

CEFS NEWS

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1. FROM THE DIRECTOR

Welcome to the first CEFS newsletter. Our goal through the newsletter is to provide CEFS participants and supporters with regular updates about ongoing activities and programs. There is a lot happening, from exciting new initiatives to our ongoing programs, and this is a way to keep everyone up-to-date with all that is developing. The newsletter will include regular updates from the Unit Coordinators and ongoing programs, but we also hope to feature special submissions from individual faculty and students providing research updates and key findings. The newsletter will circulate via the CEFS LIST and will also be posted on the CEFS website. Our plan for this first year is a bi-monthly publication beginning on September 1. Submissions are welcome and encouraged! Please submit your newsletter items by the 15th of the month prior to publication. Submissions for the November newsletter are due October 15th.

This summer has been very busy at CEFS with activities such as the internship program, ongoing research, spiderwort eradication, and tours for a variety of groups, all of which you'll read about below. In addition, several new grant funded projects have been initiated including a USDA SARE project at the Dairy, a Z Smith Reynolds Foundation organic grain project, and a Kellogg Foundation alternative hog project. We have also received a good deal of local and national publicity including a story on the internship program on a local Raleigh news channel.

On the education front, we submitted a pre-proposal for an NSF IGERT grant in April. IGERT grants (Integrative Graduate Education and Research Training Grant) provide substantial funding (\$3.5 million) over 5 years for focused graduate training in specific subject matter areas. Our submission, "Multidisciplinary Collaborations on Integrating Ecology, Economics, and Sociology in Management of Sustainable Agricultural Production and Conservation of Resources," is a cooperative effort between NC State University, the Duke University Nicholas School of the Environment, and NC A&T State University that would sent up a joint minor in sustainable agriculture and provide interdisciplinary and multi-

institutional training for graduate students at all three institutions. We were very pleased to be notified that our proposal was requested to be developed into a full proposal (120 proposals were requested out of 580 pre-proposal submissions). We will be working hard over the next few months to develop the proposal, as NSF expects to fund 38 IGERT grants this year.

—DR. NANCY CREAMER

2. NEWS FROM THE FARM

I can't help but think about the changes we've seen in the past 10 years. Agriculture Commissioner Graham, Dean Bateman, and Dean Godfrey dedicated the Center for Environmental Farming Systems at the Cherry Farm on February 1, 1994. During these past ten years we have gone through a period of transition from a production crop and livestock operation to a sustainable systems research facility. Rex Sasser, former Superintendent, said in an interview after the dedication that we had entered into a "New World." There are a few facts that I'd like to pass along to remember past events. The first operations committee was formed in 1994 with Carl Tart and Rex Sasser of NCDA, Roger Crickenburger and David Knauft of NCSU, and M.R. Reddy and Ray McKinney of NCA&T. The first soybean and cow pea transition organic crop was planted in the spring of 1994 under the direction of Dr. George Wilson, Chairman of the Organic Committee during that time. Dr. Naderman put together a plan for the Conservation Tillage Unit with the first crop rotations planted in 1995. And I am rather certain most you have haven't forgotten that we've experienced both a 100 year and a 500 year flood in our short history and come back to start again.

One of the biggest obstacles we've had to face recently is the Benghal Dayflower (Tropical Spiderwort) eradication program. Spiderwort was first identified on Cherry Farm back in 2000. Extensive scouting was done in 2003 to determine the amount of infestation on the station. Cherry Research Farm is the only known site of spiderwort in the state. The Plant Industry Division with NCDA&CS has been working with us to implement procedures to control the movement and spread of spiderwort. Permits are required prior to the movement of any material off of the farm. In addition, a wash station was constructed to clean vehicles and equipment to reduce the spread of spiderwort on and off of the farm. I'd like to express my appreciation to all for complying with these procedures. We will need to continue our efforts to control this noxious weed.

Floyd Wiggins has the design approval for the hoop swine structure to be built as part of the Kellogg Project and is ready for competitive bids. The proposed site for the new hoop facilities is where the previous swine confinement facility was. The site did comply with new flood way regulation, and the Division of Water Quality is still reviewing the permit application. The bid process will begin when the permit is approved. We are happy that the station will play an important role in this new project for North Carolina producers.

—EDDIE PITZER, STATION SUPERINTENDENT

3. FARMING SYSTEMS RESEARCH UNIT

The 2004 growing season has been one to remember for several reasons. First of all it has been a rather wet growing season with nearly 30" of rainfall accumulated by 15 August (8.69" in June). Secondly, we have had to deal with trying to control and eliminate the federally noxious weed *Commelina bengalensis* aka Benghal Dayflower, Tropical Spiderwort. This weed has been found in several areas on the FSRU including at least one plot in three of the five systems. We hope by season's end we will have a good handle on the distribution and density of this weed within the FSRU. Finally, we dodged a bullet when Hurricane Charley shifted course and by-passed CEFS in early August.

This fall we will complete our sixth season of production, a landmark for the FSRU. There will be several changes implemented during the upcoming 2005 growing season. This

fall we will rotate the pastures on the crop/animal system to crop production and pasture will be established in one of the crop fields in each replication. The next growing season will see a shift in the crop rotation with peanuts and sweet potatoes being dropped. The research group will select replacement crops during the fall of 2004.

HasNa, a Washington, DC-based NGO, has requested that a group of CEFS faculty provide a two-week training session in sustainable agriculture and extension methodology for 12 agricultural professionals from Turkey. HasNa's mission is to foster cross-cultural understanding and economic empowerment through education, training, and community partnerships, which contribute to bridging differences and enabling individuals and communities to work together towards a peaceful co-existence. CEFS will provide the technical portion of a 5-week program that includes modules in English language and conflict resolution.

—DR. PAUL MUELLER

4. CURRENT RESEARCH AT THE DAIRY UNIT

In fall 2003, a USDA SARE-funded research project (LS-03-154) entitled "An evaluation of pasture-based dairy systems to optimize profitability, environmental impact, animal health, and milk quality" was initiated at the Dairy Unit. This three-year study has the following objectives:

- 1). Examine and quantify factors affecting economic and production efficiency of environmentally sound pasture-based dairy systems in the region;
- 2). Characterize potentially beneficial differences in the composition of milk produced under pasture-based production systems;
- 3). Characterize the antioxidant components of forages and their impact on cow immuno-competence and health;
- 4). Provide interactive educational programs for dairy producers and industry leaders to enable them to make informed production and management decisions.

This experiment is in collaboration with investigators John Fike, Korinn Saker, and Gordon Groover at Virginia Tech and Jean Bertrand and Tom Jenkins at Clemson.

The primary treatment groups are two fall-calving 40-cow groups of Holstein, Jersey, and crossbred cows. One group of 40 cows is stocked at 1.0 cow/acre and the other group is stocked at 1.5 cows/acre. This will be replicated over 3 years with groups of cows calving from October to December. Forages include 20% of the respective areas in MaxQ fescue with Ladino clover; 30% in Tifton-44 hybrid bermudagrass overseeded with annual ryegrass; and 50% in an annual ryegrass and brown mid-rib sorghum sudangrass mixture. Each group of cows will also have access to two 3-acre bermudagrass sacrifice areas where supplemental haylage will be fed when pasture is limiting. Also, two small shade paddocks will be available for each group on days when the temperature-humidity index indicates high heat-stress conditions. The study includes monitoring forage and blood samples for antioxidant levels, forage and milk samples for fatty acid composition, and cow grazing behavior under various environmental conditions. We are also monitoring changes in soil nutrient levels.

Another new study at the dairy is an IPM-funded dairy calf study to examine factors associated with rearing calves in a pasture-based system without use of anthelmintics as a start to examine the possibility of growing dairy calves organically. More information on this project will be provided in the November newsletter.

Ongoing studies at the CEFS dairy unit include monitoring of dung beetle activity and integrated approaches to horn fly control. Recently, Dr. Wes Watson of Entomology and his student, Matt Bertone, reported finding 28 different species of dung beetles at the CEFS dairy unit. Most of the activity was in summer, though some species were active in winter as well. Use of an electronic walk-through fly trap and a "push-pull" system of controlling horn flies

have been investigated and continue to be studied. The population of horn flies at CEFS is highly resistant to the insecticides normally used for control.

The CEFS dairy project was one of four dairy articles featured on August 17 in the on-line magazine, New Farm: <http://www.newfarm.org>, published by the Rodale Institute.

—DR. STEVE WASHBURN

5. BEEF UNIT OVERVIEW

The Eastern North Carolina Beef Cattle Project (ENCBCP) is the formal name for activities at the beef unit at CEFS. As this is the first of frequent updates, I would like to give the background of the unit this month and provide more detailed information on current activities in future editions. The ENCBCP, also referred to as “CEFS Beef,” began about 10 years ago when the CEFS program was dedicated. There had been beef cattle at Cherry Farm for many years preceding our project, and they had been managed similar to most herds in eastern NC - with large pastures, a mix of genetics, and little emphasis on pasture management. The herd had been used for quite some time for veterinary student training.

Farm Superintendent Eddie Pitzer had worked with NCSU to develop an updated management program prior to the dedication of CEFS. Jim Green worked on a pasture layout design and a design for a piped watering system. Dr. Temple Grandin, the world renowned livestock behaviorist from Colorado State University, was brought in by the vet school to design a handling facility and holding pen system. When the CEFS project was conceived, construction was already underway on the pasture and watering system. The new working pens were constructed shortly after CEFS was started.

When we started working on the CEFS Beef project, an interdisciplinary group of NCSU faculty and stakeholders met numerous times to establish a mission for the project. We decided that we did not need another site to do detailed research, but rather needed a demonstration site where we could show beef producers and advisors the many management tools commonly recommended, all together in one management program. The pasture system, watering system, and working facility were a start, and we also wanted to demonstrate new forage crops available to producers, programmed heifer development, logical use of crossbreeding in a genetics program, good supplementation practices, animal identification approaches, a good herd health program, and the many other practices that make up a strong beef cattle production system. Another goal we set was to maintain information on as many calves as possible as they proceeded through the production chain including feedlot performance and final product value.

This was a good conceptual start for the project, and an advisory committee was formed to guide the development of the project. Our first step was to start using quality Angus bulls on the entire herd to try develop a uniform herd. A group of Angus x Simmental cows was moved down from the Upper Mountain Research Station that added some good new blood to the herd. The cow herd was culled down to the current 110 calving age cows.

The fencing system has been continually improved to the point where we now have about 30 permanent pastures. We have been through many attempts at establishing improved forage varieties at CEFS Beef. Some have failed and some have succeeded, and as of today our forage system is composed of pastures of predominantly dallisgrass that are used only for summer grazing (they are too wet for winter use), pastures that are predominantly crabgrass and broadleaf signal grass overseeded with rye or ryegrass for cool-season grazing, pastures of MaxQ (non-toxic) endophyte infected fescue, and other pastures dominated by common bermudagrass that are used for the hay feeding season.

For the last 5 years, we have been comparing two sire breeds on the Angus-based cow herd. The standard Angus are being compared to Senepol, a breed developed in the Virgin Islands and known for their heat and parasite resistance. We have been retaining ownership

of the calves through the feedlot (usually in Texas) and getting carcass data back on them. This year, we fed the calves at NCSU's Butner Beef Cattle Field Laboratory where we could measure individual performance, feed intake, and feed efficiency. In brief, the Senepol cross calves give us an increase in weaning weight of about 25 lbs, but they don't perform as well as the Angus-sired calves in the feedlot, and their beef quality is not quite as high. Overall the Senepol breed may have potential to improve beef systems in Eastern NC. There is a lot more to tell about the Senepol project so I will leave that for future editions.

Recently we have been hosting many tours, agent trainings and producer workshops at CEFS Beef. There has been considerable interest in many aspects of our program, which is encouraging. The site remains an important location for the training of veterinary students, and our colleagues at the College of Veterinary Medicine, currently Dr. Dawn Capucille, have been a key to the success of the program.

At CEFS Beef we will continue to strive to develop a model beef production system for Eastern North Carolina. Research will continue to be done within the setting of our production system, but the primary mission will continue to be one of outreach and training for beef producers and their advisors.

— DR. MATT POORE

6. SUMMER INTERNSHIP AT THE STUDENT FARM

Twelve very impressive individuals completed our 8-week internship on July 30. The Thursday morning hands-on activities, usually at the student farm, seemed to be their most enjoyable set of experiences. This group was really tuned in to vegetable production and marketing. Field trips rated pretty high among the interns, although they encouraged trips that were closer in to CEFS. Monday lectures were a bit long for them as they preferred to be outside doing things. Special projects ranged from planning nutrition with the plants we grow to increasing consciousness of farming practices in developing nations.

At present, summer intern Hilary Bravenac has stayed on to assist Melissa Bell and others in research activities. We also have an intern from France, Benjamin Bathfield, who is with us for a 10-week period ending about October 17. Benjamin is not only assisting Bryan at the student farm in fall activities but is connecting with several of our graduate students in their research activities. Maria Miranda Gomez, our full season intern, will be here until the end of November. She also continues to assist at the student farm, is involved in some of the research activities at CEFS, and is planning a vermicomposting project. Will Roberson, another full season intern, is focused on production at the student farm as he prepares to set up his own farm in the future. We are expecting other visitors and participants to the farm including an agronomist from Haiti who will spend three weeks at the CEFS student farm in October.

—DR. PHIL RZEWNICKI

7. WHAT'S GROWING AT THE STUDENT FARM

Interns and participants celebrated the 2004 year with a brickyard cornucopia event during the season's last farmers' market in Raleigh at the campus brickyard. The celebration marked the end of a busy summer of internships and farmers' markets (Goldsboro and Raleigh). Visitors enjoyed music, juices, art work, displays of harvested products and colorful decorations which created an air of celebration in the brickyard. Interns have since returned to their home states to continue in studies, work, and life after CEFS. All involved feel confident that the students will carry with them a more insightful understanding of farming and food.

Food continues to be harvested from the student farm and is being delivered to a community soup kitchen in Goldsboro that serves over 150 homeless residents of the city of

Goldsboro daily. The farm has also decided to get cover crops in place a bit early this year in order to allow for more planning time for the 2005 season. There are several meetings planned to consider the options open to CEFS student farm in terms of program focus for the 2005 growing season.

—**BRYAN 'BUSHA' GREEN**

8. CEFS WELCOMES A HOST OF VISITORS

CEFS has hosted a number of groups for farm tours, educational programs, and policy discussion in recent months. Among the universities that have visited are Auburn, Alabama A&M, Tuskegee, Eastern Carolina, and the University of Louisiana-Lafayette, where they are interested in starting a CEFS-like project. We have also welcomed international visitors, including a group Moldovan agricultural professionals and a visiting professor from Uruguay, and look forward to the opportunity to work with visiting scientists from Turkey in November.

CEFS has also continued to impact agriculture in North Carolina. Producers from North Carolina have utilized CEFS as a training resource throughout the summer with the monthly Third Thursday program. We've also been visited by the NC Board of Agriculture, an external review team evaluating dairy research programs in North Carolina, NCSU veterinary students, an NRCS group studying Pastureland Ecology, and a Cattleman's producer group from Eastern North Carolina.

In early July we hosted a meeting at CEFS with Environmental Defense to discuss ways to coordinate efforts with Farm Bill policy and implementation and are looking forward to continued productive discussions. Finally, a luncheon meeting is planned for early September to meet with local county leaders. Individuals from Wayne Community College, Chamber of Commerce, Economic Development, Extension Service, County Manager and Mount Olive College along with the CEFS coordinators plan to discuss the activities at CEFS and how we can be involved with the local community.

9. NORTH CAROLINA ORGANIC GRAIN PROJECT

NC State University, with grant funding from the Z. Smith Reynolds Foundation, has begun a project concentrating on organic grain production in North Carolina. This project is focused on equipping farmers in North Carolina with the skills and agronomic support needed to produce and market organic grain crops. The goal of this project is to motivate individuals, through extension education activities, to adopt organic crop rotations and to pursue markets for their value-added farm gate products.

Many North Carolina farmers have expressed an interest in opportunities for organic grain production. However, many farmers who are interested in transitioning to organic grains have limited knowledge of organic grain production practices that work well in North Carolina. Extension education workshops for farmers, planned for the late fall and winter, will address production issues such as weed control, pest control, seed varieties and sources, fertility, and equipment. CEFS has a unique opportunity to address these production challenges through research and by providing an excellent location for extension education programs on these issues. Another challenge for farmers interested in organic grain production is the marketing of their product. Currently, there are a few market possibilities in the state and region for organic grains, including Lindley Mills, Braswell Milling, and Anson Mills. There is also increasing demand in North Carolina for organic grains in livestock feeds. Activities of this project will include providing marketing information to growers and assessing the demand for organic livestock feed in the state, while coordinating efforts to process organic grain into organic feed in key areas of North Carolina. An organic grain

production manual and a website with organic grain production and marketing information will result from the project.

This project has great potential to help farmers in North Carolina realize the profitability of organic grain production; however, we need more input from farmers interested in organic grain production, as well as from extension agents and others interested in organic grains. For more information on the organic grain project, please contact Project Coordinator Molly Hamilton, molly_hamilton@ncsu.edu.

—MOLLY HAMILTON, PROJECT COORDINATOR

10. ALTERNATIVE PORK PRODUCTION

With a grant from the W.K. Kellogg Foundation, CEFS has begun a new project to study alternative pork production strategies for small-scale producers and develop alternative marketing strategies for their products. New swine research facilities will be located at CEFS with demonstrations of deep-bedded hoop house structures and pasture-based systems. The project also aims to help independent North Carolina producers develop niche markets for organic, sustainable, and antibiotic-free pork products and market these products directly to consumers through a Community Supported Agriculture (CSA) model.

This project is a partnership of NC State University, NC A&T University, North Carolina Department of Agriculture and Consumer Services (NCDA&CS), Rural Advancement Foundation International USA (RAFI), Carolina Farm Stewardship Association (CFSA), American Livestock Breeds Conservancy (ALBC), Red Gate Farms, NC Sierra Club, NC Environmental Defense, NC Coastal Federation, Neuse River Foundation, Southern Environmental Law Center (SELC), and Sustainable North Carolina. For more information contact Susan Jelinek (919) 515-3492, Susan_Jelinek@ncsu.edu.

—SUSAN JELINEK, PROJECT MANAGER

11. NEW AGROECOLOGY MINOR AT NC STATE

A new undergraduate minor in Agroecology has been established at North Carolina State University and is now available to students through the Crop Science Department. Given the importance of the sustainable agriculture, this interdisciplinary program will provide students with an understanding of the interrelationships between agriculture and the environment. A prominent feature of the Agroecology program is a multidisciplinary curriculum drawing from crop science, ecology, horticulture, soil science, animal science, entomology, and natural resource management disciplines that provide students a basic foundation in Agroecology but also flexibility. Additionally, two new core courses, Introduction to Agroecology (CS 230) and Advanced Agroecology (CS 430) were developed for the Agroecology program. Drs. Michelle Schroeder and Phil Rzewnicki will be teaching the Introduction to Agroecology course this fall semester and currently have 16 students enrolled. For further information on the Agroecology minor program and new Agroecology courses contact Dr. Michelle Schroeder (michelle_schroeder@ncsu.edu).

—DR. MICHELLE SCHROEDER

12. GRADUATE STUDENT NEWS

Congratulations to our recent graduates!

Dave Butler, MS Crop Science. Dave recently began a PhD program at the University of Georgia.

Molly Hamilton, MCS. Molly is now the program coordinator for the North Carolina Organic Grain Project based in Elizabeth City.

Susan Jelinek, MS Crop Science. Susan is continuing her involvement with CEFS as a the program coordinator for the Kellogg Project in Alternative Pork Production.

Nathan McClintock, MS Crop Science. Both the Rodale Institute and Partners in Health are fortunate to have Nathan consulting on projects in Senegal and Haiti.

Marie Greenwood (Newman), PhD Entomology. Marie is an assistant professor in the Department of Biology at Lake Superior State University in Sault Ste. Marie, Michigan. She can be reached at mgreenwood@lssu.edu.

Kim Tungate, PhD Crop Science. Kim is working on her master's degree in environmental policy at UNC-Chapel Hill.

13. HELP WANTED

Name the newsletter

Are you ridiculously clever? Have a knack for acronyms? Then we need your input! The CEFS newsletter needs a title. Please email your suggestions to Denise McKinney (demckinn@ncsu.edu). If we choose your suggestion, you'll see it in big print in our November newsletter along with your name!

Lunchtime discussion coordinator needed

We are currently seeking a volunteer to coordinate the sustainable agriculture lunchtime program for the 2004-05 school year. Last year, this weekly meeting time was a great opportunity to discuss issues in sustainable agriculture and catch up with one another! If you are willing to serve as the coordinator, or would like to nominate someone to serve as coordinator, please contact Denise McKinney (demckinn@ncsu.edu). Nominations of persons with names beginning with D and ending with -inney will not be accepted.

Newsletter submissions

Newsletter submissions are welcomed and encouraged! Write these dates on your calendar as a reminder for submitting newsletter items: October 15, December 15, February 15, April 15, June 15, August 15.

14. UPCOMING EVENTS IN SUSTAINABLE AGRICULTURE

September 14: Medicinal Herb and Specialty Crops Field Day in Caswell County.

September 22-24: Acidified Foods Processing and Packaging School in Sanford, NC.

October 19-21: The Northeast Sustainable Agriculture Research and Education (SARE) program will host a conference entitled Setting the Table: Tools and Techniques for a Sustainable Food System in Burlington, VT. Visit www.uvm.edu/%7EEnesare/conf.html.

October 30: Putting Small Acreage to Work Conference from 7:30 a.m. - 3:00 p.m. at the Sampson County Agricultural Exposition Center in Clinton, NC.

November 6: Putting Small Acreage to Work Conference from 9:30 a.m. - 3:30 p.m. at the Forsyth Agricultural Building in Winston-Salem, NC.

November 12-14: Carolina Farm Stewardship Association presents the 2004 Sustainable Agriculture Conference in Asheville, NC!

Additional information about these and other programs can be found at:

www.ces.ncsu.edu/chatham/ag/SustAg/index.html

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