A new breakthrough in calf and heifer management

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Poor performance in daily gain, high morbidity and high mortality among calves result in high production costs and reduces the profitability of a dairy farm.

Therefore it is essential to get an emphasis on successful calf and heifer management as those problems often have seeds in farm based management problems.

Providing benchmarks and targets which are realistic to reach can be a helpful tool to monitor the performance of a farm.

According to Boersema et. al (2010), successful calf and heifer care for Holstein Friesian needs to reach the following targets:

- Calf mortality <5%.
- First age at calving: 24 months at a weight of 540-580kg.
- Herd culling rate: 25%.
- Average herd calving interval <13 months.
- Feeding colostrum with IgG of more than 50mg/ml milk.

Colostrum management

Successful calf raising is the cornerstone for good performance of the future cow or bull generation. The period starts right after birth with powerful colostrum management. Calves are born without a high protection against diseases. Therefore they are dependent on the passive transfer of immunity.

The calf can absorb large molecules including the immunoglobulins during the first 12-24 hours of life.

Several types of immunoglobulins (IgG, IgA, IgM) are available in the colostrum. IgG constitutes approximately 85% of the immunoglobulins in colostrums.

To reach the best protection against disease in the first hours of a calf's life there are four key factors:

- Feeding colostrum in an adequate volume.
- Feeding colostrum in the first four hours after birth.
- Feeding colostrum with more than 50mg/ml IgG.
- Minimising bacterial contamination of colostrum.

The calf milk purifier uses ultraviolet light to reduce the bacterial load in milk and colostrum.

Different methods are available for giving the calf the colostrum it needs.

It can be done by the dam, by pooled colostrum in fresh or frozen form. It can be given via an oesophageal feeder, a bottle or a bucket. The best way is by tube or bottle feeding. Recent studies show that gentle thawing and heating of cow colostrum via microwave irradiation offers a suitable and time saving alternative to the warm water regime. In both systems the IgG concentration stays positive.

Studies show that a poor supply of immunoglobulin increases the number of treatments for calves, losses up to the first lactation increase, the insemination index declines and the first calving age increases.

Feeding management

In the first weeks of life the calf is developing from a monogastric animal to a ruminant. The main part of digestion after birth is the path from mouth – maw channel – abomasum to the intestine. At this time the rumen is only a very small portion of the complete gastro-intestines of the calf and does not play a role in the digestion process. The anaerobic rumen bacteria develop first after an intake of solid feed. But the abomasum is fully operative. The calf is able to digest milk or milk replacer. In the abomasum the milk curdles within a short time under the influence of enzymes and acids.

To support correct feeding the calf has to get the chance to have intensive saliva production and to execute the maw channel reflex. This can be done by having a natural posture of the head like being fed by the mother.

The temperature of the feed should be approximately 39°C because then the clotting process in the abomasum is at its best, feeding milk with lower temperature <35°C can cause scours, because the clotting or curdling process takes longer.

Higher temperatures can cause damage to the mucosa as this organ is very sensitive at this time. Furthermore, small amounts shall be fed during the day. A rule of thumb is that approximately 4% of the body mass can be fed per portion.

Feeding milk replacer one should take into account that the milk replacer shall be of high quality, soluble at 40-43°C and diluted without producing lumps. Then proper absorption and the acceptance of the calf drinking are assured. The concentration has to be higher than 90g/l as otherwise the concentration is too low and the risk of diarrhoea increases.

Using fresh milk the milk should be of good quality. Milk can contain high levels of bacteria like mastitis pathogens (Staphylococcus aureus, Streptococcus uberis, E. coli, etc) which can cause problems in calves. There is no official level for calf milk but practice shows that the bacterial load should not be more than 20,000cfu/ml.

Breakthrough into a new generation.

To get rid of bacteria in calf milk GEA Farm Technologies offers a new product which is called UVPure. It purifies the calf milk with a new technology using ultra violet light. With this technique specific bacteria in the milk are reduced by more than 99%.

As the system does not need heat to reduce the bacterial load like traditional pasteurisers the good nutrients like immunoglobulins, other proteins and vitamins stay intact.

The UVPure is a beneficial product for a successful start in the life of the calf. Farmers using UVPure commend the well being of their calves, the easy operation and the energy saving benefits of this product.

Intensive raising and intensive nutrient supply guarantees a daily gain of more than 800g to achieve a good growth development for a first insemination of 15 months.

The faster the desired weight is reached the lower the adiposis of the internal organs and the genitals. The supply of minerals, for example ion, selenium, copper and zinc, should also not be neglected.

Automatic calf feeders help to fulfill all these requirements and offer the calf the nutrition that corresponds with the natural physiological needs of the animal.

The device mixes, warms and distributes either milk replacer and/or fresh milk to a dedicated feed stall on demand.

Being electronically identified, the calves are constantly monitored which helps the calves to stay healthy and reduces veterinarian costs due to early detection of diseases. Different feeding plans can be adjusted to individual animal and adopted to the latest scientific research results.

The automatic feeders can be used in smaller farms with only one or two sucking stations or in professional calf raiser facilities with four sucking stations at each feeder. Up to 120 heifer calves can be fed with one feeder.

Good housing conditions

A bad health status in general and an increase in respiratory diseases in calves is often the result of bad housing conditions. Calves should have shelter against rain, wind and snow and the housing should be optimal in cold and hot weather conditions. Furthermore, birds and other vermin which can carry diseases should be kept out.

Fresh air with no draughts helps the calves stay healthy, whereas high humidity combined with high concentration of noxious odours and dust, draughts and overcrowding can lead to a higher risk of infection. To reduce this risk the design of housing should be synchronised to the age of the young stock.

In the first days the calves can be kept in single housing systems like single pens or igloos depending on country specific legislation. After this first period the calves should be grouped in pens with a maximum of 30 calves depending on the age structure of the calves.

Calf care solution.

Group housing offers significant labour savings and health improvements.

As a rule of thumb, the more equal the age structure the bigger the group; the younger the calves, the smaller the group. The first months of calf raising are essential for successful performance as a heifer and cow.

The investment in targeted feeding management combined with automation and monitoring and good housing conditions will pay off in the future of the farm. ■