

Achieving 365 Day Calving Interval & 12 Week Calving Spread in Suckler Herds- BETTER Beef Farm Experience

Adam Woods, Teagasc, Animal & Grassland Research & Innovation Centre, Grange, Co. Meath

Summary

- Breeding and fertility is one of the most important aspects of running an efficient suckler system.
- Cow condition score, bull fertility, the incidence of difficult calving and herd health are the main factors affect fertility. Poor herd fertility has a major impact on farm output and income.
- An outbreak of disease causing poor conception rates or an infertile bull can have a devastating impact on the bottom line for many years after the problem starts. It has been observed from the BETTER Farm Beef programme that having a written plan in place is essential in improving breeding efficiencies at farm level.
- Defining the calving period and setting down clear objectives for calving interval and mortality and working towards achievable targets over a 3 year period in a simple action plan has worked. It is important not to try and achieve these targets in one year as having too many empty cows in one year could put pressure on cash flow for the following year.
- With a disciplined approach to breeding, real progress can be made at farm level which in turn will have a positive effect on profitability.

Introduction

The profitability of a suckler herd is directly related to the number of calves reared per cow or heifer served annually. Inefficiencies are not welcome in any business and suckler beef farming is no exception. Recent figures from ICBF show that the average calving interval for all suckler herds in the country is 406 days which is somewhat off the target of 365 days. A cow that does not calve every 365 days is a drain on the system and not earning her keep. The calf per cow per year figure is at 0.78. This figure is got by dividing the number of live calves at 28 days by the number of eligible females in the herd over 22 months of age. This means that in a 100 cow suckler herd the average farmer is weaning 79 calves from 100 cows which is grossly inefficient. The target is 95 live calves per 100 cows (0.95/calves/cow/year). If this farmer was producing weanlings and could raise this figure by 0.1, it would mean an extra 10 calves to sell or approximately €6000 -

€7000 extra in sales for the year, which would be a big rise in output on any farm. It has been shown in the past that it costs between €500-€800 to keep a suckler cow for the year depending on a number of variables including land type and whether the cow calves in the spring or autumn. It is therefore essential that she produces a viable calf every 365 days to deliver an output which will cover this expenditure and produce a profit.

There are two main ways to improve suckler cow fertility:

1. Increase conception rates:

If 100 cows were put to the bull and achieved 60% conception in each oestrous period, then the following pregnancy rate would be achieved.

- 3 weeks – 60 in calf
- 6 weeks – 84 in calf
- 9 weeks – 93 in calf
- 12 weeks – 97 in calf

This means that a conception rate of 60% leaves just 3 cows empty after a 12 week breeding season (natural service or AI). If this conception rate was to drop to 40%, then after 12 weeks breeding there would be 14 'empty' cows. Good heat detection, AI technique and timing, avoiding difficult calving and stock bull fertility are all important aspects in ensuring high conception rates.

A high first 3 week calving percentage will mean:

- Heavier calves at weaning
- Heavier and more fertile homebred heifers at mating
- Reduced labour requirements due to calving taking place in one batch rather than being spread out over a long period
- Less disease spread from older to younger calves

If using AI, heat detection is very important and will have a negative effect on conception rate if not carried out properly. Table 1 shows the severely adverse effect of both poor heat detection and low conception rate on the 90 day pregnancy rate.

Table 1. Effect of heat detection rate and conception rate on pregnancy rate

		Conception rate			
		60	50	40	30
Heat Detection Rate %	90	96	91	83	71
	70	91	82	73	61
	50	76	68	59	48
	40	67	59	50	40

Source: Diskin, M.G., Teagasc, Athenry.

2. Reduce the interval between calving and conception

Cows undergo a period of recovery after calving before normal fertility is regained. The uterus needs time to recover from the calving process and return to normal size. This takes up to 40 days or longer if there was calving difficulty or uterine infection. The length of time that ovaries take to regain normal cyclist after calving can range between 25-180 days in beef cows an is related to body condition score and plane of nutrition. First calvers can often have a delayed return to oestrous due to poor condition score at calving and incorrect nutrition post calving. The target is to have most cows bulling by 50 days post calving. (Figure 1).

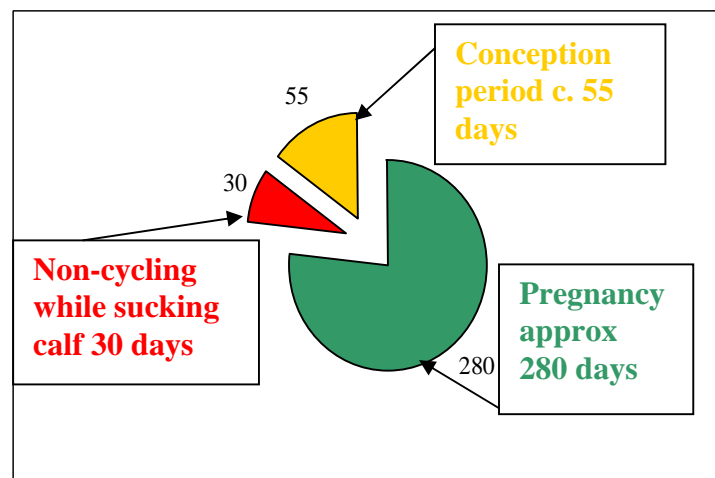


Figure 1. Annual cycle/breeding calendar for beef cow

Cows that give birth early in the calving season will tend to conceive more easily than cows calving later because of a higher fertility status and also they have longer to recover before the next service period (Figure 2). Calves born early in the season usually have heavier weaning weights which will increase their value when being sold and is another good reason for getting cows in calf as quickly as possible after calving.

Calving Season (wks)				Mating Season (wks)		
3	6	9	12	3	6	9
Cows calving for first 3 weeks have on average 73 days to resume cycling				A mating season of 9 weeks allows cows that have started cycling by the start of the breeding season three or four opportunities to be mated		
		Cows calving in second 3 weeks have on average 52 days to resume cycling				
		Cows calving in third 3 weeks have 31 days to resume cycling				

Figure 2. Effect of calving cows early in the calving season on resumption of cycling

The main factors that affect the post partum anoestrous interval are:

- Maternal offspring bonding
- Nutrition
- Parity
- Genotype
- Male effect

Bull Fertility

Bull fertility is key to maintaining a compact calving period, maximising the genetic potential and value of the calf crop and overall herd profitability. Ensuring the herd sire is ready for work requires forward planning as semen production takes 60 days. The bull must be in good health and ready to work at least 10 weeks before the breeding season begins.

Key Points:

- Bulls must be able to maintain body condition score (ideally BCS 3), repeatedly mount and serve cows and place fertile semen in the cow for 12 weeks and have a long working life in the herd.
- Good libido is important, especially in larger herds or in difficult terrain so that the bull is active in seeking out and successfully serving all cows in heat.

- Quarantine new bulls for 4 weeks after purchase for health screening and acclimatisation.
- Avoid sudden changes and do not overfeed as this can reduce fertility and lead to feet problems.
- Check feet and legs well in advance of the breeding season, as good locomotion is essential for getting cows pregnant. Take remedial action if required.
- Provide exercise where possible (e.g. site feed and water at opposite ends of the shed or field)
- Approximately 25% of all working bulls are sub-fertile or infertile.
- Watch the bull working to check he is serving cows correctly.
- Rotate bulls or scan cows early so that an infertile bull or sub fertile bull can be identified early. Even bulls that have passed a breeding soundness examination can go lame or suffer reduced fertility during the breeding season.
- Record when you see a cow being mated and watch for signs of cows coming on heat repeatedly.
- Don't overwork a young bull (20 cows maximum for first season)

Managing Body Condition Score (BCS) to improve cow fertility

The hormones which control fertility and nutrition are closely linked. Under normal conditions dietary energy is the main factor limiting the reproductive performance of suckler cows. The most critical time for cow nutrition is for 6 weeks before calving through to 6 weeks after service. The best practical way of judging whether cows are being fed appropriately is by scoring them for body condition score (see table 2 compiled by Professor Michael Diskin, Teagasc, Athenry). Suckler cows can lay down fat when feed is plentiful and mobilise it again when feed is expensive or in limited supply. Spring calvers should be in good condition in late autumn allowing for planned weight loss over the winter. However, excessive weight loss should be avoided as this can delay return to breeding after calving.

Table 2. Body Condition Score targets at critical stages in annual production cycle

Calving Season	Mating	Mid Pregnancy	Calving
Jan-Feb	2.5	3	3
March-May	2.5	3	2.75
Autumn	2.75	2.25	3.25

At weaning, check the condition of all cows and heifers and group them according to BCS. Heifers, first calvers and thin cows should be separated and fed to achieve target BCS, to ensure that they continue to grow and reach their target live weight for the subsequent breeding season.

Avoid Difficult Calving

Difficult calving greatly increases the incidence of reproductive problems in the following breeding season and also reduces calf survival. There are four main causes of calving difficulties:

1. Calves are too big (due to poor sire choice).
2. Dams are poorly grown (caused by poor management of maiden heifers).
3. Dams are over-fat (due to loss of control over body condition).
4. Dams have excessive hind quarter muscling or inadequate pelvic size.

Good management of body condition score (BCS) throughout the year can reduce calving problems considerably. Choose sires with a low calving difficulty figure. When calving the cow only intervene when calving is not proceeding as normal. Uterine infections can significantly delay the onset of cycling so it is important to practice good hygiene at calving time. Always use gloves and lubricant to examine cows. Have adequate calving pens with ample dry bedding.

Breeding to Improve Suckler Cow Fertility

The genetic traits that influence reproduction tend to have low heritability so genetic progress through selective breeding takes a long time. Breeding strategies to produce female replacements must take into account a range of traits including growth rate, milking ability, temperament and ease of calving. Farmers breeding their own replacements have the advantage that they know the cows from which to keep heifers to make future cows. Reproductive traits are greatly enhanced by crossbreeding due to hybrid vigour. These advantages can be summarised as follows:

- 10% increase in conception rate
- 10% improvement in calving ease
- 7.5% increase in number of calves raised to weaning
- 5-10% increase in milk yield

The right crossbreeding strategy can increase the weight of calf weaned per cow by up to 23%. To maximise hybrid vigour the crossbred cow should be crossed with a sire of a third breed (neither of the breeds in the cow)

Health Issues Affecting Fertility

Most health problems will affect fertility; some more than others. All abortions and stillbirths should be investigated by a vet. Possible causes include infectious bovine rhinotracheitis (IBR), bovine virus diarrhoea (BVD), leptospirosis, neospora, salmonella and campylobacter. While Johne's disease does not cause abortions, infected cows suffer weight loss and are slow to go back in calf. Good general herd health is vital to optimise fertility.

Discuss with your vet and advisor:

- A herd health plan
- Vaccination policies
- Dosing regime
- Quarantine procedure for purchased stock

The BETTER Farm Experience

At the beginning of the Teagasc/Irish Farmers Journal BETTER Farm Beef programme the management team set out some core objectives for each of the farms in relation to addressing low levels of output, improving grassland management, breeding efficiency and fertility and animal health on the farm. Breeding efficiency was one of the first items to be addressed. The first step was that the farmer had to join HerdPlus, operated by ICBF. This was an invaluable tool in assessing the current state of play on the farm in relation to calving interval, calving spread, suckler cow breeding performance, past progeny performance, etc.

A Case Study: Cathal Crean, Woodpark, Gorey, Co. Wexford

Cathal Crean farms just south of Gorey in Co. Wexford. There are currently 85 suckler cows on the farm with the aim of going to 100 suckler cows over the next 2 years. His beef system consists of finishing continental heifers off grass at 18-20 months and finishing bulls at 18 months indoors on ad-lib meal after grazing for the 2nd spring and summer. Breeding performance had fallen in recent years and in 2008 his calving interval was 411 days and he was calving cows for 9 months of the year in a nominally spring calving herd (Table 3). On entry to the BETTER Farm Beef programme, one of the first decisions made was to fix a defined calving period. This was decided to be Jan/Feb/Mar, based on turnout date and finishing dates for stock. Cathal then went through all his cows visually and identified any poor performers. The ICBF suckler cow report was used in this process to identify repeat poor performers in terms of calving interval and calf performance. Most of the cows that had slipped to the summer months had poor fertility and were identified for culling. Because of the vigorous culling (23 cows) it was decided that instead of buying in maiden heifers and taking a hit on output for two years, some cows and calves would

be purchased to avoid a reduction in output. Cows that calved in April and May were kept as a group and fed 2 kg meal at grass to make sure they resumed cycling quickly. The 15th June was identified as the date the bull was to be removed as this would mean calving would be finished by end of March. Replacement heifers were bred in March to calve in December, one month before the main herd, to give them extra time, as first calvers, to go back in calf. Dry cow minerals are fed pre- calving and early calving cows get 2 kg ration post- calving to keep the BCS on target. A Limousin bull with good maternal traits was purchased with a view to breeding replacements from within the herd.

Table 3. Calving data from Cathal Crean's herd over past 3 years

Cathal Crean	07/08	08/09	09/10	Target	Nat Av.
Live calves at birth	58	80	65	100	
Calving Interval (CI, Days)	422	375	394	365	406
Calves per cow per year	0.75	0.94	0.86	0.95	0.78
% females not calved	12	2	5	0	14.2
% dead at birth	1.7	0	1.2	2.5	4.8
% dead at 28 days	3.4	2.5	1.5	2.5	6
Months calving (calving spread)	5	9	4	4	

Nat Av. = Nation Average