K-STATE Research and Extension

# Beef Tips

May 2015 | Department of Animal Sciences & Industry | www.asi.ksu.edu/beeftips

## Upcoming Events

**Beef Cattle and Forage Crops Field Day**
May 7, 2015
Mound Valley Community Center
Mound Valley, KS
www.ksre.ksu.edu/SEARC

**Cattle Feeders College**
May 14, 2015
Scott Co. Arena
Scott City, KS
www.southwest.ksu.edu

**BBQ 101**
May–June 2015
Multiple locations
Details at www.KSUBeef.org

**BIF Annual Convention**
June 9-12, 2015
Biloxi, Mississippi
http://beefimprovement.org

**Applied Reproductive Strategies in Beef Cattle**
Aug. 17-18, 2015
Davis, CA
http://appliedreprostrategies.com/


### Contributors

**Dale Blasi**
Stocker, Forages Nutrition & Mgt.
785-532-5427
dblasi@ksu.edu

**Joel DeRouchey**
Environmental Management
785-532-2280
jderouch@ksu.edu

**Jaymelynn Farney**
Beef Systems Specialist
620-421-4826
jkj@ksu.edu

**Sandy Johnson, Editor**
Livestock Production
785-462-6281
sandyj@ksu.edu

**Chris Reinhardt**
Extension Feedlot Specialist
785-532-1672
cdr3@ksu.edu

**Justin Waggoner**
Beef Systems Specialist
620-275-9164
jwaggon@ksu.edu

**Bob Weaber**
Cow/Calf Specialist
785-532-1460
bweaber@ksu.edu


## Sorghums and millets for summer forage

*Jaymelynn Farney, beef systems specialist*

Sorghums and millets are warm weather crops that are fairly drought tolerant and can grow in above average temperatures. There are four primary categories of sorghum including: grain sorghum, forage sorghum, sudangrass, and sorghum-sudangrass hybrids. These summer annuals yield tons of forage that offer energy and protein that make a quality forage for cattle whether grazing, haying, or ensiling.

For all categories of sorghum, and for some millets, prussic acid poisoning can be an issue for cattle. In regards to ranking prussic acid toxicity sudangrass has low levels of HCN and rarely kills animals, sorghum-sudangrasses are intermediate, and sorghum has the highest levels of HCN and is the greatest risk to animals. Cattle are the species most susceptible to prussic acid poisoning, but sheep can also be affected. Additionally, sorghums have issues with nitrate toxicity, so test the forage prior to turn-out or haying. Millets such as foxtail and proso have issues with nitrate toxicity and prussic acid. Pearl millet has nitrate toxicity concerns yet is NOT a concern with prussic acid. Even though sorghums and millets have some toxicity issues, the benefits of these forages for cattle production have led to the development of management practices to minimize risks.

*Grazing Considerations*

These forages should be grazed while the quality (energy level) of the forage is high. Quality declines as the plant matures, so harvesting needs to occur before the boot stage.

To manage for prussic acid (highest content in new growth), it is recommended that grazing occurs once the sorghum plant reaches 24 inches or taller but for sudangrass, sudan-hybrids, and millets grazing can begin at 18 inches of height. When grazing sorghums during the summer, a rotational or strip grazing system is a way to manage for prussic acid and improve utilization. In a rotational grazing system cattle will only be rotated onto the sorghum paddocks once the plant is taller than 24 inches and allowed to graze until the plant is 8 inches tall. The 8 inch remaining stubble will allow for re-growth in varieties that have re-growth potential. Additionally, not allowing the cattle to graze these forages lower than 8 inch will decrease the risk for nitrate toxicity since most of the nitrates are found at the base of the plant. Ideally the cattle should consume the sorghum to the 8 inch height within a couple of days (maximum of 10 days) to minimize cattle consuming regrowth that is high in prussic acid.

An example rotational grazing system for sorghums include grazing when the forage is 24 inches tall and stocking at 5-6 AU/acre (AU=animal unit; 1 AU is a 1000 pound animal) in other words 5000-6000 pounds per acre. The grazing length is approximately 7-10 days in that paddock. Allow the paddock to rest for about 25 days before grazing again, or whenever plant height reaches 24 inches.

An example of rotational grazing for sudangrass, sudangrass-hybrids, or millets includes beginning grazing when plants are 18 inches of height and grazing for 7 to 10 days with a stocking rate of 4-5 AU/acre. Allow for a rest period of about 21 days or turn back into the paddock once the plants are 18 inches in height.

Generally, if adequate moisture is available sorghums and millets that have regrowth potential will have 2-3 grazing opportunities. Remember this is a rough estimate for a

*continued...see Sorghums on page 4*

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

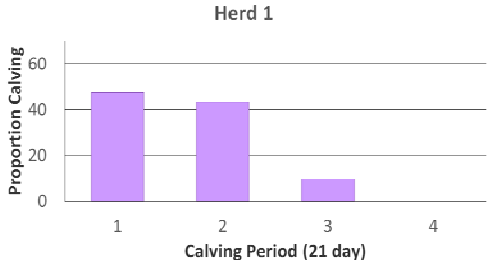
## *Tally Time – Calving distribution*

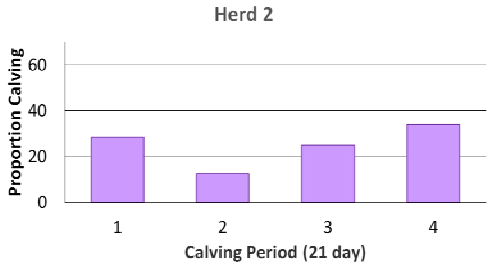
*Sandy Johnson, livestock specialist*

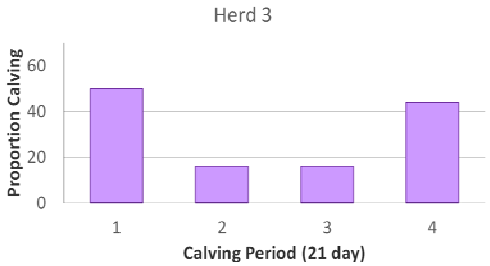
I can remember when my Dad would send us off to weigh our 4-H calves and as soon as we had the weights I would hurry off and calculate the average daily gains. It was relatively immediate feedback on the progress of our calves. When it comes to measuring reproductive performance the feedback is often delayed unless early ultrasound or a blood test is used and even at that you have to wait 30 days or more.

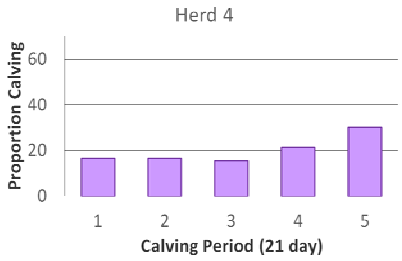
The other challenge with reproductive records such as calving distribution is that they reflect the management decisions and actions that occurred 14 to 16 months before calving. While you can't go back and change those decisions they can help you when it comes to repeating those same choices, or not, in the future.

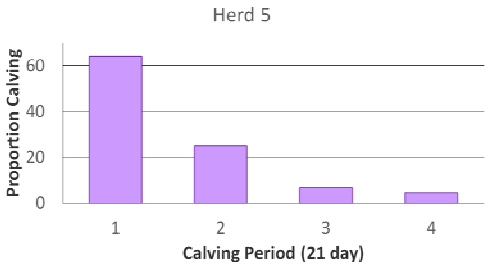
At the end of calving season take a few minutes to quantify your calving distribution. How many calves, or what percentage of calves were born in each 21 day period of the calving season? The first day of the calving period should start either 285 days after bull turnout or after the 3rd full term calf is born in the mature cow herd. Include all calves born, live or dead. It can be helpful to look at the distribution in two and three year old cows separately from mature cows. The three year old cows in particular can be useful because getting two-year olds to rebreed can be a major challenge in some settings. Do the two year olds conceive early in the breeding season or are they delayed to the second or third cycles?




The graphs show some actual herd data illustrating different patterns of calving distribution. Do any of them look like your herd? All else being equal, the pattern from Herd 5 would produce the most total pounds at weaning. Management changes to improve reproductive performance should be considered if the cost of the change is less than the value of the improvement in reproductive response. Or stated another way, maximizing reproduction should not be the goal.

Yearly calving distribution and pregnancy rate are data points that can help you track the impacts of nutrition and management decisions over time. This information becomes extremely valuable if you do need to troubleshoot a problem. Measure reproduction so you can make informed management choices.

## Grazing plan provides clear direction regardless of rainfall amount

*Julie Elliott, rangeland management specialist, NRCS*

It's early in the grass growing season so there really isn't any way to know for sure what kind of year this will be. This lack of assurance does not keep grazers from having livestock to put out on grass, however. Since you have livestock and grass, how about making a written grazing plan that includes projected cattle numbers (or stocking rates) and the turn out dates for each pasture?

To start the planning process, review when the animals were in what pasture in the previous few years. If livestock are in the same pasture at the same time year after year, the same plants are grazed year after year. Over time, these plants get weaker while the ungrazed plants get stronger, which changes the plant community By changing the schedule so you aren't grazing the same pasture at the same time year after year you can keep a better mix of plants for the livestock to graze.

A good grazing plan also includes plans for when things don't go as smoothly as they might. While you can't make a plan for all the 'what ifs', there are some events that are more likely to happen than others. Since droughts happen just about half of the time, one of those 'what if' plans should be for drought.

All too often the drought plan consists of one line: "Hope it rains". While hope is a positive attribute, it is not a plan. Failing to take timely action can negatively impact the ranch for years. We know that a drought will come and the ranchers who handle it the best are those who make and use an action plan.

To make an effective drought plan, it is essential to understand when precipitation impacts what forage. Just like corn that has to have adequate rain during pollination to have good yields, rains have to be timely to grow grass. There is a strong connection between spring and early summer moisture and total pasture yield. On the other hand, mid to late summer rains impact green period and our attitude. They do not significantly increase grass production. May and June precipitation can be a good predictor of season long grass production in western Kansas (see May 2013 BeefTips).

The most successful drought plans use critical (or trigger) dates. On each of these dates, the total effective precipitation since the previous fall is compared to long-term averages for the area. For example, on May 1, if precipitation totals are significantly below the long-term average, then early season grass production will be reduced. A person can take action to reduce the early season forage demand of livestock.

Other important dates in relation to critical periods for rapid grass growth might include May 15, June 1, June 15, and July 1. By tracking precipitation against long term averages, a person can see the drought develop. This allows them to take incremental steps to soften the drought impact. If total effective precipitation is less than long-term averages by July 1, we know that total grass growth will be reduced. Rain after July 15 will extend the green period, or green up the grass if it was already brown. It will not result in significant grass leaf production.

These dates and the possible actions need to be decided now and written down. It doesn't work to wait until June 15 to discover dry conditions and then try to decide what to do. Life seems less stressful if you have a plan that will serve to guide you through a decision process you'd rather avoid. If you would like to see examples, additional details and worksheets for all the components of a drought plan go to the 'Managing Drought Risk on the Ranch' website: http://drought.unl.edu/ranchplan. Or, just type 'drought risk ranch' in your web browser.

***"A good grazing plan also includes plans for when things don't go as smoothly as they might. "***

## K-State Cattle Feeders College set for May 14 in Scott City

The 2015 edition of the K-State Cattle Feeders College is planned for May 14 at the Scott County Indoor Arena and Activities Center, 610 E. Fairground Road in Scott City, Kansas.

Renowned Texas horseman, Joe Wolter, who has built a reputation for his work with horses and people, is the featured speaker. More information about Wolter is available at joewolter.com. Cattle feeders and others are welcome to attend, but must preregister.

The day starts with registration at 3:30 p.m., and also features the "Top Hand" Cattle Feeding Industry Awards. Those awards recognize hard work, honesty, reliability, integrity and animal stewardship. Nominations in 100 words or less, are due by May 8 to Dr. Justin Waggoner, 4500 E. Mary St., Garden City, KS 67846.

There is no cost to attend the K-State Cattle Feeders College, but registration is required, by contacting either Justin Waggoner at 620-275-9164 or jwaggon@ksu.edu or John Beckman, 620-872-2930 or jbeckman@ksu.edu. More information is available at www.southwest.ksu.edu.

***"Higher seeding rates will decrease stalk size and speed drying."***

## *Sorghums* …. *continued from page 1*

rotational grazing situation. Depending on varieties, weather, and moisture levels your forage yields might lead to a different grazing strategy than the examples listed above. See page 5 for more details on estimating pounds of forage and stocking rate.

*Haying Considerations*

When harvesting for hay there is a tradeoff between maximum tonnage and peak quality. Harvesting at boot stage or just prior optimizes both the quality and quantity. Make sure when cutting for hay that you give the plant sufficient time to dry down and help avoid issues from mold development. Higher seeding rates will decrease stalk size and speed drying.

Even though nitrates and prussic acid are issues with sorghums, when harvesting as a hay product, nitrates are the primary issue. The curing process removes the prussic acid (prussic acid is very volatile), however, the nitrate remains in the plant as it dries. There are harvesting techniques that minimize nitrate issues in sorghums (raising the cutter bar) and testing the plants for nitrate prior to harvesting. If the nitrate test is high, delay harvesting to allow the plant to continue growing (more growth, more maturity = less nitrates).

*Variety Considerations*

There are many different varieties of sorghums, sudan-hybrids, and millets so it is important to discuss with forage experts the varieties that meet your operations objectives prior to purchasing the seed. Some common questions that you need to be prepared to answer include:

- What do you plan to do with this forage?
- Do you need the forage to have regrowth potential?
- Are you concerned about prussic acid and high nitrates?

There are several variety studies conducted by Kansas State University at research centers throughout the state. Prior to making your determination about the variety of summer forage use your area's data about quality and tonnage to maximize the benefits of these summer forages.

For recent variety reports see:
http://newprairiepress.org/kaesrr/vol1/iss4/15/
http://newprairiepress.org/kaesrr/vol1/iss2/7/

## Southeast Agriculture Research Center Report now available

The Southeast Agriculture Research Center in Parsons has released its latest report. An abstract from one of those reports is below. The entire report as well as others in the series is available at: http://newprairiepress.org/kaesrr/vol1/iss4/

### Effects of cultivar and distillers grains supplementation on grazing and subsequent finishing performance of stocker steers grazing tall fescue pasture

*L.W. Lomas, and J.L Moyer,*

**Abstract**

Four hundred thirty-two yearling steers grazing tall fescue pastures were used to evaluate the effects of fescue cultivar and dried distillers grains (DDG) supplementation during the grazing phase on available forage, grazing gains, subsequent finishing gains, and carcass characteristics. Fescue cultivars evaluated were high-endophyte 'Kentucky 31' and low-endophyte 'Kentucky 31,' 'HM4,' and 'MaxQ.' Steers were either fed no supplement or were supplemented with DDG at 1.0% body weight per head daily in 2009 or 0.75% of body weight per head daily in 2010, 2011, 2012, 2013, and 2014 while grazing. Steers that grazed pastures of low-endophyte 'Kentucky 31,' 'HM4,' or 'MaxQ' gained significantly more ($P < 0.05$) and produced more ($P < 0.05$) gain/acre than those that grazed high-endophyte 'Kentucky 31' pastures. Gains of cattle that grazed low-endophyte 'Kentucky 31,' 'HM4,' or 'MaxQ' were similar ($P > 0.05$). Subsequent finishing gains were similar ($P > 0.05$) among fescue cultivars in 2009, 2012, 2013, and 2014; however, steers that previously grazed high-endophyte 'Kentucky 31' had greater ($P > 0.05$) finishing gains than those that had grazed 'HM4' or 'MaxQ' in 2010 and greater ($P < 0.05$) finishing gains than those that grazed low-endophyte 'Kentucky 31' or 'HM4' in 2011. Supplementation of grazing steers with DDG supported a higher stocking rate and resulted in greater ($P < 0.05$) grazing gain, gain/acre, and overall daily gain and reduced the amount of fertilizer needed by providing approximately 60 lb/acre, 50 lb/acre, 50 lb/acre, 30 lb/acre, 40 lb/acre, and 40 lb/acre of nitrogen (N) in 2009, 2010, 2011, 2012, 2013, and 2014, respectively, primarily from urine of grazing cattle.

http://newprairiepress.org/kaesrr/vol1/iss4/9/

## *Estimating the amount of forage available for grazing in summer annuals*

*Jaymelynn Farney, beef systems specialist*

Summer annuals can play a valuable roll in extending grazing resources. Prior to turnout it is important to quantify the amount of forage you have available for your cattle. An easy method to estimate forage yield is to clip the forage and allow it to dry to determine total dry matter yield.

In forages that are planted in rows, the easiest method to determine forage yield is to place a yardstick between two rows and cut the plants on both rows for 3 feet (leaving 8 inches at the base of the plant for regrowth) and place into containers (buckets work great!) then collect a weight. After recording the weight of the forage spread the forage evenly on a tarp or in a flat container and allow to dry in the sun for several days, until the plant appears to be completely dry. This can be anywhere between 2-4 days depending on temperature and humidity in your area. After the plants have dried, weigh the dried forage and use the calculation below to determine dry matter percentage:

$$\text{Dry matter percentage} = \frac{(\text{Weight of wet forage} - \text{Weight of dry forage})}{\text{Weight of wet forage}} \times 100$$

Once the dry matter percentage is determined you can figure out the total dry matter on a per acre basis by using the equation below:

$$\text{Dry matter yield of forage (lbs/ac)} = \left[\frac{\text{Wet forage weight (lbs)} \times (\text{Dry matter percent} \div 100)}{(\text{Planting row width (feet)} \times 3 \text{ feet})}\right] \times 43{,}560$$

Here is an example calculation: You collected 1 pound of wet weight with a dry matter percentage of 35%. Row planting width was 30 inches (2.5 feet).

$$\frac{1 \text{ lb} \times (35/100)}{(2.5*3)\ \text{ft}^2} \times 43{,}560\ \text{ft}^2/\text{acre} = 2033 \text{ lbs/ac DM}$$

Once you have ascertained the amount of forage available for grazing (remember you didn't collect the bottom 8 inches of the plant) you need to determine the grazing days for your specified stocking rate. Calculations to determine grazing days will need to account for stocking rate, forage availability, and estimated intake. For most of the sorghums assume forage intake is 3% of body weight (calculated by taking body weight times 0.03). The calculations below indicate how to determine grazing days:

$$\text{Grazing Days} = \frac{\text{Forage DM yield/acre}}{\text{Stocking rate (AU/acre)} \times \text{Expected DM intake as \% of body wt.}}$$

Using the estimated forage yield from above and stocking at 5 AU/acre you have 13 days of grazing:

$$\frac{2{,}033 \text{ lbs/ac DM}}{(5000 \text{ lbs/acre} \times 0.03)} = 13.5 \text{ grazing days}$$

In the above example calculations, we need to increase stocking rate so that the grazing days are not longer than 10 days (to avoid prussic acid problems from young regrowth). Therefore for the forage amount listed above the stocking rate would need to be 7 AU (or 7,000 pounds).

Now that you have the estimated grazing days per acre of forage, a determination of the appropriate paddock size is needed to complete your grazing plan. If you have 100 cows that average 1,400 lbs then you have a total of 140,000 pounds of beef that will be consuming the forage. If you need to stock at 7 AU/acre to have the cows graze the sorghum to appropriate levels within 10 days then you need 20 acres per paddock to be grazed for approximately 10 days each paddock. Another consideration when determining your rotational system is to make sure that there is enough time for the forage to re-grow (~25 days). Therefore in this example since each paddock has a grazing period of 10 days you need at least 4 paddocks in your rotation.

The beauty of rotational grazing is that you have the flexibility to remove cattle earlier if you find that your cattle are overconsuming the forage or you can let them graze longer if you want them to utilize more of the plant.