

# News from KSU Animal Sciences

## August, 2008



**Newsletter from the Department of Animal Sciences and Industry**  
**213 Weber Hall, Kansas State University, Manhattan, KS 66506**  
**785-532-6131 - [www.asi.ksu.edu](http://www.asi.ksu.edu)**

## WHAT'S NEW....

- ↪ **IRM Redbooks for Sale** – For more than twenty years, cattlemen have used the IRM Redbook to keep better records and track the profitability of their cow-calf operations. Some of the 2009 book highlights are calving records, Quality Assurance summary sheet, calf health records and more. The 2009 IRM Redbooks have been ordered and will be sold on a first come first serve basis. Unfortunately, the price of the redbooks has increased this year due to increases in printing costs. This year the cost will be: For orders of less than 10 = \$5.00/book; Orders of 10 or more = \$4.75/book which includes postage. To order your supply of redbooks, please contact Lois (lschrein@ksu.edu; 785-532-1267).
- ↪ **Packaging Atmospheres and Injection Enhancement Affect Beef Tenderness and Sensory Traits** - Select strip loins, eye of rounds, and shoulder clods were injection-enhanced or non-enhanced and packaged in different atmospheres, including high-oxygen (HiO<sub>2</sub>) modified atmosphere packaging (MAP), ultra-low oxygen with carbon monoxide (ULO<sub>2</sub>CO) MAP, and vacuum packaging (VP). Steaks were evaluated for instrumental tenderness, trained sensory panel analysis, and desmin degradation. Results:
- More off-flavors were associated with enhanced steaks than non-enhanced steaks.
  - Enhanced steaks were juicier and had less perceptible connective tissue than non-enhanced steaks.
  - Non-enhanced steaks packaged in HiO<sub>2</sub> MAP were less tender, according to sensory panelists, and had more off-flavors than those packaged in either ULO<sub>2</sub>CO MAP or VP.
  - Enhanced steaks packaged in HiO<sub>2</sub> MAP had less beef flavor and more off-flavors than non-enhanced steaks.
  - Sensory panelists found steaks packaged in HiO<sub>2</sub> MAP to be less tender than steaks packaged in VP or ULO<sub>2</sub>CO MAP on day 18 postmortem, but Warner-Bratzler shear force results from steaks on day 14 postmortem were not different.
  - Packaging treatment did not affect desmin degradation, a measure of enzymatic tenderization during aging. Desmin degradation differed between strip loins and shoulder clod muscles, but these two cuts were equal in tenderness.
  - Desmin degradation was similar between control and enhanced steaks, yet enhanced steaks were much more tender than control steaks.
- The Bottom Line...** Differences in desmin degradation of different beef muscles might not be related to tenderness differences across muscles. Injection enhancement is expected to improve tenderness, but not because of increased desmin degradation. Packaging steaks in ULO<sub>2</sub>CO MAP and VP would likely result in optimum tenderness and minimal off flavors compared with HiO<sub>2</sub>MAP, but the purplish-red color of VP steaks generally is not acceptable to consumers. For more information, contact Liz Boyle (785-532-1247; lboyle@ksu.edu) or Michael Dikeman (785-532-1225; mdikeman@ksu.edu).
- ↪ **Substituting Steam-Flaked Corn with Dried Distiller's Grains Alters Ruminal Fermentation and Diet Digestibility** - Cannulated Holstein steers (n = 12) were fed steam-flaked corn-based finishing diets with 0 or 25% DDGS (dry matter basis), using alfalfa hay or corn silage as roughage sources. The study was conducted in two periods, each consisting of a 17-day adaptation phase and 3-day collection phase. Three animals were assigned to each treatment in each period. Ruminal digesta samples were collected at 2-hour intervals after feeding during the collection phase and were used to evaluate changes in ruminal fermentation. Fecal samples were used to determine digestibility of the diets.
- The Bottom Line...** Feeding DDGS at moderate levels in steam-flaked corn-based diets might require additional degradable intake protein supplementation to ensure adequate available nitrogen for bacterial growth and subsequent digestion of dietary organic matter. View the complete research report online at [www.asi.ksu.edu/cattlemensday](http://www.asi.ksu.edu/cattlemensday). For more information, contact Jim Drouillard (785-532-1204; jdrouill@ksu.edu) or Chris Reinhardt (785-532-1672; cdr3@ksu.edu).

↳ **Nutritional Strategies for a Healthy Transition to Lactation: An Update** – Reducing cull rates and improving fertility in early lactation has a dramatic effect on the profitability of many dairies. Continuing research on transition cow nutrition has led to the development of an array of nutritional strategies to prevent disorders during the transition period. It is important, however, to realize that some of these strategies have similar modes of action, and as such, their effects are not likely to be additive. Producers should work with their nutritionist and veterinarian to identify the most prevalent transition problems in the herd and review options for preventing those disorders. More information is available on this experiment in Dairy Day 2007 publication. For more information, contact Barry Bradford (785-532-7974; bbradfor@ksu.edu).

↳ **The Effect of Lysine Level or Methionine/Copper/Manganese on Osteochondrosis Lesions and Cartilage Properties in Pigs** - A total of 120 gilts (PIC 327 × 1050; 89.2 lb initial BW) were used in a 3 × 2 factorial, 84-d study to determine the effect of lysine (Lys) fed either below the calculated requirement (0.8% true ileal digestible (TID) Lys Phase I and 0.6% TID Lys Phase II), at requirement (1.0% TID Lys Phase I and 0.8% TID Lys Phase II), or above the requirement (1.3% TID Lys Phase I and 1.1% TID Lys Phase II) with standard concentrations or with high added methionine (Met, 1 %), copper sulfate (Cu, 250 ppm), and manganese sulfate (Mn, 220 ppm) on the occurrence and severity of osteochondrosis (OC) lesions, growth performance, soundness, carcass traits, and several cartilage criteria. Upon completion of the feeding period, pigs were harvested and the distal aspect of the left humerus and femur were evaluated by gross examination for OC lesions. The external surface was evaluated for abnormalities and received a severity score. For the external femur evaluation, increasing dietary Lys concentration tended to increase the number of abnormalities and there was a numerical trend for an increased severity score with increasing dietary Lys. The addition of high Met/Cu/Mn to the diet reduced the number of abnormalities and severity score at the external femur compared to pigs fed diets with standard concentrations of Met/Cu/Mn. At the external humerus, increasing dietary Lys increased both the number of abnormalities and severity score. The addition of high Met/Cu/Mn to the diet reduced the number of abnormalities and severity score for the external humerus. Increasing dietary Lys concentration or high-added Met/Cu/Mn had no effect on the number of faces with lesions at the femoral growth plate or the severity score. The number of faces with lesions and severity score at the humerus articular cartilage was unaffected by increasing dietary Lys concentration or the addition of high Met/Cu/Mn to the diet. The total faces with lesions were not impacted by increasing dietary Lys concentration or additional high Met/Cu/Mn. The total abnormalities (external and number of faces) tended to increase with increasing dietary Lys. The addition of high Met/Cu/Mn did not affect the total number of abnormalities. The total severity score for both external and OC evaluation increased with increasing dietary Lys concentration. The addition of high Met/Cu/Mn decreased the total severity score compared to pigs fed diets with standard concentrations of Met/Cu/Mn. Finally, increasing dietary Lys concentration increased the sum of abnormalities and total severity score. The addition of high Met/Cu/Mn tended to reduce the overall severity score compared to pigs fed diets with standard concentrations of Met/Cu/Mn. In conclusion, feeding growing gilts dietary Lys to maximize growth performance may increase the severity of OC lesions, while a diet with additional Met/Cu/Mn may aid in the reduction of OC severity scores. More information is available on this experiment and others in the KSU Swine Day Report at [www.ksuswine.org](http://www.ksuswine.org). (This study conducted by N. Z. Frantz, J. L. Nelssen, G. Andrews, S. S. Dritz, M. D. Tokach, R. D. Goodband, and J. M. DeRouchey.)

↳ **Effect of Humidity on Flow Ability of Specialty Protein Sources in Nursery Diets** - We conducted an experiment to determine the effects of humidity on angle of repose (flowability) of different specialty protein sources. Five specialty proteins sources were used: fish meal, powdered blood meal (AP301), granulated blood meal (AP301G), powdered spray-dried animal plasma (AP920), and granulated spray-dried animal plasma (Appetein). The specialty protein sources were added at 0, 2.5, 5, 7.5, and 10% to a 70:30 corn-soybean meal blend. The experiment was conducted in an environmentally controlled nursery to minimize temperature and humidity fluctuations. There were two relative humidity levels, 34 and 64%. All samples were placed in the barn 24 h before the experiment was conducted to allow acclimation to the conditions. Flow ability was then determined by measuring angle of repose. Angle of repose is the maximum angle in which a pile of ingredient retains its slope. A large angle of repose represents a steeper slope and poorer flow ability. There was a protein source × inclusion level × humidity interaction observed. Humidity increased angle of repose, decreasing flow ability. Angle of repose increased with increasing inclusions of powdered animal plasma and fish meal, resulting in poorer flow ability. Powdered blood cells did not affect angle of repose with increasing inclusion levels. Angle of repose decreased as granular animal plasma and blood cell inclusions increased, improving flow ability. In conclusion, specialty protein ingredients in powder form reduce flow ability, while granulated specialty protein sources improve flow ability. More information is available on this experiment and others in the KSU Swine Day Report at [www.ksuswine.org](http://www.ksuswine.org). (This study conducted by E.E. Carney, C.N. Groesbeck, R.D. Goodband, S.S. Dritz, M.D. Tokach, J.L. Nelssen, and J.M. DeRouchey.)

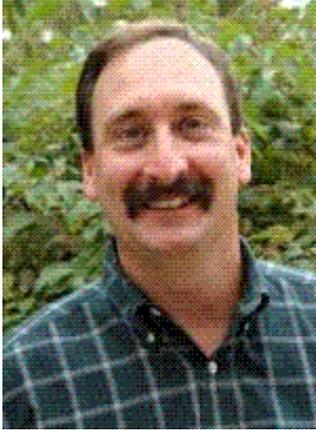
# UPCOMING EVENTS...

- ↪ The **2008 State 4-H Livestock Judging Contest** will take place on Saturday, August 23 on the KSU campus in Manhattan. Registration will begin at 9:30 a.m. with the contest starting at 10:00 a.m. For more information, contact Sharon Breiner (sbreiner@ksu.edu; 785-532-1264).
- ↪ The **2008 State 4-H Meat Judging Contest** previously scheduled for August 23 has been postponed due to tornado damages in the KSU Meat Laboratory. The new tentative date of October 11 has been proposed. More details will be forthcoming as they are available. For more information, contact John Unruh (junruh@ksu.edu; 785-532-1245).
- ↪ The **2008 KSU Beef Stocker Field Day** will be held on Thursday, October 2, at the KSU Beef Stocker Unit in Manhattan. This field day will include a chance to visit the KSU Beef Stocker Unit and obtain the latest practical information on health, nutrition and management to help optimize your stocker operation and achieve greater flexibility in the evolving beef industry. The program is listed below:
  - 9:30 Registration/Coffee
  - 10:15 Introductions
  - 10:30 Key Findings from the National Stocker Survey – Wes Ishmael, BEEF Magazine/Stocker Trends
  - 11:15 New Realities of Conducting Business in the Stocker Segment – Kevin Dhuyvetter, K-State
  - 12:00 BBQ Lunch by Coco Bolos/Cox Brothers
  - 1:00 Current Concepts in Medicated Feed Additives – Denny Hausmann, Alpharma Animal Health
  - 2:00 - 5:00 *Breakout Sessions*
    - What is the Importance of Temperature when Diagnosing Sickness – Jason Nickell, KSU
    - Making Rational Choices for Stocker Therapy – Mike Apley, KSU
    - Use of Byproducts for Exploiting Efficient Performance – Chris Reinhardt, KSU
    - What are the Implications of Heavier Cattle Being fed for Shorter Days? – Michael Dikeman, KSU
    - A Visual Tour of the Progression of Pneumonia – Gary Anderson and Gregg Hanzlicek, KSU
    - Proper Injection Considerations for the Assurance of Quality Beef – Larry Hollis, KSU
    - How much do Cutting Bulls Really Cost? – Frank Brazle, KSU

The day will conclude with Silencer Chute's complimentary Cutting Bull's Lament which includes rocky mountain oyster fry as well as dutch oven cowboy cuisine and pitch fork fondue. Registration fee is \$25 per participant by September 15 or \$35 at the door. For a registration form and more information, visit [www.ksubeef.org](http://www.ksubeef.org) or 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 8-10 in Regnier Hall, University of Kansas Edwards Campus, 127th & Quivira Road, Overland Park. Registration for the 2.5 day International HACCP Alliance accredited workshop is online at <http://animalscience.unl.edu/haccp/KansasCity.html>. The workshop fee is \$250, and meets USDA training requirements to become a HACCP trained individual. For more information, contact Liz Boyle ([lboyle@ksu.edu](mailto:lboyle@ksu.edu); 785-532-1247).
- ↪ The **2008 KSU Swine Day** will be held Thursday, November 20 at the KSU Alumni Center. Mark the date on your calendar and watch for more details.

CALENDAR OF UPCOMING EVENTS		
Date	Event	Location
August 19, 2008	KLA/K-State Ranch Management Field Day	Peru, KS
August 21, 2008	KLA/K-State Ranch Management Field Day	Beloit, KS
August 23, 2008	State 4-H Livestock Judging Contest	Manhattan
September 26, 2008	KLA/K-State Ranch Management Field Day	Medicine Lodge, KS
October 2, 2008	KSU Stocker Field Day	Manhattan
October 8-10, 2008	HACCP Plan Workshop	Kansas City, KS
October 11, 2008	State 4-H Meat Judging Contest (tentative date)	Manhattan
November 20, 2008	KSU Swine Day	Manhattan

# AS&I FACULTY SPOTLIGHT



**Bob Goodband (goodband@k-state.edu; 785-532-1228)**  
**Professor/Extension Swine Specialist**

Dr. Bob Goodband was born in 1961 in Walpole, Massachusetts. He graduated from The Pennsylvania State University in 1984. He obtained his M.S. (1986) and Ph.D. (1989) in Swine Nutrition at Kansas State University, and then joined the Department of Animal Sciences and Industry as an Assistant Professor with a 60% extension and 40% teaching appointment. In 1995, Bob was promoted to associate professor and in 2001 full professor with a 40% extension, 40% teaching, and 20% research appointment.

Bob's current teaching assignment includes ASI 535, Swine Science which is taught both fall and spring semesters. This class covers the basics of modern, sustainable swine production and includes a laboratory session where students are exposed to hands-on training at the Swine Teaching and Research Farm. Other classes include ASI 679, Swine Nutrition also taught in the fall semester. In addition Dr. Goodband has two classes, ASI 318, Fundamentals of Nutrition and ASI 535 Swine Science that are offered through the Department of Continuing Education and can be taken by students off campus. Bob also advises approximately 40 undergraduate students each year and has been the major professor for 9 M.S. and 4 Ph.D. students. Bob, his wife Dani, and son Brady enjoy K-State football games, and spending time on their small farm outside of Riley, KS.



**Barry Bradford (bbradfor@k-state.edu; 785-532-7974)**  
**Assistant Professor/Dairy Nutrition**

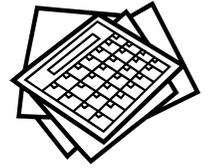
Barry Bradford was raised on a cow/calf operation in southwest Iowa and was heavily involved in the operation from a young age. He received his bachelor's degree at Iowa State University, then went on to obtain his doctorate in animal nutrition at Michigan State University, where his research focused on metabolic regulation of feed intake in dairy cattle. In 2006, Bradford began his current position at Kansas State University with a 60% research, 40% teaching appointment.

Bradford oversees an active research program focused on uses of alternative feedstuffs in dairy nutrition, transition cow health, and physiological regulation of carbohydrate and lipid metabolism. He also teaches over 150 students per year as an instructor in Fundamentals of Nutrition (ASI 318), Physiology of Lactation (ASI 601), and Dairy Cattle Nutrition (ASI 681).

Barry lives in Manhattan with his wife, Sarah, and their children, Hannah (3) and Kiernan (6 months). The Bradfords love spending time outdoors, reading, and traveling whenever possible.

# WHAT PRODUCERS SHOULD BE THINKING ABOUT...

## WHAT PRODUCERS SHOULD BE THINKING ABOUT IN OCTOBER.....



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

### ***Cowherd Management***

- Given unforeseen weather and market price volatility, price byproducts, grains and other feedstuffs on a per nutrient basis.
- Do you have sufficient harvested forage to encounter a potentially severe winter feeding season? Conduct an inventory of harvested forages and determine if you have an adequate supply on hand.
- Pregnancy Check.
- Cull cows because of:
  - ◆ Open.
  - ◆ Late vs. Early calving.
  - ◆ Soundness - udder, feet/legs, eyes, teeth, disposition.
  - ◆ Productivity - Most Probable Producing Ability (from herd performance records).
  - ◆ Disposition
- 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.
- If body condition scores warrant it, you may want start feeding supplements in late October 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  
(heifers may need more supplement than older cows)
  - ◆ Supplement nutrients that are most deficient.
  - ◆ Compare supplements on a cost per pound of nutrient basis.
  - ◆ KSU research has reported early winter supplementation is not necessary if grazing forage supplies are adequate. Third trimester cows have had the ability to achieve their target calving weights with supplementation.
- Utilize crop residues. Grazing crop aftermath can reduce daily cow costs by 50¢ or more.
  - ◆ Strip graze or rotate fields to improve grazing efficiency.
  - ◆ Average body condition cows can be grazed at 1 to 2 acres/cow for 30 days assuming normal weather.
- Consider feeding cull cows to increase value, body weight, and utilize cheap feedstuffs. Seasonal price trends have allowed producers to take advantage of maximum profit opportunities with cull cow feeding programs. Healthy cows can gain extremely well on well balanced diets.
- Check individual identification of cows. Replace lost tags or redo brands.

## ***Calf Management***

- ☑ Wean calves:
  - ◆ Reduce stress. Provide a clean, dust-free, comfortable environment.
  - ◆ Provide balanced nutritional program to promote weight gain and health.
  - ◆ Observe feed and water intake. Healthy, problem free calves have large appetites.
  - ◆ Observe calves frequently, early detection of sickness reduces medical costs and lost performance.
  - ◆ Vaccinate calves and control internal/external parasites through veterinary consultation (ideally done prior to weaning).
  - ◆ Vaccinate all replacement heifer candidates for brucellosis if within 4-10 months of age.
  - ◆ Use implants and feed additives to improve efficient animal performance.
- ☑ Weigh all calves individually. Allows for correct sorting, herd culling, growing programs, replacement heifer selection, and marketing plans.
- ☑ Participate in Whole Herd Rewards, Performance Plus, and(or) other ranch record/performance systems.
- ☑ Finalize plans to merchandise calves or to background through yearling or finishing programs.
  - ◆ Consider feedstuff availability.
  - ◆ Limit feeding high concentrate diets maybe a profitable feeding program.
- ☑ Select replacement heifers which are:
  - ◆ Born early in the calving season. This should increase the number of yearling heifers bred during the early days of the subsequent breeding season.
  - ◆ Daughters of above average producing cows. Performance traits are moderately heritable trait.
  - ◆ Of the proper frame size to compliment desired mature size and weight.
  - ◆ Structurally correct. Avoid breeding udder, feet and leg problems into the herd.
- ☑ Vaccinate replacement heifers with first round of viral vaccines.
- ☑ Plan replacement heifer nutrition program so that heifers will be at their “target weight” (65% of their mature weight) by the start of the breeding season.

## ***Forage/Pasture Management***

- ☑ Observe pasture weed problems to aid in planning control methods needed next spring.
- ☑ Monitor grazing conditions and rotate pastures if possible and(or) practical.
- ☑ Plan winter nutritional program through pasture and forage management.
- ☑ For stocker cattle and replacement heifers, supplement maturing grasses with an acceptable degradable intake protein/ionophore(feed additive) type supplement.

## ***General Management***

- ☑ Avoid unnecessary stress - Handle cows and calves to reduce shrink, sustain good health, and minimize sickness.
- ☑ Forage analyze for nitrate and nutrient content. Use these to develop winter feeding programs.
- ☑ Repair, replace and improve facilities.
- ☑ 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](mailto:lschrein@ksu.edu), or phone 785-532-1267.