

Stress: The Profit Killer

There are several reasons why cattle become stressed, but nutritional stress can take a toll from conception to finish.

Story & photos by
ED HAAG

Ron Gill, Extension livestock specialist at Texas A&M University

One of the most important tasks a cow-calf producer can perform to protect his bottom line is to determine the BCS of each and every one of his mother cows early enough to bring them up to at least a BCS 5 at calving.

— *Jason Cleere*

Like its causes, the effects of stress on cattle performance are equally numerous. In mother cows, stress can result in suppressed immune systems, reduced conception rates, infertility, inability to maintain an appropriate body score, higher calving mortality, and inadequate colostrum and milk production. In calves, stress can negatively affect weight gain, the

immune system, weaning weights and carcass merit.

Gill, who has studied stress in cattle extensively, notes that while the data on the actual cost of stress on the beef industry is limited, the information available points to a tip of the iceberg-like problem.

"Heat stress alone costs beef producers \$10 million to \$20 million a year," Gill says. "If you include the other kinds of stress, you are talking about a lot of money."

Out of the dozen or so causes of stress, Gill sees two types as particularly noteworthy — one because its effects can be so pervasive and costly, and the other because it is so easily prevented.

Nutritional stress costly

From his experience Gill has concluded that one of the main reasons why stress can be such a major player in reducing profit is the fact that some types of stress can have a negative economic effect on animals at every stage in their lives — from conception to finishing. He points out that nutritional deprivation falls into that category and, as such, it has proven to be one of the most costly types of stress.

"Malnutrition can manifest itself in reproductive performance as well as weaning weight and the overall health and mortality of calves," Gill says. "With this threefold impact you can see as much as a 48% lower return from a cow calving with a body condition score (BCS) below 4."



Cows should be scored for body condition when their calves are pulled off for weaning.

This is more than speculation. Gill cites the results of a comprehensive TAMU study led by Steve Wikse and Dennis Herd that used performance ratios to calculate the economic effect of thin cows in a beef cattle herd.

The observation study involved 422 cows and their calves. When receiving annual pregnancy tests, each cow in the study was subjected to a physical evaluation and assigned a BCS, using a 1-to-9 scale, where BCS 1 is emaciated and BCS 9 is obese.

Particular attention was paid to two groupings — the thin cows represented by BCS 3 and BCS 4, and the cows in good condition represented by BCS 5 and BCS 6.

To compare the overall economic performance of the two groups of cattle, productivity ratios were established for each group based on pregnancy rates, weaning weights

and prices per hundredweight (cwt.) of calf.

Once all the necessary data were collected and tabulated, it was determined that cows with a BCS of 3 were 48% as productive, and cows with a BCS of 4 were 78% as productive as the average of the BCS 5 and BCS 6 cows combined. This translated into each BCS 3 cow generating \$215.06 less, and each BCS 4 cow generating \$107.53 less gross income than the average gross income of BCS 5 and BCS 6 cows combined.

It was also calculated that the cost of the additional nutritional output required to boost BCS 3 and BCS 4 up to BCS 5 would be \$91.48 per BCS 3 cow and \$43.67 per BCS 4 cow, respectively.

Early evaluation critical

Jason Cleere, Extension beef cattle specialist for Texas AgriLife

Use BCS to safeguard rebreeding rates

Monitor cow body condition throughout the year and use body condition scores (BCS) to develop management strategies to ensure acceptable rebreeding rates, recommends Ron Gill, Texas A&M University (TAMU) Extension livestock specialist.

For example, if cows calve in a BCS of less than 5 (on a 9-point scale, 1 being emaciated and 9 being obese), you may need to consider weaning calves early to maximize rebreeding. If they lose more than projected amounts of condition, move the weaning date up to end the draw of nutrients for lactation and prevent further loss of condition.

"I think we get locked into a specific weaning time just because 'that is when we have always done it' without regard to reducing the need for supplemental feed for the cow or lower rebreeding performance in the subsequent breeding seasons," Gill says.

Further evaluate the situation at weaning to establish a nutritional management plan for the coming months, he recommends. "Oftentimes it is too late or too expensive to make significant changes in body condition if you wait until traditional weaning time.

"Weaning should be another tool used to manage body condition on cows," he continues. "It is more efficient to feed the calf than it is the cow."

Extension, concurs with Gill's assessment.

"The potential problems associated with nutritional stress are multifaceted," he says. "It is probably one of our biggest ongoing issues."

He notes that while severe malnutrition is relatively easy to recognize by obvious emaciation and weakness, long-term nutritional stress resulting from chronic subclinical malnutrition or a mineral deficiency might not manifest itself overtly until it is too late.

"Our primary objective in the beef business is for the mother cow to breed back every year," Cleere says, adding that animals that do not have the appropriate body condition at the end of their term often have reproductive difficulties after calving. "If there is just enough nutrition in a cow's body to support her and her calf, reproduction is last in line."

For Cleere, one of the most important tasks a cow-calf producer can perform to protect his bottom line is to determine the BCS of each and every one of his mother cows early enough to bring them up to at least a BCS 5 at calving.

"By separating them out and putting more feed resources in them to ensure reproductive performance, you are perpetuating the problem," he continues. Over time you could create a cow herd with a much higher nutritional requirement.



"If the ranch is providing adequate forage and supplement to meet the needs of cows that are matched to the environment, then thin cows are cows that are either inefficient converters of forage to flesh or they produce more than the management program will support."

— Ron Gill

"You should be evaluating those cows when you wean calves and do pregnancy testing," he says. "That is the time to step back and ask yourself whether or not that animal is going to need a little extra nutrition to get her where she should be at calving."

In larger herds, thin pregnant cows and cows 4 years old and younger should be sorted into a special group and fed a reconditioning diet that will improve their body condition to an average BCS of 5.5 by the onset of the calving season.

"If this (thin cows) is a common problem on a ranch, the genetics and management programs need to be carefully evaluated," Gill warns. "If the ranch is providing adequate forage and supplement to meet the needs of cows that are matched to the environment, then thin cows are cows that are either inefficient converters of forage to flesh or they produce more than the management program will support."

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Handle with Care



Cows handle better when approached from the side or front.

Handling techniques can lower stress for man and beast.

Story & photos by
ED HAAG

Jason Cleere notes that while dealing with nutritional stress is often one of the biggest challenges for beef producers (see page 76), reducing stress associated with handling can involve little more than behavior modification on the part of the handlers.

"You can immediately reduce the stress level when handling cattle by cutting out the noise of whips, dogs and shouting," says Cleere, Extension beef cattle specialist for Texas AgriLife Extension.

"That also means letting the guys helping you know that it isn't OK to hot-shot every calf or cow that comes down the chute."

His recommendation is to leave the cowboy testosterone back in the pickup and apply some common sense to the handling process.

"My number one piece of advice for reducing handling stress is take your time," he says. "The more you push it the more likely it is that a cow or you will end up in a wreck."

As a cattle handling presenter on the National Cattlemen's Beef Association (NCBA) Stockmanship & Stewardship Tour, Ron Gill has conducted hands-on training sessions at livestock auctions in 20 states and 35 towns.

These sessions involved sharing proven low-stress cattle handling principles that are directly applicable to gathering, penning, chute work and hauling.

Instead of creating a high-stress environment by using force and overt intimidation to drive cattle from one point to the next, Gill uses body position and deliberate movements to direct the animals to the desired location.

Extension livestock specialist at Texas A&M University, Gill notes that his actions are all based on four proven observations:

1. Cattle are most comfortable when they can see you.
2. When someone or something enters their flight zone, their first

response is to try to go around you so they can keep you directly in their line of sight.

3. When approached individually they will always try to move to the herd.

4. Cattle are capable of processing only one stimulus at a time.

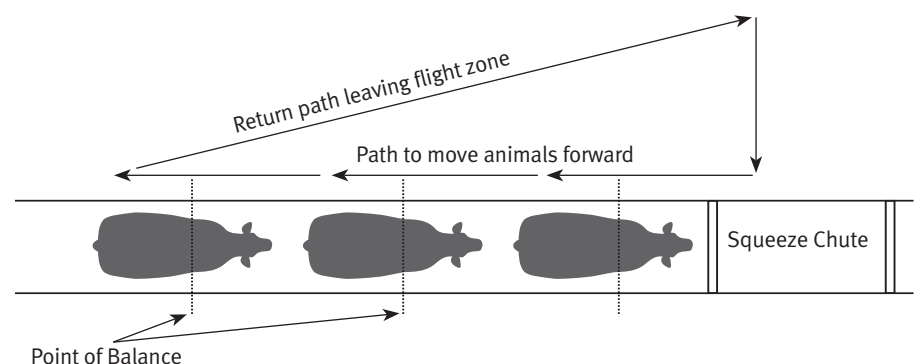
Cow psychology 101

To Gill, each one of his four observations offers a knowledgeable stockman the opportunity to influence, in a low-stress environment, the movement of one or more cattle. For example, because cattle are most comfortable when they have the individual approaching in clear sight, they will avoid allowing that person to enter their blind spot directly in front or behind by moving in the opposite

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— **Jason Cleere**

Fig. 1: Cattle movement through crowding alley and squeeze chute



direction. Similarly, knowing that a cow wants to go around you and will join other cattle when possible provides that person with the information needed to use his or her body position to successfully manipulate that cow's movements.

Finally, understanding that cattle are capable of processing only one stimulus at a time forces the handler to slow down in order to give the cow time to comprehend the action and respond accordingly.

Instead of creating a high-stress environment by using force and overt intimidation to drive cattle from one point to the next, Ron Gill uses body position and deliberate movements to direct the animals to the desired location.

Gill is of the opinion that those who try to rush cattle will only create problems for themselves and the livestock. In order to successfully implement a low-stress control regimen, one must take the time to identify an animal's flight zone.

The flight zone is the animal's personal space. Its size will depend on how accustomed it is to humans. The tamer the animal, the smaller its flight zone. When the handler is outside the flight zone, the animals will turn and face the handler and maintain their existing distance. When the handler enters the flight zone, the animals will turn away and begin to distance themselves from the handler.

A savvy cattleman must spend enough time to learn his cattle's point of balance. Generally, the point of balance is considered to be near the animal's shoulder, but you will discover that the cow's eye really serves as the point of balance. To improve handling, you need to work to make the point of balance further forward than the shoulder, particularly for sorting purposes. A stockman can prompt forward movement by standing behind a cow's point of balance or backward movement by standing in front of the cow's point of balance.

Because cattle function as a herd when faced with an atypical situation, the same principles used to control a single animal also can be used to control a herd.

Once the handler has determined the flight zone and point of balance of an individual animal or herd, a plan can be devised to move the respective animals to the desired location. That plan should involve using the handler's presence in a specific location to exert enough pressure on the cattle to motivate them to move in the preferred direction. (See

"Under Pressure," pages 160-162 in the October 2005 *Angus Journal* or through the Back Issue Search available at www.angusjournal.com.)

It should be understood that all animals respond differently to pressure, Gill says, and being able to read cattle and anticipate their response before applying the pressure is an integral part of low-stress cattle handling.

Gill adds that when considering a plan of action, one should always keep in mind that it is easier to work from the front, drawing the cattle to and around you. Enough space should be left to prevent cattle from balking as they pass the handler. If cattle are comfortable coming by you, sorting in an alley or out of a gate becomes very easy.

Working cattle from behind is a

stockman's least-effective strategy and should only be used as a last resort.

For a 10-minute video demonstrating some of Gill's low-pressure cattle handling techniques, refer to www.youtube.com/watch?v=gycWs6q1GB. A paper is available at <http://animalscience.tamu.edu/images/pdf/beef/cattle-handling-pointers.pdf>.

