



CATTLEMAN'S CORNER



Division of Agriculture Sciences and Natural Resources * Oklahoma State University

SEPT/OCT 2015

The “positive associative effect” of high protein supplements

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

For the first time in several years, Oklahoma has substantial standing forage in most pastures as we go into late summer. As the day length shortens, plants become more mature and lower in protein content. However, the protein requirements for growth, milk production, and body weight maintenance of beef cattle do not decrease as the “dog days of summer” arrive.

The micro-organisms in the rumen of beef cows and replacement heifers require readily available protein to multiply and exist in large enough quantities to digest the cellulose in low quality roughages. Protein supplementation of low-quality, low protein forages results in a “*positive associative effect*”. This “positive associative effect” occurs as supplemental protein available to the “bugs” in the rumen allows them to grow, multiply, and digest the forage more completely and more rapidly. Therefore the cow gets more out of the hay she consumes, she digests it more quickly and is ready to eat more hay in a shorter period of time. Data from Oklahoma State University illustrates this (Table 1). The prairie hay used in this study was less than 5% crude protein. When the ration was supplemented with 1.75 lbs of cottonseed meal, retention time of the forage was reduced 32% which resulted in an increase in feed intake of 27%. Because hay intake was increased, the animal has a better chance of meeting both the protein and energy requirement without supplementing other feeds.

Table 1. Effect of Cottonseed Meal Supplementation on Ruminal Retention Time and Intake of Low-Quality Prairie Hay

	Daily Supplement of Cottonseed Meal		
	None	1.75 lb	Change
Rumen Retention Time, Hr	74.9	56.5	-32%
Voluntary Daily Hay Intake, % of body wt.	1.69	2.15	+27%

Because retention time was decreased, one should expect the protein supplementation in this situation also increased digestibility of the hay. This was shown clearly in another OSU trial that indicated that low quality roughage had an increase in estimated digestibility from 38% to 48% when the cattle were supplemented with 1.5 pounds of soybean meal daily.

As producers prepare their late summer, fall, and winter feed strategies, they can see the importance of providing enough protein in the diet of the cows to feed the “bugs” in the rumen. If the forage is low in protein (less than 8 % crude protein), a small amount of supplemental protein such as cottonseed meal, soybean meal, or one of the higher protein by-product feeds, could increase the amount and digestibility of the forage being fed. This strategy requires that ample forage is available to take advantage of the “positive associative effect”. As the table above illustrates, properly supplemented cows or replacement heifers will voluntarily consume about 27% more forage if they were provided adequate protein. As long as enough forage is available, this is a positive effect of a small amount of protein supplement. Cows that are already in excellent body condition in late summer will not benefit from the additional expense, however, young thin cows would be

candidates for protein supplementation in late summer and fall. The increase in body condition can be achieved with minimal expense, especially if the spring-born calves are weaned in early fall.

Stockpiled bermudagrass can reduce winter feed costs

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Harvested forage costs are a large part of the production costs associated with cow-calf enterprises. A 15 year-old OSU trial had the objective to economically evaluate stockpiled bermudagrass. The research found that this practice can reduce cow-wintering costs. Forage accumulation during the late summer and fall is variable from year to year depending on moisture, temperatures, date of first frost and fertility.

The OSU research has found that 50 to 100 pounds per acre of actual nitrogen fertilizer applied in the late summer has produced 1000 – 2000 pounds of forage per acre. In some ideal situations even more forage has been produced.

Studies between 1997 and 2000 found stockpiled bermudagrass protein concentrations were quite impressive, even after frost. In November, the range of protein content of the standing forage was 13.1% to 15.2%. The protein held up in December and ranged from 12.5% to 14.7% and declined to 10.9% to 11.6% in January.

To make best use of the stockpiled forage, supplementation with 2 pounds of 14% to 25% protein feed beginning in early December is recommended. [Read about these studies in the 2001 OSU Animal Science Research Report.](#) Some information about the forage quality is reported in the [1999 OSU Animal Science Research Report.](#)

Planning for the stockpiling of Bermuda must begin now.

The following is a list of recommendations for stockpiling bermudagrass pastures for best results and reducing winter feed bills:

1. Remove existing forage by haying, clipping, or grazing by late August
2. Apply 50 to 100 pounds of actual nitrogen fertilizer per acre.
3. Defer grazing until at least late October or early November.
4. Control access to forage by rotational or strip grazing to cut waste and extend grazing.
5. If cool season forage is available for use in the winter, use the stockpiled bermudagrass first.
6. Supplementation (2 pounds of 14 – 25% protein) should begin in early December.
7. Provide free-choice mineral (6%- 9% phosphorus and Vitamin A) with a trace-mineral package

Fall-calving season begins ahead of schedule!

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Each year in August, it is time for an important reminder. Fall-calving season is here. In fact, the start of the fall calving season often begins before some producers expect it. The target date for the beginning of fall calving very often is September 1. Most printed gestation tables predict that calving will take place 283 days (some 285 days) after artificial insemination or natural breeding. Cows and heifers that gestate in hot weather will often calve a few days earlier than expected.

Oklahoma State University physiologists studied early fall (August) and late fall (October) calving cows. Data from two successive years were combined for 60 Angus X Hereford crossbred cows. The “early” and “late” fall

calving cows had been artificially inseminated in early November or early January, respectively. Semen from the same sire was used for all cows. All cows were exposed to a single cleanup bull for 35 days at 4 days after the AI season. The weather prior to calving was significantly different for late pregnancy in the two groups. The average maximum temperature the week before calving was 93 degrees F. for the “early” fall group. The average maximum temperature the week before parturition in the “late” calving group was 66 degrees F. There was a 100% survival rate for calves in both groups and both groups of cows had very high re-breeding rates (90% and 92%, respectively).

The average gestation length for the “early” cows was 6 days shorter (279 days) as compared to the “late” cows (285 days) in year 1. The average gestation length for the “early” cows was 4 days shorter (278 days) as compared to the “late” cows (282 days) in year 2. Keep in mind that the gestation lengths listed are AVERAGE. This means that about half of the cows calved earlier than that. Producers with early fall-calving cows should expect calves to start coming several days ahead of the “textbook gestation table” dates. **They should begin their routine heifer and cow checks at least a week to 10 days ahead of the expected first calving date.** Source: [Kastner, Wettemann, and co-workers.](#) 2004 OSU Animal Science Research Report

Fall 2015 cow-calf marketing considerations

Derrell S. Peel, Oklahoma State University Extension Livestock Marketing Specialist

Feeder cattle prices have bounced off the recent summer lows. For the week ending August 14, 2015, the Oklahoma seven-market average price of 450-500 pound, Medium/Large, number one steers was \$283.81/cwt., up from recent summer lows and \$7-\$8/cwt higher than this time last year. The price of 500-550 pound steers is currently \$259.26/cwt., also up the past two weeks but roughly \$4/cwt lower than one year ago. For 550-600 pound steers, the current price is \$244.08/cwt., about \$7/cwt. lower than last year. We are at the point where prices this year, which have been above year ago levels so far, will cross and likely be below year ago levels for the remainder of the year.

Last year, 400-500 pound steer prices increased 12 percent from August to November and, in fact, these calf prices have averaged a 9 percent price increase from August to November for the last five years. The 10-15 year average is an increase of 3 percent from August to November. However, the larger 2014 calf crop, indicated by the 1.8 percent increase in July estimated feeder supplies, means that more price pressure will build over the next two to four years. Given continued strong heifer retention, it's not clear how much of that pressure hits this fall. During herd expansion it is typical to see Oklahoma 400-500 pound steer prices drop by roughly 3 percent from August to November. I expect the most likely price range for 400-500 pound steers in November is 97 to 103 percent of current prices. There is probably a better chance of being in the lower part of that range.

The pattern for 500-600 pound steers is generally similar. In 2014, the price of 500-600 pound steers increased 13 percent from August to November and has averaged an 8 percent increase the last five years. The 10-15 year average is a one percent increase in price but during herd expansion a four to five percent decrease is more likely from August to November. November prices for five-weight calves in Oklahoma are likely to range from 95 to 101 percent of current prices. Strong wheat pasture demand for stockers could moderate modestly higher

Cowboy Motto:

If it's not yours,
don't take it,
If it's not true,
don't say it,
If it's not right,
don't do it.

feeder supply pressure this fall and limit calf price decreases. Corn prices matter as well and current corn production estimates suggest that corn prices will continue near current levels in the coming crop year. The absence of feed price pressure will also moderate calf price declines this fall.

Now is a good time to evaluate whether pre-conditioning calves makes sense for cow-calf producers. The decision depends on a number of factors that vary across producers. These factors include feed availability, labor and management constraints and adequate facilities. While pre-conditioning takes work, there is no doubt it has value. With calf prices still near record levels, preconditioning is even more valuable for buyers. Preconditioning significantly reduces the risk and high cost of death loss, sickness and poor performance on purchased calves whether those calves are going to stocker production or directly into the feedlot.

The Oklahoma Quality Beef Network (OQBN) is available to provide Oklahoma producers a certified preconditioning program and enhance feeder cattle values. In 2014, the weighted average premium of all OQBN feeder cattle over non-preconditioned cattle was \$19.20/cwt. For 400-500 pound calves, the premium was \$25/cwt. for steers and \$20/cwt. for heifers. For 500-600 pound calves, the premium was \$34/cwt. for steers and \$18/cwt. for heifers. OQBN premiums have averaged between 8 and 13 percent above the price of non-preconditioned calves in recent years. OQBN sellers are receiving a premium for calves and are selling bigger calves as a result of weight gain during pre-conditioning. Eight certified OQBN sales are scheduled this fall. Visit the OQBN website at <http://www.oqbn.okstate.edu/> for more information about OQBN protocols and upcoming sales.

Cow-calf producers will enjoy the second highest ever returns in 2015 despite slightly lower calf prices compared to 2014. It is important however for cow-calf producer to anticipate lower prices over time and to carefully consider market conditions; production plans and costs; and value-added opportunities in the future.

Testing hay can save supplement dollars

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

During a recent drive in Northeast Oklahoma, the abundance of hay in big round bales was quite evident. Producers are glad to have adequate supplies of hay as fall and winter approaches. Cattle producers must remember that quantity and quality of hay are independent characteristics of their hay crop.

Forage analysis can be a useful tool to remove some of the mystery concerning the hay that producers will feed this winter. Testing the grass hays this year for protein and energy content will help the producer design winter supplementation programs most appropriate for the forage supply that is available. Any of the potential nitrate accumulating hays should be tested for nitrate concentration.

Forage quality has two important benefits to cows or heifers. First higher quality forages contain larger concentrations of important nutrients so animals consuming these forages should be more likely to meet their nutrient needs from the forages. Secondly, and just as important, animals can consume a larger quantity of higher quality forages. Higher quality forages are fermented more rapidly in the rumen leaving a void that the animal can fill with additional forage. Consequently, forage intake increases. For example, low quality forages (below about 6% crude protein) will be consumed at about 1.5% of body weight (on a dry matter basis) per day. Higher quality grass hays (above 8% crude protein) may be consumed at about 2.0% of body weight. Excellent forages, such as good alfalfa, silages, or green pasture may be consumed at the rate of 2.5% of body weight per day. The combination of increased nutrient content AND increased forage intake makes high quality forage very valuable to the animal and the producer.

The value of forage testing can best be illustrated by comparing the supplement needed to meet the nutrient needs of cows in the winter. Assume we are feeding hay to a 1200 pound spring-calving cow in late gestation. She needs 1.9 pounds of crude protein to meet her needs and that of the growing fetus. If she consumes 2.0% of her body weight in a low quality grass hay (4.0% Crude Protein) she will receive 0.96 pounds of protein from the hay leaving a deficiency of 0.94 pounds of protein needed from the supplement. To meet her protein needs with a 30% crude protein supplement would require 3.13 pounds of supplement each day. However, if the same cow was consuming a higher quality grass hay (7.0% Crude Protein), then she receives 1.68 pounds of protein from the hay and must be given enough supplement to meet the 0.22 pounds that is lacking. Now, to meet her needs the cow only needs 0.73 pounds of the same supplement per day. Because of the difference in hay quality the supplement needs vary by 4 fold!

There are several good methods of sampling hay for forage analysis. Most nutritionists would prefer to use a mechanical coring probe made specifically for this purpose. The coring probe is usually a stainless steel tube with a serrated, cutting edge. It is 1 inch in diameter and is designed to fit on a 1/2 inch drill or brace. Cordless drills make these tools quite mobile so that the hay bales to be tested do not have to be hauled to be near an electrical outlet. The hay samples are placed in paper or plastic bags for transfer to a forage testing laboratory. Cores are taken from several bales at random to obtain a representative sample to be analyzed.

Grab samples can also be obtained and tested. To receive the best information, grab several samples by hand from about 6 inches into the open side of the bale or the middle third of a small round bale. Place all of the sample in the bag. Do not discard weeds or stems, just because they look undesirable. They are still part of the hay that you are offering to the livestock. Be certain to label the forage samples accurately and immediately, in order for the laboratory analysis to be correctly assigned to the proper hay piles or bales. Obviously the more samples that are sent to the laboratory for analysis, the more information can be gained. Just as obvious is the fact that as the number of samples increase, the cost of forage testing increases.

Samples can be taken to the [OSU County Extension office](#) near you and then sent to the [OSU Soil, Water, and Forage Testing laboratory](#) in Agricultural Hall on the campus at Stillwater. There are other commercial laboratories available in the Southern plains area that also do an excellent job of forage analysis.

Growing bred replacement heifers

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Bred replacement heifers that will calve in January and February need to continue to grow and maintain body condition. Ideally, two year old heifers should be in a body condition score 6 at the time that their first calf is born. This allows them the best opportunity to provide adequate colostrum to the baby, repair the reproductive tract, return to heat cycles, rebreed on time for next year, and continue normal body growth. From now on until calving time, the heifers will need to be gaining 1 to 1 ½ pounds per head per day, assuming that they are in good body condition coming out of summer.

Heifers will need supplemental protein, if the major source of forage in the diet is Bermuda grass or native pasture or grass hay. If the forage source is adequate in quantity and average in quality (6-9% crude protein), heifers will need about 2 pounds of a high protein (38-44% CP) supplement each day. This will probably need to be increased with higher quality hay (such as alfalfa) or additional energy feed (20% range cubes) as winter weather adds additional nutrient requirements.

Wheat pasture (if adequate rainfall produces growth) can be used as a supplement for pregnant replacement heifers. Using wheat pasture judiciously makes sense for pregnant heifers for two reasons. Pregnant heifers consuming full feed of wheat pasture will gain at about 3 pounds per head per day. If they are on the wheat too long, the heifers can become very fat and cause dystocia (calving difficulty.) Also, the wheat pasture can be used for gain of stocker cattle or weaned replacement heifers more efficiently. If wheat pasture is used for bred heifers, use it as a protein supplement by allowing the heifers access to the wheat pasture on at least alternate days. Some producers report that 1 day on wheat pasture and two days on native or Bermuda will work better. This encourages the heifers to go rustle in the warm season pasture for the second day, rather than just stand by the gate waiting to be turned back in to the wheat. Whatever method is used to grow the pregnant replacement heifers, plan to have them in good body condition by calving so that they will grow into fully-developed productive cows.

Proper cow culling is important to your business

Cull cows represent approximately 20% of the gross income of any commercial cow operation. Cull beef cows represent 10% of the beef that is consumed in the United States. Therefore, ranchers need to make certain that cow culling is done *Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist*

properly and profitably. Selling cull cows when they will return the most income to the rancher requires knowledge about cull cow health and body condition. Proper cow culling will reduce the chance that a cow carcass is condemned at the packing plant and becomes a money drain for the entire beef industry.

Is she good for another year? At cow culling time, producers often face some tough decisions. Optimum culling of the herd seems to require a sharp crystal ball that could see into the future. Will she keep enough body condition through the winter to rebreed next year? How old is the cow? Is her mouth sound so that she can harvest forage and be nutritionally strong enough to reproduce and raise a big calf? At what age do cows usually start to become less productive?

There is great variability in the longevity of beef cows. Data from large ranches in Florida would indicate that cows are consistent in the rebreeding performance through about 8 years of age. A small decline was noted as cows aged from 8 to 10 years of age. However the most consistent decline in reproductive performance was noted after cows were 10 years of age. A steeper decline in reproductive performance was found as they became 12 years of age. In other words, start to watch for reasons to cull a cow at about age 8. By the time she is 10, look at her very closely and consider culling; as she reaches her 12th year, plan to cull her before she gets health problems or in very poor body condition.

Other reasons to cull cows:

Examine the eye health of the cows. One of the leading causes of condemned beef carcasses is still "cancer-eye" cows. Although the producers are doing a much better job in recent years of culling cows before "cancer-eye" takes its toll, every cow manager should watch the cows closely for potentially dangerous eye tumors. Watch for small pinkish growths on the upper, lower, or corner eye lids. Also notice growths on the eyeball in the region where the dark of the eye meets with the "white" of the eyeball. Small growths in any of these areas are very likely to become cancerous lesions if left unchecked. Likewise be aware of cows with heavy wart infestations around the eye socket. Many of these become cancerous over time. Culling these cows while the growth is still small, will allow the cow carcass to be utilized normally. If however, cancer engulfs the eyeball and gets into the lymph nodes around the head, the entire carcass will likely be condemned as not fit for human consumption.

Check the feet and legs. Beef cows must travel over pastures and fields to consume forages and reach water tanks and ponds. Cows with bad stifle joints, severe foot rot infections, or arthritic joints may be subject to substantial carcass trimming when they reach the packing plant. They will be poor producers if allowed to stay on the ranch while severely lame. They may lose body condition, weigh less, and be discounted at the livestock market by the packer buyers. Culling them soon after their injury will help reduce the loss of sale price that may be suffered later. If the cow has been treated for infection, be certain to market the cow **AFTER** the required withdrawal time of the medicine used to treat her infection.

Bad udders should be culled. One criteria that should be examined to cull cows is udder quality. Beef cattle producers are not as likely to think about udder health and shape as are dairy producers, but this attribute affects cow productivity and should be considered. OSU studied the effect that bad udders had on cow productivity. They found that cows with one or two dry quarters had calves with severely reduced weaning weights (50 - 60 pounds) compared to cows with no dry quarters. Plus, cows with bad udders tend to pass that trait along to daughters that may be kept as replacement heifers. Two key types of "bad" udders to cull include: the large funnel-shaped teats and weak udder suspension. The large funnel-shaped teats may be indicative of a previous case of mastitis and cause the quarter to be incapable of producing milk. In addition, large teats may be difficult for the newborn calf to get its mouth around and receive nourishment and colostrum very early in life. As some cows age, the ligament that separates the two sides of the udder becomes weakened and allows the entire udder to hang very near to the ground. Again it becomes difficult for the newborn calf to find a teat when the udder hangs too close to the ground. Select against these faults and over time your cow herd will improve its udder health.

Cull cows when in moderate body condition. Send older cows to market before they become too thin. Generally, severely emaciated cattle have lightly muscled carcasses with extremely small ribeyes and poor red-meat yield. This greatly lessens the salvage value of such animals. Just as importantly, emaciated cattle are most often those which "go down" in transit, as they lack sufficient energy to remain standing for long periods of time. Severe bruising, excessive carcass trim, increased condemnations, and even death are the net results of emaciation. Very thin cows have a low dressing percentage (weight of the carcass divided by the live weight). Because of these factors, cow buyers will pay less per pound for very thin, shelly, cull cows. In addition, thin cows will weigh less. As you combine these two factors (weight and price per pound), thin cull cows return many fewer dollars at sale time than if the cow was sold when in moderate body condition. If they are already too thin, a short (45 to 60 days) time in a drylot with a high quality feed will put condition back on the cows very efficiently. There is no need to put excess flesh or fat on cows. They become less efficient at converting feed to bodyweight after about 60 days and the market will not pay for excessive fatness on cows.

Cull any really wild cattle. They are hard on you, and your equipment, and they raise wild calves. Wild calves are poor performers in the feedlot and are more prone to producing dark cutting carcasses as they reach the packing plant. "Dark cutters" are discounted severely when priced on the rail.

Cull open cows. Why feed a cow all winter that will not have a calf next spring? Call your veterinarian, schedule a time for pregnancy checking and find which cows have not bred back. Cull them while they are in good body condition after summer pasture and before you spend \$200 or more on the winter feed bill.

Are the bulls ready for the fall breeding season?

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

The fall breeding season is about two months away. If you have not assessed your bull battery recently, time is running out. Contact your local large animal veterinarian and make arrangements to see that your bulls of all

ages pass a breeding soundness exam. Late summer high temperatures may reduce bull fertility for several weeks after the weather has moderated. In addition, ask your veterinarian about the need for a trichomoniasis test. Trichomoniasis is a reproductive disease of cattle that will result in a large percentage of open cows at preg checking time. If the bulls' feet need to be trimmed, this would be an excellent opportunity to get that done as well.

Bulls that do not pass a breeding soundness exam will need to be replaced before the start of breeding. Purchase the replacement from a production sale or nearby seedstock producer as soon as possible. It is advantageous to move the bull to his new environment several weeks before breeding. If the bull has been consuming a high energy, grain-based diet, this will give you time to gradually reduce the grain and increase the forage intake. The rumen will take some time to adjust to the forage-based diet that he will consume during the breeding season. A very sudden, steep decline in energy intake could cause a decrease in bull fertility. Therefore a gradual change over several weeks will produce more positive results.

Bulls that will be placed together in multi-sire breeding pastures should be penned together for several weeks before the breeding season begins. Bulls WILL establish a social order. This needs to be settled before the first of the breeding season. We would prefer that cows are getting bred during the first part of the breeding season rather than bulls fighting each other.

Bulls are a sizeable investment in most cow-calf operations. Common sense management before the breeding season can give the best possible return on that investment.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, sex, age, religion, disability, or status as a veteran in any of its policies, practices or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services. References within this publication to any specific commercial product, process, or service by trade name, trademark, service mark, manufacturer, or otherwise does not constitute or imply endorsement by Oklahoma Cooperative Extension Service.

Never look down
on someone...
Unless you're
helping them up!

The Cattleman's Corner newsletter is distributed bi-monthly by the following:

Oklahoma Cooperative Extension Service
707 West Electric Avenue
McAlester, Oklahoma 74501
918/423-4120
www.oces.okstate.edu/pittsburg

This Newsletter is one way of communicating cattle information to those interested.

David Cantrell
Extension Educator, Agriculture, CED
david.cantrell@okstate.edu

Prepared By: Stephanie Wilson,
stephanie.wilson12@okstate.edu

The Oklahoma Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, sex, age disability or status as a veteran and is an equal opportunity employer.