

Cattle Reproduction

There are three ways in which reproduction can take place on the farm:

- 1 The bull is with the rest of the animals.
- 2 The bull is in the neighbourhood but not directly with the animals, and cannot reach the females.
- 3 There is no bull in the surrounding area, but there is a good working Artificial Insemination (AI) programme, and semen is not too expensive. Be sure the inseminator can reach your farm within 6 - 12 hours.

Calving interval

The calving interval expresses the economic importance of reproduction. The calving interval is the time between the births of two calves by the same mother. The pregnancy of 9 months and 9 days (40 weeks) is included in this time.

- ❖ A cow with a shorter calving interval has more lactations in the same amount of years.
- ❖ A calving interval of 1 to 1½ years is ideal,

Estrus (Heat)

Estrus is the period during which a cow can be served successfully by a bull or inseminated artificially, In optimal situations Estrus occurs regularly, approximately every 3 weeks. Less optimal situations include:

- Estrus stress: high temperatures and/or high humidity. Nutritional stress: imbalance in feed (proteins and minerals) or very little feed available due to seasonal effects.
- Suckling of calves.

All of these may suppress Estrus itself, or the signs which indicate estrus in a cow.

The length of the Estrus period depends on the breed. The Estrus period lasts about 12 to 28 hours. So if you do not want to miss the estrus period, you should watch your animals regularly. When the cow is ready to be served by a bull it is very important not to wait too long once you have seen the cow on Estrus, otherwise the cow won't allow the bull to jump.

Estrus detection

Many cows have Estrus signs that are difficult to notice for humans. The Estrus signs that humans can see are:

- ❖ The animal becomes restless, sometimes separating itself from the rest of the herd, walking along fences to seek a bull.
- ❖ The animal tries to mount other animals, sniffs them and is sniffed at by others.
- ❖ The animal bellows in order to attract a bull.
- ❖ The lips of the vulva turn red and are somewhat swollen
- ❖ There is a discharge of clear, thin mucus hanging from the vulva or adhering to the tail

Silent Estrus: the animal has normal Estrus cycles, but there are no Estrus signs or these are not noticed. Estrus detection is very difficult, especially with tropical breeds. In this case it is preferable to keep a bull with or close to the cows.

Abortion

The first three months after conception are quite critical. Sometimes the embryo dies and an abortion follows. Embryo loss can happen without any clear visible sign.

Several causes of abortion are:

- ❖ Nutrition: a lack of good feed and/or enough feed.
- ❖ Hygiene: cow develops an infection due to lack of good hygiene.
- ❖ Disease: Brucellosis is a disease which causes abortion.

Always try to find out the cause of an abortion so you can try to prevent this happening during the next pregnancy.

Calving and calf rearing

Calving or Parturition

Parturition is giving birth to the young calf. The calf can be expected 9 months and 9 days (40 weeks) after servicing takes place. Two months before the expected calving date (the parturition), so 7 months after service, the cow should get plenty of rest, because the growth of the calf takes up a lot of the cow's energy. This means that 2 months before the expected calving date, a milking cow should be dried off (i.e. you

should stop milking her) and a cow you keep for traction should stop working.

Once the date of expected calving gets closer, the cow needs a comfortable place, where she can lie down easily and which is clean. The cow or the calf might incur open wounds during delivery, and the dirtier it is, the more trouble you will have with infections. You can clean your hands and the vulva of the cow before calving begins to prevent disease and infection.

Before the parturition the animal becomes restless, usually seeks seclusion, lies down and gets up frequently, attempts to urinate often and then starts with the actual delivering.

Parturition can be divided into three stages:

- 1- The water bags come through the birth canal. This may take 2 to 6 hours.
- 2- In the second stage the actual delivery of the calf occurs. First the front legs come out, then the head, and after that the whole body comes out. Once the front legs are out the calf must be out within an hour. Otherwise the calf might suffocate.

If the calf presents differently the parturition is much more difficult. In that case you will see the cow really working to deliver the calf, but nothing comes out. If it takes more than 8 hours, you should help the cow with the delivery of the calf, you should pull at the two legs. Always pull to the side of the legs and udder of the cow and never towards the tail side. If you pull, then only do so with a maximum of 2 people and pull only at moments when the cow is pushing herself.

- 3- The third stage consists of the parturition of the placenta (after- birth), which normally follows the calf almost immediately. If, however, the placenta has not come out within 12 hours, you should use a veterinary process by hormonal administration or later you can use hand pull.

If two calves are born from one cow at the same time, you have to be aware of possible infertility. If these calves are both male or both female there is no problem. If the calves have different sexes, the female calf may be a barren cow. This means that the young calf is infertile; she can not be used for reproduction or milk production.

How to take care the new born:

Directly after birth the mucous membrane from mouth and nostrils should be removed, and take the tongue out, the calf start breathing as a physiological function after the umbilical cord ruptured (no blood supply from the mother) CO₂ increased in calf blood stream and stimulated the breath nerve center in the brain these let the respiratory organs to do their functions also the new environmental factors suddenly appeared to the calf, the diaphragm be tensional. The calf starting breathing and continue. Some times the calf stopped breathing as a faint down or some mucosal membrane in the mouth or nostrils. Therefore it should help by removing all membranes and liquids and take the calf from hind limbs up by circulation movement the animal start to breath or can applied some massage on its breast. The umbilical cord rupture then rubbed it with a sterilized cotton to avoiding some diseases happened.

If the calving is normal the cow starts to lick its calf which:

- 1- Stimulate the breathing
- 2- Improve blood circulation.
- 3- Drying the calves
- 4- Stimulate the urination and excreted

But in case of failure, it could be let her to be accepted by adding some bran on the calf head. Sometime in cold winter it could dry off the calf by clothes. The calf starts to stand up after 15 min. and started to suckle its dam udder during 12 h.

Colostrum feeding: The newborn calf must receive a good feed (3-4 liters) of colostrum within 6 hours of birth. This provides the calf with maternal antibodies to help it resist disease organisms in its environment. These antibodies can only absorbed from colostrum, through stomach (abomasal) wall into the calf's bloodstream in the first 12-18 hours following birth. Achieving early and adequate intake of high quality colostrum is widely recognized as the single most important management factor in determining health and survival of the neonatal calf. In addition to reduce risk for pre weaning morbidity and mortality, It is better to feed colostrum during 3-6 h. after calving, because the digestive canal could absorb the antibodies easily, if it is late, it is difficult to absorbed it. In case if milking happen before calving, then no colostrum

could be obtained. Therefore frozen colostrum should be stored, because colostrum has many important functions:

1. Contain antibodies
2. Has a good amount of protein and energy.
3. Laxative to clean the digestive system.
4. Contain minerals and vitamins easily to absorb.
5. Reduce the mortality rate.
6. Contain growth hormones.
7. Limit the diarrhea cases.

If there isn't any colostrums it can use a colostrum replacer include one egg + 0.3 liter water + 0.6 liter milk + laxative oil (castor oil) (one spoon) three times daily for 3-4 days.

The basic scientific idea for these ingredients:

1. Egg albumins has an antibacterial particularly E.coli which cause diarrhea
2. Albumin is similar to the colostrums globulin enter the blood stream without any change during 24 h.
3. Lecithin in egg yolk used as emulsifier for the fats in the ingredients.
4. Laxative oil can clean the digestive system from the meconium.

In case of using frozen colostrums should dissolve gradually and heated gradually up to 37 C° easier digestion and don't make any digestive disturbance and increase the feed conversion efficiency also increase the palatability.

The amount of milk or replacers:

It should away to give more than the demand particularly during the first three weeks. It is recommended to increase the number of milk suckling daily with a small amount which get more profit and limited the digestion disturbance. The amount of milk be given depend on the weight of calf and daily gain for each breed. This amount be changed according to the growth rate. If the owner wanted to wean early, should reduce the milk amount and let the calf to consume the concentrate diet. Any change in the amount and kind of milk should be done gradually to limit the mortality. The calves should be fed regularly, twice a day with the same amounts.

Milk replacer formulation: By using milk replacers reduce milk consumption and less cost, milk replacers are an ingredient food and replace the whole milk and should contain the nutrients need for mammals of new born during the first life stage. Milk replacers (200g/liter) successfully used with small amount of natural milk contain for producing milk replacers. The maximum amount of milk replacer that calves get fed is 500g/d. calf has the four stomach compartments, rumen, reticulum, omasum, and abomasum. But the forth stomach act significantly during the first weeks of age, and the milk by-pass the undeveloped rumen to omasum and abomasum through esophageal groove.

Therefore, the digestion in calf depend on enzymes present in abomasum and not due to bacteria and protozoa functions as in the older animals,

The quality of replacers is very important to small calves and should be suitable for calves from age 4 days. Yogurt (fermented milk) was successfully used for calves, with 1:1 diluted because it contains lactobacillus which cause an increase it's benefit and prevent diarrhea happen and could stored for longer period.

The characters of milk replacer:

1. Should suitable for nutrients content.
2. Palatable.
3. Easy to dissolve in water.
4. Less cost than whole milk and contain a balance of all nutrients, energy protein, vitamins, and minerals and could supply all the nutrients for calves.
5. Less fiber content.
6. High digestibility.

It is also recommend to castrate the males at less than one month of age or up to 6 months by Burdizo, or elastrator, or surgical, or hormonal methods.

The importance of castration:

1. Reduce the savageness habit.
2. Used animals as teaser or testers.
3. Increase the fat deposit in the meat particularly in calves and kids but not for lambs (high fat).
4. Improve meat quality.
5. In kids it limits odor gland secretion which placed near the bud horn which effect meat favor.

6. The disadvantage of castration: Reduce the feed conversion efficacy by adding fat in meat.