


Winter 2018

Fake News

Federal Grants for Buying Farms and Making Capital Improvements.

Rarely a week goes by without the Sustainable Ag Program receiving either a phone call or e-mail asking how to get a grant to buy land, materials or equipment for a farm. In talking with other Coordinators of the SARE State Professional Development Programs, they often receive similar calls.

So what to think? Apparently, there is a widespread perception that the SARE grant program or some other federal grant program is available to help people buy farms, build barns, buy tractors or other capital improvements. So let me be clear. This type of federal grant does not exist. Perhaps, the confusion stems from a misunderstanding of the cost-share programs that Natural Resource Conservation Service (NRCS) provides for on-farm conservation projects. The key words here are cost-share. This means NRCS will reimburse a farmer for part of the cost after they have implemented an approved project.

The SARE grant program, in contrast, is prohibited from funding capital improvements to a farm. If a certain piece of equipment is needed for a project, it can be rented for the project duration but not purchased with grant money. Another important thing to remember about SARE grants is that these exist to help farmers test whether particular practices or ideas will make their farm more sustainable. In other words, the farmer is conducting on-farm research and needs to have an idea or "hypothesis" that they can test. This means comparing the new idea to their existing farming practices and having ways to measure if they get different results.

These Farmer/Rancher grants and On-Farm Research grants have provided good information for farmers in our state to improve their profitability while reducing environmental impacts and improving quality of life. So take a look at the grant program when the call for proposals comes out this summer. But remember, they will not help you buy a farm.

Best,
Julia Gaskin

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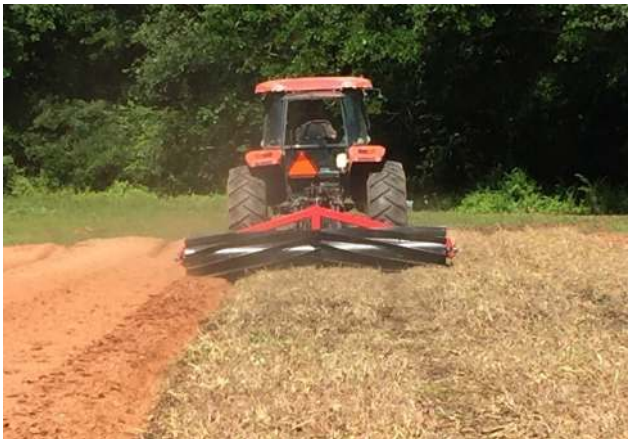
UGA extension

Extension

No-Till Tomato Production Shows Promise

No-till and limited tillage practices have been shown to be effective in row crop production and many growers have adopted these practices. This has not been the case with vegetable growers that still rely primarily on clean cultivation to prepare their fields for planting. Both conventional growers and organic growers would benefit from adopting these practices because they reduce or eliminate soil erosion and result in the net buildup of organic matter in the soil.

In 2017, the Chestatee/Chattahoochee Resource Conservation and Development Council purchased a no-till transplanter and roller crimper which they hoped to lend out to growers wishing to adopt no-till practices. We at the University were tasked with demonstrating the use of this equipment for vegetable production.



A roller-crimper preparing no-till beds

In addition, the University of Georgia's Soil Testing Laboratory has developed software that can be used to calculate a nitrogen credit from cover crop sampling (Gaskin et al., 2015 & 2016). This is calculated by collecting cover crop samples, which are processed by the soil test laboratory for determining the nitrogen credit. The credit amount is determined by the amount of cover crop, the cover crop species, as well as, environmental and soil conditions.

During the 2016-17 winter, we established a cover crop of black-seeded oats and crimson clover. From this cover crop, we pulled samples, which were analyzed by the University of Georgia Soil Test Laboratory. Their analysis suggested a 50 lbs./acre nitrogen credit. We used this information to develop treatments for a demonstration experiment. Treatments included conventional staked tomato production with plastic mulch and 150 lbs./acre nitrogen, bare ground with incorporated cover crop using 100 or 150 lbs./acre nitrogen, and killed and rolled cover crop using 100 or 150 lbs./acre nitrogen (Figure 3).

Conventional and no-till tomato plots

The results of this experiment are listed in Table 1. The conventional production of staked tomatoes on plastic had the greatest yield. The next highest yield was with bare ground and the full nitrogen rate (150 lbs./acre), which did not differ from the bare ground with the calculated nitrogen rate (100 lbs./acre) or the no-till with the full nitrogen rate.

Treatment	Total Yield (lbs/acre)	Early Yield (lbs/acre)
No-till/Full N	27,720	6,340
No-till/Reduced N	18,914	2,961
Tilled/ Full N	30,666	9,073
Tilled/Reduced N	28,266	7,318
White plastic/Full N	38,070	11,764
Fisher's Protected LSD	4,748	3,255

Table 1. No-till tomato production results. Total yield includes small (≤2 inches), medium (>2 & ≤2.75 inches), and large (>2.75 & ≤4 inches). There were no extra-large fruit (>4 inches). Early yield includes harvests 17-28 July 2017 (4 harvests) of a total harvest season of 17 July - 15 Aug. 2017 (9 harvests).

Although the conventional production had the highest yield, there are some potential areas for additional research. Anecdotally, the no-till plots seemed to have fewer weeds, which is a big concern particularly to organic growers. Organic material is known to tie up nitrogen as it breaks down and this may help explain some of the lower yields with the no-till treatments. This may be overcome with added nitrogen, which is an area that could use some additional research. In conclusion, no-till or limited tillage production practices have great potential for vegetable producers. This could have particular applications for organic growers meeting the challenges of weed control and increasing soil organic content.

Dr. George Boyhan
Extension Vegetable Specialist
and Professor of Horticulture
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Research

Perennial Sorghum and Ethiopian Farmers

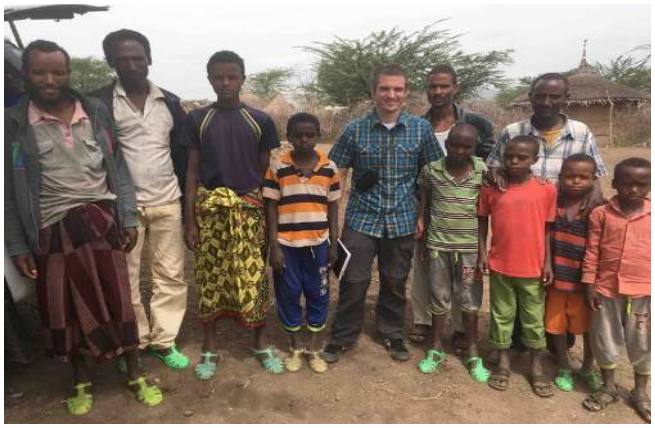
Perennial plants are an important component of ecosystem functions and contribute to soil formation, erosion reduction, water filtration, and carbon sequestration in natural systems. Modern agricultural practices often remove or alter these naturally occuring functions, and as practitioners of sustainable agriculture, we try to reconstruct these lost processes that do not; however, produce the same quality of ecosystem service. Efforts to breed similar perennial varieties to many of the familiar annual grain, legume, and oil seed crops are currently un derway at several public and non-profit institutions. Early research indicates that crop systems featuring these new perennials, often in polycultures with annuals and other new perennials, enhance the ecological functioning of agricultural systems compared to standard annual production systems.

One of these nascent crops is a perennial version of sorghum (Sorghum bicolor) jointly being developed by The Land Institute in Salina, Kansas and UGA's Feed the Future Climate-Resilient Sorghum Innovation Lab. Sorghum's ability to survive extended periods of drought and regrow after harvest from the remaining root and crown portion of the plant for successive harvests—a practice known as ratooning—contributes to its importance as a traditional food crop in many arid and food insecure regions of Africa. Agricultural experts are questioning whether perennial sorghum and other new perennial crops could enhance the food security and livelihoods of smallholder subsistence farmers through extended growing seasons, multiple harvests, labor savings, and efficient use of other costly and difficult to obtain inputs.

Sorghum being sold in the city of Harar, a UNESCO World Heritage Site in Ethiopia.

As part of my master's I was fortunate enough to conduct research on the acceptability of perennial sorghum among traditionally sorghum producing farmers in eastern Ethiopia, and its potential to enhance the food security and livelihoods there. Ethiopia was selected as the study site because it is the center of diversity of the sorghum genus, and existing research indicated that some farmers in the area practice sorghum ratooning. In the summer of 2016 I spent five weeks traveling around the Eastern and Western Hararghe Zones of Ethiopia interviewing farmers and observing farming practices. My trip coincided with the Islamic holy month of Ramadan in this majority Muslim region, and the fasting farmers I encountered resting in their fields were more than willing to share their extensive

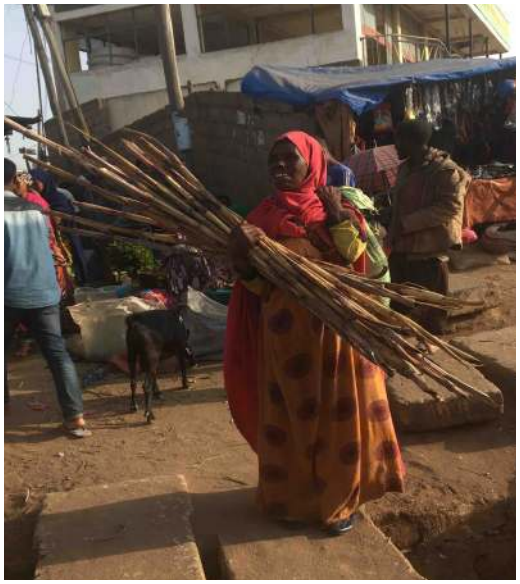
knowledge of sorghum. Luckily, I was able to connect with Abdi, a PhD candidate in plant pathology at Haramaya University. Abdi grew up locally on a farm that produced sorghum and he helped with farmer interviews and the translation of the locally predominant Oromo language to English.



Ty Brooks (author pictured fifth from left) with farmers and their children near Meiso, Ethiopia.

Sorghum has been part of people's lives in this region for millennia. All parts of the sorghum plant were used for food, fuel, fodder, and fabrication material. Farmers described using numerous locally adapted sorghum varieties with different growing season lengths and ratooning abilities to maximize harvest under what they said were increasingly erratic rainfall patterns. Farmers explained that sorghum ratooning was only successful under sufficient rainfall. In years when farmers anticipated insufficient rainfall, short-season varieties were preferentially planted to obtain grain sooner and forgo ratooning.

A market vendor showing some of the variation of sorghum sold in the marketplace of Harar, Ethiopia.



A woman carrying home sorghum stalks to be used as cooking fuel. Many areas of Ethiopia suffer from deforestation and sorghum stalks are an important fuel source in these areas.

Sorghum "Inerja" (pictured here) is a flatbread consumed with every meal. Inerja can be prepared with teff, sorghum, or a mixture of the two grains.

Interviewed farmers adjusted their strategies from season to season in an improvisational manner, suggesting that in this specific context, enhanced ratooning sorghum may confer greater benefit than a truly perennial sorghum. A true perennial could limit the ability of farmers to improvisationally adapt farming systems to environmental conditions. Developing perennial sorghum is still an important goal, and the extensive sorghum knowledge and genetic diversity developed by farmers indicate that they can greatly contribute to the efforts to develop perennial sorghum and its cropping systems. The farmers I interviewed graciously shared their knowledge with me, however use of this knowledge

or locally developed sorghum genetics to develop technologies for commercialization must include the protection of farmer's intellectual property rights.

Ty Brooks
MAEE '17
National Needs Fellowship Recipient

Grower's Corner

Winter Squash Varieties for the Southeast

University of Georgia (UGA) double alumnus Zachary Matteen is on a mission to inform Georgia's growers on which winter squash cultivars perform best in Georgia's difficult climate. Matteen, who completed his Master's degree in December under the direction of Dr. Elizabeth Little in the department of plant pathology at UGA, tested various winter squash cultivars for three seasons (2015-2017) at the UGA Horticulture Farm in Watkinsville, Georgia, as part of a Southern Sustainable Agriculture Research and Education Graduate Student Grant.

Winter squash are the mature fruit of the species Cucurbita moschata, C. maxima, and C. pepo. Cucurbita pepo performs best in cooler and/or drier climates and includes traditional pumpkins, delicata, and acorn squashes as well as the summer squashes. Hubbards and 'North Georgia Candy Roaster' are C. maxima varieties and are not highly disease resistant. Many of the C. moschata varieties are of sub-tropical or tropical origin, and are often better adapted to southeastern conditions. The exception is the popular butternut varieties such as 'Waltham'. Butternuts were developed in the north and are highly susceptible to diseases such as downy mildew. Other C. moschata cultivars tested included 'Seminole', 'Tan Cheese', 'Mrs. Amerson's', 'Chinese Tropical Pumpkin', 'Thai Kang Kob' and the recently developed 'South Anna Butternut' from Commonwealth Seeds in Virginia. 'South Anna' is a cross of 'Waltham' butternut and the disease resistant 'Seminole'. After several years of selection, the 'South Anna' has the shape and flavor of a butternut but the disease resistance of a 'Seminole'.

Examples of winter squash cultivars planted in year three. Front, left to right: Seminole, South Anna, Waltham butternut, Candy Roaster, and Mrs. Amerson's. Back, left to right: Tan Cheese, two Chinese Tropical Pumpkins showing variation in shape. All cultivars are Cucurbita moschata except 'Candy Roaster' which is C. maxima.

Squash cultivars were evaluated for resistance to three squash diseases: Downy mildew, powdery mildew, and cucurbit yellow vine disease (CYVD). Downy mildew is the most important foliar disease of squash and causes leaf death on susceptible cultivars. CYVD is caused by a bacterium that is moved from plant to plant by squash bugs. CYVD kills plants as they start to fruit and can destroy squash plantings when squash bugs are present early in the growing season.

While powdery mildew, another foliar disease, was not a severe problem on any cultivar, downy mildew damage occurred each year and was highest on 'Waltham' butternut, resulting in severe leaf loss and poor yield in two of the three years. 'Waltham' and the C. pepo cultivar 'Delicata Zeppelin' had more plant death due to CYVD. However, the other C. moschata cultivars tested all had good disease resistance. Matteen also tracked squash bug feeding preferences and found that squash bug numbers were not significantly higher on any cultivar. 'North Georgia Candy Roaster', a traditional C. maxima cultivar, was grown only one year and most died early due to high disease levels.

Overall, some cultivars hit all the marks on indices of taste such as sweetness and water content, as well as disease resistance and yield. Standouts which are recommended for Georgia include: 'Tan Cheese', a large-fruited cultivar suitable for savory dishes and pies, 'Chinese Tropical Pumpkin', a vigorous cultivar with high yields of attractive, flavorful fruits, 'Seminole', a high-yielding traditional southeastern

variety that stores well, and 'South Anna Butternut', a cultivar with high yields of superior quality fruit and may be a suitable replacement for the popular 'Waltham' butternut squash.

Downy Mildew defoliating a (A) susceptible 'Waltham Butternut' and a healthy (B) resistant 'Chinese Tropical Pumpkin' in the second trial.

In a dry year, disease susceptible cultivars such as 'Waltham' and the C. pepo acorn, pumpkin, and delicata types may perform well, especially if planted early to avoid some of the hottest parts of the summer. However, in years of heavy rain and/or heavy infestations of squash bugs, susceptible cultivars may die early before producing a good yield. For more information on results of this research, contact Dr. Elizabeth Little in the Department of Plant Pathology.

Zach Matteen
MS Plant Pathology '17
and Dr. Elizabeth Little
Extension Plant Pathologist
Department of Plant Pathology
University of Georgia

Mark Your Calendars for these Upcoming Events!

Georgia Forage and Grassland Council Meeting: February 16
This year's annual meeting will feature updates from Dr. Jennifer Tucker, grazing systems researcher at UGA's Tifton campus, and Dr. Lisa Baxter, a postdoctoral associate at UGA's Tifton campus working on the bermudagrass stem maggot. Farm tour of Deep Grass Graziers.
Registration: Cathy Felton (706)310-3464

Produce Safety Alliance Grower Training: February 16
This is the only training that is currently recognized by the Food and Drug Administration to satisfy the requirements for compliance with the Produce Safety Rule under the Food Safety Modernization Act.
Registration: http://conference.georgiaorganics.org/friday-immersion-sessions/

Georgia Organics Conference: February 16-17
21st annual conference in Augusta, Georgia where farmers, educators, and exhibitors will connect and share information and tools in farming and food systems.
Registration: georgiaorganics.org

Hay and Baleage Production Shortcourse: February 22, and March 8 - 9
This course will be valuable to serious hay producers who seek to learn more about modern haymaking techniques. This program is dedicated to those who are serious about commercial hay production and those who would like to "dig deep" into the subject.
Registration: Call coordinating Extension Office
Feb. 22 - Carroll County: 770-836-8546
Mar. 8-9 - Burke County: 706-554-2119

Small Engine Maintenance and Repair Workshop: February 23
This program will cover how to properly troubleshoot and maintain common garden and landscape equipment. Participants will be taught the basics of how to tune-up and winterize equipment, basic troubleshooting and repair procedures, and how to sharpen knives and chainsaws.
Registration: Beth Horne (770)228-7214

Georgia Fruit & Vegetable Grower's Association Water Summit (Remote Site in Tifton): February 27 - 28
The two-day Water Summit is an opportunity for growers, produce industry representatives, educators and researchers to discuss with regulatory personnel the diverse ways that water is used on farms, the hazards associated with water use on produce, the challenges and concerns related to current standards for water quality testing and workable solutions for reducing risks to protect public health.
Registration: Beth Oleson at (706)845-8200

Fencing Field Day: February 28
This is a hands-on learning opportunity to give producers of all experience levels an opportunity to discover new fencing tools that could benefit their production systems.
Registration: Cathy Felton at (706)310-3464

Water Testing and Employee Training Workshops: March 1, 8, 9
Held at different locations in Georgia, these workshops are supported by the USDA NIFA Georgia Small Farm Food and Safety Campaign, and will cover employee training basics, irrigation water testing basics, tips on how to pass a Good Agricultural Practices (GAP) audit, and will provide information on USDA-NRCS Irrgigation Assistance.w
Registration: billy@globalgrowers.org

Tifton Beef Cattle Short Course: March 6
The 60th Annual Tifton Bull Evaluation Sale in Irwinville, Georgia at the Tifton Bull Evaluation Center. This year's focus will be on the Economics of Southeast Beef Cattle Operations.
Registration: ugabeef.com

Starting a New Food Business in Georgia: March 6 - 7
The presentations are designed to provide participants with practical information on producing safe and wholesome food products. Attendees will have the opportunity to have all of their questions answered by food industry experts.
Registration: Food Science Extension Program at (706)542-2574

Conservation Production Systems Training: March 15 - 16
This conference is for anyone who is interested in conservation tillage practices. This is a great opportunity to hear about research related to cover crops, conservation tillage, soil health issues, farming practices/techniques related to utilization of cover crops, etc.
Registration: Peyton Sapp - psapp@uga.edu

Northwest Cover Crop Field Day: March 21
Focus on integrating cover crops into forage and row crop production systems, demonstrating planting dates and how it affects biomass and nitrogen, performance of mixes and single varieties, soil moisture, weed management and other topics.
Registration: Greg Bowman - gbowman@uga.edu

Northeast Cover Crop Field Day: March 29
Focus on the cover crop benefits and selection for row crop and grazing production systems, termination methods and weed management, and field demonstrations will cover planting dates, performance of mixes and single varieties and other topics.
Registration: David Daniel - dldjr@uga.edu

SARE Our Farms, Our Future Conference: April 3 - 5
Hosted by the Sustainable Agriculture Research and Education (SARE) program and the National Center for Appropriate Technology ATTRA. This national event will bring together our diverse agricultural community: farmers and ranchers, agricultural professionals, agribusiness stakeholders, students, researchers, scientists, agency representatives, and nonprofit leaders.
Registration: sare.org

Georgia Forages Conference: April 5
For the seventh straight year, the Georgia Cattlemen's Annual Convention begins with a focus on forages with the Georgia Forages' Conference starting off the week's events
Registration: georgiacattlement.org

UF/UGA Corn Silage and Forage Field Day: May 24
Field day highlighting corn silage and forage production research updates.
Registration: Cathy Felton at (706)310-3464

Beginning Farmer Rancher Development Program Locations for 2018 - 2019:

Forsyth County:
Small Fruit and Vegetable Production Training:
6 weeks: February 15, 22, March 1, 8, 15, 22 and farm tour on February 24
Registration: Heather Kolich - hnkolich@uga.edu

Carroll County:
Small Business Planning Training:
March 30
Small Fruit and Vegetable Production Training:
7 weeks: April 10, 17, 24, May 1, 8, 15, 22
Registration: Carroll County Extension Office at (770)836-8546

Please Note: The Journeyman Farmer Certificate Program has been supported by a USDA Beginning Farmer Rancher Development Grant. Starting in 2018, some counties may not offer the Hands-On program, or if they do, stipends may or may not be available. Check in with the county agent to see what portions of the program they will be offering.

Find More Information on These Programs and Events at:

www.SustainAgGa.org

You'll also find basic principles of sustainable agriculture, Extension bulletins, research publications as well as archived copies of this newsletter.

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