

Sustainable Agriculture

Looking forward for this generation
and the next...

at **UGA**



Fall 2012

With fall in the air it is sometimes difficult to think about next spring, but some planning and doing now will reap great benefits in the next growing season. Using crop rotations and cover crops are essential practices in sustainable agriculture. Both these practices require that you think ahead.

Using cover crops may be one of the most beneficial things you can do for your fields. Cover crops keep the soil covered, prevent erosion, build soil organic matter, and help keep nutrients where subsequent cash crops can use them. They can also help reduce input costs by suppressing weeds and supplying nitrogen if legumes are used.

In Georgia, the most commonly used winter cover crops are cereal rye and crimson clover. Cereal rye excels in developing a deep root system that can scavenge nutrients leftover from summer crops. If planted before Halloween and left to mature, it will out compete and shade out winter weeds. The rye can be rolled down or flail mowed and left on the surface as a mulch to continue weed suppression, particularly with large seeded crops like soybeans or transplanted vegetable crops. Rye provides a lot of carbon to the soil and extra nitrogen fertilizer may be needed with a heavy rye residue layer to prevent nitrogen deficiency in the cash crop.

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Upcoming Events

September 25: Broad River Pastures Farm Tour
September 27: Holistic Organic Methods in Vegetable and Fruit Production
September 27: Farm to Fork Workshop
October 9-10: Starting a New Food Business Workshop
October 16-18: Sunbelt Ag Expo
October 24-26: Meat Processing & Safety Workshop

Find more info about these events at www.SustainaAgGa.org

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

Crimson clover is a legume that fixes nitrogen from the atmosphere. When the clover plant dies, this nitrogen is mineralized and released to the next crop. Crimson clover can fix up to 130 pounds of nitrogen, although not all of this will be available to the next crop. Although this cover crop provides nitrogen, it may not suppress weeds as effectively. Many growers have begun combining a cereal cover like rye or oats with a legume like crimson clover or Austrian winter peas. This helps them combine the benefits of both.

There are many different potential cover crops available to fit into almost any crop rotation. We have more information on picking the right cover crop for you on our website.

So think ahead. It's not too late to order cover crop seeds and capture those benefits on ground you would have left fallow over the winter.

Enjoy.

Julia Gaskin
Sustainable Agriculture Coordinator

New Research and Education Center Supports Sustainable Agriculture

As a result of federal budget cuts, the J. Phil Campbell Sr. Natural Resource Conservation Center (JPC) in Watkinsville, GA was closed earlier this year. This was a blow to sustainable agriculture research in the Piedmont given the Center's long legacy of research on soil conservation, carbon sequestration, and water quality in both grazing and row crop production. The USDA scientists who were located at the JPC are national leaders in this work.



Water quality testing for rotational grazing

Although we will miss our colleagues from the JPC, the legacy of this facility will not be lost. The College of Agricultural and Environmental Sciences (CAES) is now operating the facility as a Research and Education Center (REC) under a five-year revocable permit from USDA. This new REC provides unprecedented facilities for teaching and research around sustainable animal and plant production systems, as well as the assessment of environmental and socioeconomic impacts. The facility houses some unique research infrastructure, including field-scale and micro-scale watersheds, water quality and rainfall simulation research plots, ground water monitoring wells, and organic transition fields. In addition, the facility is ideally suited for extension and demonstration activities, such as the Beginning Farmers and Ranchers Training Program.



Conservation tillage with a heavy rye cover crop

One project we hope to implement in the near future will compare the environmental and economic impacts of continuous grazing with rotational grazing. Rotational grazing is a forage management system utilized by producers based on available forage in multiple sections or paddocks within a pasture that provides the ration for the animals for a specific period of time. This project will not only provide research data that will benefit farmers, but also serve as a demonstration site for field days and grazing schools.

Most of our former USDA colleagues and collaborators at the station have taken other positions with USDA's Agricultural Research Service (ARS). For example, Harry Schomberg, Alan Franzluebbers, Michael Jenkins, and Dinku Endale are now with the USDA-ARS Sustainable

Agricultural Systems Laboratory (Beltsville, MD), Plant Science Research Unit (Raleigh, NC), Water Quality and Ecology Research Unit (Oxford, MS), and Southeast Watershed Research Unit (Tifton, GA), respectively. Dory Franklin has joined the Department of Crop & Soil Sciences at UGA and will continue her research at the JPC-REC.



Canola research field

As stated above, the facility is owned by USDA but currently managed by the CAES. Eric Elsner (eelsner@uga.edu) serves as the station superintendent, and Harald Scherm (scherm@uga.edu), Assistant Dean for Research, as the CAES administrative contact for the JPC-REC. Please contact either of them if you are interested in conducting research, teaching, or extension programs at the station.

*Dr. Harald Scherm
Assistant Dean for Research
Professor of Plant Pathology
University of Georgia*

UGA hosts 1st Annual Organic Twilight Tour

The University of Georgia's certified organic farm opened its gates for a First Annual Organic Twilight Tour this summer. The Durham Horticulture Farm is UGA's own organic research and demonstration farm in Watkinsville, GA. The event was sponsored by the College of Agricultural and Environmental Sciences, the Department of Horticulture and Southern Sustainable Agriculture Research and Education.

Over 100 people, including farmers, gardeners, and the general public came out on July 19th to learn both how to improve their crops using sustainable methods and how the food they eat is grown.

Researchers were on hand to talk about disease control in squash and cucumber plants, the farm's tomato variety trials, summer cover crops and their benefits, as well as how to grow summer vegetables and sweet corn.

One breakthrough researchers were excited to share about the cool season vegetable rotation is that they were able to grow beautiful organic onions using a Sunn hemp cover crop and only 50 pounds of nitrogen. Normally onions need between 100 to 150 pounds of nitrogen.



Robert Tate, Senior Agricultural Specialist at UGA, discusses current organic research at the Horticulture Farm

Many young farmers interested in learning about organic production came out for the event. The farthest away were two men from Bainbridge, GA. When UGA Sustainable Agriculture Coordinator, Julia Gaskin asked them if it was worth it, they emphatically said "Yes!" "That a five-hour, one-way trip was worth it was the greatest compliment I heard all night" recounts Gaskin.

The Farm also functions as a hands-on learning component of the Organic Agriculture Certificate Program, where students are able to work alongside researchers and design their own projects. Information regarding this program was available at the field day and is online at <http://organic.uga.edu/>.

*Kate Munden-Dixon
SARE Program Assistant
University of Georgia*

Photo courtesy of Lee Shearer, Athens Banner-Herald

Grower's Corner

Tips for Fall Disease Prevention

The unusual weather patterns of this past spring and into summer resulted in outbreaks of tomato diseases in Georgia, specifically late blight (*Phytophthora infestans*), Septoria leaf spot (*Septoria lycopersici*), and leaf mold (*Fulvia fulva*).

The late blight outbreak in the Piedmont appears to have been confined to a short period in June based on what was reported to the plant disease clinic. As expected, this disease diminished once the weather warmed up. However, with frequent rains in some areas, there could be a reoccurrence of this disease or it could be surviving at low levels.

Septoria leaf spot is common in Georgia, but the number of reports earlier this year was unusual and again most likely due to the wet weather in June. Septoria can be distinguished from early blight by the size and color of the spots. Septoria spots are smaller, roundish, and numerous, with a grey center. Under the dissecting microscope, small pimple-like, black fungal structures can be seen in the center of the spots. Early blight lesions are often large and irregular in size with rings of dark necrotic growth.



Tomato Septoria

Leaf Mold is another unusual disease for Georgia. Most years, leaf mold is a relatively obscure disease, except in greenhouse or high tunnel cultivation. Leaf mold spreads during periods of high relative

humidity (>90%) and does not necessarily need rain. The optimum temperature range is from the low 70's into the low 80's. Greenhouses most often satisfy these conditions. This year, leaf mold appears to be prevalent in both field and hoop house situations.



Leaf Mold on underside of tomato leaves

Leaf mold is distinctive from the other leaf spot diseases in that the top of the leaf shows a distinct irregular-shaped yellowing while the underside has a thick, fuzzy carpet of brown fungal spores. Over time, the leaves will die and drop. As with most of the leaf spot diseases, spotting and defoliation usually starts at the bottom of the plant and works upward through the plant. Severity will depend upon cultural and environmental conditions.



Leaf Mold on top of leaves

Management strategies for all three of these diseases, and other foliar diseases of tomato including the more common early blight and bacterial leaf spot, are similar and based on prevention. Most foliar tomato diseases survive on the infected plant tissues that fall to the ground during the growing season. Crop residues should be removed and destroyed at the end of the season to reduce the survival of the pathogens between crops.

A three year rotation away from tomatoes and related crops is optimal and helps distance the plants from the sources of disease. Greenhouses and high tunnels should be thoroughly cleaned and rotated away from tomatoes and related crops whenever possible. Healthy plants are better able to resist disease, so good soil preparation is essential with adequate levels of organic matter and a balance of nutrients and pH (based on a soil test whenever possible).

Some tomato diseases, such as bacterial spot, Septoria leaf spot, and early blight, may be carried on the seed, and seed should be considered as a possible source of initial infections. Use high quality seed from a reputable seed company. If seed is saved, only use fruit from plants with no symptoms of these diseases during the season.

Choose a sunny, open site for tomatoes with good air flow. Low spots or areas surrounded by vegetation or trees will tend to be more humid. Overhead irrigation should not be used on tomatoes. High tunnels should be well-ventilated and fans used as needed to reduce humidity. Adequate spacing of plants, staking, and pruning to open the leaf canopy are all important measures for increasing air circulation and preventing disease. Mulching the ground with organic matter will improve plant health and prevent pathogens from splashing up onto the leaves. Scout for early symptoms of disease and remove infected leaves.

There are various fungicides available, both conventional and organic, but often the above measures alone will be enough to prevent severe outbreaks of disease.

*Dr. Elizabeth Little
Plant Pathologist Extension Specialist
University of Georgia*

Extension

Georgia Farm to School Program Takes Off

Where does milk come from? If you ask this question to many elementary, middle and high school students they may respond “from the grocery store.” However, University of Georgia and Fort Valley State extension agents are partnering with Georgia Organics and the Department of Agriculture to educate Georgia students about agriculture and healthy eating.

The Georgia Farm to School movement can take many different forms, but among the aims are to educate students about farming, teach them how to grow their own food, how to prepare it nutritiously and increase consumption of regionally grown food. Increasing knowledge and consumption of fruits and vegetables for children is critical since Georgia ranks 3rd in the percentage of overweight and obese children.



Georgia students tending their raised beds

Students in Fulton county have been busy growing food for themselves and for food pantries. Louise Estabrook, Fulton County’s extension agent, partnered with Second Chance Alternative School to involve middle and high school students in a variety of gardening activities. Besides learning to propagate vegetable and flower transplants in a greenhouse, they have a one-acre historic vegetable farm that they grow food to supplement their culinary classes, donate to the local food pantry and sell at the local Farmers Market to pay for seeds and supplies.

Denise Everson and Lauren Healey in Clarke and Oconee counties have teamed up to work on a program called, "Cooking with Care," that both increases students agriculture awareness and gives back to the community. This program teaches teenagers basic nutrition, food safety and food preparation skills so that they can create nutritious meals for themselves and their families.

As of this past year, the program has been expanded to include locally grown, in-season whole meals that are prepared by the students and then delivered to a foster family every month. While the program started off with just 14 students a month, the program has seen an huge increase in demand, now teaching an average of 40 teens a month.

These successes are only a few of the many Farm to School Programs led by University of Georgia Extension personnel. Over 20 counties have nutrition and agriculture education programs and over 14 have school gardening components. From students learning how dairy goats are raised and then making goat cheese in Carroll county to raised blueberry beds in Greene county, agriculture education is booming in Georgia.

If you would like to get involved or want to know about what's going on in your area, please contact your local extension agent.

*Kate Munden-Dixon
SARE Program Assistant
University of Georgia*

*Based on information provided by Judy Ashley,
Extension Coordinator for School Relations*

Photo courtesy of Georgia Organics

Henry County Farmers Market Success Leads to More Markets

With the help of extension agents, the Henry County Farmers Market has taken off. During its four years in operation, the Thursday afternoon market has grown from three farmers to seventeen. Consumers are able to buy freshly picked produce from May to September, supporting their local farmers.

Besides enjoying delicious, fresh food, farmers markets have a number of impacts locally. Farmers are able to capture a higher percentage of sales by selling directly to the customer. This money spent at the farmers market stays in your local economy longer than if bought at a chain. How much more? Studies by Civic Economics have shown that for every dollar you spend at a business that is locally owned, 30 to 45 cents stays in the area, opposed to just 15 cents in a national chain. Also, the more farmers and the more they can grow translates into more farmland that is preserved, which helps protect water and air resources and limits urban sprawl. The Henry County market attracts an average of 227 shoppers each week, so that's a lot of local produce and preserved farmland!



Henry County Farmers Market

The success of this market has also sparked the interest of other communities in the county. The City of Hampton was assisted by Henry Extension in the development of a Friday Morning market that hosts 14 growers. Additionally, the cities of Locust Grove and McDonough have started successful Saturday morning markets in their downtown.

These not only bring in customers to shop at the farmers market, but increase downtown shopping as well. With the Henry County market added in, the four markets are reaching over 660 consumers and providing opportunities for over 44 producers and local artisans each week.

These efforts have made the UGA Cooperative Extension more visible in the county and as a result, the attendance to the Lunch and Learn programs has increased, the number of soil samples processed is at an all-time high and interest in local agriculture has increased. Agents are now assisting more local small farm enterprises than ever before.

The Henry County Farmers Market has become the spark to this community and afforded agents the opportunity to speak to market managers from around the state, representatives from other universities, as well as conducting a pilot program for “Enhancing the Safety of Locally Grown Produce”. As the number of farmers participating in the markets increase, consumers will get to enjoy even more local produce.

*Mr. Frank Hancock
Henry County Extension Agent
University of Georgia*

Coming Soon!
**New Research on Current and Potential
Food Hubs in Georgia
&
Farmer Needs Assessment For Food Hubs**