



Small Farm News

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SMALL FARM CENTER • COOPERATIVE EXTENSION • UNIVERSITY OF CALIFORNIA

Growing Minigreens on California's Central Coast

by Susan McCue, senior publications coordinator, Small Farm Center

Tucked in a valley amidst the fertile, rolling hills of California's Central Coast lies

New Natives, a minigreen growing venture operated by Sandra Ward and Ken Kimes. Begun in 1980, the unique organic operation started with soil-grown organic wheat grass and has expanded to include a variety of minigreens grown and packed in a sun-dappled greenhouse and a spotless new packing shed.

"We have sized our operation essentially to the market," says Kimes, who along with partner Ward sells from their five leased acres west of Watsonville to natural food stores and wholesalers, at farmers markets, and to chefs who purchase the trendy "minigreens" — cresses and baby/salad greens, including tatsoi, mizuna, sunflower, pea shoots, and wheatgrass.

The New Native marketing niche reaches from parts of San Jose to Santa Cruz, Monterey, and Salinas counties, using only word of mouth advertising developed from 21 years in the business. Back when the organic industry was in its infancy, Ward started selling wheat grass to the Santa Cruz Juice Club, predecessor to Odwalla Inc. Her early entry into a niche business assured her a steady market with no need for advertising. "We don't have a lot of competition," Ward explains. "So we've really been holding a unique position as far as farming goes."

Kimes adds, "And there are fewer and fewer people growing what we grow all the time. But it's never been like we've really wanted to capitalize on getting bigger and bigger."

Ward agrees that they have never been aggressive promoters. For this reason, the partners share a special fondness for farmers markets, which blend well with their style of getting to know customers without pushing them to make purchases.



Ken Kimes and Sandra Ward built this greenhouse where they produce organic soil-grown greens. Photo: Sandra Ward.

Food Safety Guide is for Fresh Fruit and Vegetable Producers

American consumers enjoy one of the safest supplies of fresh produce in the world. However, during the last several years, the detection of outbreaks of foodborne illness associated with both domestic and imported fresh fruits and vegetables has increased. The following suggestions are from the *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* by the Food and Drug Administration (FDA) and the U.S. Department of Agriculture.

Because of the diversity of agricultural practices and commodities, these suggestions will be most effective when adapted to specific operations. The guidelines do not supersede local, state, or federal laws or regulations for U.S. operators.

Operators are encouraged to seek additional advice from their state and local departments of Public Health, Environment, Agriculture, Extension services, and federal agencies.

Water Quality

Wherever water comes into contact with fresh produce, its quality dictates the potential for bacterial contamination.

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Director's Message

Food Safety: Rewards Outweigh Risks of Noncompliance

This issue of our *Small Farm News* focuses on food safety, particularly as it is affected by farm practices. In many ways, farming has become a more scientific, technologically complex activity. In the U.S., productivity has increased manyfold, to the extent that a tiny fraction of our population is now able, with the aid of a vast quantity of tools, chemicals and biological aids, to feed millions of U.S. citizens and a large number of international consumers.

To some, the productivity of U.S. and European agriculture seems miraculous. And one would want to believe that we have, in some part, left some of the age-old nemeses, such as food poisoning, behind us. And to be sure, food processing generally occurs under more hygienic conditions than was the case a hundred years ago.

Despite, and in some cases because of our best efforts, harmful bacteria and other microbes persist in our environment and, given favorable opportunities, are able to multiply to levels that can harm humans and animals. The two most dramatic episodes of infectious disease outbreaks in recent memory, mad cow and foot and mouth diseases, underscore the persistence of potentially harmful microbes and the unwitting collusion of human agents in their spread and proliferation. Mad cow disease is a significant threat to humans, resulting in a fatal crumbling of the brain and consequent wasting of the body.

The disease resulted from a practice of feeding animal tissues to animals. Perhaps the practice could be excused

on the grounds of ignorance. Still, one must ask, where did this idea come from, and why?

The confinement animal feeding industry can take pride in its ability to produce beef, chicken, and pork at relatively affordable prices. However, large scale confinement systems allow infections to spread more efficiently, and feedlots to generate large volumes of waste, which often gets flushed into rivers, lakes, and waterways. This has generated epidemic episodes in Maryland and North Carolina such as the phisteria outbreak.

But in addition to phisteria, there are less and less rare occurrences of *ecoli* poisonings and *salmonella* infections. And, it seems, many organisms have morphed into resistant strains as we have used antibiotics as prophylactics and growth enhancing additives.

What Can We Do?

To begin with, we need to recognize that microbial contamination is a constant risk that threatens our ability to market

“We need to recognize that microbial contamination is a constant risk that threatens our ability to market our crops.”

our crops. Many marketing organizations are moving to have 100 percent traceability in the products they sell. So, if a product results in infectious incidents, they can trace back the carton or container to its source. If that source is your farm or small commercial kitchen, your brand will be compromised and your ability to sell will be diminished.

You need to take responsibility for protecting your products against possible contamination by:

- Recognizing that prevention is the

best curative. Learn all you can about the conditions and practices that encourage the growth of harmful microbes.



Fightbac is a trademark of the Partnership for Food Safety Education. See www.fightbac.org.

- Learn about and adopt low cost, practical ways to reduce the risk of contamination of products, containers, storage areas, tools, hands, and clothing.
- Share this information and these practices with your colleagues.

The Small Farm Center's Food Safety Education Project is aimed at enabling small scale farmers to become knowledgeable about product safety, and to protect the reputation and integrity of the small farm sector.

Our web site's section on food safety, <http://www.sfc.ucdavis.edu/docs/foodsafety.html>, provides information that is useful to you. We also have access to university experts on various aspects of microbiology, postharvest physiology, and farm practices that can reduce food safety risks. We hope you find this issue of *Small Farm News* helpful in your operation.

Desmond Jolly

program news

Visitors

The Small Farm Center hosted several visiting agricultural officials from Western Cape, South Africa. They included **Gerrit van Rensburg**, minister of agriculture, property management and works; **Dirk J Brand**, Office of the Premier, director of intergovernmental relations; and from the Chief Directorate, Agriculture office: **Marius Palse**, director of training; and **Johan Blomerus**, director of technology development and transfer. The visitors gathered information about program research and outreach regarding organic farming, limited resource farmers, agri-tourism, and a possible exchange program with the Small Farm Center.



Desmond Jolly visits with South African guests Dirk Brand, left, and Gerritt van Rensburg.

The Small Farm Center welcomed **Joseph Seepersad**, senior lecturer, University of the West Indies, who came to learn more about U.S. extension communication outreach methods, including long distance education for farmers.

Julie Francis, alternative agriculture Extension agent, Department of Natural Resources and Environment, Victoria, Australia, visited the Small Farm Center in June to gather information for potential use in development of a family farms center in Victoria.

Other Center visitors included **Zehava Gavrielli**, architect of the planning department, Israel Government Tourist Corporation; and **Yaacov Meller**, director of Tourism Projects Development, Israel Ministry of Tourism.

Sabbatical Leave

Paul Vossen, farm advisor, UC Cooperative Extension, Sonoma County, began a nine-month sabbatical leave in August in Cordoba, Spain, where he will study the olive oil industry and take graduate level classes in olive oil making.

Benny Fouche, farm advisor, UC Cooperative Extension, San Joaquin County, has returned from sabbatical leave in Costa Rica. While there, he improved his Spanish language skills and visited research institutions to learn about their community agriculture and marketing systems. He looks forward to working more with Hispanic growers in his county.

National Media Coverage

Michael Yang, field assistant, and **Richard Molinar**, farm advisor, UC Cooperative Extension, Fresno County, were featured in a National Public Radio (NPR) broadcast that highlighted their work with Hmong farmers at the Small Farm Resource and Training Center in Fresno, California. (See story on page 8.) To hear the NPR transcript, go to www.npr.org "All Things Considered" archives for July 10, 2001, and scroll to the Hmong Farmers story.



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The Small Farm Center links those who need information on small-scale farming with those who have the information. The Center produces publications and a newsletter; sponsors conferences and seminars; holds a library of periodicals, reports and books; gives referrals; and answers numerous requests for information.

Readers are encouraged to send us information, express views, and contact us for assistance. Mention of a specific product is intended for the reader's information or as an example of a similar product—not as a recommendation of that specific product.

Growing – FROM PAGE 1

“The farmers markets are really the heart and soul for small farms,” says Kimes. He and Ward, who helped start the



These white corn greens, grown and sold by New Natives, are part of an emerging cuisine called “white foods.”

downtown Santa Cruz market, sell at three local farmers markets during winter and five local markets during the summer season.

To feed the farmers markets and other marketing outlets, the operation runs 24 hours, seven days a week, with crops that grow to maturity at mind-boggling rates of two to 24 days.

The operation runs through 80,000 pounds of organic seed per year, purchased at a relatively inexpensive cost from a Nebraska grower because the seeds are major commodities. On the farm, seeds get soaked, rinsed and planted in the greenhouse soil beds.

“Instead of moving crops from field to field, we move soil into the greenhouse, we plant the soil, and then we move that soil again and take it outside and compost it,” explains Kimes and Ward in a presentation at the Eco-Farm Conference in Asilomar, California, last winter.

They plant the equivalent of 10 tons to the acre of seeds, and turn over the greenhouse about 35 times a year or roughly every 10 days.

The duo have always made their own compost, using only sawdust and leftovers from the beds.

Food Safety Resources

As a result of foodborne illness outbreaks in the last few years associated with fresh produce, including sprouts and baby lettuce, Kimes says, “The health and safety people feel like it’s their job to come back down the food chain as far as they can to ensure that there is safe food being sold.”

Consequently, Kimes and Ward have educated themselves extensively about food safety. In June 2001, they became certified by the American Food Safety Institute with a rating of “superior” for good agricultural practices. Their advice to fellow growers: avoid raw manure and have a safe water supply. They also suggest using a few free resources.

“Trevor (Suslow) has a great CD,” says Kimes. Suslow, a UC Davis extension specialist in the Department of Vegetable Crops, has traveled extensively to share UC research-based food safety information with growers at workshops throughout the state.

Suslow has compiled food safety information on a free CD (see Resources section for ordering information), which Kimes recommends to growers for its food safety checklists. Kimes also suggests visiting the Primus Labs web site for additional free checklists at <http://www.primuslabs.com/fs/self.html>.



The new packing shed nears completion at New Natives farm. Photo: Sandra Ward.

If growers are considering becoming food processors, Kimes and Ward strongly advise them to be very aware of the inspections, paperwork, and expenses involved. “You try turning this into a kitchen,” gestures Ward towards the greenhouse interior, “because that’s what we’re really talking about. Once you become a processor, then you look at being very clean, very sterile.”

The couple were building a second greenhouse when the Food and Drug Administration (FDA) released its Sprout Guidance document in 1999, online at <http://www.cfsan.fda.gov/~dms/fs-toc.html>.

As a result of those guidelines, which include recommendations of certain procedures for growing sprouts that, according to California Certified Organic Farmers and the California State Organic Program, do not conform to organic standards, the partners shifted their plans for



The new packing shed’s interior shows the attention to detail that make it certifiable as a processing plant.

the building. Instead of a greenhouse where they would have grown water sprouts, they built a complex packing shed, with translucent walls made of a washable material called dynaglass, and a concrete floor with drains, curves, and curbs. The FDA inspected the building in summer 2000 and found no problems.

While the FDA will inspect buildings for possible violations, they won’t advise growers how to correct them, according to Kimes. That task is left to third parties like Primus Labs, which steps in to certify growers as “clean,” but charges from \$10,000-\$15,000 for the process. The cost is prohibitive for most small scale growers, but Ward says, “Not having money does not mean you’re a dirty grower.”

She and Kimes suggest that following the basic steps outlined in Suslow’s CD and on the Primus Labs web site will put growers on the right track. “And actually, doing a lot of this stuff is a real positive thing for your farm,” says Kimes.

The Future

“My dream is that more people stop being afraid of good food,” says Ward. She and Kimes plan to continue educating their faithful clientele and new customers about the goodness of fresh organic minigreens, one taste at a time. ■

Food Safety Guide – FROM PAGE 1

In general, the quality of water in direct contact with the edible portion of produce needs to be of better quality compared to uses where there is minimal contact.

Manure/Municipal Biosolids

Good agricultural practices for the use of animal manure or biosolids include treatments to reduce pathogens and maximize the time between applications to production areas and harvesting of the crops.

Manure storage and treatment sites should be situated as far as practicable from fresh produce production and handling areas.

Animal feces are a known source of pathogens that can cause foodborne illness. Domestic animals should be excluded from fresh produce fields, vineyards, and orchards during growing season.

Worker Hygiene

Be aware of existing state and federal regulations regarding standards for worker health, hygiene and sanitation practices during the growing, packing, holding, and transport of human food. Train all employees to follow good hygiene practices.

Toilet facilities and handwashing stations should be accessible and well supplied.

Field, Facility and Transport Sanitation

Clean harvest facilities and containers or bins prior to use. Discard containers or bins that are no longer cleanable.

Ensure that produce that is washed, cooled, or packaged in the field is not contaminated in the process. Remove as much dirt as practicable from the produce before it leaves the field.

Protect unused cleaned and new packing containers from contamination when in storage. Keep equipment that comes in contact with fresh produce as clean as practicable. Clean packing areas at the end of each day. The process should also include:

- establishing a pest control system
- inspecting trucks or transport cartons for cleanliness
- maintaining proper postharvest transport temperatures in trucks or transport cartons

Traceback

Traceback is the ability to track food items, including fresh produce, back to their source (growers, packers, etc.). Operators should examine current company procedures and develop procedures to track individual containers from the farm, to the packer, distributor, and retailer, in as much detail as possible. Documentation should include:

- date of harvest
- farm identification
- who handled the produce, from grower to receiver

Growers, packers and shippers should consider the physical characteristics of produce and practices that affect the potential sources of microbial contamination associated with their operation, and decide which combination of good agricultural and management practices are most cost effective for them.

Full copies of the *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* are available from the Food Safety Initiative Staff, HFS-32, U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, 200 C Street S.W., Washington, D.C. 20204; (202) 260-8920. ■

New Publication Offers Farmers Market Tips

A new book by Vance Corum, Eric Gibson, and Marcie Rosenzweig features new marketing techniques, tips, and trends for growers, market managers, and city planners who sell or work with farmers markets.

The New Farmers' Market: Farm Fresh Ideas for Producers, Managers and Communities includes three detailed sections:

- **Selling at the Market:** includes tips about the best products to sell at farmers markets and ways to combine farmers markets with other selling outlets
- **Starting, Managing, and Promoting the Market:** features information about choosing a site, attracting vendors, and market rules and regulations
- **The New Farmers Market:** provides details about educating local communities regarding the value of fresh food and the ways in which farmers markets serve communities

Appendices deal with insurance, customer surveys, farmers market profitability, and benefits of farmers markets. A seven-page list of resources provides contacts for locating scales, baskets, and packaging materials.

To order *The New Farmers' Market: Farm Fresh Ideas for Producers, Managers and Communities*, send \$24.95 plus \$4.50 shipping and handling to: "QP Distribution," 22260 C St. Winfield, KS 67156; or call (888) 281-5170. ■

publications

resources



Valuing the Health Benefits of Food Safety: A Proceedings is available online at <http://www.ers.usda.gov/publications/mp1570/>. Produced by the U.S. Department of Agriculture Economic Research Service (USDA-ERS), the publication captures presentations from a September 2000 conference outlining the current state of knowledge across federal agencies regarding food safety. For more information, call the USDA-ERS Information Center at (202) 694-5050.

USDA-ERS offers other food safety related publications including: *Antimicrobial Drug Use and Veterinary Costs in U.S. Livestock Production*, available on the web at <http://www.ers.usda.gov/publications/aib766/>.

Additional ERS reports and periodicals can be found at the ERS web site at <http://www.ers.usda.gov/publications>. To obtain more than one report by phone, call the ERS Information Center at (202) 694-5050; for individual reports, e-mail service@ers.usda.gov.

Microbial Food Safety: An Emerging Challenge for Small Scale Growers, by UC Davis postharvest extension specialist Trevor Suslow, is available on the UC Small Farm Center web site at <http://www.sfc.ucdavis.edu/pubs/SFNews/archive/microbe.htm>. Hard copies are available from the UC Small Farm Center at (530) 752-8136.

The *Food Safety Coordination 2001 CD-ROM*, compiled by Trevor Suslow, is a food safety resource for small growers and extension agents. The CD-ROM includes a food safety audit, product flow charts for various commodities, Powerpoint presentations on food safety, water sanitation and worker hygiene; how-to fact sheets on topics including water chlorination, hand washing, and water samples; a resource directory, pictures, and links to additional food safety information. Cost: Free. Contact:

Shantana Goerge, Department of Vegetable Crops, Mann Laboratory, UC Davis, CA 95616; (530) 752-4501; goerge@vegmail.ucdavis.edu.

Several free food safety publications are available at the UC Vegetable Research and Information (VRIC) web site: <http://vric.ucdavis.edu/selectnewtopic.foodsafety.htm>.

Titles include *Basics of Ozone Applications for Postharvest Treatment of Vegetables*; *A Practical Approach to Calculating Dose Values for Water Disinfection*; and *Microbial Food Safety is Your Responsibility*. Visit the web site or refer to the web site address when calling VRIC for hard copies at (530) 752-1748.

Food Safety Begins on the Farm: A Grower's Guide to Good Agricultural Practices for Fresh Fruits and Vegetables is available from the Cornell Good Agricultural Practices Program. This easy-to-read publication presents step-by-step directions for reducing contamination risks on the farm. Cost: Single copy free. Download at <http://www.gaps.cornell.edu> or contact: Lois Brown, Cornell GAPS Program, (607) 255-1428.

Also available from the same source is a free brochure entitled *Food Safety Begins on the Farm: Reduce Microbial Contamination with Good Agricultural Practices*. For contact information, see above.

The proceedings from *Managing Nutrients and Pathogens from Animal Agriculture*, a conference held in Pennsylvania in March 2000, are now available from the Natural Resource, Agriculture, and Engineering Service (NRAES).

The publication covers presentations on topics including manure management practices, feed management to reduce excess nutrients, land-applied nutrients and pathogens, aspects of land application and site management, and nutrient management. Cost: \$30. Contact: NRAES, Cooperative Extension, 152 Riley-Robb Hall,

Ithaca, NY 14853-5701; (607) 255-7654; <http://www.nraes.org/publications/nraes130.html>

The *Farm Investigation Questionnaire* is available from the U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition (CFSAN) web site: <http://vm.cfsan.fda.gov/~dms/prodques.html>

The questionnaire is used by CFSAN in investigations of farms implicated in foodborne illness outbreaks or farms that grew produce found positive for pathogens by FDA testing.

UC Davis Food Safety Contacts:

Dean Cliver, professor, food safety, School of Veterinary Medicine, Department of Population Health and Reproduction, 1019 Haring Hall, UC Davis; (530) 754-9120; docliver@ucdavis.edu; <http://faculty.vetmed.ucdavis.edu/faculty/docliver/>

Linda Harris, food safety and microbiology specialist, Department of Food Science and Technology, UC Davis, (530) 754-9485; ljharris@ucdavis.edu; <http://foodscience.ucdavis.edu/fst/faculty.html>

Deanne Meyer, livestock waste management specialist, Department of Animal Science, UC Davis, (530) 752-9391, dmeyer@ucdavis.edu; <http://animalscience.ucdavis.edu/faculty/morse/>

Trevor Suslow, extension specialist, Department of Vegetable Crops, UC Davis, (530) 754-8313; e-mail: tvsuslow@ucdavis.edu.

web sites

UC Small Farm Center Food Safety Online

<http://www.sfc.ucdavis.edu/docs/foodsafety.html>

USDA Food Safety Research Information Office

<http://www.nal.usda.gov/fsrio/>

USDA FDA Foodborne Illness Education Information Center

<http://www.nal.usda.gov/foodborne/fbindex/023.htm>

Gateway to Government Food Safety Information

<http://www.foodsafety.gov>

National Food Safety Initiative

<http://www.foodsafety.gov/~dms/fs-toc.html>

FDA Center for Food Safety and Applied Nutrition

<http://vm.cfsan.fda.gov/list.html>

Centers for Disease Control Food Safety Office

<http://www.cdc.gov/foodsafety/>

Foodsafe Program, UC Davis

<http://foodsafe.ucdavis.edu>

UC Postharvest Outreach Program

<http://postharvest.ucdavis.edu>

Cornell University Good Agricultural Practices Project

<http://www.gaps.cornell.edu/contact.html>

Food Quality Protection Act (FQPA) of 1996

<http://www.epa.gov/opppsps1/fqpa/>

Management of Human Exposure to Farm Animals/Penn State

<http://ecoli.cas.psu.edu/FARM/default.htm>

Chlorination of Vegetable Wash Water: Guidelines for Small Scale Growers

by Trevor Suslow, extension specialist, Department of Vegetable Crops, UC Davis

Washing vegetables with clean, domestic water removes many undesirable surface contaminants. Sanitation by chlorination of wash water is one option for the home user.

Sanitation is an essential process to include any time produce for commercial sale is washed to remove soil, debris, or to reduce decay on surfaces wounded or cut during harvest.

Wash water for the majority of vegetables should be maintained in the range of 75-150ppm (parts per million). Hypochlorite powders (25% active ingredient) or liquids (5.25% a.i.) are inexpensive and readily available.

The tables below give the amounts of hypochlorite to add to clear, clean water for disinfestations.

Effective chlorine concentrations are reduced by temperature, light, and interaction with soil and organic debris.

The wash water should be tested periodically with a monitoring kit, indicator strips, or a swimming pool-type color indicator kit. Concentrations above 200ppm can injure some vegetables (such as leafy greens and celery) or leave undesirable off-flavors.

More detailed information on this topic is available in Suslow's publication, "Water Disinfection: A Practical Approach for Calculating Dose Values for Preharvest and Postharvest Applications. Publication 7256."

The free publication is online at the ANR Catalog web site: <http://www.anrcommunications.edu/specials>.

For more information, contact Trevor Suslow, Cooperative Extension, Mann Lab, Department of Vegetable Crops, UC Davis, (530) 754-8313; e-mail: tvsuslow@ucdavis.edu. ■

HYPOCHLORIDE AMOUNTS FOR DISINFESTATIONS

TABLE 1.	TARGET PPM	ML/L	OZ/5GAL.	APPROX CUP/50GAL
BLEACH (5.25%)	50	0.95	.55	.5
	75	1.43	.80	.75
	100	1.9	1.1	1.0
	125	2.4	1.4	1.25
	150	2.9	1.7	1.50

TABLE 1.	TARGET PPM	ML/L	OZ/5GAL.	APPROX CUP/50GAL
POWDER (25%)	50	.2	.12	.1
	75	.3	.17	.15
	100	.4	.23	.2
	125	.5	.29	.25
	150	.6	.35	.3

MAINTAIN A NEUTRAL SOLUTION PH (6.5 TO 7.5).

statewide events



Small Farm Resource and Training Center Opens

A 20-acre slice of prime farmland on the southwest outskirts of Fresno became the San Joaquin Valley's only farm incubator April 20 when a host of federal, state and local dignitaries joined U.S. Rep. Cal Dooley at the grand opening of the Small Farm Resource and Training Center in Fresno, California.

At the new resource and training center, multi-ethnic farmers-in-training rent small portions of the facility at the market rate of \$275 per acre per year and grow crops with intensive field guidance and classroom training. Any profit goes into the new farmers' pockets.

Two farmers have already rented and begun working small plots at the center. Chaxia Lee and Nao Lee Thao are growing sugar peas, chili peppers and zucchini squash. There is



From left to right: U.S. Rep. Cal Dooley; Yolanda Vidato, master gardener; Ka Neng Vang, farmer; and Ken Grimes, USDA Natural Resources Conservation Service soil conservationist.

a waiting list for acreage at the training center for the 2002 growing season.

UC Cooperative Extension will coordinate the field and classroom education program at the center. UC Small Farm Program farm advisor Richard Molinar, UC Cooperative Extension, Fresno County, and his assistant, Laos native Michael Yang, have planned a monthly schedule of courses.

Training Center Origins

A series of events led to the creation of the new center at its southwest Fresno site. Last year, the Hmong American Community, an organization that supports economic development related to the Hmong-American agricultural community, received a \$153,326 grant from The California Endowment to create a farm demonstration site and provide pesticide safety and organic farming training.

To forge collaborative partnerships, the Hmong American Community turned to the Small Farm Resource Network. The Small Farm Resource Network, organized in 1997 by University of California Cooperative Extension, includes representatives of two dozen public and private agencies that provide assistance to small-scale growers in the Central San Joaquin Valley. Network representatives had been working with U.S. Rep. Cal Dooley's office to create a centralized facility for training and information related to small-scale farming. Combining the two projects was a natural fit.

Another network member, the American Farmland Trust (AFT), had purchased a 40-acre farm in southwest Fresno to maintain the property in agricultural production into perpetuity. AFT leased half the parcel to the Hmong American Community, and the Small Farm Resource and Training Center was born.

During the grand opening ceremonies, Rep. Dooley presented a \$98,900 check that provides funding for operating the Small Farm Resource and Training Center. The grant is from the USDA Rural Development business enterprise grants program. Funding is also being provided by the USDA Risk Management Agency. ■

Garlic Field Day Held

Surrounded by the hum of urban Silicon Valley, Maria de la Fuente, farm advisor and county director for UC Cooperative Extension in Santa Clara County, hosted a garlic field day at the Bay Area Research and Education Center (BAREC) in July.



Maria de la Fuente holds a garlic wreath made by local farmers.

For the last four years, de la Fuente and Ron Voss have been working with Zak Mousli, BAREC director, in planting, caring for, harvesting, and evaluating more than 300 strains of garlic belonging to the USDA and UC Davis collections. The Garlic Field Day provided participants with the latest scientific information about the crop and a chance to view the 300 strains evaluated.

The day's presentations launched with Maria de la Fuente's overview of California's garlic industry. Additional speakers included Maria Jenderek, scientist with the USDA Germ Plasm Resource Unit in Parlier; Daniel Brotslaw, manager of onion and garlic crops at Rogers Foods Co.; and Heather and Caryl Simpson from Garlic Festival Foods, a gourmet garlic food company in Gilroy, California. The Simpsons consistently sell out of ornamental garlic braids at their retail store and encourage small scale growers to experiment with specialty garlic varieties for retail sales.

Following the Simpsons, Ron Voss, vegetable extension specialist at UC Davis, presented his garlic germplasm research results. Voss agreed that small scale farmers should consider growing specialty garlics, which he suggests can be grown on a half acre without mechanics and marketed locally. ■

Specialty and Minor Crops Handbook Specialty Crop Endive, Escarole, Chicory

Cichorium endivia is a member of the Asteraceae (sunflower) family. Varieties include Green Curled Ruffec (endive), Broadleaf Batavian (escarole), and Full Heart Batavian (escarole).

Endive is a loose-headed plant with narrow, curling leaves. The broadleaf type is called escarole. Full Heart Batavian is the main variety of escarole on the market. At harvest, the rosette of leaves makes up most of the plant. It is 12 to 15 inches across with upright to spreading growth and deep green leaves.

Market Information

Current production and yield. Florida is the leading U.S. producer of endive and escarole. Other producing states include California, New Jersey, Ohio, and New York. Supplies are available year-round, and peak from December through April.

Use. The leaves of endive and escarole are used as salad and cooked greens. A 2-cup portion of either of these vegetables contains about 2,050 IU of Vitamin A, 6.5 milligrams of Vitamin C, 1.25 grams of protein, and 52 milligrams of calcium.

Culture

Climatic requirements. Endive and escarole are hardy plants but do poorly in hot weather and are damaged by severe frosts. Seed them to mature before hot weather arrives. Escarole is the more cold-tolerant of the two. Both plants thrive best as early spring or late fall crops. The plants bolt in hot weather.

Propagation and care. Endive is similar to lettuce in its soil and climatic requirements. Plant 1 foot apart in rows spaced 1 1/2 or 2 feet apart. Blanching the head for two weeks will reduce bitterness. To blanch, tie the head like cauliflower or stand boards on each side of the row. Tie the leaves together only when they are dry, since wet foliage during blanching will decay. Blanching is not a common practice among commercial growers.



Red endive. Photo: Marita Cantwell.

Harvest and postharvest practices. The USDA recommends storing at 32°F with 95 to 100% relative humidity. The approximate storage life is 2 to 3 weeks.

Sources

Seed

W. Atlee Burpee & Co., 300 Park Avenue, Warminster, PA 18974; (800) 333-5808.

The Cook's Garden, P.O. Box 65, Londonderry, VT 05148; (800) 457-9703.

Johnny's Selected Seeds, Foss Hill Road, Albion, ME 04910; (207) 437-4395.

Nichols Garden Nursery, 1190 North Pacific Highway, Albany, OR 97321; (800) 422-3985.

Shepherd's Garden Seeds, Shipping Office, 30 Irene Street, Torrington, CT 06790; (860) 482-3638.

More Information

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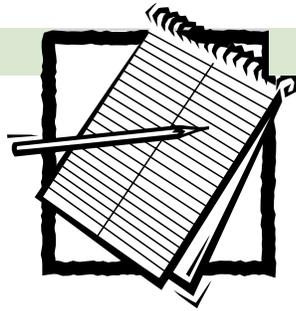
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To order the **Specialty and Minor Crops Handbook**, featuring 63 crop profiles, a six-language glossary to Asian vegetables, and an extensive bibliography, call the Small Farm Center at (530) 752-8136.

news notes



■ Food safety audits are a new hurdle some American farmers are being asked to jump before they can get into the retail marketplace, according to a recent issue of *Growing for Market* newsletter. Several businesses have sprung up to provide audits of Good Agricultural Practices (GAPs) on farms. Costs for audits may be too expensive for most small scale growers, but growers can still learn about GAPs and document to buyers that they are employing the practices outlined in an online USDA Food and Drug Administration FDA publication.

Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables (see excerpt on page 1) provides GAP guidelines that tell farmers how to avoid contamination of fresh fruits and vegetables. GAPs are similar to Hazardous Analysis Critical Control Point (HACCP) programs required by food processors. The FDA publication details potential ways for pathogens to get onto fresh produce and offers ideas for prevention.

The 39-page guide is available on the web at <http://vm.cfsan.fda.gov/~dms/prodguide.html>. Hard copies are available from the Food Safety Initiative Staff, HFS-32, U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, 200 C St. SW, Washington, D.C., 20204.



■ Apple growers in California's El Dorado County Apple Hill area who participate in the area's direct marketing program, serving more than one-half million visitors annually, have developed the Apple Hill Juice/Cider Quality Assurance Plan. Although the Apple Hill growers/processors have a 33 year track record of producing safe, unpasteurized apple juice/cider products, they developed the plan to address heightened consumer and regulatory concerns following outbreaks of foodborne illnesses associated with unpasteurized apple juice outside the Apple Hill area.

The plan presents voluntary guidelines of apple production and juice/cider processing, from orchard bloom through distribution to the consumer. Incorporated in the plan is a verification element that ensures program compliance. Developed by the Apple Hill Juice /Cider Processors committee, in cooperation with the University of California Cooperative Extension and various local, state, and federal regulatory agencies, the science-based plan is in compliance with local, state, and federal laws and regulations.

For more information, visit the El Dorado County Agricultural Commissioner web site: http://www.atasteofeldorado.com/apple_cider/qualityplan.html.

■ California cantaloupe growers and shippers were optimistic that recent imports of tainted cantaloupes from international sources wouldn't affect the cantaloupe market this season. A June 2001 issue of *The Packer* notes

that as of early June 2001, two people had died in California and dozens became ill in California and other states after eating cantaloupes containing the bacterium *salmonella poona*. California health officials said the bacterium was probably on the outside of the melons, where it was transferred to the edible flesh by knives used to cut the product. As a result, they urged consumers to wash all melons before cutting and eating them.

The California cantaloupe industry, which was taken by surprise by similar incidents in the past and suffered significant market drops, was more prepared to respond to the situation this time. The California Cantaloupe Advisory Board and the California Melon Research Board funded a three-year study that focused on the food safety of cantaloupes and produced good news for California growers. Trevor Suslow, extension research specialist at UC Davis, was quoted in the *Packer* as saying the study showed "The likelihood or the frequency of contamination of melons with *salmonella* in California at this point in time ... is a very low probability."

■ The new Food Safety Virtual University, launched by the USDA Food Safety and Inspection Service (FSIS), offers online users access to the broad scope of food safety information gathered by partnerships with FSIS and federal, state, and local governments, academic institutions, consumers, and foreign governments. Still in its infancy, the online-only university will offer free downloadable documents; on-line interactive courses; a library of digital images; a variety of self-study programs; and information about formal courses and programs offered nationwide. For more information, visit <http://www.fsis.usda.gov/OFO/HRDS/fsvu.html>.

■ U.S. Department of Agriculture Secretary Ann Veneman outlined priorities for food safety at the annual Food Safety Summit in Washington, D.C. in April 2001. Veneman announced the release of a Food Safety and Inspection Services (FSIS) report showing declines in *salmonella* prevalence in raw meat and poultry products since the implementation of HACCP programs in 1998. The report, which can be found online at <http://www.fsis.usda.gov/ophs/haccp/salmdata2.htm>, is the first aggregate data on all sizes of plants, including data from very small production plants that came under HACCP in January 2000. HACCP regulation implementation guidelines can be found at <http://www.fsis.usda.gov/OA/haccp/imphaccp.htm>. ■

calendar

SEPTEMBER

8

**UC Master Gardener's Tomato and Pepper Tasting
Santa Clara, CA**

This field day/open house features 85 tomato varieties, 45 chile varieties, melons, sunflowers, green beans, soybeans, lettuces, and herbs.

Contact: UC Master Gardener hotline, 700 Empey Way, San Jose, CA 95128; (408) 299-2635.

19

**Workshop for Trainers of Pesticide Handlers and
Agricultural Fieldworkers
Winters, CA**

Presented by the UC Integrated Pest Management Program (IPM), this workshop qualifies participants to train pesticide handlers and agricultural fieldworkers as mandated by California's pesticide handler training requirements and the U.S. EPA's Worker Protection Standard requirements. The workshop also qualifies trainers to issue the blue EPA worker training verification cards.

Contact: UC IPM, One Shields Ave., Davis, CA 95616; (530) 752-5273.

26-28

**Weed Science School 2001
Heidrick Ag Center, Woodland, CA**

This three day course covers herbicide selectivity, resistance and additives, weed biology, ecology and seed bank dynamics.

Contact: Kitty Schlosser, UC Vegetable Research and Information Center, One Shields Ave., Davis, CA 95616; 530-752-7091.

OCTOBER

2-December 3, 2001

**Agriculture NxLevel Entrepreneur Program
Escondido, CA**

This ten-week course offers growers training in business planning and covers topics including management strategies, marketing, budgeting, and financial issues.

Contact: Ramiro Lobo, farm advisor, UC Cooperative Extension, San Diego County, 5555 Overland Ave., Bldg. 4, San Diego, CA 92123; (858) 694-2845.

4

**Salinas Valley Farm Show
Salinas, CA**

This day long show includes a seminar on global positioning system technology offered by retired UCCE farm advisor John Inman.

Contact: Don Ostini, Gonzales Young Farmers, P.O. Box 445, Soledad, CA 93960; (831) 757-5503.

6-7

**Hoes Down Harvest Festival
Organic Farm Bus Tour
Guinda, CA**

The festival includes farm crafts, workshops, an organic farmers market, and hay rides; the farm tour the following day visits Capay Valley working organic farms.

Contact: Dru Rivers, Full Belly Farm, Guinda, CA; (530) 796-3464.

13-14

**California Rare Fruit Growers Festival of Fruit
Tempe, AZ**

Open to the public, this conference includes workshops and tours on techniques for growing tropical fruit in the desert.

Contact: Jim Crosson, 638 N. Valencia Place, Chandler, AZ 85226; (480) 963-2136.

15-31

**Environmental Stewardship Short Course 1
Various California Locations**

For dairy producers who want to learn how to comply with water quality regulations pertaining to animal feeding operations, the course is offered in three two-hour sessions between October 15-31 at various locations throughout California.

Contact: Jonathon Merriam, Stanislaus Ag Center, Service and Crows Landing Roads, Modesto, CA 95358; (209) 525-6800.

19-21

**Bioneers 2001 Conference
San Rafael, CA**

This three-day conference includes workshops on biodiversity gardening, organic seed diversity, soil and compost, and alternative media strategies.

Contact: Bioneers Conference, 901 W. San Mateo Rd., Suite L, Santa Fe, New Mexico 87505; (877) 246-6337.

22-24

**The Soil Food Web
UC Santa Cruz**

This two-day workshop provides information about the dynamics of the soil fertility cycle, and includes a visit to the university's Center for Agroecology Farm and Garden.

Contact: Bioneers, 901 W. San Mateo Rd., Suite L, Santa Fe, New Mexico 87505; (877) 246-6337.

**October 30-November 3
Garlic is Life Symposium
Tulsa, OK**

Workshop speakers include garlic growers from across the country, and garlic researchers including Ron Voss, vegetable extension specialist, UC Davis; and Maria Jenderek, garlic researcher, USDA Germ Plasm Resource Unit, Parlier, CA.

Contact: Darrell Merrell, 2208 W. 81st St. South, Tulsa, OK 74132-2623; (918) 446-7522.

Add your event to our online calendar at <http://www.sfc.ucdavis.edu/calendar>

Agri-tourism Fact Sheets Offer Online Support

The Small Farm Center web site now features an enhanced agri-tourism section containing practical fact sheets for farmers and ranchers considering agri-tourism and nature-tourism enterprises. Located online at <http://www.sfc.ucdavis.edu/agritourism/factsheets.html>, the updated pages include detailed information about the California Agricultural Homestay Bill (AB 1258), which paved the way for more farmers and ranchers to offer overnight visits. Thirteen fact sheets then guide farmers and ranchers through the essential stages of starting an agri-tourism or nature-tourism operation. Fact sheet titles include:

- Conducting Farm and Ranch Tours
- On-farm Customer Relations
- Safety and Risk Management
- What is Agri-tourism?
- Assessing Your Assets
- Why People Vacation
- Assessing Your Preferences, Options, and Goals
- Adding Value and Personalizing Your Services
- Creating a Business Plan
- From A to Z: Potential Enterprises for Agricultural and Nature Tourism
- Marketing Your Enterprise
- Marketing Equals the Four Ps
- Tips for Building Marketing and Community Partnerships
- Top Marketing Ideas for Agri-tourism Operations



*The "Marketing Equals the Four Ps" fact sheet identifies methods that help you define your target market, which may include families with young children.
Photo: ARS/USDA.*

Each fact sheet is free and available online at <http://www.sfc.ucdavis.edu/agritourism/factsheets.html> or by calling the Small Farm Center at (530) 752-8136 or e-mailing sfcenter@ucdavis.edu ■



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