Management for Success with AI

How long calved are the cows?

Cows should ideally be at least 45 days calved before entering a synchrony programme to ensure best results. Cows calved less than 45 days are more likely to be anoestrus (non-cyclic) at the time of implant insertion and while progesterone levels are present, the resulting pregnancy rates from the synchronisation programmes will bring many cows out of anoestrus.

Voluntary waiting period

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<th>0</th>
<th>45</th>
<th>60</th>
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<td>Consider breeding pre-implantation check</td>
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<td>Good for synchronising</td>
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Factors that are important to ensure success with synchronisation and AI include:

- **First post-calving heat may be poor.**
- **Alphostasis, the resulting pregnancy rates from the synchronisation programmes will bring many cows out of anoestrus.**

Maiden Heifers

- Farmers that are breeding their own replacement heifers should be aiming to calve at 2 years of age. In general, results with synchronised AI in maiden heifers should be around 40% of mature cows.
- Ideally, heifers should be around 65% of mature cow weight at first service (around 420kg for a mature cow weight of 650kg).
- A pre-breeding vet check may be useful in heifers to select heifers with good ovarian status and identify non-breeders (eg, freemartins).

Infectious Disease Control

- The presence of active BVD, IBR or leptospirosis infections in a susceptible group of cows/heifers during a synchrony programme can have disastrous consequences on AI pregnancy rates. Therefore, the infectious disease status of the herd should be established in advance.
- It is particularly important in synchronising a group of bought-in heifers that may be naïve at purchase and then exposed to disease.
- Heifers vaccinated for BVD, IBR, leptospirosis etc at their veal doses should not be administered during the synchronisation programme but should be completed prior to the programme starting.
- Administration of vaccines around the time of AI could reduce conception rates.

Parasite Control

- With heifers in particular, a parasite control programme should be planned to ensure burdens of stomach worm, lungworm or fluke are not present.
- Flow fluke infection is a risk then strategic dosing, particularly for autumn calves should be carried out to avoid fluke infection and not left until the breeding period.

Handling Facilities

Some thought should be given to suitability of the handling system on the farm as cattle will need gathered on several occasions during the programme and for AI. Ideally, the crush should be for non-reversed handling. A large batch of cows in heavy rain/snow is not ideal!

**Summary**

- **Cows calved less than 45 days are more likely to be anoestrus (non-cyclic) at the time of implant insertion and while progesterone levels are present, the resulting pregnancy rates from the synchronisation programmes will bring many cows out of anoestrus.**

**Body Condition Score (BCS)/Nutrition/ Trace elements**

- **Forward planning is essential to ensure cows are calved larger BCS to ensure most are cycling prior to synchrony.**
- **The basic rule is to try and keep a steady or rising plane of nutrition and avoid sudden changes (including tonics) until at least 2 weeks after AI.**
- **Trace element supplementation (eg, copper and selenium), if required, should be administered well before the synchronisation/AI programme.**
- **Simple energy deficiency leading to poor BCS and prolonged anoestrus is by far the most common cause of poor fertility in many herds.**

**FERTILITY BULLETIN**

**Introduction**

The use of artificial insemination (AI) is still uncommon in the UK commercial beef suckler herd. Many beef farmers do not consider AI due to the problems of heat detection and handling for AI but there are several potential benefits of AI in commercial beef herds including:

- Access to quality terminal sires with accurate Estimated Breeding Value (EBV) data allowing selection of early calving, fast growing, uniform calves for beef production.
- Access to sires (including sexed semen) for producing homebred beef heifer replacements.
- Increasing the % of cows calved in the first 21 days of calving period by having groups of cows/heifers all bred on day 1 of the mating period.
- Compact handling/ management and barrier breeds of ewes.
- Eliminating the possible disease risks associated with natural service and/or using (Campylobacter, infection).

**Natural service vs Synchronised AI**

- **Uniform quality calves for beef production.**
- **Easy calving, fast growing, uniform calves for beef production.**
- **A reduction in bull numbers (safer calving, easier management and heavier calves at weaning).**
- **Reduced the number of heifers that need to be considered to obtain the best results.**

This guide summarises an approach to the use of AI in beef herds and highlights areas that need to be considered to obtain the best results.
Natural service may be more expensive than you think!

- Many beef stock bulls sire only around 30-40 calves per year and if an easy calving bull is kept purely for maiden heifer matings then this can be <20 calves per year
- The true cost (including fixed and variable costs) of keeping a reasonable quality stock bull on farm may be up to £1600 per year (based on bull purchase price of £4000 and average longevity of 4 working years 1)
- A reasonable estimate of the cost of each calf produced by natural service is therefore around £45 but could be considerably higher
- Substituting a bull with AI could therefore deliver cost-benefit

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A recent US study in beef suckler herds showed a cost benefit of $50 per cow bred when single synchronisation and AI followed by sweeper bulls was compared to a mating by natural service alone. 2

Calving histogram – natural service

- Natural service may be more expensive than you think!
- Substituting a bull with AI could therefore deliver cost-benefit.

Calving histogram – semen collected and frozen

- There is a misconception that all bulls are super-fertile and AI conception rates can never match the performance of a bull which is certainly untrue in many cases
- When routine bull breeding soundness examinations are carried out many studies have shown that 20% or more of bulls on farm could be subfertile for reasons such as lameness, poor semen quality, penile injuries etc 3
- Subfertile bulls are often masked by rotating multiple sires around mating groups for extended mating periods of over 12 weeks
- With good management, beef cows can achieve 1st service AI pregnancy rates of 75% following synchronisation which easily matches the conception rates expected from a fully sound breeding bull, however this is often not achieved due to poor management and other factors
- The potential effect of subfertile bull (40% conception rate) compared with normal bull (60%) on the herd calving pattern and barren rate

Synchronisation for AI

Another method commonly used to reduce or eliminate the need for heat detection is to synchronise the oestrous cycle of the cows/heifers. Synchronisation uses products such as prostaglandin (PG) injections, gonadotrophin releasing hormone injection (GnRH) and intravaginal progesterone devices to control the onset of oestrus which allows targeted heat detection or even fixed-time AI (TAI).

Your veterinary surgeon and insemination service provider can tailor a synchronisation programme that will suit your needs. In general, when synchronising with PG injections or progesterone implants it is important to control estrus with GnRH. PG will be superior to programmes only using PG injections or progesterone implants as it is capable of inducing fertile heats in cows that are anovulatory whereas PG injection will not.