K-STATE Research and Extension

Beef Tips

March 2013 Department of Animal Sciences & Industry www.asi.ksu.edu/beeftips

Upcoming Events

KSU Cattlemen's Day
March 1, 2013
Manhattan, KS
www.KSUBeef.com

Southern Plains Drought Summit
March 27, 2013
Pratt, KS
620-886-3971
www.KSUBeef.org

Beef Improvement Federation Convention
June 12-15, 2013
Oklahoma City, OK
www.beefimprovement.org

DNA Technology & Feed Efficiency
June, 26, 2013
Clay Center, NE
www.beefefficiency.org

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Water improvement opportunities during drought

Herschel George, Will Boyer, Jeff Davidson, Ron Graber, and Stacie Minson, watershed specialists

With every storm that blows through, we hope it brings precipitation to fill the soil profile AND the ponds. But no…not yet. Maybe it is like the old adage of "a watched pot never boils". Maybe we should try to focus our attention on the opportunities this drought brings?

Regarding livestock watering, there are a number of things we can do now to better prepare for future droughts. All require time and effort, but if they can relieve stress from our lives and benefit our livestock, isn't that time and effort well spent?

Lets take a few moments to away from your daily grind and focus on approaches that can provide water to new areas or improve your existing watering situation.

Pipelines

One of the easiest options is to extend water pipelines to your pasture or feeding area. A pipeline typically delivers water from pump systems on the ranch or from a public water system like rural water and sometimes a line from a pond. The monthly cost of the electricity to pump water is relatively cheap, even compared to the cost of pond construction and maintenance. Although producers do not like to think about the monthly cost of the water bills, rural water can be a wise, economical choice.

Pipelines often cost about $2.00+ per linear foot to get the pipe installed ($1.00 for the pipe and $1.00 for the trench and installation). If the system is being installed for occasional or emergency use only, producers may want to install a freeze proof hydrant at the site so when it is shut off, there is no need to winterize. The stock tank(s) can be installed temporarily during the time of need and then removed.

Solar pumps

Many producers are investigating old well and/or windmill sites. Although these sites may not produce the water that they did in the past, they are worth considering. Many windmill well sites are no longer in use, but, the reason may be the windmill failing mechanically and nothing more. In those cases, the solar pump systems offer a real possibility. Most solar pumps for these uses are submersible and require at least 3 to 5 inch casing openings.

In order to economically justify a solar pump system, the site needs to be over 1/4 mile away from an electric power source. The basic solar pump system will cost $2,500 to $3,500. If the water is deeper than 200 feet, the cost of additional solar panels to meet the needs for increased pumping lift increase as well. Recently, some producers have mounted their solar pump system on a trailer to make it easier to move from pasture to pasture.

Be sure to check the well recharge rate before making the investment in the well site. Calculate the necessary recharge rate by estimating the daily water consumption of the livestock (gallons per head per day times number of head).

Well construction

Drilling a new well is always a consideration where ground water is available. The well drillers seem to be in big demand at this time with more wells to drill than they have time.

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

Tally Time – Short term changes in nutrition can impact embryo survival

Sandy Johnson, livestock specialist

When it comes to replacement heifers, we focus a lot of attention on getting heifers to the appropriate weight and condition for breeding. While this certainly represents a key part of the development process, continued effort is needed to capture all of the benefits from that initial effort.

Early reproductive success has major implications for lifetime productivity. Researchers from the Meat Animal Research Center and SDSU reported heifers that conceive in the first 21 days of their first breeding period remain in the herd for 0.6 to 1.2 years longer than those that conceive in the second cycle. Not surprisingly then, this early calving group of heifers have an increased average weaning weight through six calves (Figure 1; Kill et al 2012) and more total pounds weaned compared to those calving in the second period .

In most situations, fertilization rate is estimated to be 90% or greater in beef heifers, whereas first service conception rate drops to 60-70%. While a certain amount of this early embryonic loss will likely always occur, managers want to make every effort to minimize it. Nutrition and management early after conception can influence that loss.

In one study, forage allotment was such that heifers either received 2 times their maintenance energy requirement or 80% of maintenance requirements 10 days before AI and 14 days after AI to create 4 treatments, H-H, H-L, L-L, L-H. Embryo survival rate was significantly lower for heifers that were in the H-L group (38%) compared to H-H, L-L or L-H groups (65%, 70% and 71% respectively; Duane et al., 1999).

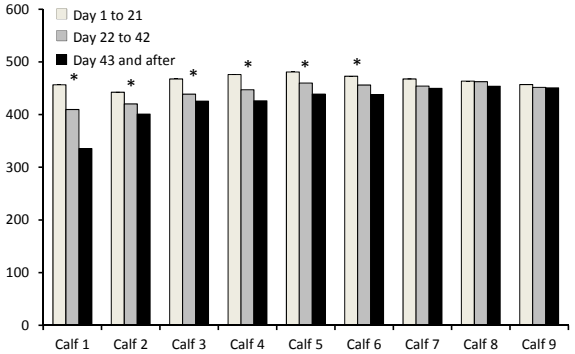
Another study collected embryos from heifers that either continued on the pre-breeding diet (gain of 1.5 lb/d) or were fed to lose weight for 6 days until embryos were collected. Embryos that developed in heifers losing weight were behind in developmental stage, received lower quality scores, and had fewer live cells compared to those from heifers continuing to gain weight. Additional evidence that fairly short term nutritional changes can have significant impacts on embryos.

In many operations, replacement heifers are grown and developed in a drylot setting and then turned out onto spring pasture after an AI program or as the breeding season starts. Any grazing skills that they learned as a calf may have not been practiced since weaning. A recent study used pedometers to track movement of heifers that were either in a drylot or on spring pasture 42 days prior to AI. Prior to AI, heifers on pasture took twice as many steps per day as those in the drylot. When placed in a common pasture after AI, drylot heifers took nearly double the number of steps as pasture heifers the first day of turn out and took several days to reach a similar number of steps as pasture heifers.

Increased activity could relate to weight differences observed in similar situations. Weight change the first week of spring pasture was reported to be a gain of 1.9 lbs/day for heifers wintered on range compared to a loss of 3.4 lbs/day for heifers wintered in a drylot. In 4 studies comparing range vs drylot developed heifers, no statistical differences were found in pregnancy rates. However, drylot developed heifers that receive supplementation the first month of grazing following AI, had higher pregnancy rates than non-supplemented heifers.

When reviewing these data, the take home message may be particularly profound in our current drought conditions. Feed supplies of any type for the wintering period may be limited and push producers to make hard choices depending on when spring grazing is available. If the quantity of forage is short and/or heifers have to learn to graze, a temporary decrease in performance is likely to occur. Small, relatively short term changes in nutrition can negatively impact embryo survival in heifers. Heifers would be most sensitive to these changes from day 5, when the embryo first enters the uterus, to day 42, when the embryo is fully attached to the uterus. When weighing the costs of alternatives, do consider the impact of early pregnancy the first season on lifetime productivity.

Figure 1. Effect of time of conception at first breeding on average weaning weight



2013 Cattlemen's Day Research Summaries

The following represents a sampling of the summaries from the 2013 Cattlemen's Day Report. The entire report is online at: http://www.asi.ksu.edu/cattlemensday.

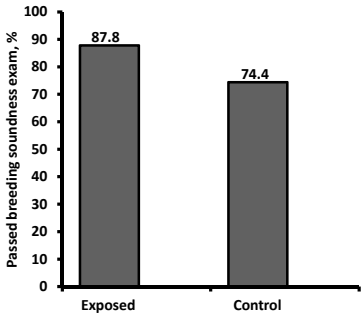
Exposure of Prepubertal Beef Bulls to Cycling Females Affects Neither Age at Puberty Nor Ability to Pass an Initial Breeding Soundness Examination

N. Miller, R. Breiner, T. Taul, S. Tucker, K. Fike

Objective: Determine if continuous, long-term fence-line exposure of prepubertal beef bulls to cycling females affects age at puberty, sexual behaviors, and bulls' ability to pass an initial breeding soundness examination (BSE).

Study Description: Prepubertal beef bulls were given fence-line (nose-to-nose and visual) contact or no contact with cycling beef females from 6.5 to 12 months of age. Bulls were considered pubertal when they had a scrotal circumference of ≥10.2 inches (26 cm), a semen sample with ≥50 million sperm per mL, and ≥10% sperm motility. Breeding soundness examinations were conducted when bulls averaged 12 months of age. Bulls passed their BSE if they had ≥30% sperm motility and ≥70% normal sperm morphology.

Results: Bull age, weight, scrotal circumference, and semen characteristics at puberty were not influenced ($P > 0.10$) by fence-line exposure with cycling females. The percentage of bulls that passed their first BSE was also unaffected by exposure to cycling females ($P = 0.54$).



The Bottom Line: Exposure of prepubertal beef bulls to cycling beef females neither enhances bull sexual development nor influences percentage of bulls passing their initial BSE. Cattle producers would not benefit from penning developing bulls next to cycling females.

Calf Health and Performance During Receiving Is Not Changed by Fence-Line Preconditioning on Flint Hills Range vs. Drylot Preconditioning

E. Bailey, J. Jaeger, J. Waggoner, G. Preedy, L. Pacheco, K. Olson

Objective: Measure calf growth and health performance during a 28-day preconditioning phase and during a 60-day feedlot receiving phase.

Study Description: Calves were subjected to 1 of 3 ranch-of-origin preconditioning methods for 28 days: drylot weaning + dam separation (Drylot), pasture weaning + fence-line contact with dams (Pasture), and pasture weaning + fence-line contact with dams + supplemental feed delivered in a bunk (Pasture+Feed). After preconditioning, calves were shipped to a feedlot for finishing and placed on a grower ration for 60 days.

Performance of beef calves subjected to 1 of 3 ranch-of-origin preconditioning regimens during a 60-day feedlot receiving period

	Preconditioning program		
Item	Drylot	Pasture + Feed	Pasture
Preconditioning phase			
Average daily gain (ADG), lb	0.68	-0.62	-0.75
Incidence of fever, %	5.01	0.63	1.91
Receiving phase			
ADG to day 30, lb	2.47	2.40	1.96
ADG to day 60, lb	3.13	2.93	2.82
Dry matter intake, lb/day	17.20	17.02	16.98
Feed/grain, lb/lb	5.49	5.80	6.04

The Bottom Line: Health and performance of beef calves preconditioned in the Flint Hills was not improved by fence-line weaning. Best management practices may include beginning the transition to a grain-based diet on the ranch of origin.

continued...see Research Summaries on page 4

Research Summaries…continued

Insecticide Ear Tags Improve Grazing Cattle Performance

S. Hill, C. Vahl, B. Oleen, W. Hollenbeck, D. Blasi

Objective: To determine the efficacy of insecticide ear tags for improving growth of stocker calves grazing native pasture in the Flint Hills region of Kansas.

Study Description: A 77-day grazing study was initiated at the Kansas State University Beef Stocker Unit on April 24, 2012. All steers were completely randomized to grazing treatments. Steers were assigned to three treatments with four pasture replicates per treatment. The treatments included a Control group (no ear tags applied), a group that received a single insecticide tag in one ear (One), and a third group that received an insecticide ear tags in both ears (Two).

Results: Gain and final weight in calves that received the insecticide ear tags were numerically greater than controls, but these differences were not statistically significant ($P > 0.83$). Due to the drought conditions, we were forced to terminate the grazing season prematurely, potentially limiting the cumulative beneficial effects of the insecticide ear tags. This factor, combined with the limited numbers of cattle used in the study, may have restricted our ability to detect significant differences among treatments.

Performance of grazing cattle tagged with 0 (Control), one or two insecticide-impregnated ear tags

Treatment	Control	One	Two
On test weight, lb	679	679	679
Off test weight, lb	789	798	801
Average daily gain, lb/day	1.45 ± 0.14	1.53 ± 0.14	1.58 ± 0.14
Added gain relative to control group, lb	—	9	12

The Bottom Line: Using insecticide ear tags yielded substantial improvements in gain over the 77-day grazing season, but these improvements were not statistically significant.

Effects of Infrequent Dried Distillers Grain Supplementation on Spring-Calving Cow Performance

B. Bennett, J. Waggoner, J. Jaeger, A. Sexten, K. Olson

Objective: Examine the effect of supplementation frequency on performance of spring-calving cows fed dried distillers grains with solubles (DDGS) as a supplement during the winter feeding period.

Study Description: Pregnant Angus-cross cows (n = 120) were fed DDGS as a protein supplement daily, every 3 days, or every 6 days from December 27, 2011, through March 20, 2012. All cows were maintained together in a common native range pasture, sorted daily for feeding, and provided the equivalent of 0.5 lb crude protein per cow per day in the form of DDGS (29.5% crude protein). Cow body weight and body condition scores were collected every 28 days throughout the duration of the study.

Performance of cows receiving dried distillers grains with solubles daily (Daily), at 3-day intervals (3Day), or at 6-day intervals (6Day)

	Supplementation interval		
Item	**Daily**	**3Day**	**6Day**
Number of cows	38	31	37
Initial weight, lb	1241.7	1256.4	1239.6
Calving weight, lb	1243.3	1256.5	1247.0
Weight change, lb	1.5	0.3	7.4
Turnout weight, lb[1]	1312.8	1329.2	1301.2
Body condition score[2]			
Initial	5.07	5.18	4.97
Calving	5.28	5.31	5.16
Change	0.21	0.13	0.19
Calf weight, lb	84.6	86.9	83.4
Avg. calving date	03/24/2012	03/22/2012	03/22/2012

[1]Weight at turnout onto summer native range pasture (5/7/2012).
[2]Scale of 1 to 9; 1 = extremely emaciated, 9 = extremely obese.

The Bottom Line: Supplementing cows with protein as infrequently as every 6 days did not negatively affect cow body weight or body condition score. Producers can reduce cost using DDGS as an inexpensive protein source and can reduce labor and fuel costs with infrequent delivery.

Water*…continued*

The local driller and the Kansas Department of Health and Environment office, where the well logs are sent, can be reasonable places to start (http://www.kgs.ku.edu/Magellan/WaterWell/index.html) for information. The cost of drilling a well is about $2,500 plus about $20 per foot for depths beyond 120 feet.

Improving pond watering systems

Improved water quality provided by tanks compared to ponds with their mud, manure and sediment, have been shown to improve calf gains. When given a choice, livestock prefer to drink from tanks.

Add a pipeline through the dam

A pipeline through the dam allows for installation of a livestock waterer below the pond. The process can be achieved with ponds that are full or low without losing 100 gallons of water during the process. If the pond is to be cleaned, it is a great time to also install a line through the dam.

In most cases, the process requires a length of pipe with a riser system and valve, plus about a half day of contractor time. Contractors can often install additional sites in about 2 hours after the initial project experience. We recommend using at least 1½ inch pipe, but prefer using 2 inch PVC pipe. All ponds with pipelines through the dam should also have an exclusion fence around the pond.

Gravity flow waterers below the pond

For the ponds that have the slope and site to install a waterer below the pond, the type of waterer is an important consideration. There are concrete tanks, tire tanks, the plastic super insulated tanks and regular plastic or metal stock tanks. Refill rate of a tank system is the most important factor in determining whether the tank size and volume of water is compatible.

Fencing out the pond

In addition to the lack of rainfall, ponds become shallower and require cleaning over time, when livestock have full access. Failure to install an exclusion fence will allow the livestock to continue to stomp the edges of the pond, causing the sediment to move to the deeper parts of the pond and promote an even wider, shallow beach edge. In a number of years, the pond will again need to be cleaned out. From our observations, it seems that ponds that cattle can access and stand in, lose water to evaporation faster than those with exclusion fences and grass up to the water's edge.

Exclusion fences do not need to be installed close to the shoreline of the pond. Producers should consider wider areas around a pond to encourage easier chemical and mechanical brush control. Larger fenced areas can facilitate flash grazing on a seasonal basis.

Limited access to the pond

For ponds that do not have the slope and elevation change for a gravity-fed water tank below a pond (these ponds are often called "pit ponds"), consider a "Limited Pond Access". A limited pond access is like a boat ramp installed into the side of the pond for the cattle to use to get down to the water and drink. We have a recommended process that should withstand years of use. The process uses geotextile fabric on the surface of the soil, semi-trailer tires with one sidewall and bead removed, and gravel. If they can be installed now when the pond is low, you can ensure safe access for drinking when the pond is full.

Cleaning out the pond

During the drought could be the ideal time to clean a pond. The cost of cleaning a pond is great and often is more than estimated. In the past, ponds were the answer to most cattlemen's water needs. Ponds built or cleaned in the present economy should incorporate practices that will extend their life. It is also the time to repair or install a primary spillway tube through the dam.

More information about ponds and the other practices discussed in this article can be found under the Pond and Livestock Watering section at KSUBeef.org. In addition to your watershed specialists, your local Extension and NCRS staff can provide additional information and may also be able to advise producers about cost-share or financial assistance that might be available.

"Improved water quality provided by tanks compared to ponds with their mud, manure and sediment, have been shown to improve calf gains."