

Corner Post **CONVERSATIONS**

K-STATE | Midway District
Research and Extension

"AS I SEE IT"

If your mailbox is anything like mine this time of year it is being taken over by cattle sale catalogs. These catalogs represent bull and female sale offerings from across the country. Every catalog touts strengths of their genetics, and why you as a producer should purchase these genetics. Buying a new herd bull or a foundation female is a daunting task for the seedstock producer and commercial cattlemen alike. These purchasing decisions can leave a large imprint on the ultimate success or failure of our operations. Research by Dr. Bob Weaber of Kansas State University indicates that your herd sire contributes greater than 87 percent of the gene flow over time to your cattle operations. This genetic influence places a high degree of pressure on your breeding decisions, so how do you effectively manage these risks? Spend time developing a game plan for your purchases by writing down your goals and a job description for your new bull or female. For example, what resources are available to you and your operation, and more importantly what are their limitations? Remember each operation is different, just because something works for your neighbor across the fence, does not mean it will work for you. Develop a list of your management goals and your marketing strategy as these areas directly impact the type of genetics your purchase. For example, does it make financial sense to develop your own replacement females or purchase them from an outside trusted source? Are you marketing your calves at weaning, retaining ownership, or merchandizing them in other ways? Be willing to evaluate these goals often because just like Kansas weather the strategy that makes the most sense for your operation will change and adapt as time passes. Utilize the goals you set for yourself to identify and purchase cattle that moves your operation forward in a positive manner. Whether you are purchasing cattle through a formal sale, private treaty, or breeding cattle through Artificial Insemination I urge you to develop a strong relationship with your seedstock supplier. Doing so allows you to determine if their genetics and goals match up with yours. If you share a similar vision, success is more likely to follow. In addition to evaluating genomic values and pedigree information make sure to visually appraise cattle you are interested in purchasing. Visual appraisal is a critical component to accurately determine how certain genetics are interacting with the environment. Evaluate structural soundness, body condition, and if possible, other animals that are closely related to better understand consistency of genetics. Making purchasing decisions can be scary at times, but if you establish operational goals, and utilize these goals to develop a purchasing strategy it doesn't have to be.



Clinton Laflin
Livestock Extension Agent
309 S. Fossil St. Russell, KS 67665
Office #: (785) 483-3157
Cell #: (620) 583-0207
Email: cllaflin@ksu.edu

This newsletter is designed to provide you with timely information on relevant issues facing livestock producers today. If I can assist you moving forward please contact me. Looking forward to working with you!

February 2023/March 2023

THE IMPORTANCE OF COLOSTRUM

DO WE REALLY NEED TO TALK ABOUT THIS AGAIN?

At the beginning of every calving season, we find ourselves discussing the importance of colostrum (first milk) in cow-calf herds. We discuss this topic so often; it makes one wonder if we shouldn't move on to other topics? The short answer to that question is NO because of the great importance of this single dietary ingredient to calf health and growth.

The bovine species is special and almost perfect in every way except the design of the placenta. Unfortunately, because of the way the placenta is structured, the dam cannot pass any of her antibodies through the placenta to the calf. Therefore, the calf is completely devoid of any antibody protection against infections at the time of birth.

To overcome the inability to pass antibodies to the calf before birth, the bovine dam secretes large amounts of antibodies into her colostrum. Colostrum contains ten times more IgG1 (one of the major antibodies) compared to milk produced during the rest of lactation. If the calf rises and suckles within the first few hours after birth, it will absorb the antibodies contained in the colostrum. Protection will be immediate upon absorption. If the calf does not nurse and absorb these antibodies, then a very important part of their ability to fight infections will be absent for several weeks.

Several factors are involved to assure colostrum antibody protection.

1. The length of time from birth to consuming colostrum is very important. Immediately after birth, the calf's digestive system begins to lose its ability to absorb colostrum antibodies. At six hours after birth, only about 60% of the colostrum antibodies consumed will be absorbed into the calf's system and by 24 hours virtually none will be absorbed. It is very important that each calf receive colostrum as soon as possible after birth to maximize antibody absorption.
2. Colostrum quantity is also important. The level of antibody protection provided by colostrum is dependent on the total amount of antibodies consumed by the calf. This amount is dependent on the amount of colostrum that is produced and consumed. Colostrum quantity is largely dependent on dam age and her pre-calving nutritional status.
3. Colostrum quality is the third component of a successful colostrum management program. The term quality means the number of diseases that are represented by the colostrum antibodies. The antibodies are disease specific. For example, antibodies that target E. coli infections will not be the same antibodies that target Rotavirus infections. The range of disease specific antibodies produced by the dam is dependent on the variety of diseases she has been exposed to in her lifetime and the number of diseases she has been vaccinated against. A well-designed vaccination program can greatly improve colostrum quality.

THE IMPORTANCE OF COLOSTRUM

-Continued-

DO WE REALLY NEED TO TALK ABOUT THIS AGAIN?

The importance of colostrum in neonatal calves goes beyond antibody protection. Compared to milk, colostrum concentration of fat and protein are two to four times greater. The concentration of the major vitamins, including A, B, D, and E is also much higher in colostrum compared to milk. In addition to these nutrients, colostrum contains several enzymes that possess antimicrobial properties. These nutrients and enzymes are extremely important to the calf's ability to survive and grow during early life.

For most herds there will be times when a calf is unable to rise and nurse as quickly as needed. Typical cases include a calf that has experienced dystocia and is tired or hurt or is born to a dam with poor mothering ability or born to a dam that doesn't produce enough colostrum. In these cases what are the best ways to manage the colostrum program? In the case where the calf is hurt or the dam's mothering ability is lacking, hand-milking the dam and collecting the colostrum is the best intervention. This should only be attempted if it can be accomplished in a facility that provides safety to both human and dam. Never use dairy colostrum or colostrum from neighboring cow-calf operations. There are several diseases, including Johne's disease and bovine leukosis, that may not be on your operation and can be passed to the calf through the colostrum. The second-best intervention would be to administer a commercial powdered-colostrum replacer. Do not use colostrum supplements as they do not contain the appropriate concentration of antibodies for protection. It is also best to choose a colostrum replacer made from bovine colostrum, not bovine plasma. Research has shown that absorption is higher in colostrum-based replacers.

It is also important that electrolytes or probiotics NOT be mixed with colostrum or colostrum replacers. Research is clear that these products interfere with colostrum/replacer digestion and absorption. Does feeding method impact colostrum absorption? It is always best to use a nipple bottle. When the calf nurses, the colostrum will by-pass the rumen and will arrive in the intestinal area where absorption occurs much faster. Research indicates that by-passing the rumen is more important if feeding 1 quart or less of colostrum/replacer. An 80-pound calf needs about 2 quarts of colostrum and most commercial replacers are formulated to be fed in 2-quart amounts to all sizes of calves. In these cases, using an esophageal feeder is certainly acceptable. Colostrum is one of the most important components in any calf-health program not only because of the antibodies but also because of the many other nutritional products that it provides. Colostrum quantity and quality, in addition to timing from birth to consumption, are important aspects of any colostrum management program.

POST CALVING NUTRITION

by John Comerford, Professor Emeritus of Animal Science, Penn State University

For the cow herd there is seldom a period during the year when the cow cannot meet her nutritional needs with reasonable quality grass, hay, or stored forages. The exception for these nutritional needs is for the 60 days prior to calving and immediately after calving.

Why is there a challenge to the cow just prior to and after calving? There are three major reasons: the initiation of lactation, the return to a fertile reproductive state, and for the production of colostrum. Cow age will certainly have an impact on these factors, and younger cows have more critical nutritional needs.

Lactation:

There is considerable variation from genetics and breed type, but the average beef cow produces about 1 1/2 gallons of milk per day during a lactation. Approximately 60-75% of the total milk produced will be in the first 60 days after calving. Studies have shown there is a point of diminishing returns and additional milk production in beef cows is probably wasted because calves will not be able to efficiently utilize large quantities of milk.

When we compare this result to the typical dairy cow that may produce 6-10 gallons of milk daily, the divergent nutritional needs are apparent. The dairy cow has a large outflow of protein, minerals, and water that must be replaced. The beef cow has very little loss of these nutrients from milk production. Data in Table 1. show an 1100-lb. cow eating 22 lbs. of grass hay with 11% crude protein will need to be a pretty exceptional milk producer to require additional protein in the diet. Except for small additions of protein for heavy-milking cows and young cows still growing, the key nutrient is energy. Most beef cows will be able to meet lactation needs with reasonable intake of grass, hay, and stored forages of good quality that will usually supply 1-1.2 Mcal/lb of metabolizable energy.

Reproduction:

There are reams of data to show that cows in poorer body condition at calving will have a longer postpartum interval, lower rebreeding rate, and a shorter life in the herd than cows in adequate condition. First-calf cows are the usual suspects for poor condition since they are adding growth to the stress of lactation and reproduction.

Condition scores range from 1 through 9 with 1 being extremely thin to 9 being very obese. The optimum score at calving for most mature cows is 4-5 and for young cows is 5-6 (Morrison et al., 1999.) Studies show condition score at calving will have very little effect on calf birth weight, so it follows Nature is pushing the intake of nutrients to fetal growth at the expense of cow condition. When the nutritional plane is inadequate, problems occur. Results from an older-but still relevant-study in Table 2. show the results of reduced feed intake prior to calving and the subsequent loss of production from cows and calves.

If one calculates the economics of the above data with calf value at \$1.00 per pound, it shows the restricted intake cost about \$40.00 per cow (36% of calf weaning weight) in returns even with these very light weaning weights, and it does not include lost production from cows that did not rebreed.

Restricted feed intake right after calving will result in similar losses. Increased nutrient intake after calving stimulated secretion of anabolic hormones, promoted fat deposition, shortened the postpartum interval to estrus, and increased pregnancy rate at the first estrus in the study from Ciccio et al. (2003) for cows fed to gain either 1 lb/day or 2 lbs./day for 71 days after calving.

Restricted pre-calving feed intake may also influence calf nursing behavior. Lardy and Stolenow (2001) have reported on Australian data which showed calves born to dams on a low plane of nutrition took significantly longer to nurse than calves born to dams on a maintenance or high plane of nutrition.

Statistics on Page 5

POST CALVING NUTRITION STATISTICS

by John Comerford, Professor Emeritus of Animal Science, Penn State University

Cow Weight	10 Lbs Milk Met Energy (Mcal/Lb)	10 Lbs Milk Crude Protein (%)	10 Lbs Milk Crude Protein (lbs)	20 Lbs Milk Met Energy (Mcal/Lb)	20 Lbs Milk Crude Protein (%)	20 Lbs Milk Crude Protein (lbs)
900	.94	9.9	1.9	1.15	12.9	2.4
1100	.92	9.4	2.0	1.07	11.9	2.6
1400	.90	9.0	2.3	1.01	11.0	2.0

NRC, 1984

First-Calf Cows	100% of Requirements	67% of Requirements
Born alive (%)	97	90
Weaning wt. (lbs.)	350	324
40-day estrus return (%)	41	28
Heifer calf puberty (days)	318	337

Second-Calf Cows	100% of Requirements	50% of Requirements
Born alive (%)	100	90
Alive at weaning (%)	100	71
40-day estrus return (%)	48	38
Weaning wt. (lbs.)	320	294
Calf Scours rate (%)	33	50
Mortality (%)	0	19

Corah et al., 1975.