



Future Beef Programme / ICBF

Breeding Farm Walk



Eamon & Donnchadh McCarthy's Farm
Carrigeen, Youghal, Co. Waterford | 3rd April 2023

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 Eamon and Donnchadh for hosting this farm walk. We look forward to working with them and their local advisors over the coming 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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Breeding Targets for Suckler Herds

2022 KPIs		McCarthy's	National Average
Calves per cow per year		1.01	0.87
Calving interval (days)		355	393
Mortality at 28 days (%)		0%	2.07%
6 week calving rate		100%	55-62%
% heifers calving at 22-26 months <i>(*100% home bred heifers calved at 22-26 months)</i>		59%*	24%
Age at slaughter (months)	▪ Heifers	21.4	26.1
	▪ Bulls	15.7	18
Slaughter performance	▪ Heifers	320kg, U-3-	340kg, R=3+
	▪ Bulls	406kg, U=3-	399kg, U-3-

Cow and Bull Management

What Factors influence Breeding Performance on Farm?

One of the key aspects of running an efficient suckler system is good breeding management and herd fertility. Cow condition score, bull fertility, the incidence of difficult calving and herd health are some of the main factors that affect fertility in the herd. Good reproductive efficiency is central to economic and environmental sustainability.

Cows Body Condition Score (BCS):

Body condition score at calving needs to be at a herd average of 3.0 for spring calvers as this allows for 0.5 of a B.C.S loss up to start of breeding season. At the start of the breeding season a cow needs to be on an increasing plane of nutrition with a BCS of 2.5 to give her the best possible chance of going back in calf.

Thin cows that are in poor condition or lose a lot of weight post-calving will have a delayed return to heat. The effects of low BCS at calving are only partially reversed by placing cows on a high plane of nutrition after calving. Extra feeding after calving will not compensate for poor BCS at calving. Cows on poor BCS 1.75 will not cycle until 71+ days after calving while cows in good BCS 3.0+ will be cycling by day 55.

Avoid fluctuations in feed supply around breeding. Keep cows on a rising plane of nutrition

Restricted suckling:

If possible, restricted suckling of calves in the morning and evening (from 4 weeks of age) will help break the maternal bond between cow and calf. This practice helps improve cow's/heifers condition coming into the breeding season and cows will return to heat cycle quicker.

Health Issues:

A number of infectious diseases are known to affect a cow's ability to produce a live calf, breed successfully, and subsequently carry a healthy calf to full term. Any issues with herd health need to be checked out fully in consultation with your vet in advance of the breeding season. Uterine infections can significantly delay the onset of cycling. If a vaccination programme is currently in place it should be reviewed and updated in consultation with your vet. Ensure cows receive all vaccinations 3 weeks prior to breeding.

Ensure cows are dosed for parasites if necessary - Fluke & Worms prior to breeding.

Avoid stress around the time of breeding. Ensure cows are in a socially stable group. Avoid mixing cows from different groups during the breeding season especially 1st calved heifers.

Calving Difficulty:

Difficult calving greatly increases the incidence of reproductive problems in the following breeding season and also reduces calf survival. When selecting sires, a good rule of thumb is to use bulls that

are <7.5% on the new calving difficulty rating and high reliability >70% on heifers. For mature cows, the calving difficulty varies according to breed from 6.2-11.5% which is available on the ICBF ready reckoner available on the ICBF website.

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).
- Check that the scrotum circumference and that they have no deformities.

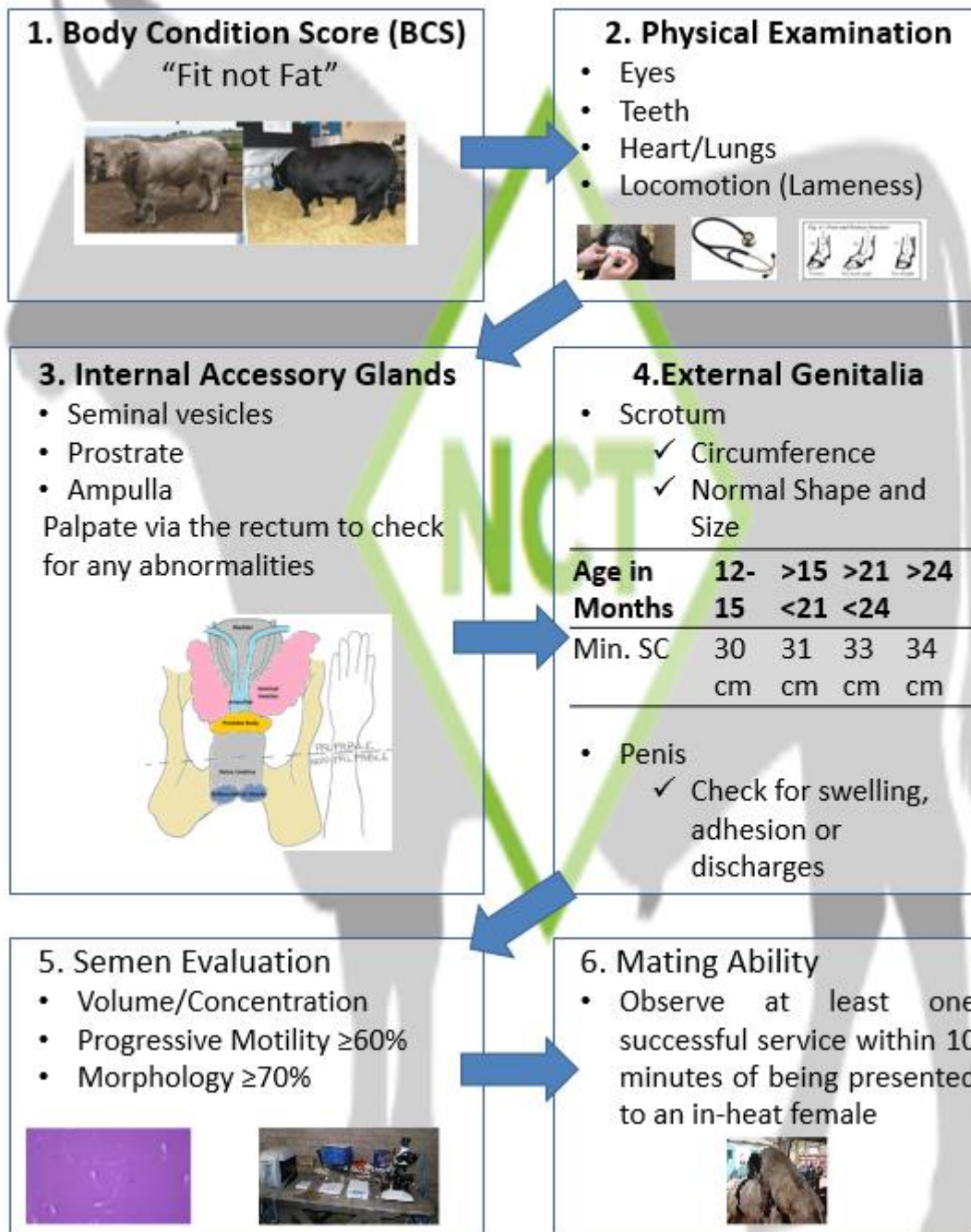
Table 1: *Minimal scrotal circumference of breeding bulls by age*

Age in Months	12-15	15 -21	21 -24	>24
Min. Scrotal Circumference	30 cm	31 cm	33 cm	34 cm

- Check penis for swelling/discharges etc.
- Ensure all vaccinations are up to date
- Approximately 25% of all working bulls are sub-fertile or infertile. Your vet can fertility test your bull 6-8 weeks pre-breeding.
- Socialise a new bull with the cows/heifers.
- 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 (15 cows maximum for first season)
- A mature bull can handle up to 40 cows.

Bull NCT

Bull Breeding Soundness Evaluation (BBSE)



Suckler Carbon Efficiency Programme (SCEP) Requirements

Female Replacement Strategy

Reference Number: 39 cows

SCEP Reference Number* **39**

(Average No. cows calved in the best three years from 2016 – 2021)

- Farmer can reduce reference number – year one – can never go above this
- In January of each year can reduce by 20% of the reference no (8), can go back up
- 31st October 2023 = 50% reference number must be genotyped 4/5star on replacement index **20**

- 31st October 2025 = 65%

25

- 31st October 2027 = 75%

29

50% of the reference number must calve each year.
Failure means removal from the scheme

Heifers must be at least 16 months old – born before end June previous year

Eligible Bull/AI

Within	Economic Indexes	Index	Rel%	Across
★★★★★	Replacement	€113	50%	★★★★★
★★★★★	Terminal	€154	54%	★★★★★

- 2023 + 2024

80% calves sired by 4/5star bull/AI on replacement or terminal index

- 2025 + 2026

85% calves sired by 4/5star bull/AI on replacement or terminal index

- 2027

90% calves sired by 4/5star bull/AI on replacement or terminal index

Genotyping

- 70% of the reference number of animals must be genotyped
- Deadline 30th November each year
- Cost €20 per animal

27

Weighing

- 80% of calves born and their dams must be weighed
- Unweaned
- Between 50 days → weaning
- Before the 1st of November

Surveys

- Tag within 27 days
- Complete calving survey
- Keep calves for 5 months –
- Complete Calf + Cow surveys by 30th November to be paid in full Dec.

15th February Deadline

Training

- Must be completed by 15th November 2024
- Two courses
- General SCEP information,
- Health and safety & livestock handling course

Other Terms and Conditions

- Must be a member of Bord Bia Quality Assurance – 16th Oct 2023
- Apply early – have to be inspected and pass checks before 16th Oct 2023
- Must remain in scheme for 5 years – If not removal from SCEP
- Must complete a BISS application each year – If not removal from SCEP

Payments

- Area based – Environmental Scheme

Farm SCEP Reference Number*	39
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- Reference no. / 1.5 = Ha (Max Payable Area) **Can't drop below 80%**

- McCarthy's 39/1.5 = 26 ha - MPA

- 15ha x €225/ha = €3,375

- 11ha x €180/ha = €1,980

- Gross payment = €5,355

- (Minus Genotyping €540)

- Net Payment = **€4,815**

- First 15ha @ €225 /ha

- Remaining @ €180/ha

- No max.

- First 22.5 cows @ €150

- Remaining @ €120

Selecting the Right Bull for Your Herd

Replacement Females

Investing in the future of your herd

Important Questions

1. Breed your own or purchase?

- Production system
- Herd size
- Pros and cons to both



2. Are current breeding stock of high enough genetic merit?

- Avg. Replacement Index of your cows, heifers and bulls?
- Are indexes balanced (carcass, milk, fertility)? → avoid extremes
- Are animals genotyped?

3. Is AI an option?

- Access to elite genetics
- Option to use multiple sires → minimizing risk
- Select best cows and mate to high Rep Index AI sires
- Proven easy calving sires for heifers

Euro-Star Indexes

Applying to your herd in 3 steps

1. Define your farming system

- What is your target market?
- What type of animal is required for this market?
- What traits are required to produce that type of animal?



Euro-Star Indexes

Applying to your herd in 3 steps

2. What are the strengths and weaknesses of your cows?

Eamon & Donnchadh- Breeding replacements and males for slaughter

C. Cows						
Average Beef Euro-Star Values for cows on your farm						
Replacement Index						
Group	Number of Cows	Index Value (€)	Across Breed	Carcass Weight (Kg)	Daught Milk (Kg)	Daught Calving Interval (Days)
				Across Breed	Across Breed	Across Breed
Cows						
Total Cows	45	€123	★★★★★	+12	+8.1	-1.54
With Euro-Stars*	45		★★★★★	★★	★★★★★	★★★★★

HerdPlus Euro-Star report summary page

Replacement Index

Carcass Weight

Milk

Calving Interval

Actions for this herd



Replacement index & Milk &



calving interval →



Carcass Weight+



Balanced Indexes

Females with adequate carcass, milk & fertility

			Replacement Index	Carcass Wgt	Milk	Calving Interval
0757	372212310340757 25-JUL-2022 CH(50%),BB(25%)	CH4082 372212310310564	€91 ★★★★★ 48% 76	+30.6 ★★★★★	+1 ★★	-0.82 ★★★
Imbalanced towards carcass						
0702	372212310370702 27-FEB-2021 LM(63%),HE(25%)	LM5983 372212310310589	€121 ★★★★★ 45% 56	+18.9 ★★★	+5.5 ★★★★	-0.28 ★★
0690	372212310340690 15-FEB-2021 AU(50%),SI(25%)	AU4683 372212310320607	€190 ★★★★★ 46% 1	+16.1 ★★★	+6 ★★★★	-4.75 ★★★★★
630	372212310310630 25-MAR-2019 SI(50%),LM(25%)	SI2469 IE351310870517	€168 ★★★★★ 53% 13	+13 ★★	+9.7 ★★★★★	-3.13 ★★★★★
0682	372212310340682 07-FEB-2021 AU(50%),SI(25%)	AU4683 372212310340625	€167 ★★★★★ 46% 14	+17.2 ★★★	+5.2 ★★★★	-5.54 ★★★★★
Balanced indexes						
341	IE351128340341 30-MAY-2016 HE(50%),HO(31%)	GGA IE351140410904	€127 ★★★★★ 56% 48	+8 ★	+16.4 ★★★★★	-2.21 ★★★★
Imbalanced towards milk and fertility						

3

Euro-Star Indexes

Applying to your herd in 3 steps

Star Rating (within Simmental breed)	Economic Indexes	Purpose	Euro value	Index reliability	Star Rating (across all beef breeds)
★★★★★	Replacement (per daughter lactation)	To breed future cows for the suckler herd	€167	52% (Average)	★★★★★
★★★★★	Terminal	To breed beef animals from the suckler herd that are destined for slaughter	€123	55% (Average)	★★★★★
★★★★☆☆	Dairy Beef	To breed beef animals from the dairy herd that are destined for slaughter	€22	53% (Average)	★★★★☆☆
Calving Difficulty (births requiring considerable assistance; % 3 & 4)					
When Mated With:				Value	Reliability
Beef Heifers Breed avg: 8.60%, All breeds avg: 8.14%				8.5%	53% (Average)
Beef Cows Breed avg: 3.64%, All breeds avg: 3.92%				2.3%	76% (High)
Star Rating (within Simmental breed) Key profit traits Index value Trait reliability Star Rating (across all beef breeds)					
Expected progeny performance					
★★★★★	Docility (1-5 scale) Breed avg: 0.06, All breeds avg: 0.02		0.15 scale	64% (High)	★★★★★
★★★★★	Carcass weight (kg) Breed avg: 21.15kg, All breeds avg: 17.08kg		33.5kg	54% (Average)	★★★★★
★★★★☆☆	Carcass conformation (1-15 scale) Breed avg: 1.34, All breeds avg: 1.44		1.41 scale	48% (Average)	★★★★☆☆
Expected daughter breeding performance					
	Daughter calving difficulty (% 3 & 4) Breed avg: 5.39%, All breeds avg: 5.32%		5.3%	66% (High)	
★★★★☆☆	Daughter milk (kg) Breed avg: 8.58kg, All breeds avg: 2.49kg		10.50kg	50% (Average)	★★★★★
★★★★☆☆	Daughter calving interval (days) Breed avg: -0.52 days, All breeds avg: -0.89 days		-1.17days	45% (Average)	★★★★☆☆

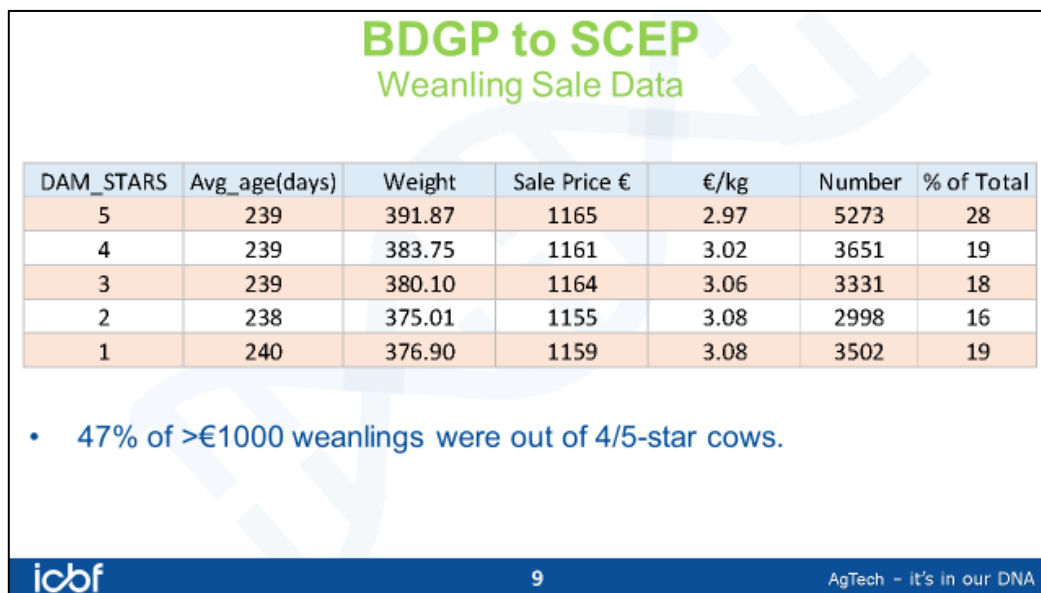
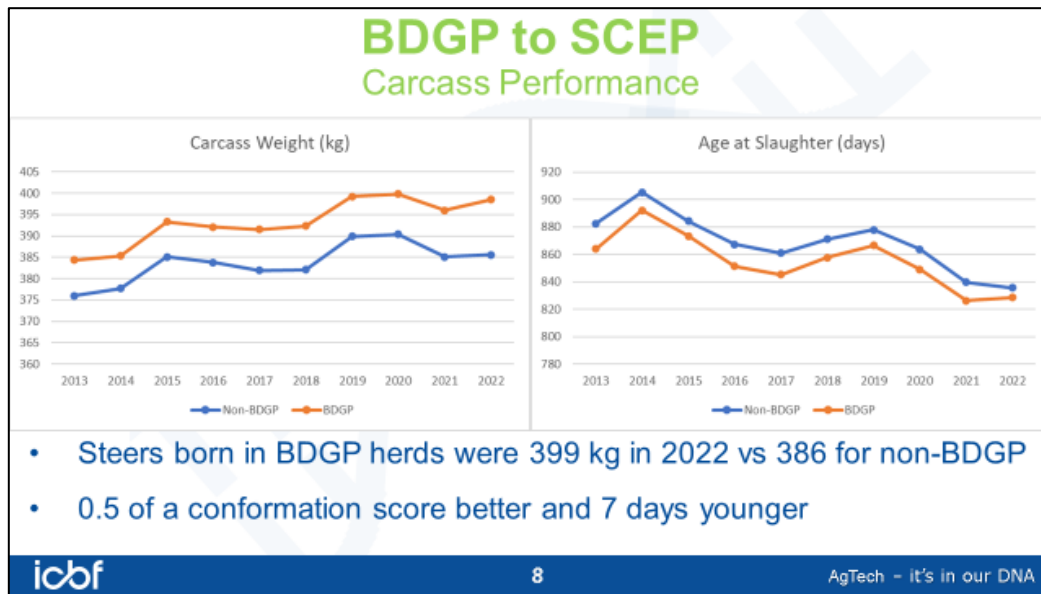
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Euro-Star Indexes

Applying to your herd in 3 steps

Star Rating (within Limousin breed)	Economic Indexes	Purpose	Euro value	Index reliability	Star Rating (across all beef breeds)
★★★★★	Replacement (per daughter lactation)	To breed future cows for the suckler herd	€138	44% (Average)	★★★★★
★★★★★	Terminal	To breed beef animals from the suckler herd that are destined for slaughter	€129	49% (Average)	★★★★★
★★★★★	Dairy Beef	To breed beef animals from the dairy herd that are destined for slaughter	€93	43% (Average)	★★★★★
Calving Difficulty (births requiring considerable assistance; % 3 & 4)					
When Mated With:				Value	Reliability
Beef Heifers Breed avg: 8.29%. All breeds avg: 8.14%				10.5%	51% (Average)
Beef Cows Breed avg: 3.83%. All breeds avg: 3.92%				4.0%	72% (High)
Star Rating (within Limousin breed)	Key profit traits	Index value	Trait reliability	Star Rating (across all beef breeds)	
Expected progeny performance					
★★★★★	Docility (1-5 scale) Breed avg: -0.05. All breeds avg: 0.02	-0.03 scale	46% (Average)	★★★★★	
★★★★★	Carcass weight (kg) Breed avg: 23.65kg. All breeds avg: 17.08kg	26.2kg	45% (Average)	★★★★★	
★★★★★	Carcass conformation (1-15 scale) Breed avg: 2.17. All breeds avg: 1.44	2.25 scale	45% (Average)	★★★★★	
Expected daughter breeding performance					
	Daughter calving difficulty (% 3 & 4) Breed avg: 4.74%. All breeds avg: 5.32%	4.28%	56% (Average)		
★★★★★	Daughter milk (kg) Breed avg: -0.46kg. All breeds avg: 2.49kg	3.30kg	42% (Average)	★★★★★	
★★★★★	Daughter calving interval (days) Breed avg: 1.13 days. All breeds avg: -0.89 days	0.03days	37% (Low)	★★★★★	

Do the Eurostar Indexes work?



Answer = Yes!

There was much criticism of BDGP that while it may have been breeding milkier and more fertile cows, it was to the detriment of the carcass traits. In fact, animals bred in BDGP herds are consistently hitting higher carcass weights at younger ages and are now half of a conformation score better than animals born in non-BDGP herds and this gap has been increasing steadily over the last few years.

Weanling sale data also shows weaned calves that are almost 15kg heavier from 5 star vs. 1 star cows.

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 1 (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 2: Recommended synchronisation regimen for beef cows ≥ 35 days calved at time

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 <u>Or</u> 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 35°C) 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.

Synchronisation regimens for replacement heifers

As the vast majority of replacement heifers should be cyclic during the breeding season there is a reduced requirement for incorporating an exogenous source of progesterone in the regimen for heifers. Consequently, prostaglandin-based regimens are the method of choice for use on replacement heifers. A very cost effective regimen involves good heat detection initially carried out for 6 days and all heifers detected in heat inseminated. On the 6th day all heifers not yet detected in heat are injected with prostaglandin. The injected heifers will respond to the prostaglandin and show heat 2-4 days after injection and should be inseminated as normal; conception rates of 65 to 70% should be expected. The remaining heifers not yet recorded in heat and inseminated can be treated with a 2nd prostaglandin injection 10-11 days (see Figure 1) after their initial injection. Up on 80% of the heifers will respond to one or either injection of prostaglandin. Using this protocol drug use, semen costs and veterinary costs are minimised.

Table 3: *Alternative prostaglandin-based regimen 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)			Inject Prostaglandin (PG)	

Fixed Time A.I. in Heifers

There is an option to use a PRID/CIDR device in heifers using a similar protocol to what was outlined for the cows. The options are to: i. 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 ii. 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. Pregnancy rates of over 70% have been achieved at Grange, to a single timed insemination in 15-16 month old beef heifers using this regimen.

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.

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	

List of Products used:

- PG Prostaglandin- *Estrumate, *Lutalyse, *Enzaprost.
- GnRH- *Receptal, *Ovarelin.
- ecG- *Folligon PMSG, *Synchrostim

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
- Receptal x 5 €113.82
- Estrumate x 5 €211.14
- Folligon x 5 €181.38
- Cidr Applicator x 1 €13.36
- Prid Applicator x 1 €13.36
- Kamar Heat Patches x 50 €82.52

Heat Detection Aids

Observe Heats and Record

It is crucially important that you observe your cows/heifers and record their heats in a notebook or on an App. If you see your cow/heifer being served by the bull or 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

A vasectomised bull fitted with a chin ball is a very easy method of heat detection. It will work on both cows and heifers. The chin ball allows you to see if a cow/heifer has been in heat, even if the bull is not with her, therefore reducing the instance of missed heats. It is important that a vet vasectomises the bull, ensure it is done eight weeks before the breeding season and ideally check it has been successful.

- Ensure your vasectomised bull is well grown. He will be working hard over a short period and you want him to be able to mark the cow on the back.
- Fit the chin ball a week before it is need to allow the bull to familiarise himself with it.
- You can pad the pad the neck and nose strap with to prevent the strap cutting the bull.
- Ensure the chin ball is well fitted to the bull. If it is leather, it will need to be adjusted.
- When ready to start the breeding season, fill the chin ball with paint. One fill should suffice for 10-15 heats
- Have your bull ringed for safety and convenience when refilling the chin ball.
- Only use chinball paint in the chinball. It is a heavy oil base and needs to be well shaken before topping up.
- Red or blue paint is most obvious so use in wetter conditions.
- Avoid overfilling the chinball and ensure the plug is secured correctly.
- The bull marks the cows on the back when he is serving them. Position yourself to see the marks on the backs of the cows. A young bull will mark cows a lot on the side when he is courting her, older bulls much less. It is the marks on top of the back that are key.



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



Automated heat detection systems

- Moo Heat – Vasectomised bull with collar, cows have tags
- Sense Hub – Cows tagged/collar
- Others available

Sexed Semen

Why use sexed semen?

Sexed semen has become a more viable option for herds in recent years. Developments in the sexing technology, herd trials which show improved conception rates and the introduction of two sexed semen labs in Ireland have increased the availability sexed beef straws for suckler farmers this spring.

The advantages of using sexed semen are:

- 90% chance of a heifer calf.
- Can breed replacements early in breeding season.
- Genetic gain.
- Can breed more cows to a terminal sire to increase beef output on the farm.

While sexed semen will provide an excellent opportunity to herds, it does come with challenges. Some of the disadvantages are:

- Lower conception rates (85% of conventional rates).
- Much smaller breeding window after heat is detected.
- Slightly higher cost.

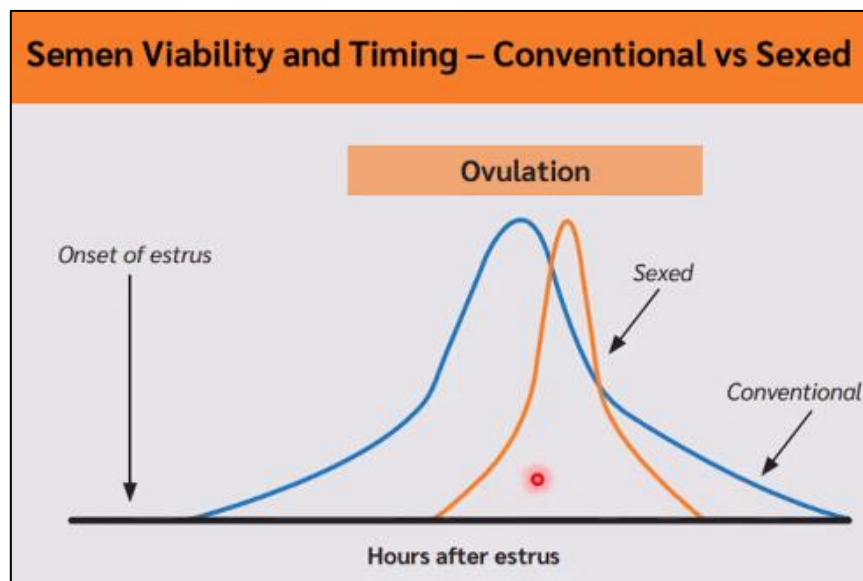


Figure 1: Semen viability and timing – conventional vs. sexed

Steps for success with sexed semen

It is recommended that sexed semen insemination should be restricted to the first 3 weeks of the breeding season so that the herd calving spread is not negatively affected. Some other main points to consider are outlined below.

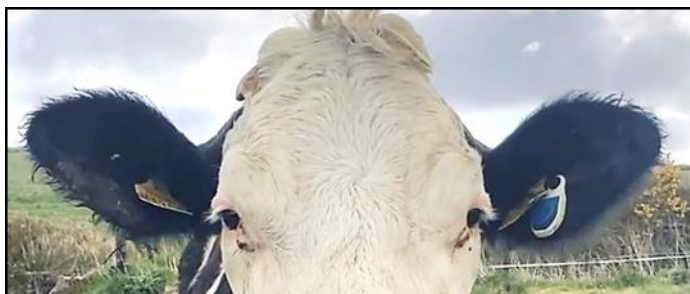
1. Herd suitability. You should;
 - Have used AI successfully in the past.
 - Have a fertile herd, i.e. >70% 6 week calving rate, 356 day calving interval, >0.95 calves per cow per year.

2. Choose your females carefully. They should;
 - Be your most fertile females that have calved in the first half of the breeding season.
 - Be >35 days calved.
 - Have cycled more than once before breeding.
 - Have had less than 4 calves.
 - Heifers should be at target body weight for breeding, e.g. over 400kg for continental heifers.
 - Have a body condition score of 3.
 - Be on a good plane of nutrition with no sudden changes in their diet before or after breeding.

3. For replacements, pick a bull that;
 - Has a higher replacement index than your herd index at over 70% reliability.
 - Has a positive daughter milk figure.
 - Has a negative daughter calving interval figure.
 - Has a daughter calving difficulty figure of less than 8% at >70% reliability if being used on heifers.
 - Note that not all sexed bulls are going to breed suitable replacements for your herd so make sure to choose them carefully.

4. Communicate with your AI technician
 - Let them know that you are planning to use sexed semen and to check if they will have the flexibility to call when needed.
 - Discuss what AI straws you want to use to ensure they are available.

5. Heat detection (NB – Crucial for success)
 - Frequent observation is essential – 20 minutes 4-5 times per day is recommended.
 - Heat detection aids such as tail paint, kamars, scratch cards, vasectomised bull with a chin ball etc. should be used.
 - Automated heat detection options such as tags, collars and boluses are also available.



6. Timing of AI
 - 14 to 20 hours after heat onset (first standing mount).
 - Practice AM/PM rule if possible.

- If using once a day AI, use conventional semen if time of AI is <14 hours after heat onset.
- Table 1: Recommended breeding times for sexed semen

Day 1: Onset of heat between	Time of AI
01:00 to 07:00	21:00 - Same day
08:00 to 13:00	06:00 - Next day
13:00 to 19:00	09:00 - Next day
16:00 to 22:00	12:00 - Next day
19:00 to 01:00	15:00 - Next day
22:00 to 04:00	18:00 - Next day

7. Straw handling

- Ensure the AI straws are easily identified in the flask if doing DIY AI, ideally in a single goblet.
- Thaw a maximum of 2 straws at any one time.
- Thawing time is a minimum of 45 seconds at 35-37°C.
- Ensure the straws are fully dry before insemination.
- Load straws into a pre-warmed AI gun and keep it warm.
- Deposit semen into the uterine body.
- Use the thawed straws within 5 minutes.

How many sexed semen straws do I need to use?

In a suckler herd of 30 cows with a replacement rate of 20%, 6 female replacement heifers will be needed per year. The expected conception rates for sexed semen in heifers is 60% and 50% for cows for the first serve.

If sexed semen is only used for the first 3 weeks of the breeding season and the 6 heifers are bred, you would expect a conception rate of 60%. Allowing for 90% sex bias towards heifers, you would expect to produce 3 replacement heifers from sexed semen. Heifers that repeat can be served again with conventional semen from a maternal bull.

Three further heifers are required to be produced from the suckler cows in the herd. Allowing for 50% conception rates and a 90% sex bias, 7 cows will have to be bred to sexed semen straws.

This means that 13 sexed semen straws are required in the herd to produce 6 replacement heifers. Note that this does not allow for any embryo loss, abortions or mortality after birth.

Calving Beef Heifers at 2 Years of Age

The percentage of beef heifers calved at 22-26 months of age nationally stands at 23%. This is compared to 74% of dairy heifers that calve at the same age.

What are the benefits to calving heifers at 2 years 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.
- If you calve your heifers at an older age, it will cost you €50/heifer/month in a 50 cow herd for the extra unproductive time she spends on the farm until calving.
- Heifers that calve at 24 months can reduce the Greenhouse Gas emissions produced on your farm by 4-5% vs. calving at 32 months of age.

How can you calve your heifers at 2 years of age?

- If you are breeding your own replacements, your replacement heifers should be identified early. These can be selected based on the following criteria;
 - ✓ Visual assessment: The heifer should have good feet and legs, which can also be assessed from her dam if possible. She should have a good frame too, particularly in the pelvic area but care should be taken that she is not too well muscled either as this can cause difficulties later at calving if she is small.
 - ✓ Weight for age: She should be gaining over 1.1 kg/day from birth and have a 200 day weight of over 250kg.
 - ✓ Eurostar index: Heifers should be genotyped as 4 or 5 star on the replacement index, with positive figures for milk and docility, and negative figures for calving interval.
 - ✓ Family history: The heifer should have a good milky dam that is docile and fertile. The sire should have positive figures for daughter milk and a negative figure for daughter calving interval.
- You should examine on your ICBF weaning performance report what the average weight of your cows are, and this will help to determine what the mature weight of your heifers will be. Based on this information, performance targets should be set as with the table below.

Table 3: 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		

- Heifers should be well fed over the first winter as they will have to gain between 60-80 kg to ensure they meet their weight targets. The silage on the farm should be tested and they should be given >70% dry matter digestibility (DMD) silage. Their diet should be balanced with ration as appropriate to ensure that there is adequate energy and crude protein for them to gain 0.6 kg/day over the housing period.
- Replacement heifers are priority stock on the farm and should be turned out to grass early in spring to help them settle at grass before breeding commences and so that they will reach their target weights before breeding at 15 months of age.
- When breeding the heifers, the bull selection is crucial. The bull's heifer calving difficulty should be less than 8%, with over 80% reliability to reduce the incidence of difficult calvings.

Pre-calving care for heifers

Over their second winter, heifers should be monitored closely. They should be dosed and vaccinated as necessary to ensure that they have no health setbacks which could impact their performance.

They should have a 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*

It is very easy for maiden heifers to be bullied by older cows when they are in the shed, which can cause injuries and affect their feed intakes. Ideally they should be housed in a separate pen to prevent this from happening, and to ensure that they have enough feeding and lying space.

As with all heifers, they should be supervised at calving.

Post calving care for heifers

After calving, heifers should be given good quality feed to help them meet their energy demands. If housed indoors, they should be given over 70% DMD silage and at least 2kg ration. They should be turned out to grass as early as possible to give them a chance to build condition before breeding again.



Notes



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.



Thank you for your attention and safe home!