

Avoid the Scour Hours
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Calving season brings about crabby ranchers running on little sleep. Add in calf sickness and/or death and you have a high stress environment for ranchers and cattle alike. Calf scours is something most of us have experienced and for some, experience year after year. Calf scours result from infection from a variety of viruses (rotavirus, coronavirus), bacteria (*E. coli*, salmonella) and protozoa (cryptosporidiosis, coccidia). These infectious agents are endemic, meaning that they are present in the herd most of the time and most animals in the herd become infected and thus become immune to them as some point in their life. The initial infection is usually silent or lacking physical sign of infection, largely due to innate response followed by the adaptive immunity. Innate response results from the body providing protection against a disease by immediate response to a pathogen in a generic, non-specific manner. Adaptive immunity results when the body recognizes a specific pathogen and mounts a response to the pathogen specifically. Newborn calves are very susceptible to infection because both the innate and adaptive immune systems are immature at birth. Often, passive immunity from the dam is also inadequate to provide substantial protection from disease. Furthermore, inadequate nutrition also decreases the effectiveness of innate response and immune function. A calf will show clinical sign of disease when it is challenged by an infectious agent at doses too large for the innate response to resist.

It is very common to focus all of our efforts on treating sick calves during an outbreak. However, we often fail to recognize that subclinically infected animals are shedding the infectious agent. Mother cows are usually the initiating vector for contamination. The virus is shed from a few mother cows and is spread in the environment to other cows, attaching to the hair coat and udders. We end up with sequential infections (dam to calf, to older calf to younger calf) and as we move through this chain the level of pathogen shedding may increase. We will eventually reach a pathogen load that exceeds the calf's ability to resist disease. This process explains why calves born in later in the calving season are at the greatest risk of disease and death.

We often see the worst cases of scours when the environment favors pathogen resilience and impedes innate response, such as large fluctuations in temperature from day to night, high moisture, muddy conditions and a high pathogen load. As the number of pathogens present increases so does the likelihood that a calf will be in direct contact with the pathogen for a period of time that will initiate disease. Therefore, the first step to combat disease is to decrease the number of pathogens and duration the calf will be in contact with pathogens. The Sandhills Calving System was designed to do just that. It has three main components:

1. Prevent pathogen/calves contact by using clean calving pastures.
2. Prevent direct contact between younger and older calves.
3. Prevent later born calves (youngest calves) from being exposed to an accumulation of pathogens in the environment.

The Sandhills Calving (SC) System accomplishes these goals by routinely moving pregnant cows to new calving pastures. Therefore, all calves within a pasture are of similar age. A case study of a Nebraska 800-900 head cattle herd found this system saved thousands of dollars. The calving season began in March and cows were historically calved in calving lots. As the season progressed, pairs were moved out of the lot into larger pastures. Mortality rate was reported at 14% and 6.5% for two years with mortality around 8.5%. Veterinary expenses averaged \$3,114.18 per year primarily for antibiotics and fluids. The strategy of CS system was to move heavy cows every week, leaving pairs behind. Initially, all cows were moved into pasture 1 when the first

calf was born. After 2 weeks, heavy cows moved to pasture 2, leaving pairs in pasture 1. After a week of calving in pasture 2, heavy cows were moved to pasture 3, leaving pairs in pasture 2. Each subsequent week, heavies were moved to fresh pasture and pairs remained in the pasture it was born in. The result was multiple pastures with calves that were within one week of age of each other. After the youngest calf was 4 weeks old, all cattle were brought to a common pasture. After implementing the SC system in this herd for three years, it was estimated that the average veterinary expenses for the season was around \$128.83 per year as only 0-4 calves experienced scours, and 0 death less. Estimated savings of \$40,000-50,000.00 per year resulted from improved calf performance, decreased death loss and reduced doctoring expenses.

A second case study was a 400 head cattle herd historically utilizing intensive management grazing (moving cattle every 2-4 days) and early summer calving. This herd had experienced 6.5 % and 11.9% death loss over 2 years prior to implementing SC system. The design of their SC system called for moving heavy cattle every 10 days or whenever 100 calves were born. The resulting groups also moved according to forage availability, however, calves within a given group never exceeded 100 hd and were born within 10 days of each other. All cattle were commingled after the youngest calf was 4 weeks old. The result after 2 years of implementation was a significant reduction in death loss. In fact no deaths occurred as a result of scours and total death loss was 2.3% and 1.5%.

The design of the Sandhills Calving System was a bit different for these two ranches, but key component of both systems was age segregation of calves and movement of heavy cows to new pastures rather than pairs. Age segregation stopped serial passage of pathogens from older calves to younger calves and movement of heavies prevented build up of pathogens in the calving environment. Together, these components limited the exposure of newborn calves to overwhelming dose load of pathogens.

Obviously, this system requires several pastures and routine movement of cattle. Designing a SC system must take into account pasture availability and labor. If you plan appropriately, this system may be the tool in which to avoid the *scour hours*.

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References

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