K-State Beeftips
March 2005 Department of Animal Sciences and Industry
www.asi.ksu.edu

Upcoming Events

Cattlemen's Day
March 4
Manhattan, Kan.
lschrein@oznet.ksu.edu
785-532-1267

KSU Open House and Little American Royal
March 9
Manhattan, Kan.
apauley@oznet.ksu.edu
785-532-6533

KSU Sheep Day
March 19
Manhattan, Kan.
lschrein@oznet.ksu.edu
785-532-1267

Roundup
April 7
Hays, Kan.
785-625-3425

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Managing stable fly production at livestock feeding sites

Adapted by Joel DeRouchey from K-State Research and Extension publication MF-2662

Blood-feeding stable flies (*Stomoxys calcitrans*), or biting house flies, are livestock pests in confined animal feeding operations (AFOs). Control measures should be used if 150 stable flies are caught per day on sticky cylinder traps in AFOs. While stable flies are not considered a major pest of pasture and rangeland animals, producers should be aware of how stable flies affect animal performance.

Pastured cattle react similar to confined cattle when bitten by stable flies. Behavioral changes include bunching in an attempt to protect their legs, tail switching and foot stomping. Stable flies mainly feed on animals' legs. Foot stomping and tail switching are sure signs of stable flies feeding on livestock. Other natural instincts include standing in water, lying with legs tucked beneath their bodies, and bunching at the corners of pastures. The defensive responses to horn flies are different and involve mainly throwing the head back and tail switching. In addition, horn flies behave in groups, lifting and landing as clouds on the host.

The effect of stable flies on weight gain performance of pastured cattle is similar to that of livestock in confined operations. Researchers in Nebraska recorded a reduction in average daily gain of 0.5 lb per head per day in 84-day trials compared to cattle that had insecticide application at least three times per week. Five stable flies per leg is considered the economic threshold, which can easily be exceeded under the current conditions of stable flies in pastures.

Stable fly production

Recent research at K-State has identified winter feeding sites of hay in round bales as a main breeding ground for stable flies in pastures. These sites include the accumulation of manure and wasted feed, primarily hay, during the winter months. By spring, winter feeding sites are ideal breeding grounds for stable flies. The use of round bale feeders is a common practice among livestock producers and urban livestock owners. Ideal stable fly breeding habitats include moisture, bacteria (upon which the larvae feed), mild temperatures, and an abundance of larval substrate (wasted hay and manure).

Field sampling has shown the number of stable flies emerging from core samples of residues at feeding sites in Kansas to be highly variable. Up to 364 stable flies emerged per square foot at some feeding sites. The common denominator at these sites was surface areas covered by the accumulated manure and wasted hay residues. While an 8-foot bale ring may only occupy 50 square feet of space, the residue area of manure and waste hay may reach 50 feet beyond the edge of the bale ring for a total affected area of nearly 2,800 square feet. A feeding site such as this can result in more than 1 million stable flies being produced at a single feeding site.

Managing feeding sites

Cultural control (i.e., sanitation) is the most important method for on-site reduction of stable fly populations in livestock operations. Stable flies do not develop in

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pens where cattle continuously tread upon the manure because most common larval sites are old manure under fences, poorly drained areas and other areas avoided by the cattle. For AFOs, cleaning pens seasonally and scraping under fences, in addition to spreading manure, can be effective control measures.

More than 1 million stable flies could be produced within the residue ring of an 8-foot bale.

For temporary feeding sites or urban livestock owners, preventing stable fly production involves eliminating the breeding habitat. Producers should prevent large accumulations of residue and moisture at the feeding site. Although research data is lacking on the best management practices for achieving this, practical recommendations include:

- Continually move feeder.
- Roll hay out in different locations throughout the pasture.
- Avoid rolling out poor quality or rotted hay that will not be eaten.
- Grind hay to prevent sorting by the animal, which decreases waste.
- Avoid overfeeding regardless of feeding method. This prevents trampled hay, which becomes habitat once mixed with manure.
- Make sure there is adequate drainage to keep moisture from accumulating around the feeder. Runoff from feeding sites should not enter open surface water and could jeopardize water quality.

If residue cannot be minimized, proper cleanup and removal is necessary. Because fly production peaks in May and early June, the site must be cleaned and waste disposed of before April 15. Management options for cleaning sites include:

- **Pile and compost the residue.** Composting generates heat and kills fecal bacteria, which are the larvae food source. This may be a practical alternative to complete removal of material. After a couple weeks of composting, the pile must be turned to incorporate outside material. Otherwise, stable flies may breed on the outside of the pile even though the internal portion is heating. Adequate residue is necessary to prevent seepage or liquid discharges from piles, which could provide suitable breeding areas for the stable flies.
- **Burn the residue.** Because most of the residue is from wasted hay, producers can dispose of it by burning. Some years moisture content of the residue may limit the effectiveness of this option.

Certain limitations based on costs associated with labor, type of feeding practice, equipment available for site clean up and the actual feeding site location will influence what management practices can be used to minimize stable fly production. Producers should be aware of the impact that feeding sites have on stable fly production, which in turn affect the performance of livestock in pastures and grasslands.

For more information see publication MF-2662, *Managing Stable Fly Production at Pasture Feeding Sites* by A. Broce, J. DeRouchey, J. Harner and L. Zurek, at: *www.oznet.ksu.edu/library/entml2/MF2662.pdf.*

Premises registration now available

Producers may now register for a premises ID with the Kansas Department of Animal Health. Online registration is at *http://nais.aphis.usda.gov/NAIS/index.jsp?state=ks.* Forms for registration via regular mail are available from your local K-State Research and Extension office. An update on the National Animal ID System will be provided at Cattlemen's Day on March 4 in Manhattan.

Trucking survey reveals few hauling standards

Mark Spire, DVM

The following highlights are the result of a joint effort of the Kansas Animal Health Department, Kansas Motor Carriers Association and Kansas State University. The survey was mailed to 353 members of the Kansas Motor Carriers Association and 50 companies providing services to Excel Corp. One hundred and thirty two surveys were returned.

Type of hauls

According to the survey, 77 percent of hauls were within Kansas; 5.5 percent were calves weighing less than 300 pounds; 21 percent were stockers (301 to 650 lbs); and 34.5 percent were feeders weighing more than 650 pounds. Fats accounted for 34.5 percent and cows and bulls made up 4.5 percent of hauls.

Trailer sanitation

Sanitation practices varied. Of those responding, 16 percent reported cleaning between each load, 45 percent cleaned one to two times per week and 33 percent clean based on the number of loads, length of trip or as needed.

Forty-three percent reported using a private cleaning area. The majority use cold water, and less than 5 percent of trailers are disinfected during cleaning.

Approximately 80 percent of companies do not have written protocols for trailer sanitation.

Loading

Respondents rated 86 percent of livestock market loading facilities and 90 percent of feedlot market loading facilities as good to excellent. Forty-four percent of farm/ranch facilities were rated minimal to inadequate for cattle loading.

Animal handling

Of companies surveyed, 96 percent do not haul non-ambulatory animals, more than half have a training program for handling cattle, and nearly 80 percent have a policy requiring cattle to be checked during a haul.

If cattle are injured during a haul, most are left at the receiving operation after injury has been documented.

Most common types of animal handling problems reported:

- Poor facilities – 71 percent
- Poor lighting – 68 percent
- Too little help – 41 percent
- Inexperienced help – 28 percent
- Dogs present – 18 percent
- Too much help – 17 percent

Health-related issues

Coughing, lameness and diarrhea are the most often encountered health problems. Sick or dead on arrival are the least encountered problems. A large percentage of interstate loads do not travel with health papers.

Respondents reported few requirements by producers either at pickup or drop-off to follow a biosecurity plan.

- 76 percent reported that they never to occasionally encountered restricted access signs.
- 15 percent reported signs at every premise.
- 90 percent of operations do not require a change of clothes or footwear before handling cattle.
- 84 percent of respondents reported never receiving a written biosecurity protocol from owners.

To learn about ways to improve cattle transportation read the following fact sheets, available at *www.beefstockerusa.org* or from your local K-State Research and Extension agent.

Cattle Transportation: Cattle Handling and Health Guidelines; Cattle Transportation: Pre-Transit Guidelines; Cattle Transportation: Sanitation Guidelines; Cattle Transportation: Transit and Post-Transport Guidelines.

2005 Cattlemen's Day Research Summaries

The following are a few of the summaries now available in the 2005 Cattlemen's Day report. You can get the entire report on line at *www.oznet.ksu.edu/library/lvstk2/SRP943.pdf* or contact your local K-State Research and Extension office.

Effects of Optaflexx™ on finishing steer performance and USDA quality and yield grades

E. R. Loe, J. S. Drouillard, T. J. Klopfenstein, G. E. Erickson, and B. E. Dicke

Crossbred yearling steers (2,015 head) were fed at a commercial feedyard near Larned, Kan., to evaluate the effects of feeding Optaflexx™ at 0 or 200 mg ractopamine-HCl per steer daily for the final 29 days on feed. Steers were fed a common diet, based on steam-flaked corn, throughout their finishing period. Cattle that were fed Optaflexx™ had heavier final bodyweights (1,264 vs. 1,236 lb). Optaflexx™-fed cattle gained 17.9% faster (carcass adjusted basis) and tended to consume more feed during the last 29 days on feed. Feed efficiency was 14% better during the last 29 days for the Optaflexx™-fed steers. Feeding Optaflexx™ increased carcass weight by 19.7 lb and increased carcass weight gained during the last 29 days on feed by 11.2 lb. There were more liver abscesses for the control steers (19.7%) than for Optaflexx™-fed steers (13.5%). Quality grade was not affected by feeding Optaflexx™. There was a decrease in USDA Yield Grade 2 carcasses (49.6 vs. 54.8%) and an increase in USDA Yield Grade 4 carcasses (3.3 vs 1.7%) when cattle were fed Optaflexx™. Performance of the steers from the time that they were sorted into their treatment pens until slaughter (98 days) was improved by feeding Optaflexx™ during the last 29 days on feed. For the full 98-day period, daily gain was 8% greater for steers fed Optaflexx™ vs. control, feed intake was greater for the steers fed Optaflexx™, and feed efficiency was moderately improved (3.3%). Steers that received Optaflexx™ gained 6.4% more bodyweight during the 98-day feeding period. These data show that addition of Optaflexx™ into finishing diets fed to steers is beneficial, increasing bodyweight and carcass gain and improving conversion of feed to beef without affecting USDA quality grade.

Serological responses to IBR viral vaccine and *Mannheimia haemolytica* bacterin/leukotoxid administered with needle-free injection technology

L. C. Hollis, J. F. Smith, B. J. Johnson, S. Kapil, and D. A. Mosier

Yearling steers were randomized to treatment and vaccinated with five-way modified live viral vaccine and *Mannheimia haemolytica* bacterin/toxoid by using either needle-free or standard needle injection. Blood samples were collected from all animals at the time of vaccination and 21 days later, and the serum was analyzed for antibody titers to infectious bovine rhinotracheitis (IBR) virus and *M. haemolytica* leukotoxoid. Serological responses to the IBR viral fraction of the five-way viral vaccine were significantly greater on day 21 after administration with the needle-free injection system. Serological responses to the *M. haemolytica* leukotoxoid tended to be greater on day 21 after administration with the needle-free injection system.

Effects of early weaning on carcass and ribeye steak characteristics of bulls and steers

E. K. Schlickau, J. A. Unruh, M. E. Dikeman, T. T. Marston, and J. Brethour

Crossbred Hereford x Angus calves (n = 103) were used to determine the effect of early weaning on carcass and ribeye (longissimus muscle) characteristics of bulls and steers. Treatments were: 1) early-weaned (117 days of age) bulls, 2) early-weaned steers, 3) normal-weaned (220 days of age) bulls, and 4) normal-weaned steers. Cattle were harvested at 360 and 389 days of age. At 36 hours postmortem, carcass quality and cutability were measured. Ribeye steaks were aged 14 days and scored for color, Warner-Bratzler shear force, and sensory panel evaluations. Carcasses from early-weaned cattle had greater dressing percentages, heavier weights, greater fat thicknesses, and higher numerical USDA

Yield Grades (lower cutability). They also had more marbling and greater USDA quality grades, but had similar longissimus color, shear force, and sensory panel scores, compared with those of normal-weaned cattle. Bulls had greater dressing percentages, but had similar carcass weights to steers. Bull carcasses had less fat thickness and greater ribeye areas, resulting in lower numerical USDA Yield Grades (higher cutability) than steers had. They also had less marbling, darker color, and lower USDA quality grades than steers did. Longissimus muscles from bulls were darker, had greater shear forces, and had lower sensory panel tenderness scores than those from steers. For early-maturing British-type cattle, early weaning is a viable management strategy to produce heavier, higher-quality carcasses than those of normal-weaned cattle. Carcasses from early-weaned cattle are fatter and have lower cutability. For a non-implant "natural" market, bulls could be an alternative for producing high-cutability carcasses. Steaks may be less tender, however, and pre-harvest management must be optimized to reduce dark-cutting carcasses.

Economic values associated with expected progeny differences (EPD) for angus bulls at auction

K. Dhuyvetter, R. Jones, T. Turner, and T. Marsh

The two primary objectives of this study were to re-examine the economic values of production expected progeny differences (EPD) and how they relate to the values assigned to actual weights, and to assess the impact that ultrasound EPD have on Angus bull prices. Buyers consider the EPD birth weight to be more important than actual birth weight when selecting bulls. For the remaining production EPD, however, the actual measures were considered more important than the EPD. All four ultrasound EPD were significantly related to price, with three out of the four exhibiting the expected response. Comparisons among premiums/discounts associated with ultrasound EPD, production EPD, and actual weights showed that EPD for ultrasound ribeye area had significantly larger price responses than did either the EPD for birth weight or the actual adjusted yearling weight. This finding suggests that breeders who currently fail to report this data should consider its inclusion in future production sales.

Effects of packaging on bone marrow discoloration in beef arm, rib, shoulder blade and thoracic vertebra bones

J. P. Grobbel, M. E. Dikeman, J. S. Smith, D. H. Kropf, and G. A. Milliken

Meat retailers have reported bone marrow discoloration to be a problem, especially in modified-atmosphere packages (MAP). To evaluate causes of bone marrow discoloration in different beef bones and packaging systems, 36 beef arm bones, ribs, shoulder blades, and thoracic vertebrae from USDA Select and Choice carcasses were obtained from a commercial abattoir, cut into 1-inch-thick sections at 4 days postmortem, and packaged into 1) polyvinyl chloride film (PVC) overwrap; 2) high-oxygen (80% O2, 20% CO2) MAP; or 3) ultra-low-oxygen (70% N2, 30% CO2) MAP. Packages were displayed under continuous fluorescent lighting for 4 days at 35.6˚F. Ribs, shoulder blades, and thoracic vertebrae packaged in PVC and high-oxygen MAP developed undesirable gray or black discoloration during display. In ultra-low-oxygen MAP, mean visual-color scores were acceptable throughout display. The a* values (larger values equate to redder color) for ribs, shoulder blades, and thoracic vertebrae decreased ($P<0.05$) over time. Arm-bone marrow had less oxidation and dramatically less total iron and hemoglobin than did marrow from ribs and thoracic vertebrae. The much larger amounts of iron and hemoglobin in ribs and thoracic vertebrae likely correspond to marrow discoloration. In summary, bone marrow discoloration occurs in ribs, shoulder blades, and thoracic vertebrae packaged in PVC or high-oxygen MAP. Bones packaged in ultra-low-oxygen MAP or arm bones packaged in PVC or high-oxygen MAP had minimal oxidation and discoloration.