

Why breeding seasons?

The synchronisation of available food sources, particularly natural pastures, with the reproduction and production cycle of beef cattle, is of critical importance to optimise the reproduction of the breeding herd as well as the pre-wean growth of calves. Breeding seasons are the most important management tool to achieve this synchronisation, thereby increasing the profitability of beef cattle enterprises.

What is the purpose of a breeding season?

The purpose of a breeding season is to get the maximum possible percentage of the available heifers and cows in the breeding herd pregnant in a relatively short period and as cost-effectively as possible, for calving during a time of the year that is most favourable for high re-conception of cows, low calf mortality and high pre-wean growth of calves.

What is the best breeding season?

Good quality summer pastures (in summer rainfall areas) is the cheapest source of high quality nutrition for beef cattle. The best breeding season is the one that makes optimum use of this high quality summer grazing.

How do I know that my breeding season starts too early or too late?

The main result of a breeding season (and consequently calving season) that starts too late, is lower weaning weights. Cows calve too late, and the calves are too small to be able to utilise their dams' high milk production during the peak summer grazing, leading to lower weaning weights. Secondly, cows calving too late have calves with higher birth weights and, consequently, a higher incidence of difficult calving because, at calving, the cows have been utilising the higher nutritional level of the summer grazing for a long period.

The main result of a breeding season (and consequently calving season) that starts too early, is a lower re-conception rate. Cows calve too early, i.e. before sufficient summer grazing is available to meet the increased nutritional requirements of lactating cows; this leads to a loss of too much condition and, consequently, a lower re-conception rate.

What are the disadvantages of breeding throughout the year?

The main disadvantages of breeding and calving throughout the year are:

- The good summer pastures (in summer rainfall areas) are not used optimally because some cows are not in peak milk production during midsummer.
- More nutritional supplements are needed during the winter to prevent lactating cows from losing too much condition on the poor winter pastures.
- Selection for fertility, especially the early culling of non-pregnant animals, is difficult.
- Management tasks, such as branding, dosing, vaccinating, weighing and dehorning calves, as well as pregnancy diagnosis of cows, cannot be consolidated.
- Performance testing (and, indirectly, estimating EBV) is suboptimal because calves have to be evaluated in several small groups, rather than in one large group.
- Marketing is difficult because calves have to be marketed in several smaller groups, rather than in one large group.
- The cost of pregnancy tests and other management tasks are higher as a result of, among other things, more visits by the veterinarian.
- Feed flow planning is more complex and therefore much more difficult.

What are the advantages of breeding seasons?

There are much more advantages to breeding seasons than disadvantages. The main advantages are:

- Optimal utilisation of the peak production period of natural pastures:
 - o The best camps can be allocated to the breeding cows; this will lead to their being in better condition, resulting in a higher conception rate.
 - o Cows and heifers can be mated at optimum condition and weight, resulting in a higher conception rate.
 - o The period during which the cows reach their peak nutritional needs (about 6 to 14 weeks after calving) coincides with the peak production period of natural pastures. As a result, cows will be able to maintain their condition better, resulting in a higher conception rate.
 - o The pre-wean growth period of the calves coincides with the peak production of natural pastures, resulting in higher weaning weights.

- The period during which the cows' nutritional requirements are low (after the calves have been weaned), coincides with the period of low production of natural pastures (during the winter). Less supplementation is therefore necessary during the winter.
- Management tasks can be consolidated; this includes the branding, dosing, vaccinating and dehorning of calves, pregnancy diagnosis of cows, fertility tests of breeding bulls, as well as weighing and weaning calves.
- With single sire mating, breeding groups have to be kept separately for only a short period of the year.
- The breeding and calving season can be coordinated with other farming activities, such as planting and harvesting, so that more attention can be given to the cows during the breeding and calving season.
- Performance testing can be done more effectively because the calf groups are larger and more uniform regarding age variation.
- Marketing of weaners is easier because the calf groups are larger and more uniform in terms of weight and age. All non-pregnant cows can be marketed in a good condition before the winter.
- Selection for fertility is easier and more effective because:
 - o non-pregnant cows and heifers can easily be identified with an annual pregnancy test; they can be culled early, directly after the diagnosis;
 - o sub- and infertile bulls, or bulls with a weak libido can easily be identified; and
 - o cows that will calve late in the season, and are therefore at the highest risk to not get pregnant the next year, can easily be identified with an annual pregnancy test and can be sold early.
- The cost of pregnancy tests and other management tasks are lower because they need to be done only once a year.
- Cost-effective strategic expansion of the breeding cow herd is possible.
- Feed flow planning is easier.

Are there disadvantages to breeding seasons?

Yes, there are some disadvantages to breeding seasons, but the benefits overshadow the disadvantages by far. The disadvantages are few:

- During the non-breeding periods of the year, the breeding bulls should be kept in separate camps, away from the cows. With adequate camps and proper management, this is not a big issue.
- More breeding bulls are required for breeding throughout the year.
- Weaners are not available for marketing during the course of the year; this will have an impact on cash flow. However, the advantage of large, uniform groups for marketing overshadows this disadvantage.

Which time of the year is the best breeding season?

By far the most important consideration is to choose the time of the year at which the cows reach optimum condition for conception. This time is usually about three months after the month of the highest rainfall. For a summer breeding season (in a summer rainfall area), the best re-conception rate is achieved when cows calve about one month before, until about one month after the first effective rains have fallen. If the first effective rain, for example, usually falls in October, the best calving season will be from September to November. This means that the breeding season should be 9½ months earlier, from 15 November to 15 February.

The availability of established pastures and crop residues should also be taken into account when the best time of the year is determined. Where crop residues and/or pasture, for example, are available in late winter/early spring, cows, and especially heifers, may very well calve earlier, without the risk of their losing too much condition before summer grazing becomes available.

If a herd has no breeding seasons, the historical calving pattern of the herd can be used as a guideline to determine the best time of the year. Determine in which three consecutive months most calves are born – this should be the calving season. The optimum time for the breeding season will then be 9½ months earlier.

In drier regions, where the rain usually starts later in the season, the breeding season should, in general, be a month or two later than in the wetter regions, where the rain usually starts early in the season.

One or two breeding seasons – which is the best?

In general, a summer breeding season is the best in a summer rainfall area. A winter breeding season should only be considered if sufficient supply of high quality feed, such as crop residues or established pastures, is available during the winter, at a low cost. A winter breeding season can be considered for the earlier mating (at age 18 to 21 months) of those heifers that grow too heavy/fat if they are mated at 24 to 27 months.

The main advantages of two breeding seasons per annum are, firstly, that non-pregnant cows, which are not culled, do not have to skip a full year before they are bred again – they can be mated again within six months. Secondly, heifers that grow too heavy/fat for mating at 24 months, can be mated at the age of 18 months. Thirdly, breeding bulls can be used more effectively.

The main disadvantages of two breeding seasons per annum are, firstly, that pressure for selection on reproduction is decreased due to the temptation not to cull cows that have skipped, since they can be bred again within six months.

Secondly, performance testing groups are smaller because the annual calf crop is spread over two seasons. Thirdly, higher management inputs are required for two breeding seasons, because all management tasks need to be done twice a year.

What are the main advantages and disadvantages of a winter calving season?

The main advantage of a winter breeding season is that the parasite load is lower during the pre-wean growth phase of calves, which can lead to savings on dosing and dip costs. Secondly, calves are weaned in the summer (approximately December), when weaner prices are usually higher than in the winter months.

The main disadvantage of a winter breeding season is that the cows are usually in a poorer condition during the breeding season, which could result in a lower conception rate. More supplementation is needed to keep the cows in good condition during the period in which the nutritional needs of the cows peak (mid-winter), because it does not coincide with the peak production period (during the summer) of natural pastures.

How long should a breeding season be?

Ideally, cows should calve about the same time annually. Considering that the average gestation period of cows is about 285 days, a cow should conceive within 80 days after calving (365 minus 285 = 80 days) to calve at the same time each year. Therefore, a breeding season of 75 days is better than one of 90 days.

The ideal is a breeding season of 65 days (3 oestrus cycles) for lactating cows and a breeding season of 45 days (2 cycles) for heifers and dry cows. It is important to note that aspects such as the nutritional status and condition of the cows should be at an optimum level to achieve a high conception rate in a short breeding season. During a drought, for example, it will be difficult to achieve a high conception rate in a short breeding season, unless additional nutrition is provided.

How do I implement a breeding season in my herd?

There are basically four decisions to make, namely:

1. Decide on one or two breeding seasons per year.
2. Decide on the best period(s) during the year.
3. Decide on the implementation strategy, either gradually or immediately.
4. Decision on the implementation process.

For immediate implementation of a summer breeding season, the following steps are recommended:

1. Remove all bulls from the breeding herd at the end of the planned summer breeding season.
2. Do pregnancy tests on all cows and heifers about 2 to 3 months after the bulls have been removed.
3. Cull all the non-pregnant cows and heifers, OR transfer these animals to a winter breeding season.
4. If non-pregnant cows and heifers are transferred to a winter breeding season, test for pregnancy again and cull all non-pregnant animals. Transfer the pregnant females to the summer breeding season, OR continue with the winter breeding season.

For gradual implementation of a summer breeding season, it is recommended to start with a longer season and shorten it by 1 to 2 weeks each year until the desired breeding period is reached. It is important that the breeding season should be shortened by moving the starting date forward (not moving the end date back). If the breeding season should be from 15 December to 28 February (2½ months), for example, one can start off with a four-month breeding season and it should be shortened annually by two weeks, e.g.:

- 1st year: 1 Nov - 28 Feb (4 months)
- 2nd year: 15 Nov - 28 Feb (3½ months)
- 3rd year: 1 Dec - 28 Feb (3 months)
- 4th year: 15 Dec - 28 Feb (2½ months)

The following procedure is recommended:

- Remove all bulls from the breeding herd at the end of the planned summer breeding season.
- Do pregnancy tests on all cows and heifers, 2 to 3 months after the bulls have been removed.
- Cull all non-pregnant cows and heifers.

How do I incorporate AI in a breeding season?

There are three common practices of managing AI (artificial insemination) in breeding seasons:

- The first option is to AI for the first third of the breeding season, and then introduce follow-up bulls for the last two thirds of the breeding season. The target with this practice is to get at least 60% cows pregnant from AI.
- The second option is to synchronise the cows and/or heifers, AI for one oestrus cycle and then introduce follow-up bulls.
- The third option is to only use AI. This is a high risk practice and should only be considered if the nutrition, management and AI practices of the relevant herd is at a very high level.

Which factors should be taken into account when breeding heifers?

The correct management of heifers and first-calf cows is a very critical aspect in order to achieve a high conception rate in a herd because they still have to grow through pregnancy and lactation. To do this and to re-conceive, they need sufficient quantities of high quality feed.

Weight, condition and growth rate are the primary factors to consider when deciding when heifers can be mated. These factors are more important than the age of the heifers. The ideal would be to breed heifers as soon as possible after they reach sexual maturity. Heifers reach sexual maturity when they reach about 60% to 65% of their expected mature weight. For medium frame cows, with an average mature weight of 500 kg, the target weight of heifers for mating is about 300 to 325 kg.

The management practice to mate heifers that grow too heavy/fat at 18-to-21 months of age (instead of 24 to 27 months) during a second (winter) breeding season, places greater stress on these young heifers. This practice should only be considered if sufficient high quality pastures and/or crop residues, hay or silage are available for the first-calf cows during the winter following the first calving, otherwise it will lead to a lower re-conception rate.

There are basically two options for first-calf cows that have calved during the winter at the age of approximately 2½ years, namely:

- Transfer them to the main breeding season by waiting an extra six months before they are mated again. This gives them extra time to recover before the next breeding season, resulting in a higher re-conception rate; OR
- Mate them immediately to calve again during the winter, at the age of approximately 3½ years. This practice will eventually lead to two full breeding seasons.

Ideally, the breeding season of heifers is approximately 45 to 65 days in order to place higher pressure on selection for fertility. Higher selection pressure can also be applied by the practice of over-mating, where up to 50% more heifers than needed for replacement are mated, thereby ensuring that only pregnant heifers are included in the herd.