

Vet Call

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Immunization Strategies Part III

The first step in designing a program to minimize pregnancy wastage is to select the diseases against which the herd should be immunized. Commercial vaccines are not available for all pregnancy-wasting diseases. Other diseases have vaccines manufactured for their control, but the vaccines are not adequately effective or are not a primary concern for a particular area or herd.

For most beef herds, the potential list of diseases to include in a vaccination program are: brucellosis, leptospirosis, vibriosis (Campylobacteriosis), Infectious Bovine Rhinotracheitis (IBR) and Bovine Viral Diarrhea (BVD). Other diseases for which vaccines are available include: anaplasmosis, Hemophilus somnus and trichomoniasis.

When selecting diseases to include in a vaccination program, it is wasteful and unjustified to vaccinate with every available vaccine. The diseases selected should be limited to those for which there is an effective vaccine and for which the herd will possibly be exposed. This decision is largely based on the classification of the herd as a closed, modified open or open herd.

A closed herd has no new additions except for bulls and there is no animal to animal contact with neighboring herds. New bulls are isolated prior to introduction into the herd, and appropriately tested for and vaccinated against transmissible diseases during the isolation period. The level of immunization necessary for a closed herd is less than that for other herds because the risk of exposure is low.

Modified open herds have a higher risk of exposure to pregnancy-wasting diseases through limited additions of bulls and replacement females, animals moving in and out of the herd to exhibitions, or through contact with neighboring herds.

Open herds have a high risk of exposure to pregnancy-wasting pathogens. This may be due to the frequent introduction of replacements or exposure of the breeding herd to stocker cattle or other recently purchased, stressed cattle.

Diseases with Vaccines Available

Brucellosis

As brucellosis is a disease that can be spread to humans, its control in animals is especially important. Brucella abortus strain 19 vaccine is a live bacterial product and confers long-term cell mediated protection in healthy animals vaccinated properly. Brucella abortus strain RB51 has recently been given a conditional license and is expected to produce fewer "false-positive" blood tests in vaccinated cattle than the strain 19 vaccine.

Official calfhood vaccination (OCV) of females between 4 and 12 months of age (some states vary) is undertaken by accredited veterinarians or state or federal animal health representatives only. Whole herd (adult) vaccination can only be undertaken under specific situations with approval from a state or federal animal health official.

Brucellosis is also controlled by a monitoring system of blood testing and identifying market cattle, cattle at livestock sales and cattle moving across state lines. Positive test reactors and the herds in contact with positive reactors are handled by rules developed by the USDA. For many areas of the country, brucellosis has been eradicated and in those areas, many herds are no longer utilizing OCV. Whether or not to continue with a brucellosis vaccination program should be determined only after considering interstate movement, risk of exposure and legal responsibility.

Viral pregnancy wastage organisms (IBR and BVD)

Infectious bovine rhinotracheitis (IBR) is a herpes virus infection and is easily transmitted by secretions from the respiratory tract, the eyes and the reproductive system. Like other herpes viruses, IBR virus often causes hidden infections, and those carriers who don't appear sick are important sources of exposure.

Bovine Viral Diarrhea (BVD) virus is widely distributed and is easily spread from one animal to another. Infection with BVD

virus causes different reproductive losses depending on the time a susceptible female is exposed to the virus. Abortion losses to BVD are sporadic and the rate is usually low.

Frequently, BVD virus is found in fetuses aborted due to other agents (such as fungal organisms) because BVD may suppress a herd's immunity and increase the susceptibility to other infections.

To decrease the risk of pregnancy wastage from these viral diseases, non-pregnant heifers should be given modified live vaccines two or more times from weaning to 6 weeks before breeding.

Although modified live IBR/BVD vaccines don't require a booster to induce a protective response, it's recommended vaccinations be repeated two or more times because you don't know when maternal antibody interference with active immunization wanes or if nutritional or host factors interfering with immunization are present.

Multiple vaccinations allow the maximum number of heifers to develop active immunity to the vaccination. An open herd with a high level of risk may benefit from having annual IBR/BVD booster immunizations.

Veterinarians and immunologists have not been able to agree on the superiority of modified live BVD vaccines versus killed BVD vaccines for use to immunize heifers. Still, all veterinarians agree that because of the complexity of BVD infection and disease, a well thought out plan that includes: screening for persistently infected individuals, herd biosecurity and vaccination is necessary to protect against this persistently troublesome virus.

Next month we'll finish this series of articles by examining the remainder of reproductive diseases for which vaccines are available.

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