



News from KSU Animal Sciences

September, 2016

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UPCOMING EVENTS...

➤ Join us for the KSU Beef Stocker Field Day to be held September 22

- The 2016 KSU Beef Stocker Field Day will be held on Thursday, September 22, at the KSU Beef Stocker Unit, 4330 Marlatt Avenue, Manhattan. The schedule is as follows:

- 9:30 a.m. Registration/Coffee
- 10:15 a.m. Introductions
- 10:30 a.m. Beef Cattle Outlook –
Dr. Glynn Tonsor, Agricultural Economist, KSU
- 11:15 a.m. Producer Panel – Pasture Burning Issues – The necessity, alternatives and consequences
Moderator: *Wes Ishmael, Contributing Editor, BEEF magazine*
Clenton Owensby, Kansas State University
Mike Holder, KSU Extension Agent, Chase County
Mike Collinge, Stocker Operator, Hamilton, KS
Matt Teagarden, CEO, Kansas Livestock Association
- 12:15 p.m. Barbeque Brisket Lunch – View posters/demonstrations
- 1:00 p.m. Animal Health Research Update –
Dr. Tim Parks, Technical Services Vet, Merck Animal Health
- 2:00 p.m. Receiving diets: Implications on health and performance –
Dr. Sean Montgomery, Corn Belt Livestock Services
- 2:45 p.m. Break
- 3:00 p.m. Parasite and fly control options –
Dr. Justin Talley, Oklahoma State University
- 3:45 p.m. Technology applications for Beef Cattle Operations –
Dr. Ray Asebedo, Kansas State University
- 4:00 p.m. Beef Cattle Handling –
Dr. Tom Noffsinger, DVM, Benkelman, NE
- 5:30 p.m. Cutting Bull's Lament 2015

The day will conclude with a good old-fashioned Prairie Oyster Fry and Call Hall ice cream. Pre-registration is \$25 by September 15. For complete details and registration, visit www.KSUbeef.org. For more information, contact Dale Blasi (dblasi@ksu.edu; 785-532-5427).

➤ Developing and Implementing Your Company's HACCP Plan for meat, poultry, and juice processors will be held October 5-7, 2016 in Olathe, KS. Information and registration for the 2.5 day International HACCP Alliance accredited workshop is online at <http://haccp.unl.edu>. The workshop fee is \$400 per person, and participants will be presented with a certificate with an International HACCP Alliance seal upon completion of the course. For more information, contact Dr. Liz Boyle at lboyle@ksu.edu or 785-532-1247.



Join us for the 2nd annual **AS&I Family and Friends Reunion to be held on Friday, October 7, 2016**, from 5:30 – 9:30 p.m. at the Stanley Stout Center, 2200 Denison Avenue, Manhattan, Kansas. Last year's event was truly amazing with over 1,100 family and friends reuniting at the inaugural event. The Don L. Good Impact Award will be presented to Certified Angus Beef, LLC. Other activities will include great food, live music, Junior Wildcat Barn Yard and more surprises!! A tentative schedule includes:

- 5:30 pm **AS&I Family & Friends Reunion is OPEN!**
All event attractions remain open throughout the evening
- 7:20 pm **"Pride of Wildcat Land" Band Performance**
Outdoor Bowl (south of the Stout Center)
- 7:40 pm **WILDCAT WALK**
Stroll through the aisle formed by the band! Led by Willie and the kids, event attendees move into the Stout Center
- 7:55 pm **Star Spangled Banner (Inside the Stout Center)**
KSU Marching Band
- 8:00 pm **Don L. Good Impact Award presented to Certified Angus Beef LLC**
Special recognition of key KSU affiliates involved CAB's success
- 8:40 pm **Jr Wildcat toy drawing (must be present to win)**
Justin Janssen & Kyle Bauer, LMIC Board Members
- 9:30 pm **Event attractions close - Travel safe!**

Registration is \$25 for adults; \$10 for students (13 and over); and free for those 12 and under. Early registration is due by September 23. To register and for more information, visit www.asi.k-state.edu/familyandfriends. If you have questions, contact Lois at lschrein@ksu.edu or 785-532-1267.

The new **K-State Ranching Summit** which will be held Friday, October 7, at the K-State Student Union Ballroom. The program will begin at 9:30 a.m. with registration and will conclude by 4:30 p.m. A tentative schedule includes:

Agenda

- | | |
|------------------|---|
| 9:30 – 10:00 AM | Registration and social |
| 10:00 – 10:10 AM | Welcome, Goals |
| 10:10 – 10:55 AM | Defining the unit of profit in cow/calf operations
<i>Burke Teichert, Teichert Consulting</i> |
| 10:55 – 11:55 AM | Evaluating the cost of alternative and new grazing opportunities
<i>Mykel Taylor and Dustin Pendell, Kansas State Univ., Ag. Economics</i> |
| Noon – 12:45 PM | Lunch (45 min) |
| 12:45 – 1:30 PM | Solving complex problems in ranching
<i>Rich Machen, King Ranch Institute for Ranch Management</i> |
| 1:30 – 2:15 PM | Profitable systems approaches to ranch (resource) management
<i>Trey Patterson, Padlock Ranch</i> |
| 2:15 – 2:30 PM | Break |
| 2:30 – 3:15 PM | Farm Economy and Financial Implications
<i>Allen Featherstone, Kansas State Univ., Ag. Economics</i> |
| 3:15 – 4:00 PM | Building communities to support ranching in 2050
<i>Chuck Schroeder, Rural Futures Institute, Univ. of Nebraska</i> |
| 4:00 – 4:30 PM | Q & A with all speakers |

Registration is \$35/person or \$60 per couple and is due by September 30. Watch for more information and schedule updates at www.KSUbeef.org. For more information, contact Bob Weaber (bweaber@ksu.edu; 785-532-1460), Sandy Johnson (sandyj@ksu.edu; 785-462-6281), or Justin Waggoner (jwaggon@k-state.edu; 620-275-9164).



↪ **Make plans now to attend the 2016 KSU Swine Day.** The 2016 KSU Swine Day will be held Thursday, November 17, at the KSU Alumni Center. The schedule for the day includes:

- 8:00 a.m. – 4:00 p.m. Trade Show
- 9:15 a.m. Welcome - *Dr. Ken Odde, Department Head, Animal Sciences and Industry*
- 9:30 a.m. Latest update on K-State Applied Swine Nutrition Research
Dr. Duane Davis, Dr. Joel DeRouchey, Dr. Steve Dritz, Dr. John Gonzalez, Dr. Bob Goodband, Dr. Cassie Jones, Dr. Jim Nelssen, Dr. Mike Tokach and Dr. Jason Woodworth, Kansas State University
- 11:45 a.m. Lunch with Trade Show
- 1:30 p.m. Kansas State University Disease Research Update – PRRS/PCV, deep sequencing, influenza
Dr. Bob Rowland, Dr. Jurgen Richt, and Dr. Megan Niederwerder Kansas State University
- 2:15 p.m. VFD's – Ready, Set, GO
Dr. Mike Apley, Kansas State University
- 3:30 p.m. Question and Answer Session
- 4:00 p.m. Reception with K-State Ice Cream

Pre-registration fee is \$25 per participant by November 9; with registration at the door \$35 per participant. There is no charge for any students if they are pre-registered. The complete schedule and on-line registration information can be found at www.KSUswine.org. For more information, contact Lois Schreiner at lschrein@ksu.edu or 785-532-1267.

CALENDAR OF UPCOMING EVENTS		
Date	Event	Location
September 22, 2016	KSU Beef Stocker Field Day	Manhattan
October 5-7, 2016	HACCP Workshop	Olathe, KS
October 7, 2016	KSU Beef Ranching Summit	Manhattan
October 7, 2016	AS&I Family and Friends Reunion	Manhattan
November 17, 2016	KSU Swine Day	Manhattan

WHAT'S NEW.....

Management Minute "Preferred Employer"

↙ **Management Minute** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist

"Preferred Employer"

If only 70% of our cows settle in a given breeding season, and we need to cull the other 30% for infertility, how much selection pressure can we implement based on other production traits such as weaning weight, marbling, calf feedlot performance, or any number of other valuable traits? Zero.

But if you have a 90 or 95% weaned calf crop, you can cull cows based on production traits of interest and make substantial improvements in your genetics.

The same is true for your workplace. If you have the kind of workplace people are looking to leave when the next opportunity arises, good employees with ability, intelligence, and ambition are going to grab the next bus out of town for better pay, better working conditions, or simply a better growth and career opportunity. What you are stuck with are the people who cannot leave because no one will have them.

The goal of any progressive organization should be to be the preferred employer in the region or in the industry. That employer will attract the best and brightest people around who want opportunity and want to work in a positive environment. Word will travel through your satisfied team members who will want to bring in more like-minded individuals to be on their team.

Assess your workplace and your people. Are you consistently attracting high-quality personnel or are you chronically trying to fill empty positions vacated by young, talented people with potential? Do your people give 110% because they love what they do and who they work with or is there a mad rush for the door at 5:00?

Self-assessment plus vulnerability create opportunities for growth. But without one or the other, you will be stuck in a quagmire of your own making.

For more information, contact Chris at 785-532-1672 or cdr3@ksu.edu.

Feedlot Facts "Value Equation"

↙ **Feedlot Facts** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist

"Value Equation"

Because of abundant, low-cost feed resources throughout the Midwest, the question of what to do with open cows is not as cut-and-dried as in past years.

One option---the conventional option---is to stay the course and market those open females through conventional channels as not fitting their present environment and production system. Open cull females are in demand and have value this fall and can be a ready source of capital.

Another option, depending on the flesh status of the open females, would be to feed them for a period to add flesh and pounds to their selling weight. If feed is plentiful and inexpensive and feeding is logistically feasible, this may be a way to profitably increase the value of open cull females. One key consideration is that, like fish in your refrigerator and visiting in-laws, feeding cows have a very limited shelf-life. Thin cows can be fleshed up and convert feed to gain fairly efficiently and cost effectively for approximately 45-60 days, depending on their initial body condition; after that period, nearly all of their added gain is fat gain and conversions become very poor, very quickly.

A third option, again depending on cost and availability of feed resources---this is somewhat outside of the box---is to convert open cull females to bred cull females. Breeding open cows this fall and over-wintering them may increase their value by transforming them from likely slaughter cows into a ready-made calf supply for producers who are eager to increase their cow herd, but may not be eager to buy open cows now, feed them throughout this winter and next spring until breeding season, and then feed them through another winter before they calve the following spring.

The rather sweet situation of abundant feed supplies provides a very exciting opportunity for ranchers to consider numerous alternative feeding and marketing plans for cull females. Some options may not have been on the radar but this is not a "normal" year.

For more information, contact Chris at 785-532-1672 or cdr3@ksu.edu.

↪ **IRM Redbooks for Sale** – The 2017 IRM Redbooks will be arriving soon and will be sold on a first come first serve basis. The price will be: For orders of less than 10 = \$6.00/book; Orders of 10 or more = \$5.75/book which includes postage. To order your supply of redbooks, please contact Lois (lschrein@ksu.edu; 785-532-1267).

↪ **Supplemental Zinc Sulfate Affects Growth Performance of Finishing Heifers**– Heifers (n = 480; initial body weight 849 lb) were sorted by body weight and randomly assigned to treatments. Treatments consisted of supplemental zinc in the form of zinc sulfate to provide 0, 30, 60, or 90 ppm added zinc (dry matter basis). Heifers were housed in dirt surfaced pens with 6 pens per treatment and 20 heifers per pen. Heifers were weighed every 28 days and were harvested after 144 days on feed. Harvest data were collected after slaughter.
Bottom Line... Increasing the zinc concentration in the diet improved feed efficiency with the greatest improvement from heifers supplemented with 60 ppm zinc; however, no further benefits for feedlot performance or carcass traits were observed. View the complete research report at www.asi.ksu.edu/cattlemensday. For more information contact, Jim Drouillard (785-532-1204; jdrouill@ksu.edu) or Chris Reinhardt (785-532-1627; cdr3@ksu.edu).

↪ **The Effect of Enhancement on Trained Panel Beef Palatability Scores Is Dependent Upon USDA Quality Grade** – To determine the effect of enhancement on trained panel beef palatability scores of strip loins of three quality grades when cooked to three degrees of doneness.

Strip loins were selected to equally represent three USDA quality grades. One-half of each grade was enhanced with a water, salt, and phosphate solution. Steaks cooked to rare, medium, or very well done on a clamshell grill were evaluated by eight trained sensory panelists for initial juiciness, sustained juiciness, myofibrillar tenderness, amount of connective tissue, overall tenderness, beef flavor identity, intensity, salt flavor intensity, and off flavor intensity.

Bottom Line... There are palatability differences between non-enhanced and enhanced steaks; however, few differences exist among enhanced steaks from quality grades. Therefore, enhancement largely improves palatability, but there is a limit for the overall improvement potential and it does not indicate an additive palatability effect for marbling and enhancement. View the complete research report at www.asi.ksu.edu/cattlemensday. For more information contact, Travis O'Quinn (785-532-3469; travisquinn@ksu.edu).

↪ **Effects of Amino Acid and Energy Intake During Late Gestation on Piglet Birth Weight and Reproductive Performance of Gilts and Sows Housed Under Commercial Conditions** The objective of this study was to determine the effects of amino acid (AA) and energy intake during late gestation on piglet birth weight and reproductive performance of high-performing gilts and sows housed under commercial conditions. At d 90 of gestation, a total of 1,102 females (PIC 1050) were housed in pens by parity group (P1 or P2+), blocked by weight within each pen, and each female was randomly assigned to dietary treatments within weight block. Dietary treatments consisted of combinations of 2 standardized ileal digestible (SID) AA (10.7 or 20.0 g SID Lys intake/d with other AA meeting or exceeding the NRC [2012] recommendations as a ratio to Lys) and 2 energy intakes (4.50 or 6.75 Mcal/d intake of NE) in a 2 × 2 factorial arrangement. Data were analyzed using generalized linear mixed models with parity group and dietary treatments as the linear predictor and random effects of pen as the experimental unit for parity and the individual female as the experimental unit for dietary treatments. With high energy intake, the magnitude of BW gain during late gestation was greater with increasing AA intake compared with increasing AA at low energy intake. Gilts gained more weight at low energy intake than sows; however, there was no evidence for differences in weight gain between gilts and sows at high energy intake. Sows fed high-energy intake had marginally reduced probability of piglets born alive compared with sows fed low energy, but no evidence for differences in gilts was observed. This was due to the increased probability of stillborns to be higher in sows fed high energy intake. There was no evidence for differences between the dietary treatments for litter birth weight and individual piglet birth weight of total piglets born. However, individual born-live birth weight was heavier for females fed high-energy intake treatments compared to those with low energy intake. Born-alive piglets from sows were heavier than those from gilts. There was a lower probability of pre-weaning mortality for females fed high AA intake compared to low AA intake, regardless of energy level. There was no evidence for differences between the dietary treatments on farrowing rate, number of total piglets born, and percent of piglets born alive in the subsequent cycle.

Bottom Line...In conclusion, 1) body weight gain of gilts and sows depends not only on energy but also AA intake, 2) sows fed an increased amount of energy had increased stillborn rates, 3) the positive effect of increased amount of feed during late gestation on individual piglet birth weight, 30 g per pig, was due to energy rather than AA intake. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by M. A. D. Gonçalves, K. M. Gourley, S. S. Dritz, M. D. Tokach, N. M. Bello, J. M. DeRouchey, J. C. Woodworth, and R. D. Goodband)

↪ **Evaluating Pellet and Meal Feeding Regimens on Finishing Pig Performance, Stomach Morphology, Carcass Characteristics, and Economics** A total of 2,100 pigs (PIC 327 × 1050, initially 68.8 lb) were used in a 118-d trial to determine the effects of pellet feeding regimens on finishing pig growth performance, stomach morphology, and carcass characteristics. Pens of pigs were balanced by initial BW and randomly allotted to 1 of 6 dietary treatments (14 pens/treatment with 25 pigs/pen). Pens were sorted by gender allowing for 7 barrow and 7 gilt pens/treatment. The same corn-soybean meal-based diets containing 15% dried distillers grains with solubles were used for all treatments and fed in 5 phases. The 6 treatments included a meal or pelleted diet fed from d 0 to 118, a meal diet fed from d 0 to 70 and then pellets from d 70 to 118, a pelleted diet fed from d 0 to 70 and then meal from d 70 to 118, or pellets and meal rotated every two weeks starting with meal or pellets. On d 110, 4 pigs from each pen were harvested with the stomachs collected and a combined ulcer and keratinization score determined for each pig. Overall, there were no differences for ADG across feeding regimens. Pigs fed meal throughout had the greatest ADFI, while pigs fed pellets throughout had the lowest, with all other treatments intermediate. Pigs fed pelleted diets throughout had the most improved F/G, while pigs fed meal throughout had the worst F/G, with all other treatments intermediate. When pelleted diets were fed for the last 48 d, or for the entire trial, the incidence of ulceration and keratinization increased, while pigs fed meal for the last 48 d had lower incidence, with all other treatments intermediate. Feeding pellets throughout increased the number of pigs removed per pen compared to all other treatments. Removals were determined by an onsite farm manager as animals unable to remain in the general population due to health or welfare problems. There were no differences for any carcass characteristics measured. For economics, feeding a meal diet throughout the experiment increased feed cost/lb gain compared to all other treatments. There were no significant differences for IOFC; however, numerical differences showed that rotating between a pellet and a meal diet improved IOFC by \$1 to \$2 above feeding a meal diet throughout the finishing period.

Bottom Line...In conclusion, feeding pelleted diets improved F/G but increased stomach ulceration and removals; however, rotating pellets and meal diets provided an intermediate F/G response without increasing in stomach ulceration and subsequent removals compared to only feeding pelleted diets. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by J. A. De Jong, J. M. DeRouchey, M. D. Tokach, S. S. Dritz, R. D. Goodband, and M. Allerson)

↪ **Evaluating the Effect of Manufacturing Porcine Epidemic Diarrhea Virus (PEDV)-Contaminated Feed on Subsequent Feed Mill Environmental Surface Contamination** This study aimed to utilize the only known pilot feed mill facility approved for pathogenic feed agent use in the United States to evaluate the effect of manufacturing Porcine Epidemic Diarrhea Virus (PEDV)-contaminated feed on subsequent feed mill environmental surface contamination. In this study, PEDV inoculated feed was manufactured and conveyed on equipment along with four subsequent batches of PEDV-free feed. Equipment and environmental surfaces were sampled using swabs and analyzed for the presence of PEDV RNA by PCR. The experiment was replicated three times with decontamination of the feed mill and all equipment between replications. Overall, environmental swabs indicated widespread surface contamination of the equipment and work area after a PEDV contaminated batch of feed was processed. There was little difference in environmental sample cycle threshold (Ct) values after manufacturing each of the subsequent PEDV-negative feed batches.

Bottom Line...In summary, introduction of PEDV-infected feed into a feed mill will likely result in widespread contamination of equipment and surfaces, even after several batches of PEDV-free feed are produced. Eliminating the PEDV RNA from the feed mill environment was challenging and required procedures that are not practical to apply on a regular basis in a feed mill. This data suggests that it is extremely important to prevent the introduction of PEDV-contaminated feed, ingredients, or other vectors of transmission to minimize PEDV-risk. More research should be conducted to determine if contaminated surfaces can lead to PEDV infectivity and to determine the best feed mill PEDV-decontamination strategies. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by L. L. Schumacher, R. A. Cochrane, C. E. Evans, J. R. Kalivoda, J. C. Woodworth, C. R. Stark, C. K. Jones, R. G. Main, J. Zhang, S. S. Dritz, and P. C. Gauger)

AS&I Faculty Spotlight



Valentina Trinetta (vtrinetta@k-state.edu; 785-532-1667)
Assistant Professor/Food Safety

Dr. Valentina Trinetta obtained her BS in Food Biotechnology (2005) from the University of Pisa, Italy, her MS in Genetics Biotechnology for Food Quality and Safety (2006) from the University of Naples, Italy, and she received her PhD degree in Food Science and Technology (2009) from the University of Milan, Italy, for her work in active packaging and food safety. Since then she continued to work in the field of food safety prolonging the shelf-life of food products using non-thermal technologies, antimicrobial packaging and studying the mechanism of action of foodborne pathogens in the food supply chain. Her interests spanned from the microbiology of fresh produce to muscle food and ready to eat meat products.

Dr. Trinetta is coming back to Academia after a four-year experience as Principal Microbiologist-Scientist at Ecolab Research and Development Center (2011-2015). She is currently an Assistant Professor in the Department of Animal Sciences and Industry and the Food Science Institute at Kansas State University. Utilizing her background and experience in food science, microbiology and packaging, her research interests focus on the development of treatment technologies to improve the long-term sustainability of food products, minimizing the risk of foodborne illnesses associated with them. She is also interested in investigating the persistence and survival of pathogens along the food supply chain, with a particular emphasis on the mechanism of actions.

Dr. Trinetta has authored and co-authored a variety of publications, including 16 peer-reviewed articles and 3 book chapters. Her teaching responsibilities include food microbiology lectures and laboratory at undergraduate and graduate level.



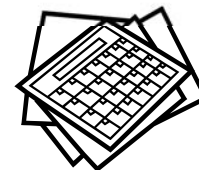
Umut Yucel (yucel@k-state.edu; 785-532-1208)
Assistant Professor/Chemistry of Foods

Dr. Umut Yucel earned B.S. (2004) and M.S. (2006) degrees in Food Engineering from Middle East Technical University (METU), Turkey, and M.S. (2010) and Ph.D. (2011) degrees in Food Science from the Pennsylvania State University. He continued his academic training as a Post-Doctoral researcher at the Flavor Research and Education Center, University of Minnesota. In April 2014, he was appointed as an Assistant Professor at the Food Engineering Department, METU of his hometown. He has joined the Department of Animal Sciences and Industry and the Food Science Institute at Kansas State University in March 2016 as an Assistant Professor with teaching and research responsibilities.

Dr. Yucel is a food chemist and physical chemist with an emphasis on food emulsions, colloids and nano-particles. More specifically, his research area focuses on design and development of emulsion-based colloidal systems, which can serve as delivery systems for bioactive foods components, such as flavors, essential oils and other phytochemicals, to improve their effectiveness (high bioavailability and controlled release profiles) and efficiency (enhanced stability during processing and storage) in foods. In parallel, his research interests involve understanding the nature of micro-scale interactions and dynamics of small molecules in a complex food environment that define food structure and biochemical functionality. In order to study aforementioned systems he is applying novel and non-invasive food materials characterization techniques, such as low-intensity ultrasound, electron paramagnetic resonance spectroscopy, in addition to more conventional spectroscopic and analytical methods. His teaching responsibilities include food processing unit operations, functionality of foods and physical chemistry of foods.

What Producers Should Be Thinking About.....

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



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

Spring Calving Cows

Cowherd Management

- Pregnancy Check (if not already completed)
- If candidates for culling were not selected in September or October, it should be completed now.
- Consider feeding cull cows to increase body weight, value, and utilize cheap feedstuffs. Value of gain is equal to the difference between the ending value and beginning values divided by the gain. Compare this to cost of gain figures. When cost of gain is less than value of gain, profit will be realized.
- Body Condition Score
 - Provide thin cows (body condition score 3's and 4's) extra feed now. Take advantage of weather, stage of pregnancy, lower nutrient requirements, and quality feedstuffs.
- In late fall and early winter, start feeding supplement to mature cows using these guidelines:

Dry grass	1½ - 2 lb supplement/day of a 40% CP supplement
Dry grass	3 - 4 lb supplement/day of a 20% supplement
Dry grass	10 lb good nonlegume hay, no supplement needed

 - Compare supplements on a cost per pound of nutrient basis.
- Utilize crop residues.
 - Average body condition cows can be grazed at 1 to 2 acres/cow for 30 days assuming normal weather. Available forage is directly related to the grain production levels.
 - Limiting nutrients are usually protein, phosphorus, and vitamin A.
 - Strip graze or rotate fields to improve grazing efficiency.
- Discontinue feeding tetracycline if used for anaplasmosis control

Calf Management

- Participate in National Level Breed Association Performance Programs CHAPS, and(or) other ranch record systems.
- Finalize plans to merchandise calves or to background through yearling or finishing programs

Forage/Pasture Management

- Plan winter nutritional program through pasture and forage management

General Management

- Document cost of production by participating in Standardized Performance Analysis (SPA) programs.
- Review management decisions, lower your costs on a per unit of production concept.
- Plan your marketing program, including private treaty, consignment sales, test stations, production sales, etc

*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.*