Farm Vet News

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AI in the Beef Herd

Overview

When we discuss artificial insemination (AI) it is almost invariably in the context of the dairy industry. However, there are many benefits for commercial and pedigree suckler herds that adopt an AI breeding programme. Using AI, especially when combined with a synchronization programme, can help to shorten the calving period which in turn will increase average weaning weight and allow replacement heifers to reach target service weight at the right time. This improved weight gain is linked to the combination of a likely tighter calving period giving calves more time to grow, suffering from lower disease risk and being born with better genetics.

Yearling suckler offspring sired by AI use in a suckler herd

Bulls

AI bulls have genetic potential which far outweighs that can be purchased in a stock bull. A reasonable stock bull siring 25 calves a year will cost ~£40/calf; a straw of top-quality beef semen is only ~£15. AI allows sires to be matched to cows in a bespoke manner based on what the aims of the herd are. This allows rapid rates of genetic improvement to be achieved. Multiple bulls can be available for the herd without the associated costly housing although some farms may choose to have a sweeper stock bull where AI is carried out after a synchronisation programme. Not keeping a bull removes any risk of misalliance and means more homebred heifers can be retained as there is less risk of inbreeding. Many farms will claim to have a closed herd, rearing their own replacements but will also buy in a new stock bull every few years; if there is no need for a stock bull then the herd can remain truly closed meaning a high health status can be attained and maintained.

Selection of AI Sires

AI can be beneficial for breeding high quality replacement heifers that have good maternal attributes including easy calving, shorter gestations and good milk production. These traits are predicted by EBVs (estimated breeding values) which are based around the averages of offspring already produced by a bull. EBVs can be rapidly obtained for AI bulls as large numbers of calves will be sired by one individual.

AI bulls have genetic merit that far outweighs that of most stock bulls

Many farms will opt to use different bulls for different cow groups. Smaller breeds or bulls producing calves with a lower birth weight and a good direct calving ease are preferred for heifers whereas cows can be matched to sires that will produce replacement heifers or larger calves with superior carcasse traits.

Making AI work for your herd

- Appropriately conditioned cows – BCS 3 is ideal.
- Heifers weigh at least 65 per cent of their mature body weight at first service.
- Cows have adequate levels of trace elements
- Disease free herd with all cow vaccinations completed at least a month before service.
- Cows have calved more than 50 days before service
- Cows fed a rising plane of nutrition before and during the service period
- Keep management consistent
- Select the best sires for your herd using EBVs
- Ensure good handling facilities are available
- Maintain thorough records of calving dates, service dates and family lines.
- Discuss the breeding plan with your vet – facilities and staffing may affect your approach
- Set aside time for heat detection and know what to look for
- Choose a competent AI technician or have an adequately trained, well-practiced staff member has – an AI technician may seem costly but the bigger picture (experience, success rates, costs of training and setting up storage) should be considered
- Pregnancy scanning visit 30 days after the final service to assess the success of the breeding period and determine the fate of any non-pregnant cows.

Written by Lucy Jerram BSc MVetMed Dip.ECBHM MRCVS on behalf of Endell Farm Vets Beef Working Group.

Case Study: Beechcroft Farm

Beechcroft Farm have a predominately Simmental and some native breed 25 cow suckler herd. All youngstock are finished on farm and sold through the farm shop. They have been using Artificial Insemination based on heat detection for three years.

Why did you stop keeping a stock bull?
"There were three reasons. Firstly, we run a closed herd, rearing our own replacements, meaning our bull needed replacing every two years. We took care to purchase bulls from quality breeders, but with the threat of TB ever present as well as other diseases, such as BVD, we felt that we had a gaping hole in our herd biosecurity. Secondly, we didn't have the facilities on farm for a bull pen meaning he ran with the herd throughout the year, leading to dominance, herd handling issues and causing our tight calving pattern to slip and cows to calve out of our desired block. Thirdly: safety, we are constantly trying to reduce the risk of injury on the farm and as lone working is not unusual for us, we felt removing the bull reduced risk of injury somewhat."

A Simmental cow (first calved at 2 years old, her Shorthorn 2019 daughter and her 2020 Simmental daughter)

What affects the choices of AI bulls used in the cows?
"Since switching to AI we really have been introduced to a world of opportunity! Previously we calved heifers at 3 years old as we were nervous of calving difficulties. Now, however, we have such flexibility on breed choices and can make much more informed decisions as we have so much more genetic information on the bulls. This means we now calve our heifers at 2 years old choosing easy calving beef shorthorns. We use polled bulls which takes the hassle and stress of dehorning out of the equation. It also allows us to select bulls specific to the cow we are serving, allowing us to get the best performance of our cattle. We are able to access far superior genetics than we could ever have afforded in a stock bull. In a relatively short period of time with improved genetics we have been able to improve the performance of the herd."

Why did you opt for an AI tech rather than DIY AI?
"Quite simple. As farmers running a suckler herd, 2 sheep flocks (Spring and Autumn lambing), a herd of outdoor pigs and farm shop it's easy to be a jack of all trades and a master of none! Our AI tech is able to concentrate solely on our cows, allowing much quicker detection of fertility issues than if we were to be doing the job ourselves. The benefits of that expert eye being cast across the herd far outweighs the costs."

Why did you opt for service based on natural heat expression rather than a synchronisation programme?
"Although very keen to keep a tight calving pattern we felt that the success rate of natural heat was best suited to us. Based on value for money we felt that natural heat was better as the cows are more likely to hold; saving money on straws and syncing. Since AI, our calving period has dramatically reduced and now takes around 8 weeks."

"There have been so many advantages of AI apart from reducing calving periods and improving genetics. Before embarking on AI we invested in self-locking head yokes, which our previously rarely handled cattle took to like ducks to water. The herd is now so much quieter – we are able to handle the cattle without dramas when it comes to TB tests and other vet work. We are managing our suckler herd so much more efficiently: before I feel we were being reactive to any problems but now I feel we are much more proactive as we spend so much more time with the cows and are monitoring performance constantly. This all improves physical and therefore financial performance of our beef suckler herd. We would never look back from AI now!"

Artifical Insemination vs Stock Bull

No risk of venereal transmitted disease at service	Risk of buying in disease when new stock bulls are purchased
Reduced cost per pregnancy	Cost per pregnancy includes bull purchase price and upkeep thereafter
Requires practice +/- cost of an AI technician	No need to observe oestrus
If choosing to synchornise before AI require high staffing rates at calving	Cannot synchronise unless have sufficient bulls to serve all the cows
Need to spend time carrying out heat detection, or invest in heat detection aids	Risk of extended calving period, especially if bull is permanently housed with the cows
Choice of top quality genetics specific to the herd's aims and individuals	Bull will need replacing every 2 – 4 years to avoid him covering his heifer offspring
Initial set up cost will be moderately high	Risk of misalliance
Need good handling facilities to safely AI cattle	Need good facilities to house the bull safely
Need cows calm enough to tolerate daily handling and potential herd separation when in heat	An infertile bull risks severely affecting the next calving season and may not be detected quickly

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References: AHDB Better Returns Programme +, Artifical Insemination (AI) and Oestrus Synchronisation of Beef Cattle