

Working towards net zero carbon emissions

Improving fertility in the beef herd



Practical Guide

Improving performance in the beef herd relies on optimal fertility, good genetics, health and nutrition. Managing breeding is a complex topic which includes making choices for herd genetics, managing live weight gains to allow timely breeding of heifers, maintaining a tight calving interval whilst ensuring bulls are fit for purpose.

Key Performance Indicators (KPIs) focusing on breeding include:

- Age at first calving - aim for 24 months
- Calving pattern - aim for 80% calved within 60 days
- Bulling periods - max bulling period of 9 weeks for cows; 6 weeks for heifers
- 365 day calving interval
- Calf mortality birth to weaning <3%
- Weaning 0.95 calves per cow/year
- <5% barren rate



This practical guide looks at helping to maximise performance of the beef herd by improving fertility within the herd

Age at first calving

Studies have shown that calving heifers at 24 months instead of 36 months has several benefits to the herd. Heifers calving at two years have been found to be more produce more calves over their lifetime; allow a faster rate of genetic improvement within the herd and reduce the costs of production for replacements.

In order to calve at two years old, nutrition and genetics are key. Those calves born within the start of the calving period and of a healthy weight will have a greater opportunity of achieving the required 65% of their mature weight by 15 months to achieve calving at two years. Although heifers below this weight target can breed, they often show delays in oestrus post-calving which will increase the calving interval. This is due to nutritional requirement imbalances between the needs for lactation & growth which then reduce the ability to cycle. Calf live weight gain is therefore a critical aspect of raising replacements efficiently.

For single block calving units heifers must calve down at either two or three years, however for herds with autumn and spring calving blocks, heifers can be calved down at 28-30 months to provide replacements for the other group.

This practical guide is part of a series looking at steps you can consider to reduce emissions whilst maintaining a profitable farm business.

For more information, tips and ideas and to read what other farmers have done, visit

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Breeding heifers

Aim to bull heifers a minimum of 6 weeks prior to the main calving group for a period of no more than 6 weeks. This ensures only the most fertile animals enter the breeding herd; any heifers who haven't conceived during these 6 weeks should not be considered as potential replacements - they are more prone to delayed breeding in subsequent years.

Successfully calving heifers 6 weeks before the main calving block allows for a longer growth period for calves coming forward as breeding replacements. This can give the first calvers more time to begin cycling again before they join the main breeding herd with the bull.

Since heifers are more susceptible to calving problems it is important to carefully select the bull to avoid issues causing and delays to cycling. Bulls with noted calving ease, short gestation lengths and low calf weights are ideal.

Bull fertility

Choosing a stock bull is an important decision. The use of Estimated Breeding Values (EBVs) can help identify how the progeny of the bull should perform. EBV's should be used along with a thorough visual examination of the bull.

At least two months before he is required to work, the bull should have a thorough MOT check. A body condition score of 3.0 is ideal for a bull prior to work; if identified in advance he can be fed accordingly to achieve this, avoiding heavy concentrate rations. Assess his feet and leg health, offering a foot trim to ensure his mobility isn't compromised.

Check his scrotum, looking at circumference measurement and the texture of his testes. His scrotal circumference should be in line with his breed and age. Testicles should be firm to touch without any lumps or cysts and reasonably even in size. Your local vet can offer a more thorough service, including assessing a bull sperm health and mobility test. Since sperm development takes around 60 days, the earlier any problems are identified, the better.

Body condition scoring

Body Condition Scoring (BCS) is a useful management tool to ensure that animals are kept fit and not over fat or over thin - both of which can cause breeding and fertility problems. The table below summarizes the key times to condition score animals and the key BCS targets.

When?	BCS for Autumn Calving	BCS for Spring Calving
Housing	3.0	3.0 - 3.5
Calving	3.0	2.5 - 3.0
Turnout	2.5	2.5
Breeding	2.5 - 3.0	2.5 - 3.0

Calving and fertility problems can be seen in cattle at both extremes. Excess fat around the pelvic canal can lead to complicated and assisted calving, plus cycling problems and delays in conception. Over thin cows lack stamina and can have problems with weaker calves, poorer colostrum and lower milk yield. For these cows, breeding competes with early lactation nutrient demands, delayed cycling and embryo losses can be high.

Picking up fertility problems

Using SAC data, achieving 5% greater calf numbers (reducing barren cows and calf mortality by 5 in 100 cows bred) could improve finisher cattle sales by **over 3t liveweight per 100 cows** and reduce greenhouse gas emissions by 10% per kg carcase weight.

Managing fertility is essential to maintain a 365-day calving interval. If a cow misses conceiving within the time with the bull, she can miss breeding in that year. This reduces the overall herd productivity and increases the farm's carbon footprint. Cows that remain barren outside of the breeding period can be sold on to maintain an efficient herd. However, if more than 5-10% of the cows are failing to conceive within the bulling period, it is important to investigate the causes.

Observe bulls at work and watch for cows that are still showing signs of oestrus when they would next cycle. PD cows and heifers early to identify potential problems.

Recording this information can help with fertility management decisions later in the year.

Problem areas to consider include:

- ◆ Difficult last calving
- ◆ Body condition score
- ◆ Infectious disease
- ◆ Bull selection & effectiveness
- ◆ Bull : cow ratio (1:50 for mature bulls; 1:25-30 for younger bulls)
- ◆ AI timing / technique
- ◆ Nutrition & mineral balance

Consult your vet for detailed investigations and advice.