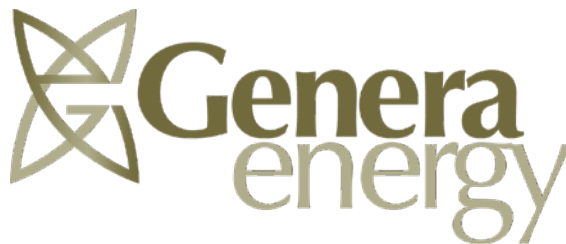


What's happening with biofuels

Who's on first? Or maybe just who's who? You've heard of biofuels and the Institute constructing the state's first biorefinery for the production of cellulosic ethanol. But what about the new names being tossed around? **Just what is Genera Energy and who is DuPont Danisco?** And what do they have to do with UTIA?

Here's a brief primer. **Kelly Tiller** is a member of the Department of Agricultural Economics and co-author of the business model that outlines the state's potential to be a leader in cellulosic ethanol production. She also serves as director of operations for the UT Office of Bioenergy Programs (housed in UTIA) and president and CEO of Genera Energy. As she explains her job, "It just sounds glamorous. It's really a lot of work serving as the liaison between the University and our technical partners."



The next generation of biofuels and bioproducts

"The UT Research Foundation formed Genera Energy as a limited liability company to carry out the biorefinery's activities and capital projects needed by the UT Biofuels Initiative," Tiller details. "Genera provides the flexibility to develop collaborations with private entities that have technology or other needed resources."

Tiller is one of four UT employees who "work" for Genera Energy. Their titles may be lofty, but none receives any extra compensation for their efforts. In addition to CEO Tiller, Tom Klindt serves as Genera's VP of Finance; Sam Jackson is VP of Feedstock Operations. Also, Joe DiPietro has a seat on Genera's board of directors. Genera's management team is rounded out by Paula Flowers, VP of Biorefinery Operations, an ORNL employee working for Genera.

Continued Page 5



Joe DiPietro

Building bridges

The ability of the University of Tennessee to be most successful hinges on all of us working together as a team sharing our strengths and talents. Collaboration is imperative to maximizing our breakthroughs and successes. Especially during these difficult economic times we need to be certain that we carefully make use of all assets to their greatest benefit. There is no doubt that as a university our individual and even more important our collective intellectual capital is the greatest asset we have.

I spoke on this theme January 26 when I addressed the UTK Faculty Senate. As I discussed the uniqueness of the Institute of Agriculture, our statewide reach and capabilities, I also emphasized the need for collaboration between the East and West campuses at the scientist level. Many are already engaged in such collaboration, and I hope more of you will do so in the future. It is through collaboration that we will maximize advances in scientific discovery that translate from the laboratory or campus to benefit the people of Tennessee firsthand.

In the coming months and years, I anticipate that we'll be working with UTK's new chancellor, Dr. Jimmy Cheek, to achieve even greater collaboration. Dr. Cheek's background and comprehensive awareness of land-grant agriculture programs and the efforts we put forth will help us build many more bridges between our campuses. We are looking forward to having him on board.

All the best,

Tree planted to honor longtime supporter

A tree has been planted in front of the **West Tennessee AgResearch and Education Center** to honor the memory of longtime UT Institute of Agriculture supporter, Jane Hazlewood. A West Tennessee native, Hazlewood's father, **Ben Hazlewood**, served as superintendent of the Center for more than 40 years. Jane spent much of her youth there.

Throughout her life, Hazlewood remained devoted to the university. She received her B.S. from UT Knoxville. Later she served on the UTIA Development Board for three terms, and she spent time on the UT system-wide Development Council. In addition, Jane and her parents established the Hazlewood Endowment, a \$1 million gift that supplies graduate stipends for students of the UT College of Agricultural Sciences and Natural Resources. Friends say she also loved Big Orange athletics and was an avid Vol fan.

She lost her battle with cancer on April 2, 2008, yet her legacy of support for Tennessee agriculture lives on.

—Ginger Trice



How do we know when the lights go on?



Caula Beryl

by Caula Beryl, Dean, College of Agricultural Sciences and Natural Resources

As they explain complex concepts, teaching faculty are often confronted by a sea of glazed looks in vacant faces. Those of us who have faced a classroom full of students know what it is like to live for the “aha!” moments. These are the wonderful transformations that you see when a student really grasps a concept and the ‘lights go on.’ How can we know when we are making an impact? How do we really know when learning is occurring?

As architects of the learning environment, the progressive teaching professors are receptive to opportunities to make positive changes throughout the semester that can impact learning. This means that assessment needs to be occurring not just after exams are administered but throughout the course of the classroom delivery. A simple way to gauge whether or not students have grasped an idea is to pose a question that has multiple answers. Divide the class into groups and give the groups a short defined time (such as two minutes) to come up with as many answers to the question as possible. A variation on this theme is allowing students to respond to a yes/no question using electronic clickers that record individual responses and engage the student in determining if they have responded correctly to the question. An instructor that I know who was working on a severely limited budget and could not afford the more expensive electronic clickers used a low-cost alternative—3 x 5 cards in two contrasting colors! Case studies that apply knowledge in a real world context are an excellent way to assess whether higher levels of learning have occurred. Even better is to engage students in discussions about how they would respond to the case study. If controversy occurs, students with opposing viewpoints could be paired and given time to ‘convince’ the each other of the appropriate solution. When a student has to articulate the rationale behind his or her viewpoint, learning is solidified.

Another technique is to ask, “What have I said?” When students have to relate back what they have learned (in a sense, teaching what has just been taught), they are learning at a deeper level. There is an old saying that ‘the best way to learn something is to teach it.’ Another technique that can liven up a class is to make a controversial statement, such as “all suburban landscapes should be allowed to return to nature to minimize negative environmental impact” and then assess the responses made to it.

A time-honored technique such as the one-minute question is an excellent way to evaluate whether students can apply knowledge in real-world situations. With this method, you could ask “What impact would global warming have on agriculture?” or “Do increasing costs of fossil fuels affect the viability of biofuels as an alternative energy source?” Students then are given one minute to write their responses, which are then collected and reviewed by the instructor to determine what aspects of the subject need clarification or expansion.

Assessment is ongoing whereas evaluation typically occurs at endpoints. The exceptional teaching professor is always improving, assessing the improvement, and then improving again to maximize the opportunities to see the “lights go on.”

What's news

Thanks to you, **UTIA's 2008 Campus Chest campaign was a success.** We achieved pledges and contributions totaling \$66,559.96. This represents 108 percent of our goal of \$62,000. We are very pleased to announce that we have once again exceeded our goal. Our pledges and contributions will benefit thousands of people and their families through the participating agencies that assist individuals desperately in need. Our support truly makes a difference in the quality of their lives and the life of our community. —Mike Keel

Coping with the death of a pet can often be a stressful experience. Veterinary Social Work, a program of the Colleges of Veterinary Medicine and Social Work, is offering the Pet Loss Support Group to help those experiencing the grief process. Meetings are free and are designed for anyone whose pet has died or is terminally ill. During the spring, the meetings are held the first and third Tuesday of every month (in March they will be held the first and fourth Tuesday) from 6:30 p.m. to 8:00 p.m. on the UT agricultural campus. Contact the Veterinary Social Work office at (865) 755-8839 or visit www.vet.utk.edu/socialwork for more information.

The 2009 Agritourism Conference "Cultivating Farm Revenue" was geared to help entrepreneurs do just that. Organizers say that more than 200 were expected to attend the conference held January 26 and 27 in Chattanooga, which featured a surprise bonus presentation by internationally known business consultant Jon Schallert. His acclaimed business improvement session "Increasing Sales and Profits as a Destination Business" was a late, but enthusiastically welcomed, addition to the advertised program. Schallert also participated in a "Marketing Roundtable" during which participants had the opportunity to discuss pertinent business issues. Other program topics included the ins and outs of on-farm food service and sessions on liability legislation, insurance and safety and health regulations pertinent to agritourism operations. Megan Bruch, marketing specialist with the **Center for Profitable Agriculture**, declared the program a success and hopes that funding will allow UT Extension, the CPA and the Tennessee Department of Agriculture to hold a fifth conference next year.



Allan Houston, left, research professor of forest and wildlife biology based at the AgResearch and Education Center at Ames Plantation, has been honored with the prestigious National Society Daughters of the American Revolution Conservation Medal for his outstanding work in conservation and education. Houston's volunteer work with youth was emphasized by Sue Luscomb, regent of Chucalissa Chapter, right.

Three department heads named

The Institute of Agriculture has appointed **Robert (Oz) Augé** as head of the **Department of Plant Sciences** in the **College of Agricultural Sciences and Natural Resources** and **Claudia Kirk** as head of the **Department of Small Animal Clinical Sciences** in the **College of Veterinary Medicine**. Additionally, Mike McEntee has been named interim head of the **Department of Pathobiology**, succeeding **Dave Edwards**, who has retired after a 29-and-a-half-year career with CVM.



Robert Augé



Claudia Kirk



Mike McEntee

Research Profile: The AgResearch and Education Center at Milan

We interviewed Center Director **Blake Brown** about the **Research and Education Center (REC) at Milan** and **what it offers AgResearch scientists**.

Describe your location and general facilities:

The REC-Milan consists of 496 acres with an additional 388 acres that are leased from the Milan Army Ammunition Plant. Of this 884 acres, approximately 640 acres are tillable. In a typical year, approximately 350 acres are involved in either small plot or large plot research projects, with the remaining land being rotated to alternate crops or used for crop production to generate revenue. Three irrigation systems (two center pivots and one lateral system) covering approximately 125 acres are available for research purposes and allow researchers to conduct research on various projects while reducing the effects of drought during a dry summer.

How many and what types of employees work at your Center?

The staff at REC-Milan consists of the director, two research associates, two administrative specialists, one senior farm crew leader, and three senior plot caretakers. These individuals are jacks-of-all-trades and do everything from maintenance of the property, facilities, and equipment to planting, maintenance, data collection, and harvest of the research projects, to production of revenue-generating crops, to preparation and implementation of field days, to you name it.

What can your Center offer faculty in terms of land and infrastructure resources?

We have the capabilities to conduct research on basically all row crops that are grown in west Tennessee including corn, cotton, soybeans, wheat, and grain sorghum. Equipment ranging from small plot cone-type planters to field-scale 8-row equipment are available to meet the researchers needs. Equipment for small plot planting, spraying, and harvest

of cotton, grains, and switchgrass are available for research. We have a large research effort involving the production and harvest of switchgrass for use as an energy crop. We have a 32-acre stand of mature switchgrass that was established in 2004. We have recently begun a small effort on annual and perennial forage production. Also we have invested in equipment for precision agriculture including yield monitors on both cotton and grain harvesters, variable rate application equipment for fertilizer application and planters, and most recently a tractor equipped with Auto-Steer using RTK (Real Time Kinematics) GPS systems which provide accuracy of less than one inch. As mentioned previously, we have approximately 125 acres that are irrigated.

Tell us about current research and extension projects currently underway at your Center.

Here's a list of just a few: precision agriculture; irrigation; variety testing; cotton and soybean agronomy; forages; small grains; plant disease control; weed and insect management; and fertility/plant nutrition.

Describe some success stories that have come from work at your Center.

- **Weed Control** – Due to the presence of herbicide resistant weeds at our Center, several researchers have conducted work to evaluate control methods of these herbicide resistant weeds: Larry Steckel – glyphosate-resistant horseweed, Hoelon-resistant ryegrass, and Chris Main – Hoelon-resistant ryegrass.
- **Fertilizer Rates** – A Nitrogen Rate Calculator is available on the Web this month, based on nitrogen rate work done in corn for the past three years at Milan REC and Highland Rim REC by Angela Thompson McClure and Don Tyler. The Web tool will allow producers to pick a nitrogen rate that is the most profitable for irrigated and non-irrigated production corn. A variable rate lime study is also underway, whose results may be used to update lime recommendations for soybean production.



At the Milan REC, a variety of crops are grown with and without irrigation.

UT Gardens news



Beth Willis

Beth Willis is now a permanent member of the **UT Gardens' staff**. As Sue Hamilton assumes new responsibilities as interim director of the Gardens, **Willis will take over responsibilities for plant trials and will serve as trial coordinator.**

The trial results take the guesswork out of what plants ought to be grown, sold, and used in Tennessee. You can see the results from the 2007 variety trials that Willis has compiled on the UT Gardens Web site at <http://utgardens.tennessee.edu/>. In addition to these duties, **Willis also serves as the Gardens Web master and volunteer coordinator.** In these capacities, she will play an important role in helping the UT Gardens grow and develop.

Two other Gardens' tidbits: **The UT Gardens have been invited to participate in the new 'American Garden Award' program** where garden visitors get to vote on their favorite plants in the UT Gardens by text messaging or using a call-in number from their mobile phone. This "mobile marketing" appeals to generation X and Y and is a new marketing tool in the horticulture industry. At the end of the fall season, votes will be tallied by the AGW headquarters in Chicago and the top three most popular plants from participating gardens will win the 'American Garden Award.' More information will follow on how you can participate in bringing great plants to market as the Gardens start the 2009 growing season.

Also, the UT Gardens have been recognized as an official 'Conifer Reference Garden' by the American Conifer Society (ACS). This prestigious status acknowledges the significance of the UT Gardens conifer collection and support from the American Conifer Society. This recognition makes the UT Gardens eligible for regional ACS grants that can be used for expanding our collection, interpretive signage, educational programs and brochures. To be selected for reference garden status, a garden must: be an ACS member; have two to four ACS local sponsors; contain at least 30 specimens representing eight genera; have interpretive labels on each specimen; and have regular maintenance.

Since October of 2005, the UT Gardens has invested \$6,114.00 in developing its conifer collection growing the collection by 276 new specimens. Its current collection is 346 conifers representing 19 genera. The Gardens have also invested \$11,550.00 in permanent interpretive botanical labels, aluminum accession labels, and a computer to electronically store and manage the plant collection database. Since 2005, the conifer collection has become a significant collection in the gardens and helps fulfill the garden's mission. The Gardens plan to offer a conifer symposium in early fall 2009. More information will follow as symposium plans and details are made.

Biofuels, *continued*

Tiller says they all work to ensure that University resources and the state's \$70 million investment are managed prudently. The company's activities are detailed online at their recently redesigned Web site, www.generaenergy.org

So, what is the project's status? In October Genera collaborated with DuPont Danisco Cellulosic Ethanol and broke ground in Vonore for a first-of-its-kind biorefinery. The project is on track to produce cellulosic ethanol by December. Meanwhile, UT Extension experts are working with area farmers interested in producing switchgrass within 50 miles of the biorefinery. Sixteen farmers established 723 acres of switchgrass under contract in 2008, and additional farmers are being sought to plant up to an additional 2,000 acres in 2009.

Tim Rials, director of research for the **Office of Bioenergy Programs**, is working with faculty and outside researchers to refine the process of converting cellulosic materials into ethanol and develop co-products, or materials that have commercial potential, from the conversion residue. A new Bioconversion Laboratory being constructed near the Forest Products Center will house some of this world-class research as early as August. —*Patricia McDaniels*

First-ever Holiday Express at the UT Gardens draws thousands

The 2008 **Holiday Express** at the **UT Gardens** drew more than 9,000 visitors, raising public awareness for the UT Gardens and the Institute of Agriculture. Because of the success, creator Mark Fuhrman has agreed to partner with the Institute again this year to bring back the event.

In addition to the hard work of Fuhrman, his business partner Jeanne Lane, and the UT Gardens staff, student interns and volunteers, Holiday Express would not have been possible without the generosity of: Media sponsors: WBIR, Knoxville News Sentinel; Corporate Sponsors: Cariten Healthcare – a Humana Affiliate, McBride Company, LLC, Pumps of Tennessee, UT Federal Credit Union, Advanced Office Systems, Duck Irrigation, Inc., Eye Care Center of Oak Ridge – Lee Smalley, MD, Schmid & Rhodes Construction Company, Tennessee Master Gardener; and In-Kind Sponsors: All Occasions Party Rentals, Claiborne Hauling, Mark W. Fuhrman Complete Landscape Services, Safe N' Sound, and Stanley's Greenhouses.

Holiday Express at the UT Gardens 2009 will open with a sneak preview for employees Tuesday, November 24th, and will open to the public November 25-29 and then Friday-Sunday December 4-January 3. Additional days of operation will include Monday and Tuesday, December 28 and 29.

Thanks to everyone who came to the show and look forward to seeing you again this year!



Sudanese outreach

Coming to a strange land where you don't know the culture or the language has to be one of the hardest things you can do. But that's the reality for many Sudanese refugees who have migrated from their war-torn country to Tennessee.

UT Extension has a program to help these immigrants adapt to life here. Sumner County Extension agent **Theresa Allan** teaches a cooking class to Sudanese women and their children who now live here. The women need to know new shopping techniques, new food preservation, new plans and how to prepare for their families.

"The people are simply a lovely people," says Allan, "and they have great pride, love for their families, and they seem very appreciative to be here, and to learn what America means."

Middle Tennessee has a large Sudanese population—about 10,000 people in the Nashville area. Many of the Sudanese immigrants came to the U.S. as a result of a relocation effort by the United Nations. You can watch a video about UT Extension's outreach to the refugees at www.agriculture.utk.edu/news/VideoReleases/.

—Chuck Denney



Capital Campaign Update

A Legacy of Love, Care and Devotion

Known as 'Dr. John' to UT veterinary students and alumni for some three decades, Professor **John Henton** and his wife, **Cathy**, have played a central role in the life of UT's **College of Veterinary Medicine**. In addition to his celebrated teaching career in equine reproduction, John has served the college as director of Continuing Education, a capacity in which he's planned and provided countless well-prepared courses and conferences—each with personal touches provided by him and Cathy. In addition, the Hentons have been at the center of many tailgate barbecues for students and alumni, home-cooked breakfast and lunch buffets for continuing education participants, Thanksgiving dinners for students away from their home communities, truly special alumni reunion dinners, and fresh flowers at every entertaining occasion. These are but a few examples of how this couple personally treats the people who come to the college. The Hentons understand that the activities that take place at the college and their home are like pebbles thrown into a pond, with ripples of influence that reach far beyond the initial events. It's clear that they care deeply about the College of Veterinary Medicine and its people.

Recently the Hentons provided a legacy of love, care and devotion to the college when they made a very generous estate commitment of \$1.5 million focused on the people in the Department of Large Animal Clinical Sciences. Their gift focuses on professional development for faculty, staff, and researchers to ensure that the department can continue to attract and retain top-quality people in service to the mission of the department and college.

—Claire Eldridge



Perennial Ag Day/CVM Alumni Tailgate hosts, “Dr John” (in denim) and Cathy Henton (in stripes) pose with CVM alumni and student guests at the 2008 event. The two have donated the annual BBQ for over two decades in support of the College of Veterinary Medicine.

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