TB Management Tips for Beef Herds

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Tuberculosis (TB) is a contagious disease of both animals and humans. It is caused by three specific types of bacteria that are part of the Mycobacterium group: Mycobacterium bovis, M. avium, and M. tuberculosis. Bovine TB, caused by M. bovis, can be transmitted from livestock to humans and other animals.

The cooperative Federal-State-Industry effort to eradicate bovine TB from cattle in the United States has made significant progress since the program's inception in 1917. The disease has nearly been eliminated from the livestock population of the United States. Many consider this one of the great animal and public health achievements in the United States. However, our ultimate goal of eradication remains elusive as animal health officials continue to detect TB sporadically in livestock herds. Bovine TB has continued to be a threat in the US due to potential exposure from infected wildlife (in certain states), cattle imported from Mexico, and exposed dairy cattle.

Bovine TB is a contagious, chronic bacterial disease caused by Mycobacterium bovis. The infection commonly involves the lungs, but it may spread to other organs. Animals often don't show signs until the infection has reached an advanced stage. The disease primarily affects cattle, but it can be transmitted to any warm-blooded animal, including people. Bovine TB is difficult to diagnose with clinical signs alone. In the early stages of TB, clinical signs are not visible. In later stages, clinical signs may include: emaciation, lethargy, weakness, anorexia, low-grade fever, and pneumonia with a chronic, moist cough. Lymph nodes may also be enlarged.

TB can be introduced into a herd by infected animals or people. In the United States, the two most common methods of introduction are purchase of, or exposure to, infected cattle or exposure to infected free-ranging wildlife. The bacterium that causes bovine TB is found in the saliva of infected animals and spread through airborne particles from the respiratory tract. The bacteria can also spread through feed or watering sites contaminated with saliva and other bodily discharges (urine, manure) or by drinking raw, unpasteurized milk from infected animals. The risk of exposure is greatest in enclosed areas, such as barns with poor ventilation.

You can reduce the risk of your cattle herd being exposed or infected with TB by keeping a closed herd and raising your own replacement stock. Ideally, buy cattle only from known clean herds or an accredited TB-free herd, test the new animals prior to purchase, and finally, isolate them for 60 days and retest before commingling them with your herd. The best way to make sure that purchased animals have not been exposed to TB is to buy animals from an accredited TB-free herd if possible/practical. Additionally, have animals tested prior to purchasing and moving them to your premises. Isolate new animals for 60

days and have them retested before commingling them with your herd. Commingling new animals with a herd can introduce diseases, especially if they are not properly screened for disease prior to introduction. Minimize contact between your herd and other herds. Make sure your fences are in good condition to separate your herd from other herds and wildlife.

Wildlife and cattle with TB can pass the infection to each other. In areas where free-ranging deer are known to be infected with TB, deer that have direct contact with cattle could pose a risk of transmitting the disease. Livestock can become infected if they share common watering or feeding places contaminated with saliva and other bodily discharges from infected wildlife. Try to keep wildlife away from outdoor feeding and watering containers, such as troughs and pools. Additionally, store your animal feed in areas that wildlife cannot access. Should wildlife get into stored feed, discard that feed immediately, and do not give it to your cattle. Michigan and Minnesota have both had transmission of bovine TB from wildlife to cattle. To date, other states have not found TB in deer or elk.

Bovine TB Testing

Your state veterinarian, private practitioner, and USDA use two methods to test for bovine TB. The main method of testing is a tuberculin skin test (caudal fold test), where the animal receives an injection of tuberculin in the skin and is checked for a reaction 72 hours later. There is also a nationwide surveillance program in slaughter plants. If lesions consistent with bovine TB appear in a carcass, a sample is sent to USDA's National Veterinary Services Laboratories for confirmation.

Animals are tested if they are suspected of having bovine TB; are part of an epidemiological investigation, such as a TB trace from an affected herd; are required to be tested for participation in a show or exhibition; are required to be tested for a change of ownership; preparing for interstate movement; or as part of surveillance activities at slaughter.

TB Outbreak Impacts

If there is a TB outbreak in your area, there are many additional biosecurity measures, above and beyond best practices, that you can take to reduce the chance of your cattle getting the disease. Practice good biosecurity at all times. Do not commingle new animals with your herd without first isolating them for 60 days and having them screened for diseases. Also, do not allow visitors to the livestock areas of your farm, except for veterinary or regulatory personnel who may have to test your herd for disease. Prevent commingling or fence-line contact with other susceptible animals (domestic and wild). When bringing cattle home from a sale barn, show, or exhibition, isolate them from the rest of your herd for 60 days and have them tested before allowing them to commingle with the rest of your herd.

Animal Identification and Traceability

Animal identification is very important if there is a bovine TB detection or outbreak in an area/state. When dealing with bovine TB, knowing the origin and movement history of your animals can help you and the state veterinarian determine whether or not they may have been exposed to the disease. Animal identification and good records can help regulatory personnel more quickly trace your animals and determine if they could have been exposed to TB. Traceability is the key to protecting animal health and marketability. Without good records and official identification, a trace for any disease is unduly complicated, can take a great deal of time, and may delay finding other infected animals, thereby enabling disease to spread to other herds.

Official Identification

Your state animal health officials and USDA use official identification RFID tags for program disease work whenever possible. This includes bovine TB eradication efforts. The tags allow for faster and easier testing of cattle. During TB testing, each animal needs to be handled twice—once to inject and once to "read" or palpate the injection site. The use of RFID tags eliminates the need to manually record identification numbers and greatly speeds the process. By reducing the time each animal is restrained, the RFID tags help reduce stress and increase the quality of the data obtained.

If your cattle need to be tested for TB, they will have to be tagged. One of the requirements associated with an official tuberculin test is that the animal tested must be officially identified, with the identification recorded on all associated test charts. RFID tags are not required; however, some form of identification that qualifies as official identification is required.

Protecting the Food Supply from Entering the Food Chain

Slaughtered animals suspected of having TB do not enter the food chain. Rather, samples are collected from them, and those samples are sent to the National Veterinary Services Laboratories in Ames, IA, or to USDA's Food Safety and Inspection Service (FSIS) laboratory in Athens, GA, for diagnostic tests. Animals from affected herds that test negative are inspected by FSIS personnel at slaughter. If an inspector finds any signs or symptoms of disease, the carcass is condemned and does not enter the food chain. If there are no signs or symptoms of disease, the carcass is allowed to enter the food chain.

What if your herd is found to be TB infected or is involved in a TB trace?

If bovine Tuberculosis is found in animals in your herd, or if an infected herd is epidemiologically linked (traced) to your herd, your herd will be quarantined by the state animal health official and USDA APHIS, and will be required to undergo herd testing. Infected herds may be allowed to "test out" of the disease by testing and removing

responders (positives) over a period of months. Heavily infected herds may be required to be depopulated with USDA indemnity paid to the owner. Trace (exposed) herds are required to be tested and would be released from quarantine if no infected animals are found. Quarantine on an infected herd can last several months depending on many factors. Quarantine on an exposed/trace herd may be relatively short depending on whether test responders are found and the level of exposure animals may have had in the source herd. Animals known to have been directly exposed to positive animals are sent to slaughter for tissue collection and are indemnified by USDA APHIS.

Animals that "respond" to a caudal fold TB test are then tested by a comparative cervical test (CCT) which evaluates the animal's immune response to two types of Tuberculin and may rule out Bovine TB. If there is a positive response on the CCT, that animal would be taken to slaughter or necropsy and tissue samples collected for bacterial culture. The carcass would not enter the food chain until laboratory work determines the status of that animal.

Wyoming's TB Traces Related to the South Dakota Infected Herds

South Dakota (SD) is currently dealing with a case of Bovine Tuberculosis in which the TB affected herd there had epidemiologic links with some Wyoming herds. One of these links was a potential source herd and the other link was cattle purchased from the SD herd that had been purchased and imported (legally) into Wyoming prior to the SD case being found.

South Dakota notified Wyoming in March that four of 41 cows having confirmed lesions of bovine tuberculosis originated from a herd in northeastern Wyoming. Official brucellosis vaccination ear tag identification provided by SD for these four cows matched brucellosis vaccination records in the WLSB office.

TB testing of the entire adult herd of approximately 700 cows and 42 adult bulls was completed. A total of 24 cattle (21 cows and three adult bulls) showed responses to the initial caudal fold tuberculin skin test. All 24 TB "suspects" were then injected with the Comparative Cervical Test (CCT). These follow-up CCT tests were read and provided additional information to help determine herd status. All suspects were slaughtered on April 10 at a Greeley, Colorado plant. The Wyoming Assistant State Veterinarians accompanied the cattle and examined the carcasses. This herd was determined to not be affected with TB and was not the source of the SD infection.

Wyoming also had "trace out" animals from the SD herd that were purchased from the infected herd and imported into Wyoming before the disease was identified in SD. The Wyoming State Veterinarian staff and USDA APHIS veterinarians traced 86 head of heifers that were considered to be TB-exposed.

Two Wyoming herds that received one TB-exposed heifer each were tested. The known exposed heifers were purchased with indemnity (USDA APHIS), necropsied, and there were no findings of TB by USDA's National Veterinary Services Laboratory in Ames, Iowa. Tests of other non-exposed cattle these two herds purchased at the same time were negative, and both herds were released from movement restrictions.

One Wyoming herd had imported 38 TB-exposed cattle. These heifers tested negative, but necropsy was performed on these animals for added assurance that TB infection was not missed. The non-exposed cattle that were with these 38 TB-exposed cattle were tested negative in April. That quarantine was thereby released.

Using brand records and health certification information at the Wyoming Livestock Board office, 30 TB-exposed cattle were subsequently shown to have gone out of state after entering Wyoming to buyers in Colorado, Nebraska, and Montana. These states were notified and are in the process of conducting their own investigations. The remaining 16 TB-exposed heifers that came to Wyoming were found to have gone to slaughter and the quarantine on their Wyoming location was released.