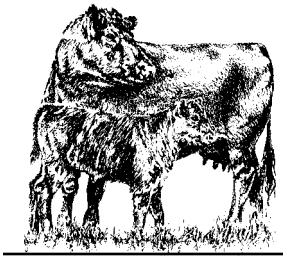

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Animal Health Section 659

Trichomoniasis

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Trichomoniasis, or "trich," is a sexually transmitted disease of cattle caused by the protozoan parasite, *Tritrichomonas foetus*. Trich causes infertility, early embryonic death, and abortions resulting in a high percentage of open cows, which has major economic impact.

Trich is a common disease in the western states, especially in those areas using shared public lands for grazing. Most states west of the Mississippi River have regulations set in place to help control the spread of this disease. These regulations are state specific and can be found by contacting the individual state's department of agriculture or livestock.

The bull is the long-term carrier of this infection but usually exhibits no clinical signs. The organism lives in the tissues lining the penis, prepuce, and sheath. Trich can be transmitted to the vagina of the cow at breeding, which then spreads, allowing infection to develop in the uterus. The initial infection usually does not interfere with conception but rather, results in death and resorption of the embryo 30 to 90 days later.

There is no treatment for trich; and although some bulls may clear the infection, it is recommended or required that bulls be tested and positive bulls be sent to slaughter. Literature about trich often indicates a major resistance of young bulls to trich compared to older bulls. This concept is valid; however, young bulls can be infected. In Utah, this was recognized when testing of bulls became mandatory. Of 131 positive bulls, 19 would have been considered "virgin" by their owners.

Obviously, bulls are getting exposure to trich through breedings that their owners are unaware of or have forgotten. Some of this breeding may have occurred by young bulls mounting infected cows before they are weaned from their dams. Not all of these young bulls cleared the infection.

In the cow, infertility may persist for 2 to 6 months, after which an immune response eliminates the infection in most females and pregnancy can be established. There is no persistent immunity after infection, and cows may be re-infected later. Rarely, a cow may remain infected but still deliver a normal calf. These cows are a source of infection for bulls in the following breeding season.

Some infected females develop pus in the uterus (pyometra) and may not cycle for some time. Once they do begin to cycle, they would be highly contagious until the infection clears. Cull cows should be sold directly to slaughter and never housed with bulls, as this puts the bulls at high risk. The greatest threat for spreading trich to a new herd is mixing the herd with infected cattle or the purchase of open cows or previously used bulls.

Diagnosis

Sample Collection—The diagnostic sample necessary for trich testing in the bull is the smegma (oily secretions and skin cells) that collects in the prepuce. Several methods are described for collecting this sample including brushing, swabbing, washing, and scraping. Scraping is the most commonly used method in the United States. Scraping is performed using a sterile artificial insemination (A.I.) pipette attached to a syringe. The pipette is inserted into the prepuce as far back as possible and scraped multiple times along the lining. Suspect cows can also be tested by collecting samples of cervical mucus with an A.I. pipette.

The trich organism may be shed only intermittently, so multiple testing will greatly increase the opportunity to find and remove all the positive bulls. Research data estimates that one test will find 80 to 90 percent of infected bulls; two tests will find 90 to 95 percent; three tests will find 95 to 99 percent.

Testing all herd bulls three times is critical for eradicating trich from a herd, whether it is a single owner or communal grazing herd. Ideally, cows should be

tested when more than expected are found open at preg check; especially if any open females have an enlarged uterus or a discharge.

Bulls should be sexually rested for 1 week before trich testing. Usually, all bulls in the herd should be sampled at or near the same time. If any of the bulls are found to be positive, the rest of the herd bulls should be tested twice more at 1-week intervals.

Diagnostic Tests—Culture is the gold standard for trich testing. The collected sample is cultured in a special media and observed with a microscope for the organism. Some states require that the samples be cultured and evaluated at specific animal disease diagnostic laboratories. Other states allow veterinary practitioners with special certification to conduct the test at their clinics. Regulations require that each sample be observed multiple times over a specific time period.

Handling of the inoculated media is one of the most critical steps in trich diagnosis. Improper handling can result in the organism not surviving, leading to false negative results. The media should be shipped to arrive at the testing laboratory as soon as possible, and extreme temperatures should be avoided. In Idaho, the inoculated culture media has to arrive at the laboratory no more than 48 hours after collection and has to be within the temperature range of 60° to 120°F.

The downside to trich culture as a diagnostic test is that it is not specific for *Tritrichomonas foetus.* A variety of other trichomonad organisms can occasionally be isolated from the bull reproductive tract. These are considered contaminants and do not cause reproductive problems; however, they grow well in the media and cannot be distinguished from "reproductive" trich even by experienced personnel, leading to false positive results.

Another testing method currently used for trich diagnosis is polymerase chain reaction (PCR). This test involves replicating a unique and recognizable portion of the organism's DNA so it can be detected. PCR is a much more complicated process requiring specialized, expensive equipment and training; however, this method does have application in trich testing.

The advantage of polymerase chain reaction is twofold. PRC is specific for the organism for which it is designed; therefore, *Tritrichomonas foetus* (reproductive trich) can be differentiated from other contaminants. This test is used to confirm or determine if a positive culture is, in fact, *Tritrichomonas foetus*.

Another advantage of polymerase chain reaction is the ability to detect the DNA of dead organisms. If the samples are not handled correctly, or the collection location is such that a timely delivery to the lab is impossible, PCR can still detect the organism. This is not to say handling of the sample is not important.

One study shows that maintaining the samples at >107°F for 24 hours can make a positive sample both culture and polymerase chain reaction negative. Each state has regulations on how to handle and ship samples for PCR. In Idaho, if the samples arrive at the lab outside the recommended temperature range, they are not cultured but they are deferred to PCR.

Disposal of Positive Cattle

Currently, no treatment is available for infected cattle. Bulls that are positive for trich must be sold only for slaughter, by state regulation. This may be required within a certain time period. Most states do not regulate disposal of infected females. Selling infected females other than direct to slaughter is a major risk factor in spreading the disease.

Management to Clean Up an Infected Herd (or Association)

Trich can be eradicated from the herd after diagnosis by following some basic management guidelines. If these guidelines are not followed by everyone in the grazing association, the disease can be financially devastating. If any animal in a communal grazing allotment is diagnosed with trich, all animals in that group must be considered infected until they "test out" after a specific time period as described by state law. Below are some basic guidelines for cleaning up an infected herd or keeping trich out of a clean herd.

- Shorten the breeding season (60 to 90 days preferred; 90 to 120 maximum).
- Keep bulls separate from ALL cows, except during breeding.
- At the end of the breeding season, cull problem bulls (lame, etc.) to slaughter. Test the remaining bulls three times; cull all positives to slaughter.
- Test all new bulls before using and try to ensure that the herd of origin is trich free.
- Pregnancy test all females; cull open and late calving females.
- Raise or purchase virgin replacement heifers.
- Repair fences to prevent all straying; some states have regulations and penalties for bulls that are allowed to stray.
- Cull cows that abort.
- At grazing turnout, all cows should have a calf at their side.
- Ensure that all association members follow guidelines.

Split Breeding/Calving Season

Often a trich problem is not discovered until the time of pregnancy testing. Sometimes the number of females that are open is so high that it would be economically devastating to cull all of them. In this situation,

one option that can be considered is a split breeding and calving season. On a spring calving plan, the open females would be bred for fall calving. Below are some guidelines for this management plan.

- Separate all open females and keep them separate from then on.
- Remove all bulls and rest all females from breeding for 2 to 3 months.
- Breed for 90 days, using bulls that are free of trich.
- After the breeding season, cull (to slaughter) all bulls that were used, or test them three times. Using these bulls for two breeding groups may reduce breeding costs, but proper and repeated testing is essential to avoid re-infecting the clean group.
- Keep this group of females separate and manage them as appropriate for the new calving season.
- Continue with the two herds and two calving seasons, or when economically feasible, sell one group and go back to once-a-year calving.

Vaccination for Trich

A trich vaccine is available (TrichGuard™ by Boehringer Ingelheim Vetmedica, Inc.). The vaccine can be a helpful tool; however, to eradicate trich from the herd you must implement ALL of the management strategies. The vaccine is of no benefit in protecting or clearing bulls of trich.

The vaccine label directs that two doses be given 2 to 4 weeks apart, the second dose being 4 weeks pre-breeding. Giving one dose is probably of little benefit. In the following years, one dose should be given at 4 weeks pre-breeding.

Summary

Trich can be a financially devastating disease causing poor reproductive performance in the herd. Eradication of this disease is possible by following good bull management practices and adhering to a strict test and cull program.

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