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Can pre-fresh feeding practices influence calf birth weights? (II)

By Dr. R. Tom Bass, II, DVM, PhD,
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Nutritional Effects?

As previously mentioned (Part 1 – Oct. 2003 issue), little data exists to support the contention that pre-fresh rations significantly increase birth weight in dairy calves. Data from Colorado indicates that altering the protein status of Holstein heifers during late pregnancy did not affect the birth weights of their calves. A New York study found no effect of increased dietary protein (from a highly rumen undegradable source) on birth weights of calves born to mature Holstein cows. Illinois research found no statistical differences in calf birth weight from cows consuming different levels of protein and energy during the dry period (see table).



Measurements from cows consuming different dry period rations.

Parameter	Dry Period Ration		
	Control	High Grain	High Fat
NE-L intake (% 1989 NRC)	108	140	103
Crude protein intake (% 1989 NRC)	95	120	81
Change in BCS (units)	-0.4	-0.1	-0.6
Calf birth weight (lb)	97	93.5	91.7

Adapted from Grum et al, 1996.

Is there any evidence that nutritional management during pregnancy can influence calf birth weight? Robert Van Saun, DVM, PhD, of Penn State University, believes it can occur in heifers under the proper circumstances. Based on observations made in past research, he theorizes that heifers experiencing suboptimal nutrition during **mid-pregnancy** may undergo increased placental development in an attempt to maintain adequate nutrient provision to the developing fetus. If the heifer's plane of nutrition is then raised substantially upon entering the dry or pre-fresh period, increased nutrient intake may combine with the existing, increased capacity to deliver nutrients to the late-term fetus, resulting in substantially increased birth weights. Increased glucose production by the dam during late pregnancy holds perhaps the greatest potential to increase calf birth weight, as glucose delivery to fetus is believed to be a limiting factor with respect to fetal growth. However, numerous studies have indicated that increased glucose production by the dairy cow immediately before calving can improve fresh cow health and performance; thus it is a desirable goal. Cornell researchers have calculated that fetal growth would increase by a maximum of 1.5 ounces for each pound of "glucogenic supplement" (e.g. calcium propionate or propylene glycol) consumed by the dam during late pregnancy. Therefore, even if 2 pounds of such a supplement were consumed daily for a 3 week pre-fresh period, the resulting increase in calf birth weight would be a maximum of 4 pounds. If the average birth weight of calves did increase by 4 pounds, a significantly higher incidence of dystocia should not occur unless there are problems with excessive body condition during the dry period and/or insufficient frame size in first calf

heifers. Furthermore, any actual increase in birth weight would likely be lower, as feeding such a high level of "glucogenic supplement" is improbable given the cost of such a practice and possibility of appetite suppression.

Conclusion

Can feeding a pre-fresh ration increase calf birth weight? Perhaps, but an increase of more than 1 or 2 pounds is unlikely. Remember that proper preparation of the cow for the upcoming lactation is the primary goal of the dry period and pre-fresh ration. The likelihood of compromised fresh cow performance is much greater for those animals on an inadequate pre-fresh program, but the potential damage doesn't stop there. Colorado research with beef cattle has shown a reduced ability to generate body heat in calves born to dams consuming either protein or energy restricted rations during the last 90-95 days of pregnancy. This could reduce the thriftiness or survivability of newborn calves subjected to cold climates. Although not a consistent finding, a Kansas study found beef calves born to protein-restricted dams (during the last 100 days of pregnancy) had a reduced ability to absorb immunoglobulin G, the predominant component of a calf's passive immunity. Thus, the potential exists to compromise calf health as well as cow performance when inadequate rations are fed during the dry and pre-fresh periods. In closing, consider this final question: if pre-fresh rations significantly increase fetal growth during late pregnancy, why don't more of the millions of US dairy cattle that consume pre-fresh rations give birth to calves that are too big?

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Winter housing and calf care...

Winter will soon be here with challenges of weather and time. It's a critical time for calves. When considering calf housing you need to think about issues like temperature, moisture and wind. Extreme cold requires dry bedding with a lot of depth. Additionally, if hutches are used, it is beneficial to insulate two or three sides. This will help the calf to conserve body heat. Keep hutches out of direct wind. Calves tolerate cold if they do not have to battle wind and the elements, have deep, dry bedding, and are fed a quality milk replacer and starter/grower. Newly arrived calves may need special arrangements on cold nights, possibly a shed or under a roof with solid walls. You might even want to add heat. Be careful to observe safety measures when using supplemental heat. This can be a cause of many concerns! Calf comfort can make a big difference in the growth and development of your future herd.

Interested in discussing topics in this newsletter, or feel you need to do a better job feeding your cows? Call me! My goal is to help you. That's Renaissance's commitment to you!

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Consider this -

In cold weather it is necessary to feed more energy to calves, in order to meet their higher energy needs for maintenance. Once the environmental temperature drops below 59°F, the calf has to increase its metabolism in order to maintain its body temperature. A calf housed at an environmental temperature of 25°F requires roughly 30% more energy for maintenance than one housed at 50°F. In extremely cold weather (<0°F), sick calves are at great risk due to potentially reduced feed and energy intake, coupled with limited body reserves of energy.

To maximize the growth rate of young calves we need to supplement nutrient intake during cold weather, thereby increasing the animal's ability to generate and maintain its body heat. To ensure your calves are getting enough milk replacer on cold winter days, and to review your entire calf raising program, call me today! Together we can make a difference in your future herd.



WHAT ARE YOUR COWS TELLING YOU?

How important are milking procedures? This is a process that happens every day on every dairy. However, it often happens without much consideration to set procedures that can improve the productivity and profitability of a farm. It goes beyond merely ensuring that teat skin and ends are thoroughly cleaned. Recommended procedures include dipping, stripping and checking – but stripping each teat several times, making sure the milk looks normal. When good milking procedures are carried out consistently they can help to prevent the incidence and spread of mastitis. Carefully set procedures will result in more contented cows and easier work for milking personnel. Additionally, when a cow is properly prepped she should let down her milk sooner – reaching peak milk flow quicker and finishing milking ahead of poorly prepped cows. Poor preparation can stress a cow, and she will not let down her milk! This usually results in longer milking times and the potential of teat end damage. Review your milking procedures and make changes that can improve this experience for your herd. They'd thank you for it – if they could!

A POINT TO PONDER...

Thanksgiving is just a few short weeks away! At this time of year our thoughts turn to the accomplishments and changes that we and our family have endured during the past year, the challenges and opportunities that have made a difference in our lives. We've had good times and difficult times... times of joy, and times of pain and sorrow. However, as we prepare for this season ahead, take time to be thankful for the many blessings enjoyed. There is much to be thankful for in spite of the challenges, hardships and concerns. Then, let's share an attitude of thanksgiving with those around us. It can brighten everyone's day.



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