

Section 7

Managing Colostrum

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Introduction

The health of suckler calves depends on minimising their exposure to, and maximising their defence against, disease. Colostrum (beestings) is the first and most important line of defence for the calf and, a timely, adequate intake of quality colostrum is essential. Colostrum provides food but also maternal antibodies to protect the young calf against the infections that it is likely to encounter in early life.

- ① What is colostrum?
- ② Why is consuming colostrum critical for calf health and survival?
- ③ What are the main factors affecting colostrum yield & quality?
- ④ What are the main factors affecting calf immune status?
- ⑤ When should you decide whether or not to hand-feed colostrum to a newborn beef calf?
- ⑥ What volume of colostrum should be fed to a newborn beef calf?

Managing Colostrum

① What is colostrum?

- Colostrum (or “beestings”) is the first milk that the cow produces after calving.
- Colostrum contains antibodies from the mother necessary to protect the calf from disease. Antibodies and other protective mechanisms in colostrum help to maintain the calf’s health and reduce mortality rates by helping to eliminate bacteria and viruses.
- Colostrum is also a concentrated source of energy and nutrients, with levels of protein, lactose, fat, and vitamins A and E, much higher than found in milk.

② Why is consuming colostrum critical for calf health and survival?

- Calves are born with a very poorly developed immune system. Until their own immune system is fully functional, at about 1 to 2 months of age, calves are dependant on the passive immunity provided through absorption of antibodies in colostrum from the cow.
- Calves that don’t receive enough colostrum are more susceptible to neonatal infections and disease and, in extreme cases, death.
- The antibodies present in the cow’s colostrum relate to disease organisms in the local environment and also to specific vaccines the cow received for control of organism(s) known to be responsible for calf infection on the farm e.g. *E. coli*, rotavirus and coronavirus.

③ What are the main factors affecting yield and quality of colostrum?

Colostrum yield

Yield of colostrum is very variable between beef suckler cows but is generally **higher** in:

- Beef × dairy cows than beef × beef or purebred beef breed cows.
- Beef breeds with greater milk yield potential.
- Older cows compared to heifers (first-calvers).
- Cows that are adequately fed during late pregnancy compared to those that are severely feed restricted during this time – this especially applies to first-calvers and very thin cows.

Colostrum quality (antibody concentration)

- Within most suckler beef cow breed types, colostrum yield rather than colostrum antibody concentration is the primary limiting factor.
- Antibody concentration (quality) in colostrum from suckler beef cows is generally much higher (up to double) than in dairy cows, but relatively similar for beef and beef crossbred cows.
- Unlike dairy breeds, where colostrum antibody concentration is usually much lower for first-calvers compared to older cows, this doesn’t occur to the same degree with beef suckler cow breed types.
- Antibody concentration (quality) is similar between quarters (teats) of the udder and is also similar within a quarter, that is, as the quarter is milked / suckled out for the first time.
- The antibody concentration of second milking colostrum is only half that of first milking colostrum. This highlights the importance of first-milking colostrum.
- Pre-partum leakage of colostrum from the udder results in low antibody concentrations.

Colostrum antibody mass (i.e. colostrum volume x antibody concentration) is more important than either colostrum yield or antibody concentration alone.

4 What are the main factors affecting calf immune status?

Passive immunity in suckler calves depends primarily on the colostrum antibody mass consumed, coupled with the absorption capacity of the calf. Factors affecting these parameters impacts on the immune status of beef calves.

- The antibodies in colostrum must get into the calf's blood via absorption from the small intestine.
- It is vital that sufficient colostrum is consumed as soon as possible after birth because the **ability of the calf to absorb antibodies starts to decline after birth**. This happens progressively after 4 to 6 hours, and ceases around 24 hours after birth.

Key Point

The earlier a calf suckles (or is fed), the greater the level of immunoglobulin absorption.

Key Facts

Immune status is generally higher in calves from:

- The suckler herd than the dairy herd.
- Beef x dairy cows than from beef crossbred cows.
- Cow beef breed types with higher milk production potential than from cows with lower milk production potential.
- Older cows than heifers (first-calvers).
- Cows adequately fed before calving compared to those severely feed restricted (e.g. straw-only diet) before calving.

5 When should you decide whether or not to artificially feed colostrum to a newborn beef calf?

Checklist

Factors to consider before making a decision:

- Is the calf too weak to suckle soon after birth?
- Has the cow abandoned the calf or refused the calf access to suckle soon after birth?
- Has the calf experienced a difficult birth or was it exposed to environmental conditions that might interfere with its ability to suckle?
- Has the cow sufficient colostrum for the calf?

If you answered yes to any of these questions, you may need to hand-feed colostrum to the calf. Colostrum may be fed to calves using a nipple bottle or a stomach tube (oesophageal feeder). A stomach tube is particularly useful where the calf is unable or unwilling to suckle. However, training/experience is required in using this device.

6 What volume of colostrum should be fed to a newborn beef calf?

- Calves should suckle the cow until they are full as soon as possible after birth.

In situations where this is not feasible, research at Teagasc, Grange has shown that feeding the calf 5% of its birth weight (e.g. ~2 litres of colostrum for a 40 kg calf), within one hour or so of birth, with subsequent suckling of the dam (or a second feed) 6 to 8 hours later, ensures adequate passive immunity.



