K-STATE Research and Extension

Beef Tips

July 2014 Department of Animal Sciences & Industry www.asi.ksu.edu/beeftips

Upcoming Events

Range Schools

Mid/Shortgrass
August 5-7
Camp Lakeside, Scott City, KS
Tallgrass
August 19-21
Camp Wood YMCA, Elmdale, KS
see details page 4
www.kglc.org

K-State Beef Conference

Aug. 11, Erie
Aug 12, El Dorado
Aug 12, Pratt
Aug. 13 - Newton
Aug. 14, Oakley
Aug. 14, Salina
www.ksubeef.org
see details page 6

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Heat stress abatement: Prevention is the cure

Chris Reinhardt, extension feedlot specialist

Summer is upon us and is promising some record temperatures and heat conditions across the Midwest, and we're just coming into the time of greatest concern for heat stress. As beef producers and those of us who support the beef industry, it's our duty to prepare for all the possible contingencies that summer weather can bring. So, that being said, what are the tools we have in our toolbox to be better prepared to deal with the heat?

1. Pasture cattle fare better than confined cattle during heat events, provided that they can find adequate shade, elevated areas to catch more breeze, and abundant water quality and quantity to alleviate heat stress during the hottest times of the day.

2. Black-hided cattle sustain the greatest challenge due to absorption of more solar radiation compared to light-hided cattle, and the problem is exacerbated in heavy, long-fed cattle. Heat stress is caused by the combination of actual temperature, high humidity, lack of wind, and lack of cloud cover.

3. Shade works. Keeping solar radiation to a minimum during extreme heat events may eliminate the need for emergency intervention. Even some kind of temporary or portable shade structures which can be placed in pens prior to extreme heat events will give cattle relief and get you through the worst heat episodes.

4. Wind breaks contribute to heat stress. Even if no extreme heat stress may be evident, reducing potentially cooling breezes can make cattle less likely to consume and perform up to their full potential. If wind breaks are needed for the winter, consider some form of temporary wind break which can be removed for the summer months.

5. Building mounds isn't just for wet, muddy, conditions. Cattle will climb mounds for improved access to breezes. Cattle don't lie: if they're using shades and using mounds, they are probably more comfortable because of the mounds and the shades.

6. Extra drinking water space may provide comfort and alleviate the demand on the water system during peak heat hours. Remember: cattle cool themselves through evaporative cooling from their lungs and this can move a tremendous volume of water which needs to be replaced. Extra water space can be in the form of steel tanks or even feed bunks with tarps and sand bags on the ends to convert part of the bunk to an extended water tank. Not only is water volume the issue, but linear access space is also critical because dominant cattle may simply stand at the water trough to breathe the cooler air directly above the water source, preventing smaller or more timid cattle from getting a needed drink. Extra tanks provide both volume and linear access space.

7. Bedding a portion of the pen with straw or light-colored hay provides a reflective surface to provide cattle a cooler place to lie down and rest, thus reducing their activity and improving comfort during already stressful conditions.

8. Sprinkling cattle may be essential during extreme heat events. Spraying cattle is

continued...see Heat Stress on page 5

"You can't manage what you don't measure."

Tally Time – Counting Flies

Sandy Johnson, livestock specialist

Horn flies represent the single largest cause of losses in cattle production due to external parasites. The total loss was estimated to be $1.36 billion in 2012. Failing to control flies in growing calves roughly reduces gain 1.5 lbs per week. At today's calf prices, fly control is a good investment. Animals in poor body condition will suffer injury at a lower fly population than those in good body condition.

With the exception of feeding insect growth regulators (IGRs), other forms of fly control should be delayed until fly numbers reach levels where it makes economic sense to control them, by most estimates 200 flies per animal. The delay is recommended to help reduce the development of resistance by reducing the generations of flies that are exposed to the treatment (30-35 generations per season for horn flies). Removing fly tags and other forms of treatment late in the season is another necessary part of managing resistance.

If you've ever tried to count flies yourself you might find it a bit challenging. Technology has made it much easier for researchers to document fly numbers by using a camera and a software program. We can use some of these observations to help us get a better mental image of how many flies are present. The figures below show cows with 145 (A), 247 (B), 314 (C) and 536 (D) flies per side, notice you see evidence of slobber trails on several of these cows. Cattle tossing their heads fighting flies are not eating.

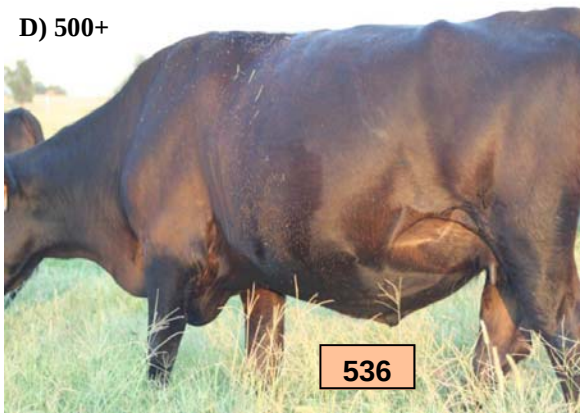
If you find the flies hard to see in images in the newsletter, the same pictures can be viewed online at http://livestockbugs.okstate.edu/horn-flies in the 2012 report by Justin Tally, entomologist for Oklahoma State University with his annual report of studies comparing commercial ear tags. You will also find a listing of what class of compound is contained in various fly tags to help ensure you get needed rotation.

The recommendation is to only use pyrethroid tags once every 3 years and not use organophosphate tags more than 2 years in a row. If fly control methods are not working, do not retag cattle regardless of insecticide class. Rather switch to a different chemistry and try sprays, pour-ons, dusts or backrubbers. If possible, alternate insecticide classes when changing control methods. Generally most fly tags will be effective for about 2.5 months. The goal should not be to eliminate all flies rather it should be to keep them under the level at which they cause economic harm.

A) 100+

B) 200+

D) 500+



Performance of limit-fed pregnant beef cows fed ammoniated wheat straw based diets

Justin Waggoner, beef systems specialist

The prevalence of drought conditions across much of Kansas and the Great Plains in recent years has renewed interest in the use of anhydrous ammonia to improve the feeding value of low quality forages such as wheat straw. An application of 3.0% anhydrous ammonia (60 lbs/ton) on a dry matter basis has traditionally been recommended. However, a demonstration project conducted by the K-State Beef Extension team at 6 locations across the state in 2012, indicated that an anhydrous ammonia application rate of 1.5% (30 lbs/ton; dry weight basis) resulted in a proportionally greater improvement in forage quality than the recommended 3.0% application rate.

A cow feeding study, based on the results of that case study, was recently conducted at the Agricultural Research Center in Hays during the Fall of 2013. The objective of this study was to evaluate the inclusion of wheat straw treated with 1.5% or 3.0% anhydrous ammonia (dry basis) in diets containing wet distillers grain limit fed (1.9% of bodyweight, dry matter basis) to spring-calving beef cows for 84 days on cow bodyweight, average daily gain and body condition score. Three treatment diets were fed: 1) 64.1% wheat straw (**CON**); 2) 64.1% wheat straw treated with 1.5% (weight/weight) anhydrous ammonia (**1.5A**); 3) 64.1% wheat straw treated with 3.0% (weight/weight) anhydrous ammonia (**3.0A**). See Table 1 for nutrient composition.

Table 1. Ingredient and nutrient composition of diets containing wheat straw treated with 0.0% (control), 1.5% or 3.0% anhydrous ammonia (wt/wt; DM basis).

	Treatment[1]		
Item	CON	1.5A	3.0A
Ingredient composition, % DM			
Ground, wheat straw-CON	64.1	-	-
Ground, wheat straw-1.5%	-	64.1	-
Ground, wheat straw-3.0%	-	-	64.1
Wet distillers grain	19.9	19.9	19.9
Rolled sorghum	14.9	14.9	14.9
Calcium carbonate	0.5	0.5	0.5
Salt	0.2	0.2	0.2
Vitamins and mineral premix[2]	0.4	0.4	0.4
Nutrient composition, DM basis[3]			
Crude Protein, %	11.8	14.9	16.2
Neutral Detergent Fiber, %	44.51	42.59	42.05
Acid Detergent Fiber, %	34.20	35.25	35.24
Calcium, %	0.99	0.94	0.90
Phosphorus, %	0.30	0.29	0.30
Sulfur, %	0.29	0.27	0.31

[1]Treatments: CON = 64.1% wheat straw (no anhydrous ammonia); 1.5A = diet containing 64.1% wheat straw previously treated with 1.5% (wt/wt) anhydrous ammonia; 3.0A = diet containing 64.1% wheat straw previously treated with 3.0% (wt/wt) anhydrous ammonia
[2]Premix supplied 150 mg $head^{-1}d^{-1}$ Rumensin®
[3]Nutrient analysis conducted by SDK Labs, Hutchinson, KS

The results of this study are summarized in Table 2 (page 4). Cows fed diets containing wheat straw treated with anhydrous ammonia resulted in greater bodyweight gain, average daily gain and tended to result in better body condition scores at the conclusion of the feeding period. Collectively, the results of this study indicate

continued...see Ammoniated Wheat Straw on page 4

"… application of 1.5% anhydrous ammonia (dry weight) may be more economical when anhydrous ammonia prices are relatively high."

Ammoniated Wheat Straw ….

continued from page 3

that the performance of pregnant beef cows may be improved by applying anhydrous ammonia to low quality forages, such as wheat straw, at a rate as low as 1.5% (dry weight). Additionally, these improvements in cow performance were observed in diets containing wet distiller's grain. Treating wheat straw with 3.0% anhydrous ammonia resulted in the greatest bodyweight gain and average daily gain. However, the observed improvement in these variables in response to the 1.5% application rate suggests that application of 1.5% anhydrous ammonia (dry weight) may be more economical when anhydrous ammonia prices are relatively high.

Table 2. Performance of pregnant beef cows diets containing wheat straw treated with 0.0% (Control), 1.5% or 3.0% anhydrous ammonia on (wt/wt; DM basis) for 84 days.

Item	Treatment[1]			SEM	*P*-value
	CON	1.5A	3.0A		
Number of pens	4	4	4		
Body wt[2]					
Initial, lb	1265	1239	1245	16.6	0.51
Final, lb	1395	1399	1408	19.6	0.89
Total gain, lb*	130[a]	160[b]	163[b]	3.9	0.01
ADG, lb/d*	1.35[a]	1.66[b]	1.69[b]	0.09	0.01
BCS[3]					
Initial	5.86	5.87	5.92	0.07	0.78
Final	5.86[a]	5.94[a]	6.08[b]	0.07	0.09
Change	0.00	0.08	0.16	0.04	0.13

[1]Treatment consisted of 3 diets, limit-fed at 1.9% initial BW (DM basis) 1) CON = 64.1% wheat straw diet (no anhydrous ammonia); 2) 1.5A = diet containing 64.1% wheat straw previously treated with 1.5% (wt/wt) anhydrous ammonia; 3) 3.0A = diet containing 64.1% wheat straw previously treated with 3.0% (wt/wt) anhydrous ammonia
[2]To account for differences in gut fill, cows were fed a common diet prior to collection of initial weight and were fed a common diet for 12 d prior to collection of final weight. Thus calculation of ADG is based on 96 days on feed.
[3]BCS scale: 1 to 9 (1=emaciated, 9=obese; Wagner et al., 1988)
[a,b]Within a row, means without a common superscript differ (P≤ 0.05)
* Linear P= 0.01, Quadratic P= 0.10

More information on this study and many others may be found in the 2014 Agriculture Research Center-Hays Roundup, Centennial Report of Progress which may be viewed online at http://www.ksre.ksu.edu/bookstore/pubs/SRP1104.pdf

August Range Schools Cover Adaptive Management, Profitability Topics

(Hutchinson, KS) *"Adapting Your Management to a Changing Climate* is the theme for the Kansas Grazing Lands Coalition (KGLC) summer range schools," said Tim Christian, state coordinator for the group. "The Mid-/Shortgrass Range School runs from August 5-7 at Camp Lakeside, Scott Lake, and the Tallgrass Range School is set for August 19-21 at Camp Wood YMCA, Elmdale."

The climate in Kansas continues to change - the uncertain weather, uncertain markets and diminishing wildlife species and their habitat needs are among the tough challenges facing ranchers today. This situation calls for action - rethinking your management options and strategies, said Christian. The intent of the schools is to help inform decision-makers and provide them with sound grazing principles that they can take home and employ on their operations. Our cadre of instructors includes ranchers, agency, university and organizational staff who provide hands-on instruction in the field as well as classroom presentation.

The 2014 registration fees are still a bargain at $300 per person. The fee covers course materials, on-site lodging and meals, and other related costs. Ranchers, landowners, and students may qualify for a $150 scholarship if they meet eligibility and request one using KGLC's scholarship form. Agency staff may qualify for $100 in scholarships. The form and more information on the Schools is available at www.kglc.org under 2014 Range Schools found in the navigation bar. Scholarship applications must be submitted by July 22 for the Mid-/Shortgrass School and August 5 for the Tallgrass School.

KGLC organized in 1991 as a non-profit educational organization and its vision is to regenerate Kansas grazing lands. This is achieved through the management, economics, ecology, production, and technical assistance programs provided by voluntary methods to reach landowners, ranchers, and others making decisions on grazing lands.

For more information on the 2014 KGLC Range Schools, contact Tim Christian, state coordinator, at 620-241-3636, email to tdchristian@cox.net, or Ken Sherraden assistant coordinator, 785-922-7061, email to kennethsherraden@sbcglobal.net. You may also go to the web at www.kglc.org.

Heat Stress …. *continued from page 1*

costly, time-consuming, and can contribute to increased mud and humidity within the pen, but it also may be the difference between life and death for extremely heat-stressed cattle. Be hyper-vigilant for signs of extreme heat distress: open mouthed, labored, panting. Both cattle surface temperature and soil surface temperature are reduced as a result of spraying water which then evaporates, taking heat out of the surface. Have a full water truck on hand when the forecast calls for elevated temps, high humidity, minimal wind, and lack of cloud cover.

As summer heat comes at us, we all need to be prepared. Shade, extra water space, mounds to elevate cattle to catch extra breeze, and removal of wind breaks can help cattle effectively alleviate heat stress. Preparation is much more effective at reducing the costs of heat stress than interventions after extreme heat stress is obvious.

Other resources on Heat Stress

Heat Stress — What You Should Know to Make Livestock Shows a Success
UNL Extension G2121- http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=1448

APPS

ThermalAid -This app is a decision-making tool for users to identify, monitor, and reduce heat stress in cattle to improve welfare and performance.

Heat Stress - The Heat Stress in Livestock and Poultry App allows the producer to calculate heat stress based on the measured barn temperature and relative humidity.

QualiTech Heat Stress Web APP - Sends email alerts when temperature and humidity indexes reach levels that cause stress. http://www.qualitechco.com/ANEVIS

Hollis Retires

Beef Tips introduced you to Dr. Larry Hollis in September of 2002 as beef extension veterinarian. He joined K-State after several years working in industry and at other academic institutions. Since then he has been an active and valued member of the extension beef team and the Animal Sciences and Industry Department. He plans to retire on July 5, 2014. We thank him for his valued service to the university and the industry. He and his wife, Shirley, plan to move to Texas where they can be closer to grandchildren and Larry can teach them to fish.

2014 K-State Beef Conference Set for Six Locations from August 11-14

The 2014 K-State Beef Conference will feature six face-to-face meetings around the state of Kansas over the August 11-14, 2014 time frame. The goal of the meeting is for extension expertise to interface with profit minded cow-calf producers on a range of timely and economically impactful topics. This year's program is titled: Busting Myths that Affect Your Bottom Line (see list of tentative topics below). State extension educators and collaborating district and county based extension experts will provide a fast paced program that will get to the heart of a number of common myths that are robbing profit from cow-calf producers' bottom lines. Speakers will include state extension specialists Drs. Jaymelynn Farney, Dale Blasi, Charlie Lee, Sandy Johnson, Chris Reinhardt, Justin Waggoner, and Bob Weaber.

It is important for producers to not rest on the expected wide margin of profit due to today's high calf prices. Rather producers should be energized to seek out and capture profits left on the table.

Registrations should be completed with the hosting county/district office. Registrations will vary depending on site location but will be kept to a minimum to encourage attendance. All sites will feature a meal which will be included in registration costs. To aid in the judicious use of funding resources, a minimum of 40 attendees at each site is requested. For more information see www.ksubeef.org and see information on 'K-State Beef Conference.'

Dates and locations

- Aug. 11, 2014, 5 - 9 PM, Erie hosted by Southwind and Wildcat Extension Districts
- Aug. 12, 2014, 9 AM - 1 PM, El Dorado hosted by Butler, Cowley, Sedgwick Co. Ext. and Rolling Prairie, Flint Hills Ext. Districts
- Aug. 12, 2014, 5 - 9 PM, Pratt, hosted by Barber County Extension
- Aug. 13, 2014, 5 - 9 PM, Newton, hosted by Harvey, Marion, and McPherson County Extension
- Aug. 14, 2014, 9 AM - 1 PM, Oakley, Golden Prairie Extension District
- Aug. 14, 2014, 5 - 9 PM, Salina, Central Kansas, Post Rock, River Valley and Midway Extension Districts

Tentative list of myths that will get busted:

- Trichomoniasis is a regulatory problem
- Antibiotic restrictions won't affect me
- Operation is too small for a planned breeding program
- Record keeping has to be complicated
- I don't need to body condition score my cows
- Producers need 1,400 lb cows to make 1,400 lb fed steers
- I can change a trait without affecting others
- Heterosis isn't important in today's beef business
- All info in a bull sale catalog is important… a bull's actual birth weight is a good selection tool
- Anything with a uterus is a replacement
- Ionophores (Rumensin or Bovatec) are too expensive to be practical in my operation
- The only beef consumer worth focusing on is the one that goes to a white table cloth restaurant
- I don't need to pay attention to wildlife/ endangered species on my property