



# Beef Tips

September 2013

Department of Animal Sciences & Industry

[www.asi.ksu.edu/beeftips](http://www.asi.ksu.edu/beeftips)

## Upcoming Events

### Stocker Field Day

September 26, 2013  
Manhattan, KS

[www.KSUBeef.org](http://www.KSUBeef.org)

### Applied Reproductive Strategies in Beef Cattle

October 15-16, 2013  
Staunton, VA

[www.appliedreprostrategies.com](http://www.appliedreprostrategies.com)

### Range Beef Cow Symposium

December 3-5, 2013  
Rapid City, SD

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## Genetic condition recently identified in Angus breed no reason to panic

*Bob Weaber, extension cow-calf specialist*

Following the identification of a number of genetic conditions in several major beef breeds over the last several years, beef producers around the world are more sensitive and inquisitive when abnormal calves are born. In fact, breeders are abandoning the 'shoot, shovel and shut up' mentality and embracing a culture of transparency, discovery and testing. This evolution in culture will benefit the beef business for years to come.

The reality is that each beef animal is the carrier of approximately 20 different genetic defects, many of which are unknown. It's also true that through the accumulation of inbreeding over time within breeds, we increase the likelihood of propagating mutated genes and increasing their frequency in the population. Once the frequency of the damaged allele is elevated, carriers will eventually be mated and, hopefully, the mutation detected. It's important to recognize that not all mutated or broken genes impart deleterious phenotypes. In some cases (e.g. polledness), the mutation actually produces a desirable phenotype or condition.

New genomic tools such as high density SNP genotyping make discovery of a deleterious mutation and a subsequent diagnostic test much easier. These tools, along with a growing availability of DNA sequence data, will lead to the identification of additional mutations in beef cattle in the months and years to come. A large research project is underway to help identify embryonic lethal defects in beef cattle using DNA sequence data. It's not a question of **if** new defects will be discovered; it's only a question of **when**. Seedstock and commercial beef producers should develop an awareness of these various conditions and mitigation strategies to minimize the impacts on their herds. Widespread culling of carriers is NOT

the solution. Designing matings that don't produce affected calves is the correct solution and should be our goal. By using bulls that are free of known defects, producers are assured of not producing affected calves. Use of non-carrier bulls also drives down the allele frequency of the defect(s) over time. In this case, the solution to pollution is dilution!

On August 14, 2013 the board of directors of the American Angus Association (AAA) officially recognized a newly identified genetic condition in the Angus breed. The condition is called Developmental Duplication (DD) and is inherited as a simple recessive. The condition was first reported in Australia. Angus Australia's collaborative work with Dr. Jon Beever at the University of Illinois and subsequent identification of affected calves in the US, led to discovery of a common genomic sequence among affected calves (homozygote recessives) and their carrier parents (heterozygotes). It is believed that this defect, based on functional analysis of the putative mutation, would result in embryonic loss in most cases. However, some affected calves are carried to term and have additional front limbs originating from the neck or shoulder region. These additional limbs can often cause dystocia.

The frequency of carriers is estimated to be approximately 6 percent of the population. Given the embryonic lethality of the condition it has been difficult to identify the source of the defect due to absence of affected calves. It is hypothesized that these affected embryos would appear as early embryonic losses or breeding failures and go unidentified for some time. A significant number of popular sires have been identified as carriers. Many of these

*continued...see Genetic on page 5*

*“You can’t manage what you don’t measure.”*

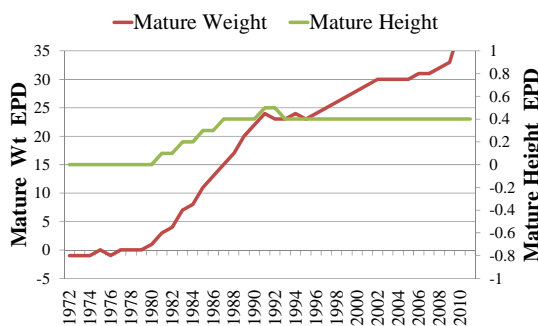
## **Tally Time – Timely measurements**

*Sandy Johnson, livestock specialist*

Drought has impacted a major portion of rangeland in Kansas in the past 2-3 years and still is a significant concern in western KS. Producers have destocked, culled and weaned early to varying degrees as their conditions warranted. Cow/calf pairs are often stocked or destocked based on long-held numbers of pairs assigned to each pasture.

Have you measured cow body weight in your herd recently and has it changed over time? Data from a number of sources suggest that the average mature weight of beef cows has increased by more than 300 pounds in the last 30 years. Figure 1 shows genetic trends for mature weight and mature height EPDs in Angus cattle since 1972 illustrating a genetic component to this increase. Body weight is the major driver of forage intake so as cows get bigger they eat more forage. Because of the gradual nature of this change, producers with the intention of grazing moderately may have missed their intended mark. Range that is moderately stocked produces more new growth regardless of precipitation and returns to normal more quickly after drought than heavily stocked range. To avoid over grazing, herds that have been moving towards heavier mature weights should be making downward adjustments in the number of pairs per acre to account for this change.

**Figure 1. Angus Genetic Trends**



For spring calving herds, a great time to weigh cows is when they undergo a pregnancy diagnosis in the fall. Cow weights can then be used to help evaluate the adequacy of current grazing and drought management plans and necessary adjustments.

The other measurement to take at this time is body condition score. Body condition reflects the balance between nutrient availability and nutrient demand or how well a cow fits her environment and production system. Cow condition could be considered as the producer’s score card for this assessment.

Body condition measured now allows time for producers to improve condition at a relatively low cost if cows are thin. Cost to improve body condition will be less when cow requirements are lowest (dry, mid-gestation) and condition can often be improved without supplementation in the late summer or early fall, depending on forage quality and availability.

If calves were weaned early due to drought and the cows now have condition to spare, producers should evaluate possible adaptations to normal winter feeding programs to save costs. One option is to delay when a supplemental feeding program begins or to use a lower quality forage for a longer period of time than normal. Knowing your cow weights and body condition scores can provide valuable information in estimating and sourcing feedstuffs for winter supplementation. It can also aid the allocation of feedstuffs by sorting cows into groups of thin and adequate body condition to assure that animals which need nutrients the most get them.

Weight and body condition score are valuable pieces of information that help producers make better decisions. Making sure your stocking decisions are based on animal weight will contribute to better rangeland condition and resource stewardship. Measuring body condition now, puts the herd manager in the driver’s seat to determine the trade-offs between timing and use of nutrients, optimal level of reproduction and calf weaning weight.

## Adjust stocking rate to maintain plant health and vigor

Walt Fick, *extension range management specialist*

Late summer rains in western Kansas have improved our attitudes and have helped green up many pastures. However, the drought and impacts of drought are far from over. Most counties in western Kansas have experienced 2-3 years of drought and the western third of the state still averages less than 75% of normal precipitation for the year. Drought conditions are expected to persist or intensify in western Kansas for the August 15 to November 30, 2013 time period.

Drought the last couple of years has not only reduced forage production but has also caused changes in plant composition. Cover of blue grama and buffalograss have declined. Taller grasses may have nearly disappeared. Meanwhile, cool-season annual grasses such as Japanese and downy brome may have appeared with fall and/or early spring moisture. Broadleaves like western ragweed and heath aster may have survived because of deeper root systems than the grasses. Poisonous plants like snow-on-the-mountain and woolly loco may be more prevalent. As the shortgrass sod thins, mother nature fills in the gaps with other plants, especially annuals, when rainfall returns. Stolons allow buffalograss to recover from drought more quickly than blue grama.

Stocking rate is the primary range management principle that impacts plant and animal response. As stocking rates increase, individual animal gains decline and gains/acre increase. Reduced forage production associated with drought may require a reduction in stocking rate. Complete destocking may be necessary if plant growth ceases. Ranchers can decrease pressure on grazing lands by culling more animals, improving grazing distribution, and weaning calves earlier.

What does rain in July and August do for forage production? Other than regrowth from “grazing lawns” most of the forage production potential has occurred by mid-July. Late summer rains will often cause the grasses to produce seed heads with minimal leaf growth. Annual forbs will germinate.

Weed control may not increase grass growth from an economic standpoint. Dense stands of western ragweed may reduce short grass production because of shading, but many forbs are deeper rooted than the grasses and cause minimal competition. Attempts at weed control during drought may not be very successful because of poor herbicide absorption. Treating poisonous plants generally enhances palatability and increases consumption.

If at all possible, try to avoid heavy use of native rangelands in late summer. Rest during these months is critical for warm-season grasses to store carbohydrate reserves, important for winter survival and initiation of spring growth.

Monitor pastures for forage production. Adjust stocking rates as needed to maintain plant health and vigor. Reduce livestock numbers rather than feeding harvested forages. Use good grazing management during and after drought. Stay flexible and have a written plan of action.

## K-State’s Beef Stocker Field Day is Sept. 26

MANHATTAN, Kan. – Presentations on beef stocker economics to environmental impact to cattle health and more are planned for Kansas State University’s 2013 Beef Stocker Field Day on Sept. 26. The day begins with registration at 9:30 a.m. and the program at 10:15 a.m. at K-State’s Beef Stocker Unit located on West Marlatt Ave. on the west side of Manhattan.

The program features industry and university speakers from Nebraska, Oklahoma and Kansas, as well as a producer panel discussion. Presentations include:

- The 30,000-Foot View: What’s in Store for the Stocker Program;
- How Can Your Stocker Operation Fit;
- Receiving Health Programs – Are They the Same as Five Years Ago;
- Environmental Impacts on Beef Stocker Health and Wellness;
- Carry-Over Effects of Stocker Cattle Systems on Feedlot Performance and Carcass Characteristics; and
- Producer Panel: Do Flint Hills Stocking Rates Still Apply?

The fee to attend, which includes all presentations, a barbecue brisket lunch and the Cutting Bull’s Lament, featuring prairie oysters and Call Hall ice cream to wrap up the day, is \$25 if paid by Sept. 15 or \$35 if paid at the door. More information, including online registration, is available at [www.KSUBeef.org](http://www.KSUBeef.org). More information is also available by contacting Lois Schreiner at [lschrein@ksu.edu](mailto:lschrein@ksu.edu) or 785-532-1267.

*“If at all possible, try to avoid heavy use of native rangelands in late summer.”*

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## Johne's present in Kansas beef cattle

Gregg Hanzlicek, DVM, Production Animal Field Investigations, KSU Diagnostic Lab

There is an important, incurable disease found in Kansas beef cattle that isn't often talked about. This disease is called Johne's (pronounced YO - knees). In 2013, of the thousands of beef cows and bulls tested for Johne's disease through samples sent to the veterinary laboratory at Kansas State University, 2 percent were found to be positive.

What are the production and health effects of this disease in cow-calf herds? No studies have been completed to assess this, but results from studies completed in dairy herds suggest the cost is high. Positive Johne's cows' milk less, are at a higher risk of experiencing other diseases, and are at a greater risk of being culled earlier. It is likely these effects also occur in beef cows.

The potential economic cost to the cow-calf herd is a very good reason for producers to be thinking about Johne's, but there may be an even more important reason.

Johne's bacteria can be found in both milk and meat harvested from Johne's positive animals. (Again, animals do not need to have clinical signs but only need to be infected for the bacteria to be found in both milk and meat.) For many years some people have believed there is a link between the Johne's organism in cattle and Crohn's disease, an intestinal disease, in humans. To date no proof of this link has been shown, but the drum keeps beating, and now discussions within some segments of the human medical field have attempted to link the Johne's organism with human Type I diabetes and autism.

What is Johne's? It is bacterial disease caused by *Mycobacterium avium* subspecies *paratuberculosis*, also called MAP. This disease affects several domestic ruminant species including cattle, sheep, goats, and can be found in camelids and some species of free-ranging ruminants.

The signs of Johne's disease are observed in adult cattle (both bulls and cows) which are typically over 3 years of age. Persistent diarrhea and rapid body weight loss are the classical signs of Johne's. Although the signs of Johne's disease are usually only observed in adults, animals become infected very early in life, typically from birth to 6 months of age. There are three ways a calf can become infected: 1) passed from a positive dam to the calf while in the uterus, 2) calf consumes colostrum or milk that contains the bacteria, or 3) the calf ingests feces from a positive animal. Oral ingestion of the

organism is the most common way calves become infected.

Infected cows, regardless of whether they are showing signs of the disease can pass the bacteria to the calf while in the uterus, and these cows do pass the bacteria in both milk and feces. The amount of bacteria passed in either substance is largely dependent on what stage of disease the cow is experiencing. Milk and feces from cows that are not showing signs of the disease (subclinical) typically shed lower numbers of bacteria than cows in advanced stages of the disease. It is important to remember that even cows not showing signs of Johne's disease may be exposing both her calf (through her milk) and all calves within the herd (through her feces).

Johne's organisms have been found in semen, but at the present time it is believed that the major way bulls spread this disease is through contaminated feces.

Although no link has been established between Johne's bacteria and human diseases, as an industry, maybe we should send the message that we are doing what we need to keep the disease prevalence at a very low level. One of the best ways to do this is have a producer's veterinarian conduct a Johne's Disease Risk Assessment survey. This survey is conducted at the producer's operation and asks questions about biosecurity and calving management. The answers to these questions allows the veterinarian and producer to determine whether the herd is at a high risk of being Johne's positive. In addition, it is relatively easy and inexpensive to test a certain percentage of the herd to estimate the level of prevalence in the herd.

To discover if your herd might be infected, conduct a risk assessment survey with your local veterinarian. This activity, in addition to follow-up testing, will help reduce the negative economic effects of this disease in your herd and send a message to consumers that although no link between this disease in cattle and human diseases has been made, we are doing our part on the ranch to assure food safety.

**“Johne's bacteria can be found in both milk and meat harvested from Johne's positive animals.”**

## *Genetic ... continued from page 1*

trace to the very widely used bull B/R New Design 036, born in 1990, and others to his great-great-great grandsire, Ken Caryl Mr Angus 8017, born in 1977. Many of the popular sires that have been identified as DD carriers were used widely across the Angus breed, and the rest of the industry, as they were outcrosses free of previously identified conditions.

A DNA test for the DD condition is now available from both the Zoetis and Geneseek labs allowing testing of potential carriers to clarify their status. Producers may use either new DNA samples or use AAA archived samples. Currently, a standalone DNA test for DD status is \$22. Reduced prices are available if conducted as an add-on to genomic tests using high density panels. The AAA will not require testing of carriers of this condition as a condition for registration or registration of progeny. This change in policy represents a significant, and in my opinion, well thought out, departure from the organization's previous policy implemented with AM, NH and CA conditions. Other breed associations with open herd books, such as the American Simmental, Gelbvieh and Limousin Associations, will likely implement testing strategies for hybrid or composite animals that include DD carriers.

Resource materials.

- Information from AAA on DD condition as well as up-to-date database searches for animals tested free or carrier of DD. <http://www.angus.org/Pub/DD/DDInfo.aspx>

- Letter to Angus breeders from AAA President Phil Trowbridge: <http://www.angus.org/Pub/DD/DDLetter08142013.html>
- Dr. Jon Beever update on DD to AAA membership and board including an initial list of animals tested free or DD carriers: [http://www.angus.org/Pub/DD/DD\\_Update08122013.pdf](http://www.angus.org/Pub/DD/DD_Update08122013.pdf)
- Webinar on managing genetic defects, good review material. <https://connect.extension.iastate.edu/p67353268/>
- Mendelian inheritance calculator (carrier bull worksheet) computes the probabilities of carriers and affected calves depending on matings to carrier or clean dams. <http://www.asi.ksu.edu/doc5907.ashx>

I will provide additional materials on management/mitigation of genetic defects in commercial and seedstock herds in the coming weeks for your review and use. I'm also happy to answer any questions you may have. Please don't hesitate to contact your local livestock extension specialist or me regarding this or any other issue.

***“Widespread culling of carriers is NOT the solution.”***

## **Applied Reproduction in Beef Cattle Event in Staunton, Virginia October 15, 16, 2013**

STAUNTON, VA - Cattle producers, veterinarians and other industry personnel from across the country will have the opportunity to participate in another installment of an outstanding educational event called “Applied Reproductive Strategies in Beef Cattle”. This year's meeting will be held at the Stonewall Jackson Hotel in Staunton, VA on October 15 and 16, 2013.

“Reproductive technology holds the key that will allow beef producers to quickly achieve the best genetics suited to their cattle production goals” says conference chair, Dee Whittier, DVM, Professor in the Department of Large Animal Clinical Sciences at the Virginia-Maryland Regional College of Veterinary Medicine at Virginia Tech.

Some of this year's sessions will address profiting from reproduction, achieving success with estrus synchronization and artificial insemination programs, managing factors to improve pregnancy rates, and using genetic tools to get the most from reproductive efforts. Additionally, current issues in reproductive management will be discussed, including a first-time session on managing pregnancy and birthing losses. Outstanding Virginia producers Terry Slusher and Steve Hopkins will describe their successful reproductive programs.

Put October 15-16, 2013 on your calendar now. The program qualifies for 16 Continuing Education hours for veterinarians. Registration and information on continuing education can be found at the conference website [www.appliedreprostrategies.com](http://www.appliedreprostrategies.com). A reduced early registration fee is available through Sept. 16.

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