

Sustainable Agriculture

Looking forward for this generation
and the next...

at **UGA**



Fall 2014

Even if you are growing fall and winter crops, there is something about fall that signals another year coming to a close. The mornings are darker now and soon with the time change we'll trade morning light for early dark afternoons. It does tend to turn your thoughts inwards.

It is the traditional time for gratitude – that we have lived another year, produced another crop, have our friends and family with us. We have so much to be thankful in this country. No doubt we have problems, but a quick look at other parts of the world should be enough to stop and consider how many things we tend to take for granted.

So as the days shorten, take a moment to say thanks. Maybe to a friend or someone who has helped you along the way. Maybe for the good piece of earth that has given you good food or crops for the year.

And we want to thank you – for all you do to make Georgia and this earth a better place.

*Julia Gaskin
Sustainable Agriculture Coordinator
Crop and Soil Sciences Department
University of Georgia*

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Upcoming Events

November 8th, 15th, and 22nd: Organic Farming and Gardening Course
Athens, GA

November 12-13th: Mid-Atlantic Grazing Conference
Moultrie, GA

November 25th: Small Flock Management Workshop
Griffin, GA

Find more information on these events at
www.SustainAgGa.org

Also find basic principles of sustainable agriculture, Extension bulletins, research publications as well as archived copies of this newsletter.

Research

Breeding Watermelons For Organic Production

Although modern plant breeding has been going on for well over a century, breeding specifically for organic or sustainable production is a relatively new endeavor. This is not to say that plant breeders have not engaged in efforts that would fit well with organic growers' needs. Developing disease resistance, improving yield, and quality have been very successful and dovetail well with the needs of organic growers.

Recent efforts have attempted to address more specifically the needs of organic growers. One of the biggest obstacles organic growers face is weed control. Can crops be bred to be weed competitive? One of the things we are looking at in watermelon germplasm is the rapidity of emergence and growth. Watermelons, as a vining crop, can compete effectively against weeds once they vine out and cover the ground, but early in the crop cycle they can be overwhelmed by fast growing weeds. Can we select for more rapid seedling emergence and growth that would help watermelons compete more effectively with weeds? This will probably not eliminate the need for weed control, but may help with other



Watermelon growth habit. Plant on the left has typical vining characteristic, while the two plants on the right have the short-internode (dwarf) characteristic.



Watermelons started in the greenhouse for controlled crossing.

cultural practices such as early weeding and plant spacing in more effectively controlling weeds.



Dwarf breeding material evaluated in the field.

Although watermelons are known as a vining crop requiring a great deal of space, there are short-internode types available that require much less space. We are investigating the use of this characteristic in conjunction with closer spacing to produce watermelons. Organic growers generally deal with smaller or multi-crop plots and this characteristic may be particularly useful to them. Breeding good quality, high yielding varieties with this dwarf characteristic is one of our objectives.



Vine and dwarf cultivars evaluated for weed competitiveness under different spacing and cultivation treatments.

There are several heirloom watermelon varieties such as 'Moon & Stars', 'Rattlesnake', and 'Congo' that are available from many seed companies. How different are these varieties when purchased from different seed sources? Has there been a significant amount of genetic drift between different sources and has this affected the yield, quality and disease resistance? Identifying seed stocks with uniquely enhanced traits can benefit plant breeders and growers alike.

These are some of the objectives and questions we are trying to answer.

Dr. George Boyhan is an Extension Vegetable Specialist with a 50% extension, 30% research, and 20% teaching appointment. Dr. Boyhan's extension responsibilities are primarily in sustainable and organic vegetable production. Suzanne Stone is a Ph. D. Candidate and Dr. George Boyhan is her major professor.

*Dr. George Boyhan and Suzanne Stone
Department of Horticulture
University of Georgia*

Photo: George Boyhan and Suzanne Stone

Grower's Corner

Predicting Nitrogen from Cover Crops

Cover crops are one of the practices we can use on the farm that have the biggest impact on sustainability. A cover crop is a crop that is grown to prevent erosion, build soil quality, suppress weeds, suppress nematodes, provide beneficial insect habitat, reduce compaction, recycling nutrients and in some cases provide nitrogen. That's a lot to do! The fact that most cover crops do provide multiple benefits is the reason using them increases sustainability.

As we move towards decreasing reliance on fossil fuel based inputs and trying to rebuild soil quality, the use of legume cover crops to supply nitrogen becomes more and more important. Legumes are plants that form a symbiotic relationship with bacteria (*Rhizobia*) that fix nitrogen gas in the atmosphere for the plant to use. When the legume dies, it releases that fixed nitrogen for other plants to use. Many farmers use legumes to provide nitrogen for a following cash crop. For example, sunn hemp is a tropical legume used as a summer cover crop before vegetable crops that need nitrogen. Sunn hemp can fix more than 100 lbs of nitrogen per acre, but not all of this nitrogen will be available to the following cash crop. Many farmers use general values published to estimate how much nitrogen will be available from a cover crop, work off their experience with a particular cover crop, or just guess.

Having a better idea of how much nitrogen a cover crop can provide should help them be more profitable and help them supply enough nitrogen while not over-applying.

For many years, Dr. Miguel Cabrera in UGA Crop & Soil Sciences and Dr. David Kissel at Agricultural & Environmental Services Laboratories have been working to better predict nitrogen release from cover crops. In recent years, a new laboratory analysis technique has made it cheaper and quicker to get the results needed to make a better prediction. Now we are testing a cover crop nitrogen prediction tool on farms and at research farms to see how well it performs.



Harvesting Broccoli at Wide Bottom Farms in Habersham County.

Recently, we harvested broccoli planted as part of a project at Wide Bottom Farms in Habersham County. The farmers grew a cowpea summer cover crop in test plots with three test plots left without a cover crop. We collected soil and cover crop samples before the cowpeas were turned in and gave a nitrogen credit for the cover crop based on the N prediction tool results. The average broccoli yield in the plots with no cover crops was 4,474 lbs/ac and the average yield from the plots that received the recommended amount of nitrogen minus the predicted nitrogen from the cover crop was 4,665 lbs/ac. This was good news. It indicates if we give a nitrogen credit for the summer cover crop, the farmer can reduce his nitrogen fertilizer by that amount and expect to get comparable yields.

So the data is beginning to show some promise with this new nitrogen prediction tool. We have more work to do to make sure it will work for farmers,

but we hope to have this available for you to use in the near future. We will give you updates in this newsletter in the future.

Our thanks to Phil Franklin, James Franklin and Carey Madigan at Wide Bottom Farms, and to Steven Patrick, Habersham County agent who helped with this project.



Broccoli planting crew!

*Julia Gaskin
Sustainable Agriculture Coordinator
Crop and Soil Sciences Department
University of Georgia*

Extension

What Kind of Food Hub is Right for You?

The National Good Food Network Food Hub Collaboration Conference brought together a huge variety of food hubs where they could share ideas and talk about how they worked in their area. What became apparent was that while the USDA Agricultural Marketing Service has a definition of a food hub, there are so many forms these can take. As yet there is not one model that rises to the top. The overriding ideal for food hubs is to secure more money for farmers and provide a market for local and regional food. Many groups are unsure of which type of food hub they should form. The answer is to look at the specific needs in your area and see what the farmers want. Here are a couple of models that have proven successful.

Eastern Carolina Organic (ECO)

The mission of this North Carolina based food hub is “to support emerging organic farmers and organic tobacco farmers while improving the supply of local organic produce”. They started in 2004 as a non-profit born out of the Carolina Farm Stewardship Association and were awarded a \$48,000 grant from the Tobacco Trust Fund Commission to assist the transition of tobacco farmers into organic farming. They are unique in that in 2005 they transitioned to a for-profit LLC, but are based in the ideals of a co-op. This farmer-manager owned hub is composed of 40% farmer ownership and 60% management ownership with farmers making up 3/5 of their board of directors. This ensures that while the management owns more of the company, the farmers have the largest voice in decisions the hub makes. They value all of their staff, including the warehouse packer and truck driver who have phantom ownership. This means they can participate in profit sharing, but without the tax burden.

ECO distributes the profit each year to farmers as patronage profit, where the farmers get a percentage of what they sold to ECO. This is an extension of their mission to support their farmers and also encourages farmers to sell to ECO, ensuring a supply each year.

Corbin Hill Food Project

Unlike ECO, this New York based hub started to fulfill demand for local food by increasing the consumption of fresh fruits and vegetables in vulnerable populations in Harlem and the Bronx. The hub is split as a for-profit and non-profit (operations). The hub works with local organizations in the communities to identify need. Once the need is identified



Some food hubs serve their community by having members pay to take a “share” of the produce.

ied, they work with local farmers in Upstate New York to fill the demand.

To get a better idea of how this works, let's say that a job-training center in Harlem wants to have fresh vegetables for sale for their community because there's only one bodega in the neighborhood and people have complained about how long it takes to go to the grocery store. The center would work with Corbin Hill Food Project to purchase wholesale local produce and then sell it at discount to their community members at their center as farm shares. Community members pay a flat rate and then are able to take a "share" of the produce. By buying large quantities they can get a lot of local food and have it where community members already congregate.

Since their customers are predominantly poor, the hub has a flexible program. If a customer informs the staff they are below the poverty line, they receive a large discount when buying a box.

On the hub side, the farmers deliver their product to their facility and then the hub outsources their trucking to deliver the boxes to the organizations that distribute them. All of their workers at the hub are given fair wages.

This is a great example of how hubs need to think creatively to fulfill their mission and stay economically viable.

Veritable Vegetable

This San Francisco based hub was founded in 1974 and currently sources and delivers on a regional



The ideal for food hubs is to secure more money for the farmers and provide fresh and local food to the market.

basis, including Hawaii, Colorado and New Mexico.

Their core tenants are integrity, community, excellence, innovation and sustainability. The organization has adapted over time as the numbers of conventional distributors and food hubs have grown. They started off only selling vegetables, but have transitioned into selling meats, tofu and grains due to market interest and a need to add complexity to their business. They are an organic retailer, with 99% of their product is certified organic.

This hub currently sources from 300 growers from California and the northwest, specializing in small and mid-size farmers. They sell to over 500 customers, including restaurants, schools, groceries, and corporate campuses. They are a pack and repack operation, with no processing or further handling.

Over time, there has been pressure to lower prices as competition increases. This means that they must be innovative with balancing values and profits. One example of how they do this is with their trucks. They have seven hybrid tractor trailers and hybrid refrigerated trailers that are full every time they hit the road. This means that they will haul other company's products to ensure there's no wasted space. They also have 598 solar panels which offset 80% of their energy.

Where they don't cut corners is with their staff and farmers. Their staff are highly valued, with all employees paid a higher than living wage and are key to company decisions. They also have a "farmer protectionist stance" unlike many conventional distributors. Ensuring these values remain in the company is still a process. They are currently finalizing a staff ownership policy that will aim to be flexible and equitable as the core founders retire.

*Kate Munden-Dixon
Ph.D. Candidate
University of California, Davis*

Education

UGarden: The student-run demonstration and teaching farm at UGA!

As you drive along South Milledge you may have seen cultivated plots and groups of students out in the field and asked; “What is that?” or “What are they doing?”. It’s UGArden!

In 2009, a group of students connected to the University of Georgia Go Green Alliance, who were interested in sustainable agriculture, wrote a proposal petitioning for a student community garden to be created on campus. The group was called the Campus Community Garden Initiative and their goal was to create a space on the main campus where students could learn how to grow food using sustainable practices, provide an educational space for university faculty and students, as well as the Athens community to learn about those practices, and donate much of the produce grown to the community.



Planting kale during a UGArden work day.

Space on the main campus proved challenging as the University of Georgia is in a constant state of growth. With the help of David Berle, Associate Professor in the Horticulture Department at UGA, and support from the UGA Horticulture Department and the College of Agriculture and Environmental Sciences, several acres on South Milledge Avenue were made available. This space had previously been used by the Animal Sciences Department as a sheep, pig, and cattle farm. The group of students adopted the name UGArden Club but after a short time the garden space became known simply as UGArden and the name has stuck.

The current mission of UGArden has been expanded somewhat from the original proposal, but it remains a community of students taking an active role in the local food system and it is achieved through four basic goals: 1) to teach students to grow food using organic practices; 2) to share healthy, sustainably grown food with members of the local community who are less fortunate;



The UGArden Club meets for the produce stand, harvests produce for the community, has social activities and special classes as well.

3) to engage students in the local community through service learning; and 4) to provide opportunities for students to learn practical skills and experiment with new ideas. UGArden has continued to expand from the first $\frac{3}{4}$ acre plot to over 6 acres in cultivation. The UGArden staff now includes a full-time farm manager, two full-time AmeriCorp Vistas, 5-10 student interns, a host of Master Gardeners, and a large number of student volunteers, including the UGArden Club.

Utilizing sustainable agriculture practices, UGArden operates on a cover-crop rotation program, with about 1 acre of vegetables in cultivation each season. UGArden also has a small fruit orchard, shiitake mushroom production area, culinary and medicinal herb gardens, and a beehive. The management program adheres to organic practices as determined by the National Organic Program, though the farm is not USDA certified organic. In addition to providing a space for students to volunteer and learn about sustainable agriculture, UGArden also serves as an experiential lab space for classes from the Local Food Systems Certificate and the Certificate Program in Organic Agriculture

as well as two Freshman Odyssey seminar classes focused on food production. A local homeschool group utilizes space as a means to teach their children how to grow food as well.

UGArden also has provided space for undergraduate and graduate student research projects focused on sustainable agricultural practices. Recent student research projects have included substrate evaluation for raised beds, substrate evaluation and irrigation systems for green wall systems, and organic squash production. With the addition of the AmeriCorps Vista Volunteers, we have been able to offer more tours to college level and grade level classes as well as other members of our community.



Basil was grown in this green wall system as part of a graduate research project.

Engaging students in the community is one of the key goals at UGArden. UGArden has a longstanding partnership with another student organization, The Campus Kitchens at UGA, housed by the Office of Service Learning, by providing fresh produce each week that is used in meal preparation for food insecure seniors in our community. UGArden has two sister gardens, one at Clarke Middle School and one at the Athens Community Council on Aging. UGArden staff and student volunteers help

maintain those gardens with support from the middle school students and ACCA clients and staff. UGArden also provides plants, compost and tools when needed to keep these gardens growing. Two other key partnerships include the Community Garden Network in Athens and the School Garden Network where student labor, plants, compost, and tools are supplied as needed.

Members of the student community at UGA are encouraged to participate in UGArden work events and activities by coming to UGArden during our student volunteer workdays, which are posted on their Facebook page. Members of the Athens community can support UGArden through our student produce stand, sponsored by the UGArden Club, and through the Athens Area Master Gardeners Program. For more information see our website at ugarden.uga.edu or contact the Farm Manager, JoHannah Biang, at jb1410@uga.edu or the Volunteer Coordinator, Mary Schulz, at meschulz@uga.edu for information or a tour.



The UGArden is located at 2500 Milledge Avenue, Athens, GA 30602.

*JoHannah Biang
UGArden Farm Manager
University of Georgia*

Mark your calendars for following conferences:

Southeast Regional Fruit and Vegetable

January 8 - 10, 2015 Savannah, GA

Website: www.seregionalconference.com

**Southern Sustainable Agriculture Working Group
(SSAWG)**

January 14 - 17, 2015 Mobile, AL

Website: www.ssawg.org

