Calf rearing notebook

Why collect data?

Do you know how well your calves are performing and your costs of production? Collecting records and then analysing them is the best way to understand how your livestock and therefore your business is performing.

In calf rearing, daily liveweight gain is one of the most important indicators of efficiency and getting it right is essential for the long-term performance and profitability of any enterprise.

More and more units are regularly monitoring body weights, and this is an extremely useful way of ensuring animals are performing appropriately and can be a useful pointer to potential issues in the system.

Monitoring growth can be achieved in a number of ways. The gold standard would be to weigh the animals, but using weigh bands or measuring an animal's height can be used as a quick guide.

As well as monitoring growth, it is important to be aware of any disease problems on the farm. This notebook will help you keep a record of calves showing signs of ill health, cases of disease and losses.

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Key performance indicators

A key performance indicator, or KPI, is a performance measurement calculated from farm data to identify the unit's strengths and weaknesses. The following seven KPIs have been identified for assessing calf-rearing units.

KPI	Definition	Example	Target
Calf liveweight at weaning (kg)	Average calf weight at weaning (kg)	85 kg	>Double birthweight
Daily liveweight gain to weaning (kg/day)* *KPI specific for dairy herds*	(Average calf weight at weaning (kg) – birth weight (kg)) / Average calf age at weaning (days)	(85-40) / 56 = 0.8 kg/day	>0.7 kg/day
Daily liveweight gain to weaning (kg/day)* *KPI specific for specialist calf rearers*	(Average calf weight at weaning (kg) – purchase weight (kg)) / Average days on unit prior to weaning	(85-55) / 40 = 0.75 kg/day	>0.7 kg/day
Daily liveweight gain post weaning (kg/day)*	(Average calf weight (kg) – weaning weight (kg)) / (Average calf age – Average weaning age (days))	(137-85) / (98-56) = 1.2 kg/day	>1 kg/day
Calf mortality (%) *For dairy producers it is useful to split this KPI into deaths before 24 hours and those after*	(Number of calf deaths / Number of calves born or purchased) x 100	(1/60) x 100 = 1.6%	<2%
Incidence of pneumonia (%)	(Number of calves with pneumonia / Number of calves born and purchased) x 100	(5/40) x 100 = 12.5%	<15%
Incidence of scours (%)	(Number of calves with pneumonia / Number of calves born and purchased) x 100	(4/40) x 100 = 10%	<10%

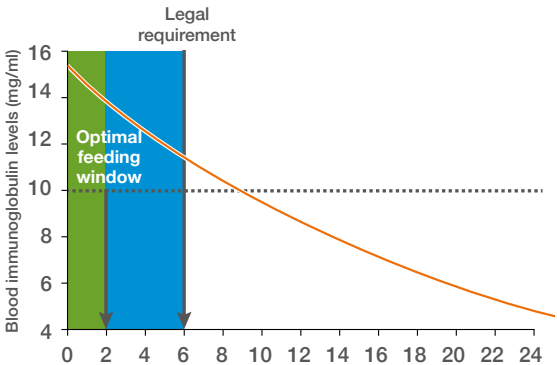
*Daily liveweight gain is also known as average daily gain

Depending on your system, these KPIs can be calculated for each batch of calves or for the total number of calves reared throughout the year.

Colostrum intake

Calves are born without antibodies that are essential to prevent disease. Colostrum is the sole source of these antibodies, so it is important that all calves receive sufficient, good-quality colostrum as soon as possible after birth.

Calves need a first feed of 3 L within two hours of birth, followed by another similar-sized feed within 6–12 hours of birth. High-quality colostrum contains at least 50 g/L of the antibody Immunoglobulin G (IgG). Colostrum quality can be tested using a refractometer. It is impossible to tell by eye.



Top tip:

Blood testing calves can indicate whether they have received adequate colostrum. Ask the vet to take blood samples within one week of birth. Samples can be tested for either the actual antibody level (IgG) or the total protein (TP) in the blood.

Quality of colostrum	Blood IgG (g/L)	Blood TP (g/L)
Good	>12	>55
Marginal	10–12	50–55
Poor	<10	<50

At least 80% should be in the 'Good' category.
If less, revise colostrum management.

Calf and colostrum intake record

Calf ear tag	Date of birth	Calf sex	Calf weight (kg)	Dam ear tag or brand number	Sire ID & breed	Colostrum Volume? Time after birth?		Colostrum testing results
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Sourcing calves for beef rearing systems

Successful calf rearing begins with sourcing the correct calves for the system. It is important calves have the best start in life as disease in the early stages can have long-term impacts on performance.

Buy calves that are:

- Known to have received adequate colostrum at birth
- Well grown for their age (at least 50 kg at two weeks old)
- Of known disease status
- Seven days old or more
- Healthy with a dry navel
- Alert and bright-eyed
- Showing reasonable conformation

Calves frequently become dehydrated during transport and will benefit from being offered two litres of warm electrolytes on arrival.

If their Bovine Viral Diarrhoea (BVD) status is unknown, calves should be tested for BVD antigen to identify any persistently infected (PI) calves. PI cattle have a high likelihood of dying in their first year.

BVDFree England is an industry-led scheme aiming to eliminate BVD virus from all cattle herds in the country by 2031. More information can be found at **bvdfree.org.uk**

Milk replacer

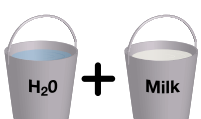
Traditionally, the recommendation to feed calves 10% of body weight was translated into feeding 2 L of milk twice daily. This does not provide sufficient energy to growing calves.

The exact amount of feed depends on calf liveweight, target growth rate, environmental conditions and the nutritional composition of the product being fed. Current advice for most beef situations is to feed a minimum of 750 g/day of calf milk replacer, which can be achieved by feeding different concentrations, as shown in Table 1.

Table 1. Daily quantity of milk replacer supplied per calf (g)

Mixing rate (g/L)	ml fed/day			
	5	6	7	8
150	750	900	1,050	1,200
140	-	840	980	1,120
130	-	780	910	1,040
125	-	750	875	1,000

Note: Always follow the instructions provided with the calf milk replacer



It is a legal requirement to feed calves under 28 days old at least two liquid feeds per day.

All calves must be provided with fresh, clean water from birth. Water is fundamentally important to rumen development and optimal growth. Calves will drink 1 L of water per day during the first week of life, increasing to nearly 3 L by 3–4 weeks of age.

Vaccines

Vaccinations are a wise investment, as outbreaks of disease are often unpredictable and can have major financial implications for a farm business.

Vaccinations have very specific storage requirements. All vaccines must be kept refrigerated at all times until they are used. The fridge temperature should be between 2°C and 8°C. This should be checked regularly using a thermometer, as a recent survey found that many farm fridges were either too warm or too cold.

The middle of the fridge generally has the most constant temperature, so this is the best place to store medicines. Keep bottles in their boxes as this helps protect medicines from light.

Live vaccines are especially fragile. If they become too hot or are frozen for any length of time, the organisms in the vaccine will be destroyed and the vaccine will not work.

Leaving a live vaccine in a hot vehicle for just 30 minutes is enough to render it ineffective. Vaccines have to be used quickly after the bottle is broached.

Check the label for information on storage guidelines, including how to store and how long a product can be used after the bottle is first opened.

Preventative medicine and vet records

Record medicine usage that aims to prevent the occurrence of disease or infection, e.g. vaccinations.

Drug used	Drug batch number	Animal or batch of animals treated		Date used	Reasons for treatment	Dosage	Length of treatment
		ID	Number treated				

Preventative medicine and vet records

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Identify common problems early

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RESPIRATORY

Signs of good health and vigour	Look for early signs of disease	Late signs of disease
• Bright • Playful • Curious • Keen to drink milk	• Quiet • Slow to stand • Still drinking milk	• Dull • Reluctant to stand unaided • Off milk
		
		
• Clear eyes and nose • No cough	• Discharge from eyes and nose • Cough on movement	• Severe discharge with pus • Frequent coughing/wheezing
Normal temperature (38–39°C or 100–102°F)	High temperature (>39.5°C or 103°F)	High temperature (>39.5°C or 103°F)

Identify common problems early

SCOURS

- Clean hindquarters
- Well formed faeces

Normal temperature
(38–39°C or 100–102°F)

- Dirty hindquarters
- Loose faeces

Variable temperature

- Wet hindquarters • Hair loss
- Dehydrated • Watery faeces

Variable temperature

ACT NOW

Implement the treatment plan agreed with your vet

Information supplied by Volac with thanks to the Royal Veterinary College.

Protocol for standard treatments

Plan standard treatments, such as those for pneumonia and scours. Complete with your vet during herd health planning. Remember treatment might not be a medicine, it could be a calf coat or re-hydration therapy.

Disease or condition	Signs to look for	Treatment	
		Option 1	
		Option 2	
		Option 1	
		Option 2	
		Option 1	
		Option 2	
		Option 1	
		Option 2	
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		Option 2	
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Reactive medicine and vet records

Recorded treatments administrated to individual or groups of animals after diagnosis.

Drug used	Drug batch number	Animal ear tag	Date used	Reasons for treatment	Dosage	Length of treatment

Reactive medicine and vet records

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Calf notes

Make a note of any calves that need additional attention, e.g. haven't drunk their milk or look off-colour.

Date	Ear tag	Reason for additional attention	Date & time	Action taken

Calf notes

Date	Ear tag	Reason for additional attention	Date & time	Action taken

Calf notes

Date	Ear tag	Reason for additional attention	Date & time	Action taken

Calf notes

Date	Ear tag	Reason for additional attention	Date & time	Action taken

Calf notes

Date	Ear tag	Reason for additional attention	Date & time	Action taken

Calf deaths

Recording calf deaths will help calculate an accurate mortality figure. Remember to record any stillbirths.

Date of death	Calf ear tag	Batch number (if applicable)	Age at death	Reason	BCMS informed (✓)

Calf deaths

Date of death	Calf ear tag	Batch number (if applicable)	Age at death	Reason	BCMS informed (✓)

Liveweight records

Measuring the growth rate of youngstock provides useful information on how well they are growing. It is also an indirect method of monitoring the efficiency of feed conversion. Meeting growth targets ensures maximum return on your investment.

The benefits of monitoring growth include:

- Achieving target growth rates for breeding
- Identifying underperforming and sick calves
- Identifying problems within your system
- Maximising growth efficiency cost effectively

In calf rearing, daily liveweight gain (DLWG) (also known as average daily gain) is one of the most important indicators of performance.

DLWG = (finish weight (kg) – start weight (kg)) / age (days) (or days between weighings)

Work out a monitoring system that fits your system. Weighing can be timed to coincide with other routine procedures, and measuring just a few times through the rearing phase will provide enough information to monitor progress. As a minimum, aim to measure each individual calf at:

- Birth of purchase
- Weaning
- Sale

Birth weight or purchase weight should be recorded as this will create a baseline figure to calculate DLWG.

Liveweight records

This table has been left blank so that it can be populated with relevant headings to suit your system and weighing pattern.

Liveweight records

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