainable Agriculture Research and Education Program and the Organic Farming Research Foundation.

"We are comparing anaerobic soil disinfestations, mustard cake and broccoli residue in this trial," Muramoto said. "Disinfestation was discovered independently in the Netherlands and Japan. We're trying to optimize this method for California strawberries. We've been successful on a small scale, and now we're trying it on a larger scale in Salinas. Oil from mustard seed can be used as a biofuel. The cake that is left is 6 percent nitrogen, and can also be used for disease and weed control."

UC plant pathologists Krishna Subbarao and Steve Koike discovered years ago that broccoli residue releases a biofumigant that can help control disease pathogens in the soil. Most organic farmers use broccoli residue to help control diseases, and many Salinas Valley lettuce growers include broccoli in their rotations because it helps to manage lettuce drop.

On the edge of the 25-acre farm overlooking the Pacific Ocean, a few dozen blueberry plants growing under the protection of bird netting are yielding important information about varieties suited to the cool coastal climate.

"In 2004 we planted 15 blueberry varieties in cooperation with UC Cooperative Extension to see what might work well on the Central Coast. They are low-chill varieties. Some of them have produced $80,000 to $100,000 an acre, after we put up the bird netting because we lost the first crop to the robins," said Liz Milazzo, UCSC Center for Agroecology and Sustainable Food Systems field production manager.

"Our biggest challenge has been figuring out how to acidify the soil. We've used sulfur, wood chips and vinegar," Milazzo said.

But the farm is also home to a range of educational activities, most prominently a six-month apprenticeship in organic farming that has graduated 1,400 students who became farmers, students at agricultural colleges or leaders of urban garden programs.

"The apprenticeship program has been around for 44 years, training farmers. Graduate and faculty research is done here, some of it in conjunction with people from

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the U.S. Department of Agriculture or UC Cooperative Extension. The Life Lab Science Program uses the Farm and Garden to teach science to K-12 students," said Christof Bernau, University of California, Santa Cruz, garden manager.

The approach in the apprenticeship program is to look at production on a scale that would be appropriate for an urban garden program, and on a scale that would be appropriate for commercial agriculture.

"The apprentices who come through here have an opportunity to work on both the tractor cultivation scale and the hand cultivation scale. Apprentices work in both a sandy soil that doesn't hold its organic matter well and a heavier clay soil to see the difference. Part of our curriculum is to have people have experience from seed to seed. We grow more than 50 vegetable species and more than 50 flower species," Bernau said.

The apprenticeship program is a six-month course taken each year by 39 students, 29 of whom live on the farm. The teaching manuals are available online for free at the center's website (http://casfs.ucsc.edu).

The entire agricultural effort on the Santa Cruz campus began in the 1960s, when the chancellor brought in an English horticulturist with a background in drama to bring a couple acres of charm to the campus.

"We're a practical, hands-on apprenticeship program; our program is mostly learning by doing. We got started up the hill on two acres in Alan Chadwick's garden. What they didn't know was that Alan was a Shakespearean actor and very charismatic," said Diane Nichols, UCSC Center for Agroecology and Sustainable Food Systems apprentice course coordinator.

Graduates from the apprenticeship program over the last four decades can be found farming throughout the state and beyond.

"This school has turned out an amazing number of farmers. There are hundreds of people out there farming after taking this program," said Amigo Cantisano, the principal partner of Organic Farm Advisors, a producer of olive oil in the Sierra foothills and the leader of the farm tour for a quarter century.

The Santa Cruz campus is not a land grant college, which means that fewer resources are available to the farm program and that there are fewer restraints. Researchers in the agroecology program have been studying organic farming for years.

"We've been certified organic with California Certified Organic Farmers for 25 years, but we have always been forthright about our organic status," Bernau said.

Along with producing apprentices, the farm also produces an impressive amount of food by the standards of college agricultural facilities.

"It's unusual for a campus farm to have this much production," Milazzo said. The farm includes six acres of vegetables and blocks of apple, pear and plum trees.

The mild climate in the campus by the sea makes it suitable for an unusual range of tree fruits.

"We probably grow in the vicinity of 100 varieties of apples; we're all about varieties. There's not many places you can grow citrus spitting distance from deciduous fruit like apples, but you can here," said Orin Martin, UCSC Center for Agroecology and Sustainable Food Systems garden manager.

The food from the farm is sold, and the proceeds make a substantial contribution to the cost of the research and educational projects.

There is a community-supported agriculture program that began as an experiment in direct marketing with 16 weekly subscribers in 1996, and has become a significant source of funding with 130 weekly subscribers through the growing season. Sixty percent of the harvest from the farm is sold through the CSA.

Another 30 percent of the harvest is sold through the farm's food cart on campus, and the remainder to campus dining facilities and other local outlets.

(Bob Johnson is a reporter in Magalia. He may be contacted at bjohn1135@aol.com.)