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TRICHOMONIASIS: PART I The Disease

Trichomoniasis is a disease of cattle that causes infertility, open cows, and occasional abortions in cows and heifers. It is commonly referred to as "Trich", and is a disease that can be economically devastating for infected herds. Trichomoniasis can also be costly to eradicate from a herd. Dr. Robert BonDurant, a UC Davis School of Veterinary Medicine researcher, has put together the most current information on Trichomoniasis for the next two months' columns. Dr. BonDurant is a nationally recognized expert on this disease of cattle and is actively involved in laboratory and field research aimed at helping solve the cattle health problem we call "Trich".

What causes Trichomoniasis? A protozoan (a mobile, complex, single-celled organism), called *Tritrichomonas foetus* is the microbe that causes this condition. It is similar to - but not the same as - a venereal organism in humans called *Trichomonas vaginalis*. The cattle organism lives in the microscopic folds of the skin that line the bull's penis and internal sheath. As the bull gets older, this skin grows, and folds more and more, creating additional places where the organism can thrive. Therefore, older bulls (more than three years of age) are more likely to become chronically infected with the "Trich" organism than younger bulls. In the cow or heifer, the organism lives in the cavity of the vagina and uterus until her immune system eventually destroys it. That destruction process (immunity) may not occur for 3-20 weeks. Also, the immunity is short-lived, so a cow or heifer can become infected again.

What are the signs or symptoms of "Trich" in cattle? Neither the cow nor the bull appears ill at any time when they are infected with this organism. The cow, after having been infected at breeding, may rarely show a very subtle, very mild vaginal discharge, 1-3 weeks later. Most of us would never notice it. The bull rarely shows any indication that he is infected. So, there are no outward signs that the bulls, cows, or heifers are infected with "Trich".

What if Trichomoniasis gets into my herd? If it is a *new* infection (that is, if your herd has never been infected before), you can expect a long, drawn-out calving season, with a disappointing total calf crop. In such herds, it is common to end up with a 50-70% calf crop, strung out over 3-8 months. If the herd has been infected for a long time, the effect may be slightly less. That is, a higher number of cows will get pregnant, but never as many as normally would calve if there were no "Trich" present. Because "Trich" often gets into a herd via the introduction of one infected animal, especially an infected bull, another scenario is possible. In this case, after the first year, the percentage of pregnant cows may fall from 95% to 90%, for example. In the second year, there may be a further fall to 75% or less and a problem will be obvious. The reason for the open or late cows is the fact that the Trichomoniasis organism causes the loss of the calf a few weeks into the pregnancy. A few cows in the herd (perhaps 5%) may actually abort due to "Trich", nearly always **before five months' gestation**. However, many factors are involved in abortion, and Trichomoniasis is just one factor, and a less common one at that. So don't assume that every abortion is a sign of "Trich". A few cows (perhaps another 5%) may develop **pyometra**, i.e., a heavy, pus-filled uterus, after being infected. A qualified veterinarian can detect this pyometra at pregnancy check time. Cows or heifers with pyometra **at the time of pregnancy check** (as opposed to after calving) should make you very suspicious about Trichomoniasis.

Does the disease cause abortions? It can, but most cows do not abort a fetus big enough to find. Instead, they come back into heat at some extended interval (usually more than 21 days) after breeding. Most cows will eventually settle, if given enough time, but their immunity to the disease is weak. They can be reinfected the next season. What apparently happens when a "clean" cow is bred by an infected bull is that her egg **is** fertilized, but the disease organism either kills the embryo soon after conception, or the uterus' reaction to the "Trich" organism kills the embryo. In either case, the cow or heifer may not lose her "conceptus" until the end of the breeding season.

How is Trichomoniasis transmitted? Trichomoniasis is a **venereal disease** of cattle (all breeds). It is transmitted from cow to cow by a bull, so it is nearly always a disease of cattle that are naturally bred, as opposed to Artificially Inseminated (AI) cattle. Very rarely, it can be transmitted by contaminated semen or AI equipment, but this is highly unlikely if semen is purchased from reputable bull studs and hygienic artificial insemination methods are used. Like most venereal diseases, there is only one way to contract Trichomoniasis...that is, by sexual contact with an infected mate. There are rare cases of a cow or heifer being infected by contaminated semen or AI equipment, but these are not generally important means of spreading the disease. Reputable AI studs take great pains to assure that their product (bovine semen) is free of *Tritrichomonas foetus*.

How common is Trichomoniasis in cattle? Bovine trichomoniasis has been--and continues to be an important cause of economic loss in cattle operations that use natural service. In the Western U. S., where extensive grazing (vs. intensive grazing on permanent pasture) management practices are employed, the disease is prevalent at surprisingly high rates. In

1990, a random survey of California beef cattle operations revealed that more than 15% of herds were infected (i.e., they had at least one infected bull). Several factors such as grazing association, renting or borrowing bulls, large areas of common fence lines, etc. favor introduction of "Trich" from one herd to another.

How can I tell if my herd has it? In spite of the fact that bulls don't show any signs, the organism is easier to find in bulls than in cows, because bulls become "carriers" while cows eventually shed the infection. Special culture media have been developed that can support growth of the organism in an incubator. Scrapings of preputial (internal sheath) fluids are taken, and placed in this medium, which is then cultured for up to a week. If even one bull is positive, you have to assume that the herd is infected.

Is the diagnosis a sure thing? No, but the technique used is quite good, as diagnostic tests go. Studies of known "positive" bulls have shown that the culture method (described above) will miss about 10-20% of infected bulls if we only test them once. But testing the **herd** (all the bulls in the herd) once gives us an 80-90% chance of finding the disease if it's there. If no infected bulls are found on the basis of a single culture of all bulls, then we can be 80-90% sure that the bull herd is "clean". Repeat testing (up to three times, at weekly intervals) is necessary if we want to be more than 99% sure that the entire bull herd is negative. It's important to give the bulls 1-2 weeks' of sexual rest before beginning to test them for Trich. This allows time for the numbers of organisms to build up to a level that can be detected.

You can begin to see why Trichomoniasis is such a difficult disease to eliminate once it establishes itself in a herd. Next month, we will discuss prevention and control of "Trich".

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