Chute Side Working Cattle

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A preventative health plan is essential when preparing weaned calves for the next segment of the industry (as a stocker or feeder). When the plan fails and illness surfaces, the first suspicion is a failure in the vaccination program. There are numerous explanations for these failures: an overwhelming pathogen challenge, stress, immunological immaturity, improper nutrition, genetically limited immunity, poor quality vaccine and improper vaccine handling.

Improper handling or administration renders any vaccine ineffective. Producers too often overlook critical considerations when preparing and administering vaccines. With the increased use of modified live virus (MLV) and chemically-altered (CA) vaccines, many producers need to reevaluate how they handle biological products. Both MLV and CA products must be reconstituted with a sterile diluent prior to being administered to cattle. Common handling mistakes can render MLV products inactive and even greatly reduce the effectiveness of killed (K) vaccines and bacterins. Avoid these common mistakes during procurement, storage, handling and administration of vaccines. Remember, vaccination alone does not guarantee immunization.

It's important to buy vaccines from a reputable business. A good distributer will maintain a temperature log for their cooler to confirm vaccines are handled properly prior to selling. When buying vaccines locally, ask about storage conditions and use a cooler with ice packs to transport the vaccine home. Shipped purchases should be sent overnight, upon arrival, check the temperature of the shipping cooler. If the temperature is above 45°F, contact the distributer and arrange to have the vaccine replaced.

Vaccines should be stored at temperatures between 35-45°F and protected from ultraviolet light. Although K vaccine products are considered more stable than MLV products, both are susceptible to degradation if exposed to temperatures outside this range. Freezing is most detrimental to K vaccine products; it will change the structure of the adjuvant, which is the part of the vaccine that presents the antigen to the immune system. Additionally, freezing may release toxins that are normally bound by the adjuvant. Although K vaccines are fairly tolerant to warmer temperatures, exposure to temperatures above 45°F for longer than one hour is not recommended. MLV vaccines are fragile after they have been mixed; they should be kept between 35-45°F and used within two hours. Vaccines that have undergone temperature cycles above or below the recommended storage temperature will have reduced efficacy and may be completely worthless due to deactivation.

Another important factor to consider is the vaccine's expiration date. Vaccines are approved by the USDA to meet an efficacy standard. Over time, the efficacy of a vaccine will decline. The vaccine manufacturer has determined the timeline from the date of production to critical loss of efficacy to establish the expiration date. To reduce the risk of a vaccine becoming outdated, buy only enough vaccine to meet immediate needs.

The final hurdle to keeping a vaccine viable is during the time of use. The size of an operation will determine the length of time a vaccine is exposed to environmental conditions. Good planning will assure the vaccine retains its efficacy and results in immunized livestock. Vaccines should be transported to a working facility in a rigid sided cooler that has been pre-cooled. It will take about an hour for a large cooler at room temperature to cool down to 35-45°F. Additionally, a smaller pre-cooled personal cooler should be available to store vaccines during use. Repeated opening the large storage cooler can cause temperature fluctuation, which may damage any unused vaccine. If needed, the temperature in a cooler can be adjusted with hot packs to maintain the storage temperature between 35-45°F.

When livestock are ready, mix the amount of vaccine needed for about an hour; this will depend on the activities being done. Once mixed, a MLV vaccine will remain viable for two hours, if it is well taken care of - kept cool and out of direct sunlight. Reducing the time frame to one hour's work ensures that the vaccine remains useful, especially if there are any unexpected delays. During use, the open bottle of vaccine should be kept on ice in the small cooler. Additionally, syringes should be stored in a cool, dark place between uses. Laying a syringe down on a table or tailgate will cause the vaccine to warm up and UV light will cause damage. Coolers with openings or slots to protect vaccine syringes can be purchased or made.

When filling a syringe, always use a clean needle to go into a bottle. Bacteria and debris on the surface of a used needle will be deposited into the bottle contaminating it and the vaccine. It is important to clean syringes following use. Only use boiling water to disinfect syringe components. Soaps and disinfectants can kill or deactivate the MLV and cause damage to K products. Residues left in the syringe comprise the effectiveness of the product. Furthermore, use the first draw of a vaccine to lubricate the syringe. Do not lubricate syringes with petroleum-based lubricants, they will inactivate MLV and CA products and may compromise the efficacy of K products.

These are just a few tips to ensure the vaccine administered will be effective.

For more information, please contact the local K-State Research and Extension Office.