

Beef Production: The Basics

Breeding Seasons

Breeding in the beef herd (allowing a bull to mate with a cow on heat), and consequently calving, can take place throughout the year, or it can be restricted to a previously determined limited part of the year. Where breeding takes place in a restricted breeding season, the most common practice is either a spring calving or an autumn calving season, although some farmers make use of two breeding seasons per year, allowing cows that miss a breeding season to be bred in the subsequent breeding season.

Whether breeding takes place throughout the year or is confined to a part of the year, there are advantages and disadvantages associated with each system, which are often decided by the requirements of the farmer and where the farm is situated. The major limiting influence is that cows are pregnant for 283 days and normally do not re-conceive earlier than 50 to 60 days after calving (post partum).

Breeding throughout the year

Where breeding takes place throughout the year, the normal practice is to leave the bulls with the cow-herd all the time. Heifers are introduced to the breeding herd once they are ready for mating. Experience has shown that cows kept with the bull throughout the year tend to fall into a calving season of sorts on their own accord, with the majority calving down in spring.

Advantages:

- If a farmer wishes to have milk for household use all year round, breeding throughout the year, or in overlapping breeding seasons, is necessary.
- Bulls remain in the herd, thus there is less bull management and, where a farmer has more than one bull, less fighting amongst bulls. Where bulls are kept together in all-male groups during the non-breeding season, bulls often fight, damaging equipment and injuring one another.
- Because only a small proportion of cows come on heat at a time, a lower number of bulls is needed *i.e.* only 2% bulls are necessary.
- Cows are served as they commence cycling after calving.
- Heifers are mated as they achieve their target mass.
- Marketing can take place throughout the year.

Disadvantages:

- A high plane of nutrition is necessary all the time, including winter, to ensure adequate conception rates.
- Management tasks e.g. dehorning, vaccination, castration, must be undertaken continuously throughout the year.
- Where artificial insemination is used, heat spotting must be undertaken throughout the year, adding significantly to labour requirements.

Restricted breeding season

Advantages:

- The feed requirement of the herd can be matched to the feed resources of the farm with relative ease.
- Herd management and fodder flow planning is simplified. Thus, all calves can be dehorned and castrated in a day or two, leaving the rest of the year open for other activities. This could be a significant advantage for a person not always present on a farm or where other enterprises must be taken into consideration.
- It is easier to monitor conception rates and to devise a simple system to detect cows that fail to reconceive.
- In small herds, the only way performance testing can be carried out is by seasonal breeding as at least 10 to 15 animals in each group must be tested. In order to provide 10 bulls to make a group comparison, for example, at least 30 calves must be born within a time period of 3 months (approximately 50% of calves are male and mortalities must be taken into account).
- Animals can be marketed in uniform groups when beef prices are favourable.
- Where artificial insemination is used, heat spotting is only necessary for a short period.

Disadvantages:

- If a cow does not conceive when the bull is in the herd, she must wait for the next breeding season before being impregnated, thus losing a year in her productive life.
- Because many cows come on heat in the first 6 weeks of the breeding season, more bulls are needed at mating time i.e. 4% to 6% bulls are recommended, depending on the type of farm, the size of paddocks and the size of the herds where mating is taking place.
- Bulls must be cared for in the non-breeding season, placing additional pressure on management needs of the enterprise. Good holding pens are needed to keep bulls apart and to reduce damage when bulls fight, which is common in all-male groups.
- Heifer rearing requires additional management because heifers must be kept in a separate herd and grown out to achieve an optimum target mass for the relevant breeding season.

Timing of a restricted breeding season

Changing from year-round breeding to a restricted breeding season is difficult. The change can be achieved by taking the bull out, preferably in autumn, and starting the following summer with bringing the bull into the herd at the required time. This practice goes hand in hand with a loss in production. The problem can be overcome by moving gradually into seasonal breeding. Strategic culling of cows which calve at the wrong time of year and breeding replacement heifers to calve within the pre-determined calving season, is implemented in conjunction with grouping cows calving at the right time of the year in a separate herd to prevent breeding taking place out of season. Cows calving out of season

can gradually be allowed to have increased inter-calving periods, until all the animals are calving down at the right time. It is noteworthy that once a system of seasonal breeding is fully implemented, moving breeding later is easy, whereas trying to bring forward the breeding season is difficult. To avoid dramatic mishaps, such as calving rate suddenly falling by half, it is advisable to introduce any changes gradually rather than to attempt to adapt a new practice in one season.

Although the timing of the calving season is ultimately determined by the date on which the cows and bulls in a herd are joined, breeding will not take place until cows are coming on heat regularly. The result is that spring breeding cannot commence until the cows have started cycling, which is often delayed by poor winter nutrition or as a result of inadequate winter nutrition subsequent to poor nutrition the previous summer *e.g.* overstocking during summer or delaying the weaning of calves from the dams for too long, resulting in poor cow condition which must be regained before cows will reconceive.

A good practice is to have calving commencing 4 to 6 weeks before the start of the spring rains. Mating will then commence 6 to 8 weeks after the first rains have fallen, when the veld has had time to become green and has grown out enough to support the needs of the cow and her calf. When the calf is 2 to 3 months old, the cow's nutritional needs are at a peak. Her milk production is at a maximum and she needs effective nutrition to provide for milk production as well as to build up her body reserves after the winter, in addition to taking the bull and reconceiving.

Guidelines for time of breeding season

Sourveld areas:

Start the breeding season in November

Sweetveld areas:

Start the breeding season in December

Most advisors maintain that at least 80% of cows in a herd should calve down in the first six weeks of the calving season. If the timing of a breeding season is correct, there is usually a short lag phase at the expected start of the calving season, followed by a period when there is a rapid increase in the number of calves born each week. After a peak in the weekly calving rate there is a gradual decline in the incidence of births.

Drawing a graph of the distribution of calves born each week is a good way to examine how correctly the breeding season is timed. When evaluating the calving distribution graph, season must be taken into account. An abnormally poor season could cause a lag in calves born.

When deciding on the timing of the breeding season, there is a balance between "good for the cow" and "good for the calf", which is dependent on the type of feeding and the feed resources available on the farm. Many studies have shown that where calving takes place earlier in the season, better calves (bigger and healthier) are weaned, and where calving takes place later in the season, there is less pressure on the cow.

Cows that calve too early in the spring usually suffer from a shortage of food (unless preserved feeds of high nutritional value are available), forcing them to provide milk for the calf by drawing on body reserves. Such a cow becomes very thin and takes a long time to recover adequate body condition to ensure that she reconceives during the subsequent breeding season.

Length of the breeding season

If not in calf, cows cycle on average every 21 days. It is therefore advisable that the breeding season lasts 60 to 90 days, thus allowing cows 2 to 3 (in a 60 day breeding season) or 3 to 4 (in a 90 day breeding season) opportunities to take the bull.

A shorter breeding season, lasting 60 days, can be used if a farmer wants management procedures to take place over a short period so that the beef enterprise can fit in with other undertakings. However, longer breeding seasons are less prone to mishaps like disappointing conception rates subsequent to poor weather conditions and are less demanding on management. Certain genetic abnormalities can be eliminated by using a short heifer-breeding season *e.g.* a 35-day breeding season is recommended to select against Robertsonian 1/29 translocation, a genetic abnormality.

Conclusion

Choosing between seasonal and all-year breeding depends on a number of factors, mostly associated with a farmer's personal preference and consideration of the factors discussed. The most common system on most commercial farms is seasonal breeding because management is simplified and, especially where winter feeding is necessary, it is easier to match the feed requirements of a herd to the fodder production of veld.