

OMAFRA *Virtual Beef*

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Calving Performance 07: Here it Comes - Ready or Not!

Nancy Noecker
Cow Calf Specialist OMAFRA

Some jobs you can put off a little if you aren't quite ready. Calving however is not one of those. It happens on schedule whether you are ready or not. It also shouldn't be catching you by surprise as you set the date back when you turned out the bull. So a quick review of what you might need to be ready is easier now than some morning at 2 a.m., and minus 20°C !

First, you need to remember that calving is the *Cow's Act* and you are supposed to be a bit player in the production. If, however, enough emergencies arise that move you into a major or *starring* role then you really need to do some re-evaluations before you turn the bull out next year.



Figure 1. Newly Born Calf

.....continued on next page

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Single paper copies may be obtained by calling 1-877-424-1300

Direct general questions and suggestions to

Tom Hamilton

tom.hamilton@ontario.ca

705 - 647 – 2087

OMAFRA

280 Armstrong St

Box 6008

Temiskaming Shores

P0J 1P0

For inquiries regarding content of a specific article contact the author.

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If you are calving now through to the end of “winter” then some form of calving pens or shelter are probably needed, as are more frequent checks in minus 20°C weather. Pens need to be as clean and dry as is feasible. Lots of straw or bedding material and lime won't be a waste.

Remembering your role as a bit player (or more active role in an emergency), is your Kit ready? Hopefully you won't need them, but do you know where the calving chains and the calf-puller are? Are they clean, disinfected and ready to go? Are your ear tags made up, recorded in your calving book and ready to be applied? If you are using the Market Access Program (MAP) are your tags ordered? Record the date calved in your calving book so age verifying is easy later.

Then there is the processing gear. If you give Vitamin E/Selenium injections or Vit.A,D,&E do you have the correct, clean needles/syringes? Can you do some of the other processing at the same time, like de-horning and castrating? Do you have a package of plastic sleeves to protect both you and the cow, if you need to check progress on a calving? Lubricant? See your Vet. Most of all, know when to say when and call for help. For those, *not so nice emergencies*, is the Vet's phone number handy? It needs to be where anyone in the family can find it when you send them to call the Vet. Do you know where in the freezer the colostrum is - probably at the bottom. Have you noted which early calving older cows you are going to try and save some fresh colostrum from?

Make some notes on your cows' calving and mothering skills. Note their udder structure at calving as well. These may help jog your memory when looking at a culling list next fall. A cow that is a little on

the *prima donna* side is not a real bad thing, just a real good mother. However, if she wants to kill anything –including you- that gets near her calf, then as a safety precaution she should be on the cull list.

The degree to which any of these precautions are necessary may ease a little if you are calving in a warmer and dryer part of the year. However, getting ready for the *Calving Performance*, no matter when it is, will make the whole show a little more livable and perhaps even enjoyable!



Figure 2: cow mothering newborn calf

----- VB -----

Nancy Noecker
Cow Calf Specialist - OMAFRA
613-258-8476
E-mail: nancy.noecker@ontario.ca

----- VB -----

Colostrum – Early Health Protection With Lasting Benefits

Brian Lang
Veal Specialist, OMAFRA

Calf Immunity

At birth, a calf has a poorly developed immune system which not ready to actively produce protective antibodies in response to disease challenge or vaccination. In addition, no

maternal antibodies are present in the new born's blood stream since they cannot cross the placenta during pregnancy¹. For the several months before the calf has developed its own active immunity, it must rely on the passive transfer of immunity through the dam's colostrum (first milk) for disease resistance.

Colostrum is rich in the antibodies that provide the calf with protection against infectious diseases. Antibodies, or immunoglobulins (Ig), are proteins that identify pathogens in the calf and promote their destruction. There are three types of Ig in the colostrum of cattle. Cow colostrum contains about 70-80% IgG, 10-15% IgM, and 10-15% IgA.

IgG and IgM identify and inactivate the microorganisms that have entered the blood. IgA attaches to the membranes that line many organs, such as the intestine, and prevents pathogens from attaching and causing disease.

The ability of a calf to absorb antibodies from colostrum drops rapidly over the first few hours of life (Table 1). By 24 hours of age, the ability to absorb immunoglobulins is nearly non-existent. Calves that have not received any colostrum within 12 hours of birth are unlikely to be able to obtain enough antibodies to provide adequate health protection. A study of 45 beef herds in Quebec reported in 2003 found that 19% of the newborn calves had not received adequate passive transfer of immunity from their dams².

Table 1. The effect of time on colostrum feeding on total immunoglobulin absorption in calves

Time of feeding after birth (hours)	Plasma concentration 24 hours after feeding (mg/ml)	Absorption %
6	53	66
12	37	47
24	9	12
36	5	7

Source: Selk³

Colostrum is also important as the first source of nutrients after birth. "First milk" colostrum is the highest in both antibodies and nutrients. Colostrum that is taken later from the cow

decreases in both antibodies and nutrients (Table 2).

Table 2. Typical analysis of colostrum, transitional milk and whole milk

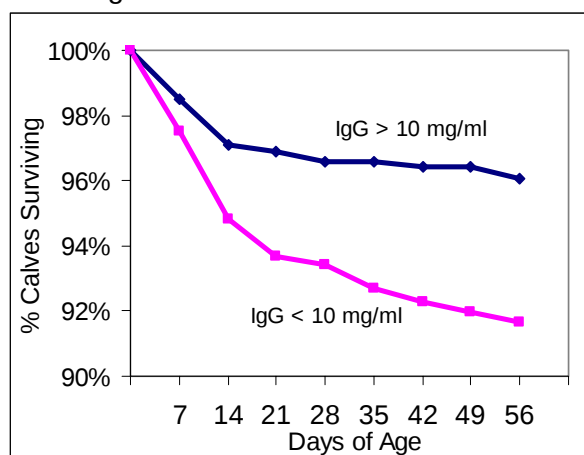
Component	Milking number			
	1	2	3	11
	Colostrum	Transitional Milk		Whole milk
Total solids, %	23.9	17.9	14.1	12.5
Fat, %	6.7	5.4	3.9	3.6
Protein*, %	14.0	8.4	5.1	3.2
Antibodies, %	6.0	4.2	2.4	0.09
Lactose, %	2.7	3.9	4.4	4.9
Minerals, %	1.11	0.95	0.87	0.74
Vitamin A, ug/dl	295	190	113	34

Source: Davis and Drackley⁴

Reduced Health Problems and Death Losses

For years, studies have typically suggested that the goal is to provide enough colostrum to result in minimum serum blood IgG levels greater than 10 mg/ml. Failure of passive transfer (FPT) in calves is often defined as a blood IgG level of less than 10 mg/ml at 24 to 48 hours after birth. In support of this recommendation, the results of a 1992 US national survey showed that the mortality rates for calves with low antibody levels (less than 10 grams per liter) were more than twice that of calves with higher levels (Figure 1).

Figure 1. Survival of Calves with Adequate and Inadequate Immunoglobulin Concentrations in Blood Serum



Source: USDA National Animal Health Monitoring System, 1992

Recently reported research looked the health response of calves with much higher levels of IgG⁵. The 3 year study, published in 2006, of 1,568 crossbred beef calves in a Nebraska herd found that calves with serum IgG1 concentrations less than 24 mg/ml were 1.6 times more likely to become ill before weaning and 2.7 times as likely to die before weaning as calves with higher serum IgG1 concentrations.

Increased Weaning Weights

A study of 244 Herford and Angus calves at the University of Georgia in 2001 found that calves with higher serum IgG levels at 1 day of age had significantly higher weaning weights than calves with lower IgG levels⁶. Calves were classified based on their level serum IgG concentrations.

Calves in the group with higher serum IgG (over 16 mg/ml) had a 205 day weaning weight that was 64 pounds heavier than the calves in the group of calves with low IgG levels (below 4mg/ml serum IgG). The calves identified as the middle group with serum IgG levels of 4-16 g/l. had a weaning weight 31 pounds greater than the calves with low IgG levels.

Table 3. Antibody concentrations affects on weaning performance

	Low	Medium	High
Blood Serum IgG (mg/ml)	< 4	4-16	> 16
Weaning weight increase at 205 days		+ 31 lb	+ 64 lb

Source: Vann and Baker⁶

Storing Colostrum

Colostrum can be refrigerated at 2°C (36°F) for up to a week or frozen for up to year at -20°C. Avoid frost free freezers.

Warm the colostrum slowly in water or with care in microwave. Avoid hot spots Recent research at the University of Minnesota found that colostrum can be heated to 60°C (140°F) without damaging the antibodies in colostrum.⁷ However, when the colostrum was heated to 63°C (145°F), the antibodies were reduced by 34%.

Save colostrum for calves only if the cow or heifer meets these criteria:

- Healthy
- No mastitis
- Has not leaked milk
- No bloody milk
- Cow has been in the herd for at least 45 days

While high quality colostrum is always the preferred option, colostrum supplements can be valuable tools to increase calf immunity when colostrum supplies are limited. Six colostrum supplements are currently registered for use in Canada. Colostrum supplements can be used to increase the amount of IgG fed to calves when no source of quality colostrum is available, but supplements cannot replace high quality colostrum.

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----- VB -----
Brian Lang
Veal Specialist - OMAFRA
519-537-8786
E-mail: brian.lang@ontario.ca
----- VB -----

Re-establishing Forages in Winter Feeding and Yard Areas

Jack Kyle
Provincial Grazier Specialist, OMAFRA

This fall and winter has been one of the wettest in recent years. The mud created by the excess rain has made finding the driest location available to feed and yard the cows a

challenge. The best scenario for wet weather and muddy conditions is to minimize the area that cattle have access to and then deal with a small problem area. If livestock have access to a large area they will do a moderate amount of damage to the whole area, and any damaged areas will be slow to recover in the spring. One small severely damaged area can be renovated in the spring while the undamaged pastures will have normal growth in the spring.



Figure 1: damaged pasture

The challenge of the mud leads to the challenge of what to do with these areas this coming spring. Each situation will be unique, due to the soil type, drainage, species of pasture forages, depth of the mud and size of area. While the extent of damage will vary with each situation, the first level of damage will be to the pasture plants and the second to soil structure. Some of these areas will recover with a little assistance while others will take major renovation.

These areas will have a high level of fertility from the manure, any bedding used and feed wastage. Assess each situation carefully and if the damage is light to moderate then seeding, by either frost seeding or drilling should make the area productive for the coming grazing season.

Those areas that are not too severely damaged may respond to broadcast seeding clovers and grasses in the early spring. Approximately 4-5 pounds of red clover or 2-3 pounds of white clover per acre should supply sufficient seed to

give a good stand. Keep livestock off the area until there is a good ground cover re-established.

In some cases broadcasting spring cereals with the forage seed may be beneficial, as the cereals will grow faster than the forages and give some ground cover and pasture by early summer.

Any frost action after the pugging (hooves punching into the soil) and before spring will help to restore some of the soil structure, similar to fall plowing. Soil damage in the spring can have more lasting effect on the soil and make seed bed preparation and seedling establishment difficult.

In most pasture areas there will be a considerable seed supply in the soil and these seeds will have an opportunity to grow under these conditions. In many areas with moderate damage there will still be viable roots that will be able to produce some new growth.

If the damage is severe then it may be necessary to do some tillage to level the area and prepare a suitable seed bed for re-seeding. Any tillage should be done after the ground has dried. Tillage of wet soils will do further damage to soil structure and impede seedling establishment. Be particularly cautious if you are considering the use of deep tillage equipment. Forage root systems will often do an effective job of penetrating compacted soils if they are given some time.

In a situation requiring tillage consider what your best option is for re-seeding. In some cases your best option may be to reseed with a perennial forage pasture mix. In other scenarios an annual crop (sorghum, cereals, turnips, or corn) for one year and then seeding back to perennial forage may be your best option. In making this decision consider whether or not you need to feed in this same area next fall or winter. If it is to be a feeding or yard site again next season then consider a cropping plan that allows you to have grass or cereal well established in the fall.

----- VB -----
Jack Kyle
Provincial Grazier Specialist - OMAFRA
705-324-5855
E-mail: jack.kyle@ontario.ca
----- VB -----

Beef Industry Issues Update

Joanne Handley
Livestock Issues Coordinator, OMAFRA

Two issues that are likely to have an impact on Ontario Beef Producers this coming year can be traced back to May 20, 2003. Since its now 2007, you would think that fateful day when an Alberta cow was diagnosed with BSE would be fading from our memory. However, the impact that one cow had on the industry was swift and will be long lasting. Believe it or not, in terms of recovery from the BSE bomb, Canadian beef producers can be considered relatively fortunate. Canada regained access to export markets within 4 months of the initial closures. Historically, countries have not regained any exports for several years following the discovery of BSE. However, there is still more work to do.

Beef and Cattle Trade with the United States

The USDA recently posted "Rule 2" to their Federal register for a public comment period that begins January 9 and ends March 12, 2007. The proposed rule will allow for export of any live animals – breeding or for slaughter – born on or after March 1, 1999, from Canada to the United States, as well as beef products of any age. The non-pregnant requirement will be eliminated along with the movement restrictions on feeder cattle, so it will be considerably easier and less costly to export feeder and slaughter cattle to the US.

Following the 60 day comment period, the USDA will review the comments, write responses to them and potentially amend the rule. The rule must then be returned to the Office of Management and Budget for review. Once they release the rule the USDA will post it and set a date for it to come into effect. The

earliest expected time the rule will come into effect if all goes well is sometime this summer. However, RCALF is not likely to let this change pass without a fight and the actual implementation date of the rule is anybody's guess.

RCALF has recently launched another legal battle against the first rule, asking the District Court to re-examine the evidence presented, arguing that the Ninth Circuit Court did not review all evidence when they overturned the injunction back in 2005. The battle to fully normalize trade between Canada and the U.S. is far from over.

Enhanced Feed Ban

The second issue has to deal with the feed ban in place to prevent the transmission of BSE within the cow herd. Ruminant meat and bone meal (MBM) has been banned from ruminant feed since 1997, however the potential exists for ruminants to receive feed with ruminant MBM due to feed being mixed for ruminants and non-ruminants in the same feed plant and in some cases being fed on the same farm.

The Federal government is implementing an enhanced feed ban that prohibits specified risk material (SRM) from use in feed, fertilizer and pet food by July 12, 2007. If an infected animal, the SRM harbors the BSE prions (causative agents), so removal of SRM eliminates the potential threat of infectivity. SRM include: from cattle of all ages the distal ileum (portion of small intestine), from cattle 30 months of age and older, the skull, brain, eyes, tonsils, spinal cord, trigeminal and dorsal root ganglia. Removal of SRM will strengthen the feed ban by removing the chance of cross contamination and also speed up the process of eliminating BSE from our cow herd.

Feed manufacturers are indicating that to adhere to the enhanced feed ban they will no longer accept MBM with SRM after May 1, 2007. Under the new regulations a permit will be required to allow SRM to be collected, transported, received, contained, processed or used (i.e. renderers, dead stock collectors, incinerators). SRM must be controlled by permanent containment (i.e. landfill), rendered or

composted with controlled end use or destroyed. Currently accepted methods for destruction include incineration, gasification followed by incineration, cement kiln, alkaline or thermal hydrolysis. In an effort to deal with the regulations by the implementation date the industry is currently looking at short term solutions to deal with SRM until more sustainable long term solutions are brought into line.

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Joanne Handley
Livestock Issues Coordinator - OMAFRA
519-826-3323
E-mail: joanne.handley@ontario.ca

----- VB -----