

Texas Dairy Matters

Newsletter



Editor: Texas AgriLife Extension
Service - Dairy Team

In This Issue:

2010 Herdsman Short Course Series

Another Successful Southwest Dairy Day

Texas Dairy Matters Fact Sheets:

Ketosis in Dairy Cows

Inoculants in Ensiled Forages

Increase Fertility and Number of Heifer Pregnancies during Heat Stress

What's New in Your Region

People From Our Dairy Industry

Texas Dairy Team

Todd Bilby, PhD

Ralph Bruno, DVM, MPVM

Ellen Jordan, PhD, ACAN

Kevin Lager, MS

2010 Herdsman Short Course Series

Last May, the Texas AgriLife Extension Service organized the first High Plains Herdsman Short Course targeting parlor managers and mid-managers, with the objective to better understand milking routine, leadership and milk quality issues. The course was delivered in four locations throughout the Texas High Plains (Dalhart, Hereford, Muleshoe and Olton) and trained 52 workers from 21 dairies representing approximately 30% of the dairy cows in this region. Instruction was given in Spanish about the basic physiology of lactation, mastitis and leadership. Attendants also participated in a wet lab where they were given the opportunity to have “hands-on” experience with diseases of the mammary gland, bacterial identification and milk quality issues. Attendants evaluated this event as very informative. A follow-up survey has been designed for dairy producers to evaluate our efforts. The High Plains Herdsman Short Course was sponsored by Pfizer Animal Health, Vi-Cor and Standard Nutrition.

Due to the success of our Herdsman Short Course in the Texas High Plains, this same module will be offered for dairy employees from the Central/North Texas region. This program will be delivered at two locations within the Central and North Texas region starting at 10:00 a.m.:

August 31st – TX AgriLife Extension Ctr - Stephenville

September 1st – Knights of Columbus Hall - Windthorst

This event will focus on animal welfare in addition to the topics presented at the High Plains Short Course. Meals will be sponsored by Boehringer Ingelheim.

For registration and more information, contact the Erath Co. office (254) 965-1460, Archer Co. office (940) 574-4914, Choyia Holley at the District office (254) 968-4144 or visit our website at <http://texasdairymatters.org>.

Future programs have been planned in East Texas for later this year. Visit our website for future events in your region.



Another Successful Southwest Dairy Day

The annual Southwest Dairy Day was held on May 27 at Spandet Dairy near Hart, TX. This event rotates locations throughout the state to address new technologies that meet the needs of the industry. It features an area dairy that has adopted some of those technologies. This year the Southwest Dairy Day was hosted by the Schilderink family and Texas AgriLife Extension Service. The event began at 10 a.m. and ended at 4 p.m. There was a 100 x 200 ft. tent that housed

70 booth vendors along with 15 equipment dealers outside the tent. Cheese and crackers were provided by Hilmar Cheese and the Texas Wheat Board, funnel cakes from Lextron, ice cream from Southwest Dairy Farmers and last, but not least, an excellent cheeseburger lunch by ViCor, Intervet/Schering-Plough and Sweet Bran.

Tour trailers, made possible by Monsanto, facilitated people taking a 1 ½ hour tour to see the cross-ventilated barn for 5,500 milking cows, a 6,000-head dry lot heifer facility, 100-cow rotary parlor in action, and view the latest in cow comfort and cooling. Also during the tour, a cross-ventilated barn smoke test demonstration was conducted, as well as demonstrations on improving irrigation pump efficiency and the latest in manure and sand separation.

This year over 550 participants converged on Hart, Texas to make this another successful event. Thank you to the Schilderink Family for their southern hospitality and opening up their facility for the big event!

We hope next year to have the Southwest Dairy Day at the new Southwest Regional Dairy Center in Stephenville, Texas. If you are interested in knowing more about the event, contact Choyia Holley at 254-968-4144 or c-holley@tamu.edu; or visit the AgriLife Extension Dairy Team's website <http://texasdairymatters.org>.



Spandet Dairy near Hart, TX which hosted the 2010 Southwest Dairy Day

Hilmar Cheese in Dalhart, TX is going to expand its plant. The expansion will roughly double the plant's capacity.

Cooperatives Working Together (CWT) has accepted 194 bids in its latest herd retirement, representing 34,442 cows and 653,893,409 pounds of milk. Farmers had submitted a total of 209 herd retirement bids to CWT.



Participants getting ready for the tour at Spandet Dairy



Equipment and new technologies being presented for SWDD participants

Log on to <http://texasdairymatters.org> to subscribe to the quarterly TDM newsletter



Ketosis in Dairy Cows

Ralph Bruno, DVM, MPVM

Texas AgriLife Extension Service – Canyon, TX

The postpartum period is a critical stage of lactation for a high producing dairy cow. This period is characterized by drastic metabolic changes, immunosuppression, negative energy balance (NEB) and elevated levels of stress, which can lead to increased incidence of diseases and decreased animal efficiency. Ketosis is one metabolic disease, frequently observed in high producing herds.

Ketosis usually occurs within a few days to a few weeks after calving. It is characterized by low blood glucose, excess ketone bodies in blood and urine, lack of appetite, either lethargy or excitability, weight loss, depressed milk production and occasionally, in cases of severe ketosis, incoordination and neurologic signs. Based on various reports, the incidence of clinical ketosis can range from 2 to 15% and subclinical ketosis from 9 to 34%.

Any factor resulting in a reduction of dry matter intake (DMI) increases the risk for ketosis. Around calving, lactating dairy cows naturally decrease DMI due to the advanced stage of gestation, as well as metabolic changes which occur in this period. This decrease in DMI typically leads to NEB. During the last week of fetal development, the fetus uses approximately 46% of maternal glucose.

The onset of milk production makes this energy shortage even more remarkable.

When lactation starts, the mammary gland requires a large amount of glucose for lactose milk synthesis. It is estimated that the mammary gland consumes 60 to 70% of the whole body glucose, mainly for lactose synthesis. In this case, a cow producing 66 pounds of milk per day uses at least 3.3 pounds of blood glucose to synthesize milk lactose. The high energy demand during this period of glucose shortage triggers a compensatory process of nutrient partitioning and fat mobilization. During this period of glucose shortage, fat is mobilized as an alternative source of energy. It is used as a fuel for basic cell functions in addition to providing energy to maintain milk production. In the process, ketone bodies are produced and the excess are eliminated in the urine and milk.

Several studies have described deleterious effects of ketosis on animal health and reproduction. Clinical ketosis is associated with an increase of 2 to 3 days to first service and a 4 to 10% reduction in pregnancies per AI at first service. Other researchers have identified an association between ketosis and an increased incidence of ovarian cysts. Body condition score

(BCS) has been linked to metabolic changes during the postpartum period. An elevated BCS at calving is a major risk factor for ketosis. Cows with elevated BCS at calving (BCS \geq 4.0) had elevated levels of circulating ketone bodies in plasma. They were at the highest risk of developing clinical and subclinical ketosis compared to cows classified as either a moderate or thin BCS prior to calving.

Ketosis is an undesirable disease with a severe impact on animal performance and consequently on the economic well-being of dairies. Prevention usually is less costly than treatment associated with production losses. Due to the increased energy demand required before calving, strategies to prevent metabolic diseases must focus on the nutritional management of the dry and transition cow. The goals of these diets are to provide all required nutrients and to adapt the rumen for future diet changes as cows advance through these lactation stages. To prevent metabolic disorders, diets must be properly formulated to accomplish this goal and to minimize DMI reduction. Managing BCS towards the end of the previous lactation is an important management practice to minimize ketosis and other postpartum metabolic diseases.

FARMERS FEED THE WORLD



Inoculants in Ensiled Forages

Kevin Lager, MS

Texas AgriLife Extension Service – Canyon, TX

Ensiled forages provide excellent feed and are a staple in dairy cow rations. It is essential to properly harvest and store the forages, since rations will be impacted by the quality of silage for the duration of their feed out. One way to promote improved ensiling and feed out is through inoculants. Silage inoculants are commonly used at forage harvest to enhance the ensiling process or to improve stability of the forage at feed out.

There are five types of fermentation that occur during ensiling, depending upon the quality of the forage entering the bunker or bag: homolactic, heterolactic (glucose), heterolactic (fructose), yeast and Clostridia. Homolactic fermentation utilizes glucose from the forage, resulting in one end product: lactic acid. This differs from heterolactic fermentation which results in multiple end-products from the fermentation of sugars from the forage including: lactic acid, ethanol and carbon dioxide from glucose fermentation and lactic acid, acetic acid, mannitol and carbon dioxide in fructose fermentation. Yeast and Clostridia are the least desirable types of fermentation since lactic acid is not an end-product. The silage produced has a higher pH and greater chance of continued fermentation.

Lactic acid is the preferred end-product. It decreases the pH of the silage and prevents further fermentation of the carbohydrates and breakdown of protein in the forage, which results in lower quality silage at feed out. The type of fermentation that has taken place may be evaluated by a simple smell.

Properly ensiled forage, through homolactic fermentation, has little to no smell; whereas heterolactic fermentation has a slight vinegar smell due to the production of acetic acid. Forages that have undergone fermentation by yeast have an alcohol smell and Clostridial fermentation produces a rancid butter or baby vomit smell.

Silages fermented properly, with sufficient levels of lactic acid, remain stable for many months. However, when feed out begins, exposure of surfaces to oxygen restarts the fermentation process. Most inoculants utilize bacteria that produce lactic acid to ensure sufficient drop in pH once fermentation is complete to preserve the forage. The forage must also be covered to exclude oxygen from the bunker or bag. This ensures that proper fermentation occurs and a stable feed product is produced. Research has shown that combining heterolactic and homolactic fermentation provides a balance of quickly lowering silage pH through the homolactic bacteria and increasing forage stability at feed out through inclusion of heterolactic bacteria.

While inoculants may provide benefits to prevent forage storage loss, the following points must be heeded to provide the greatest opportunity for positive results:

- Check that the inoculant is labeled for use with the ensiled forage.
- Mix with cool water, as warmer water temperatures may decrease inoculant efficacy.
- Test water quality for potential

negative impacts on inoculant efficacy (ex:chlorinated water kills bacteria).

- Ask salesperson to provide independent research results indicating that the product works.
- Apply at a rate of at least 100,000 cfu/g of wet forage for lactic acid bacteria.
- Apply at chopper for greater surface area contact and better dispersion in the silage.
- Remember, inoculants are an aid, not a replacement for good management.

Although inoculants provide benefits such as improved fermentation and greater stability at feed out, there is no substitute for good management. Harvest silage at the proper moisture level and maturity, insure sufficient compaction at storage and exclude oxygen during storage. With proper management, an inoculant provides insurance in case an unexpected event occurs. While inoculants may be beneficial in less than optimal silage preservation conditions, they cannot guarantee a perfect and complete fix.

Be selective in deciding whether inoculants fit into each individual management scheme. Choose which inoculant is the best option, because the most expensive may not be the most effective. On the other hand, the least expensive option may not provide sufficient bacteria to properly assist with fermentation. Work with a nutritionist to determine the need for an inoculant or type of inoculant that best fits the demands.



Increase Fertility and Number of Heifer Pregnancies during Heat Stress

Todd Bilby, PhD

Texas AgriLife Research and Extension Service – Stephenville, TX

Reproductive failure is the number one reason for involuntary culling, which contributes to the economic importance of getting cows pregnant in a timely manner. Fertility results from a combination of many factors, for example: an increase in milk production per cow, management, and environmental factors such as heat stress.

Heat stress not only reduces milk production but further reduces fertility. The total annual economic impact of heat stress on the American dairy industry has been estimated at \$1.5 billion, with an estimated economic loss of \$132 million to the Texas dairy industry alone.

One reason for the drastic decline in fertility during summer is the early growing embryo's (2-3 days of life) susceptibility to the negative effects of heat stress. However, the use of embryo transfer of a 7-day-old embryo potentially could by-pass those negative effects.

Recently, our group conducted a study to determine whether transfer of fresh or frozen embryos could improve fertility during summer in lactating dairy cows compared to artificial insemination (AI). All embryos were produced in vitro using sex-sorted semen and cultured for 7 days until transferred.

A total of 722 lactating dairy cows were enrolled last summer at two commercial dairies in Central Texas. Cows were randomly assigned to one of three treatments. Conventional AI (n = 227) was used as the control compared to embryo transfer of either frozen (n = 279) or fresh (n = 216) embryos 7 days after a synchronized estrus. All cows were submitted to the farms' estrous synchronization protocol. The control group was bred either at timed-AI or AI following detected estrus. The other two groups had embryos transferred 7 days after the synchronization protocol was completed.

At initial pregnancy diagnosis (40 ± 7 d), the percent of cows pregnant was greater for fresh embryos (42.1%) versus both frozen embryos (29.3%) and AI (18.3%). Also, the percent of cows pregnant was greater for frozen embryos (29.3%) than AI (18.3%). At second pregnancy diagnosis (97 ± 7 d), the percent of cows pregnant remained greater for fresh (36.4%) and frozen

(25.7%) compared to AI (17.0%). Again, the percent pregnant was greater in the fresh (36.4%) than frozen (25.7%) treatment group. The amount of embryo loss did not differ between treatments. Transfer of both frozen and fresh embryos, produced in vitro using sex-sorted semen, improved fertility and number of heifer pregnancies in lactating dairy cows during summer. In addition, fresh embryos restored fertility to levels normally seen during cool months.

In conclusion, the use of in vitro produced embryos with sex-sorted semen can by-pass the deleterious effects of heat stress on fertility while increasing the number of heifer pregnancies. This could be a viable option for producers to adopt to maintain fertility during summer months.



This article is part of our TDM fact sheets series (July, 2010) and can also be viewed at <http://texasdairymatters.org>



Dairy Producers Day at Hopkins County

The Hopkins County Dairy Producers Day was conducted July 1, 2010 at the Hopkins County Civic Center. There were more than 40 dairy producers attending the program. The program was moderated by Dr. Mario Villarino, County Extension Agent in Hopkins County. Darren Turley (Texas Association of Dairymen Executive Director) started the program with TAD updates, followed by Jim Wyrick, private consultant, discussing environmental requirements, changes and differences between TCEQ and EPA. Jeremy Siegers (EPA) described the inspection process and mentioned the outreach efforts from EPA. Teresa Wagner, DairyMAX, talked about tips and topics related to media relationships and social awareness. The program was organized by the Texas AgriLife Extension Service in Hopkins County and lunch was sponsored by DairyMAX. Two Dairy Outreach Program Area (DOPA) credits were offered to permitted dairies.



Southern Great Plains Dairy Consortium

From May 17 through June 25, Clovis, NM hosted 36 students from 11 universities throughout the country who participated in the 3rd Southern Great Plains Dairy Consortium-Teaching (SGPDC-T) program. Among participants, Texas A&M University was represented by 9 students.

The SGPDC is a multi-university, interagency organization established to meet the educational and research needs of the rapidly expanding dairy industry in the Southern Great Plains. The Consortium provides a formal structure for coordinating teaching, research, extension and diagnostic service programs.

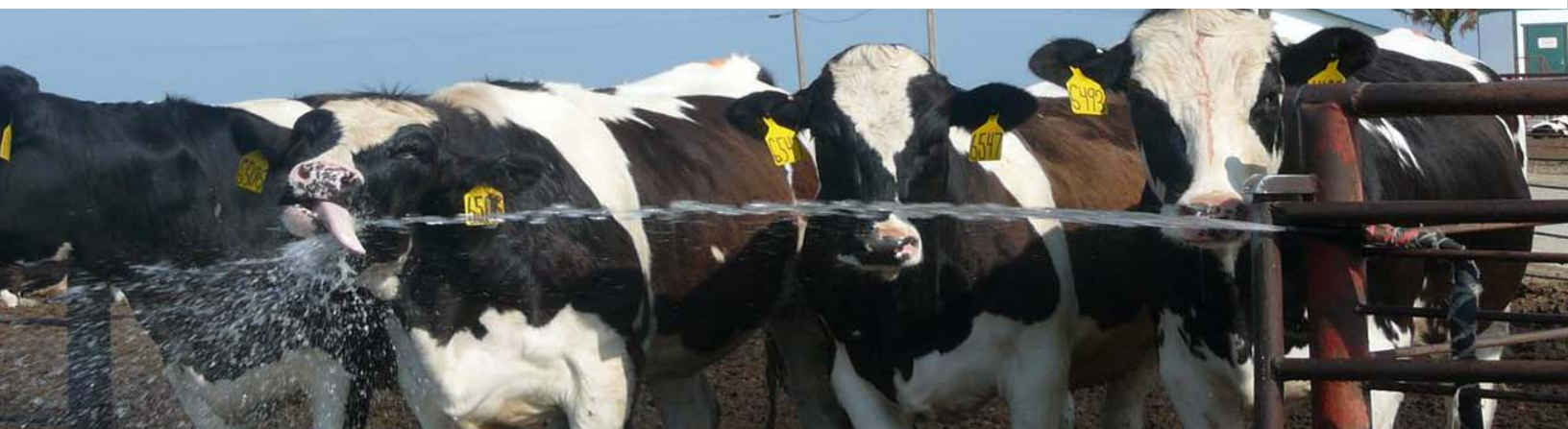
An important feature of this program is the “hands-on” experience that students are able to obtain. Faculty from several universities across the nation taught daily classroom and lab sections throughout the six-week summer session.

Students interested in the program should request an application form from the animal science department at their participating university or at <http://sgpdct.tamu.edu>. Application deadline is February 1.

Texas Rural Mediation Service (TRMS)

The Lubbock County Office of Dispute Resolution's (ODR) successful track record and innovative services have allowed for the most comprehensive delivery practice of any Alternative Dispute Resolution system in Texas, with over 3,000 inquiries and referrals last year alone. In 2000, the Lubbock-based office was appointed by the Governor as the administrator for the Texas Rural Mediation Services™ (TRMS), which is the sole provider of the USDA Certified State Agricultural Mediation Program for Texas. TRMS was established to address disputes among and between consumers, peers, businesses, agriculture producers, ranchers, creditors and various USDA agencies.

Anyone can request mediation through the program, regardless of the county in which they live. System mediators are located across the state of Texas, thus reducing the distance participants must travel to mediation. Through this program, other alternative dispute resolution services, not just mediation, may be available. For more information about the program or to request services, please contact the office at (806) 775-1720.



People from the Texas Dairy Industry



Dr. Mario Villarino

Dr. Mario Villarino is a County Extension Agent for Hopkins County. Dr. Villarino received his DVM degree from the University of Mexico and his PhD from Texas A&M University. Mario has worked with parasitology and most recently he was an Extension Associate for the Demonstration Project on Control of Johne's Disease in Texas.



Dr. Daniela Bruno

Dr. Daniela Bruno is a Microbiologist–Dairy Specialist at Texas Veterinary Medical Diagnostic Laboratory in Amarillo. Dr. Bruno received her PhD from the University of California, Davis. Prior to joining the TVMDL she worked at the milk quality laboratory and at the dairy food safety laboratory at the Veterinary Medicine Teaching and Research Center in Tulare, CA..

Texas AgriLife Extension Service Dairy Team

You can ask a question of the Dairy Team at:
texasdairymatters@ag.tamu.edu



Todd Bilby, PhD



Ralph Bruno, DVM



Ellen Jordan, PhD



Kevin Lager, MS

Save the dates:

August 13th, 2010 – TCEQ soil sampling informative session (1 DOPA credit) – Stephenville, TX -

August 31st, 2010 – Central/North TX Herdsman Short Course – Stephenville, TX - <http://texasdairymatters.org>

September 1st, 2010 – Central/North TX Herdsman Short Course – Windhorst, TX - <http://texasdairymatters.org>

September 13-15th, 2010 – International Dairy Show – Dallas, TX - www.idfa.org

September 13-16th, 2010 – Intern. Symposium on Air Quality and Manure Mgmt. for Agriculture – Dallas, TX

October 12-14th, 2010 - Large Herd Dairy Management Training – Amarillo, TX

For other event dates, log on to <http://texasdairymatters.org>