

Free DeLaval Calf College webinar focuses on successful newborn calf feeding

The third DeLaval Calf College webinar, hosted by Dr. Robert James, DVM, covered the foundations for successful newborn feeding. “This is where it all begins, and we don’t get a second chance,” he said. “It has a dramatic influence upon how successful we are with raising these cows.”

In his third, hour-long presentation in a series of eight free webinars hosted by DeLaval, Dr. James spoke about two large components in newborn calf feeding: dry cow care and colostrum management.

Dry cow care

The development of healthy calves begins before birth, and dry cow care is an essential component to achieving success. The diet of a pregnant cow is lower in energy and protein, but higher in fiber. Dr. James stressed the importance of monitoring the intake of dry cows so a nutritionist can help determine the right concentration of nutrients, minerals and amino acids for optimal colostrum quality.

The calving environment should be clean; a low microbial environment will help prevent disease transmission to the newborn. “I want a clean environment...I don’t care what the system is...that has to be a high priority,” said Dr. James. He also emphasized the importance of avoiding heat stress and overcrowding by keeping the dry cow environment comfortable and low stress.

Once a cow has given birth, the process of harvesting her colostrum (1-2 hours after birth) and feeding it to the newborn (within 6 hours) should be as seamless as possible. “Facilities can be the source of some of the biggest challenges,” Dr. James conceded. “We need to think about the flow of people, milk, calves and cows in [a] facility.”

Colostrum management

Feeding a newborn clean colostrum packed with antibodies should be a top priority in raising healthy calves. Colostrum is very different compared to milk; it contains more solids and is more nutrient dense.

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Makeup of colostrum versus milk

Component	Colostrum	Milk
Solids %	15-25	12.5
Protein %	4-14	3.3
IgG %	5.2-9.2	0.04
Lactoferrin %	0.15	0.002
IL-1B	840 ug/1000mL	3 ug/1000mL
TNF	926 ug/1000mL	3.3 ug/1000mL
IGF-1	100-2000 ug/mL	<25 ug/1000mL

Colostrum is also high in maternal immune cells, cytokines and hormones, all of which play a role in the healthy development of the calf.

Immunoglobulin G (IgG) is the primary antibody found in colostrum, and it plays a key role in immune system function. IgG levels in colostrum decrease the longer a cow waits to be milked after giving birth, and a calf’s ability to absorb IgG also dramatically

declines within a few hours after birth. For maximum IgG absorption, Dr. James recommends harvesting colostrum 30 minutes after calving and feeding it to the calf within an hour. Good quality colostrum should have levels of at least 22 using a Brix refractometer. To optimize IgG transfer, feed a calf four liters of colostrum with at least 50g/L IgG, or 200g of IgG in total.

The ‘how’ is just as important as the ‘when’ in harvesting colostrum. Bacteria doubles every 20 minutes in colostrum at room temperature, so ensuring the cleanliness of the milking environment and

containers is critical. Producers should aim to keep the bacteria count in colostrum to 100,000 cfu/mL or less.

“Let’s think about this as being a race,” Dr. James said. “It’s a race between the bacteria in the environment [and] the initial feeding of colostrum and the IgG in the colostrum. Who is going to get to the intestine first?”

Producers may want to consider pasteurizing colostrum to help preserve colostrum quality. According to a study, calves fed pasteurized colostrum had lower morbidity (5.2%) and mortality (2.8%) rates compared to calves which received raw colostrum (15% morbidity, 6.5% mortality). Raw colostrum with no more than 2 million cfu/mL can be pasteurized at 140°F for 60 minutes; it can then be fed, refrigerated or frozen. However, the lower the bacteria count the better.

Dr. James noted that colostrum replacers are convenient and safe to use and a good solution for small farms which lack the facilities or personnel to optimize colostrum quality or timely colostrum feeding. “We need to think about the risks, and if we can’t [meet the quality requirements], then consider the use of colostrum replacers,” said Dr. James. Colostrum- or serum-derived replacers should be fed at a rate of 150g IgG in the first feeding to ensure adequate absorption.

Other colostrum management details, like tube versus bottle feeding, should be considered. Despite some risks in tubing calves, a recent study showed tube-fed calves drank half a liter more, resulting in higher glucose and insulin levels. If bottle feeding, pay attention to the nipple hole size as larger holes may result in aspiration of liquid into the calf’s lungs. Lastly, colostrum should be warmed to approximately 100°F.

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Keys to successful newborn calf management

- Optimal facilities for close-up cows, calving, milking and calf housing
- Calving environment – accessible, low stress, clean
- Milk within an hour after birth – strive for low bacteria count (100,000 cfu/mL)
- Feed colostrum as soon as possible – no longer than 6 hours
- Aim for high IgG content (>22 Brix) in colostrum (>50 IgG/L)
- Feed 4 L within 30 minutes
- Monitor serum proteins to assess success

In closing, Dr. James noted that various factors – calving environment, stress at calving, delay in nutrient intake and body composition at birth – can undermine the healthy development of a calf. “These things all have an impact on the nutrient status of the calf,” he stressed. Optimal dry cow care and colostrum management are the foundations of successful newborn feeding programs.

Dr. James’ entire Calf College series is available for playback online at www.delaval.com.