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UC DAVIS CATTLE HEALTH RESEARCH TO BENEFIT COOPERATOR HERDS

Efficient reproduction (the percentage of live calves born each year) is the key to successful cow-calf operations and has been for many decades. Preventing infertility in the cows and bulls and reducing or eliminating abortions in the cowherd are very important aspects of achieving efficient reproduction in beef herds. Of course, there are a number of infectious diseases that can cause problems with reproductive efficiency and the health of cattle in general. Some of these diseases have not been surveyed extensively or recently in California beef cattle. Among these conditions are *Neospora caninum*, persistently infected (PI) BVD cattle, anaplasmosis, and foothill abortion (Epizootic Bovine Abortion; EBA). Recently, Dr. Bruce Hoar, a professor in the School of Veterinary Medicine at UC Davis, has received some funding to examine the prevalence of these diseases in California beef herds.

Neospora caninum is a protozoal parasite that commonly causes abortions in cattle. While it is a more common problem in dairy cows, it can certainly have a major impact on beef herds in California. It usually causes abortions at 4-7 months of gestation (before the calf has hair) so it can easily be missed and the cow can show up open. The agent can potentially be spread in a beef herd by coyotes or domestic dogs. Additionally, cows can be infected with *Neospora*, show no illness, and still abort their calf. Therefore, identifying these infected cows may be of great benefit to preventing losses due to this disease.

Bovine Virus Diarrhea (BVD) is a common disease affecting beef cattle and the BVD virus can cause a wide spectrum of problems. BVD virus infection can be fairly mild to fatal. In well cared for cattle it can cause diarrhea, with damage starting in the mouth and extending throughout the gastrointestinal tract. Hence, the name: ***Bovine Virus Diarrhea.*** BVD is also a major cause of respiratory disease in young cattle going into stocker operations, backgrounder operations, and feedlots. In the cowherd it can cause abortions or reproductive failure in cows. One of the most important problems caused by BVD is the Persistently Infected (PI) animal. These PI cattle are actually infected with the BVD virus before they are born—at about 80-100 days of gestation in most cases. Many of these calves are born alive but cannot develop any immune protection against the BVD virus. They are sub-optimal performers (some obvious, some not). They shed billions of virus particles every day in their saliva, urine, and feces. They act as the "typhoid Mary" for the entire herd—infecting and re-infecting other cattle in the herd and causing continued illness in the entire group of cattle. Identifying these BVD-PI cattle is very important in the control and potential elimination of this disease.

Anaplasmosis is a disease of cattle caused by an organism called *Anaplasma marginale*. This organism is a rickettsia, half way between the viruses and the bacteria. It is susceptible to tetracyclines, unlike viruses. The disease, anaplasmosis, is caused when the infected cattle react to the agent and remove their own infected red blood cells. This reaction causes a severe anemia and usually death if the cattle are not treated. All cattle are susceptible to infection by *A. marginale*. Also, deer, elk, and other ruminants

are susceptible to becoming infected and can act as natural reservoirs of the agent. Cattle of any age can become infected; however, **young cattle do not become ill**. In California, we have a number of ticks that transmit the anaplasmosis agent and are extremely effective at passing the agent to new, susceptible hosts. Additionally, any transmission of a small amount of blood from a carrier animal to a susceptible animal can transmit anaplasmosis. So insects such as horse flies, are capable of transmission. An even larger culprit in this type of transmission is man. Ear-tagging instruments, tattoo tools, needles, ear implant tools, castrating instruments, dehorning instruments, etc., can all easily transmit the agent. So humans are also important in the spread of this disease. If an animal under the age of 12 months becomes infected, virtually nothing is noticed. The calf undergoes an incubation period of about 45 to 90 days, has a very mild illness, which is rarely noticed, and becomes a carrier for life. Cattle that become infected between 1 and 2 years of age become ill after the incubation period, with severity increasing with age. Cattle over 2 years of age become very ill and approximately 50% die unless treated. **The older the animal and the better shape they are in--the sicker they get!** Usually, once the cattle become infected, and if they survive, stay infected for life. They are "immune carriers"-they do not get sick; but, act a reservoir for other susceptible animals. Therefore, being an infected carrier protects the animal from becoming sick if re-infected. Determining the rate of anaplasmosis in your herd can be extremely helpful in controlling this disease.

Another disease that can cause major losses is Foothill Abortion (Epizootic Bovine Abortion; EBA) and is a condition well known to beef producers who have experienced losses. It is a major source of economic loss for California cow/calf producers and estimates are that 5-10% of the California beef calf crop may be lost each year (45,000 to 90,000 calves per year). The infectious agent that causes the abortion is a bacterium and is transmitted by the soft tick known as the Pajaroello tick (pa-ha-WAY-lo). There are a number of risk factors that are common with this disease problem and can be helpful to know about.

The project to learn more about these diseases will utilize blood and/or skin samples to test for the presence of *Neospora*, BVD-PI, and anaplasmosis. Additionally, a survey will be used to determine risk factors for Foothill Abortion. Cattlemen are welcome to participate in the study and can derive valuable information about these diseases in their own herds. Specimens will be collected from a random sampling of about 30 beef cows that have calved in each volunteer herd for analysis. Also, a standardized questionnaire or survey will be filled out. The information from individual herds will be sent back to each owner; however, the individual data from throughout the state will be kept confidential. You can volunteer to participate in the study by contacting either Dr. Hoar (530-754-5342; brhoar@ucdavis.edu) or Dr. Maas (530-752-3990; jmaas@ucdavis.edu). This is a great opportunity to learn more about these common diseases in your herd and add to a greater understanding about these problems statewide. We welcome your participation.

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