

► Management for Success with AI

Voluntary waiting period

Don't breed Good for synchronising



0 45 60

↑
Calving Consider breeding - prebreeding check

Factors that are important to ensure success with synchronisation and AI include:

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 based programmes will bring many cows out of anoestrus, the resulting pregnancy rates from the first post-calving heat may be poor.

Maiden Heifers

- Farms that are breeding their own replacement heifers should be aiming to calve at 2 years of age therefore first mating must be commenced by 15 months of age
- In general, results with synchronised AI in maiden heifers should be good if all are cyclic before entering the programme
- Ideally, heifers should be around 65% of mature bodyweight 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)



Body Condition Score (BCS)/Nutrition/ Trace elements

- Forward planning is essential to ensure cows are calved at target 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 turnout) until at least 6 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

Infectious Disease Control

- The presence of active BVD, IBR or *Leptospira hardjo* infection 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
- This is particularly important if synchronising a group of bought-in heifers that may be naïve at purchase and then exposed to disease
- If herds are vaccinated for BVD, IBR, Leptospirosis etc then vaccine doses should not be administered during the synchrony 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
- If liver fluke infection is a risk then strategic dosing, particularly for autumn calvers should be carried prior to breeding/synchrony and not left until during 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 covered, as inseminating a large batch of cows in heavy rain/snow is not ideal!



► Summary

- Beef cows and heifers can be bred successfully by AI achieving conception rates to match bulls**
- Synchronisation can eliminate or reduce the need for heat detection**
- Economic benefit can be delivered by having batches of uniform, quality calves that are heavier at weaning**
- The use of conventional or sexed semen is possible to breed replacement heifers with desirable maternal traits**

1. Lowman (2009) personal communication. 2. Rodgers JC and others (2012) An Economic Evaluation of Estrous Synchronization and Timed Artificial Insemination in Suckled Beef Cows. Journal of Animal Science 90,4055-4062. 3. Walters JA (2012) Outcomes of 560 Bull Breeding Examinations performed in the United Kingdom. Proceedings World Buiatrics Congress, Lisbon June 2012, Poster 614.



ARTIFICIAL INSEMINATION IN BEEF HERDS – HOW TO GET GOOD RESULTS

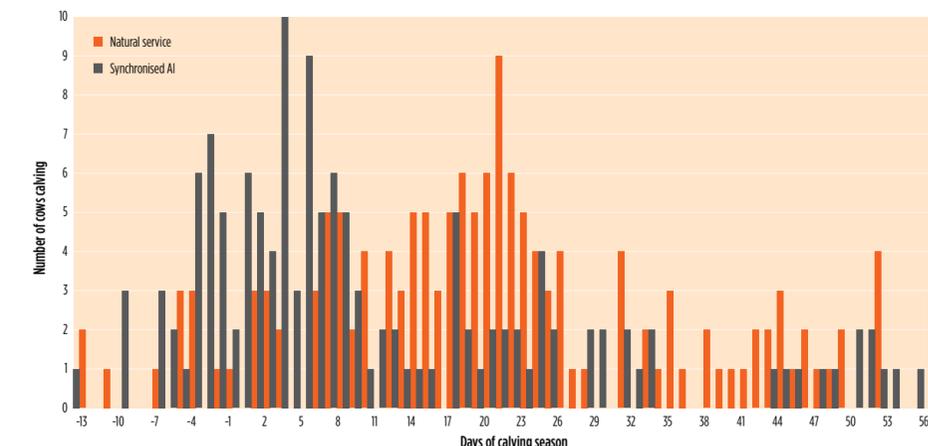
► Introduction

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 easy calving, fast growing, uniform quality calves for beef production
- Access to sires (including sexed semen) with maternal traits suitable 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 calving = easier management and heavier calves at weaning
- Eliminating the possible disease risks associated with natural service and bull hiring (eg *Campylobacter* infection)



Natural service vs Synchronised AI

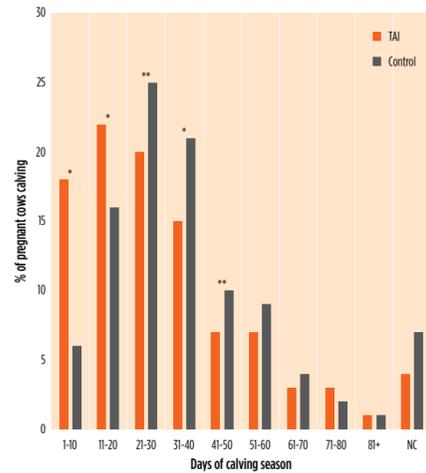


This guide summarises an approach to the use of AI in beef herds and highlights areas that need to be considered to obtain the best results

► Economics of AI versus Natural Service (Bulls)

Natural service may be more expensive than you think!

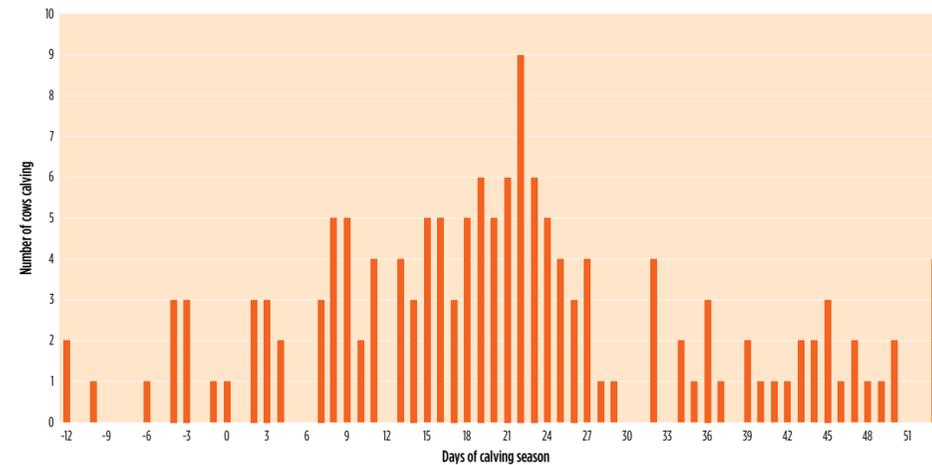
- Many beef stock bulls sire only around 30-40 calves per year and if an easy calving bull is kept purely for maiden heifer matings then this can be <20 calves per year
- The true cost (including fixed and variable costs) of keeping a reasonable quality stock bull on farm may be up to £1600 per year (based on bull purchase price of £4000 and average longevity of 4 working years!)
- 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
- 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?



The percentage of cows calved by 10 day increments from the start of the calving season (*significant difference $P < 0.01$, **significant difference $P < 0.05$)

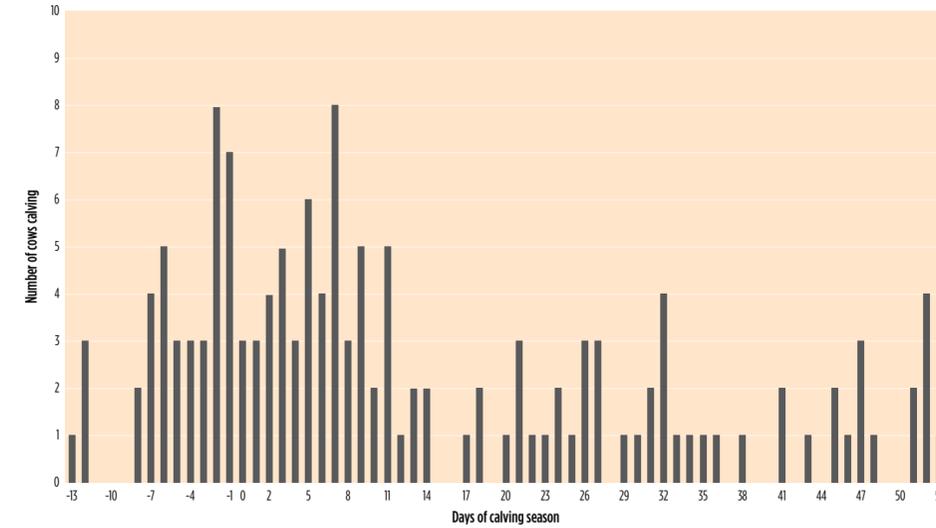


Calving histogram – natural service



55% calved in 21 days

Calving histogram – synchronised AI herd

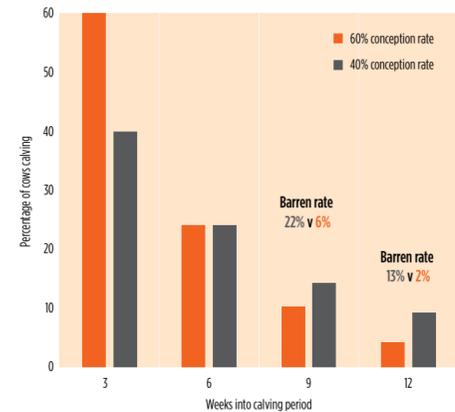


71% calved in 21 days

- 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 etc³
- 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



- Subfertile bulls are often masked by rotating multiple sires around mating groups for extended mating periods of over 12 weeks



The potential effect of subfertile bull (40% conception rate) compared with normal bull (60%) on the herd calving pattern and barren rate

► Options for Managing Breeding by AI in the Beef Herd

AI to Observed Heats

- Beef cows that calve in target body condition score (BCS) around 2.5-3 should normally start cycling and show heats within 50-60 days of calving
- Cows in poor BCS may have extended anoestrus and show heats much later after calving
- 20-30 min periods of heat detection 2-3 times daily can be an effective way of selecting cows for AI especially in autumn calving housed cows - early morning and evening are critical times to observe for heats
- Heat detection aids such as tail paint and activity meters/pedometers have also been used successfully in beef herds
- Cows should be inseminated within 12 hours of being seen standing to be mounted



Synchronisation for AI

Another method commonly used to reduce or eliminate the need for heat detection is to synchronise the oestrus cycle of the cows/heifers.

Synchronisation uses products such as prostaglandin (PG) injection, 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 beef cows the use of progesterone implants and PG will be superior to programmes only using PG injections as progesterone implants are capable of inducing fertile heats in cows that are anoestrus whereas PG injection will not.

