



Farm Profile:

Clemson Student Organic Farm

*by C. Alex Pellett,
 Clemson Student
 Organic Farm Intern*

Clemson University's Student Organic Farm is tucked in a corner of the historic Calhoun Fields on the outskirts of the main campus. The Student Farm has been producing fruits and veggies using sustainable production methods since 2001 and received organic certification in 2005. Under the guidance of Farm Manager Shawn Jadrnicek, Clemson students and enthusiastic volunteers work to balance human consumption with natural processes.

The Calhoun Fields have been part of Clemson University from the beginning, since Thomas Green Clemson bequeathed land for the establishment of an agricultural college upon his death in 1888. Before that, the fields were used to grow cotton and other crops as part of the homestead of prior owner, John C. Calhoun. The fields were fertilized by sediment deposited by floodwaters from the Seneca River. The importance of the area was later recognized by Clemson President Robert Cook Edwards, who fought to protect it from inundation before the Hartwell Dam Project in the



Farmers taking a break under the student designed main pavilion on the farm.

Photo courtesy of Clemson Student Organic Farm

1950s. Now, the Calhoun Fields and a significant portion of the Clemson main campus (including Clemson's football stadium) are protected from Lake Hartwell by two enormous dikes and a pump station.

The farm is designed for productivity and ecological harmony. Farm roads run along slight, natural ridges in the landscape. This minimizes erosion, reduces road maintenance and keeps farm vehicles out of the mud. The roads are further built up with woodchip mulch from trees taken down by Clemson landscaping. Mowed strips of grass are maintained around the Farm to buffer from sprays

on the neighboring conventional corn and soy fields, and to discourage the occasional groundhog.

The production fields are clustered around a central hub, like petals on a flower. The sheds, greenhouses and other buildings are located in the center, with roads and irrigation pipe spreading outward to the fields. Since the farm is located in bottomland, drainage is critical for successful operations. Field rows are on a ¼ percent

slope so that excess water runs off, but not so fast that it erodes valuable soil. Drip irrigation is used on most of the crops, because it makes efficient use of water. When possible, drip tape, the staples that hold it down and valves are reused. Some crops, like potatoes, are periodically flood irrigated.

Rainwater is collected from the roof of the main pavilion building, stored in a large tank and used to fill a series of ponds. Integrated into the landscape, the ponds provide microclimates for a variety of perennial herbs and fruit trees, habitat for fish (which eat mosquito larvae), and thermal mass to heat the greenhouses. Some of the runoff from fields fills ephemeral ponds that provide habitat for wildlife, especially migratory birds. The heavy

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CAROLINA FARM STEWARDSHIP ASSOCIATION (CFSA)

CFSA is a membership-based organization of more than 3,200 farmers, processors, gardeners, businesses and individuals in North and South Carolina. CFSA's mission is to advocate, educate and build connections to create sustainable food systems centered on local and organic agriculture.

CFSA Main Office

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From the Director

New Ag Census Reveals Biotech's Big Lie

Once every five years, the US Dept. of Agriculture (USDA) surveys America's farmers for the Census of Agriculture. The Census is the most comprehensive picture available of farming in the US, covering farm sales, crop and livestock production, farmer demographics and production practices. The data guides federal farm programs and investment in the sector. The latest Census, based on farmers' reports of their 2012 activities, was published in early May. It shows that our movement has much work to do, and soon.

Encouraging news came in local food stats. USDA tallied for the first time the number of farms with sales direct to retail stores, restaurants and institutions, and North Carolina ranked fifth in the country. Direct-to-consumer food sales were up 8 percent nationally. South Carolina put most of the country to shame in direct sales growth with a 116 percent increase, zooming into the top 20 states and jumping to number three in the Southeast, behind Virginia and North Carolina. The Carolinas combined had more than 3,300 farms that sold value-added products, up 53 percent from 2007. These numbers validate the benefits that come from promoting and investing in local food distribution, as advocated in last year's "Making Small Farms Big Business" report commissioned by the SC Dept. of Agriculture and funded in part by CFSA.

Nationally, organic farming continued its rapid growth, with farm sales of organic products increasing 82 percent since the 2007 Census. In North Carolina the growth was even more significant, reaching more than \$15 million in sales, more than double the amount in 2007 and highest among Southeastern states.

Yet combined, local and organic sales were less than half a percent of total farm sales in the Carolinas. The chemical- and capital-intensive industrial paradigm continues to



Roland McReynolds, Executive Director

dominate, and the 2012 Census shows its impacts are getting worse: The big got bigger, farming became more expensive and more damaging to the environment, and the small and mid-sized family farm found it harder to survive. Total farm output in both Carolinas increased by more than 20 percent, and the largest farms captured all the increase. Ninety percent of the farm products sold in North Carolina were from the 10 percent of farms that had more than \$500,000 in income; in South Carolina, farms that size were just 5 percent of all farms, and produced 87 percent of the state's total ag output. Both those shares-of-sales figures were increases over 2007.

Farms' costs of production rose even more sharply than sales, up 28 percent in North Carolina and 31 percent in South Carolina, with spending on fertilizers, pesticides and seeds up 63, 74 and 46 percent respectively. Little wonder that the number of beginning farmers and farmers under 45 in the Carolinas has shriveled since 2007, and the average age of farmers ticked up by another full year. The barriers to entry in farming have only gotten worse. Conventional corn, soybeans, cotton and confinement livestock make up the overwhelming proportion of the Carolinas' farm production, and so it is obvious that the ag chemical and biotech manufacturers are the real beneficiaries of the growth in our farms' ag productivity.

The losers: our environment and rural communities. The ag biotech giants have claimed that seeds genetically engineered to be tolerant of chemical herbicides would reduce pesticide

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19th Annual Piedmont Farm Tour

The 19th annual Piedmont Farm Tour took place April 26 – 27 with over 8,500 people visiting 39 local farms. Picture perfect weather set the scene and farm tour attendees saw everything from baby farm animals to barley, hops and wheat that go to make beer. Four new farms joined the tour this year: Farm Boy Farms, Ramblerill Farm, Woodcrest Farm and Cooper-Lasley Farm. Many thanks to our Piedmont Farm Tour co-sponsor, Weaver Street Market, and to all the volunteers who make the farm tour a success year after year. The biggest thanks goes out to the farmers for making the Piedmont a vibrant example of what sustainable agriculture looks like for the rest of the country.

Organic Consulting and Conservation Activity Planning Available

Many producers that consider USDA Organic Certification cite the associated costs as a major obstacle. As you have likely heard with the passing of the new Farm Bill, the Organic Certification Cost Share Program has been reinstated! We are extremely glad that this important program will continue to help make organic certification more economically feasible

COST SHARE DETAILS:

If program details remain the same, producers can be reimbursed for 75% of the costs – up to \$750 - associated with USDA Organic Certification – up to \$750 with submission of the appropriate documentation to the South Carolina Department of Agriculture. This is a reimbursement-based program, so you must first successfully become certified to qualify. This program is handled by each state's Department of Agriculture. To receive reimbursement, you'll need to submit appropriate documentation, which you can find at the following links.

South Carolina– funds are available!

<http://agriculture.sc.gov/userfiles/file/forms/OrganicCertificationAssistProgramGrantApp.pdf>

<http://agriculture.sc.gov/userfiles/file/w9.pdf>

North Carolina– funds available soon!

To be added to an alert list to receive program details and applications please email Heather Barnes: heather.barnes@ncagr.gov

Or check in periodically at the NCDA Organics website to download the application:

<http://www.ncagr.gov/markets/commodit/horticul/ncorganics/>

CFSA Welcomes New Staff!

CFSA is proud to welcome two new staff members to the team!

Patricia “Trish” Tripp will serve as our Local Produce Safety Coordinator for North and South Carolina, consult with farmers across the Carolinas about Good Agricultural Practices (GAPs) and help them become GAPs certified. Trish comes to us from Foster-Caviness Company where she was the Director of Sustainability and responsible for ensuring compliance of all sustainability and food safety practices.

Elizabeth Read will serve as the Communications and Development Director and will oversee communications, membership and fundraising efforts for CFSA. She comes to us from Company Shops Market in Burlington, NC, where she was the Marketing Manager. Elizabeth is also a board member for the Piedmont Food and Agriculture Processing Center in Hillsborough, NC, and was a collaborator in the launch of the American Sustainable Business Council, a ‘green’ alternative to the Chamber of Commerce.

Welcome Trish and Elizabeth!

CFSA Bids Farewell to Fred Broadwell

CFSA's long serving Education Director and past board member resigned this March. In his six years as the Education Director, Fred dramatically improved the quality of our programming, helping hundreds of farmers improve their stewardship

of the land and the success of their operations. Fred rebuilt our highly successful farm tour program, helping thousands of people connect with small farms in their communities. He was responsible for making CFSA's Sustainable Agriculture Conference the largest and best sustainable farming conference in the South.

He established a relationship with the UNC School of Social Work, which allowed us to do innovative work like the sustainable agriculture inventory of South Carolina, and to have access to a pipeline of talented and dedicated people, including current staff members Jared Cates and Anna MacDonald Dobbs.

We will miss Fred and wish him the best of luck with the new and exciting challenges ahead. Former Education Coordinator, Laura Stewart, has since been promoted to Education Director, and we look forward to all she brings to the position!



Fred on one of the many farm tours he organized in his time at CFSA. We'll miss you Fred!

User-Friendly Changes to the Website

You've given us feedback over the past few years that our online system – for memberships, donations and event registrations – is not easy to use. We heard you, and we've made a big change!

We're excited about our new database and the user-friendly features that will benefit you:

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Organic Tomato Production in High Tunnels

by Kurt Taylor, Extension Associate, North Carolina A&T University

According to CFSA's Organic Produce Marketing Survey (OPMS) conducted in 2012, there is more than a \$1.5 million supply gap for organic tomatoes grown and sold in the Carolinas. There is no better time to take advantage of this consumer demand, and with generous cost share programs for the construction of high tunnels through the National Resource and Conservation Service (NRCS), farmers are able to extend the growing season and increase profits.

High Tunnel Production

The Carolinas' mild climate allows for the use of high tunnels to extend the growing season for tomatoes without the added cost of fuel, which is required for greenhouse production. The Environmental Quality Incentive Program (EQIP), sponsored by the NRCS, will share up to 75 percent of the cost of a high tunnel to encourage season extension growing methods. Through this program, more than 200 high tunnels have been built

in North Carolina. With the price of organic tomatoes fetching \$2-4.30 per pound, investing in a high tunnel is a smart move for the business savvy farmer. Further, tomatoes grown organically in a high tunnel have a decreased risk for disease, reduced fruit cracking, and reduced need for continuous weeding.

High tunnels generally allow growers to plant two to six weeks earlier in the season, before the last frost date, and harvest two to four weeks earlier than farmers who plant in the field. In the Piedmont region, tomato transplants can be planted as early as March 1 and as late as mid-July for harvest after the year's first fall frosts. In North Carolina, the planting schedule is usually two weeks ahead of the Piedmont in the east and two weeks behind in the west.

Of course, most farmers grow more than tomatoes, leading to increased use of moveable tunnels. Though relatively new, moveable tunnels are gaining popularity due to their adaptability and ability to support a diversified crop rotation. Because the tunnel can be moved, the farmer can use the land more effectively by planting different crops that do not need the heat protection at that time in the newly exposed space. Time between

plantings is not sacrificed to plant cover crops or to leach the soil of built up salts. Animal production can be incorporated in this rotation system with a moveable tunnel by using the high tunnel for raising animals, such as chickens, during an off-planting season or as part of a crop rotation, nutrient management scheme.

Most tunnels are covered with a single layer of plastic; however, a second layer can be added in conjunction with an inflation pump that drives air between the two layers of plastic. A double layer provides an additional 8-12°F while reducing light intensity approximately 2-6 percent compared to a single poly that gives an extra 5-8°F during the winter. Plastics used on high tunnels are normally 4-millimeter greenhouse-grade quality. Different types of plastics are available with various qualities or attributes a farmer might prefer, such as anti-condensate, luminance THB (Thermal Heat Block) and (IR) Infrared polyethylene, among others.

Since high tunnels create their own microenvironment, irrigation has to be provided for the crops. This can be achieved through drip tape or trickle irrigation. The use of these methods provides immediate advantages: reduced water usage compared to overhead irrigation, reduced disease through decreased leaf wetness, better weed control by only watering the economic crop, reduced soil erosion, and reduced application of fertilizer or pesticides.

Another distinct advantage of drip irrigation is the ability to inject OMRI-listed water-soluble nutrients, fertigation, and water soluble pesticides, chemigation, through the irrigation system. This technique allows nutrients, water and chemicals to be applied as the crop grows, rather than most of the nutrients being applied at once at planting. Tunnels are normally vented from the side by rolling up the side curtain



A crop rotation plan is important for any high tunnel production. Here, a high tunnel is being used for leafy greens while tomatoes, or other crops planted here previously are planted elsewhere for the season.

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from ground/baseboard to the hip board with a manual or automated crank system. Ventilation is also accomplished by opening the high tunnel doors; a few high tunnels are equipped with ridge vent. Ventilation is important to reduce heat, humidity and increase air movement within the structure.

To yield maximum harvestable fruit, tomatoes need to be trellised. The two most popular trellising methods used in high tunnels are the high wire system and the Florida Short Stake System.

Trellising should begin immediately after planting because it is easier to maneuver and train the plants while they are young. The high wire system is normally used for long vine (indeterminate) varieties, such as German Johnson and Paul Robeson. Indeterminate tomato varieties will continue to produce additional vines and flower clusters throughout the growing season. These plants are normally trained one or two leaders to the high wire system.

The short stake system is used for short vine (determinate) varieties, such as Amish Paste and Black Prince. Determinate type tomatoes produce side shoots that terminate in a flower cluster and are usually no more than five feet tall.



Jason Lewis of Wild Pilgrim Farmstead with his high tunnel tomatoes.

Photo courtesy of Anna MacDonald Dobbs

Suckering increases airflow in the tunnel and prevents leaves or stems from touching the ground, reducing opportunity for disease to travel up the plant. Suckering is done on stems between the main stem and leaf. Indeterminate tomato plants are suckered once per week to maintain one or two stems (leaders) for best quality, easy harvest, and better airflow. Determinate tomato plants are only suckered up to the first flower cluster.

In conclusion, the high demand for organic tomatoes combined with cost share programs for high tunnels offers a great opportunity for farmers to extend their growing season and make more money.

For more information on organic certification or cost share funding visit: www.carolinafarmstewards.org/farm-services

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Mark your calendars for the 2014 Sustainable Agriculture Conference in Greenville, SC on November 10 - 12!

For sponsorship opportunities in 2014 please email Thomas Locke: thomas@carolinafarmstewards.org, or call the CFSA office at 919-542-2402

We look forward to seeing you in Greenville this November!



Clemson Student Organic Farm...(continued from cover)

rains last summer provided plenty of opportunity to observe excess runoff. As soon as the soil dried out, we plowed out improved drainage channels to keep floodwaters out of the fields.

Swathes of fruit trees, perennial herbs and other flowering plants support a diversity of beneficial insects. Buckwheat is seeded at the borders of the fields – it suppresses weeds, attracts parasitoid wasps and enhances the aesthetics of the farm. The tiny parasitoid wasps don't waste their time stinging farm workers; they are too busy collecting nectar to fuel their flight to the nearest crop pest. The wasps lay an egg on the back of caterpillars and other pest insects. When the eggs hatch, the wasp larvae destroy our pests for us!

Although proactive solutions such as crop rotation, parasitoid wasps and manual pest removal are used on the farm, occasionally organic pesticides are deemed necessary.

Produce from the farm is made available to the public through our 100-member Community Supported Agriculture (CSA) program. The CSA program runs for 14 weeks twice a year, first in the spring/summer and again in the fall. CSA members come by every week and pick up their share of our harvest. Because of the

intentional grading and orientation of the fields and efficient layout of the farm, production can continue even through difficult weather conditions such as the excessive rain experienced last year.

The farm provides a valuable resource for teaching, research and Extension outreach. Creative Inquiry courses for student experiential learning in sustainable agriculture are offered each semester, and the farm is commonly used for class visits and tours. A summer course is also offered where students gain hands-on experience with organic vegetable production and marketing. Countless student workers toil in the fields. The farm also hosts interns who spend several months working and learning at the farm before reporting what they learned to the University.

A variety of research projects are ongoing at the farm, including studies on alternative greenhouse heating

systems, aquaponics and black soldier fly composting. As part of his Plant and Environmental Science (PES) M.S. degree research, Shawn Jadrnicek is collecting data on the effects of row covers combined with hydronic heating for season



One of the several ponds and greenhouses on the farm.

Photo courtesy of Clemson Student Organic Farm

extension lettuce production inside high tunnels. David Robb, another PES Master's student, is conducting research on organic, no-till production of vegetable crops. Holly Garrett, a PES PhD student, is investigating bioaccumulation in comfrey. David Thornton, in Biosystems Engineering, leads teams of students in black soldier fly studies.

The Farm Extension Outreach program offers a series of workshops for farmers and Extension agents each year on various topics related to sustainable and organic farming. You can see the Student Organic Farm on the Upstate Farm Tour, June 7-8 from 1-6pm both days. The farm is available for private and group tours by appointment. Scheduled, guided tours are also offered each year and visitors are also welcome to stop by for a self-guided tour.

For more information, check out:
www.clemson.edu/sustainableag/

Author Bio: When he's not toiling in the fields, Alex enjoys his research in geospatial statistics and playing the harmonica. His past in Memphis, TN, Austin, TX, and San Francisco de Sigsipamba, Ecuador, has prepared him for a future in sustainable agriculture.



Transplants ready to go in the ground.

Photo courtesy of Clemson Student Organic Farm

Executive Director Letter...(continued from page 2)

use by allowing farmers to make more targeted applications of those toxins. Now, 30 years into the biotech revolution, the new Census shows a 25+ percent increase of total acres in the Carolinas being treated with herbicides. As GE seeds have encouraged overuse of herbicides like Roundup, weeds have become resistant to those chemicals, causing farmers to call in more toxins to fight back. A stunning 26 percent of the land area in North Carolina's top 10 crop-producing counties was poisoned with herbicides in 2012, and in some counties the figure is over 40 percent.

While chemicals pollute their soil and water, those farming-dependent communities aren't seeing promised economic benefits from the growth of industrial ag. Eight of North Carolina's top 10 ag counties in 2012 had poverty rates above the state average of 18 percent, and poverty rates in every single one of North Carolina's top 25 ag counties increased over the previous decade. The companies that control our ag system want us to believe that GMOs and

pesticides are necessary to feed a rapidly growing global population, and yet they can't even manage to feed their neighbors.

Folks, this should make us mad. The agro-industrial complex has a PR blitz underway to greenwash itself, and they are getting away with it. CFSA and its allies across the country are on the front lines fighting back. Hundreds of thousands of Carolinians care about these issues, but they don't know where to go to do something about it. We depend on you to help us reach them. Call our office or email today and volunteer to get involved. Together we can change food and farming for the better, and build on the progress we've already made to effect bigger change by the time the next Ag Census rolls around.

Sincerely,



"Bang to Bacon" Event Held at Ninja Cow Farm

In today's world of fast food convenience, biotech windfalls and extreme disconnect between the food consumers eat and where it comes from, it's not often that one has the opportunity to attend an event like the one held at Ninja Cow Farm this winter. "Bang to Bacon" was a day long journey that began with living pig and ended with delicious food and a renewed understanding of why supporting local, sustainable farmers is so important. **Read the full story on the CFSA blog: www.carolinafarmstewards.org/blog.**



Photo courtesy of <http://dianemckinneyphotography.com>

Association News...

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- Use your social media credentials to login (optional!)
- Set up automatically recurring donations and membership renewals
- The "forgotten password" loop is a thing of the past
- No more hunting through the online store – we'll send you directly to event registration, donation and membership forms.
- Enjoy snazzier email communication with information better targeted to you

If you haven't done so already, please create a new login for your account by clicking on "Member Login" on the homepage, and double check to make sure your information transferred correctly.

If need help navigating the new system, have any questions or find errors on your record that you need helping fixing, please contact Anna: anna@carolinafarmstewards.org or 919-542-2402.

Save the Dates!

Upstate Farm Tour

June 7 & 8

NEW! Triad Farm Tour

June 7 & 8

Eastern Triangle Farm Tour

September 20 & 21

Retail Ready Workshops

October 10 & 11

October 28

December 10

Sustainable Agriculture Conference

Greenville, SC

November 10 - 12

For all the details & more events:
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