Synchronisation Protocol for Heifers Using Observed Heat or Fixed AI

What is the Synchronisation Protocol for Heifers?

The Synchronisation Protocol for Heifers is a reproductive management system designed to enhance the efficiency of artificial insemination (AI) in heifers. The protocols involve the use of progesterone-based devices (such as PRID or CIDR) combined with hormonal injections to regulate the heifer's heat cycle. Heifers can either be inseminated based on observed heat (using the AM/PM rule) or using Fixed Time AI (FTAI), which occurs 54-56 hours after the Prostaglandin (PG) injection.

What is the recommended synchronisation programme for heifers?

There are two different options for synchronising heifers. One is based using a progesterone device and the other uses injections of prostaglandin.

Option One:

Synchronisation protocol for heifers using a progesterone device and/or Fixed Time AI (FTAI):

Day	Action
0	Monday 10am: Insert PRID + Inject GnRH
7	Monday 10am: Remove PRID + Inject PG Observe heat and AI using the AM/PM rule*
9	**Fixed Time AI** Wednesday 4:00pm: 54-56 hours after Prid removal and PG injection Inject GnRH in both instances at insemination

Note: *AM/PM rule: If the heifer is seen in standing heat in the morning, AI should be performed in the evening. If the heifer is observed in standing heat in the evening, AI should be performed in the morning.

How Can Heat Detection and AI Impact Conception Rates?

The synchronisation programme works best when a combination of heat detection and AI using the AM/PM rule is employed, followed by timed AI for non-responders.

Is serving based on observed heat beneficial for conception rates?

Yes, it can provide better results. On average, you can expect an additional 10% increase in overall conception rates. For instance, conception rates may rise to around 75%, assuming all heifers are passed puberty at the start. Progesterone devices like PRID/CIDR can induce heat in a proportion of non-cycling heifers, leading to a higher pregnancy rate compared to protocols based solely on PG.

What are the Key Considerations for Heifer Synchronisation?

Do heifers need to be well-grown?

Yes, it is essential for heifers to be well-grown. The target weight depends on breed type, but typically it should be around 60-65% of their expected mature weight. This ensures most heifers are cycling at the start of the breeding season, leading to better results. Ideally all heifers should be observed in heat before beginning the synchronising procedure.

Why is bull selection important?

For ease of calving, a hard calving will increase the risk of the heifer not going back in calf on time. It is recommended to use easy-calving sires on heifers (<7.0% heifer calving difficulty) with high reliability (>80%), this improves greatly the chance of an easy calving.

When should heifers be bred during the breeding season?

Heifers should be bred at the start of the breeding season to ensure they return to calve the following year. Progesterone-based protocols will help induce heat in non-cycling heifers, improving the chances of successful conception.

What nutrition should heifers receive?

It is vital to maintain a good plane of nutrition for heifers at the time of breeding and for four weeks after insemination. Avoid fluctuations in feed supply, and ensure heifers are gaining weight, but there is no advantage to excessive weight gain. Heifers should not lose weight, as this can negatively impact fertility.

Option 2: Prostaglandin-Based Protocol for Beef Heifers

The prostaglandin-based protocol is a simple, cheaper approach for breeding beef heifers. It is not compatible with FTAI

The specific requirements for success are:

- Cycling Heifers: Heifers must be cycling for the protocol to be effective. If they are not cycling, prostaglandin (PG) will not bring them into heat.
- Use two injections: Heifers have to be in the middle 10 days or so of the cycle i.e. have a corpus luteum on the ovary that is capable of responding to the PG injection. It doesn't work if given in the first 4-5 days or the latter 4-5 days of a typical cycle. That's why you need a duration of 10-11 days between the injections
- If a third of heifers are not inseminated in the first week, this may indicate that they are not cycling. In this case, check their weight, nutrition, and heat detection.

Day	Action
0-6	Monday to Sunday: Detect heat and inseminate using the AM/PM rule
7	Monday (AM): Inject PG if not inseminated
9-12	Wednesday to Saturday: Detect heat and inseminate
17	Thursday: Inject PG again for non-responders
19	Saturday: Final insemination check

From Teagasc research, 80% or more of the entire group of heifers should have been inseminated by the second injection, assuming that they are all cycling naturally.

What Happens if Heifers Don't Respond to the First Protocol?

Heifers that have not been inseminated following the first protocol should come back into heat 17-21 days later, unless there is an underlying issue. It is essential to keep meticulous records to track the progress of each heifer and ensure any problems are addressed promptly.

What Drugs Are Used in the Synchronisation Protocol for Heifers?

The synchronisation protocol for heifers involves the use of several hormonal treatments, which are classified as Prescription Only Medicines (POM). These medicines require a veterinary prescription, ensuring they are used under the guidance of a qualified professional.

1. **PRID (Progesterone Releasing Intravaginal Device)**
   - Function: PRID is a progesterone-based device used to control the heat cycle of heifers. It is inserted into the vagina and slowly releases progesterone, which mimics the natural hormonal environment, helping to synchronise the heifers' cycles.
   - Classification: POM (Prescription Only Medicine)

2. **GnRH (Gonadotrophin-Releasing Hormone)**
   - Function: GnRH is used to stimulate the release of luteinising hormone (LH) and follicle-stimulating hormone (FSH), both of which are involved in the regulation of the heifer's reproductive cycle. This injection is given at the start of the synchronisation protocol to help control the timing of ovulation.
   - Common Products: Cystorelin, OvaCyst
   - Classification: POM (Prescription Only Medicine)

3. **PG (Prostaglandin)**
   - Function: Prostaglandin is a hormone that is used to induce luteolysis (destruction of the corpus luteum), which helps bring the heifer into heat. It is typically administered on Day 7 of the protocol.
   - Common Products: Lutalyse, Estrumate
   - Classification: POM (Prescription Only Medicine).

Why Are These Drugs POM?

As Prescription Only Medicines, these drugs are regulated and must be administered under the supervision of a qualified veterinary professional. This ensures that the correct dosage is used and that the heifer's health and welfare are considered throughout the breeding process. The use of POM drugs helps prevent misuse, ensuring their safe and effective application in reproductive management

What is the cost?

Progesterone protocol : approx. €30/head excluding the straws and the vet call out.

Prostaglandin protocol approx. €10 per head excluding the straws and the vet call out.

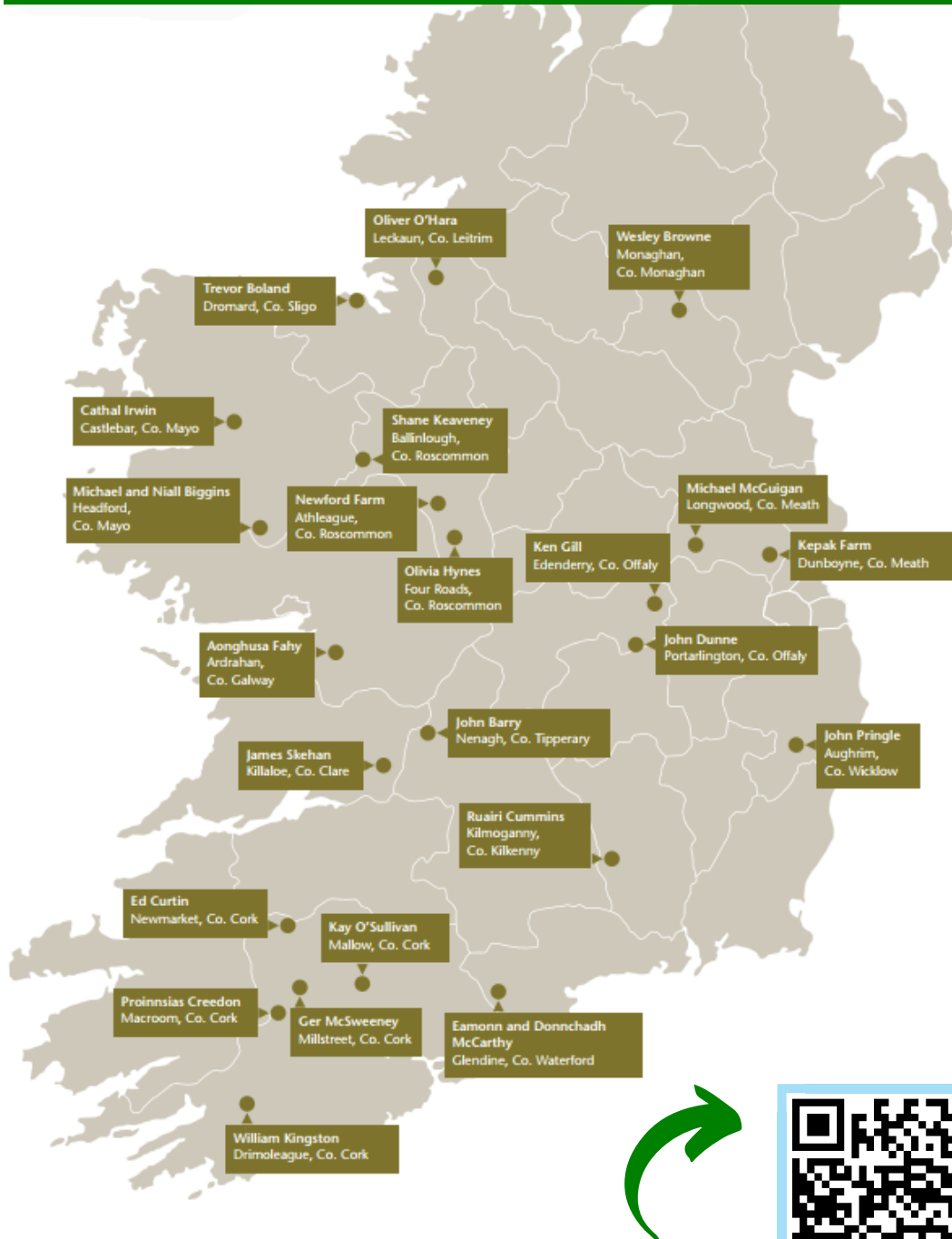(April 2025 sample costs P4 device €16, GnRH €5 per shot, PG €5 per shot)

Conclusion

The Synchronisation Protocol for Heifers, whether using observed heat or Fixed Time AI, provides a structured approach to improving fertility rates in heifers. By combining proper nutrition, effective heat detection, and careful selection of sires, farmers can significantly increase the chances of successful pregnancies. The use of POM drugs such as PRID, GnRH, and PG under veterinary supervision ensures the protocol is both safe and effective, leading to higher conception rates and better overall reproductive outcomes.
By following the protocols outlined above, heifers can be bred efficiently, ensuring they calve on time and contribute to a profitable breeding programme.

Teagasc Future Beef Programme Farms

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Leckaun, Co. Leitrim

Wesley Browne
Monaghan,
Co. Monaghan

Trevor Boland
Dromard, Co. Sligo

Cathal Irwin
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Find out more about the Future Beef Programme