MUNSTER BOVINE

# BREEDING & FERTILITY MANAGEMENT

# BREEDING GOALS

| 1 | 2 | 3 |
|---|---|---|
| **Breed enough high EBI replacement heifers that are suitable for your farming system.** | **Have all replacements born in the first 4 weeks of the calving season to ensure ease of management and to promote retention in the herd.** | **Increase the value of beef calves produced by using high genetic merit dairy beef bulls, delivering high beef value stock while ensuring calving ease and acceptable gestation length.** |

## MAXIMISING GENETIC GAIN IN YOUR HERD.

**Cow selection** – Select your highest EBI, most productive cows that are trouble free to breed replacements from. Use your milk recording report to select your most productive cows.

**Breed replacements from your maiden heifers** – Your maiden heifers should be the highest genetic merit animals on your farm. Breeding replacements from them will accelerate genetic gain. It will also facilitate the use of easy calving bulls with high reliability on them which is crucial for their future fertility and survival.

**Use a team of high EBI dairy sires** – Use high EBI dairy sires that will breed cows to suit your farming system. It is also important to use an adequate size team – see page 4.

**Sexed Semen** – Using sexed semen will allow you to be more selective with the females to breed which will further accelerate genetic gain – see page 16

## BREEDING COWS TO SUIT YOUR FARMING SYSTEM.

To breed suitable heifers, first review your EBI Herd summary report (Example on page. 3) and subindex figures to identify the areas that need improvement. Towards the bottom of the EBI report, you will see the Dairy Youngstock genetic breakdown which is a summary of the calves retained as dairy replacements. Generally, these females are the highest genetic merit in your herd and therefore are a good guide to use when setting your selection criteria for the breeding season. Use the PTAs (Predicted Transmitting Ability, i.e., genetic merit for a trait that a cow is expected to pass on to her calves) and Sub Indexes as your selection criteria when selecting your team of bulls.

The **Milk Kg PTA** figure is the milk volume part of the milk sub index. Using a team of bulls with a higher milk kgs figure than the herd average will increase milk volume output and vice versa. The farm feeding system must be considered when choosing for higher or lower milk kgs PTA as under and overfeeding can result in significant economic, fertility and health consequences for the herd.

**Fat and Protein Percentage PTAs** – Both of these traits are highly heritable and rapid genetic progress is possible. The milk payment structure in Ireland rewards farmers for producing milk with high percentages. Select a team of bulls to maximise gain here while satisfying other requirements.

**Fat and Protein Kg PTA** – Similar to Fat and protein percentages, these traits are highly heritable and therefore genetic progress can be made quickly. Use your EBI report to guide you when setting your selection criteria for selecting a team of sires.

The **Milk Subinde**x is positively associated with profit per lactation. A higher index value indicates a higher profit potential from production provided the herd is fully fed.

**Fertility Subindex** – Herd fertility drives profitability in a seasonal system. Attaining a high 6 week calving rate, a low empty rate and optimum days milking at grass requires fertile cows. The fertility sub index should be high enough to allow the herd to meet its fertility targets. Aim for the fertility subindex to be at least equal to the milk subindex.

**Carbon Subindex** - A high fertility subindex (increased survival and decreased calving interval) and a high maintenance subindex (lighter cows) are positively correlated with the carbon subindex.

**Calving Subindex** – Cows with a high calving subindex have a shorter gestation length and minimal calving difficulty.

The **Maintenance** figure predicts the mature liveweight of the cow, it is not a measure of how tall or small a cow will be. Using a team of bulls with a higher maintenance figure than the herd average will REDUCE cow liveweight and vice versa. The liveweight of the mature cow influences her nutrition requirement, her walking ability, her survivability, her calf's beef potential, and her impact on ground conditions. The two figures that most dictate the TYPE of cow are the Maintenance subindex and Milk Kgs PTA.

**Management Subindex** –Cows with a positive management subindex have good temperament and milk out speed.

**Health subindex** – Is made up of 4 traits including Mastitis, SCC, Lameness and TB. On average, cows with a high health subindex are less likely to suffer from mastitis and lameness, critical for cow survivability and reduced antibiotic use; furthermore, they are more likely to have increased resistance to TB.

**Trait PTAs** | **Sub-Indexes that make up the overall EBI**

| Animal Group | No. of Cows | Milk Kg / Fat % / Prot % | | Surv % / CI Days | Milk | Fertility | Carbon | Calv | Beef | Maint | Mgmt | Health | EBI € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cows with EBI** | **115** | **-57** | | | **€32** | **€75** | **€6** | **€21** | **€17** | **€7** | **€02** | **€13** | |
| Missing EBI* | 0 | **5.4** | **0.14** | **1.5** | | | | | | | | | **€170** |
| Total Cows | 115 | **2.1** | **0.07** | **-4.2** | | | | | | | | | |
| **1st Lactation** | **27** | **-72** | | | **€42** | **€64** | **€4** | **€20** | **€16** | **€2** | **€0** | **€9** | |
| | | **6.1** | **0.16** | **1.2** | | | | | | | | | **€157** |
| | | **3.1** | **0.1** | **-3.7** | | | | | | | | | |
| **2nd Lactation** | **20** | **-53** | | | **€40** | **€65** | **€6** | **€24** | **€9** | **€14** | **€0** | **€12** | |
| | | **5.6** | **0.14** | **1.3** | | | | | | | | | **€169** |
| | | **3.2** | **0.09** | **-3.6** | | | | | | | | | |
| **3rd Lactation** | **18** | **-40** | | | **€36** | **€77** | **€6** | **€19** | **€17** | **€5** | **€-12** | **€14** | |
| | | **4.1** | **0.10** | **1.6** | | | | | | | | | **€174** |
| | | **3.3** | **0.08** | **-4.3** | | | | | | | | | |
| **4th Lactation** | **10** | **22** | | | **€51** | **€63** | **€3** | **€22** | **€12** | **€12** | **€1** | **€11** | |
| | | **9.2** | **0.15** | **1.6** | | | | | | | | | **€174** |
| | | **4.8** | **0.07** | **-3.3** | | | | | | | | | |
| **5th Lactation (+)** | **40** | **-75** | | | **€15** | **€88** | **€9** | **€20** | **€24** | **€6** | **€0** | **€15** | |
| | | **4.4** | **0.13** | **1.8** | | | | | | | | | **€178** |
| | | **-0.4** | **0.04** | **-4.9** | | | | | | | | | |

**2. Dairy Youngstock**

| Animal Group | No. of Calves | Milk Kg / Fat % / Prot % | | Surv % / CI Days | Milk | Fertility | Carbon | Calv | Beef | Maint | Mgmt | Health | EBI € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2025 Calves** | **33** | **-88** | | **1.4** | **€47** | **€91** | **€8** | **€24** | **€10** | **€10** | **€-1** | **€11** | |
| Missing EBI* | 0 | **7.3** | **0.19** | | | | | | | | | | **€198** |
| Total Calves | 33 | **3.2** | **0.11** | **-5.4** | | | | | | | | | |
| **2024 Calves** | **33** | **-65** | | **1.5** | **€45** | **€80** | **€7** | **€24** | **€10** | **€8** | **€-1** | **€9** | |
| Missing EBI* | 0 | **7.3** | **0.18** | | | | | | | | | | **€182** |
| Total Calves | 33 | **3.2** | **0.1** | **-4.6** | | | | | | | | | |

# FERTILITY GOALS

**1**

**Achieve a high 6-week calving rate –For a compact spring calving herd the target is 90%. To hit this target, 70% of the current milking herd need to calve in the first 6 weeks.**

**2**

**Achieve a low empty rate – for a 12-week breeding season, the target is less than 10% empty cows. Achieving this target will allow some voluntary culling even with a low replacement rate of 18-20%. (With less empty cows in the herd, more choice exists to cull problem cows.)**

**3**

**Aim to calve 95% of your maiden heifers in the first 4 weeks.**

## RESPONSIBLE BREEDING – USE A TEAM OF BULLS

It is advisable to use a team of bulls evenly across the herd. There are two reasons for this

1. Genetics – If a bull is overused and his genetic value falls, you may end up with too many heifers from a bull that no longer fulfils your criteria.
2. Fertility – The field fertility of a bull refers to his ability to get cows in calf. Any bulls' field fertility can drop from time to time despite rigorous lab tests.

Using a sufficient size team evenly will mitigate against both of these risks.

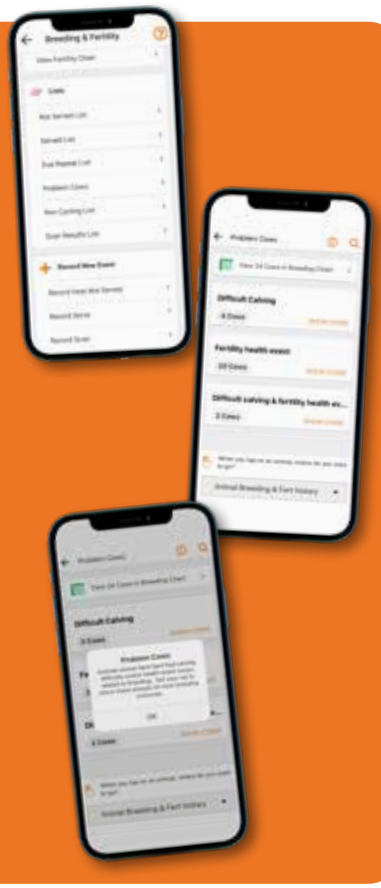
Example – In a 100 cow herd use at least 5 unrelated bulls with no bull used on more than 20% of the cows.

G1 bulls are young test bulls in their first season. They do not have known field fertility and their calving difficulty has low reliability. They are available in packs through Gene Ireland and in limited quantities through Munster Bovine. This is to ensure that the risk to genetic evaluation and field fertility for individual bulls is mitigated.

## FARMOPS PROBLEM COWS

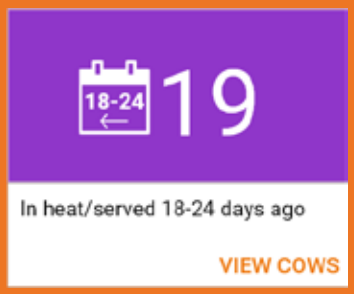
### PROBLEM COW LIST IN FARMOPS

**The problem cow list in FarmOps is generated from cows that you have recorded as having a difficult calving at calf registration or a health event that may affect their fertility e.g., retained afterbirth, milk fever, mastitis, uterine infection, LDA, ketosis etc. This list allows cows that need veterinary examination to be easily identified for drafting.**



## FARMOPS BREEDING METRIC 2 – DUE FOR REPEAT

**This is a list of cows/ heifers that have had a pre-breeding heat recorded or a serve recorded 18-24 days ago. These are the animals to watch carefully in case they repeat.**




## FARMOPS BREEDING METRIC 4 – NOT SERVED

**This is an action list of cows that are now calved long enough to be eligible for breeding. These are the cows that may need veterinary intervention during the breeding season to ensure they come bulling and are bred early.**

# BREEDING MANAGEMENT PLAN

| Date | Action |
|---|---|
| 3-4 weeks before Mating Start Date | Begin Pre-breeding Check, heat detect for full cycle 24 days. Find the non-bullers > 35 days calved. |
| | Apply tail paint one colour to all cows intended for breeding regardless of when calved. |
| | Check cows Body Condition - thin cows on OAD milking now, treat lame cows, check nutrition . |
| | Treat/examine problem cows that had issues around calving - Refer to problem cow list in FarmOps. |
| | Check Bodyweights of heifers now. |
| | Make sure all vaccines are up to date. |
| | Make sure all stock bulls are sound; not lame and have a bull soundness certificate. |
| | |
| 1 week before Mating Start Date | Vet Exam and treat all non-bullers that are > 35 days calved to get them bulling in the first round. |
| | Check cows now recently calved that have had problems. |
| | Begin heifer synchronisation programme depending on expected start of calving for heifers. |
| | Identify late calvers (Calved after March 17th) See Pg 7. |
| | |
| Mating Start Date | Mating Start Date. |
| | Tail Paint and top up twice weekly - change colour on cows served. |
| | Target to serve 1/3 of eligible cows each week from Mating Start Date - if not on target review Heat Detection. See FarmOps Metric 1 - Heats expected. |
| | |
| 3 weeks breeding completed | Vet exam cows calved greater than 35 days and not calved. Refer to FarmOps Metric 4. |
| | Check cows calved greater than 21 days and less than 35 days for uterine infection. |
| | Level of mounting activity is decreasing. Increase heat detection intensity. |
| | Vet exam any heifers that are not bulled yet. |
| | Check due repeat dates to improve heat detection accuracy. Refer to FarmOps Metric 2. |
| | |
| 6 weeks breeding completed | Vet exam any cow calved greater than 35 days and not bulled. |
| | Vet exam cows calved greater than 21 days and less than 35 days for uterine infection. |
| | Vet exam Late calvers. Consider synchronising. |
| | Level of mounting activity is decreasing. Maybe time for vasectomised bulls with chin ball or stock bulls to go in.(1 mature bull to 20 potentially empty cows). Refer to Pg 13 on Stock bull management. Consider switching to scratch cards to help with heat detection. |
| | If using bulls now - keep AI ing for 10-14 days after bull/bulls being introduced. |
| | Early Pregnancy Scan now on cows that have not returned and are greater than 28 days served. |
| | |
| 9 weeks breeding completed | Vet exam any cow calved greater than 35 days and not bulled. |
| | Vet exam cows calved greater than 21 days and less than 35 days for uterine infection. |
| | Early Pregnancy Scan now on cows that have not returned and are greater than 28 days served. |
| | Make sure you have enough bull power – 1 mature stock bull to 20 potentially empty cows. |
| | |
| 12 weeks breeding completed | End breeding season. |
| | Cows not bred, not calved long enough - avoid recycling these cows. |
| | |
| End August | Preg check all SPRING cows (Scan or Milk test). |

# NUTRITIONAL GOAL

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Have cows calving at BCS of 3.0 to 3.25 | Limit the loss of BCS from calving to breeding to a maximum of 0.5 of a BCS. | Have cows on a BCS of 2.75 or greater at breeding | Have cows fully fed approaching and during the breeding season |

Achieving these nutritional goals will ensure submission rate and conception rate will be maximised during breeding leading to a high pregnancy rate.

## MATCHING ENERGY INTAKE TO OUTPUT

The tables below show the concentrate required depending on forage intake (kgs of dry matter per day) and output (milk litres per day). The mistake most commonly made is an overestimation of the grass intake. If you overestimate grass intake, cows will not be fully fed and will lose BCS. The most vulnerable cows are the 1st calvers and the high yielders. Are you losing too many 1st calvers and mature cows each year?

**Concentrate level (Kg) required to supply 100% of required energy at varying yields and at grass full time**

| | Milk Yield Litres/day | | | | | | |
|---|---|---|---|---|---|---|---|
| **Grass Intake Kg/Day** | **18** | **20** | **22** | **24** | **26** | **28** | **30** |
| 12 | 1.9 | 2.8 | 3.8 | 5.0 | 6.0 | 7.0 | 8.0 |
| 13 | 0.8 | 1.7 | 2.7 | 3.6 | 4.9 | 5.9 | 6.9 |
| 14 | | 0.6 | 1.5 | 2.5 | 3.4 | 4.8 | 5.8 |
| 15 | | | 0.4 | 1.4 | 2.3 | 3.7 | 4.7 |
| 16 | | | | 0.3 | 1.2 | 2.2 | 3.1 |
| 17 | | | | | 0.1 | 1.1 | 2.0 |
| 18 | | | | | | | 0.9 |

**Recommended supplementary concentrate allowance to supply 100% of UFL requirement in early lactation for cows of differing milk yield with varying grazed grass and silage intake**

| | Milk Yield (kg/d) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **18** | **20** | **22** | **24** | **26** | **28** | **30** | **32** | **34** |
| 6kg Grass DM 6kg 64 DMD | 4.0 | 4.9 | 5.9 | 6.9 | 7.9 | 8.9 | 9.9 | 10.9 | 11.9 |
| 6kg Grass DM 6kg 70 DMD | 3.5 | 4.4 | 5.4 | 6.4 | 7.4 | 8.4 | 9.4 | 10.4 | 11.4 |
| 6kg Grass DM 6kg 74 DMD | 3.2 | 4.1 | 5.1 | 6.1 | 7.1 | 8.1 | 9.1 | 10.1 | 11.1 |

***Monitor**: Carefully watch the volume of milk and % protein delivered as both are excellent indicators of energy. Ensure neither drops 3 weeks pre breeding and during the breeding season.*

During inclement weather intakes will be reduced and cows need extra supplementation.

## NUTRITION ANALYSER IN FARMOPS

**The nutrition analyser in FarmOps will divide your herd into 5 groups depending on their production and calculates the concentrates required for each group depending on grass and silage intakes. This is done after each milk recording making the information captured from the spring and early summer recording extremely valuable to ensure nutrition is optimised for breeding.**

# LATE CALVERS AND COWS WITH PROBLEMS

The goal is to retain as many of these cows as possible and avoid the costs associated with replacing them . First lactation animals will produce 20% less than a mature cow. Therefore having a higher replacement rate will impact herd maturity and overall production.

**IDENTIFY THIS GROUP OF COWS**

1. Late calvers - Cows that calved in the last third of a 12 week calving season
2. Underconditioned Cows - BCS less than 2.75 at Mating Start Date or 3 weeks prior
3. Problems at calving – difficult calving, retained afterbirths, milk fever, ketosis, LDA etc.
4. Problems since calving – Mastitis, lameness etc.

Refer to the Problem Cow list in FarmOps.



### 1. Nutrition & BCS- OAD and/or Extra feeding

Cows do not reach their peak intakes of grass until they are calved 6 -8weeks. Therefore, late calving cows will be consuming between 10 and 12Kgs of grass DM in early lactation as opposed to 16-18Kgs for the February calving cows.

Late calvers need an extra 3-5Kgs of concentrates per day more than the early calving cows for the 1st 6 weeks of lactation. Putting these cows on once a day milking and feeding them twice a day will reduce their production and energy demand while their intakes catch up. This will allow them to commence cycling earlier.

### 2. Vet exam, Scan, Metricheck & Treat if required- Need to Gain Time

Once these late cows and any other problem cows are more than 28 days calved, have them examined by your Vet. Metricheck them or scan them to ensure no endometritis present. Treat any 'dirty' cows as prescribed by your vet. A cow calved in early February has had over 80 days and possibly 2-3 cycles to repair and cleanse her uterus - in late calvers we are continually working against the clock.

## 5 POINT PLAN FOR LATE CALVERS AND COWS WITH PROBLEMS:

1. **Nutrition - OAD Milking and / or extra feed.**
2. **Metricheck cows calved 28 days.**
3. **Synchronisation**
4. **Heat detection aids for repeats plus short gestation bulls.**
5. **Early scan**

### 3. Synchronisation Programme for Fixed Timed AI

Once these cows are clean and calved 35 days synchronise them for fixed time AI to guarantee they are served as soon as possible. The programme for cows with fixed timed AI is superb as it ensures that these cows are cycling and bred within 10 days.

This will give the best chance to pull back next year's calving date for these cows.

***See synchronisation programme for cows on back page.***

### 4. Apply heat detection aids and watch for repeats

The advantage of the 10-day synchronization programme is that cows are bred quickly, and the repeats are due together which makes heat detection easier. Inseminate these cows with easy calving short gestation dairy beef bulls. These bulls will gain you an extra 7-10 days next year..

### 5. Early Scan for Pregnancy & Resynchronise if empty.

Scan these cows once 30 days have passed since insemination and the cow has not repeated. These late calvers are repeating at a time when activity is decreased, and it can be more difficult to detect them. If the cow scans empty resynchronise her if there is time and it's worth breeding her and she will be bred again in 10 days.

# HEAT DETECTION

Achieving excellent AI results during the breeding season is dependent on excellent heat detection

## THE METRICS OF HEAT DETECTION

**1**

**EFFICIENCY**

**Missing too many heats leads to poor efficiency. This can lead to poor submission rate to 1st service or 3 week repeats being missed and rolling onto 6 weeks.**

**2**

**ACCURACY**

**Presenting cows for AI that are not actually in heat will lead to a reduced conception rate.**

The key to efficient and accurate heat detection is to identify when a cow is or has been in standing heat. Heat detection aids like tail paint, scratch cards or crayons are extremely useful tools, however they are dependent on the cow or heifer in standing heat being mounted enough times to rub them off.

## SUBMISSION RATE

The submission rate for cows is a measure of how many are submitted for breeding within a specific timeframe, with a common target of 90% of cows being submitted within the first three weeks of the breeding season. This rate is crucial for achieving a high six-week calving rate, which is essential for long lactations and high milk production.

**Table 2**

| | 100 COW HERD | | 200 COW HERD | |
|---|---|---|---|---|
| **Weeks Breeding** | **Cows in heat per day** | **Mounts per Cow per Day** | **Cows in heat per day** | **Mounts per Cow per Day** |
| **1st 3 weeks** | 5 | 50 | 10 | 50+ |
| **2nd 3 weeks** | 2-3 | 10-25 | 4-5 | 50 |
| **3rd 3 weeks** | 1-2 | 10+ | 2-3 | 10-25 |
| **4th 3 weeks** | 0-1 | 10 | 1-2 | 10+ |

Table 2 illustrates how many mounts a cow will receive depending on how many cows are in heat that day. It is quite clear that as the number of animals in heat decreases so does mounting activity, therefore as the breeding season progresses and less cows are in heat per day, heat detection becomes more difficult. How quickly this happens depends on herd size.

## FARMOPS BREEDING METRICS

### BREEDING METRIC 1 - HEATS EXPECTED PER DAY

**FarmOps uses all available information to calculate how many heats are expected each day during the breeding season for both cows and heifers. If you are below target you may be missing heats or there is a problem with cows not cycling. If you are above target you may be drafting cows that are not actually in heat.**

### BREEDING METRIC 3 - VALID SERVES

**A valid serve is a serve where the cow is likely to be truly in heat and therefore has a better chance of conceiving. For example, if a cow is served on day 1, day 10 and day 21 – day 10 is invalid as a cow cycles every 18-24 days. FarmOps generates a target for valid serves and counts your valid and invalid serves as the season progresses. From the number of valid serves, the true heat detection accuracy can be determined.**

**Poor heat detection efficiency will mean you will be behind target for valid serves. Poor heat detection accuracy will mean you will have excessive invalid serves.**

# TAIL PAINT


Tail paint is a easy cost effective method of heat detection in cows. It works well when there are 3 or more cows on heat per day as there is sufficient activity to rub it off. In a 100 cow herd it is effective for 6 weeks if the herd is already calving compactly, otherwise use it for the 1st 3 weeks and then switch to scratch cards, in a 200-cow herd it can be effective for 9 weeks if calving compactly. It does not work as well in heifers as they are not heavy enough to rub it off each other's rumps.

Clip the hair off the rump prior to the application of tail paint. This allows the paint to be more easily removed at mounting and it reduces the layers of paint building up as the season progresses making it difficult to interpret. Apply paint on a dry day and to dry skin.

## TAIL PAINT GUIDELINES:

**1**

**Clip rumps prior to applying paint. Paint will come off easier and layering will be minimized**

**2**

**These cows have not coated yet and the hair will hold the paint leading to layering later on**

**3**

**These cows have been clipped and the paint will be removed easier. Leading to less layering of paint later on. 9 x 1 inch strip of paint is ideal**

**4**

**Paint well cleaned off after being on heat**

## TOP TIPS

Top up twice a week and more often in wet weather.

As the season progresses every 3 weeks heat activity is halved therefore the intensity of heat detection needs to be increased.

On the day of insemination put a band of tail paint on the cows back or shoulder that will not be rubbed off by mounting. This will indicate the cows that have been served and will avoid drafting them the following morning for insemination. Excessive one day repeats will impact on conception rates.

As the season moves on if there is a lot of layers of paint building up - change the colour completely. If you were using blue all along- ignore the blue paint now as it will not come off cleanly. Paint with a different colour for example yellow and if the yellow is rubbed off the cow is in heat even though the blue is still present.

# BEHAVIOUR MONITORING TECHNOLOGY

## Smarter insights. Healthier herds. Greater peace of mind.

### Overview

Behaviour Monitoring Technology can assist farmers; helping them to gain real-time insights into the health and reproductive status of their herd 24 hours a day, 7 days a week.

This technology enables remote monitoring of key behaviours, such as activity and rumination levels, allowing farmers to detect heats, identify cows not cycling, and make informed breeding decisions.

## CORE BENEFITS

### REPRODUCTION

- Detect heats with high accuracy
- Identify cows not cycling or with irregular heats
- Optimise insemination timing for both sexed and conventional semen
- Reduces the requirement for stock bulls
- Increases the use of AI - leading to accelerated genetic gain

### HEALTH

- Detect illness early to improve cow recovery and performance
- Receive distress alerts for problems such as ketosis, acidosis, or displaced abomasum
- Monitor response to treatment for faster recovery and reduced costs

### NUTRITION

- Track rumination and eating patterns to evaluate feed changes
- Identify early nutrition-related performance drops
- Prevent long-term productivity loss through proactive management
- Close monitoring of cows during early lactation assisting with transition period

### LABOUR EFFICIENCY

- Automated, continuous monitoring 24/7
- View alerts and insights instantly via desktop or mobile app
- Reduce labour and reliance on manual observation

# SCRATCH CARDS

1 

2 

3 

4 

5 

6 

7 

7a 

8 

9 

10 

11 

12 

**Scratch cards are an excellent method of heat detection in both cows and heifers when cattle are outdoors and rumps clean. They are also extremely useful when the number of animals coming into heat is reduced - as the season progresses. The scratch cards shown here in the picture 'Estrus Detect' are superior to the previous self-adhesive cards, as they stay much better and are not scratched as easily and are easier to read.**

1. Apply scratch cards to dry hair on a dry day otherwise the glue will not adhere. Watch the forecast. Wear gloves to avoid glue on hands.
2. Do not clip, glue needs hair for adherence, just comb or brush, to remove loose hair and dirt. Loose hair is shed easily in the spring and will take the scratch card with it when shed.
3. Layout the number of cards corresponding to the number of heifers in the crush in a clean dry non- windy and dust free area and spray with glue. Dust sticking to the card reduces the adhesiveness of the glue. Ensure to cover the entire card to the edges of the cards.
4. Spray cleaned brushed rump area in an east to west direction where the card is to be applied, across the back bone.
5. Patience required now until the first card gets tacky. Wait .... When tacky it will stick to your glove and not fall to the ground.
6. Apply the card to the sprayed area- East to West.
7. Secure in place by applying gentle pressure especially at the edges.

7a. Card properly applied.

8. Heifer in heat, grey rubbed off and red exposed. Can also get green and yellow cards.
9. Lot of mounting, grey and red rubbed off, white exposed and edges curled from mounting.
10. In narrow heifers the complete card may not be rubbed red, just the entire centre area. As the mounting heifers body did not touch the edges of the card.
11. Get heifers into the yard each day and check scratch cards.
12. As heifers are being A I'd, cut the hair off the tails. Long tails are those yet to be inseminated.

## TOP TIPS

| | | | |
|---|---|---|---|
| Watch the forecast for a perfectly dry day to apply the cards. | Patience - Wait till the 1st card is tacky before application - It will stick to your glove. | Reapply the cards the day after being inseminated. Can reapply the card over the existing card if it is well adhered. | On the day of insemination put a band of tail paint or a crayon mark on the cows or heifers back that will not be rubbed off by mounting. This will indicate the animals that have been served and will avoid drafting them the following morning for insemination. One day repeats may reduce conception rates. |

# CRAYONS

**Paint sticks or Crayons work on the same principle as tail paint and are very convenient to use.**

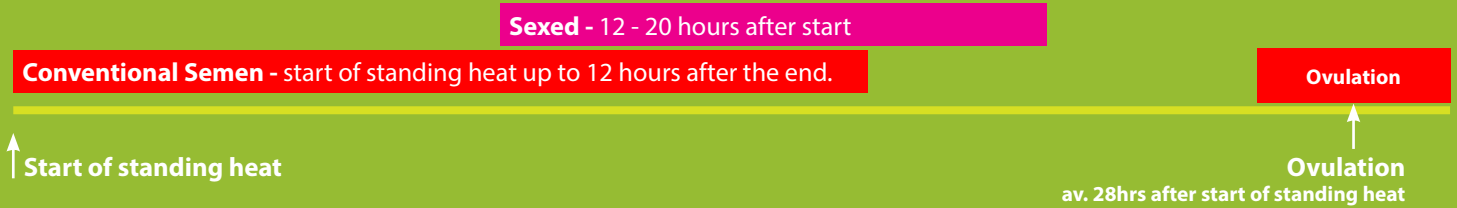
However, they rub off easier than tail paint following mounting, this makes them extremely useful for maiden heifers. They work well when cattle are indoors also. They are also very convenient and clean to apply.


1. Paint sticks or Crayons are available in the four colours pictured. They come in boxes of 12.
2. Just comb or brush the rump area, to remove loose hair and dirt. It is not necessary to clip the hair; this is clearly an advantage if you wish to use them in conjunction with scratch cards.
3. A skin can form over the tip of the paint sticks when they dry. Rub the paint stick on a concrete surface to remove it.
4. Apply the crayons as you would apply tail paint, 9" narrow strip. In heifers come further down the tail head with the paint stick than you would with cows, as heifers do not go as forward on the rump on the standing animal with their brisket as cows do.
5. If you are finding heifers difficult to heat detect apply both scratch cards and crayons to the heifers. Put on the scratch card first and then apply the paint stick.

# TIME OF INSEMINATION TO MAXIMISE PERFORMANCE

Accurate heat detection will ensure the majority of cows are actually on heat when inseminated, giving them the best chance of conceiving. The graph below demonstrates the window for timing of AI with conventional and sexed semen.

## TIMING OF AI CONVENTIONAL VS SEXED



# VASECTOMISED BULL

1


2


3


4


5


6


7


**Vasectomised bulls fitted with chin balls are an excellent method of heat detection for both heifers and cows.** The chin ball is as important as the bull as heats will be missed due to the bull mating the cow and not remaining with her. This happens especially in mature bulls as they mate and walk away, they do less courting than young bulls. Ensure the bull is vasectomised - your vet can check his ejaculates to ensure they are free of semen.

1. A well grown vasectomized bull is invaluable for the breeding season. This reduces the likelihood of injury and he will work for you 24/7.
2. The chin ball shown is the preferred one. Pad the neck and nose strap with 4" Elastoplast or vet wrap, or a section of a worn yellow volume washer hose works well. This prevents the strap cutting the bull. Ring the bull for convenience when refilling the chin ball.
3. Ensure the chinball is snugly fitted to the bull. It is leather so will need adjusting. Initially, fit the chinball for 1 week without paint to familiarise the bull with it.
4. 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 best in wet weather and yellow or green is best in dry weather.
5. Putting the drum of chinball paint into a bucket of warm water makes it easier to mix. Avoid overfilling the chinball and ensure to secure the plug correctly. One fill should suffice for 10-15 heats.
6. The bull marks the cow on the back when he is serving them. Position yourself to see the marks on the back of the cows.
7. 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 the top of the back that are key.

## TOP TIPS

Reduce injuries by training a young bull with maiden heifers first. Secondly avoid overworking a bull, he is not required until heats are 2 or less per day.

Remove the vasectomised bull when a synchronised group are due in heat- reduces the risk of him getting injured and ensures we have him when required.

Young bulls may be courting cows 24 hours before they are in standing heat - It is the marks on top of the back that are key not the ones on the side. The marks on the side alerts you to the fact that a cow may be coming on heat 'courting marks'- Take care with courting marks on the side and no marks on top of the back as you may be inseminating cows 24 hours prior to standing heat.

Keep the chin ball topped up.

**HEALTH & SAFETY** **Beware of the bull**

Exercise caution when dealing with all bulls including those vasectomised.

# STOCK BULL MANAGEMENT

## 1. Bull Power

Adequate bull power is required for compact calving. One young bull to 10 empty females and one mature bull to 20-30 empty females. Every 3 weeks of AI reduces the bull power required by half.

Maximise bull power where two or more sires are available by rotating bulls 24 hours on and 24 hours off to allow sufficient time for resting and feeding.

## 2. Calving Difficulty

Easy calving is crucial for maiden heifers and dairy cows calving later in the season with a high BCS. When selecting AI sires for maiden heifers the calving difficulty needs to be categorized as low risk and ideally be <5.0% with a high reliability >90% for dairy heifers.

Stock bulls have a lower reliability figure and therefore carry more risk.

## 3. Purchase in Advance

Purchase bulls up to two months in advance of when they are required to allow for acclimatization, disease testing and vaccination. Vaccinate and dose bulls with whatever the herd is being vaccinated and dosed for.

## 4. Nutritional & Relocation Stress

Young bulls need extra energy as they are still growing. They expend more energy than older bulls as they do more courting. Bulls that rapidly lose weight (greater than 50Kg) over a short period go sub fertile. Young bulls need to be fed in their first season. If a young bull loses more than 50Kgs in weight or has reduced libido get him fertility tested to ensure he has not gone infertile since his last fertility test.

## 5. Foot Bathe Bull on Arrival

Foot bathe all bulls on arrival to avoid the introduction of Mortellaro. Pair him with another animal of similar or smaller size for company initially. The bull will be more relaxed and easier to handle.

## 6. Fertility Tested and Mating

Get your bull fertility tested by your vet.

Train him in a small paddock or a well bedded pen by introducing a small female fully on standing heat. Repeat this exercise until he can mate confidently. Ensure a young bull can mate prior to leaving him run with females otherwise you may lose 3 weeks.

## 7. Lame and Injured Bulls

Lame and injured bulls need to be rested and treated, some may not recover for the season. If the bull has a high temperature for a period of time or goes lame retest his fertility before he resumes mating as depending on the insult it can take him a full 6-12 weeks to recover.

## 6. Monitor

Bulls need to be monitored throughout the season, either with a chinball on him or scratch cards and tail paint on the females.

Monitor repeats from synchronisation and it may be prudent to AI for the 4-5 days that they are occurring. Watch for low conception rates whereby an increased number of repeats are presented to the bull.

**Avoid the 'Lull' in calving after insemination finishes.**

**Inseminate for the 1st 10 to 14 days of the bull being released and each day where there are 2 or more cows on heat per bull.**

**Bulls need time to settle into a routine.**

**Number of Bulls Required to achieve a high Pregnancy Rate Depending on Herd Size and Length of AI Period**

| | 120 cows | 250 cows |
|---|---|---|
| **3 weeks AI 90% submission rate. Number of empty cows** | 61 empty cows | 126 empty cows |
| **Number of bulls required with 3 weeks AI** | 3 Mature bulls | 6 Mature Bulls |
| | | |
| **6 weeks AI 90% submission rate. Number of empty cows** | 31 empty cows | 64 empty cows |
| **Number of bulls required with 6 weeks AI** | 2 Mature or 1 Young & 1 Mature Bull | 3 Mature Bulls or 2 Mature & 1 Young bull |

## FARMOPS

**During the breeding season, FarmOps is calculating the number of potentially empty cows or heifers in the herd. From this calculation it displays the number of mature stock bulls you require to service these cows and ensure none are missed. Keep AI ing until this number matches the number of bulls available for breeding.**

## Our motto – Live Semen, Right Place, Gently and Hygienically

### LIVE SEMEN

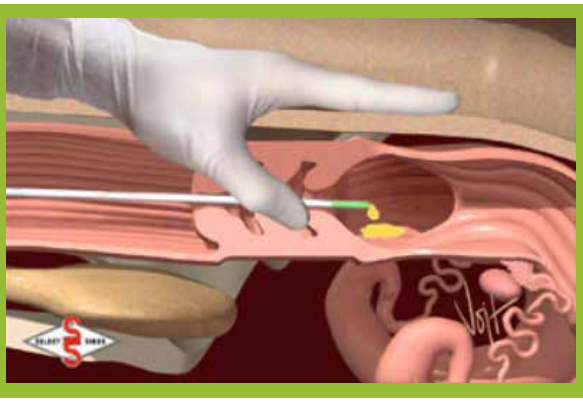
Select straws from deep in the next of the flask using a semen forceps. Good organisation allows this to happen quickly. The goal – to minimise exposure and avoid partial thawing of remaining straws.

Quick transfer to the thawing flask where the temperature of the water is 35 – 37 degrees. Allow 30 seconds for a conventional straw and 45 seconds for a sexed straw to thaw. Fast thawing is critical to minimise the formation of crystals in the straw which will damage the cells. Dry and read the straw and load into a prewarmed gun.

Keep the loaded gun underneath your clothes until ready to inseminate – this keeps the gun warm, clean and protected from UV light. Sexed straws need to be in the cow within 5 minutes and conventional straws within 15 minutes.

### RIGHT PLACE

Semen needs to be deposited in the common body of the uterus just inside the cervix. After passing the gun through the cervix, retract the gun back in to the cervix until it can't be felt with your index finger, then reintroduce the gun forward until it re – emerges just inside the cervix in the common body (0.5 centimetre inside). Deposit the semen slowly all the while maintaining your placement.



### GENTLY

Gentle handling with the hand in the rectum and the gun will ensure the procedure is stress free for the cow and will minimise the chance of causing any inflammation or bleeding which will both affect conception rates.

### HYGIENICALLY

Any contamination from a dirty thawing kit or manure on the gun will effect semen quality and will introduce infection into the cow. Both will reduce conception rates. Ensure straws are thawed in a clean descaled flask filled with cool boiled water that is changed daily. Keep the gun warm and clean until insemination. Ensure the tip of the gun enters the cow as cleanly as possibly. Wipe the vulva clean with paper towel and part the lips of the vulva using your elbow of the arm that is in the rectum or insert clean paper towel in the lower vulva.

# SEXED SEMEN

## NEW SEXED SEMEN LAB

The National Cattle Breeding Center (NCBC), run the dairy and beef breeding programmes for it's shareholders Munster Bovine and Progressive Genetics. All our domestic sexed semen is produced in house by Sexing Technologies (ST).

## PRIORITISING FERTILITY

Sexed Ultra Plus straws can contain 2, 3 or 4 million cells per straw. Because herd fertility is so important to the herdowner and to Munster Bovine, all sexed domestic Munster Bovine straws are produced containing 4 million cells per straw. Also, as a company we do not sex G1 bulls. G1 bulls are young test bulls that do not have known field fertility (conception rate).

All our staff that handle semen are fully trained and realise the importance of correct semen handling. This is even more important for sexed semen straws.

## Why is Sexed Semen Different?

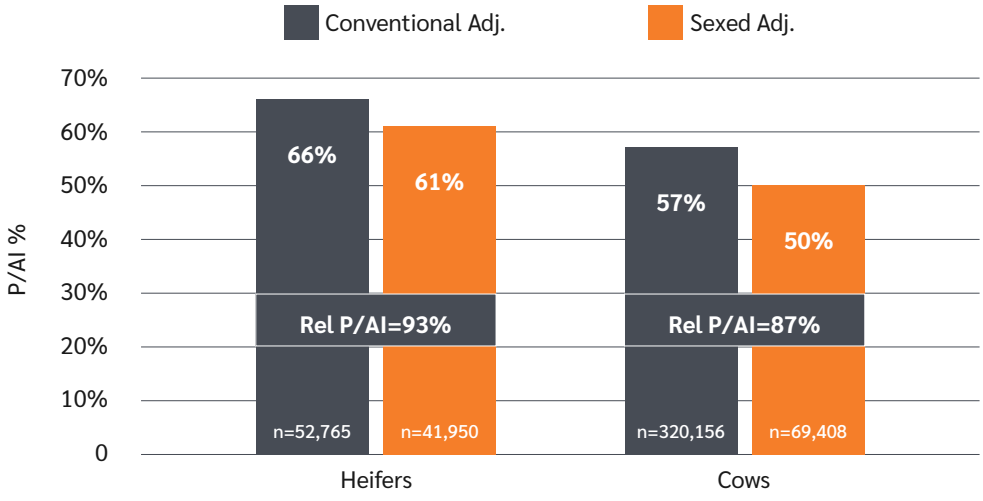
**1.Lower Concentration – 4 million cells in Munster sexed straws. Conventional straws contain 15 – 20 million cells per straw.**

**2. Purity – 90%. This means that for every 10 calves born on average 9 will be female for female sexed semen.**

**3.Lower viability – The sexing process in the laboratory lowers the viability of the semen meaning it will not last as long in the cow.**

**4. Capacitation process complete – conventional semen must loose its protective coat in the cow before it is capable of fertilisation. ( This process is called capacitation and takes 8 – 10 hours). Sexed semen capacitates in the lab and so is ready to fertilise immediately once the sperm cells reach the egg.**

**Recent analysis by ICBF of 2024 calving from 2023 first inseminations demonstrated an average pregnancy rate in heifers of 66% and 61% to conventional and sexed semen respectively. In cows the average pregnancy rate was 57% and 50% to conventional and sexed semen respectively. See graph below.**



## ONLY USE SEXED SEMEN EARLY IN THE BREEDING SEASON

Use sexed semen early in the breeding season, within the first three weeks. This will allow any repeats an early opportunity to be re-served with conventional.

## USE AN ADEQUATE SIZE TEAM OF BULLS

Field fertility can vary between bulls following the sexing process and it is advisable to use a team of sexed bulls.

## HEAT DETECTION AND TIMING OF AI

- The window for fertilisation by sexed semen is narrow compared to conventional. The recommendation for sexed semen is that animals should be inseminated 12-20 hours after the start of standing heat.
- Avoid inseminating cows early in the heat. Sexed semen does not last as long as conventional semen in the cow and may not be viable when ovulation occurs if insemination has happened too early.
- Accurate heat detection is critical to achieving best results and good heat detection aids (tail paint, scratch cards) are essential to aid this process. Use two methods in heifers – scratch cards and crayons.
- Always use conventional semen if unsure of the heat.
- Synchronisation and sexed – Modern synchronisation programmes that end in fixed time AI have an important role to play as they synchronise ovulation to the time of insemination (no need for heat detection). It also allows a group of heifers or cows to be inseminated early in the season, increasing the submission rate. Repeats will have more opportunities to go in calf.

## FLEXIBILITY REQUIRED TO MAINTAIN FERTILITY OF THE HERD:

If you are unsure of a heat or timing – Use conventional.

Select enough cows for sexed that affords you the flexibility to switch to conventional if timing is not right or for any other reason.

## STACKING THE ODDS IN YOUR FAVOUR

### HEIFER SELECTION

- Your heifers will have higher conception rates than your cows making them better candidates for sexed semen.
- You will be breeding more replacements from your highest genetic merit stock.
- Heifer calves will also be easier calved – further reducing calving difficulty for your maidens.
- Heifers should be cycling regularly.
- Heifers need to be above their target weight and in good body condition.
- Nutrition – maximise intakes during breeding and for the following month.

### COW SELECTION

- Cows need to be at least 50 days calved at AI and should be clean and cycling regularly beforehand.
- Younger cows have higher conception (1st to 4th calvers) - Careful with some 1st calvers if BCS is low and they have not coated off yet.
- Avoid in cows that are struggling for body condition - 2.75 or less.
- Cows with no issues at calving or since calving – difficult calving, milk fever, retained afterbirth, uterine infection, ketosis, lameness, mastitis etc.
- Energy balance is crucial – watch the bulk tank for any drop in % protein & volume. Ensure cows are fully fed particularly during periods of bad weather.

FOR MORE INFORMATION TALK TO YOUR AI TECHNICIAN OR BREEDING ADVISOR

MUNSTER BOVINE

# MAIDEN HEIFERS

## GOALS FOR MAIDEN HEIFERS

**1**

**Aim to calve all the maiden heifers in the first 4 weeks, this gives them the best opportunity to achieve 5.5 lactations.**

**2**

**Easy calving critical for future production. Inseminate with an easy calving sire of high reliability.**

**3**

**Maximize the number of replacements from the maiden heifers as they are the highest genetic merit animals and it will allow you to maximize the overall calf value of the herd by using more beef sires on the mature cows.**

**4**

**Consider the maidens for sexed semen to rapidly improve the herd genetic merit.**

## PRE-BREEDING

1. Ideally have the maiden heifers at grass 3-4 weeks pre breeding. This will ensure that they are on a stable diet at breeding and are gaining weight. Heifers can gain 1Kg/day at grass.
2. At breeding heifers need to be at 60% of their mature body weight . Heifers that are behind target need supplementary feeding. See table 3 for target weight by maintenance.
3. Ensure all vaccinations are received 3-4 weeks pre breeding.
4. In the last week pre breeding familiarize the heifers with the yard and crush by bringing them in daily and for encouragement feed them 1Kg per day of feed.
5. Watch the weather forecast for applying scratch cards as the heifers need to be bone dry.
6. Introduce the vasectomised bull to them and fit him with a chin ball, if he is a first season bull fit him with a chin ball without any paint in it for a week. It will be lighter on his head and he will be less likely to damage it.

| Maintenance Index € | Mature weight kg | Target weight at breeding kg |
|---|---|---|
| 44 | 525 | 315 |
| 29 | 550 | 330 |
| 15 | 575 | 345 |
| 0 | 600 | 360 |
| -14 | 625 | 375 |
| -28 | 650 | 390 |
| -43 | 675 | 405 |

## BREEDING

1. Ensure heifers are on a rising plane of nutrition and are gaining weight. Avoid any reduction in intakes at this time, avoid keeping them in a bare paddock as it near the crush or housing them on silage. This will reduce heat activity and conception rates.
2. **HEIFERS UNDER TARGET WEIGHT by less than 15%** Breed these heifers in the 1st 3 weeks of the breeding season avoid delaying them by 3 weeks, as delaying by 3 weeks will result in March & April calvers and an early exit from the herd.

When grass quality begins to decrease in July start feeding these heifers to ensure that at housing, they are at target weight. Avoid delaying the supplementation of these heifers

## HEAT DETECTION

- Avoid tail paint in heifers as they are too light to rub it off.
- Ideally use two methods of heat detection as they can be difficult to pick up.
- Crayons work well if heifers are indoors
- Scratch cards are excellent outdoors.
- Scratch cards and crayons together are excellent.
- A vasectomised bull fitted with a chin ball combined with either scratch or crayons is best.

## SCANNING

This is an extremely worthwhile exercise in heifers. Scan the heifers 30 days after the majority have been served and place scratch cards on the empty heifers and watch them carefully for repeats.

### RECORDING A SCAN IN FARMOPS

**FarmOps facilitates easy and accurate recording of pregnancy results. If the serves are recorded, the days in calf will be displayed which will increase the accuracy of your scanning results.**

# SYNCHRONISATION FOR MAIDEN HEIFERS

The use of synchronisation makes calving your heifers in the first month a possibility. Where heifers are away from the main farm or if help is scarce, it can facility the use of AI where otherwise stock bull may be used. There are various options available depending on facilities, labour and proficiency of heat detection.

## OPTION 1 – PG INJECTION ON DAY 7

| HEAT DETECTION FOR 12 DAYS - ALL BRED ONCE | |
|---|---|
| Day 0 - Day 7 | AI on observed heat - should have 1/3 detected at end of week. |
| Day 7 | PG to heifers not detected in heat. Only inject if 1/3 bred- otherwise investigate |
| Day 7-12 | AI on detected heat. Majority on 48-72 hours post PG injection |

- This is a cost-effective synchronisation regime that can achieve high conception rates.
- There is a requirement for heat detection for 12 days.
- Inform your technician before injecting PG on day 7 to ensure he has capacity on day 9 and day 10 as the majority will be in heat these days.
- Also ensure you are fully available on these days for heat detection and drafting.
- The injection can be delayed by a day or 2 if necessary.
- If 1/3 of heifers are not bred in the first week – investigate. They may not be observed in heat because: they are not cycling – under weight or intakes have reduced, they are pregnant, or heat detection is not working.
- Remove the vasectomised bull if 3 or more heifers are expected per day to avoid injury. Apply scratch cards and/or crayons if not already being used with the vasectomised bull.
- If releasing the bull on day 13, ensure he is not overworked 18-24 days after the majority of heifers were bred following the PG injection. Heat detect and AI if more than 2 heifers are on. Alternatively remove the bull and heat detect for those 4-6 days

## OPTION 2 – FIXED TIME AI PROGRAMME

| 4 HANDLINGS - ALL ANIMALS BRED | |
|---|---|
| Day 0 | Insert P4 Device & Inject GnRH |
| Day 5 | Inject PG |
| Day 6 | Inject PG and remove P4 Device |
| Day 8 | Fixed time AI 48 hrs after P4 Device removal and inject GnRH. |

- This is an 8-day programme involving 4 visits to the crush and ending with fixed time AI of all heifers with no requirement for heat detection.
- This programme eliminates heat detection turning reactive work into planned work with all heifers being bred on a given day with excellent results possible to achieve.
- It will not overcome poor management and all heifers need to be above target weight, cycling and on a suitable plain of nutrition.
- Careful planning is required to ensure your technician or technicians are available at the required time and the required semen is in the tank.
- Liaise early with your veterinary practice to ensure availability of personnel and drugs to start the programme.
- Facilities and help are crucial. If possible, divide heifers by sire they are receiving and help the technician as an efficient stress-free routine will maximise results.
- All repeats will occur between 18-24 days. If 2 or more repeats are expected per stock bull per day, the best advice is to remove the bulls on day 16 or 17 and apply heat detection aid. Heat detect and AI for the 7 days.
- If bull power is adequate, monitor heats per day and AI if too many come on a given day.

**Table of Hormones required, route of application and example products:**

| | Hormone | Route | Example |
|---|---|---|---|
| P4 Device | Progesterone releasing device | Intra uterine | PRID, CIDR |
| GnRH | Gonadotrophin releasing hormone | Intramuscular | Receptal, Overelin, Acegon, Busol |
| PG | Prostaglandin | Intramuscular | Estrumate, Lutalyse, Enzaprost |

Products containing the above hormones are prescription only medicines and must be prescribed by your veterinary surgeon.

- The PRID or CIDR need to be inserted hygienically. Failure to do this will lead to excessive vaginal discharge and reduced conception rates.
- It is advisable to shorten the strings of the PRID/ CIDR particularly in heifers, as a rogue heifer may pull out several devices.
- If a heifer has already lost a device at removal, mark her and ensure she gets conventional semen and not sexed semen.
- Always contact your technician/breeding advisor prior to starting any programme to ensure availability of technician(s) on the day for fixed time AI.

MUNSTER BOVINE
Collectively Improving Farm Life

# Dairy synchronisation protocols for Fixed Time AI Recommendations

| FTAI protocol for Dairy cows - Conventional semen | | | |
|---|---|---|---|
| **Example Day** | **Example Time** | **Day** | **Action** |
| Mon 3rd April | Morning | Day 0 | Insert P4 device + Inject GnRH |
| Mon 10th April | 9am | Day 7 | Inject PG |
| Tue 11th April | 9am | Day 8 | Remove P4 device + Inject PG |
| Wed 12th April | 5pm | Day 9 | Inject GnRH (32 hrs after P4 device removal) |
| Thurs 13th April | 9am - 1pm | Day 10 | FTAI conventional semen (16-20 hrs post GnRH) |

| FTAI protocol for Dairy cows - Sexed semen | | | |
|---|---|---|---|
| **Example Day** | **Example Time** | **Day** | **Action** |
| Mon 3rd April | Morning | Day 0 | Insert P4 device + Inject GnRH |
| Mon 10th April | 9am | Day 7 | Inject PG |
| Tue 11th April | 9am | Day 8 | Remove P4 device + Inject PG |
| Wed 12th April | 5pm | Day 9 | Inject GnRH (32 hrs after P4 device removal) |
| Thurs 13th April | 12pm - 3pm | Day 10 | FTAI sexed semen (19-22 hrs post GnRH) |

| FTAI protocol for Heifers - Conventional Semen | | | |
|---|---|---|---|
| **Example Day** | **Example Time** | **Day** | **Action** |
| Mon 3rd April | Anytime | Day 0 | Insert P4 device + inject GnRH |
| Sat 8rd April | 3pm | Day 5 | Inject PG |
| Sun 9rd April | 3pm | Day 6 | Remove P4 device + Inject PG |
| Tue 11rd April | 2 - 4pm | Day 8 | FTAI conventional semen + Inject GnRH (48 hrs after P4 device removal) |

| FTAI protocol for Heifers - Sexed semen | | | |
|---|---|---|---|
| **Example Day** | **Example Time** | **Day** | **Action** |
| Mon 3rd April | Anytime | Day 0 | Insert P4 device + inject GnRH |
| Sat 8rd April | 9am | Day 5 | Inject PG |
| Sun 9rd April | 9am | Day 6 | Remove P4 device + Inject PG |
| Tue 11rd April | 9am<br>4pm - 6pm | Day 8<br>Day 8 | Inject GnRH (48 hrs after P4 device removal)<br>FTAI sexed semen (8 hours post GnRH) |

MUNSTER BOVINE

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MCB1090

**DEDICATED TEXT NUMBER FOR BOOKING AI TECHNICIAN CALL SERVICE. SIMPLY TEXT HERD NO. TO 086 387 6259 BEFORE 12 NOON MON-FRI & BEFORE 10AM SAT, SUN AND BANK HOLIDAYS FOR SAME DAY SERVICE**