

# Sustainable Agriculture

Looking forward for this generation  
and the next...

at **UGA**



## Spring 2019

**H**ow far we've come. I've been going through my office for the past several weeks, sifting through papers for workshops, conference calls, strategic planning meetings, etc. There is a document from somewhere around 1999 called the Statewide Strategic Plan for Sustainable Agriculture Extension Programs in Georgia. Here is a direct quote – "Most of the sustainable agriculture emphasis in Georgia is towards high-yield production to achieve efficiency and best use of resources." Now don't get me wrong, efficiency is important and so are yields. Both are key components of sustainable agriculture, but this statement would no longer suffice as encompassing sustainable agriculture or even as the main focus. Now we expect to preserve and even rebuild our soil, maintain our water quality, and preserve our pollinators and insect communities. This is just the environmental side of sustainability. We look to helping preserve our rural communities, provide fresh fruits and vegetables to everyone, and help farmers find a good quality of life.

On Friday, I retire. There will be a new faculty member who will be hired to work on conservation systems and soil health, but there will not be a particular person as a Sustainable Agriculture Coordinator. The reason is wonderful. It is no longer a separate, anomalous issue, it has become part of base programming - the way to look at things. I know we still have things to do and it's critical that we continue to address sustainability seriously, but look how far we've come.

### Contents

Welcoming New Agroecology Professor - Bill Snyder	2
The Great Georgia Pollinator Census	3
Modern Marketing: How About CSA?	4
Food Waste Solutions On-Farm, On-Campus, and In-Kitchen	5

Thank you to the many faculty, Extension specialists, and Extension agents who have worked hard on so many aspects of sustainability and brought great information to farmers and the public over the years. We've tried to feature some of their work in this newsletter over the years. Never fear! The quarterly newsletter, [www.sustainagGA.org](http://www.sustainagGA.org) and the Sustainable Agriculture at UGA Facebook page will continue to bring the best information possible on sustainable agriculture. Emily Cabrera will be leading that effort.

I have loved knowing and working with you all.

Julia Gaskin  
Sustainable Agriculture Coordinator

## Research

### *Welcoming New Agroecology Professor - Bill Snyder*

Originally from Allentown in eastern Pennsylvania, Dr. Bill Snyder obtained his B.A. in Biology from the University of Delaware, his M.S. in Ecology from Clemson University, and his Ph.D. in Entomology at the University of Kentucky. His graduate work focused primarily on the ecology of predatory insects and spiders, including those important for the biological control of agricultural pests. After a short postdoc in the Zoology Department at University of Wisconsin-Madison, Bill became the Biocontrol Specialist in the Department of Entomology at Washington State University. In Washington, Bill had state-wide responsibilities for biological control research and extension in a wide array of vegetable crops, on farms both large and small and including many organic farms. After nearly 20 years in the Pacific Northwest, Bill is excited to return to the southeastern U.S. where he began his graduate career. He will join the Entomology Department at the University of Georgia, with a home base in Athens, starting July 2019.



*New agroecology professor, Dr. Bill Snyder*

Bill's research and outreach efforts out west focused on the value of on-farm biodiversity for natural pest control. Intensified, modern farming methods often lead to very large fields of single crops because of the efficiency of production at that scale. However, removing natural habitats and simplifying the range of plant species grown can make it difficult for beneficial pollinators, predatory insects, soil bacteria,

and other helpful species to survive. Bill looks for ways to return beneficial biodiversity to farms to restore valuable "ecosystem services," while maintaining farm productivity and profitability. Recent projects have focused on two biodiversity-friendly farming systems, organic mixed vegetable production and the integration of livestock within mixed crop production. His lab has found that these megadiverse farming systems are particularly friendly places for beneficial predatory insects and birds, and useful soil bacteria and fungi, to thrive and assist in controlling pests and improving soil and plant health.



*A big-eyed bug eating a potato psyllid, which is a small plant-feeding insect that is a major pest of tomato and its relatives.*



*A lady beetle and predatory wasp on wildflowers a vegetable grower planted to attract beneficial insects and spiders.*

Dr. Snyder and his research group are looking forward to the wide diversity of soils, climates, and cropping systems in the southeastern US. The lab is particularly excited about a few research directions. First, the team has developed a new interest in the ecology of food safety on the farm. In the Pacific Northwest they found that dung beetles and antagonistic soil microbes effectively suppress pathogenic *E. coli* that otherwise can contaminate fresh produce. Recent work is beginning to suggest that wild songbirds, sometimes viewed as vectors of human

pathogens best excluded from farms, instead eat many pest insects while posing few food-safety risks. Bill is hoping to pursue similar food safety work in the Southeast, alongside research looking at how beneficial bacteria and fungi in the soil allow crop plants to protect themselves against plant-feeding insects and attract predatory insects to their defense.

Nearly all of the work in Bill's laboratory is conducted on the farms of cooperating growers. If you are interested in learning more about the beneficial insects, birds, or soil organisms on your farm, don't hesitate to get in touch with Bill. He'd love to include your farm in future projects.

*Dr. Bill Snyder  
Agroecology Professor  
Department of Entomology  
University of Georgia*

## Grower's Corner

### *The Great Georgia Pollinator Census*

On August 23rd and 24th, 2019, Georgians all across our state will become citizen scientists and participate in the first Great Georgia Pollinator Census. The census is an important initiative to document a snapshot of our pollinator populations. Other goals include increasing sustainable pollinator habitat and increasing the entomological literacy of Georgia citizens. We want people to go from "ooh, it's a bug" to "look at the tarsal claw on that bee!". All Georgians are invited to be part of this project!

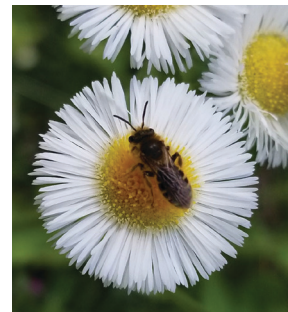
## GREAT GEORGIA Pollinator Census

Pilot projects conducted in 2017 and 2018 focused on community and school gardens. The results of the pilot projects allowed us to improve the count-

ing strategy and to create educational materials for gardeners and teachers. Many schools used the pilot projects as part of their STEM work. The project website, <https://GGaPC.org>, contains all the information a citizen needs to participate. An Insect Identification and Counting Guide explains the details of the project. On the census dates people are encouraged to pick a favorite pollinator plant from their garden to use for counting. This plant should have many blooms that are attracting insects.



*Bumblebee with head in flower.*



*Bee on Fleabane.*

For 15 minutes participants will count the insects landing on their plant and put them in the following categories:

- Bumble bees
- Carpenter bees
- Honey bees
- Small bees
- Wasps
- Flies
- Butterflies
- Other insects

You do not have to be an entomologist to participate; we are not looking for species level identification. Again, the Insect Identification & Counting Guide gives you all the tools needed to tell a bee from a fly and a bumble bee from a carpenter bee. The website also has information on building pollinator habitat as well as information about pollinator

events going on around the state. After counting, participants will upload their counts to the website. For those excited about learning more about these insects, our Georgia Pollinator Census Facebook page shares educational snippets daily and is a format for insect discussion.

Pollinator conservation is important to everyone from apartment dwellers to farmers. Homeowners will learn through this project that many of our native bees forage in a small area, 300-500 ft<sup>2</sup>, and if the bees' needs are met they will stay and provide valuable ecoservices for that homeowner. We can make a real and lasting difference in pollinator protection.

Won't you join us? Sign up at the website. Join our Georgia Pollinator Census Facebook group. Create dedicated pollinator habitat. Learn about insects. Count with us in August. Be part of Georgia pollinator history.

*Becky Griffin*  
Great Georgia Pollinator Census  
Project Coordinator  
University of Georgia

## Grower's Corner

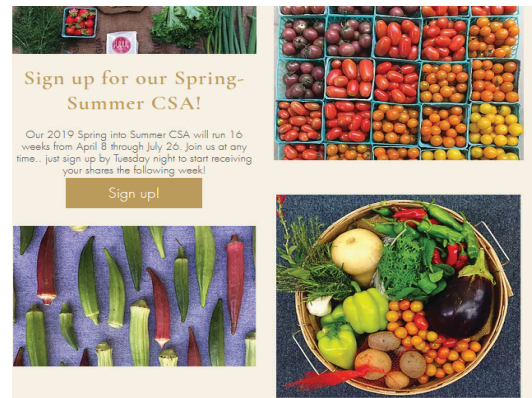
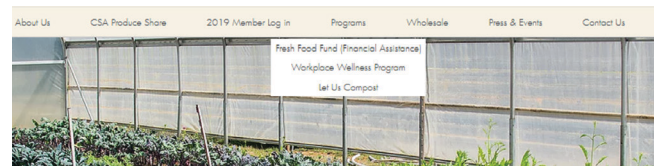
### *Modern Marketing: How About CSA?*

Community Supported Agriculture (CSA) is a direct marketing strategy that started with the idea of supporting local farmers and engaging customers in a more sustainable food system. Similar to a magazine subscription, shareholders instead receive a box of fresh seasonal vegetables, fruits or other items like herbs or cut flowers. The box is ideally paid in one installment price before the season begins, which allows farmers to cover their production costs.

Over the years, marketing trends have changed. Consumers are more health conscious, wanting to know how their food is produced and are willing to reduce their environmental impact. However, they

still want grocery shopping to be fast, convenient and affordable. Large companies and retailers within the food industry have acknowledged these needs by coming up with creative ideas and taking advantage of a variety of emerging marketing opportunities such as groceries or meal kits delivered to your door and store pick-up. These companies have capitalized on the uptick in online shopping, providing customers with convenient, time-saving grocery and meal prep options.

So, what's happened with the modern CSA model? In order to reach out to their customers and differentiate themselves, CSAs have evolved toward business models where farmers address societal issues like improving food access and supporting better nutrition. According to a recent study published by the USDA, producers have adapted the CSA model to fit a variety of emerging direct marketing opportunities, including institutional health and wellness programs and incorporating value-added products, offering flexible shares, and flexible electronic purchasing and other e-commerce marketing tools.



*Screenshots of a website for an Athens-based farmer cooperative, Collective Harvest, who offer a variety of options for managing a CSA subscription online, including options for applying for financial assistance, workplace wellness programs, and ordering value-added items from farmer members of the cooperative.*

A recent survey of CSAs in Georgia highlights the farmers' creativity to connect and establish a strong relationship with their clientele and partners. Farmers provide an innovative and attractive share, able to compete with other marketing channels. CSAs are progressively reaching out to urban populations, a large untapped market with higher disposable income. Share sizes may vary to answer different needs, e.g. individual share for a college student, half share for a couple or full share for a family of four. In addition to fresh produce, value added products like eggs, milk, butter or cut flowers may be available as well. Using new online programs, shareholders are able to customize their share and have it delivered to their door.

Technology is also more and more important for CSA farmers to stay connected with current shareholders and market to potential new customers. Unlike farmers markets, CSA doesn't necessarily offer the opportunity to visit the farm, shake hands and chat with the farmer to understand the production process. That can be done through social media platforms. These are easy to operate, low cost, reach younger generations, and allow customers to sign up for and manage CSA subscriptions from the click of a mouse. Having a social media presence also creates this sense of relationship between the farmer and the customer, a more personalized association. Many CSA farmers post pictures of their families, animals on the farm, what the farm looks like in each season, daily or weekly updates, and offer instant communication with consumers which helps forge a better, and ideally longer-lasting, relationship with their customers.



Screenshot of Collective Harvest's website which invites users to "follow" them on social media. This method of communication helps forge a closer relationship to their customer base.

Finally, sticking to their community-based roots, most CSAs establish partnerships with local businesses. They arrange pick up locations at local restaurants for example and cross-advertise local business products on social media.

Local food systems based on direct marketing opportunities like CSAs have evolved to reach modern consumers and answer their needs in terms of convenience. They also stick out in the food industry by engaging in sustainable agriculture to supply fresh, seasonal and quality produce, while educating consumers on the nutritional benefits and providing better access to healthy foods in their communities.

*Olivia Fassino & Vanessa Shonkwiler  
Agricultural and Applied Economics  
University of Georgia*

## Education

### *Food Waste Solutions On-Farm, On-Campus and In-Kitchen*

**D**id you know food waste is one of the biggest contributors to global climate change? The good news is that reducing food waste is one of the most easily attainable goals to slow down global warming trends. Food waste refers to food that is fit for consumption, but is discarded. Food loss happens in production, storage, processing and distribution. Although both food loss and waste happen all over the world, food loss tends to be more prevalent in developing countries, while food waste tends to be more prevalent in developed countries. Together, the loss of food creates significant challenges in both the environmental and social arenas. It is estimated that a staggering 40% of the food produced globally is never consumed. Cutting down on food waste could have nearly the same impact on reducing emissions over the next three decades as onshore wind turbines. More than 70 billion tons of greenhouse gases could be prevented from being released into the atmosphere. Reducing food waste and loss at every step of the supply chain will

not only reduce the rate of climate change, but has the potential to help meet the nutrient demands of a growing global population, preserve threatened ecosystems, and provide economic benefits through new markets.

### On-Farm

Food waste and loss happens begins on the farm. On-farm losses occur due to pest damage, lack of storage space, weather-related damage, market demands, post-harvest handling, labor shortages, or even in the distribution from farm to markets. One solution for mitigating on-farm losses is “gleaning” food that is left in the fields after harvest to either be composted in order to build soil organic matter, or donated to local food banks. The University of Georgia’s Horticulture Farm does just that. Produce that is not used for research is donated to the Food Bank of Northeast Georgia.



*North Fulton Community Charities Board of Directors President, Mary Good, helps stock produce at the North Fulton Food Pantry. Donations are made from farms and homeowners.*

Another solution is using “ugly” produce. One of the challenges many farmers experience is that consumers and wholesale buyers have certain cosmetic expectations for how fruits and vegetables should look, which leads to constraints on what is actually marketable. This societal pressure to discard their “ugly” produce has surfaced in recent years as one of the most important roles we as consumers play in creating on-farm losses. Restaurants and new businesses are quickly capitalizing on this trend for purchasing the ugly produce to create delicious and nutritious prepared meals. The food produced on our farms is dictated by consumer demands and preferences, so consumers can take action to shift unrealistic expectations in order to mitigate these losses at the very start of the supply chain.

### On-Campus

College campuses are also becoming more involved in the food waste reduction movement and play a vital role in educating students and the community about how food moves in and out of the food system. UGA’s Campus Kitchen is a student-led program whose food recovery and redistribution has significantly mitigated hunger and food waste in the Athens area. Food safety is of utmost concern with any food diversion operation, and that is where programs such as Campus Kitchen, provide an impressive model for repurposing food, in a safe and timely manner, to get it to people who need the food each day. While Campus Kitchen is a University-sponsored program that largely draws from student volunteers, it engages the larger community through outreach initiatives, and education. In 2018, Campus Kitchen received 1,743 lbs of donated produce from the Athens Farmer’s Market, 1,815 lbs of produce from the UGarden Student Community Farm and the Green Roof at UGA, and 49,393 lbs of produce from Trader Joe’s and the Fresh Market, all of which turned into 19,989 prepared meals and 29,403 raw products that were delivered to people in need in the community. If you are interested to learn more about Campus Kitchen, partner agencies, and their model for recovering, preparing and distributing food, visit: <https://www.ckuga.org/>



*Top: Boxes of donated food from local grocery stores are offloaded before being sorted, prepared, and delivered. Bottom: student volunteers deliver food to resident.*

## In-Kitchen

The last element of the food chain is the consumer. What you decide to purchase, how you decide to prepare, consume, store or discard food is ultimately up to you. Food is often wasted in the kitchen due to storing food improperly and not utilizing foods fast enough before it expires. While some spoilage may be unavoidable, there are a couple of options consumers have for redirecting food from the trashcan. Food that is thrown in the trash is taken to landfills, and as those organic materials decompose they produce what is called landfill gas (LFG), which is composed of roughly 50% methane and 50% carbon dioxide – both of which are potent greenhouse gases. When possible, try to use food in prepared dishes, or if needed, divert your scraps away from the trashcan and into a home or community compost system.



Home compost piles can be made from a wide variety of materials. Maintenance of compost piles also range in the level of involvement from the homeowner. For general guidelines on home composting, visit: <https://extension.uga.edu/publications/detail.html?number=C816&title=Composting%20and%20Mulching>

Another possible solution is to process foods through canning, which is a way of preserving meats or vegetables so they can last months or years. Your local Family and Consumer Science (FACS) Extension agent is an excellent resource for learning how to properly can foodstuffs safely. Better Process Controls School courses are offered through Food Science and Technology Extension each year for those who are interested in learning more about canning foods safely and even becoming certified so they sell their own canned products. To register for an upcoming Better Process Controls School or find more information, visit <http://extension.uga.edu/programs-services/food-science/workshops.html>. There are also several community canneries in Georgia, which are open to the public and have knowledgeable supervisors to assist with the canning process. Canning foodstuffs at home or visiting a local cannery can be a fun way to teach kids about

food safety as well as sustainability so less food goes to waste.



Preserving foods safely requires good sanitation practices, proper time and heat application, and labeling for expiration dates. Additional canning information can be found at [https://nchfp.uga.edu/how/general/selecting\\_correct\\_process\\_time.html](https://nchfp.uga.edu/how/general/selecting_correct_process_time.html).

Other ways of reducing food waste from in your home and community:

- Plan meals ahead of time & shop with a list;
- Use more of the food you buy- carrot tops, broccoli stems, bread crust and countless other food items can easily be transformed into delicious dishes;
- Use leftovers;
- Store food properly;
- Start a compost at home or locate a local community program or collection program for your food scraps;
- Support businesses that implement sustainable practices like composting, reusing food and donating food;
- Encourage your local grocery store to donate their food.

*Emily Cabrera  
Sustainable Agriculture at UGA  
University of Georgia*