



Newsletter from the Department of Animal Sciences and Industry
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UPCOMING EVENTS...

September 2013

News from KSU Animal Sciences

In This Issue

- Upcoming Events
- Management Minute
- Feedlot Facts
- 2013 KSU Cattlemen's Day Article Featured
- 2012 KSU Swine Day Articles Featured
- Faculty Spotlight
- What Producers Should Be Thinking About...

We Need Your Help!

Please send questions, comments or ideas for future newsletter topics to lschrein@ksu.edu or call (785) 532-1267.

- **KSU Beef Stocker Field Day to be held September 26** - The 2013 KSU Beef Stocker Field Day will be held on Thursday, September 26 at the KSU Beef Stocker Unit in Manhattan. The schedule is as follows:
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|------------|--|
| 9:30 a.m. | Registration/Coffee |
| 10:15 a.m. | Introductions |
| 10:30 a.m. | The 30,000 Ft View – what is in store for the stocker segment – <i>Dr. Glynn Tonsor, KSU</i> |
| 11:15 a.m. | How can your Stocker Operation Fit? - <i>Tom Field, UNL</i> |
| 12:00 | Barbeque Brisket Lunch – View posters/demonstrations |
| 1:30 p.m. | Receiving Health Programs – Are they the same as 5 years Ago? - <i>Mark F. Spire, DVM, Merck Animal Health</i> |
| 2:30 p.m. | Environmental Impacts on Beef Stocker Health and Wellness – <i>Terry Mader, Professor Emeritus, University of Nebraska</i> |
| | Break |
| 3:15 p.m. | Carry-over effects of stocker cattle systems on feedlot performance and carcass characteristics - <i>Ryan Reuter</i> |
| 3:45 p.m. | Producer Panel: Do Flint Hills Stocking Rates still Apply? Moderator: Mr. Wes Ishmael – Associate Editor, BEEF
Mike Arndt, Emporia, KS; Frank Brazle, Chanute, KS; Tracy Brunner, Ramona, KS
Kevin Gant, Wilsey KS; and Mark Sullivan, Dickson, TN |
| 4:30 p.m. | |
| 5:30 p.m. | Cutting Bull's Lament 2013 |
- The day will conclude with a good old-fashioned Prairie Oyster Fry. 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 Food Processors** will be held October 2-4, 2013, at the Kansas State University Olathe Campus, 22201 West Innovation Drive, Olathe. Registration for the 2.5 day International HACCP Alliance accredited workshop is online at <http://HACCP.unl.edu>. The workshop fee is \$375, and meets USDA training requirements to become a HACCP trained individual. For more information, contact Liz Boyle (lboyle@ksu.edu; 785-532-1247).

- **KSU Goat Artificial Insemination Clinic planned for October 5**. A Goat AI Clinic will be held on Saturday, October 5, 2013 at the K-State Sheep and Meat Goat Center. Reservations are required. Seats are available on a first come, first served basis. There is a maximum space limit (20) so reserve your space now. The cost is \$125 per participant. Please e-mail or call Brian Faris to reserve your spot (brfaris@ksu.edu; 785-532-1255). The schedule is as follows:



KSU Goat Artificial Insemination Clinic

8:00 – 8:30 a.m.	Registration (coffee, juice, donuts)
8:30 – 9:30 a.m.	Basic anatomy and physiology of goats
9:30 – 11:00 a.m.	Estrus detection and synchronization in goats
11:00 – 12:00 a.m.	Practice with fresh reproductive tracts
12:00 – 1:30 p.m.	Lunch (on your own)
1:30 – 2:30 p.m.	Semen handling and AI kits
2:30 – 3:00 p.m.	Break (refreshments provided)
3:00 – 5:00 p.m.	Practice AI with live animals

For more information, contact Brian Faris (brfaris@ksu.edu; 785-532-1255).

↳ **Dedication of the new O.H. Kruse Feed Technology Innovation Center planned.** The dedication of the new O.H. Kruse Feed Technology Innovation Center and feed mill will take place at 3:00 p.m. on Friday, October 11, 2013 followed by a reception.

↳ **Applied Reproduction in Beef Cattle Event in Staunton, Virginia October 15-16, 2013** - Cattle producers, veterinarians and other industry personnel from across the country will have the opportunity to participate in an outstanding educational event called "Applied Reproductive Strategies in Beef Cattle". This year's meeting will be held at the Stonewall Jackson Hotel in Staunton, VA on October 15-16, 2013.

Some of this year's sessions will address profiting from reproduction, achieving success with estrus synchronization and artificial insemination programs, managing factors to improve pregnancy rates, and using genetic tools to get the most from reproductive efforts. The program qualifies for 16 Continuing Education hours for veterinarians. Registration and information on continuing education can be found at the conference website www.appliedreprostrategies.com. A reduced early registration fee is available through Sept. 16. For more information, contact Sandy Johnson, sandyj@ksu.edu.

↳ **Make plans now to attend the 2013 KSU Swine Day.** The 2013 KSU Swine Day will be held Thursday, November 21, at the KSU Alumni Center. The schedule for the day includes:

8:00 a.m. – 5:00 p.m.	Trade Show
9:45 a.m.	Welcome - <i>Dr. Ken Odde, Department Head, Animal Sciences and Industry</i>
10:00 a.m.	Current K-State Swine Research to Help Improve Net Return of a Swine Business <i>KSU Swine Team</i>
11:00 a.m.	Recent Disease Challenge to our Industry – Porcine Epidemic Diarrhea <i>Dr. Dick Hesse, KSU Diagnostic Medicine and Pathobiology</i> <i>Dr. Steve Henry, Veterinary Clinician, Abilene Animal Hospital</i>
11:45 a.m.	Lunch with Trade Show
1:15 p.m.	Recent On-Farm and Commercial Feedmill Innovations to Improve Whole Herd Feed Efficiency – <i>Dr. Charles Stark, KSU Grain Science and Industry</i>
2:00 p.m.	Current K-State Swine Research to Help Improve Net Return of a Swine Business <i>KSU Swine Team</i>
3:30 p.m.	Tour of the O.H. Kruse Feed Technology Innovation Center Feed Mill and 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. Watch for more details and registration information at www.KSUswine.org. For more information, contact Jim Nelssen (jnelssen@ksu.edu; 785-532-1251).

↳ The **Range Beef Cow Symposium (RBCS)** will be held at the Rushmore Convention Center in Rapid City, South Dakota on December 3 to 5, 2013. The RBCS is a bi-annual educational event designed as "In-Service Training for Cow-Calf Ranchers." The event will feature well-known speakers who will provide updates on production topics in the areas of beef industry issues, genetics, reproduction, range and forage management, cattle health, beef nutrition, and more. For more information, contact Sandy Johnson, sandyj@ksu.edu.

CALENDAR OF UPCOMING EVENTS

Date	Event	Location
September 26, 2013	KSU Beef Stocker Field Day	Manhattan
October 2-4, 2013	Developing/Implementing HACCP in Meat, Poultry & Food Processing	Olathe
October 5, 2013	KSU Goat Artificial Insemination Clinic	Manhattan
October 11, 2013	Dedication of O.H. Kruse Feed Technology Innovation Center	Manhattan
October 15-16, 2013	Applied Reproduction in Beef Cattle	Staunton, VA
November 21, 2013	KSU Swine Day	Manhattan
December 3-5, 2013	Range Beef Cow Symposium	Rapid City, SD

WHAT'S NEW.....

Management Minute **“The Classics Never Go Out of Style!”**

↪ **Management Minute** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist
“The Classics Never Go Out of Style!”

Beef Quality Assurance is now nearly 40 years old and still going strong and is stronger than ever. The BQA program started out with the intent of educating all U.S. beef producers on what to do, and not to do, to ensure that 100% of U.S. beef was safe and wholesome for consumers.

In some developing countries, any form of meat is a luxury item that few can afford to eat on a regular, daily, basis, and because of insufficient infrastructure for transport, processing, and refrigeration of fresh meat, food safety is also a luxury. Foodborne illness is commonplace in these countries.

But in the U.S. and other developed nations, food safety is table stakes. All the marketing in the world about flavor or nutritional value or convenience falls completely on deaf ears if the assumption that the product will be safe, 100% of the time, is violated. Zero tolerance. Western consumers have zero tolerance for food risk, mainly because we as the production community have provided them with that level of assurance over the past few decades.

We have one of the safest food supplies in the entire world, because the entire food production community has taken food safety seriously. In the 1950's, foodborne illness was common, and yet today it is so rare that it is newsworthy whenever or wherever it happens at the industrial level, regardless of whether it arises from meat, eggs, milk, or vegetables.

The modern industrial food production process is fascinating and incredibly complex. The level of technology employed simply in keeping foods safe for consumers would be mind-boggling to a consumer from the 1950's, or even to a modern consumer in the developing world who do not have access to this precious gift.

Most beef producers of today understand the need to keep beef safe. But it is important that we keep training each other, learning from one another's mistakes and successes. Decades ago BQA started out by making sure needles weren't left in the muscle of cattle; we moved injection site from the valuable top round to the lower value neck muscle area; we moved product use, whenever possible, from intramuscular to sub-cutaneous administration; residue avoidance became a priority so we emphasized adherence to label instructions and withdrawal times; and most recently, we've included training on reducing the stress level of cattle at all stages of production leading up to harvest.

Food safety will never go out of style; its job one for everyone in the business of feeding the world. Never stop learning, and never stop teaching one another in order to maintain consumer trust.

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

↪ **Feedlot Facts** – Chris Reinhardt, Ph.D., Extension Feedlot Specialist
“High Moisture Corn”

For feeders that are willing to put in a little extra work at corn harvest, high moisture grain can be an excellent addition to their cattle feeding operation.

Properly ensiled high moisture corn has nearly equivalent digestibility and energy content compared to steam-flaked corn, yet doesn't require the extensive up-front capital outlay. Harvesting corn early in the season can reduce field losses due to ear drop, and doesn't require extra mechanical drying. Longer-growing season varieties may be used to capitalize on additional growing days, resulting in greater yield.

However, it does require extra planning, preparation, and management to make sure a rapid and complete anaerobic fermentation occurs.

Feedlot Facts **“High Moisture Corn”**

Feedlot Facts – “High Moisture Corn” (cont.)

There are 5 critical steps to putting up and getting the most from your high moisture corn. They are:

1. Harvesting the grain at 24-33% moisture,
2. fine grinding the grain,
3. uniformly applying a quality commercial microbial silage inoculant designed for high moisture grains,
4. effectively packing the grain as it is added to the pile
5. completely sealing the grain pile or bunker

Rapid fermentation after packing results in accumulation of acids, reducing the pH of the grain pile which prevents mold growth. Once the pH of the grain drops down to about 4.5, the grain can be stored for a long period, provided oxygen is excluded. If oxygen is permitted into the system, mold can form, spoiling the grain.

High moisture corn is more highly and rapidly fermented in the rumen. If fed as part of a high-grain finishing diet, an additional element of caution and nutritional management is required. However, if grain processing by-products such as distillers grains or gluten feed are included in the diet at or above 30% of diet dry matter, or if the high moisture corn is used in a forage-based grower diet, the increased fermentability should not adversely affect performance.

Harvesting corn at high moisture and properly storing the grain can improve utilization of the grain for any cattle producer. Make sure to get quality technical advice during harvest, processing, storage, and feeding to make the most of this opportunity.

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

↪ **IRM Redbooks for Sale** – The 2014 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 = \$5.25/book; Orders of 10 or more = \$5.00/book which includes postage. To order your supply of redbooks, please contact Lois (lschrein@ksu.edu; 785-532-1267).

↪ **Ultrasound Technology has Limited Ability to Predict Carcass Yield Grade of Lightweight, Short-Fed Stocker Cattle** - Ultrasound measurements were collected on lightweight stocker calves (n = 550, initial body weight = 450 lb) prior to placement in a commercial feedlot. All calves were rescanned approximately 60 days after arrival to the commercial feedlot. The correlation between initial fat thickness and carcass fat thickness was relatively poor ($r = 0.20$; $P < 0.01$), suggesting initial ultrasound measurements have limited utility as a predictor of carcass fatness and yield grade.

Bottom Line: Correlation between initial ultrasound measurements of fat thickness and carcass fat thickness measurements at harvest is low, indicating that ultrasound measurements have limited value as a predictor of carcass fatness. View the complete research report at www.asi.ksu.edu/cattlemensday. For more information contact Dale Blasi (785-532-5427; dblasi@k-state.edu).

↪ **Efficiency of Early Weaned Beef Calves Is Not Improved by Restricting Feed Intake During 84-Day Growing Phase** - Immediately following weaning, calves were fed a common diet at 1 of 3 rates to achieve targeted average daily gains during an 84-day backgrounding phase: 1 lb/day, 2 lb/day, or 3 lb/day. Calves were blocked by gender and assigned to 1 of 18 pens (6 pens/treatment) at the Kansas State University Agricultural Research Center in Hays, KS.

Bottom Line: Lightweight, early weaned calves that were fed a grain-based diet at restricted rates did not exhibit improved feed efficiency relative to full-fed counterparts. View the complete research report at www.asi.ksu.edu/cattlemensday. For more information contact John Jaeger (785625-3425; jrjaeger@ksu.edu) or Justin Waggoner (620-275-9164; jwaggon@ksu.edu).

↪ **The Effects of MicroSource S on Growth Performance, Fecal Consistency, and Postcleaning Microbial Load of Growing-Finishing Pigs** — A total of 1,245 pigs (PIC 1050 × 337, initially 106 lb) were used in a 90-d study to determine the effects of MicroSource S (DSM Nutritional Products Inc., Parsippany, NJ) and diet type on growth performance, carcass traits, fecal consistency, pen cleaning time, and postcleaning microbial load in growing-finishing pigs raised under commercial conditions. Pens of pigs were balanced by initial weight and randomly allotted to 1 of 6 dietary treatments in a completely randomized design with 25 to 26 pigs per pen and 8 replications per treatment. Treatments were arranged as a 3 × 2 factorial with main effects of MicroSource S (0, 1×, or 1.3×) and diet type (corn-soybean meal or a by-product-based diet with 30% dried distillers grains with solubles [DDGS] and 15% bakery by-product). The MicroSource S dose in the diet was 147 million cfu/g feed for the 1× level and 191 million cfu/g feed for the 1.3× level. Fecal consistency and manure buildup in each pen was scored at the end of the trial by 3 observers with the average value per pen used for analysis. Time required to wash each individual pen was also recorded. After pens were cleaned and dried, ATP (adenosine triphosphate) testing was used to measure microbial load in each pen.

Overall (d 0 to 90), increasing MicroSource S had no effect on growth performance, carcass characteristics, ATP concentration, manure score, or wash time, but pigs fed 1× Micro- Source S tended to have

the lowest carcass yield. No interactions were observed between MicroSource S dosage and diet type for growth performance, ATP concentration, manure score, or wash time; however, a MicroSource S × diet type interaction was observed for loin depth. In pigs fed the 1× MicroSource S diet, loin depth increased when fed the by-product diet, but MicroSource S reduced loin depth in pigs fed either the corn-soybean meal or 1.3× diets. No differences occurred in ADG among pigs fed the corn-soybean meal-based diet and those fed the by-product diet.

Bottom Line... Pigs fed the by-product diet had greater ADFI and poorer F/G compared with those fed the corn-soybean meal diet. Pens of pigs fed the by-product diets required more time to wash, which appeared to be the result of an increase in manure buildup. In this trial, the 1× or 1.3× level of MicroSource S did not improve growth performance or alter fecal consistency, postcleaning microbial load, or barn wash time. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by S. Nitikanjana, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouchey, J. L. Nelssen, and J. R. Bergstrom.)

↳ **Effects of Added Zn in Diets with Ractopamine HCl on Growth Performance and Carcass Quality of Finishing Pigs in a Commercial Environment** - The experiment was conducted in a commercial facility to determine the effects of added Zn on the performance of finishing pigs fed Ractopamine HCl (RAC; Paylean; Elanco Animal Health, Greenfield, IN). Pigs were randomly assigned to pens based on gender (14 barrow pens, 11 gilt pens, and 23 mixed-gender pens), with 25 to 28 pigs per pen. Previously, pens of pigs were assigned to treatments containing 0, 7.5, or 15% bakery by-product in a completely randomized design while balancing for initial BW and gender. On d 75, treatments were implemented to determine the effects of adding 50 ppm Zn from ZnO on finishing pig performance. A total of 1,234 pigs (PIC 337 × 1050; average BW 224.6 lb) were used in a 28-d study. Pens of pigs were randomly assigned to diets with and without 50 ppm added Zn from zinc oxide (ZnO) and balanced by BW, bakery by-product, and gender. All diets contained 5 ppm RAC and 83 ppm Zn from ZnO provided by the trace mineral premix. There were 24 pens per treatment.

Overall (d 75 to 102), no differences in growth performance or carcass characteristics were observed when pigs were fed diets with 50 ppm added Zn compared with the RAC control. For pigs subsampled on d 84, pigs fed diets with 50 ppm added Zn had decreased ($P < 0.05$) edge belly thickness compared with pigs fed the control. For pigs subsampled on d 102, pigs fed diets with 50 ppm added Zn had decreased backfat thickness, belly weight, and edge belly thickness; a tendency for decreased middle belly thickness; and increased percentage lean compared with pigs fed the RAC control.

Bottom Line... In contrast with our previous research, these data indicate that adding 50 ppm Zn from ZnO to finishing pig diets containing RAC did not improve overall performance. Consistent with the earlier research, income over feed cost (IOFC) was numerically increased with the addition of Zn. More information is available on this experiment in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by C. B. Paulk, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouchey, R. D. Goodband, and K. J. Prusa.)

↳ **Effects of Lowering Dried Distillers Grains with Solubles and Wheat Middlings with or without the Addition of Choice White Grease Prior to Marketing on Finishing Pig Growth Performance, Carcass Characteristics, Carcass Fat Quality, and Intestinal Weights** - A total of 225 pigs (PIC 327 × 1050, initially 100.1 lb) were used in a 92-d study to determine the effects of withdrawing high-fiber diets 19 d before market on growth performance, carcass characteristics, fat quality, and intestinal weights of finishing pigs. Pigs were allotted to 1 of 7 dietary treatments (5 or 6 pens/treatment). Treatments were arranged in a 2 × 3 factorial plus control with main effects of added choice white grease (CWG; 0 or 3%) during the withdrawal period (d 73 to 92) and fiber levels of low (corn-soybean meal diet), medium (9.5% wheat middlings [mids] and 15% dried distillers grains with solubles [DDGS]), or high (19% mids and 30% DDGS) during the withdrawal period. Pigs were fed high-fiber (19% mids and 30% DDGS) diets from d 0 to 73. Control pigs were fed low-fiber corn-soybean meal diets from d 0 to 92. No CWG × fiber interactions occurred except for jowl iodine value (IV), which increased with increasing DDGS and mids only when CWG was added to the diet during the withdrawal period. Adding CWG during the withdrawal period (d 73 to 92) improved ADG (1.81 vs 1.94 lb/d) and F/G (3.46 vs 3.19), leading to an overall (d 0 to 92) improvement in F/G. Carcass yield and backfat depth increased when low-fiber diets were fed from d 73 to 92.

Bottom Line... Pigs fed high levels of DDGS and mids had increased jowl IV, with a larger increase when CWG was added. Feeding low levels of DDGS and mids during the withdrawal period decreased whole intestine weights, mainly due to the reduction in rinsed stomach and full large-intestine weights. Lowering dietary DDGS and mids during a 19-d withdrawal period increased yield through reduced large intestine weight and content and lowered jowl IV. The addition of CWG improved F/G but did not improve carcass characteristics. More information is available on this experiment and others in the KSU Swine Day Report at www.KSUswine.org. (This study conducted by M. D. Asmus, J. M. DeRouchey, J. L. Nelssen, M. D. Tokach, S. S. Dritz, R. D. Goodband, and T. A. Houser.)

AS&I Faculty Spotlight



Chris Mullinix (cmullinix@k-state.edu; 785-532-1917)
Instructor/Livestock Judging Coach

Chris Mullinix has returned to Kansas State University as an Instructor of Animal Sciences and the new head Livestock Judging Team Coach. Chris was born and raised on a diversified cattle and farming operation in central Maryland where his family continues to run a Hereford cow herd, an Angus herd and a small feedyard. Chris received his Animal Science degree at Kansas State University where he was a member of the 1995 National Champion Intercollegiate Livestock Judging Team and was recognized as the contest High Individual. During his undergraduate days, Chris also participated on winning Wool Judging, Dairy Judging and Academic Quadrathlon teams while serving leadership roles in the National Junior Polled Hereford Association, the Little American Royal and Alpha Gamma Rho. For the past sixteen years, Chris has been an Associate Professor on faculty with Butler Community College where he has coached more than 30 national contest winning collegiate teams and has been recognized with numerous teaching/student advising awards at a regional and national level.

In his free time, Chris is an avid K-State sports fan and enjoys working with youth and breeders at livestock events. To date, Chris has judged cattle exhibitions in 36 different states including prestigious events such as the North American in Louisville, the American Royal, the Houston Livestock Show and Rodeo, the Fort Worth Stock Show and Denver's National Western.

Chris is married to another K-State Animal Science graduate, Elissa (Good) Mullinix. Elissa completed both her B.S. and M.S. degrees in the department and has also been a faculty member in Butler's Agriculture Department where she continues to teach in an online, adjunct capacity. Chris and Elissa celebrated the arrival of their first child, Mason just last fall and feel certain his first sentence will include "Every Man a Wildcat!!" Earlier this summer Chris and his family made the move back to Manhattan and they are excited to once again be a part of the rich tradition that is K-State!



Jason Woodworth (jwoodworth@k-state.edu; 785-532-1157)
Research Associate Professor/Swine

Dr. Jason Woodworth was raised in Sterling, Kansas on a diversified crop farm. In 1997 Jason completed his B.S. Animal Science degree at KSU and during his undergraduate career he worked and lived at the KSU Swine Unit. Jason went on to complete his swine nutrition M.S. and Ph. D. degrees at KSU with his research emphasis related to the vitamin and mineral requirements of nursery pigs and sows.

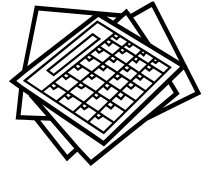
After completing his degrees, Jason joined Lonza which was the same company that funded his Ph.D. In his 11+ year tenure at Lonza, Jason's responsibilities transitioned from being the NAFTA Technical Sales & Service Manager, to the NAFTA Business Manager, and finally to the Global Product Manager for some of Lonza's specialty feed ingredients. In this capacity, Jason was responsible for the global research & development initiatives of Lonza's animal nutrition portfolio for all production and companion animal species. Furthermore, he had the global profit/loss responsibility for Lonza's L-Carnitine-based portfolio and spent about 50% of his time traveling internationally to develop the global business.

In June of 2013 Jason re-joined the Applied Swine Nutrition team at KSU as a Research Associate Professor. In this role, Jason will contribute to the already-successful swine nutrition team at KSU in their efforts to expand swine nutrition knowledge and develop young professionals for their future roles in the swine industry as well as support the team's overall objectives to increase swine producer profitability.

Jason lives in Enterprise, KS with his wife, Brooke, and two sons, Jensen and Carson, where they operate a 150 head registered Angus herd.

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.*