

UC Santa Cruz

News & Notes of the UCSC Farm & Garden

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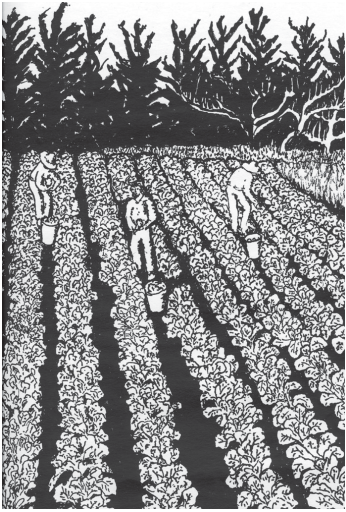
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News & Notes of the UCSC Farm & Garden

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Farming During a Drought:

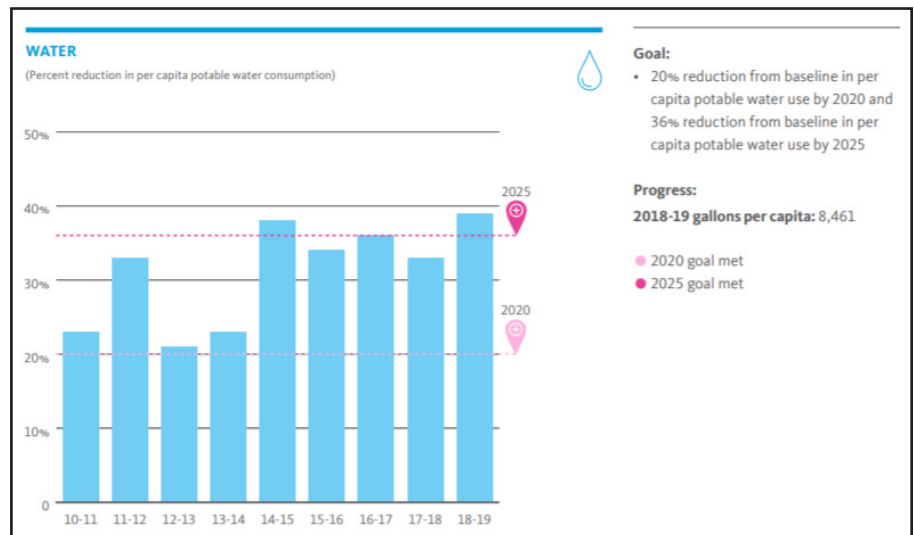
An Interview with Darryl Wong, Executive Director, Center for Agroecology

by Cathy Murphy

After a short reprieve from drought, most of California is again facing a water shortage. Santa Cruz is a rare exception: Loch Lomond reservoir is nearly full and overall water usage per capita is down thanks to the city's record of good water management. As a result, the State Water Resources Control Board (SWRCB) granted the City of Santa Cruz an exception from the most stringent conservation strategies. Even so, there are restrictions,* including limiting outdoor irrigation to only two days per week and running irrigation only after 6pm and before 10am.

UC Santa Cruz draws its water from city resources, which are in turn limited to water that falls on the ocean side of the Santa Cruz Mountains. *News & Notes* recently spoke with Darryl Wong, executive director of the Center for Agroecology, about how dry conditions are affecting the Farm and Garden. "The city of Santa Cruz is unique in that it gets all of its water from its direct watershed," notes Wong. "We aren't tied into federal water projects. We only have what we have."

Because Santa Cruz has to manage a limited supply of water, the city and the campus are good about communicating about water availability, he says. Wong is part of the UCSC Water Working Group, a committee drawn from stakeholders across the campus. They are continuously looking for opportunities to reduce water consumption and are exceeding their aspirations: by 2019, the campus had already met the UC System's water use reduction goals for 2025 (see graph at right).



According to the UCSC Water Working Group, approximately 40% of water is used by the residence halls and student dining. About 28% goes to irrigation, but of that, only 8% is used by the UCSC Farm and the Chadwick Garden. In other words, the Center for Agroecology is using only about 2% of the water used across UCSC. Approximately 80% of crops at the Farm and Garden are watered using drip irrigation.

The farm manages its water usage closely. Weekly and daily decisions are based on information from the farm's own weather station, as well as data from state and other sources. Adaptability and flexibility are essential. "When we have a foggy week, we water to foggy conditions," says Wong, "and when we have a hot week we water to hot conditions."

Since rainfall is the only source for replenishing the watershed, total precipitation is a crucial metric. Less rain reduces the available water for irrigation throughout the year. More sunny days also mean having to irrigate more frequently to maintain soil and crop health. However, when the rain falls also affects irrigation decisions and water use. As any home gardener knows, a week of heavy rain is a mixed blessing: once the soil is saturated,

additional water and soil nutrients are washed out to the ocean. The same amount of rainfall spread over weeks nurtures plants and cuts down on use of city water. Less is wasted.

Although Northern California typically doesn't get summer rain to nurture crops in the peak growing season, rain early or late in the rainy season can be a boon to farmers. The timing, frequency, and intensity of the spring, winter, and fall rains are crucial to decisions about tilling and planting. "If we don't get fall rain, we have to irrigate our cover crops," says Wong. "Because cover cropping is such an essential part of our overall fertility, soil health, and biodiversity plan, we make the decision that it is worth using the water at that time."

While traditionally planting had to occur by October 15 each year to take advantage of fall rains, for most of the past decade, winter rains have not started until November 15 or later. Last year, however, a heavy rain in October gave the Center the opportunity to plant the winter cover crop early, adding another month of fall daylight and increasing biomass. Because the staff tilled the cover crops into the soil in January, they decided to plant half of those fields with a second winter cover crop (buckwheat), to be irrigated by the hoped-for winter rain. The other fields were fallowed and prepped for spring planting. This dual strategy is a response to the unpredictability of weather during a drought. Wong says, "You have to be prepared for whatever happens—rain or no rain. As growers and land managers in an era of climate change, you have to hedge your bets."

Likewise, Wong notes, "If we don't have rain in the early and late spring, we have to irrigate the ground so that we can till it at the right moisture."

So far, the farm has not had to drastically change the types of crops it grows because of drought. When necessary, the farm manages water resources by reducing pre-planting irrigation as much as possible, reducing production (taking some fields out of cultivation), and foregoing summer cover cropping. Although under ideal conditions, it's best for soil health to keep plants in the ground for as long as possible, sometimes dry conditions force them to limit summer cover cropping and leave the fields bare.

For more information on how UCSC is managing water resources, visit the Office of Sustainability website at <https://sustainability.ucsc.edu/initiatives/water/index.html>. Learn more about how the farm is adapting to climate change by attending the members-only tour of the farm and UCSC Arboretum (see details in the upcoming events section.)

*<https://www.cityofsantacruz.com/government/city-departments/water/2022-water-use-restrictions-4475>

Upcoming events and workshops

UCSC Farmstand

Wednesdays 12pm–5pm and Fridays 11am–3pm at the Cowell Ranch Hay Barn

Find fresh, organic produce and flowers grown, harvested and distributed by staff and students of the Center for Agroecology at the weekly Farmstand. By purchasing produce at the Farmstand you are supporting the Center's mission and programming.

Free Guided Tour of the UCSC Farm

Sunday, August 7, 2pm–3:30pm at the UCSC Farm

Take a free tour of the 30-acre organic UCSC Farm. Visitors can enjoy touring the organically managed greenhouses, hand-worked garden beds, orchards, row crop fields, and children's garden, while learning about the history of the site and the basic concepts of organic farming and gardening. Perched on a meadow near the campus entrance, the farm also offers spectacular views of the Monterey Bay.

Sketching LIVE on the Farm

New date! Saturday, September 17, 9am–1:30pm at the UCSC Farm

Santa Cruz artist Tina Somers will guide participants with composition, technique, and direction at this in-person workshop. This session will focus on sketching techniques, materials, and things you need to know to get started. All levels of experience are welcome. Students will meet at the Louise Cain Gatehouse on the campus farm. *Cost: \$30 Register at https://calendar.ucsc.edu/event/sketching_live_on_the_farm.*

Harvest Festival

Sunday, September 25 at the UCSC Farm

Save the date for our annual Fall Harvest Festival! We're excited to partner again with Life Lab to host our first in-person festival for the community since 2019! More details coming soon.

Farm and Garden happenings

Summer is here and our new apprentice cohort has arrived! We are excited to have them on the farm where they will live and learn the nuts and bolts of farming, gardening, and the food system for 10 weeks.



The aquaculture research facility at the UCSC Farm has partnered with the Basic Needs program to contribute fish harvested from the sustainable aquaculture operation. Earlier this summer, the mobile food hub served up lunch on the farm with trout tacos using fish produced sustainably in the aquaculture facility. In the future, fish tacos may be offered several times per year on a pop-up basis, as fish in the research program reach maturity.



The farm has been bustling with activity this year and feels truly “open” again after two years of the pandemic. Life Lab welcomed back summer camp on the farm for schoolchildren and FoodWhat?! youth are also spending more time on the farm, as well as our summer interns and student staff. We hope to see our wonderful Friends of the UCSC Farm & Garden members at the Farm and Garden this summer, whether at our upcoming events, a farm tour, or just taking a nice stroll among the plants.

Friends of the Farm & Garden board of directors transitions

Ella Fleming travels east

We are sad to say goodbye to Ella Fleming, who stepped down from the Friends’ board this month. Ella was assistant manager of the Chadwick Garden from 2015 – 2019 as well as a former apprentice. Ella brought valuable insight from a farm staff perspective to our discussions and was an active member of the workshop committee.

Ella is moving to the East Coast to explore her own personal and professional options in other parts of the country. We wish her all the luck in the world and look forward to hearing from her and her new adventures in a different climate.



Seeking new board members

The Friends of the Farm & Garden board is seeking new members! You can support the Center for Agroecology, its programs and its mission of advancing agroecology and equitable food systems by joining the Friends board. Board members help plan public workshops on gardening and food topics, determine what support is most beneficial to the Center and direct funds to these areas, and participate in Center for Agroecology meetings and staff mixers.

If you’re interested in becoming a board member or would like more information, please email agroecology@ucsc.edu. We look forward to working with you!

Garden bean growing tips from Orin Martin

Garden beans are tender, warm-season annuals grown for their edible pods and seeds. The pods are eaten at the immature stage with minimal seed formation (green or snap beans). The seeds are eaten while still moist and succulent, but with the pods leathery and thus discarded (fresh shell beans). After maturing further many of the fresh shell varieties are harvested, stored, and cooked at the dry bean stage

Ingenious and enterprising gardeners can have beans in the kitchen in one manner or another the year round: fresh snap beans from midsummer to fall; fresh shell beans from midsummer to fall; dried beans from fall to spring; and of course, as a reminder of summer, snap beans pickled throughout the year. All beans are an excellent source of vegetable protein and are rich in vitamins A and B as well as calcium, phosphorous, and iron.

Growing Tips

Planting conditions and germination

Because of their tropical origins, beans are tender, warm-season crops. They are directly sown when soil temperatures average greater than 60°F, with 70-85°F an optimal range for germination. Cold, wet soils induce seed rot, reduce percentage of germination, and lengthen time to emergence. Continued cool air and soil temperatures will slow the growth of bean seedlings and cause chlorosis (yellowing); 70-90°F is an ideal range for growth, pod set, and maturation.

Being a large-seeded crop, bean seeds are not overly sensitive to a soil dry down to 50% of field capacity between waterings before the seedling emerges. Because of the seed's ability to imbibe and hold water, the soil can feel frighteningly dry during this process with no negative effects.

Soils and planting

Depth of planting can vary from 1/2" to 1-1/2," depending on soil texture and specific weather patterns at planting time. Lighter textural classes of soils (sands and silts) favor deeper planting; cool, wet weather favors shallow planting. It is important to remember that germination and seedling root growth require significant amounts of oxygen. Thus a soil that has been appropriately managed over time will display a good structural arrangement of soil particles and facilitate the diffusion of air into the soil (a passive process) and the exit of excess CO₂.

Beans are seeded with 6-9 seeds per foot and then thinned to 3-6" between plants. Spacing between rows is generally 20-36" for bush types and 4-5' for pole types. A soil pH of 6.0-6.8 is optimal for beans.

Weed management

Weed management (suppression via hoeing) should be practiced 1-2 times within 30 days of emergence. Both bush and climbing types possess moderately deep (1-2' and 3-4' respectively), branched tap root systems, and are good at outcompeting weeds as the crop advances.

Watering

Water requirements for beans are moderate, 1.5"-2" per week until flowering. From flowering through harvest lack of water has a severe negative effect on flowering, fruit set, and quality of the pods. Thus a steady supply is recommended, especially with fillet beans.

Fertilizers

Beans are among the least responsive vegetable to fertilizer inputs. As legumes they can meet some of their nitrogen need by fixing soil atmospheric nitrogen. Unless soil tests indicate a deficiency, neither phosphorous nor potassium need be applied.

Harvesting

Harvests must be consistent (every 2-5 days) and thorough. Like peas, squash, and many annual flowers, a few fruit left on the vine will truncate further production.

A note on Rhizobium Bacteria

One of the remarkable features of most legumes, including beans, is their ability to host symbiotic soil bacteria on root nodules. This association allows the bacteria to take nitrogen gas from air in the soil and convert or "fix" it chemically into a form available to plants. The bacteria residing in the legume root nodules are called Rhizobia (*Rhizobium* spp.). Each species of legume hosts a specific species of the Rhizobium; that is, the species that associate with clovers won't inoculate beans. Growers with low levels of inoculum in the soil can increase the vigor and yield of bean plants by inoculating the seeds with the appropriate Rhizobium prior to planting.



Photo: Jim Clark

Meet the summer 2022 apprentices

I recently had the pleasure of cooking a few meals for the first crop of apprentices since the pandemic. It is so refreshing to see their enthusiasm about the program and hear their plans for the future. The group is a diverse balance of ages, experiences, and backgrounds. All seem to be emerging from 2020-21 with new life goals and perspectives.

The Center for Agroecology's long-standing reputation drew people from all parts of the country. Meet the new apprentices and if you happen to be walking on campus, say hello! Your membership in the Friends of the UCSC Farm & Garden helps this training program by providing funds for scholarships, equipment, outreach, and facility improvements. Many thanks for your ongoing support!

—Delise Weir, board president
Friends of the UCSC Farm & Garden



Michelle Docter - I currently work at Pixar, but I've recently discovered the joy of growing and sharing food. Over the past year, I started volunteering at local farms to help my community gain access to fresh food. I'm excited to learn the ins and outs of organic farming so that one day I can help others learn how to grow their own food through the power of storytelling.

Allison Gracia - I'm a recent graduate from UC Berkeley with a degree in environmental economics and policy. While my focus has largely been on the economics of environmental resource management, I was fortunate to take a class on agroecology that has changed the course of my education and career path. I believe agroecology, food sovereignty, and reciprocal land stewardship can help save the environment which is why I have chosen to participate in this program. I want to learn the skills and

gain the knowledge that will be necessary to feed our communities and shift our relationship with the land from an extractive one to a reciprocal and caring one.

Stephen Dickinson - I live in Sonoma County where I work for a custom cabinet shop. I moved here from the East Coast (New York and Virginia) 10 years ago, after receiving a graduate degree in architecture from Arizona State University. I've worked in construction, solar power, and, my favorite job, as a barista. I am particularly interested in soil rehabilitation and would like to help people (including myself) create healthy homes and lives.

Jennifer Kim - I am currently finishing up my 23rd year of teaching high school biology and chemistry in LA. Before COVID, I started a school garden for my urban students to get in touch with nature and to provide a healthy way for students to socialize. I also joined a nonprofit garden organization involved in food justice. I'm interested in deepening my knowledge of gardening and food systems.

Avery Jeanneret - I am currently wrapping up my sophomore year as an environmental science major at UCSC and have lived on campus for the past two years – through the pandemic. During the past school year, I worked with the Center for Agroecology as an intern at the Farm Garden as well as a volunteer at the Rachel-Carson Garden. During this Apprenticeship I want to gain an increased understanding of plant sciences, sustainable agriculture, food systems change, and indigenous agriculture and land stewardship practices.

Andre Fuselier - I was born and raised in Inglewood, CA and moved to Riverside to attend the UC. For the last 20 years, I have been a secondary special education math teacher. As a child, my grandfather sparked my interest in growing fruits and vegetables and I've been curious ever since. For 10 years I have been a board member for a food pantry non-profit organization, Arlington Temporary Assistance. Over the last two years, I have taken a deep dive into gardening and permaculture. At my home, I have over 20 perennial fruits, 200 square feet of sunken garden bed space, basins, and a rainwater harvesting tank. My two to five year goal is to enter a new career path helping as many people as possible to grow their own food, preferably by removing their lawns or in community gardens in the urban setting.

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News & Notes

Sierra Brown-Bourne - I am currently in my senior year at San Francisco State University. In my free time, I enjoy writing poetry, sketching, nature walks, and reading. I also really love gardening; I regularly volunteer at gardens in the city and I spent last summer interning as a gardener with the Golden Gate National Parks Conservancy. I'm eager to learn more about conservation, food justice, sustainability, and making ethical agriculture accessible to underserved communities.

Puja Batra - I am based on unceded Kumeyaay land, renamed San Diego, CA. I identify as South Asian-American, am an ecologist by training, and have worked in biodiversity conservation, sustainable development, and nature-based climate solutions (like "carbon farming") for several years. I am looking forward to learning with and from others about building the social, economic, and farming systems that will heal the climate, restore habitat, and build food sovereignty and racial justice.

June Schock - Agriculture and outdoor work has always been a part of my life and I'm hoping to keep on doing what I love. I'm a student at Bennington College in Vermont, studying comparative literature, art, queer studies, and food access and farming science. I've worked in conservation and small-scale agriculture, with a farm and artist residency in Rosendale, NY, the Vermont Youth Conservation Corps, and other outdoor and agriculture work in New York State and Vermont. I want to learn more about how to steward the land in a way that regenerates ecosystems and communities and get more insight into soil science, holistic management, and how to improve and revolutionize our broken systems of food access.

Selin Oh - I'm from the Midwest (unceded land of the Council of the Three Fires: Ojibwe, Odawa, and Potawatomi Nations) – raised in Indiana and currently an undergrad in Chicago studying history and environmental studies. My first entry into growing food was in a small raised bed with my dad, and I have since cultivated this interest by volunteering at urban farms in Chicago. This summer, I will also be reading and researching for my thesis on Korean agriculture, so I'll be thinking about themes of energy, power, and cultural identity as we go through these next 10 weeks.

Emily Jackson - I work as a global public health/sexual and reproductive health consultant. I am trained as a family physician with additional training in public health and reproductive health and rights. I'm an avid home gardener and completed a virtual Permaculture Design Certification in 2021. I hope to learn how to scale up growing to support multiple households within a framework of food and social justice, and I'm interested in the intersection of agroecological principles and gut health.

Rogelio Olivia - I go by Rojas and recently I have been teaching chicanx kiddos how to farm and fix. I'm excited to get into the nitty-gritty details of figuring out how to reproduce our world without violence.

Kayden Bryant - I have worked for Life Lab, a garden education nonprofit, as a garden/cooking instructor at an elementary school in Watsonville for the past two years. I got my BA in sociology from UC Santa Cruz in 2020 and since then have seen how using nature and gardens can be places of healing and justice. A lot of my work involves students engaging in hands-on learning and science, exploring and tasting foods that nourish us, and connecting to our bodies, land, and each other. I'm looking forward to gaining the skills and experience in agroecology and land stewardship to bring back to the community!

Rebecca McKnight - I'm originally from Pittsburgh, moved out to Santa Cruz to study holistic nutrition in 2014, and have been teaching in Oakland for a few years now. I started farming and gardening out here at the Homeless Garden Project, then worked for FoodCorps as a garden educator. I'm so excited to further my knowledge in agroecology and sustainable food systems to work toward a more just system.

Tal Safran - This program marks a new chapter in my life. I recently left my career as a software developer, a journey that began as a childhood hobby. After over a decade of doing the work I'd dreamed of (including founding an online marketplace for home cooked food), I fell out of love with technology as I witnessed the industry's negative effects on people and our surroundings. Plus, I just wanted to get outside. I've volunteered on farms in Vermont, Butte County, the Central Valley, and Berkeley and each experience has brought me closer to taking the leap to a new vocation. I'm excited to deepen my knowledge of growing food, to care for the land, and to help fix our broken food system and make it more equitable for all. I don't exactly know where this journey will lead me, but I know it'll involve food, people, and our planet, which happen to be my three favorite things.



Center Spotlight: Darryl Wong, executive director

What brought you to the Center for Agroecology?

I originally came to agriculture through food. My father was always the cook in our family and his mother came over from China in the late 1940s. They did some farming of Asian vegetables, winter melons and things like that but then quickly got into the restaurant business and they did that for a while. But growing up, my dad always loved to cook and so I think that really inspired in me a real love of food and cooking. I had a chance to travel when I was in college and something that struck me was just how connected food was. It didn't matter if I couldn't speak the language, my favorite place was always in the kitchen with somebody, connecting over food. After studying abroad and seeing the world, I dropped out of college and I went back to the my hometown in the East Bay Area and worked at a restaurant called Olivetto. This was in the early 2000s when the local food thing was really kind of picking up. I heard about the Apprenticeship Program and decided to go for it in 2004. I always thought I would go back to working in restaurants but I got hooked on the agricultural side of things.

Do you have advice for people who want to work in the food system?

It's an exciting time because not only has so much groundwork been laid by programs that the Center runs but also people who have been pushing change in the food system. There are so many more opportunities now and so many organizations doing good work. There are opportunities in government and in politics, there are research opportunities. There are local restaurants and folks who are doing creative work in that way but there's also the palpability, or palatability, of these conversations about diversity, equity and inclusion. I think there's so much more space for inventiveness within the food system that hadn't been around in the past. By giving folks access who typically haven't had access to these systems and these understandings, I think we will see a real paradigm shift in terms of how we conceptualize what the food system can look like. It's an exciting time and it's in the face of what is catastrophic and in our face: climate change, fires, droughts, all of these problems that need to be tackled now with creative solutions.

What do you look forward to in your new position as executive director?

I kind of experienced the Center from just about every angle that you can. I've been an apprentice, a second year, an undergrad, a graduate student, staff. What's exciting to me is to be able to share stories from all those different ways the Center impacts this change and working with all these different groups. To be able to share how impactful



this place can be to such a broad range of people and the role that I think it has played and can play in continuing the transformation of our food system. I use that term a lot but when it comes down to what our goal is here at the Center for Agroecology, we are here to transform the food system. How do we do that? What are the different ways that we do that? It is ambitious to say that we're going to do that but I think if we're not going to do it, who else is?

What are some of your goals as director?

When Kirstin (Yogg, field site manager) and I are working in the field site, we say that our job is to make the space as welcoming as possible to as many people as possible. Carrying just that nugget into the larger Center to make sure we're thinking about how to continue to bring people to this space that is so transformative and has been for so many people is a goal. I'm also excited to think about how we continue to serve the larger food systems network that is doing so much. And there's opportunity for us to engage with all of the different partners that have developed and come up in the last two decades, and to really think about, structurally, institutionally, where the new levers for change are to really continue to push that kind of next level. For a long time, it was enough for us to be a garden where people came and were exposed to the practices. That is still very important for those folks who can access it on that hyper local level, but how do we continue to impact the broader movement that is much bigger than just this place to make sure that we're supporting that kind of coordinated food systems change?

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Your membership dues in action

Friends membership dues are helping to fund a series of informational signs currently being designed for installation at the Farm and Garden. The signs will include information on the Center for Agroecology, the farm and all the activities that happen there, the history of the Chadwick Garden, the UCSC Land Acknowledgement and information on the Amah Mutsun. The signs are nearing the final stage of design and we hope to have them installed before summer ends. We're excited to make the Farm and Garden more accessible to visitors with informational text in both Spanish and English and scannable QR codes linking to more information online. Thank you for your support, which helped to make this much needed signage a reality!

Friends memberships also helped fund \$5,000 in scholarships for our apprentices. Thank you for helping us make this program accessible to all.



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 agroecology@ucsc.edu with any questions. Thank you for your support!

Sign up for digital News & Notes

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.

Thank you for being a Friend!

As a member of the Friends of the UCSC Farm & Garden you get 10% off all Friends workshops. Use the discount code "10-OFF" every time you register for a class. Show your membership card when shopping for garden supplies at San Lorenzo Garden Center, The Garden Company, and Sierra Azul Nursery to receive discounts on purchases. *Note: Discount only applies to events sponsored by the Friends of the Farm & Garden.*