CATTLEMAN'S CORNER

*Division of Agriculture Sciences and Natural Resources * Oklahoma State University* **MAY/JUNE 2016**

Understanding wet hay

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Spring rain in Oklahoma has allowed cool season forages to grow in abundance. Harvesting and baling cool season crops such as fescue and wheat hay is a challenge during a wet spring. The timing of the rains can make it difficult for cattlemen that are trying hard to put quality hay in the bale for next winter's feed supply. All producers that harvest hay occasionally will put up hay that "gets wet" from time to time. Therefore, ranchers and hay farmers need to understand the impact of "wet hay" in the tightly wound bales.

Extra moisture in hay can cause heat inside the hay bale or hay stack. Heat produced by the bale comes from two sources: **First**) biochemical reactions from plants themselves as hay cures. (This heating is minor and rarely causes the hay temperature to exceed 110 degrees F. Very little if any damage occurs if the hay never exceeds 110 F.); **Second**) Most heat in hay is caused by the metabolic activity of microorganisms. They exist in all hay and thrive when extra moisture is abundant. When the activity of these microbes increases, hay temperature rises. Hay with a little extra moisture may not exceed 120 degrees F., whereas, wetter hay can quickly exceed 150 degrees. If the hay rises above 170 degrees, chemical reactions can begin to occur that produce enough heat to quickly raise the temperature above 400 degrees and the wet hay can begin to burn and cause fires. Be wary of the fire danger of wet hay and store it away from buildings and other "good" hay just in case this would occur.

Below is a table with moisture guidelines at time of baling. (Adapted from "Preventing hay fires" Martinson, University of Minnesota)

Moisture ranges (%)	**Comments**
Less than 10	Too dry. Hay may be brittle and dusty
10 - 15	Recommended moisture range. Minimal risk of fire
16 - 20	Could mold. Slight risk of fire hazard
21 -25	Will likely mold. Moderate risk of fire hazard
Greater than 25	Severe heat damage likely. High risk of fire hazard

Heat damage causes hay to be less digestible, especially the protein. Heat damaged hay often turns a brownish color and has a caramel odor. Cattle often readily eat this hay, but because of the heat damage, its nutritional value might be quite low. Some ranchers have reported that "the cows ate the hay like there was no tomorrow, but they did very poorly on the hay".

Testing wet hay may be very important. Determining the internal temperature of large bales or stacks of hay should be done carefully. Make certain that checking the temperature in suspicious hay is done safely. Read the E-Extension Fact Sheet "Preventing Fires in Baled Hay and Straw" (http://www.extension.org/pages/66577/preventing-fires-in-baled-hay-and-straw#.VV-WALco7L8).

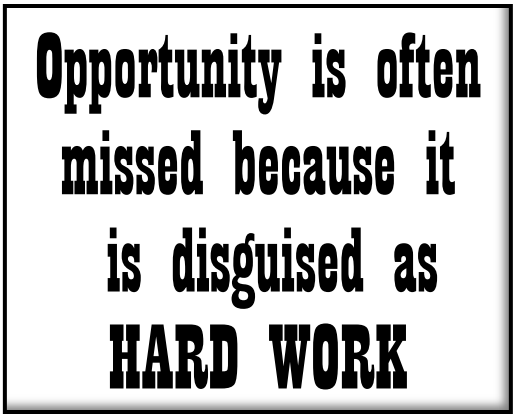
Testing the protein and energy content of stored wet hay will allow for more appropriate supplementation next winter when that hay is fed. Moldy hay could be a source of mycotoxins that could present several health problems for cattle. Many animal disease diagnostic laboratories can examine feedstuffs for mycotoxins or can recommend laboratories that do such testing.

Watch for a lameness issue called corkscrew claw

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Recently a cattle producer asked about a lameness issue of a cow in his herd. There is no way to completely diagnose the problem via email. However, his question encouraged a reminder about a lameness problem that can be troublesome for other cattlemen.

Corkscrew claw is a defect that causes severe lameness in cattle and is most often observed in cattle 2 to 3 years of age or older. This is a condition that most commonly occurs in the hind legs. Corkscrew claw (also called screw claw) is a twisting of the toe in a way that places the side wall of the hoof in direct contact with ground. The condition often begins to show itself with toes pointing inward instead of forward and leads to lameness due to improper distribution of weight within the toe.



Corkscrew claw may be confused with founder. Have your veterinarian look at any cow or bull with poorly shaped or overgrown toes. A correct diagnosis could be important as to the culling of that particular animal or any of its offspring.

The genetic component of corkscrew claw seems to be a subject of some debate. One study in dairy cattle reported a low heritability of the condition. However, that same study noted that there was sizeable difference in breeds as to the incidence of screw claw. Beef cattle veterinarians occasionally report that the condition is much more prevalent in some herds and relationships can be traced back to a certain bull that was used in that herd. The American Association of Bovine Practioners Fact Sheet "An Approach to Corkscrew Claw" includes a bullet statement: *"….Regarded as being a heritable trait. The use of animals as breeding stock showing characteristic signs of CC (corkscrew claw) at a young age should be discouraged…"*

Although this condition may not be manifest in young cattle (when they are purchased for seedstock), it still makes good sense to watch for any signs of corkscrew claw when buying bulls, replacement heifers or replacement cows.. Culling cows or bulls that are diagnosed with this condition as well as their heifer offspring should reduce the incidence of the problem for your herd.

Why are two-year olds such a challenge to get re-bred?

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Two year old cows that calved this spring will present a challenge to producers to get them to rebreed and stay in synch with the rest of the cow herd. The issue at hand is the number of days between calving and the return to heat cycles when the cow has a chance to be rebred. There are several factors that influence the "post partum anestrus period" or the days between calving and the beginning of estrous cycles.

The following table from Missouri researchers illustrates the number of days between calving to the return to heat cycles depending on body condition at calving and body condition change after calving. The data was compiled using two-year old Angus first-calf heifers. Remember the cow must not only return to heat cycles but conceive by day 85 in order to have a calf on the same calendar date the next year.

Table 1. *Predicted number of days from calving to first heat cycle as affected by body condition score at calving and body condition score change after calving in young beef cows. (Body condition score scale: 1 = emaciated; 9 = obese)*

Condition score change after calving to day 90

Condition score at calving (below)	**-1**	**-0.5**	**0**	**+0.5**	**+1**	**+1.5**	**+2**
3	189	173	160	150	143	139	139
4	161	145	131	121	115	**111**	111
5	133	116	103	93	86	83	82
5.5	118	**102**	89	79	72	69	66

Adapted from Lalman, et al. 1997. Journ. of Animal Science. 75:2003.

This data clearly points out that young cows that calve in thin body condition (BCS=3 or 4) will take a long time to return to heat cycles. Thin heifers cannot gain enough body condition after calving to return to heat cycles as quickly as cows that calve in moderate body condition (BCS = 5.5) and maintain or lose only a slight amount of condition. Pay particular attention to the heifers that calved in a body condition score of 4 and then were fed enough of a high energy diet to gain 1.5 condition scores by day 90. Compare them with heifers that calved in a body condition score of 5.5 but lost a half score and were 5.0 at 90 days. The heifers that calved in poor body condition and were fed well did not return to estrus as quickly (111 days vs. 102 days) as the heifers that were in good body condition and lost a small amount of body condition after calving. It is very difficult to add body condition on young lactating cows in most range situations.

Once again remember, cows must be rebred by 85 days after calving to calve again at the same time next year. Notice that none of the averages for two-year old cows that calved in thin body condition were recycling in time to maintain a 12 month calving interval. This illustrates why many ranches breed the yearling heifers 2 to 3 weeks ahead of the start of the breeding season for adult cows. It gives these heifers extra days to return to heat cycles and therefore breed at about the same time as the other cows in the herd. A hidden aspect of the nutritional challenges of two-year-old cows is noted when we remember that this is time when they transition from baby teeth to adult teeth.

Other factors that influence the length of the “post partum anestrus period” include difficult births and suckling intensity. Heifers that suffer a prolonged stage 2 of delivery will take a few days longer to return to heat cycles due to the length of labor during calving. In addition, strong suckling intensity may have a small impact on the length of time between calving a return to heat cycles. Research many years ago suggested that bull calves may nurse more vigorously than heifers and therefore result in a slight delay in the return to heat cycles. Certainly cows nursing twins will be affected by the increase in suckling activity.

Using artificial insemination in very warm weather

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

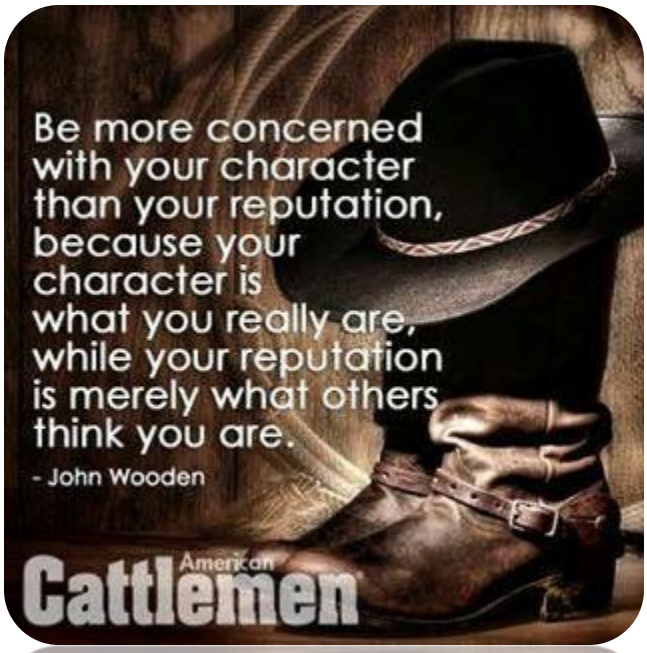
As the breeding season for spring calving herds is getting closer, understanding heat stress in cattle takes on increased importance. Producers that choose to synchronize and then artificially inseminate replacement heifers

or adult cows will begin the process in the next few weeks. If the hot weather arrives during the AI breeding season, some management and breeding alterations may be helpful.

For years, producers that bred artificially upon detected standing estrus (heat), would wait 12 hours before breeding the female in heat. If she was first observed in standing heat in the morning she would be inseminated that evening. If she was first observed in standing heat in the evening she would be inseminated the following morning. (This was called the AM/PM rule of artificial insemination.) More recent extensive research with dairy cattle has indicated that there is no significant advantage to the AM/PM rule. Similar pregnancy rates have resulted from inseminating in the morning only compared to following the AM/PM rule. Plus new research at Oklahoma State University on the internal temperature of heat stressed cattle adds even more concern about handling and inseminating cattle in the evening.

Research with rumen temperature boluses has shown that the core body temperature of beef cows peaks at 2 to 5 hours after the highest daytime temperature (Pye, Boehmer, and Wettemann. 2011 ASAS Midwest Abstracts Page 104; Abstract 285). On a hot spring/summer day the highest daytime temperature is often late afternoon. Therefore the peak body temperature of cattle will occur at 6 PM to 11 PM. Elevated core body temperatures have been implicated from other research in reduced pregnancy rates in heat stressed cattle.

Inseminating all cattle in the morning hours would avoid the heat stress of evening breeding. Some would be bred at first standing heat, others would be bred at the conventional 12 hours after standing heat. If timed AI is the method of choice, cattle working (especially the actual insemination) should be scheduled for the morning hours.



The *Cattleman's Corner* newsletter is distributed bi-monthly by the following:

Oklahoma Cooperative Extension Service
707 West Electric Avenue
McAlester, Oklahoma 74501
918/423-4120
www.oces.okstate.edu/pittsburg

This Newsletter is one way of communicating cattle information to those interested.

David Cantrell
Extension Educator, Agriculture, CED
david.cantrell@okstate.edu

Prepared By: Stephanie Wilson,
stephanie.wilson12@okstate.edu

The Oklahoma State University Cooperative Extension Service offers its programs to all eligible persons regardless of age, race, color, religion, sex, sexual orientation, genetic information, gender identity, national origin, disability, marital or veteran status, or any other legally protected status. OCES provides equal opportunities in programs and employment.