

# CALVING EASE

April 2000

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## Heifer Colostrum An Overlooked Resource

What happens to heifer colostrum on your dairy farm? Is it discarded or fed to a pig? Is it kept separate from mature cow colostrum and used for bull calves? Many farms do not use heifer colostrum for the first feeding for heifer calves.

### General Rules vs. Specific Heifers

In research work recently reported by Tyler and Others, the colostrum quality was measured for Holstein heifers and cows. Quality was defined as the level of antibody content. Specific antibodies were not identified. Some animals had either very poor quality colostrum. Others had super excellent quality. The range in values was from 1 to 155 grams of antibodies per liter (gm/L). Farms using a colostrometer to estimate antibody content of colostrum will see that values 60 and over are defined as "Good," values between 30 and 50 as "Fair," and values 30 gm/L and below as "Poor."

As a general rule, individual heifers are more likely than mature cows to have low-antibody content colostrum. In this study first lactation animals had an average of 66 grams of antibodies per liter. The same value for second lactation cows was 75 and for third lactation and higher cows the average was 87. However, specific heifers may have high-antibody content colostrum. One-third of the study heifers had good antibody concentrations between 66 and 103 gm/L. Seventeen percent of the heifers had high antibody concentrations over 103 gm/L.

How can a calf raiser tell the "good" from the "bad?" Quantity is only an extremely rough guide to quality. The general rule is "less is better." The rule is feed the colostrum if the first milking yield is under three gallons. If the yield is over three gallons, use the colostrum for second or later feedings.

The quantity rule is probably not as good a guide for heifers as for cows since heifers tend to average lower antibody content than cows. Physical appearance is also a poor indicator of antibody concentration. Also, colostrum contaminated with mastitis or excessive amounts of blood should not be fed. If colostrum appears thick and yellow it means that it has a high percentage of fat and that the dam had an adequate supply of vitamin A in her ration prior to calving. But, antibody concentration cannot be reliably estimated by looking at the physical appearance of colostrum in a pail.

Much more reliable antibody concentration estimation is done with a special hygrometer

called a colostrometer. It uses the specific gravity of the colostrum as an indicator of antibody concentration. The instrument is floated in a colostrum sample. By reading the upper stem that sticks up above the colostrum we make a direct estimate of antibody concentration.

Because the colostrometer works on the principle of specific gravity, estimates have to be made taking into account the temperature of the liquid. Ideally, measurements are always made at a standard 72 F. temperature. In reality, cooler or warmer colostrum is measured. Quality estimates in these cases have to be adjusted either down (below 72 F) or up (above 72 F) respectively to accommodate differences in specific gravity caused by differences in temperature.

### **Quality of Antibodies will Vary**

What about the issue of quality rather than quantity? To our knowledge the research data on this specific question is lacking. For the major pathogens to which newborn calves are exposed, heifers raised on the home farm are very likely to have had extensive exposure. The heifers' exposure will not have been for as long a time as the more mature animals but the breadth of exposure should not be very different given the kinds of bio-security on most dairy farms.

Heifers that are raised off the farm may be present a completely different pathogen picture. This group includes both purchased heifers and those sent off-farm for rearing. Their environmental pathogen exposure is very unlikely to be as good a match as the pathogen profile of the producer's farm as on-farm reared heifers. The colostrum from heifers raised elsewhere may be a good source of nutrition. But, this colostrum is less likely to produce the farm-specific passive immunity that is most desirable for calf survival and health than colostrum from farm-raised heifers.

### **Bottom Line on Heifer Colostrum**

From heifers raised off-farm, give this colostrum lowest priority for first feeding for heifer calves. From heifers raised on-farm, if you can't test it for antibody concentration with a colostrometer, feed it for first feeding only if mature cow colostrum is unavailable. If on-farm raised heifer colostrum tests high with a colostrometer (100 gm/L or way down in the green part of the stem), consider feeding this rather than mature cow colostrum that tests lower in antibody concentration. For the newborn calf what really counts is feeding enough good quality colostrum as soon after birth as possible to (1) load her blood up with protective antibodies and, (2) coat her intestines with antibodies to prevent bacteria from sticking to its inner lining.

Reference: J.W. Tyler, B.J. Stevens, D.E. Hostetler, J.M. Holle and J.L. Denbigh, "Colostrum Immunoglobulin Concentrations in Holstein and Guernsey Cows." Am. Journal Vet. Res., Vol.60, No.9, September, 1999, pp.1136-1139.

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