Future Beef Programme Workshop:

Calving Heifers at 24 Months

Kildalton College| 11th November 2022

Teagasc Future Beef Programme

The aim of Future Beef is to demonstrate to beef farmers how they can produce a quality product as efficiently as possible to make beef farming more profitable while also making it more environmentally and socially sustainable. Future Beef farmers are also participants in the Signpost Programme.

The whole programme hinges on our network of 22 demonstration farms. All our farmers have a very positive attitude towards suckler farming. They are willing to take on new technologies and develop efficiencies to improve profitability and reduce the negative effects of agriculture on the environment around them.

Key objectives:

- Create more sustainable and profitable farms
- Reduce greenhouse gas (GHG) & ammonia emissions
- Improve water quality
- Improve biodiversity

We will achieve this by focussing on reducing inputs and the costs of production while increasing the performance of every animal on the farm.

Acknowledgement

We wish to thank the farmers that have agreed to take part in the programme, particularly to Ken and his family for hosting this farm walk. We look forward to working with them and their local advisors over the next five years. We are confident that all parties involved in the programme will benefit hugely from the experience. We wish to acknowledge all the sponsors of the Future Beef Programme and thank them for their commitment to the programme.

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Calving Beef Heifers at 24 Months of Age

The percentage of beef heifers calved at 22-26 months of age nationally stands at 24%. This is compared to 75% of dairy heifers that calve at the same age.

What are the benefits to calving heifers at 24 months of age?

- Calving at a younger age means that breeding females have the opportunity to produce more calves over their lifetime.
- There will be a lower stocking rate on the farm than if older heifers are being carried as replacements.
- By getting your genetically superior heifers to calve down younger, you will get faster genetic improvement into your herd and can further improve this by breeding replacements from your best heifers and cows.
- From Teagasc work in Grange based on a 50-cow herd with a 20% replacement rate, each additional month that calving is delayed costs €490 or €50 per heifer per month. These figures are based on 2018 input costs, so we can add at least another 20% to these costs in 2022.
- Based on Teagasc modelling work, reducing the age at first calving from 3 years to 2 years could cut the carbon footprint on your farm by 12%. The reduced footprint comes from the cow calving at 24 months producing more product (beef) than the heifer calving at 36 months, over her lifetime.

Table 1: *Performance targets for calving heifers at 24 months*

Performance targets for calving at 24 months				
Stage	**Age (mths)**	**ADG (kg/day)**	**Target Weight (kg)**	**How is this achieved on farm**
Birth	0		45	
Weaning/Housing	8	1.1	275-300	- Good grass management - High milk in cows
Turnout	12	0.6	335-375	Good quality silage + meal
Bulling	14	1	380-420	- 60% of mature bodyweight - Early turnout
Housing 2nd winter	20	0.8	540-570	Good grass management
Calving	24		550-590	- 80% of mature bodyweight - In correct body condition
Overall Lifetime ADG required		0.72		

Myths Around Calving Heifers at 24 Months

Only 23% of our suckler-bred heifers are calves at 24months, despite of the obvious economic and environmental benefits. The main reasons given for not calving them at 24 months are

1. **"Sure you will stunt her and she will be no good for anything!"**

   ✓ ICBF statistics shown in Figure 1 from 137 thousand sucklers clearly shows this is not the case. In fact, the heifers that calve at 2 years of age were heavier than those calved at 31 – 35 months.

2. **"She will go in calf the first time, but she won't go back in calf again!"**

   ✓ From the same set of heifers, it can be seen that 82% of the heifers went back in calf the second time, in comparison to 86% that calved at 3+ years.

3. **"She will be too small and be too hard to calve."**

   ✓ All first time calvers have the potential to need assistance at calving. 43% of heifers calved at 36+ months needed assistance, this only went to 50% in the 24-month-old heifers. This is where bull selection is key and possibly the preferential use of AI. It is very hard to have a good bull on your mature cows and use him on your heifers – at any age.

4. **Survivability**- possibly the biggest surprise in the system is that 39% of the heifers that calved at two years reached their 5th parity in comparison to only 4% of the heifers calved at 31 -35 months and 0% of those calved at 3 years +.

Age at 1st calving (months)	Average subsequent calving interval (days)	% Calving for a second time	Average calving difficulty of bulls used (%)	Heifer calving unassisted (%)	Mortality at first calving (%)	Heifers reaching 5th Parity	Mature Cow Weight
23-26	383 days	82%	4.7%	50%	3.2%	39%	708Kg
27-30	394 days	83%	5.1%	53%	2.8%	20%	
31-35	392 days	87%	5.2%	58%	2.6%	4%	692Kg
36-40	386 days	86%	5.2%	57%	2.0%	0%	

Figure 1: *ICBF data - Replacement heifers born in 2011 (131,077)*

Managing Your Heifer from Birth to First Winter

Identify your replacements early

Pick your best heifers for potential replacements from your best cows early in the year. Identify at least 20% of your herd size as replacements. These heifers should be sourced from cows with the following specific characteristics;

- ✓ 365 day calving interval or less
- ✓ Calve early in the season
- ✓ Good Docility
- ✓ Consistently delivers a top quality calf
- ✓ High maternal replacement index figures €100+
- ✓ Has good conformation , milking ability & feet

First grazing season

- ✓ Target weaning weight for replacement heifers is from **280kgs to 320kgs**
- ✓ A daily weight gain of at least 1.1kgs/day from birth to housing
- ✓ Monitor the performance of the heifers through regular weighing
- ✓ Take faecal samples and dose during the summer and autumn to avoid build-up of lungworm and stomach worms
- ✓ Weaned gradually to minimise stress. Feed 1kg/head/day of meal prior and post weaning
- ✓ It is good practice to vaccinate for IBR and respiratory disease prior to housing
- ✓ Separate the heifer weanlings from other stock in late summer

First winter

The heifers identified for replacements are priority stock for the first winter. To meet the target weights for bulling at 15 months, they need to gain between 60-80kgs during the winter period. This weight gain can be achieved by adopting the following;

- ✓ Ensure the shed is well ventilated and bright
- ✓ Do not mix with older stock
- ✓ Do not overcrowd the pen allowing 1.7sqm to 2.0sqm/animal
- ✓ Provide clean drinking water at all times
- ✓ Check for parasites and dose accordingly
- ✓ Feed top quality silage (+70%DMD) ad lib and 1-2kgs of ration/head/day
- ✓ Feed more meal if silage quality is poorer in quality <70%DMD

DMD	Poor-62%	Average- 68%	High-72%
Meal required for 0.6kgs/hd/day	2.5	2.0	1.0

- ✓ First group to be turned out to grass – Early!
- ✓ Rising plain of nutrition thereafter

Managing your Heifer from End of First Winter to Calving

Second grazing season

- ✓ Your replacement heifers are priority stock and should be turned out to grass as early as possible
- ✓ Target weight of 335-375kg for spring born heifers and 130-170kg for autumn born heifers
- ✓ Target for spring heifers is to gain 0.8 kg/day to weigh 540-570kg at housing, and for autumn born heifers to gain >1kg/day to weigh 380-420kg by the autumn
- ✓ Good quality grass
- ✓ Any vaccinations that heifers are due to receive should be given well in advance of breeding, for example a leptospirosis booster vaccine should be given 2 weeks before turnout
- ✓ Take faecal egg samples every 4 to 6 weeks over the grazing period from May onwards and dose accordingly

Breeding heifers

- ✓ Both spring and autumn born heifers can be bred at 14-15 months of age, at a target weight of 380-420kg depending on the breed, which should be 60% of their mature body weight
- ✓ They should be actively cycling and heats should be recorded to verify this, and also to predict when their next heat will be for timing their breeding
- ✓ If they are not cycling consider why not? Are they at their target weight / is it a nutrition issue / is the heat detection an issue?
- ✓ They should bred in the first half of the breeding season
- ✓ Breed for 6 weeks only
- ✓ Bull selection is crucial. The bull's heifer calving difficulty figure should be less than 7.5%, with over 80% reliability to reduce the incidence of difficult calvings.
- ✓ Scan 35 days after the breeding season has ended

Second winter

- ✓ Spring heifers should weigh 540-570kg and autumn heifers should be 440-480kg
- ✓ Pen heifers separately to cows to prevent bullying
- ✓ Ensure that they have enough feeding and lying space as outlined in the tables below

Table 2: *Recommended feed space for cattle*

Recommended Feed Space (mm/animal)				
Feeding regime	**Weanling**	Finishing cattle	Light stores	Cows
Ad lib silage/ TMR	**225-300**	400-500	250-300	400-500
Restricted silage	**400 – 500**	600-650	500-600	600-700
Concentrates	**400 – 500**	600-650	500-600	600-700

Table 3: *Recommended lying space for cattle*

Recommended Housing Space Allowance (m^2/animal)		
Animal Type	**Slatted**	**Straw**
Suckler cows	2.5 – 3.0	5
Calves	1.5 – 1.8	2.4 – 3.0
Cattle 220-300kg	1.2 – 1.5	1.8 – 3.0
Cattle 310-450kg	**1.5 – 2**	**2.4 – 3.0**
Cattle 550kg	**2.2**	**4**
Cattle 600kg	**2.4**	**4**
Finishing Cattle 500-750kg	2.2 – 2.7	4.0
Research shows that $2m^2$ is insufficient for finishing animals		

- ✓ Dose as necessary, especially for liver or rumen fluke if your farm is prone to them
- ✓ Beef Health check on ICBF and faecal sampling can determine this
- ✓ Vaccinate as necessary to ensure that they have no health setbacks which could impact their performance
- ✓ If there are any disease issues in your herd, you should discuss with your vet about vaccinating sucklers to prevent them and to help ensure your heifer stays in calf.

Table 4: *Vaccines to prevent abortion*

Vaccine (Legal status)	Diseases Controlled	Administration	
		Primary	**Booster**
Leptavoid-H **(LM)**	Leptospirosis	***Two shots:*** First 2ml (sc injection) – ideally in spring time Second 2 ml injection 4 to 6 weeks later	1 injection each year in the spring
Spirovac **(LM)**	Leptospirosis	***Two shots:*** First 2ml (sc injection) – ideally in spring time Second 2 ml injection 2 to 4 weeks later	1 injection each year in the spring
Bovivac S **[(POM (E)]**	Salmonella	***Two shots:*** First 5ml (sc injection) to pregnant cows Second 5 ml injection 3 weeks later (no more than 8 weeks from calving)	1 injection each year 3 – 4 weeks pre-calving
Bovilis Bovpast RSP **[(POM (E)]**	BVD , RSV, Pi-3 Mannheimia (Pasteurella) haemolytica	***Two shots:*** First 5ml (sc injection) Second 5 ml injection 4 weeks later	1 injection each year
Bovilis BVD **[POM (E)]**	BVD	***Two shots:*** First 2ml (im injection) – 8 weeks pre-breeding Second 2 ml injection 4 weeks later	1 injection 6 months later and yearly thereafter
Bovela **(POM)**	BVD	***Single shot:*** 2ml (im injection) at least 3 weeks pre-breeding	1 injection each year

Legal Status
LM
The product can be purchased from a licenced merchant, pharmacy or vet. A prescription is not needed.
POM(E) "Prescription Only Exempt", the product can be bought from a pharmacy or a vet. A prescription is not needed to buy the product.
POM "Prescription Only" the product must have a written prescription from a vet and the product can then be bought from a vet or pharmacy and in the case of some products from a licenced merchant.
im = intra-muscular (usually in the neck)
sc = sub-cutaneous (usually in the neck)
Disclaimer:-The information presented in this technical note is for illustrative purposes only. All information relating to administration is presumed correct at time of printing (23rd Nov. 2017). The product datasheet that comes with each product must still be referred to for withdrawal periods, dosage rates, uses for the product etc. and veterinary advice should always be sought.

- ✓ If there are any health issues with scours or respiratory disease on your herd, vaccinations can also be given to heifers to prevent this in them and in their calves. The timings are extremely important if planning for the calf to receive immunity from its mother, as is receiving adequate colostrum in the first 3 hours of its life.
- ✓ For autumn calving herds, the scours vaccines will have to be given in the summer for them to be effective.

Table 5: *Vaccines to prevent scour*

Vaccine (Legal status)	Diseases Controlled	Administration	
		Primary	**Booster**
Rotavec Corona **(POM)**	Rotavirus, Coronovirus E.coli (K99)	***Single shot:*** 2ml (im injection) 3 to 12 weeks pre-calving	Repeat each year 3 to 12 weeks pre-calving
Trivacton 6 **(LM)**	Rotavirus, Coronovirus E.coli (K99, F41 & 31A)	***Two shots:*** First 5ml (sc injection) 2 to 6 weeks pre-calving Second 5 ml injection 2 weeks later	1 injection each year 2 weeks pre-calving
Bovigen Scour **(POM)**	Rotavirus, Coronovirus E.coli (K99)	***Two shots:*** First 3ml (im injection) 5 to 12 weeks pre-calving Second 3 ml injection 3 weeks later	1 injection each year 3 to 12 weeks pre-calving

- ✓ Body condition score (BCS) of over 2.75 to ensure that they are fit and not fat at calving. If they are lower than this, there will be a slower return to breeding, the cow will be weaker at calving and the colostrum will be poorer. On the other side, if BCS is higher than 3.0 the cow will have greater difficulty calving and re-breeding could be delayed.
- ✓ This can be assessed by handling cows for fat cover on the edge of the loin bones (transverse processes) and on the tail head and ribs. At a condition score 3.0 and greater, loin bones cannot be felt so focus on the tail head and the fat cover over ribs.

Figure 2: *Body condition score examples*

- ✓ 68-70% DMD silage will be sufficient to maintain heifers in a fit condition at a BCS of 2.75, without feeding ration for spring calvers
- ✓ Autumn heifers should be fed 70% DMD silage and 2kg meal to gain 0.6 kg/day
- ✓ Feed minerals 4 to 6 weeks prior to calving

- Macro minerals required are calcium, phosphorus, magnesium and sodium. These must be fed daily through feed (dusting on silage, mineral lick) or through the water
- Micro or trace elements required include copper, selenium, zinc, iodine, cobalt and manganese. These can be fed through feed, water, a bolus or an injected supplement
- Dusting of macro minerals on silage is the cheapest way of feeding them to spring calving herds. It is typically at a rate of 120g/head/day and should be done twice daily, but it is important to follow the manufacturer's guidelines and to make sure enough feed space is available so that all heifers can be fed at the same time

Table 6: *Minerals required pre-calving*

Macro Minerals	**Micro (Trace) Minerals**
Calcium Phosphorus Magnesium Sodium	Copper Selenium Zinc Iodine Cobalt Manganese
- Fed in grams per day - Acute presentation - Rapid response - Offer feed or water	- Fed in milligrams per day - Gradual deficiency symptoms - Slower response - Feed, water, bolus, injection

Calving

- ✓ Heifers should be fit and not fat at calving
- ✓ Service calving camera before calving starts
- ✓ Clean and disinfect calving pens
- ✓ Have equipment available, see checklist on page 15.
- ✓ Safe handling facilities
- ✓ 1 calving pen for every 10 cows that are calving on the farm
- ✓ Supervise heifers (~50% will need assistance at calving)

Post calving care for heifers

- ✓ Turn out calved cows to grass as they calve to give them a chance to build condition before breeding again
- ✓ Cows going to grass directly after calving don't need concentrates if there is a good supply of high-quality grass. If housed indoors, heifers should be given good quality feed to help them meet their energy demands, i.e. over 70% DMD silage and at least 2kg ration
- ✓ Watch their body condition (target BCS ~2.5)

Genetics – Using the Euro-Star Index

Selecting your replacements

There are a number of physical attributes that any potential young heifer must have to be considered as a replacement to calve down at 24 months. These are:

- ✓ **Weight** – Heifers must be heavy enough to breed at 14-15 months (see target weights under "Breeding Heifers" on Pg. 7).
- ✓ **Docility** – Heifers should be quiet and easy to handle.
- ✓ **Conformation** – Extreme, heavily muscled females should be avoided for breeding.
- ✓ **Functionality** – Heifers should have good feet and legs. They are still young when being assessed for breeding and may not be showing any issues at such a young age. Assessing the heifer's dam is good practice. If the dam has poor feet and legs, then there's a possibility the heifer may develop the same problems later in life.

Once a physical assessment is complete and any heifers not meeting the above criteria are removed, the next step is to assess their Euro-Star Indexes. This information can be accessed through your ICBF HerdPlus account. You can use the online Euro-Star profile or the Euro-Star report (ensure you are looking at the most recent report).

	Animal Details				Replacement Index				
	Jumbo	Animal Tag Date Of Birth Breed	Sire ID Dam Tag	Calvings	Index Value (€) Across Breed Stars	Rel % Herd Rank	Carcass Weight (Kg) Across Breed	Daught. Milk (Kg) Across Breed	Daught. Calving Interval (Days) Across Breed
✓	426	372246678104 26 08-FEB-2022	IE151094460784		€159 ★★★★★	47% 33	+20.6 ★★★★	+6.6 ★★★★★	-2.42 ★★★★
✗	427	372246678204 27 08-FEB-2022	372126179309 47		€78 ★★	45% 62	+33.1 ★★★★★	-1.2 ★	+0.46 ★★
✗	1138	372269300511 38 17-FEB-2021	372138899293 45		€201 ★★★★★	23% 7	-5.3 ★	+16.8 ★★★★★	-7.23 ★★★★★

Figure 3: *ICBF HerdPlus Euro-Star report example*

The Euro-Star indexes of 3 potential replacement females are detailed in Figure 3 above. You should look for the following:

- ✓ **A <u>high</u> Replacement Index** – the higher the better.
- ✓ **A <u>positive</u> Carcass Weight figure** – between 10-30 kg should be targeted.
- ✓ **A <u>positive</u> Daughter Milk figure** – between 5-15 kg should be targeted.
- ✓ **A <u>negative</u> Daughter Calving Interval figure** – the lower the better.

Heifer 426 in Figure 3 meets all of the above criteria. **Heifer 427** has a low Replacement Index and she is a more terminally bred heifer as she has a very high carcass figure but poor milk and calving interval (fertility) figures, so is not suitable. **Heifer 1138** has the highest Replacement Index, but is not suitable as her index is very imbalanced. She has a negative carcass figure and extremely high milk figure. These extremes should be avoided.

Selecting the sires to mate to heifers

When selecting sires to use on maiden heifers, calving difficulty is the most important trait. The Euro-Star Index has a specific 'Beef Heifer' calving difficulty trait available for all bulls (see Figure 4).

Calving Difficulty (births requring considerable assistance; % 3 & 4)		
When Mated With:	**Value**	**Reliability**
Beef Heifers Breed avg: 8.31%, All breeds avg: 8.20%	6.1%	99% (V High)
Beef Cows Breed avg: 3.82%, All breeds avg: 3.91%	2.6%	99% (V High)

Figure 4: *'Beef Heifer' calving difficulty trait in the Euro-Star Index*

Target sires with a 'Beef Heifer' calving difficulty figure of <7.5% with a reliability of >80%. The example in Figure 4 has a 'Beef Heifer' calving difficulty of 6.1% at 99% reliability. The genetic merit of the replacement heifer for calving difficulty is also important. If the heifer has a high calving difficulty figure, the maximum figure for the sire should be reduced accordingly. You can find the calving difficulty figures for females in the Euro-Star profile of your HerdPlus account. Using AI sires on heifers is very beneficial as you have access to a large selection of high reliability, low calving difficulty sires. Avoid using new stock bulls on heifers where possible.

Selecting sires to suit your system

While calving difficulty is the priority when selecting sires for maiden heifers, it is not the only consideration. There is a large selection of proven low calving difficulty AI sires with different strengths and weaknesses. Your production system will determine which sires you choose. Figure 5 shows the Euro-Star Index details for 2 AI sires. Both are <7.5 % for 'Beef Heifer' calving difficulty at >80% reliability but they are very different in terms of the type of progeny they will produce.

		A	B
Economic Indexes	**Purpose**	**€uro value**	**€uro value**
Replacement (per daughter lactation)	To breed future cows for the suckler herd	€113	€97
Terminal	To breed beef animals from the suckler herd that are destined for slaughter	€116	€71
Key profit traits		**Index value**	**Index value**
Expected progeny performance			
Docility (1-5 scale) Breed avg: -0.05, All breeds avg: 0.02		-0.06 scale	0.03 scale
Carcass weight (kg) Breed avg: 23.45kg, All breeds avg: 17.18kg		19kg	10.7kg
Carcass conformation (1-15 scale) Breed avg: 2.17, All breeds avg: 1.45		2.13 scale	0.69 scale
Expected daughter breeding performance			**ng performance**
Daughter calving difficulty (% 3 & 4) Breed avg: 4.74%, All breeds avg: 5.33%		5.67%	7.46%
Daughter milk (kg) Breed avg: -0.42kg, All breeds avg: 2.49kg		-1.00kg	5.30kg
Daughter calving interval (days) Breed avg: 1.04 days, All breeds avg: -0.87 days		-0.61days	-4.86days

Figure 5: *Euro-Star Indexes of 2 AI sires with similar calving difficulty figures*

Bull A has much better carcass traits while Bull B has better maternal (milk and fertility) traits. Both sires meet the calving difficulty criteria but have different strengths. The suitability of these bulls for use in a herd depends on what the production system is for that herd.

Synchronisation Regimes for Replacement Heifers

- ✓ Heifers need to be well grown – 60% of their mature body weight
- ✓ If 60% of mature weight they should be cyclic
- ✓ No requirement for progesterone in the regime for heifers
- ✓ Prostaglandin-based regimens are the method of choice for use on replacement heifers
- ✓ 65 -70% inseminated after 2 weeks
- ✓ 80% inseminated after three weeks
- ✓ Using this protocol drug use, semen costs and veterinary costs are minimised

Table 7: *Prostaglandin-based regime for replacement heifers*

Monday – Sunday	Tuesday	Thursday to Saturday		Thursday	Tuesday
Day 0-7	Day 8	Day 10 - 12		Day 19	Day 23
Detect heat and inseminate as normal. Should have 1/3 inseminated	Inject heifers not seen in heat with PG	Detect heat and inseminate for 5 days	Heifers should respond to PG injection in 2-4 days Conception rates of 65 -70% expected	Inject all heifers not seen in heat or inseminated to date	Detect heat and inseminate for 6 days 80% of heifers should be inseminated after the 2nd injection
	Inject Prostaglandin (PG)	11 days apart		Inject Prostaglandin (PG)	

- ✓ Pick AM or PM and stick with this
- ✓ **Use an easy calving bull < 7.5% beef heifer calving difficulty and >80% reliability**
- ✓ Calving difficulty can be four-fold higher in first calvers than in more mature cows.
- ✓ Maintain a good plane of nutrition for four weeks after the breeding season
- ✓ If using a bull to "mop" up make sure he is a mature bull capable of covering the last animals

NOTE: If 1/3 of your heifers are not inseminated in the first week the heifers are not cycling is it due to weight, nutrition, poor heat detection?

Do not inject with PG

Fixed Time A.I. in Heifers

- ✓ There is an option for Fixed time AI in heifers
- ✓ Involves using a PRID/CIDR
- ✓ Two options:
    - Heat detect and AI as normal, any heifers not showing heat inseminate at 72-84 hours after device removal and administer an injection of GnRH; OR
    - Avoid heat detection and inseminate all heifers at 55-60 hours after device withdrawal. GnRH must be administered at insemination. This approach will ensure a 100% submission rate and induce ovulation in some non-pubertal heifers

Table 8: *Fixed time AI for heifers*

Monday Day 0	Saturday Day 5	Sunday Day 6	Wednesday Day 9	Day 22	Day 23
Prid in + Inject GnRH	Inject PG	Prid Out + Inject PG	Fixed time AI -72hrs after PG + Inject GnRH	Heifers can be AI'd 72 and 96 hours after second PG	

- ✓ Pregnancy rates of over 70% have been achieved at Grange, to a single timed insemination in 15-16 month old beef heifers using this regime
- ✓ It is imperative that heifers are bred to easy calving sires, as dystocia or calving difficulty can be four-fold higher in heifers than in more mature cows

List of Products used:

- PG Prostaglandin-*Estrumate, *Lutalyse, *Enzaprost. Cost : Estrumate x 5 €211.14
- GnRH-*Receptal, *Ovarelin. Cost: Receptal x 5 €113.82
- ecG- *Folligon PMSG,*Synchrostim Cost: Folligon x 5 €181.38

Idea of costs – this will depend on your vet and the number you are orderings

- Cidrs x 10 €99.67
- Prids x 10 €88.78
- Cidr Applicator x 1 €13.36
- Prid Applicator x 1 €13.36

Heat detection is key when using A.I. or a Bull

Most heats detected from 9pm – 7am

Record their heats in a notebook or on an App

If you see your cow/heifer being served by the bull of with A.I and in 18 + days, you see her bulling again it may be indicative of a problem, depending on the percentage of repeats. If you pick up the issue early, you can put a solution in place early

Vasectomised bull + chin ball

- ✓ Use a well grown bull
- ✓ Get a vet to vasectomise the bull
- ✓ Have him vasectomised 8 weeks pre use to ensure all semen is gone
- ✓ Fit the chin ball a week before required
- ✓ Look for paint on the top of the back, not the sides
- ✓ Keep the paint topped up
- ✓ Record activity 24/7

Tail Paint

- ✓ Apply to the tail head
- ✓ Ensure area is clean & dry, brush loose hair
- ✓ Apply paint on a dry day
- ✓ Apply in a narrow strip 1.5 – 2in wide
- ✓ When paint is rubbed off you have standing heat

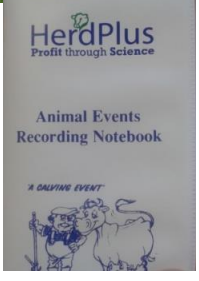
Scratch Cards

- ✓ Apply to clean dry hair on a dry day
- ✓ Brush hair, do not clip
- ✓ Apply half way between the tail and hip
- ✓ Keep cards are glue dust free
- ✓ The grey will be rubbed off to show colour

Moo Heat – Vasectomised bull with collar, cows have tags

Sense Hub – Cows Tagged

Record Heats - ICBF Notebook/website - Several apps



Calving Checklist

Are Cows Scanned? Use ICBF Expected Calving Profile Expected Calving Dates Cows Carrying Twins Peak workload	
Cows vaccinated against Scour	
Calving pens Cleaned and Disinfected	
Dry Cow Minerals for 6 weeks Pre calving	
Are cows clean? (Tails/Flank)	
Have you got frozen colostrum/biestings?	
Are Calving cameras working? Calving Sensors working	
Have you ordered sufficient Calve tags?	
Equipment on Hand	
Calving Gloves	
Calving Lub	
Calving Jack	
Good Calving Ropes	
Iodine	
Chlorohexidine	
Stomach Tube/Feeding Bottle	
Electrolyte/Kaolin Powder	
Thermometer	
Warming Box/Calf Jacket	
Calciject/Magniject	
Flutter Valve	
Cow Lifter	

Points to Remember

Oestrous Synchronisation or Timed Insemination

In Ireland, less than 20% of calves in beef herds are bred from AI. Such low usage of this effective technology most likely reflects the difficulty and labour requirements for heat detection, assembly of cow(s) for insemination as well as land fragmentation in beef herds. Synchronisation is a process that aims to reduce the labour requirement and make AI more accessible to beef farms

What is Heat Synchronisation?

Simply put 'oestrous or heat synchronisation' is the process of manipulating the oestrous cycle of the cow by the use of synthetic hormones in order to better manage the timing of breeding.

Why should a farmer consider using synchronisation?

• So he/she can plan the dates to best suit the availability of labour on the farm

• With timed AI all cows can be bred on a predetermined day, regardless of whether they showed heat or not

• It can also be used to induce heat in anoestrous cows. However, conception rate achieved at the induced heat in such cows is generally lower than cows that are cyclic, fertility at subsequent repeat heats is normal (55-70%)

• Increasing the use of AI means you can have a more targeted breeding policy

• You can use more bulls of higher genetic merit

• You can have a more focused replacement policy

• It helps to shorten the breeding season and compacts the following calving season

• For larger herds the need for a number of natural service bulls can be reduced and thus the quality improved

How does it work?

In order to develop and test a robust and repeatable timed AI program for Irish suckler beef farmers, Teagasc conducted a large on-farm trial, which involved timed AI of over 2,200 cows on 85 herds throughout the length and breadth of Ireland. The protocol in Table 9 (below) is the outcome of this work. An overall pregnancy rate of 55% to the timed insemination was achieved, which is very acceptable considering that in the region of 50% of the treated cows were anoestrous (had not resumed normal heat cycles) at the start at the start of the regimen. When combined with repeat breedings, 80% of synchronised cows were pregnant in the first three weeks of the breeding season, which obviously has very positive benefits for average herd calving interval and the subsequent calving season.

Table 9: Recommended synchronisation regimen for beef cows

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
Day 0	Day1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
10am							10am			10am
Prid in + (GnRH optional)							Prid Out PG + eCG	Record heats	Inseminate cows – evening	Continue to inseminate Or Fixed time AI -72hrs after prid removal + GnRH
								Cows will show standing heat in evening - record	Most heats expected	

Notes
- **All drugs are Prescription Only Medicines (POMs) and are under veterinary control.**
- **Dosage of drugs: will vary according to drug and drug formulation.**
- **Inadvertent administration of prostaglandin to a cow/heifer during the first 3-4 months of pregnancy will cause abortion.**

For best results with oestrous synchronisation in beef cows, it is recommended that:

• Cows are in a moderate BCS score (2.5 –3.0) at time of treatment. It is equally important that cows are a minimum of 35 days calved at time of PRID or CIDR insertion and are on a good plane of nutrition (plentiful supply of grass) for a minimum of 3-4 weeks prior to, during and after treatment.

• Synchronisation should only be used in herds where the level of management and in particular heat detection skills are high in order to detect heats and particularly repeat heats. Alternatively, a bull should be turned out with cows 7-10 days following the initial AI.

It is vitally important that high fertility semen is used and the competence of the inseminator is high. Semen must be thawed carefully (15 seconds in water at 35ºC) and the cow inseminated within 1-2 minutes of thawing. The correct site for semen deposition is in the common body of the uterus. Each straw should be thawed separately.

Checklist

Minerals for the suckler cow – pre-calving

- Feed the right type and level of pre-calver mineral (see example below)
- Feed pre-calver minerals for 4-6 weeks pre-calving
- Pre-calver minerals can be fed by dusting on top of the silage, through water, trace elements can be supplied in boluses (but this will not cover for major elements), molassed mineral buckets and in a carrier ration.
- Don't feed last year's minerals.
- Ensure feeding rate is correct – weigh it out
- If top dressing on silage, do it at least twice a day
- Ensure adequate feeding space (1.5-2.0 ft, 0.5 - 0.66m / cow)

Major Elements	"What you see on the label"	Feeding Rate 120 grams / day What the animal gets / day
Calcium	0%	0 g / day
Phosphorous	4.0%	4.8 g / day
Sodium	13%	16 g / day
Magnesium	17%	20 g / day
Trace Elements	**mg/kg**	
Copper	2,700 mg /kg	324 mg / day
Selenium	50 mg /kg	6 mg / day
Iodine	500 mg /kg	60 mg / day
Cobalt	100 mg /kg	12 mg / day
Manganese	1,000 mg /kg	120 mg / day
Zinc	4,000 mg /kg	480 mg / day
Vitamins		
Vitamin A	400,000 iu / kg	48,000 iu / day
Vitamin D3	100,000 iu / kg	12,000 iu / day
Vitamin E	2,000 iu / kg	240 iu / day

Explanation of model describing 75% difference in net margin per cow (€) and 12% difference in greenhouse gas emissions per kg beef liveweight (kg CO2e/kg beef liveweight) when in a suckler to weanling system that calves heifers at 24 versus 36 months of age (costs etc June 2022.)

Scenario one calving 24 months		Scenario one calving 36 months		Comment
40ha Farm		**40ha Farm**		**Calf to weanling system**
Suckler cows	71	Suckler cows	63	Cow numbers will change in the model based on what a 40ha farm can feed. In the calving for the first time at 36 months of age model, there are 20% more 'unproductive animals' on the farm if heifers do not calve down until 36 months of age. NOTE: Slightly more heifers carried than needed, as not all will go in calf; 20% will be actual replacement rate.
Heifers 0- 1	35	Heifers 0- 1	32	
Steers 0-1	36	Steers 0-1	31	
Heifers 1-2	16	Heifers 1-2	15	
Steers 1-2	0	Steers 1-2	0	
Heifers > 2	0	Heifers > 2	15	
Steers > 2	0	Steers > 2	0	
Replacement rate (%)	20	Replacement rate (%)	20	
Animals Sold		**Animals Sold**		
0-1	61	0-1	55	Number of progeny available for sale has important impact on gross output
1-2	2	1-2	0	Assumes two empty heifers following breeding
>2	16	>2	17	Includes cull cows and empty heifers in 36 month model
Farm organic N (kg/ha)	183	Farm organic N (kg/ha)	190	
Farm fertiliser N (kg/ha)	162	Farm fertiliser N (kg/ha)	163	
Stocking rate (LU/ha)	2.40	Stocking rate (LU/ha)	2.59	
Costs		**Costs**		
Silage	348	Silage	388	Larger silage requirement as additional heifers in system in 36 month model
Concentrates	184	Concentrates	189	
Urea (€/t)	950	Urea (€/t)	950	
Concentrate (€/t DM)	440	Concentrate (€/t DM)	440	
Economic				
Gross output (kg/ha)	752	Gross output (kg/ha)	673	Beef output is reduced by 79 kg/ha.
Gross output(€/ha)	2015	Gross output(€/ha)	1798	Greater number of progeny available for sale is a big driver of this difference. Gross output is reduced by €238 per ha.
Gross margin (€/ha)	962	Gross margin (€/ha)	724	As above
Net margin (€/ha)	309	Net margin (€/ha)	69	
Net margin (€/cow)	152	Net margin (€/cow)	38	THIS IS THE 75% DIFFERENCE IN NET MARGIN PER COW
Environment				
GHG kg per kg beef	11.2	GHG kg per kg beef	12.7	THIS IS THE 12% DIFFERENCE CARBON FOOTPRINT. This indicates methane, nitrous oxide and carbon dioxide emissions that are associated with the system on a per kilo of beef liveweight produced basis.

A to Z of FARM SAFETY

A	**Always** consider SAFETY on the farm.
B	**BULLS:** Beware of aggressive animals on your farm. Be sure to cull cross bulls, cows, rams, stags from your farm.
C	**CHILDREN:** Always supervise children on the farm, especially during machinery operations.
D	**DRAWBARS:** Never let anyone ride on the drawbar of your tractor or any other machinery. Do not allow anyone ride in an open trailer.
E	**ELECTRICITY** can kill. Beware of overhead power lines and buried cables.
F	**FORESTRY and tree felling:** Take care not to be caught under falling trees and logs. Attend a chainsaw and tree felling course.
G	**GAS:** Slurry gases can kill. Remove all stock from slatted sheds before agitating. Never enter a shed when slurry is being agitated. Close agitation point after each use.
H	**HORSES:** Some horses can be dangerous. Always wear safety equipment e.g. helmet when handling or riding horses. Be wary of being kicked by horses.
I	**INSPECT:** Check safety equipment on your farm regularly, e.g. machinery safety covers, PTO guards, fire extinguishers and First Aid kits.
J	**JAWS:** Keep away from blades of shear grabs, mowers, revolving knives and chainsaws.
K	**KEEP CLEAR** of machinery such as tractors, HiMacs, bulldozers when they are working. Stay in their line of vision and wear a high visibility jacket or vest.
L	**LIVESTOCK:** Be wary of being kicked or crushed while working in pens, yards or fields with livestock.
M	**MACHINERY:** Ensure safety covers and PTO guards are in place and working on all farm machinery. Avoid wearing loose clothing near machinery.
N	**NEVER** start a tractor when you are standing on the ground alongside it.
O	**OVERTURN:** Remember tractors have a high centre of gravity and can overturn easily. Drive slowly over uneven ground.
P	**PESTICIDES** and other toxic chemicals: Keep them out of the reach of children. Read the label and follow the manufacturer's advice on proper use, storage and disposal.
Q	**QUAD bikes:** Always wear a safety helmet when using a quad bike. Avoid letting children on them. Drive slowly over rough ground.
R	**ROOFS:** Use a roofing ladder when working on farm sheds. Stay clear of skylights.
S	**SAFETY:** Complete and update your Risk Assessment Document. This can be completed online at www.farmsafely.com. Take action on risks highlighted.
T	**TRAINING:** Attend a Farm Safety training course NOW at your local Teagasc centre.
U	**UNTIDY:** Poorly maintained farmyards/farm can lead to accidents. Keep your farmyard/farm neat, tidy and well maintained.
V	**VISION:** Your eyesight is vital – protect it. Wear safety goggles where your eyes are in danger.
W	**WARNING SIGNS** should be erected to warn the public of dangers or hazards such as "Tractors Crossing", "Beware of Bull".
X	**XTRA:** Be extra careful when there are children or elderly people on the family farm. Restrict access to dangerous ponds, tanks, unstable heights etc.
Y	**YOU and YOUR FAMILY:** Take every precaution to remain safe and healthy. Assess every farm task carefully for potential dangers or risks. Organise and complete tasks with safety in mind.
Z	**ZOONOTIC DISEASES** and infections which can be transmitted from animals to humans. E.g. TB, Toxoplasmosis, Weil's Disease, E.Coli .... Wear gloves when handling livestock. Always wash your hands after being in contact with animals.

REMEMBER: HEALTH IS WEALTH. THINK SAFETY. BE SAFE!

Thank you for your attention and safe home!