



News & Notes of the UCSC Farm & Garden

Issue 171, Winter 2022

Growing Blueberries in the Home Garden

Tips from Farm Garden Manager Christof Bernau

by Cathy Murphy

In first grade, my son's best friend would wax poetic about the blueberry muffins his grandmother made for him every time she visited. With a wistful smile, he would describe the sweet, tangy juice and the way the big berries would burst in his mouth when he took a bite of the warm muffin. Once, he said with delight, the juice ran out of his mouth and down his chin.

Many of us have a similar affection for blueberries, perhaps one of North America's most perfect native foods. Cultivated and bred for thousands of years by Indigenous people living in what is now the Northeastern United States and Southeastern Canada, the blueberry is a member of the *Ericaceae* family, which includes the heaths and heathers, and are related to huckleberries and cranberries. Blueberry bushes produce abundant fresh fruit in the summer that can be dried and stored for winter, providing nutritious, vitamin-rich food during otherwise lean months.



Joshua Flores on Unsplash

Blueberries fall into two distinct types: Northern and Southern highbush (*Vaccinium corymbosum*) and lowbush (*V. angustifolium*) varieties. Choose varieties that grow well in your region. Christof Bernau, Farm Garden manager at the UCSC Farm, recommends the following Southern highbush low-chill varieties for Santa Cruz, based on extensive research: Emerald, Jewel, Misty, Sapphire, Star, and Southmoon.

If you look at a USDA map of blueberry habitat, you will notice that the plants do not occur natively west of Texas, although they can be grown very successfully in California, as well as in most of North and South America. One limiting factor is precipitation and/or irrigation: blueberries need 1-1 ½ inches of water per week during the growing season. Surrounding the bushes with a thick layer of compost covered with a thick layer of wood chip mulch will help your soil retain moisture and inhibit weeds.

Another limiting factor is pH. Blueberries need highly acidic soil, with a pH range of 4.0 to 4.5, to access nutrients in the soil. Native soil in the Santa Cruz area tends to be slightly alkaline, which means you will have to take steps to bring the soil pH down by 3 or more points. At the UCSC Farm, the staff adds a small amount of vinegar to their drip irrigation in order to lower the pH. (Currently they are working with Brooks Schmitt of the Cowell Coffee Shop to manufacture their own vinegar from the annual apple harvest.) Home gardeners should add about 1 tablespoon of store-bought vinegar per gallon to their irrigation water to bring soil pH to about 5.0. The farm managers also augment their soil with soil sulfur, which releases slowly. Note that the need for low pH and thick mulch can limit the types of plants you grow near blueberries; you may find it best to give blueberries their own part of the garden.

Native blueberry bushes often grow in the forest understory and can tolerate quite a bit of shade. However, Bernau has found that on the central coast full sun is optimal for healthy, compact plants with high yield. Inland, plants may benefit from partial shade. Protect the plants from strong winds and allow space around the plant for harvesting the fruit.



Harvest berries at the peak or near-peak of ripeness, when the fruit is blue. Unlike bananas, pears, and many other fruits, blueberries do not continue to ripen post-harvest. Most varieties will ripen between May and July. Home gardeners will find that the blueberries ripen in stages and can be picked two or three times per week.

Blueberry plants can be productive for more than 20 years with good care. Prune heavily in winter, and as needed in summer, removing the largest, oldest canes. Individual stems have a lifespan of about five years. Beyond that, canes diminish in vigor, producing fewer laterals and fruit buds. You may also want to prune small, weaker branches and those that have died back. Prune to promote sunlight and air flow throughout the canopy. By pruning out less productive canes, you will simultaneously reduce overall fruit load, increase fruit size, help fruit bud set for the following year, and expedite maturation of this year's fruit.

While blueberries are not generally plagued by pests, protect the roots from gophers using wire baskets or by trapping the animals. Use netting to discourage birds from eating all of the delicious berries. Treat scale on the plants with horticultural oil.

You can buy Southern highbush blueberry plants at local garden stores throughout the year, but they are most available mid-winter through early spring.

Bernau recommends really focusing on pH adjustment, soil fertility, and regular water to promote strong establishment. Some sources also suggest that you remove all flowers/fruit for the first two plus years to help the plants focus on vegetative growth and establishing a strong foundation. This is a good idea if you buy 2-gallon plants, which are typically two years old.

After patiently waiting for the plants to establish themselves, you can enjoy delicious, antioxidant-rich berries for muffins, smoothies, pies, and much more!

To Die For Blueberry Muffins (from allrecipes.com)

Ingredients:

1 ½ cups all-purpose flour
¾ cup white sugar
½ teaspoon salt
2 teaspoons baking powder
⅓ cup vegetable oil
1 egg
⅓ cup milk, or more as needed
1 cup fresh blueberries
½ cup white sugar
⅓ cup all-purpose flour
¼ cup butter, cubed
1 ½ teaspoons ground cinnamon

Directions

1. Preheat oven to 400 degrees F (200 degrees C). Grease muffin cups or line with muffin liners.
2. Combine 1 1/2 cups flour, 3/4 cup sugar, salt and baking powder. Place vegetable oil into a 1 cup measuring cup; add the egg and add enough milk to reach the 1-cup mark. Mix this with flour mixture. Fold in blueberries. Fill muffin cups right to the top, and sprinkle with crumb topping mixture.
3. To Make Crumb Topping: Mix together 1/2 cup sugar, 1/3 cup flour, 1/4 cup butter, and 1 1/2 teaspoons cinnamon. Mix with fork, and sprinkle over muffins before baking.
4. Bake for 20 to 25 minutes in the preheated oven, or until done.

Nutrition Facts

Per Serving: 383 calories; protein 4.3g; carbohydrates 56.9g; fat 16.1g; cholesterol 39.3mg; sodium 321.8mg.

About the Author

Cathy Murphy is a professional editor of educational materials, primarily biological science books and media. She also serves as board secretary for the Friends of the UCSC Farm & Garden. She's an avid backyard gardener, focusing on edible plants and fruit trees.

Upcoming Events, Workshops, and Courses

Visit agroecology.ucsc.edu to learn more and register

Use discount code "100FF" to receive 10% off listed prices for Friends workshops

Docent Tour

Thursday, March 10, 4:00pm, UCSC Farm

Current docents and those interested in becoming a docent are invited to the Center for Agroecology docent tour at the UCSC Farm with Darryl Wong, farm site and research lands manager. Meet at the Hay Barn at 3:45pm for registration and parking permits, then walk up to the farm to meet with Darryl for a 1 tour and Q&A with snacks.

Organic Seedling Short Course

March 22-24 at the UCSC Farm

***NEW* First short course offering from the Center for Agroecology!** Producing high quality seedlings is a prerequisite to successful crop production. This multi-day short course is designed for growers in production-scale farm or garden systems to deepen their knowledge of the skills and systems to produce healthy seedlings organically. This in-person course will cover seed and seedling biology, management of environmental conditions to optimize seedling growth and development, greenhouse systems and production tools to increase efficiency and improve crop health, and effective methods for regulating pests and diseases in the greenhouse. *Cost: \$450 (discount code not applicable)*

Beekeeping Basics (virtual)

Wednesday, March 23, 5:00pm–6:30pm, online

Farmers, gardeners and nature lovers alike witness bees and blooms in spring. Emily Bondor of Santa Cruz Bee Company will share with attendees the role that bees play in our gardens, cover basic honey bee biology and behavior, and some of the essential tips and tricks that could help you start a colony of your own. *Cost: \$5*

Gopher Control in the Home Garden and Small Farm (virtual)

Tuesday, April 5, 5:00pm–6:30pm, online

Learn how to control gophers, moles, and ground squirrels in the home garden, landscape, and on the small farm using non-toxic techniques that focus on exclusion and trapping. This workshop will be taught by Thomas Wittman, founder and owner of Gophers Limited and an expert on vertebrate pest control. *Cost: \$5*

Hands-On Gopher Trapping Clinic (in-person)

Saturday, April 9, 10:00am–12:00pm at the UCSC Farm

Companion to the virtual class on "Gopher Control in the Home Garden and Small Farm," Thomas Wittman of Gophers Limited will show and tell about different types of traps, showing how and where to set them in gopher runs on the UCSC Farm. Space is limited to 30 people, first come first serve. *Cost: \$40*

Volunteer Work Day

Saturday, April 16, 9:00am–12:00pm at the UCSC Farm

Join a Saturday Volunteer Work Day at the UCSC Farm Garden! Park in lot 115/116 walk up the farm road through the wooden gate/Gatehouse where we will meet and check in volunteers. Find more information and instructions for signing up at <https://agroecology.ucsc.edu/get-involved/volunteer.html>.

Hands-On with Honeybees (in-person)

Saturday, March 26, 11:00am–1:00pm at the UCSC Farm

Want to get hands-on with honeybees? Attend our in-person workshop at the Homeless Garden Project Farm. Emily Bondor of Santa Cruz Bee Company will lead a "Hive Dive" where attendees can get the chance to get up close and personal with some honeybee hives. Attendees will be able to experience first-hand how to best handle honeybees and participate in a live hive inspection with plenty of Q&A. Space is limited to 35 people, first come first serve. *Cost: \$40*

Organic Citrus Short Course

April 30–May 1 at the UCSC Farm

Interested in organic citrus production for the small farm or home orchard? This course will include citrus selection, planting, pruning, fertility, and seasonal care for a small citrus block. Instructors Orin Martin and Christof Bernau will teach in-person sessions at the UCSC Farm and Chadwick Garden, and the 20-hour course will include field trips as well as online presentations and videos. More information and registration to come at <https://agroecology.ucsc.edu>.

Grant supports BIPOC students in agriculture and related fields

UC Santa Cruz (UCSC) will partner with California State University Monterey Bay (CSUMB) to increase degree attainment in food, agriculture, and natural resources education for students from underrepresented groups, including Black, Indigenous, and people of color (BIPOC) students.

A \$1 million grant from the U.S. Department of Agriculture Hispanic Serving Institution Grant Program will fund the project, entitled, "Increased Degree Attainment in Food, Agricultural, Natural Resources and Human Sciences: Creating a Regional Pipeline." Through partnerships among local community colleges, universities, organizations, and the agriculture industry, the project will provide students from underrepresented backgrounds opportunities to obtain degrees, conduct research, and build careers in agriculture and related fields.

UCSC will support the project through working to build mentoring, professional development, and writing skills among graduate students studying environmental studies and ecology and evolutionary biology at UCSC, and through facilitating opportunities for CSUMB students to learn about graduate study opportunities and engage in agricultural research through tours as well as a summer research program associated with UCSC's SUPERDAR Program. The SUPERDAR (Supporting Undergraduates by Promoting Education, Research, Diversity, and Agricultural Resilience) Program, coordinated by Center for Agroecology Director and Environmental Studies Professor Stacy Philpott, provides underrepresented students independent research opportunities in agriculture, and encourages exploration of agriculture-related fields.

Philpott is a co-director of the project and will work with Greg Gilbert (Environmental Studies), Ingrid Parker (Ecology and Evolutionary Biology) and Damian Parr (Center for Agroecology) to support UCSC graduate students and CSUMB undergraduates students participating in the SUPERDAR Program. Center for Agroecology staff Jan Perez will support the evaluation components of the project.



Stacy Philpott and Damian Parr of the Center for Agroecology with SUPERDAR fellows on a field trip to a sustainable farm, the Mesa Del Sol vineyard near Arroyo Seco. (Photo by Ann Hougham)

Sign up for the Center for Agroecology's CSA Program

Join the Center for Agroecology's Community Supported Agriculture (CSA) program and get a weekly assortment of fresh, organic Farm and Garden produce for 22 weeks, from June 20 through November 18, 2022.

By committing to a season's worth of produce, you'll be supporting your local campus farm and investing in the Center's mission of advancing agroecology and equitable food systems. In exchange, you get produce that is picked fresh for you and quality, nutrition and flavor and that is unmatched! You'll also receive weekly emails that include relevant recipes and updates from the field.

Choose to pick up your share on Wednesdays from 11am to 3pm or Fridays from noon to 5pm. Pick up your share at the Cowell Ranch Hay Barn, just above the base of the UC Santa Cruz campus. Members may purchase additional produce, flowers, and value-added products from the Center's Farmstand at a special 10% discount.

Sign up by April 1 to get a 5% early bird discount! Learn more and sign up at <https://agroecology.ucsc.edu/support/produce-sales/csa.html>.



Center for Agroecology student staff pose with produce at the CSA / Farmstand site at the Cowell Ranch Hay Barn.

Spring Plant Sale Update

We will not be holding the Spring Plant Sale this year so that Center for Agroecology staff can focus on other programmatic needs. We encourage you to support the many other sales in the region this spring, and look forward to holding our plant sale next year!

Apprenticeship Updates

The Center for Agroecology's Apprenticeship Program, which prepares participants to work in agriculture and the food system, will resume starting June 2022. Started in 1967, the internationally recognized residential training program blends the virtues of hands-on learning with traditional classroom studies. The program was put on hold in 2020 to allow staff to focus on strategic planning, and the COVID-19 pandemic extended the pause through 2021.

The traditional six-month Apprenticeship has been revised as a 10-week residential program that will offer participants an experiential study of soil health and cultivation, plant physiology, and crop production and distribution, while also touching on the social and political context in which food is grown. Apprentices have the opportunity to live on the UCSC Farm in four-room tent cabins and all participants eat, work, and learn together on-site, co-creating a community of practice.

The Center will host two 20-person Apprenticeship cohorts each calendar year, with summer programming in 2022 beginning in June and fall programming beginning in September. The Center welcomes new Apprenticeship and Short Course coordinator, Pam McLeod, to the team and we are excited to work with her to help coordinate a successful program and positive experience for participants.

To learn more about the Apprenticeship Program, visit <https://agroecology.ucsc.edu/education/apprenticeship/index.html>.



Farm & Garden Happenings

The UCSC Farm and Chadwick Garden are beginning to bustle again after a restful winter break. In-person interns and agroecology classes have returned to these sites for winter quarter, and student staff continue to be essential to running day-to-day operations. Center for Agroecology staff are also excitedly preparing to debut the new and improved Apprenticeship. Come June of this year, we will welcome apprentices to the farm for the first cohort since 2019.

Farm staff and students continue to grow and distribute food for UCSC students in need and have worked throughout winter to meet their goal of year round food production for campus basic needs efforts. Farm staff are working with the Cowell Coffee Shop team and students of the UCSC Food Systems Working Group on 2022 crop planning, with an emphasis on culturally significant and nutritiously dense foods to offer the campus community.

In the farm's research fields, Darryl Wong's three year no-till trial is wrapping up, and Joji Muramoto's strawberry soil-borne disease research is continuing, with a current exploration of co-planting bunching onions with strawberries to suppress Fusarium wilt, a soil-borne disease that can devastate strawberry fields.

At the Chadwick Garden, Orin Martin continues to work his magic on the fruit trees, flowers, and other crops. You can come say hello to Orin and other Center for Agroecology staff by visiting the Farm & Garden, which are both open to the public daily from 8am to 6pm.



Gratitude for Gifts & Memberships

December's generous gifts are already being put to work at the UCSC Farm and the Alan Chadwick Garden. We are so grateful for everyone who contributed, whether through Friends memberships, general gifts, or support for special projects.

It's always fun to announce a new gift from the M&T Fantastic Family Foundation, with their \$25,000 providing general support for Center for Agroecology (think salaries and seeds). We're grateful for other general support gifts to the Center this December from many donors, who gave from \$10 to \$1000, and one anonymous gift of \$5000.

New gifts have brought an infusion of 2022 support for the effort to film our great instructors teaching in the fields and gardens (see accompanying article on the video project). A past Friends of the UCSC Farm & Garden Board member gave a \$10,000 gift anonymously for the video project. Another Friends member contributed \$2500 to the video project, and Friends members and past Apprenticeship alumni together contributed another \$3775.

We are grateful for all the Friends members who renewed their membership and for new members joining us this winter! The fall memberships and gifts to the Friends totaled more than \$16,000. For information about making donations and renewing your membership, please see agroecology.ucsc.edu/support.

Honoring Stephen Decater

In 1967 Stephen Decater was an undergraduate at UCSC when he started apprenticing with Alan Chadwick in the UCSC Student Garden's first year. Stephen was instrumental alongside Chadwick in the building of the Garden, first as an apprentice for a year and then as a staff member for two and half years. Orin Martin said of him: "Stephen was so stalwart, hardworking – an industrious 'craftsman.'"

When Chadwick left UCSC, Stephen joined him in 1972 helping to develop the Round Valley Garden Project in Covelo, California. Later, with his wife Gloria, Stephen started Live Power Community Farm, a 50-acre horse-powered and solar-powered biodynamic farm in Covelo. For over 40 years, Stephen trained apprentices at their farm from all over the US and abroad. Live Power was also one of the earliest Community Supported Agriculture (CSA) farms in the country and developed a thriving school visitation program. We are saddened by the loss of this great farmer, teacher, and community leader.

A celebration of the life of Stephen Decater will be held at Live Power Farm on the weekend of March 19th and 20th. Please email livepower@livepower.org for information or to RSVP.

Instructional Videos

Thanks to the support of members like you, the Center for Agroecology has worked with professional videographer Jim Clark to produce over two dozen instructional videos over the last year, with more videos still being edited and planned. Visit <https://agroecology.ucsc.edu/resources/instructional-videos.html> to access the following videos produced by Jim Clark:

Getting Started with Fruit Trees

- Selecting Bare Root Fruit Trees
- Site Location for Fruit Trees
- Planting a Bare Root Fruit Tree
- Growing Cover Crops
- Orchard Floor Management
- Planting Citrus Trees
- Pick an Apple and Preserve the Fruit Bud

Pruning and Training Pome Fruit Trees

- Pruning Tools and How to Use Them
- Understanding Bud Types
- Fundamental Pruning Cuts
- Pruning an Apple Tree to Open Center Form
- Pruning an Apple Tree to Modified Central Leader Form
- Train a Pear Tree to an Open Center Form
- Blenheim Apricot Summer Pruning
- Summer Pruning of a Santa Rosa Plum Tree
- Summer Pruning and Training of an Apple Tree

Vegetable Production

- Growing Potatoes at Field Scale
- Harvesting Winter Squash
- Highlights of Growing Dry-Farmed Tomatoes
- Rocoto Peppers

Seedling Production & Greenhouse Management

- Seedling Development, Container Blocking and Holding Strategies
- Seed Sowing By Hand & Using A Dibbler
- Greenhouse Irrigation Methods and Tools
- Seedling Soil Mix Assay Test
- Seedling Mixes - Qualities and Ingredients
- How to Use a Vacuum Seeder
- Seedling Containers
- Soilless Mixes - What to Expect

Soil Amending & Bed Preparation

- Side Forking A Raised Bed
- Merced Rye Crimp Down

We also have excellent videos produced by student videographers Jacinto Salz and Angelo Garcia, supported by CARES act funding for remote learning during the pandemic, and through other special funding to support student basic needs and the new agroecology major. Please see our full range of video offerings on the Center for Agroecology YouTube channel at <https://www.youtube.com/user/casfsvideo/videos>.

Center Spotlight: Francis Ge, basic needs coordinator

How did you become interested in agriculture and sustainable food systems?

My first experience in agriculture was working as a field intern at a maize genetics lab when I was in high school. I did the tasks of growing corn and planting and weeding, harvesting and doing crosses. It was a very formative experience, but I thought of it basically as science, and not as agriculture and food systems.

My first actual farm internship was the summer after my junior year in college. I was a biology major and didn't really have a career planned out. I just thought it would be fun. Everybody thought I was nuts, but I loved it. After I graduated, I did the Farmer Training Program at the Rodale Institute, and later ended up going to grad school for Food Studies.

What brought you to the Center for Agroecology?

I was very torn for a while about whether to be a farmer full-time or to get into food systems and food policy. We were running into a lot of problems that we couldn't solve as a small organic farm, where the number of people we could possibly serve or reach and the amount of power a single farm could have is limited. Being a nerd, I thought the way I could understand food systems more deeply would be through more school. Halfway through the Food Studies master's program, I got an internship with the New York State Department of Agriculture and Markets focusing on urban food access programs in New York City, and that led almost directly to my work here at the Center for Agroecology.

Can you tell us a bit about your role at the Center?

I'm the Basic Needs Coordinator 75% of the time, and 25% of the time I'm the staff advisor for the Food Systems Working Group. On the Basic Needs side, I'm doing produce distribution and also a bit of production planning and working in the field when I can. Lately I've been trying to sit in on the first half hour of the field internship to learn about the UCSC farm. Every farm is so unique and I haven't farmed in California before, so I've been learning a lot. I'm also the supervisor for the Produce Pop-Up, which is a twice-weekly on-campus low-cost organic farmstand. It's a way to make produce really accessible to students and to the community.

Basic Needs is also working with the Dean of Students and Student Success Division to strategize on the university level about our goals for the next three years and what we're going to be focusing on. The part of me who is interested in systems and policy is very thrilled to be part



of something that's happening at the state and legislative level. And I still sort of believe in the possibility of the government making things better for people and spending taxpayer money wisely. I think Basic Needs is one really good way to do it.

What do you enjoy about your work?

It is kind of perfect because it encompasses everything that I was interested in doing or that I had dabbled in before, like working in the field, working in food systems, in a restaurant, and then in government at the New York State Department of Agriculture.

My first week here, I asked my colleague Brooks [Schmitt, Cowell Coffee Shop supervisor] what we were doing, and he said we are in the business of keeping students "fed and empowered." I think about that a lot. It feels good to be able to be in the field and physically make things happen – grow and harvest produce – and then drive everything up to campus in that big box truck and hand them into students' hands. I like being an advisor. I like being able to put all that theory into practice, and having those two things both in the same job is so ideal, because sometimes they come apart. Being able to do it all at once here on one campus is amazing.

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University of California Santa Cruz
Center for Agroecology
1156 High St.
Santa Cruz, CA 95064

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Late Winter Gardening Checklist

Spring will be here before we know it! Here's a checklist to help you keep up with winter gardening tasks in preparation for spring:

- Plant potatoes and cool-season crops like leafy greens, root crops and brassicas
- Start seeds for long-germinating summer crops
- Turn in cover crop
- Harvest and use compost
- Feed citrus, roses, and garlic
- Weed!

Find free gardening resources on our website, <https://agroecology.ucsc.edu/resources>, including videos and how-to guides on fruit tree planting and pruning, seed starting, and more.



Friends Membership Renewals

Need to renew your Friends of the UCSC Farm & Garden membership? You can find renewal information and a secure donation link online at connect.ucsc.edu/joinffg. Contact us at casfs@ucsc.edu with any questions. Thank you for your support!

News & Notes is going digital!

Members can opt out of receiving *News & Notes of the Friends of the UCSC Farm & Garden* via U.S. mail and instead receive a digital PDF file via email beginning in winter of 2022. By offering a digital alternative we will reduce printing and postage costs and enable your membership dollars to go farther in directly supporting the Center for Agroecology while reducing our carbon footprint. If reading on a screen doesn't seem appealing to you, we encourage you to print hard copies of the newsletter at home.

To opt out of receiving the paper newsletter and receive a PDF version instead, visit <https://bit.ly/newsandnotesoptout>. Members who do not opt out will continue to receive a mailed hard copy version. Got questions? Send an email to agroecology@ucsc.edu.