K-STATE Research and Extension

# Beef Tips

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

## Upcoming Events

**K-State Cattle Feeders College**
May 22, 2014
Haskell Co Fairgrounds
Sublette, KS
details on page 4
www.southwest.ksu.edu

**Beef Improvement Federation Annual Meeting and Research Symposium**
June 18-21, 2014
Lincoln, NE
details on page 5
www.beefimprovement.org

## Use stocking rate calculations to aid grassland management

*Walt Fick, range management specialist*

What is meant by stocking rate? A stocking rate refers to the number of animals per unit area for a given period of time. For example, a typical stocking rate in the Kansas Flint Hills might be 7.5 to 8.0 acres per cow-calf pair for 6 months. In the High Plains of western Kansas, a stocking rate for a normal year might be 7 acres per 600 lb stocker for 5 months. Size, type, and class of animal impacts what a proper stocking rate should be. The other critical factor in determining a stocking rate is the amount of forage available.

How do you determine a stocking rate? The most accurate way to determine a proper stocking rate is to put a certain number of head on a given area for a specific period of time and see what happens. How do the animals perform? What happens to the plant community? Is the soil still protected from erosion? This approach takes time and adjustment to determine the appropriate long-term stocking rate that is sustainable and doesn't deteriorate our natural resources. Another approach is to ask your neighbor or visit with a rangeland management specialist with NRCS or extension. Stocking rates used in a region may be based on long-term stocking rate studies done at experiment stations.

Formulas shown in Table 1 can be used for stocking rate calculations. Let's assume available forage production for the season is 2500 lbs/acre, grazing efficiency is 25 percent for season-long grazing, and that a cow-calf pair will average 1500 lbs and consume 2.6 percent of their body weight. As the calculations show in Table 1, stocking rate 28 to 29 pairs.

Another question you might have is how many days of grazing do I have? Let's assume you have 2000 lbs/acre, grazing efficiency is 25 percent for season-long grazing, and that 700 lb steers will consume 3 percent of their body weight. Number of grazing days calculates to be 152 days as shown in calculations in Table 1.

A couple of variables in these formulas are grazing efficiency and the percent of body weight consumed by the grazing animal. The 25% grazing efficiency is based on the animal consuming 25% of the dry matter, leaving 50% of the total production, with the other 25% disappearing because of trampling, plant senescence, etc. On native range the grazing efficiency number could be as high as 40% with a management intensive system with > 24 paddocks. The percent of body weight consumed by a grazing animal varies in the 2-5% range.

**Table 1 - Calculations for stocking rate decisions**

$$\text{Number of animals} = \frac{\text{Available forage (lbs/acre) x Acres x \% Grazing efficiency (in decimal form)}}{\text{Animal weight (lbs) x Intake as \% of body weight (expressed as decimal) x Days}}$$

$$\text{Number of animals} = \frac{\text{2500 lbs/acre x 320 acres x 0.25}}{\text{1500 lb/pair x 0.026 x 180 days}} = \frac{200{,}000}{7020} = \textbf{28.5 pairs}$$ or 320 acres/29 pair = 11 acres/pair

$$\text{Grazing days} = \frac{\text{Available forage (lbs/acre) x Acres x \% Grazing efficiency (in decimal form)}}{\text{Animal weight (lbs) x Intake as \% of body weight (expressed as decimal) x number of head}}$$

$$\text{Grazing days} = \frac{\text{2000 lbs/acre x 320 acres x 0.25}}{\text{700 lbs/steer x 0.03 x 50 head}} = \frac{160{,}000}{1050} = \textbf{152 days}$$

*continued...see Stocking rates on page 5*

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

## *Tally Time – Evaluate risk for delayed rebreeding*

*Sandy Johnson, livestock specialist*

Generally turning cow/calf pairs on to spring pasture brings a boost to their nutrient intake which is beneficial going into the breeding season. If pasture conditions are less than optimal, producers should consider potential impacts on cow reproduction and weigh options that could be taken to mitigate delayed rebreeding problems. Estimate that return at weaning is reduced $84 for each 21 day cycle a calf is born later (21 days x 2 lbs/d x $2/lb).

There are two primary concerns related to pasture condition and calves being born later in the season; extended postpartum anestrus and increased early embryonic loss. More than one cause could impact the same group of animals. Inadequate nutrition after calving will delay the return to normal estrous cycles especially in cows that were thin at calving. Cows that haven't started cycling when first turned out on pasture will likely be further delayed if there is not sufficient forage quantity or quality for cows to maintain a positive energy balance. This could be further compounded if grass is short and cows are approaching peak lactation (8 to 9 weeks post calving) and/or had been experiencing significant condition loss after calving.

If the breeding started before going to grass or concurrently, early embryonic loss could be a concern. Embryo survival was reduced 27 percent when heifers went from a grazing allowance of twice their energy requirements 10 days before breeding to a lower grazing allowance of 80% of energy requirements for 14 days post insemination. It is early during pregnancy when embryos are most susceptible to stressors from nutritional changes or the environment (i.e. hot weather or transportation stress). Recently a producer who starts breeding before grass turnout commented to me about a gap in calving that corresponded to the first weeks of grazing. Similar reports come from producers who have bred heifers in a dry lot and then turned out on pasture.

Management options to deal with this potential problem:

- Delay turnout and allow more forage growth to occur before grazing begins. This may be a wise grazing management step independent of decisions related to cow reproduction.

- Provide supplementation on pasture. In most cases this should be an energy supplement rather than a protein supplement. Presence of some highly palatable forage may make it challenging to achieve desired intake of supplement. Consider any negative consequences of the supplemental feeding on the pasture its self.

- Delay start of breeding season. Most viable if a week to 10 days delay will provide sufficient improvement in nutrient intake.

None of these options may seem particularly attractive however the potential risks and the associated cost should be evaluated. We do not have research data to tell us at exactly what point these problems occur but they do occur and in a strong calf market the implications are magnified.

Records of cow body condition score at calving and prior to turnout, calving distribution and normal forage growth would help producers make better decisions regarding potential problems with delayed rebreeding. You can't manage what you don't measure.

## Spring Cleaning: Have you cleaned your water tanks?

*Justin Waggoner, Beef Systems Specialist*

It would appear that after a much anticipated arrival spring has finally come to Kansas. The most notable attribute of the month of April has been the wind and dust. One of the fundamental concepts of animal husbandry is to provide a source of continually available, clean drinking water. In the feedyard industry one of the standard operating procedures in most feedyards is to routinely clean water tanks, typically once per week or following wind events. However, I was recently reminded of how easy it is to overlook this fundamental concept of animal husbandry in pastures and more remote watering sites. Consider this a friendly reminder, to bring a shovel, pull the plug, and flush the tank; you might be surprised by what or how much you find at the bottom of the tank.

## Estimating loss in livestock production due to redcedar encroachment

*Carol Blocksome, range specialist*

Eastern redcedar encroachment is an increasing problem in rangelands in the eastern two-thirds of Kansas. The Kansas Forest Service estimates that there was a 23,000 percent increase in redcedar volume in Kansas between 1965 and 2005. Increased redcedar cover in rangelands results in undesirable conversion of rangeland to forest, negatively impacting prairie wildlife habitat and decreasing the amount of available forage for livestock.

Controlling redcedar, and thereby increasing forage production, can have a positive economic impact for producers by allowing them to stock more livestock in the same paddock. A redcedar calculator has been developed that allows a producer to roughly determine the amount of forage lost to redcedar encroachment and the related reduction in carrying capacity of a paddock. The calculator was based on measurements taken in the tallgrass prairie and has not been evaluated for mid-grass or shortgrass rangelands.

The calculator can be found on the "Education" page of the ksfire.org web site (under the "Reasons for Burning" subhead) at: http://ksfire.org/p.aspx?tabid=15 . You will need to enable macros to use the calculator.

To use the calculator, the percent canopy cover of the paddock, by size class, must be determined, along with an overall estimate of the total number of redcedar plants in the paddock. In addition, the estimated biomass production, either from measurement or from soil survey information, along with the number of acres, must be input into the calculator. Producers frequently work with the Natural Resources Conservation Service (NRCS) to gather the input information.

The calculator output estimates the amount and percent of biomass (forage) and the Animal Unit Months (AUMs) (based on a 6-month grazing season) that are lost due to redcedar encroachment for the analyzed paddock. The calculator also estimates the additional number of cow-calf pairs (increased stocking rate) that could be supported if redcedar were eliminated.

For example, if 50% of the trees are 10-15 ft. in diameter, and 20% of the trees are 15-20 ft. in diameter, with a total of 80 trees and an estimated production of 2500 lbs./acre, you will have reduced your carrying capacity by 1.5 cow/calf pair in a 160 acre pasture.

Because redcedar invasion occurs gradually over a period of years, it can be difficult to perceive the accumulated loss of forage due to this invasion. Very small trees (<2 ft.tall) have little impact on grass productivity, with grass frequently growing right up to the tree stem. However, as the tree increases in diameter, the forage loss becomes more pronounced. As the amount of forage decreases, grazing intensity needs to be adjusted downward (fewer animals, shorter grazing period, or both). Failure to decrease stocking rate as tree cover increases leads to overgrazing. Overgrazed rangelands often suffer from an increase in undesirable plants (from both a livestock and ecological viewpoint), decrease in ecosystem functioning (including less water infiltration, thus reducing forage growth even more), increased soil compaction, increased soil erosion by wind and water, and an absence of wildlife habitat. In addition, livestock gains are reduced on a per-head basis.

Control of redcedar is primarily carried out with burning for small trees (less than 3 feet in height) and by mechanical means for areas with either larger trees, dense stands without a grass understory, or where fire poses a safety hazard. By allowing producers to calculate forage losses, the costs of redcedar control can be considered in conjunction with the potential for positive financial returns due to increased livestock production.

Complacency and procrastination concerning redcedar invasion can lead to loss of income not only through decreased stocking rates, but by also increasing the eventual cost of tree removal.

***"Failure to decrease stocking rate as tree cover increases leads to overgrazing."***

## K-State Cattle Feeders College planned for May 22 in Sublette

GARDEN CITY, Kan. — Taking the information right to the people who do the work—that's one way to describe the agenda for the K-State Cattle Feeders College planned for Thursday, May 22. The event, designed for anyone working in the cattle feeding industry, will be held at the Haskell County Commercial Building, 600 S. Fairground Rd. in Sublette, Kan.

The event kicks off with registration at 5 p.m. and a sponsored dinner at 5:30 p.m., followed by the presentation of the "Top Hand" Cattle Feeding Industry Employee awards.

"We designed Cattle Feeders College to bring continuing education right to the employees who keep our beef industry operating," said Justin Waggoner, beef systems specialist with K-State Research and Extension.

The evening includes the Industry Perspective session which this year is "Managing of High Risk Cattle: Thinking Outside the Shots!" by Dan Thomson, Jones Professor of Production Medicine, K-State College of Veterinary Medicine.

The Cattle Crew session will cover "Building a Better Stock Horse and Cattle Handling" (live demonstration) by Scott Bagley of Bagley Performance Horses, Dimmitt, Texas.

The Mill and Maintenance Crew session will feature "Feed Mixer Technology" by Mark Cooksey with Roto-Mix LLC in Dodge City, Kan. and "Truck Service and Maintenance" by Mark Holderness with Dodge City International, also in Dodge City.

There is no cost for dinner or to attend the event, thanks to sponsors Merck Animal Health, Lallemand Animal Nutrition, Animal Health International, Roto-Mix, Dodge City International and the K-State Veterinary Diagnostic Lab. However, preregistration is required by contacting Justin Waggoner at 620-275-9164 or jwaggon@ksu.edu or Lacey Noterman at 620-675-2261 or lnote@ksu.edu. More information is available online at www.southwest.ksu.edu.

## Photographing range can help decision-making during and after drought

LINCOLN, Neb. — Photos are more reliable than memory for helping spot changes to range condition, says Julie Elliott, with the Natural Resource Conservation Service in northeast Colorado. In the first of two free webinars, Elliott will speak May 15 about how and why ranchers can benefit from photographing range conditions.

Photos can help ranchers identify change sooner, whether it's improvement as a result of a new management system, or stress, as a result of drought or other unfavorable conditions. "There might be more cheat grass or more bare ground, but we don't want to see it," Elliott said. "Photos help keep us honest."

The National Drought Mitigation Center at the University of Nebraska-Lincoln is offering free webinars at 10 a.m. CDT on May 15 and 22 to walk through the how's and why's of photographically documenting forage conditions, particularly during drought recovery.

On May 15, Elliott, a rangeland management specialist with the U.S. Department of Agriculture's NRCS in Wray, Colo., will detail what to look for when photographically monitoring range conditions during and after drought, and Pat Reece, of Prairie Montane Enterprises, will talk about using photo points, a method that involves photographing the same location in different seasons over the years to document seasonal and long-term change.

On May 22, Bethany Johnston, UNL Extension, will review GrassSnap, a new app for smart phones that simplifies positioning for photo points, and Kelly Helm Smith, National Drought Mitigation Center, will talk about how and why ranchers can contribute their photos to the Drought Impact Reporter, a national, web-based archive of drought impacts.

For more information, please contact Tonya Haigh, National Drought Mitigation Center, thaigh2@unl.edu, 402-472-6781. To register for the free webinars, go to http://drought.unl.edu/ranchplan. If you are unable to view the webinars live, an archived version will be available soon after the session at the same website.

## BIF to meet June 18-21 in Lincoln

The 2014 Beef Improvement Federation (BIF) Annual Meeting and Research Symposium will be June 18-21 at the Cornhusker Marriot in Lincoln, Neb. The theme for this year's program is "Novel Traits: Needed or Novelty."

Co-hosted by the University of Nebraska–Lincoln (UNL), Nebraska Cattlemen and the U.S. Meat Animal Research Center (USMARC), the event will start at noon June 18 with registration. A welcome reception begins at 5 p.m., followed by a USMARC Symposium: 50 Years of Service to the Beef Industry.

It's no coincidence that the meeting is in Nebraska in 2014, said Matt Spangler, associate professor in UNL's animal science department. The USMARC is celebrating its 50th anniversary in 2014. USMARC scientists have contributed to the annual BIF meeting since its beginning, he said.

The meeting will allow the research community and industry to meet and discuss issues surrounding the genetic improvement of beef cattle and for attendees to learn about technologies and management practices that can aid in the profitability of their operations.

On June 19, the meeting will start at 8 a.m. with a general session and welcome. Presentations and technical breakout sessions will follow through June 20. Attendees are invited to participate in a post-conference tour June 21.

Some of the topics to be covered include economic considerations for profitable cow herds, heifer intake and feed efficiency, heifer development strategies, selection for novel traits, genetics of disease susceptibility, genetically changing the nutrient profile of beef, nutritionally changing the fatty acid profile of beef, improving feed efficiency in the feedlot, and the relationship between selection for feed efficiency and methane production.

Online registration for the conference is now available at http://go.unl.edu/bif2014. The cost to attend the full conference is $250. Day-only, student and media discount rates are also available.

*Continued...Stocking rates from page 1*

A lactating cow will consume more than a dry cow. Stockers will consume 2-4% of their body weight depending on size and growth potential. A good average number to use would be 3%.

Another unknown may be the amount of forage available. Forage production varies with precipitation and ecological site. Average forage production on a loamy upland site in western Kansas may vary from 1,000 to 2,000 pounds/acre. A loamy upland site in the Flint Hills typically varies from 3,500 to 5,000 pounds per acre. Ecological sites in the same precipitation zone will also vary. Average production values are available from NRCS. Another way to determine forage production is to set up an exclosure, clip the forage at the end of the season, dry and weigh. A cattle panel can be bent into a circle and staked to the ground for the exclosure. Clip the forage at the end of the growing season from a 2 ft x 2 ft square plot placed inside the exclosure. Let the clipped material air dry for about 4 days. Weigh the dried forage in grams and multiply by 24 to obtain pounds/acre.

A number of factors influence grazing management including the kind of animal, season of use, and distribution of grazing. However, stocking rate is by far the most important factor. Knowing how to calculate a stocking rate and make adjustments is an important factor in managing our grasslands.