



News from KSU Animal Sciences

UPCOMING EVENTS...

- ↪ The **49th Annual LMIC Stockman's Dinner** will be Thursday, February 28, at 6 p.m. at the Four Points by Sheraton, Manhattan, KS. Jerry Bohn will be honored as Stockman of the Year. To register online, go to www.ksufoundation.org/rsvp/asi or contact the KSU Foundation Events Department at 785-532-7417.
- ↪ **Make plans to attend Cattlemen's Day 2019** – The 106th annual Cattlemen's Day will be hosted Friday, March 1, 2019. The schedule includes:
- 8 a.m. Commercial Trade Show (Weber Arena)
 - 10 a.m. Morning Presentations:
 - Welcome** – *Evan Titgemeyer, Interim Department Head, ASI*
 - Our Meatless Future: Is the \$90B Global Meat Market Getting Disrupted by Plant-Sourced and Cultured "Meat" Products?** –
Dr. Brad Morgan, Senior Director of Protein at Performance Food Group
 - Beef Industry Outlook and Key Economic Issues Surrounding Expansion of Alternative Protein Offerings in the U.S.**
Dr. Glynn Tonsor, KSU Agricultural Economist
 - 12 noon Lunch (compliments of US Premium Beef and Commercial Trade Show)
Visit Trade Show
Afternoon Break-out Sessions:
- Weber Hall Room 111**
- 1 p.m. Beef Quality Grading: Recent Revisions and Relevance to Valuation of Beef – *Terry Houser*
 - 2 p.m. Antibiotic Stewardship in Animal Agriculture – *Nora Schrag*
- Weber Hall Room 123**
- 1 p.m. Alternative Methods for Pregnancy Diagnosis – *Sandy Johnson*
 - 2 p.m. CattleTrace: An Industry Initiative for Disease Traceability – *Brandon Depenbusch*
- Weber Hall Room 146**
- 1 p.m. Factors Influencing Value of Calves Sold Through Superior Livestock Video Auction – *Esther McCabe*
 - 2 p.m. Genetic Control of Cattle Feet and Leg Structure – *Jenny Bormann*
- Beef Stocker Unit, 4330 Marlatt Avenue**
- 1 p.m. Open House at the Beef Stocker Unit
 - 2 p.m. Necropsy Demonstration – *A.J. Tarpoff*
- Registration for KSU Cattlemen's Day will be \$20 per person in advance or \$30 per person at the door. Morning refreshments and lunch are included with registration. For more information and a schedule, visit <http://www.asi.k-state.edu/events/cattlemens-day/index.html> or call 785-532-1267.
- If you are interested in exhibiting at Cattlemen's Day or have any questions, please contact Dale Blasi (dblasi@ksu.edu; 785-532-5427) or Jim Drouillard (jdrouill@ksu.edu; 785-532-1204).

Department of Animal Sciences and Industry

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- ↪ The **42nd Annual Legacy Bull and Heifer Sale** will be March 1, 2019, at 4 p.m. at the Stanley Stout Center. This year's offering includes 29 feed-efficiency tested bulls — 17 Angus, 7 Simmental and 5 Hereford; 15 Fall-Bred registered females; 21 commercial heifers; and 5 AQHA ranch performance horses. Visit www.asi.ksu.edu/bullsale to view the catalog and more information.
- ↪ **Junior Swine Producer Day** is scheduled for Saturday, March 9, 2019, in Weber Arena on the K-State campus in Manhattan. This one-day educational event is devoted to the selection and management of youth swine projects. All ages and knowledge levels are invited! K-State faculty members, graduate students, and guest speakers will cover topics including selection, meat science, ear notching, breeds, the state nomination process, herd health, nutrition, and showmanship. An optional instructor-led YQCA session will also be held at the conclusion of the program. The cost for junior swine producer day is \$15/person, if registration is submitted by February 15, 2019, or \$20/person after the early deadline. All attendees, including youth and adults, must register. All participants who sign up by February 15 will also receive a t-shirt. Families may register online at <http://bit.ly/ksuasiregister>, or by downloading the flyer (<http://bit.ly/ksujrproducerdays>), completing the bottom portion of the flyer and mailing it, with payment, to the K-State Youth Livestock Program. Those who indicate they would like to participate in the optional YQCA certification will receive additional details and instructions via email in late February. For more information, contact Lexie Hayes at adhayes@ksu.edu or 785-532-1264, or Joel DeRouchey at jderouch@ksu.edu or 785-532-2280.
- ↪ **KSU Sheep Producer Day** will be Saturday, March 23, at the Stanley Stout Center, Manhattan, KS. Vans will leave at 8:15 am from the Stout Center. The day will include a tour of Shannon Creek Lamb, as well a body condition scoring, FAMACHA and a trapping/snaring clinic. Speakers for the day include Dr. Emily Reppert, KSU Veterinary School; Dr. Alison Crane, KSU Sheep and Meat Goat Specialist; Charlie Lee, KSU Wildlife Specialist; Mike Wallace, retired US-MARC manager; Lesa Eidman, Superior Farms; and Emily Voris, Kansas Department of Ag.
- Pre-registration is \$15 for KSA members and \$25 for non-members if received by March 11. Registration at the door is \$20 for members and \$25 for non-members. Lunch is provided with all registrations. If interested in sponsoring or for more information, contact Lois Schreiner (lschrein@ksu.edu; 785-532-1267) or Alison Crane (arcrane@ksu.edu; 785-532-1672).
- ↪ **Junior Meat Goat Producer Day** will be hosted on Saturday, March 30, 2019, in Weber Arena on the K-State campus in Manhattan. This one-day educational event is devoted to the selection and management of youth meat goat projects. All ages and knowledge levels are invited! K-State faculty members, graduate students, and guest speakers will cover topics including selection, meat science, nutrition, the state nomination process, herd health, reproduction, health and wellness, facilities and equipment, and showmanship. An optional instructor-led YQCA session will also be held at the conclusion of the program. The cost for junior meat goat producer day is \$15/person, if registration is submitted by March 11, 2019, or \$20/person after the early deadline. All attendees, including youth and adults, must register. All participants who sign up by March 11 will also receive a t-shirt. Families may register online at <http://bit.ly/ksuasiregister>, or by downloading the flyer (<http://bit.ly/ksujrproducerdays>), completing the bottom portion of the flyer and mailing it, with payment, to the K-State Youth Livestock Program. Those who indicate they would like to participate in the optional YQCA certification will receive additional details and instructions via email in late March. The KSU Sheep & Meat Goat Center will also be hosting its annual sale following the junior day program. These are separate events, but the schedule will allow families who would like to attend both events to do so. For more information, contact Lexie Hayes at adhayes@ksu.edu or 785-532-1264.
- ↪ **K-State Animal Sciences Leadership Academy** - Kansas State University will host the K-State Animal Sciences Leadership Academy June 5-8, 2019, for young livestock industry leaders. This four-day event will focus on increasing young leaders' knowledge of Kansas' diverse livestock industry as well as building participant's leadership skills. Students will stay in university housing with event staff for the duration of the event. Twenty high school students (current 9th-12th graders) will be selected to participate. The application deadline is April 1, 2019. For more information, please contact academy director, Sharon Breiner at sbreiner@ksu.edu.

- ↪ A **Sheep Scanning Certification School** will be hosted April 10-12, 2019, at the KSU Sheep and Meat Goat Center. Kansas State University Animal Sciences and Industry and KSU Research and Extension, through sponsorship by the National Sheep Industry Improvement Center, are hosting this sheep scanning educational and certification school to increase the number of trained technicians available to sheep producers. Participants will receive educational material on sheep scanning and be shown methods of collecting loin-eye area and depth, back fat, and body wall thickness. Participants also will have the opportunity to become certified to collect ultrasound data for submission to the National Sheep Improvement Program. The registration fee is \$200 and the school will be limited to 20 students. For more information, contact Alison Crane at 785-532-1672; arcrane@ksu.edu.

- ↪ The 2019 **Kansas Wildlife Habitat Education Program (WHEP) Contest** for Kansas youth will be held on Thursday, May 2 in Manhattan. The ecoregion for contestants to study is Great Plains Grassland – Tallgrass/Mixed Prairie, which can be found in the WHEP manual online at <https://www.whep.org/national-whep-manual/>. For more information, contact Charlie Lee (clee@k-state.edu or 785-532-5734).

- ↪ Plan to attend the **42nd Annual Midwest Meat Processing Workshop** on May 3, 2019, at K-State. Join us at the workshop to see, hear, taste and ask questions as state award winners share their expertise and demonstrate the manufacturing techniques used to make award winning products. Mark your calendar and watch for more details coming soon. For more information, contact Liz Boyle (lboyle@ksu.edu; 785-532-1247).

- ↪ **Developing and Implementing a HACCP Plan for Meat and Poultry Workshop** will be June 11-13, 2019, in Weber Hall, Kansas State University, Manhattan, KS. This three-day workshop uses curriculum recognized by the International HACCP Alliance for meat and poultry processors and is led by an International HACCP Alliance Lead Instructor. For more information, contact Dr. Liz Boyle (lboyle@ksu.edu; 785-532-1247).

- ↪ **Local Youth Livestock Opportunities** - Any county that has a youth livestock educational opportunity open to Kansas youth outside of the county is invited to share that information with Lexie Hayes (adhayes@ksu.edu). This includes spring shows, showmanship clinics, skillathons, field days, etc. These opportunities will be included on the youth livestock website.

CALENDAR OF UPCOMING EVENTS		
Date	Event	Location
March 1, 2019	KSU Cattlemen's Day	Manhattan
March 1, 2019	Legacy Bull and Heifer Sale	Manhattan
March 9, 2019	Junior Swine Producer Day	Manhattan
March 23, 2019	KSU Sheep Producer Day	Manhattan
March 30, 2019	Junior Meat Goat Producer Day	Manhattan
April 1, 2019	Application Deadline for K-State Animal Sciences Leadership Academy	
April 10-12, 2019	Sheep Scanning Certification School	Manhattan
May 2, 2019	Wildlife Habitat Education Program Contest	Manhattan
May 3, 2019	Midwest Meat Processing Workshop	Manhattan
June 11-13, 2019	HACCP Plan for Meat and Poultry Workshop	Manhattan
August 24-25, 2019	Kansas 4-H Livestock Sweepstakes	Manhattan

WHAT'S NEW.....

Management Minute – Justin Waggoner, Ph.D., Beef Systems Specialist

“Corporate Culture”

Corporate or organizational culture is one of “buzzwords” in today’s business community. Although it is not a new term by any means (originating in the 1960s), it has undoubtedly received more attention, as tech giants have created unconventional employee centered environments. So what does corporate or organizational culture mean, and what is the role of a leader or manager in an organization’s culture? Many different sources define corporate culture as the shared beliefs, values, standards, systems, policies and perceptions held by employees. Informally the culture of company may be characterized by asking the company’s employees a few questions. What words best describe the organization? What behaviors or efforts are rewarded? What is the company’s No. 1 priority? In some cases, two very different cultures may exist within an organization: a formal corporate culture, i.e. mission statements, core values statements and an informal corporate culture (views of the employees). Corporate culture is generally thought of as progressing from the top down, where leadership initiates and stewards the corporate culture by hiring and promoting individuals who represent/embrace the corporate culture. More importantly, managers and leaders must model the corporate culture in their interactions with both customers and employees. Corporate culture may be healthy or unhealthy. Is the culture of your organization positively contributing to the business? As a manager, does the corporate culture align with your values and beliefs? Are you incentivizing and rewarding employees for doing the right thing?

For more information, contact Justin Waggoner at jwaggon@ksu.edu

Feedlot Facts – Justin Waggoner, Ph.D., Beef Systems Specialist

“Body Condition Scoring: A Herd Management Tool”

Body condition scoring is one of the most valuable management tools at the disposal of the cattle manager. This one number gives producers a direct indication of an individual cow’s previous plane of nutrition and future reproductive capability. Although the individual body condition scores are important, we don’t necessarily manage individual cows, we manage groups of cows. Thus, it is important for us to look beyond the individual scores and look at the distribution of body condition scores within the herd. If we have a herd (Herd 1) with an average body condition score of 5 that is essentially characterized by the classic bell curve, with a few thin cows (3.5’s), the bulk of cows in the middle (4’s and 5’s) and few over-conditioned cows (7’s) everything is good. Alternatively, we could have a herd (Herd 2) with an average body condition score of 5 that is essentially the result of a few thin cows (3’s) and some over conditioned cows (6’s and 7’s).

Body condition scoring also has more value when it is done on the same group of cows at multiple times during the production year. If Herd 2 was scored at calving and had been previously scored at weaning and had an essentially normal distribution (similar to Herd 1), we need to ask ourselves what happened. Did we change anything? Although these examples are somewhat extreme, they illustrate that we have to look beyond the individual body condition scores of cows at one point during the production year to get the most of body condition scoring.

K-State has several resources on body condition scoring available on the web that may be accessed at <https://www.asi.k-state.edu/research-and-extension/beef/feedandwater.html>, including the quick reference guide to body condition scoring shown below.

Body Condition Scorecard for Cattle

	Physical Attribute						
	BCS	Spine	Ribs	Hooks/Pins	Tailhead	Brisket	Muscling
Thin	1	Visible	Visible	Visible	No fat	No fat	None/atrophy
	2	Visible	Visible	Visible	No fat	No fat	None/atrophy
	3	Visible	Visible	Visible	No fat	No fat	None
Borderline	4	Slightly visible	Foreribs visible	Visible	No fat	No fat	Full
	5	Not visible	1 or 2 may be visible	Visible	No fat	No fat	Full
Optimum Condition	6	Not visible	Not visible	Visible	Some fat	Some fat	Full
	7	Not visible	Not visible	Slightly visible	Some fat	Fat	Full
Over-Conditioned	8	Not visible	Not visible	Not visible	Abundant Fat	Abundant Fat	Full
	9	Not visible	Not visible	Not visible	Extremely Fat	Extremely Fat	Full

Adapted from Herd & Spratt, 1986; BCS = body condition score

For more information, contact Justin Waggoner at jwaggon@ksu.edu.

↪ The **National Pork Board recently announced the funding for a new grant** “Deep-frame machine learning will evaluate the impact of pig early-life endotoxin exposure on social behaviors in the nursery and finishing periods.” Principal investigators will be T.B. Schmidt, University of Nebraska, and L.E. Hulbert, Kansas State University. The main goal is to refine and train the system to automatically recognize sickness-behaviors and agonistic-behaviors in swine. This technology and work will advance science, math, engineering, swine producers and animal welfare and health. For more information on the grant, contact Lindsey Hulbert at lhulbert@ksu.edu.

↪ **Effects of Increasing Standardized Ileal Digestible Lysine During Gestation on Growth and Reproductive Performance of Gilts and Sows Under Commercial Conditions** - A study was conducted on a commercial sow farm to evaluate the effects of increasing dietary standardized ileal digestible (SID) lysine (Lys) intake in gestation on sow performance and piglet birth weight. A total of 936 females were group-housed and individually fed with electronic sow feeders (ESF). Scales were located in the alleyway after the feeding stations returning into the pen. Females were moved from the breeding stall to pens on d four of gestation and were allotted to one of four dietary treatments on d five. Dietary treatments included increasing SID Lys intake (11, 13.5, 16, and 18.5 g/d). Gilts and sows received 4.6 and 5.1 lb/d, respectively, (5.3 and 5.7 Mcal NE/d) of feed throughout the entire study. Dietary treatments were achieved by different blends of low (0.48% SID Lys) and high (0.88% SID Lys) Lys diets via ESF based on the females’ set feed allowance. Initial and final BW and backfat were obtained on d 4 and 112 of gestation. Individual piglet BW was obtained within 12 h of birth on litters from 895 females.

Body weight at d 112 of gestation increased within each parity group as SID Lys increased with gilts and sows consuming 18.5 g/d SID Lys weighing 16 and 11 lb more, respectively, than gilts and sows consuming 11 g/d SID Lys. There was no evidence for differences in d 112-backfat depth. Average total born for gilts and sows was 15.3 and 16.0, respectively with no evidence for differences among treatments. However, the percentage of pigs born alive increased with increasing SID Lys intake for sows but not in gilts. This is explained by the treatment x parity group interaction for percentage of stillborn pigs. In gilts, there was no evidence for differences among treatments in the percentage of stillborn pigs; however, in sows, as dietary SID Lys intake increased, the percentage of stillborn pigs decreased. Increasing SID Lys intake during gestation did not affect the percentage of mummified fetuses, total born, or born alive piglet birth weight in this study. In addition, increasing SID Lys intake during gestation did not affect subsequent reproductive performance.

Bottom Line... In conclusion, increasing dietary SID Lys intake in gestation increased female BW, without changing backfat or total born litter weight, indicating these females are depositing more lean tissue. The impact on female reproductive performance suggests that increasing SID Lys intake may increase the percentage of piglets born alive by reducing the number of stillborns in sows, but not in gilts. More information is available on this experiment in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by L.L. Thomas, L.K. Herd, R.D. Goodband, S.S. Dritz, M.D. Tokach, J.C. Woodworth, J.M. DeRouchey, M.A.D. Gonçalves, and D.B. Jones)

↪ **Effects of Fe Dosage in Newborn Pigs on Preweaning and Subsequent Nursery Performance** - A total of 336 newborn pigs were used in a 63-d study evaluating the effects of increasing injectable Fe dose on preweaning and subsequent nursery pig performance and blood Fe status. GleptoForte contains gleptoferron that is a Fe macro-molecule complex that is used as an injectable Fe source for preweaned piglets. A total of 28 litters were used and on the day of processing (approximately d 3 after birth) all piglets were weighed and six barrows and six gilts per litter were allotted to one of six treatments in a completely randomized design. Treatments consisted of a negative control receiving no Fe injection and increasing injectable Fe to achieve either 50, 100, 150, 200 mg; or 200 mg plus a 100-mg injection on d 11 post-farrowing. Piglets were weighed and blood samples were taken on d 3, 11, and 21 of age to determine blood Fe status and growth performance. Then pigs were weaned at approximately 21 d of age and allotted to nursery pens based on body weight (BW) and corresponding treatment in a completely randomized design with five or six pigs per pen and 10 pens per treatment. Common diets were fed throughout the nursery in 3 phases. Blood samples were taken on d 21 (weaning), 35, and 63 to determine blood Fe status. During the preweaning phase, increasing injectable Fe up to 100 mg improved average daily gain (ADG) and d 21 BW with no further improvement thereafter. There was no evidence of differences between the 200 mg and 200 mg + 100 mg treatments for growth. For the nursery period, increasing Fe dosage improved ADG, average daily feed intake (ADFI), and d 63 BW. Also, increasing injectable Fe up to 150 mg improved feed efficiency (F/G) with no further improvement with increased dosage. There was no evidence of differences between the 200 mg and 200 mg + 100 mg treatments for growth. Significant treatment x day interactions were observed for hemoglobin (Hgb) and hematocrit (Hct). The interactions occurred because pigs that had less than 150 mg of injectable Fe had decreased values to d 21 and then increased to d 63 while pigs with 150 or 200-mg of injectable Fe had increased values to d 21 then stayed relatively constant to d 63.

Bottom Line... In summary, preweaning and nursery growth performance and blood Fe status were maximized with a 200 mg Fe injection at processing. Providing an additional 100 mg of Fe on d 11 of age increased Hgb, Hct, and serum Fe values at weaning and 14 d into the nursery but did not provide a growth performance benefit in farrowing or nursery. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by H.E. Williams, J.C. Woodworth, J.M. DeRouchey, S.S. Dritz, M.D. Tokach, R.D. Goodband, and A. Holtcamp)

ASI Faculty Spotlight



David Grieger (dgrieger@k-state.edu; 785-532-1229)

Professor/Beef Cattle Reproduction

Dr. Grieger is from a small town in Indiana. His major teaching and research interests are applied and basic reproductive physiology with an emphasis in cattle.

He teaches courses that include topics on estrous synchronization, ultrasonography, pregnancy diagnosis, and calving. He also teaches a course on applications of biotechnology to animal agriculture as well as co-teaches Animal Reproduction. He has led two international study tours, one to Costa Rica and one to South Africa. In addition to his teaching responsibilities, he also advises undergraduate students.

His applied research interests focus on estrous synchronization and timed artificial insemination protocols for beef heifers. Dr. G.'s basic research focuses on genes important to reproductive function in livestock. Recently, his lab has worked on developing bovine stem cells for biotechnical applications. He has a 60% Teaching and

40% Research appointment in the department.

Dr. Grieger's applied research emphasis is the development of estrous synchronization and artificial insemination systems for beef heifers. Specifically, studies were done using timed-insemination to eliminate estrous detection. The objective is to fine-tune different systems that result in acceptable AI conception rates and are practical for producers to use.

Dr. Grieger's most recent basic research emphasis has been on isolating a source of stem cells for livestock. His lab has focused on bovine determined by expression of classic stem cell markers. His objective is to introduce fluorescent markers to these cell lines and then follow their ability to incorporate into various tissues of a developing embryo or fetus. The picture demonstrates some bovine cells expressing green or red fluorescent proteins.

He teaches ASI 512, Bovine Reproductive Technologies. You might describe it as a very "hands-in" course, as we pretty much learn how to preg check cows. Some students learn quicker than others do, but by the end of the semester, they all know which end of the cow is important and where the sleeve goes.



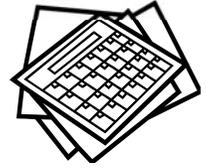
Jay Amamcharla (jayendra@k-state.edu; 785-532-1221)

Associate Professor/Dairy Foods

Dr. Jayendra (Jay) Amamcharla obtained his B.S. (Dairying) in 1998 from Acharya N. G. Ranga Agricultural University, India and M.S. (Dairy Engineering) in 2001 from National Dairy Research Institute (NDRI), India. Dr. Amamcharla received his Ph.D. (Agricultural and Biosystems Engineering) in 2008 from North Dakota State University. Subsequently, he worked as a Postdoctoral Research Associate (2008-2012) at the Dairy Science Department, South Dakota State University. In July 2012, Dr. Amamcharla joined the Department of Animal Sciences and Industry at Kansas State University as an Assistant Professor with teaching and research responsibilities. His teaching responsibilities include Physical Methods of Food Analysis (FDSCI 728) and Research and Development of Food Products (FDSCI 740). His research focuses on the development and validation of rapid and nondestructive sensing technologies for quality and safety of dairy and food products.

What Producers Should Be Thinking About.....

WHAT PRODUCERS SHOULD BE THINKING ABOUT IN APRIL.....



BEEF -- *Tips by Dale Blasi, Extension Beef Specialist*

Many producers should consider calving in this month. Stress is minimized and forage/grass management may be optimized.

- Keep calving areas as clean and dry as possible. Give each calf a dry, comfortable and clean environment.
- Supplement and feed cows to maintain or improve body condition prior to the breeding season (cows should be in moderate body condition by the start of the breeding season to maximize fertility).
- For thin, young cows, consider feeding fat to improve rebreeding rates. Research indicates that when feeding about 0.4 lb. per head per day of a plant source (soybean, sunflower, safflower oils), fat can increase first-service conception and pregnancy rates (0% to 15%). Feeding fat can be effective both before and after calving. Consult your nutritionist.
- Mineral supplementation should include greater levels of magnesium (intake should be between 15 to 30 grams (g) per head per day, or at least 11% of the mineral mix) for grass tetany prevention.
- Plan your breeding season, both AI and natural service. Make sure all supplies and semen are on hand prior to the breeding season. For natural-service programs assign yearling bulls to 10-15 cows, 2- and 3-year-old bulls to 20-25 cows, and older bulls to 25-40 cows. Breeding for 65 days should be long enough; less than 90 days is a key sign of good management. Some suggest the service capacity of a yearling bull (less than 24 months) is equal to his age in months at turn out.
- Bulls should be in good body condition prior to the breeding season. Thin bulls can run out of stamina. Now is the time to make sure bulls are physically capable of performing for the upcoming summer breeding season.
- Breeding soundness examinations are recommended for all bulls!
- Consider using estrus synchronization and AI. Several synchronization systems to overcome anestrus are available. Selection depends on labor, facility and implementation costs.
- Consider breeding heifers three weeks prior to the mature cow herd to give them a greater chance to rebreed.
- Maintain top management concerning calf scours (sanitary conditions, early detection, electrolyte/dehydration therapy).
- Vaccinate calves as per veterinarian consultation. Castrate males that are not candidates for breeding stock prior to pasture turnout. Implant calves that will be sold at weaning.
- Wait for fly control until critical numbers are reached (100 to 200 horn flies per animal).
- Deworm cows and bulls if needed. Expect performance response to be variable dependent on location, weather, grazing system, history, infestation level and management.
- Use prescribed burning techniques to eradicate Eastern Red Cedar trees and improve forage quality.
- Good fences make good neighbors. Summer pastures should have had fences checked, repaired or replaced by now.
- Check equipment (sprayers, dust bags, oilers, haying equipment) and repair or replace as needed. Have spare parts on hand; downtime can make a large difference in hay quality.

*We need your input! If you have any suggestions or comments on **News from KSU Animal Sciences**, please let us know by e-mail to lschrein@ksu.edu or phone 785-532-1267.*