Making Colostrum Count

We all know that colostrum is nature’s way of protecting and nourishing calves during their first hours and days. A management plan will ensure that the calf, and you, get the maximum benefit.

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Colostrum (biestings) is the milk produced at the first milking post-calving (second milking onwards is transition milk) and contains a host of vital immunological and nutritional substances that protect the health of the newborn calf. The most important of these are the immunoglobulins (antibodies), which help defend the newborn calf against bacteria and viruses it will almost certainly encounter as soon as it is born.

Immunoglobulins can be transferred from the human mother to her child while in the womb. Unfortunately, this is not the case for calves. The structure of the bovine placenta does not allow the transfer of immunoglobulins from the mother to the calf through the placenta while the calf is in the womb.

So, unlike a human baby, a calf is born with no circulating immunoglobulins, and depends almost entirely on colostrum to provide it with immunological protection. Getting enough immunoglobulins from colostrum immediately after birth is the single most important factor in ensuring the health and productivity of the calf.

Of course, high standards of hygiene are necessary when collecting, feeding and storing colostrum. Recent results from a Teagasc Moorepark survey of 48 commercial farms showed that the implements with the greatest quantity of bacteria present were stomach tubes and bottles with teats.

If equipment used to feed calves their colostrum feed is contaminated with bacteria, the calf is automatically put at an immediate disadvantage.

As colostrum management is so critical to ensuring the health and wellbeing of a calf, it is a good idea to develop a Standard Operating Procedure (SOP) or a work plan for colostrum management. This can then be printed and placed on a notice board in the calf shed, so everyone knows exactly what to do when a calf is born.

The following are examples of what might be included and the reasons why these practices are mandatory.

1. Ensure colostrum is only collected

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from healthy cows i.e. Johnes-free animals. Identify all high-risk cows by using leg bands, or an alternative, to ensure their colostrum is not collected.

• Thoroughly clean all containers being used for colostrum collection and storage – this includes collection buckets and storage cartons.

• The best practice is to milk the cow immediately after calving and feed her calf 3l of colostrum straight away. This is not practical on all farms, so there follows an alternative solution, of which all points must be followed to minimise the risk of failure of passive transfer:

  • Milk freshly-calved cows at next milking. Be aware that colostrum quality can be reduced if cows have been sucked and if time from calving to milking is greater than nine hours.

  • Test colostrum quality with a Brix refractometer (see Figure 1).

  • Typically, there is large variation in colostrum quality within a herd. Previous research completed at Moorepark showed that approximately 20% of a herd may have colostrum of poor quality i.e. insufficient antibodies for the calf. Some of the factors that can influence colostrum quality are as follows:

  • Lactation number – Older cows tend to have higher quality colostrum, although the majority of heifers tested in experiments were above the cut-off. Testing colostrum with a Brix refractometer is the only way to identify quality.

  • Time from calving – Colostrum quality decreases as the interval between calving and the collection of colostrum increases. Milk cows as soon as possible after calving.

  • Month of calving – Later calving cows tend to have lower quality colostrum. Freeze a supply of colostrum (it will last for a year in the freezer) to overcome such issues. It’s useful to have some available for the start of the following calving season. Do not import colostrum from neighbouring farms.

  • Only colostrum with a Brix value greater than 22% should be used to feed the calf their first feed, as 22% is equivalent to 50 mg/ml, which is the threshold that determines if there is sufficient antibodies to ensure calves acquire immunity passively.

  • If it is below 22%, use an alternative source e.g. another freshly calved cow. The poor quality colostrum can be used as a second feed for the calf.

  • Once its quality has been determined, colostrum above 22% should be stored in a fridge immediately to prevent bacterial growth. It is then readily available when cows calve. All cartons should be labelled with cow number and time and date of collection. Alternatively colostrum can be stored in a freezer where, as said, it will last for up to a year. Take great care when defrosting frozen colostrum; thaw it in water at 38°C.

  • Feed all calves within two hours of birth. Absorption of antibodies from colostrum is maximised when fed within two hours of birth.

  • After two hours, the calves ability to absorb antibodies rapidly decreases and after 24 hours the calf can no longer absorb antibodies.

  • Feed all calves 3l of colostrum. This is for a standard calf weighing approx. 35kg at birth (8.5% of birth bodyweight). Volume can be adjusted by feeding 8.5% of calf birth bodyweight (if birth weight is known).

  • Feed using a bottle and teat. If the calf does not drink or will not drink all of the colostrum, use a stomach tube.

  • You can’t assume a calf will receive enough colostrum, even if it’s if sucking the cow. Artificial feeding will help promote better health in the calves.

  • Hygiene, hygiene, hygiene! Clean all feeding equipment and collection containers thoroughly after use.

New results from Teagasc Moorepark shows that antibody absorption is reduced when colostrum is pooled, compared to feeding colostrum from one single cow - even though the quality of colostrum offered to both groups of calves was similar.

• All colostrum should be fed warm, as this increases the absorption of antibodies.

• Heat colostrum by placing it in a bucket of body temperature water. Do not use boiling water, microwaves etc., as high temperatures denature the antibodies.

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