

## Section 4



# Synchronisation Regimens for Beef Cows and Heifers

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### Introduction

Generally, about 90% of dairy cows will have resumed ovulation and oestrous cycles by 42 days after calving. Beef cows are much slower to re-commence oestrous cycles after calving because of the bond between the cow and her calf. In many herds 30-40% of beef cows will still be anoestrus (non-cyclic) at 60 days after calving.

- ① Why should you consider synchronising beef heifers or cows?
- ② Which synchronisation regimens are available for beef cows?
- ③ Which synchronisation regimens should be used for replacement heifers

# Synchronisation Regimens for Beef Cows and Heifers

## 1 Why should you consider synchronising beef heifers or cows?

### Advantages

Can be used to facilitate AI and the use of genetically superior bulls or to introduce bulls with high breeding values for maternal traits to produce replacement heifers

With fixed-time AI most cows can be bred on an appointed day

For larger herds the need for a number of natural service bulls is reduced

Can be used to induce heat in anoestrous cows. While the conception rate achieved at the induced heat in such cows is generally low (30-50%), fertility at subsequent repeat heats is normal (55-70%)

### Disadvantages

Cost: around €25-30 per cow treated + Veterinary call out fees and AI costs.

Repeated collecting and handling of cows

Variable conception rates

Does not eliminate the need for heat detection. Cows returning to service must be detected in heat and re-inseminated. Alternatively, a bull can be used to breed cows returning to service.

## 2 Which synchronisation regimens are available for beef cows?

The method will always be based on the use of progesterone inserts (PRID® Delta or CIDR) combined with GnRH and prostaglandin (Table1)

Table 1. Some commercially available Prostaglandin, GnRH and eCG products used for oestrous cycle control in cattle

| Commercial Drug | Product Type  | Active Ingredient          | Dosage (ml/animal) |                 | Classification                      |
|-----------------|---------------|----------------------------|--------------------|-----------------|-------------------------------------|
|                 |               |                            | Cows               | Heifers         |                                     |
| Estrumate       | Prostaglandin | Cloprostenol               | 2                  | 2               | POM<br>(Prescription-Only Medicine) |
| Lutalyse        | Prostaglandin | Dinoprost Tromethamine     | 5                  | 5               | POM                                 |
| Enzaprost       | Prostaglandin | Dinoprost                  | 2                  | 2               | POM                                 |
| Prosolvlin      | Prostaglandin |                            | 2                  | 1               | POM                                 |
| Dalamzin        | Prostaglandin | d-cloprostenol             | 2                  | 2               | POM                                 |
| Receptal        | GnRH          | Buserelin                  | 5                  | 5               | POM                                 |
| Ovarelin        | GnRH          | Gonadorelin (as diacetate) | 2                  | 2               | POM                                 |
| Dalmarelin      | GnRH          | lecirelin acetate          | 2                  | 2               | POM                                 |
| Folligon        | Gonadotropin  | eCG                        | 400 iu             | Not recommended | POM                                 |



A possible regimen for beef cows is outlined below.

Recommended synchronisation regimen for beef cows  
35 – 70 days (or longer) calved at time of treatment

| Day                    | Action                                                                                                                                                                                                                                   |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Day 0, a.m. (Monday)   | PRID® Delta or CIDR insertion + GnRH at insertion                                                                                                                                                                                        |
| Day 8, a.m., (Tuesday) | PRID® Delta or CIDR removal + prostaglandin + 400 iu eCG at time of removal (Do this in morning (Ideally tail paint cows or Affix Oestrous Detection Patches to cows)                                                                    |
| Day 9 (Wednesday)      | Cows will start to show standing heats late p.m. and through the night. Record cows in heat and active                                                                                                                                   |
| Day 10 (Thursday)      | Most heats expected. Inseminate all cows observed in heat in the evening of Day 9 and on Day 10. Heat check cows and record all cows active or in heat (if required)                                                                     |
| Day 11 (Friday)        | Continue heat detection and inseminate cows observed in heat. Alternatively, inseminate all cows not observed in heat at 72 hours post CIDR or PRID® Delta removal and administer GnRH (optional) to these cows at time of insemination. |

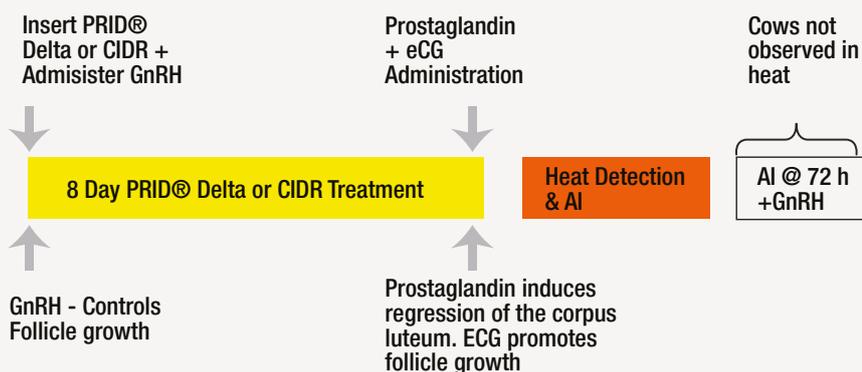
**Notes**

- 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.
- The 8-day treatment can be substituted with either a 7- or 9-day duration treatment without compromising fertility. Synchronisation regimen for beefs cows.

**Use of eCG (PMSG):** There is a significant body of scientific evidence indicating that equine chorionic gonadotropin (eCG; better known as PMSG), administered at the time of device removal, improves synchronised conception rates in beef cows, particularly cows that are anoestrus at the start of treatment. The improvement in conception rates arise from increasing the proportion of cows ovulating (particularly cows in a low body condition score and or cows that were anoestrus at time of treatment initiation) and also possibly from increased concentrations of progesterone following AI. The incorporation of a low dose (300-400 iu) of eCG is now normally incorporated as part of synchronisation regimens in both dairy and beef cows in South American countries where synchronisation treatments are now widely used.

For beef cows under Irish conditions and typically 30-70 days calved, 400 of eCG at device removal is recommended. The projected cost of the 400 eCG is about €3-4/dose.

Figure 1. Synchronisation regimen for beefs cows.



# Synchronisation Regimens for Beef Cows and Heifers

## How to

### Use fixed-time AI:

As an alternative to heat detection and inseminating only cows observed in heat, GnRH could be administered at 48 hours after PRID® Delta or CIDR removal with all cows inseminated once at 64-66 hours after PRID® Delta /CIDR removal.

The overall proportion of treated cows becoming pregnant would be expected to be slightly greater following a fixed-time AI as opposed to inseminating at observed heats only. While this option eliminates the need for heat detection, the extra dose of GnRH would cost €5-6 per cow as well as an extra handling of cows.

The use of single fixed-time AI will require that PRID® Delta /CIDR insertion and removal be carried out in the afternoon/evening to facilitate the administration of GnRH at 48 hours and the timed AI at 64-66 hours all being carried out within the working day.

## Checklist

### To optimise success with synchronisation regimens

The expected conception rates vary from 30- 75%, for best results:

- Cows should have a moderate Body Condition 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® Delta 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 levels 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 following the synchronised 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 inseminated into the cow 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.

### 3 Which synchronisation regimens should be used for replacement heifers?

The regimen out-lined above for cows can be used for heifers. However, as the vast majority of replacement heifers should be cyclic there is a reduced requirement for incorporating an exogenous source of progesterone in the regimen for heifers. Consequently, prostaglandin-based regimens are the methods of choice for use on replacement heifers. A number of such regimens are outlined in Figures 2a and 2b. The regimen outlined in Figure 2a involves two administrations of prostaglandin (PG) at an 11-day interval. All heifers can be inseminated twice on a fixed-time basis at 72 and 96 hours after the second administration without any heat detection or, alternatively, heifers can be checked for heat after the 2nd prostaglandin administration and inseminated on the basis of a detected heat.

A more cost-effective regimen for replacement heifers is outlined in Figure 2b. Good heat detection is initially carried out for 6 days and all heifers detected in heat are inseminated. On the 6th day all heifers not yet detected in heat are injected with prostaglandin. About 90% of the injected heifers will respond to the prostaglandin and show heat 2-4 days after injection and should be inseminated as normal. Using this protocol, drug use, semen costs and veterinary costs are minimised. Conception rates to prostaglandin-induced heats are normal.

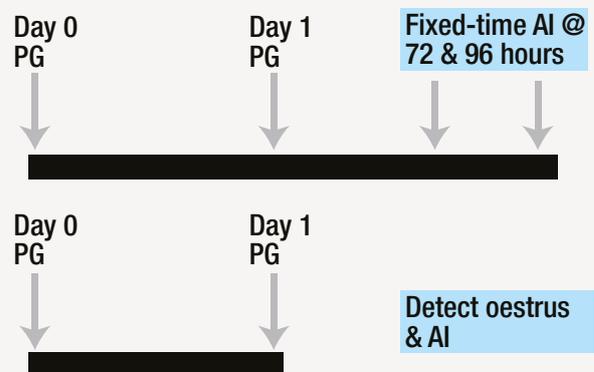


Fig 2a. Commonly used prostaglandin-based synchronisation protocol for heifers

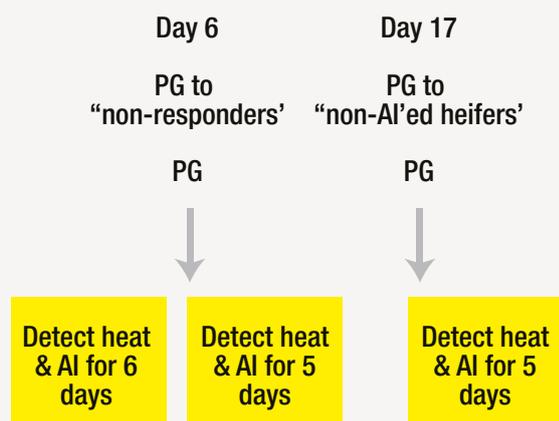


Fig 2b. Alternative prostaglandin-based regimen for replacement heifers. This is the most cost-effective regimen for heifers.

With this later regimen (outlined in Figure 2b) 90% of heifers are inseminated within 10 days and 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 Fig 2b) after their initial injection. It is important that replacement heifers are well-grown (minimum 350-400 kg depending on breed type) and are regularly cyclic. Ovsynch-type regimens are not recommended for use in heifers. It is strongly recommended that replacement heifers are bred at the beginning of breeding season to ensure early calving the following season. It is important to remember that late-calving heifers generally produce late-calving cows. Heifers should be bred to easy calving sires.

### Key risk



**Ovsynch-type regimens are not recommended for use in heifers. It is strongly recommended that replacement heifers are bred at the beginning of the breeding season to ensure early calving the following season. It is important to remember that late-calving heifers generally produce late-calving cows. Heifers should be bred to easy-calving sires.**

