



munster
cattle breeding group



BREEDING & HEAT DETECTION MADE EASY

Heat detection in Dairy Cows

Reliance on observation alone will not yield good results; a high proportion of heats will be missed. Aids for heat detection are a must, these become more important as the season progresses, less cows in heat resulting in less mounts overall.

Weeks breeding	200 cow herd		100 cow herd	
	Cows in heat per day	Mounts per cow per day	Cows in heat per day	100 cow herd Mounts per cow per day
1 st 3 Weeks	10	50+	5	50
2 nd 3 weeks	5	50	3	27
3 rd 3 weeks	3	27	1 to 2	11
4 th 3 weeks	1 to 2	11	1	10

Tail Paint

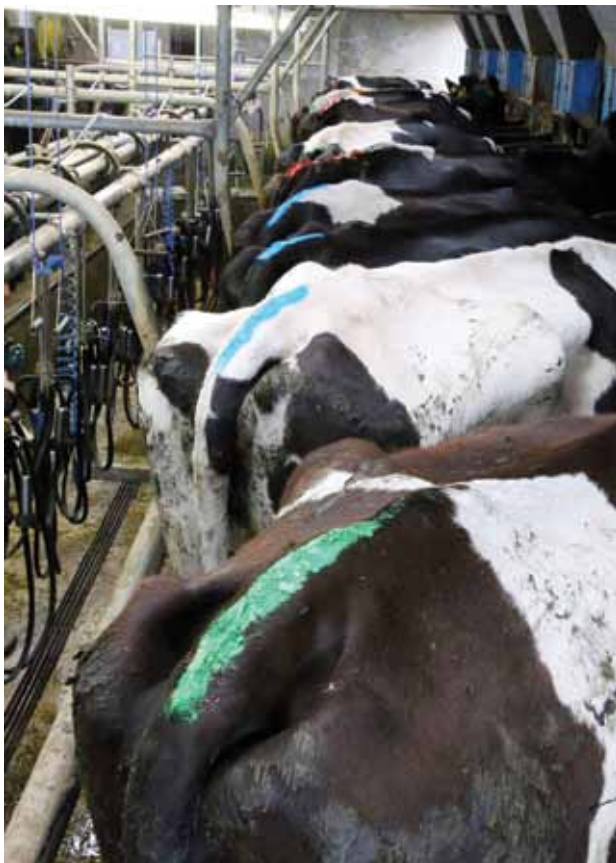


Fig 1. Cows tail painted with Fils Tell Tail paint in different colours

Tail paint works well in dairy cows. It is the aid of choice for the 1st 3-week period.

Tail paint is applied on a 9 inch by 1 to 2 inch strip on the rump. Clipping the rump prior to paint application allows the paint to be rubbed off easier and avoids a build-up of paint. The paint can be applied with a paint brush, paint roller, spray or a glove. Herdowners find Fils Tell Tail paint very effective and convenient to use.

Tail paint is not as effective in maiden heifers as it is in cows, mainly because they are not heavy enough to rub it off, spray or crayons work better on heifers. Painting a little further down the tail of the maiden heifers help detection.



Fig 2 Emulsion paint can be applied with a brush, glove or roller.

Tail Paint

Following points help improve the effectiveness of Tail Paint

- 1.** Clip the hair off the rumps prior to application. This allows the paint to come off easier on mounting and reduces the amount of paint layered on as the season progresses it also reduces the amount of dung on the rumps.
- 2.** Minimize the width and thickness of the strip applied to the tail head.
- 3.** As the season moves into the 2nd 3 weeks of the breeding season, if there is a lot of layering of paint change the colour completely. For example, 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
- 4.** Tail paint needs to be topped up as often as is necessary; twice a week is sufficient in most cases. In inclement weather, it needs to be topped up more often.
- 5.** If cows need to be housed indoors use crayons as opposed to the tail paint.



Fig 3 Fils tail paint



Fig 4. Clippers to remove hair before tail paint applied



Fig 5. Cows with tail paint removed. Marks typical of cows in heat early in the season with a lot of activity.

Vasectomised Bull

A vasectomised bull fitted with a chin ball is the best method of heat detection for heifers and dairy cows after 3 weeks breeding. The chinball is as important as the bull, heats will be missed with a bull without a chinball as he will mate them and not remain with them especially as he matures.



Fig 6. The bull needs to be well grown and ideally similar in size or taller than the females to be detected



Fig. 7 & 8 Chinball padded and well fitted. Alternatively, a section of the yellow volume washer hose works well.

Have the bull vasectomized minimum of 8 weeks prior to him being required. Your vet can check him to ensure his ejaculates are free of any semen. Always fit him with a nose ring at vasectomizing as it allows easy application and removal of the chin ball for topping up with paint.

The bull needs to be well grown and ideally similar in size or taller than the females to be detected, this is especially important indoors.

Take good care of the vasectomised bull; he is a valuable asset on the farm. Ensure young bulls are well fed and avoid a major loss in weight- more than 50Kg. Avoid situations where the

He will work 24/7 and will not miss any cows. When fitted with a chin ball, he will mark every cow he mates, this will allow you to pick up heats at milking.

The best chin ball device, is the one shown (Figs.6 & 7). Ensure the chin ball is snugly fitted to the bull as shown. The leather straps are likely to stretch, adjust them regularly especially in the first month of use.

It is important, especially in young bulls, to pad the area around the back of the neck (Fig. 7 & 8) and around the nose band to avoid the strap cutting into the bull. Alternatively, a section of the yellow volume washer hose works well.

Put the chin ball on at least one week prior to the breeding season, without paint; this allows the bull to get used to the device and avoids wastage of paint.

vasectomised bull may get hurt e.g. if you have a lot of synchronised cows or heifers remove the bull when they are on heat.

Chin ball paint is the only paint that should be used in the chin ball. Prior to filling the chin ball, shake the paint vigorously as it has a heavy oil base, much more difficult than tail paint to mix properly, alternatively put it in a bucket of warm water. It is important to secure the plug properly after each paint fill to prevent leaking. Overfilling causes difficulty in securing the plug. A fill of the chin ball should last 15-20 heats depending on the bull.

Vasectomised Bull



Fig. 9 Shake the Chinball paint vigorously or place in warm water to dissolve.

Watch carefully to make sure that the bull marks the backs of the cows he mates (Figs 10 & 11). When the cow is standing and the bull mates her he marks the back of the cow- these marks are the ones to watch for. Other marks will appear on the sides of the cow, these are 'courting marks' and they will alert you to the fact that the cows may be coming on heat- very common in young bulls (Fig.12). One mistake that is often made is inseminating cows on the courting marks. If only 1 or 2 cows are coming on heat, a young bull can court a cow up to 48 hours before she will stand to be mounted, this results in cows being inseminated 24-48 hours earlier than the optimum time



Fig. 10 Chin Ball marks on the back of the cow – cow in heat



Fig. 11 Chin Ball marks on the back of the cow - cow in heat

Fig 12. Chinball marks on the cows side - Courting marks – She is coming into heat. When marks are on the back she has stood to be mounted.

In a dairy herd the vasectomised bull(s) can run with the heifers for the first 4 weeks of the breeding season and then can be removed and put with the cows.



Always exercise caution when dealing with vasectomised bulls as they can have similar issues as entire bulls.

Scratch cards

Scratch cards are an excellent method of heat detection in both cows and heifers. The newer scratch cards 'estrus detect' are superior to previous scratch cards, they are not as easily scratched unless the heifer is in heat and they remain on the heifer much easier. They come in rolls of 100, with a can of 'scotch weld glue' (Fig 14).



Fig 13. Heifers in heat with red and green cards and the silver one not yet on heat.



Fig. 14 Roll of 100 scratch cards with a can of scotch weld glue.

Scratch cards are the number 1 choice for maiden heifers apart from the vasectomised bull.

Herdowners are using them in the main cow herd now in the 2nd and 3rd week period when the activity is reduced or in herds less than 80 cows.

Hair is needed for the glue to stick the scratch card onto the cow or heifer, do not clip the hair, as it the practice when using tail paint and crayons. Always apply scratch cards on a dry day.



Fig. 15 Spray the white side of the cards with 'Scotch Weld' glue in a draught free area.

On a dry day when the cows and heifers are dry, brush off any loose hair, dirt or dust from the rump area with a brush or comb. Tear off the number of cards from the roll equal to the number of heifers in the crush, and spray the back of the cards with the 'Scotch Weld' glue in a draught and dust free area to avoid dust sticking to the cards (Fig. 15).

Scratch cards



Fig. 16 On a dry day spray the glue onto the rump area free from loose hair or dust.



Fig. 17 Wait till the glue is tacky prior to application to the rump.



Fig. 18

Spray the area of the rump where the card is to be applied to the cow or heifer with 'Scotch Weld' (Fig. 16).

Patience is required now; wait until the glue on the card is gone tacky before you apply it to the rump, this ensures it adheres to the rump. When it is tacky it will stick to your glove (Fig.17); in warmer weather, it will go tacky quicker.

Apply the card to the sprayed area of the rump and rub it in well especially around the edges (Fig. 18).



Fig. 19 Heifer in heat- Silver scratched off to reveal a green colour underneath.

When the cow or heifer is on heat, the silver will get scratched off and reveal the colour of the card underneath e.g. In Fig.19 the card was green. You can also get yellow and red cards (Fig. 13 & 20).

Scratch cards



Fig. 20 Heifer in heat- Silver scratched off to reveal a red colour underneath.



Fig. 21. Heifer in heat, lot of activity the red colour is nearly all scratched off to reveal the white underneath.

If there is a lot of activity, all the colour will get scratched off and the surface of the card will be white.

Renew the scratch cards as often as necessary usually if properly applied they will last 2-3 weeks. Renew them each time the day after the animal was in heat. You can apply the new card on top of the old one if the old one is still in place.

Overall scratch cards work exceptionally well in

both cows and heifers especially when they are outdoors. If the animals are dirty indoors you may get a layer of dung on the cards preventing them being scratched. In this scenario, crayons or vasectomised bull work better.

Crayons



Fig 22. Rub crayon on a wall to get rid of film



Fig 23. Box of Crayons

Crayons work on the same principle as tail paint and are very convenient to use. However, the crayons rub off easier than tail paint, this makes them extremely useful for maiden heifers. Herd owners also find them very convenient to apply, they can be applied when cows/heifers are feeding or when cows are in the parlour. They come in boxes of 12 and in different colours. The tip of the crayon can form a film over it, this must be removed prior to rubbing the crayon on the cows. The easiest way to do this is by rubbing the crayon on a wall, to get rid of the film.



Rub on the crayon to the rump in an area 9 inches by 1 inch. For maiden heifers come a little further down the tail. Top up the crayon weekly.

Stock Bulls

Bull Management

If using sweeper bulls ensure they are easy calving as they are going on the late calvers. Difficult calving results in reduced production and reduced fertility in cows and especially heifers.

Bull power is key to achieving compact calving.

Ensure the ratio is correct, 1 young bull to 10-15 empty females, older bulls 1:20-30 females.

Keep inseminating until such time as your ratios will be correct.

Always inseminate for the first fortnight after the bulls have been released as well as the bulls serving them. This avoids a lull in the calving, allows your bulls time to settle into working and most importantly maximises your conception rate. This also works exceptionally well if your ratios are too high and you are experiencing difficulty.

When bulls are released to both cows and heifers following A.I. at synchronised heat, watch carefully for repeats and A.I. for 2 to 3 days if necessary.

Young Bull First season

Young bulls need to be purchased 2-6 months in advance of mating

Talk to your vet about health tests pre and post purchase

Young bulls need this period for acclimatising to their new home, change in nutrition, hierarchy not established and for health testing and vaccination

Pair them with another animal and avoid having them isolated on their own

On arrival foot bath them and check for mortellaro

Vaccinate the bull with whatever your herd is being vaccinated for

Ensure each stock bull is fertility tested prior to the season

Introduce medium to small females in standing heat for a few hours in a small paddock and observe the mating behaviour

Repeat until he can serve successfully

Now he can be released with females to pasture

Ratio of 1 young bull to 10-15 empty females is the maximum that a young bull can mate and achieve compact calving

Young bulls are still growing and need supplementary feed especially if running with the dairy

Avoid loss of greater than 50Kgs in the first 2 months

When Introduced to the dairy herd need to feed AM & PM at milking time, as 12 to 24 hour paddocks restrict intake of bulls who are active following cows, long roadways take a toll and time spent following cows resulting in less time to eat

Monitor throughout season with a Chinball or scratch cards

At the first sign of Lameness remove the bull and treat

Older Bulls

Ensure older bulls are semen fertility tested

Check their 2016 CR, calving ease & calf quality

Check their legs & feet and mobility

Need to be careful with older bulls as libido decreases

Have them treated for parasites and vaccinated with the main herd

Mature, fertile, active, mobile bulls can have a ratio of 1 bull to 20-30 females to achieve compact calving



Synchronisation in Cows

The best returns gotten from synchronisation are at the following four times in the breeding season.

1. Pre-breeding cows calved 35 days not seen in heat.
2. 3 weeks into the season cows calved 35 days not seen in heat.
3. 6 weeks into the season cows calved 35 days not seen in heat.

4. 9 weeks into the season cows calved 35 days not seen in heat.

I would always recommend the following synchronisation programme with fixed timed AI to ensure all the cows are bred. Synchronisation is an excellent way to increase the number of cows or heifers served with minimum heat detection. Cows have to be in good body condition and calved at least 35 days.

Synchronisation Protocol for AI at Fixed Time.

Mon May 1 st	DAY 0	PRID or CIDR and GnRH (e.g. 2.5ml Receptal)	AM
Mon May 8 th	DAY 7	PG (e.g. 5ml Lutalyase or 2ml Estrumate)	AM
Tues May 9 th	DAY 8	PRID or CIDR out	AM
Wed May 10 th	DAY 9	GnRH (e.g. 2.5ml Receptal)	PM
Thur May 11 th	DAY 10	AI all cows	AM-NOON
12 th 13 th 14 th May watch carefully for late heats			

The second GnRH should be timed 36 hours after PRID, or CIDR removal and AI 18 hours after this injection. PRID, CIDR, GnRH (Receptal, Overelin), PG (Lutalyase, Estrumate, Enzaprost, Cyclicx) are all POM medicines.

Maiden Heifers - BREEDING SEASON

DATE	HEIFERS
Monday 3/4/17	24/4/17 mating is calving on 1/2/18 Get them out to grass 3-4 weeks pre-breeding. Ensure all vaccinations are received 3-4 weeks pre-breeding. Ensure heifers are on a rising plane of nutrition. Supplementary feeding to those under 320Kgs. Familiarize heifers by bringing them into yard daily for 1 Kg feed in last week pre-breeding. Watch weather forecast for applying scratch cards. Introduce Vasectomised bull fitted with a chinball.
Monday 24/4/17 Week 1 Breeding	Ensure heifers are on a rising plane of nutrition. Watch weather forecast for applying scratch cards, heifers need to be bone dry. Scratch cards on all heifers. Bring heifers to the yard daily for drafting for AI and reading the cards.
Monday 1/5/17 Week 2 Breeding	Should have 30% heifers bred now. Renew scratch cards missing. If less than 30% not bred investigate, avoid PG as its unlikely to be successful. Inject PG to those not bred. See programme below.
Monday 8/5/17 Week 3 Breeding	Should have 90+% heifers bred now. If not investigate. Reapply new scratch cards to watch for repeats.
May	Watch repeats, especially after the PG injection 20 th May onwards. If leaving off a bull ensure he is fertility tested and has mated. When the repeats from the synchronisation are due on 20 th May, ensure each bull has no more than 3 matings per day. Ai for 2-3 days at this point works well.

Ensure all heifers:

- Meet the minimum target weights- 340 Kg for Holstein heifers. However if they are within 20-30 Kgs of the target Kg breed them at the start, avoid delaying them 3 weeks and recover the extra Kg during the grazing season.
- Are on a rising plane of nutrition during the breeding season. Reducing nutrition during the breeding season will result in reduced conception rates. Avoid housing heifers or grass shortages.
- Ensure they have received all their vaccines prior to the breeding season.
- Are in a socially stable group; avoid mixing heifers during the breeding season.

Synchronisation in Heifers



Synchronisation is an excellent way of increasing the number of heifers served to A.I. with minimum heat detection. There are many advantages; all the heifers are served within a short period of time, repeats will occur in close proximity – facilitating heat detection. A compact group can be presented for scanning more importantly they all will calve in the 1st four weeks of the calving season minimizing SCC issues.

Cost effective Synchronisation Protocol for heifers

Monday 24 th April	Day 1-7	A.I heifers when on heat. Will get 1/3 bred this week.
Monday 1 st May	Day 7-8	Inject PG to the remaining 2/3 of heifers not bred. New syringe and needle, preferably dry skin.
Tues- Thur 2-5 th May		A.I heifers when on heat. Majority will be on heat 48-72 hour's post injection. Be extra vigilant at this time.
Friday 12 th May	Day 18	Re-Inject all heifers not bred with PG- 11 days post the 1 st injection. Should be very few heifers.
Monday 15 th & Tuesday 16 th May		A.I. heifers when on heat or 72 and 96 hours' post 2 nd PG injection.

PG: Prostaglandin- *Estrumate, * Lutalyse, *Enzaprost (*POM prescription only medicines)

Synchronisation Protocol for heifers with AI at Fixed Time.

Mon April 24 th	DAY 0	PRID or CIDR and GnRH (e.g. 2.5ml Receptal)	AM
Saturday 29 th April	DAY 5	PRID or CIDR removal and inject PG (e.g. 5ml Lutalyse or 2ml Estrumate)	AM
Sunday 30 th April	DAY 6	2 nd PG injection (e.g. 5ml Lutalyse or 2ml Estrumate)	AM
Tuesday 2 nd May	DAY 8	Inseminate and inject GnRH (e.g. 2.5ml Receptal) at AI	AM
3 rd /4 th /5 th May watch carefully for late heats			

PRID, CIDR, GnRH (Receptal, Overelin), PG (Lutalyse, Estrumate, Enzaprost, Cyclicx) are all POM medicines.

Plan the Breeding Season

DATE	ACTIONS	COWS	HEIFERS
Monday 3/4/17 Week -3 Breeding (3 weeks pre-breeding)	Decide mating start date. Tail paint all cows. Treat Lamé Cows. Put low BCS cows on Once a day milk (OAD)	24/4/17 mating is calving on 1/2/18. Record all cows with rubbed paint at each milking	24/4/17 mating is calving on 1/2/18 Ensure heifers are on a rising plane of nutrition. Supplementary feeding to those under 320Kgs
Monday 10/4/17 Week -2 Breeding (2 weeks pre-breeding)	Tail paint all cows.	Record all cows with rubbed paint at milking	Ensure heifers are on a rising plane of nutrition. Supplementary feeding to those under 320Kgs
Monday 17/4/17 Week -1 Breeding (1 weeks pre-breeding)	Tail paint all cows.	Record all cows with rubbed paint at milking	Rising plane of nutrition. Familiarize heifers by bringing them into yard daily for feed Watch weather forecast for applying scratch cards .
Monday 24/4/17 Week 1 Breeding	Mating Start Date Tail paint all cows.	Tail paint all cows. Draft cows calved 35 days not seen in heat for synchronization TODAY. Synchronization programme detailed below with fixed timed AI is superb.	Scratch cards on all heifers. Ensure rising plane of nutrition for heifers. Bring heifers to the yard daily for drafting for AI and reading the cards.
Friday 28/4/17	Tail paint all cows.		
Monday 1/5/17 Week 2 Breeding	1 week breeding complete.	Should have 30% of cows calved 35 days bred	Should have 30% heifers bred now. Renew scratch cards missing. Inject PG to those not bred. See programme below. If 30% not bred investigate, avoid PG.
Friday 5/5/17	Tail paint all cows.		
Monday 8/5/17 Week 3 Breeding	Tail paint all cows.	Should have 60% of cows calved 35 days bred	Should have 90+% heifers bred now. If not investigate.
Friday 12/5/17	Tail paint all cows.		
Monday 15/5/17 Week 4 Breeding	Tail paint all cows.	Tail paint all cows. Draft cows calved 35 days not seen in heat for synchronization TODAY. Synchronization programme detailed below with fixed timed AI is superb.	Scratch cards on all heifers. Bring heifers to the yard daily for drafting for AI and reading the cards.