



# Tennessee Dairy News

## Dates of Interest:

- June 21-24 - National Holstein Convention, Sioux Falls, SD
- June 28-July 1 - American Jersey Cattle Association Annual Meeting, Nashville
- July 1 - AJCA 49th National Heifer Sale, Murfreesboro
- July 1 - Transfer and Lease Agreement Deadline for Regional and State Junior Dairy Shows
- July 9-13 - American Dairy Science Association Meeting, Minneapolis, MN
- August 1 - Entry deadline for Regional and State Junior Dairy Shows
- August 9 - Retrofit Parlor & Free-Stall Bedding Options, Platteville, WI (608-342-1365)
- August 10 - State 4-H Dairy Judging Contest, Franklin
- August 23 - Central Region Dairy Judging Contest, Lebanon
- September 9 - Easter Region Junior Dairy Show and Dairy Judging Contest, Knoxville
- September 12 - Western Region Junior Dairy Show and Judging Contest, Jackson
- September 14 - State FFA Dairy Judging Contest, Nashville
- September 16-17 - Central Region Junior Dairy Show, Nashville
- October 3-7 - World Dairy Expo, Madison, WI
- October 21 - State Dairy Show, Murfreesboro
- October 31-November 1 - Mid-Atlantic Dairy Grazing Conference, Goldsboro, NC (919-515-7726)

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## *We are Back!*

And hopefully better than ever! We are back to getting information out directly to dairy producers in Tennessee. With this new expanded version of the Tennessee Dairy News, we hope to be able to provide more information covering more topics than ever before. With this issue, we want to update you on dairy activities at U.T. If there is a particular issue that you would like for us to address in future newsletters, just let us know!

## *A Look at Dairy Research in the Department*

*-Kristy M. Hill*

I am often asked if there is any dairy research happening at U.T. And, the answer is a resounding YES! The faces in the department, their focus or the types of research may have changed over the years, but we still have faculty committed to solving problems faced by today's dairy producers and searching for innovative techniques for tomorrow's producer. So, if you would like to know who is doing what around here, let me introduce you to...



### **DR. LANNETT EDWARDS**

Appointment: 85% Research, 15% Teaching  
Contact: 865-974-7286 [jedwards@utk.edu](mailto:jedwards@utk.edu)

Besides conducting research, Dr. Lannett Edwards teaches two graduate level courses; currently oversees three graduate students; and involves undergraduates in her research efforts.

In recent years, Dr. Lannett Edwards has focused her research on fertility issues of dairy cattle. At this time, she is investigating two major issues facing producers....infertility due to heat stress and producing more heifer calves.

All producers in the South know that it is difficult to get cows pregnant during the summer. Researchers have long been trying to find ways to overcome the summer slump, and even though cooling cows has improved the situation, it has not solved the problem. Dr. Edward's group has been investigating the

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### *Dairy Research, from page 1*

effects of elevated body temperature (which can be caused by heat stress, disease or toxins) on the cow's eggs. They have found that higher body temperatures induce premature aging of the eggs, thereby reducing its fertile lifespan. Through their investigations, they continue to gain a better understanding of the basic mechanisms by which temperature effects eggs and early embryos. Information gained through these studies will allow for advances in applied research to develop practical solutions.

Dr. Edwards research team is also searching for better methods of sexing semen. Current methods of sexing semen actually cause extensive damage to the sperm which hampers its commercialization, leading to higher prices for sexed semen. Her group is studying the differences between X- and Y-bearing sperm to gain basic knowledge that will allow for advances in applied research, and hopefully find a better and more economical way to produce heifer calves.



**DR. STEPHEN OLIVER**

*Appointment: 85% Research, 15% Teaching*

*Contact: 865-974-7260 soliver@tennessee.edu*

*In addition to his research efforts Dr. Stephen Oliver is the Co-Director of the Food Safety Center of Excellence; team teaches an undergraduate course; and oversees a large group of professionals, graduate and undergraduate students in his labs.*

Dr. Stephen Oliver is a name that you are probably familiar with. He is often referred to as the "Mastitis Guy." And yes, he is still that. Just as you are constantly battling mastitis on your farm, he is continually searching for new ways to help you. He has kept busy trying to determine why some cows are more resistant to mastitis than others; developing and evaluating techniques for the prevention and control of mastitis; determining the mechanisms that pathogens use to invade mammary tissue and what factors affect their ability to cause infections; and determining what food safety issues are relevant to mastitis infections.

In recent years, you have probably heard or read Dr. Oliver in popular press explaining how intramammary antibiotic infusion of heifers a few weeks before calving will reduce or eliminate mastitis infections during lactation. Many farms are now utilizing this practice as part of their normal herd management. He also worked with Dr. Neal Schrick on research that has shown clinical and/or subclinical mastitis infections in early lactation increases the days to first service, days open and services per conception. His lab also developed DNA fingerprinting techniques to identify several mastitis pathogens. These techniques have been used to determine if an infection is a new infection or a persistent infection. It has also been used to show that horn flies play a major role in transmitting *Staph. aureus* mastitis to heifers. Additionally, Dr. Oliver's research group has potentially identified several factors that may explain why *Strep. uberis* is such an infectious organism. So yes, that "Mastitis Guy" is still very busy helping you produce quality milk from healthier cows!

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## *Dairy Research, from page 2*

### **DR. GINA PIGHETTI**

*Appointment: 75% Research, 25% Teaching*

*Contact: 865-974-7225 pighetti@utk.edu*

*In addition to her research, Dr. Gina Pighetti teaches our undergraduate Dairy Production class as well as a graduate course; oversees two graduate students; and involves undergraduates in her research lab.*



Dr. Gina Pighetti (sounds like spaghetti, but with a 'pig' instead) may be a name that you are not as familiar with, but if you subscribe to Hoard's Dairyman, you will be soon. Dr. Pighetti began her career as an immunologist and has now branched into genetic links with immunology. Her research has focused on mammary health in both cattle and humans. In humans, she has been researching energy regulation in mammary cells and why overweight women are two times more likely to develop breast cancer. She has also been investigating the relationship between energy regulation and cellular immunity within the mammary gland of dairy cows and its contribution to mastitis susceptibility during early lactation.

In an upcoming article in Hoard's, you can read a more in-depth discussion of her most recent venture. In short, her research lab has been trying to identify specific genes that are heritable and directly contribute to disease resistance. Recently, they have found some potential genetic markers. What is so exciting about this? If enough of these genetic markers are found, a DNA fingerprint could be developed to identify bulls, cows and heifers that have the greatest potential for resistance to mastitis. In other words, you could select bulls that will produce offspring more resistant to mastitis. This particular method of selection could be much faster and more accurate than selecting for low SCC and udder traits.



### **DR. GARY ROGERS**

*Appointment: 30% Research, 70% Extension*

*Contact: 865-974-7289 grogers2@tennessee.edu*

*In addition to his research, Dr. Gary Rogers serves as the State Extension Dairy Specialist; oversees a graduate student; and is currently serving as the Editor-In-Chief for the Journal of Dairy Science*

Dr. Gary Rogers is someone with whom you are likely familiar with, but you probably associate his name with Extension work. In addition to his Extension appointment, Dr. Rogers also has a research appointment. The primary focus of his research is to help improve the health, reproductive performance and sustainability of dairy cattle herds and populations. His emphasis has been on the genetic improvement of dairy cattle for these characteristics as they are the most limiting to efficient and economical dairy production.

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## Free Necropsy Services Available

-Kristy M. Hill

The average on-farm death rate of dairy cows in Tennessee is nearly 9%. Many times, cows and/or heifers die on the farm without a clear understanding as to why. Was it disease or infection? Nutritional problem? Accident? Hardware? Old age? Too often the animals are buried without knowing the answer. The Tennessee Department of Agriculture and the UT College of Veterinary Medicine can help you solve the mystery....for free!



Partnership between the Tennessee Department of Agriculture and the UT College of Veterinary Medicine gives East Tennessee cattle producers greater access to necropsy services.

### What is a necropsy?

A necropsy is a post-mortem examination of an animal to determine the cause of death, much like an autopsy.

### Why is a necropsy important?

If the cause of death is not known or cannot be determined by your local veterinarian, a more detailed examination and testing can help you make management decisions. Not every cow needs a necropsy. Your local vet can help you determine which animals to send in for diagnostic exams.

### Where are the necropsies performed?

Necropsies are performed at the C.E. Kord Animal Disease Diagnostic Laboratory (Nashville) and the U.T. College of Veterinary Medicine (Knoxville). Please call the appropriate lab before submitting an animal.

### What if a local vet is not available?

Both the Kord Laboratory and the UTCVM prefer to work with your local veterinarian. However, they will work with individual producers. Producers must be able to provide information about the animal. The disadvantage of not working with a local veterinarian is that as a producer

you will only receive the results of the necropsies. Neither lab will make any recommendations for management or treatment of other animals. You would still have to work with a local vet to interpret results and/or implement changes.

### What about live animals?

This program covers post-mortem exam only.

### Do they need the whole animal or can we send in tissues?

This program only covers necropsy of whole animals (calves, heifers and adult cows) including aborted fetuses and the placenta for evaluation.

### How long after death do they need to be submitted?

This will depend on a number of variables. The carcass of a cow lying in the sun on a hot summer day will deteriorate more rapidly than if it were in a cooler location. In most cases, if the animal is believed to be dead more than 12 – 18 hours, the carcass will be of limited diagnostic value, if at all. Part of the purpose of having a referring veterinarian is to help you select appropriate cases for submission.

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## *New Laboratory Will Provide Services to Dairy Industry*

The University of Tennessee Institute of Agriculture and the Department of Animal Science are proud to announce the opening of the Tennessee Quality Milk Laboratory in July 2006. Their mission is to meet the needs of the dairy industry through diagnostic services, educational resources and ongoing research. The TQML will be located in McCord Hall under the direction of Dr. Steve Oliver. This fee-for-services laboratory will be offering a wide variety of diagnostic tests to enhance the quality of milk produced in Tennessee and the Southern Region. Services offered will be available to dairy producers, veterinarians, milk buyers, milk processors, dairy consultants and other members of the dairy industry.

Services available will include 1) mastitis pathogen identification and antibiotic sensitivity of quarter milk samples; 2) bulk tank milk analysis including: standard plate count (SPC), coliform count, *Staphylococcus* count, *Streptococcus* count, preliminary incubation count (PI or PIC) and laboratory pasteurization count (LPC); 3) *Mycoplasma* culture; 4) molecular techniques for identification of mastitis pathogens for research purposes; and 5) product testing. With this newsletter, we hope you found a brochure about the lab. A complete list of services offered, pricing information and submission forms are available on their website: [www.tqml.utk.edu](http://www.tqml.utk.edu)

### **ATTENTION YOUTH!**

*Transfer and Lease deadline is July 1. Entries for Regional and State Dairy Shows are due August 1. If you have any questions, please contact Jeff Mitchell at [jmitchel@utk.edu](mailto:jmitchel@utk.edu) or (865) 974-7289.*

### *Free Necropsy Services, from page 4*

*Is this service free for all types of animal?*  
No, this free service offered at the UTCVM is only available for cattle belonging to Tennessee producers. The UTCVM offers necropsy services of other animals for a fee; all livestock submitted to the Kord Laboratory in Nashville are performed without any charge.

*What about producers in West Tennessee?*  
At this time, producers in West Tennessee will still have to submit samples to the Kord Laboratory in Nashville. In a February 2006 press release, the Tennessee Department of Agriculture indicated that they were also partnering with U.T. Martin to renovate facilities for an animal diagnostic laboratory. This will provide producers and veterinarians in West

Tennessee better access to diagnostic services, including necropsies. Services at Martin are expected to be available sometime in 2007.

*Is it really free?*  
The only cost to producers is the cost of transporting the dead animal to the lab and any service fee your local veterinarian may charge.

*How can I get more information?*  
You, or your veterinarian, can call the Kord Animal Disease Diagnostic Laboratory (615-837-5125) or if in East Tennessee, contact the U.T. College of Veterinary Medicine (865-974-5673).

## *Tennessee Quality Milk Initiative Needs Your Help*

-Kristy M. Hill

It is common knowledge that the legal SCC limit in the U.S. is 750,000/ml, and you are likely aware of the repeated attempts to lower the legal limit. Though it did not pass this year, future attempts will be made. The rationale behind lowering the legal limit is to be competitive in global dairy markets. Other countries have limits of 450,000/ml or less. Additionally, scientific literature clearly shows that high SCC is associated with a higher incidence of antibiotic residues in milk; the presence of pathogenic organisms and toxins in milk; decreased shelf life; decreased cheese yield; and the list goes on.

Currently, Tennessee ranks 49<sup>th</sup> in the nation on average SCC. Many other Southern states also have high SCC, leading most to believe that you cannot produce high quality milk in the South; so, we could never meet a lower legal limit. Though it is more challenging, we *can* produce higher quality milk in the South. Regardless of legal limits and challenges you face, closer attention will have to be given to milk quality.

Many milk processors are demanding higher quality raw milk. They have set their own requirements on SCC, standard plate counts (SPC), preliminary incubation counts (PIC) and laboratory pasteurization counts (LPC). If your milk does not meet their requirements, they will not accept it. There are producers in Tennessee that have already lost or are on the verge of losing their milk market because of consumer and milk processor driven quality standards.

If your interest has not been sparked yet, how about this: Herds with SCC between 200,000 and 500,000/ml are losing at least 8% in potential milk production. Most of these infections are subclinical! In December of 2005, DHI data from 84 herds in Tennessee was evaluated. Milk loss due to SCC was 8630 lbs per herd. This equals \$1411 lost per herd during one winter month because of subclinical infections! It is estimated

that losses due to mastitis in Tennessee exceed \$18 million annually. Are you interested yet?

In response to attempts to lower legal limits, processors lowering their requirements, the overall lower quality of milk produced in Tennessee and because you are losing significant profits, a diverse group of individuals at UT are proposing a project. This project, led by Dr. Steve Oliver, would involve dairy producers, dairy scientists, veterinarians, agricultural economists, research scientists, Extension personnel and animal health professionals. The project will consist of three phases. First, we will work with individual producers to evaluate their herd, milking procedures, milk machine function, mastitis therapies and other parameters. We will set up on-farm demonstrations and conduct on-farm research to identify *cost-effective* methods for mastitis and quality control. In the second phase, we will use that information to develop educational programs in English **AND** Spanish to deliver throughout the state and Southeast. The third phase of the project will involve working with milk buyers to potentially develop a premium program for milk quality.

However, in order for this to happen, we need your help! Nothing within a University system moves without funding. Money must be provided through state appropriations, university appropriations, grants, contracts or gifts. The leaders of this project are soliciting the UTIA administration for start-up funds. Within a short time frame, we are confident that we will secure funding from outside sources, but we need the seeds to get it started.

If you agree that this project is worthwhile and will benefit producers in this state and the South, please call me or send me an email to show your support. Knowing that our producers are highly supportive of this project will help convince our administration.

### *Dairy Research, from page 3*

In recent years, Dr. Roger's work has proven that selecting for higher dairy form scores and lower body condition has detrimental effects on reproduction and health. As a result, breeding programs have changed how they use this information in selection. They are now selecting for increased productivity with lower dairy form and higher body condition. This should result in healthier cows with better reproduction. Additionally, he has also been working in the area of the genetics of mastitis resistance. His data has shown that electrical conductivity data of milk can be used to genetically improve resistance to mastitis. Therefore, data collected from modern milking parlors will be one of the technologies that producers can use to improve their genetics. This could considerably speed up progress for improving mastitis resistance. Another area of recent work involves looking at risk factors for cow death. This area of interest stems from a dramatic increase in cow death rates during recent years. Crossbreeding to gain hybrid vigor and the use of dairy cattle strains from Europe in crossbreeding programs appear to be viable ways to improve the profitability of dairy cattle in the U.S.



**DR. NEAL SCHRICK**

*Appointment: 88% Research, 12% Teaching*

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*Along with conducting research, Dr. Neal Schrick teaches two undergraduate courses; currently oversees three graduate students; and works closely with Extension Specialists.*

Dr. Neal Schrick is another researcher with a long history in our department. His research focuses primarily on environmental and management factors that affect reproductive performance of both dairy and beef cattle. As mentioned earlier, he worked with Dr. Oliver to show how early lactation mastitis can affect reproductive performance. Through that project he also discovered that the eggs develop normally during a mastitis infection. However, he believes that certain hormones and enzymes during those infections cause the eggs to fail. He is planning future studies to investigate hormonal and enzyme changes during mastitis infections.

Through other research trials, Dr. Schrick's lab investigated early embryonic loss due to elevated uterine prostaglandins in beef cattle. They found that administering a prostaglandin inhibitor at the time of embryo transfer improved pregnancy rates. Also, the group recently identified prostaglandin receptors on the embryo and is currently testing a receptor blocker to help decrease early embryonic death. His lab has also been testing different methods of estrus synchronization and timed breeding programs that reduce labor input and are more economical. He is also pursuing studies on how nutrition and body condition affect reproductive performance. Though much of his work is conducted with beef cattle, many results also apply to dairy cattle reproductive performance. In short, his work addresses getting your cows pregnant in the most economical way.

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We're on the web!  
<http://animalscience.ag.utk.edu/>

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*Dairy Research, from page 7*

As you can see, we still have a good number of faculty committed to solving everyday problems in dairy production. Though we still conduct applied research, not all studies will provide knowledge that can be immediately transferred to the farm. In research, there are many different ways to approach a problem. Some projects have a clear road map and provide quick results. Other projects are similar to searching for a needle in a haystack, painstaking and slow. And still other projects are financially risky and require a leap of faith. But all projects begin with the desire to find tested solutions to complex problems that you, as dairy producers, face.

As always, if you have any questions for any of our dairy faculty, don't hesitate to contact them.

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