

Veterinary Medicine

Animal Health



Feeding Colostrum to Beef Calves

W. Mark Hilton, DVM

School of Veterinary Medicine, Purdue University



Ensuring adequate colostrum intake is one of the most important factors in getting a calf off to a good start. Since a calf is born essentially without any antibodies to disease causing organisms, it must rely totally on his dam for this immunoglobulin rich nourishment. Colostrum is sometimes referred to as “first milk”, but this is actually a misnomer as colostrum is physiologically much more similar to blood than milk. Besides being very high in immunoglobulins that help prevent infection, colostrum is high in fat, energy, vitamins A & D, white blood cells and growth factors. It is easy to see why some veterinarians have referred to colostrum as the sustenance of life, or the most important meal the calf will ever have.

Quality and Quantity and Timing

If beef cows are in adequate body condition score (BCS) precalving, quality of colostrum is generally not a problem. Heifers should be in BCS 6.5 – 7.0 and cows in BCS 5.5 – 6.0 precalving. Colostrum quality can be assessed with commercial test kits available through your veterinarian or with use of a colostrometer.

Since a beef calf is left to nurse the dam, assessing quantity ingested can be challenging. Calves should be seen to be up and nursing within two hours of birth. If there is any concern that a calf has not ingested adequate colostrum, watch the pair to be sure the calf knows how to nurse or simply tube feed the calf. If the calf needs to be fed, it needs to have 2 quarts of colostrum by six hours of age and an additional 2 quarts by twelve hours of age. An easy way to remember the volume/time equation is 2 x 6 and 4 x 12. Observing a newborn calf and hoping that he has nursed is no way to treat a baby. If in doubt, milk the cow and feed the calf.



Factors that decrease the chance of adequate colostrum intake include: cold and or wet calves, dystocia, unusually large calves and prolonged calving times.

In any of these cases, it is best to simply tube feed the calf with colostrum so that the calf has the best chance of getting off to a good start. In a calf under 75#, give 2 – 3 quarts and for calves over 75#, give 3 – 4 quarts soon after birth.

What if quantity or quality is inadequate? If the dam has inadequate quantity or quality of colostrum, the first thing to do is to give the cow 1 ml of oxytocin to enhance “letdown” of

additional colostrum. Massage the cow's udder and see how much more colostrum you can obtain. If you still have inadequate volume, there are two options. The best option is using frozen colostrum (see section on freezing colostrum) that you have stored previously and thaw it for this calf. The second option is to use a commercial colostrum supplement or replacement product. The high quality products on the market have a minimum of 60 grams of IgG per liter. There are many products on the market that do not have this level of IgG and they have not performed well in research trials. You can use the high quality products to supplement the colostrum already ingested from the dam or they can be used as a replacement if the calf is unable to ingest any colostrum from the dam.

Freezing Colostrum

It is always a good idea to have a quantity of frozen colostrum on hand for emergency situations. The problem is: how do you obtain this colostrum? The best ways are to: (1) milk out any cow or heifer that loses her calf for non-disease reasons in your herd or (2) take a small amount of colostrum (less than 500 ml) from numerous cows that have a more than adequate supply of colostrum for their calves. Freeze this colostrum in ice cube trays or small plastic bags so that thawing the product is fast and easy.

If you obtain colostrum from another farm, you could be at a risk of obtaining a new disease for your farm. Diseases like *Mycobacterium avium* subspecies *paratuberculosis* (Johne's disease) and salmonella can be transmitted via colostrum and can be a disaster for your herd. Most veterinarians recommend you never use colostrum from another farm.

Thawing Frozen Colostrum

The best way to thaw frozen colostrum is to use a warm water bath of 102° F. Add more hot water to the bath as the frozen colostrum cools the water. You can also use the microwave, but it needs to be set on one of the lowest settings and stirred frequently to prevent over heating. Overheating destroys the antibodies in colostrum that are the main benefit to the calf.

Testing Calves for Passive Transfer

If you have significant calf sickness, testing a number of calves to assess their immunoglobulin level is a wise idea. Your veterinarian can take blood from calves 2 – 10 days of age and test for total protein or Immunoglobulin G.

We have known for years that calves that do not receive adequate colostrum have a much higher mortality rate in the neonatal period. Newer studies show that calves that do not ingest enough high quality colostrum soon after birth are three times more likely to get sick and five times more likely to die later in life as compared to calves that receive adequate colostrum.

Colostrum is truly a "magic" product with regard to calf health. Without question, it is one of the keys to the long term health of beef calves.

Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may be similar. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

Rev. 3/05