UNIVERSITY OF FLORIDA
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VM122

Trichomoniasis (Trich)[1]

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Trichomoniasis ("trich") is a venereal disease of cattle and as such is transmitted only by breeding. The disease is caused by the protozoan *Tritrichomonas foetus* which lives in the reproductive tract of the cow and in the crypts (wrinkles or folds) on the mucosal surface of the bull's penis and sheath. Trich-infected herds experience decreases in calf crops and delayed calving. The cows can conceive but usually the developing embryo dies about 50 days after breeding and the cow will come back into heat. In some infected cows the embryo does not die at an early stage and will develop into a larger fetus only to die and be aborted later; in other cows, the embryo dies and the cow's uterus becomes filled with pus (pyometra). Some infected cows actually carry a live foetus to term and calve a normal calf; however, the cow is still infected and can be a reservoir of the disease in the herd. Trich can be especially damaging because it does not cause any alarming clinical signs. It often goes undetected until a producer takes a critical look at the herd's reproductive efficiency. Beef producers that accept a 60% or 75% calf crop may never know when they have the disease and operators that calve year-round are not able to determine their actual reproduction efficiency. During an initial encounter with trich, the herd can easily experience a loss of 50% in calf crop, especially in those herds where the breeding season is relatively short (45-60 days in length). In subsequent years, the calf crop in the infected herd may not be as drastically affected as it was initially but the herd can still experience a 10-20% reduction in the calf crop. The lessening effect is thought to be due to some immune resistance. However, newly infected additions to the herd will exhibit the more severe disease syndrome.

The trich organism is an external parasite of the bull, living in the crypts of the penis and the sheath. Since these crypts develop with age, old bulls (4+ years) usually become permanently infected after exposure and carry the disease into the next breeding season. Bulls under four years of age that become infected will tend to "clean up" after the breeding season. Unfortunately, infected bulls will show no signs or symptoms of the disease.

Infected cows will develop a redness of the vagina, cervix and uterus. These signs are not obvious on most routine examinations and could easily be caused by problems other than trich. As stated before, the infected cow will conceive but death of the embryo occurs at about 50 days. The cow will usually remain infertile for 2-6 months. Most infected cows will become free of the trich organism and develop

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resistance to the disease; this resistance can last for 6 months or longer. In those herds with extremely long breeding seasons a cow could become infected, lose the embryo, be infertile for several months, become free of the trich organism, get rebred, conceive, and, because of the temporary resistance to the disease, carry a calf to term. Because of this, the producer will see a greatly stretched-out calf crop with a wide variation in calf weights at weaning, rather than a reduction in the calf crop.

Diagnosis of trich is on a herd basis. When observing a trich-infected herd, a rancher may notice the bulls going back to work at the end of a long breeding season or a lot of open cows at the end of a short breeding season. The rancher may also notice a 10% to 40% reduction in pregnant cows at preg check time, a spread out calving season, and a wide variation in weaning weights. When ranchers notice any of the herd signs described, they should call a veterinarian to obtain a confirmed laboratory diagnosis. Keep in mind that other diseases can cause the same herd signs; we need to respond to a confirmed diagnosis rather than a suspected diagnosis.

A confirmed diagnosis is accomplished only by finding the trich organism in the herd. Since most cows will eventually become free of the organism after infection, the cow is not the "patient of choice" when looking for the organism. Because bulls do not clean up as readily, they become the "patient of choice" for finding the trich organism. In the bull, the procedure involves collecting material from the prepuce, culturing this material in special growth media at the lab, and identifying the organism by microscopic examination. It is virtually impossible to get a confirmed diagnosis in every infected bull. The organism is extremely fragile and dies easily. One negative culture on a bull does not label him trich-free; we could only be 90% sure a bull was free of *Tritrichomonas foetus* if he cultured negative 3 times. Finding the organism in just one bull indicates that we have a trich-infected herd. It is recommended that all bulls in a herd be tested rather than just a sampling of bulls.

Once trich has been confirmed in a herd, a strategic management scheme must be adopted to handle the disease. To develop a management plan you have to use the tools available for raising the herd's resistance and for reducing the disease challenge. It is essential that the plan use both types of tools, not just one; one tool alone just won't handle this disease. Trich vaccine is the only tool available for raising the cow herd's resistance. The initial trich vaccination regime for the cow herd requires two doses administered 2-4 weeks apart. The second injection and an annual booster should be given four weeks before breeding so that the cow has time to build resistance. Unfortunately, the present trich vaccine stimulates a medium level of resistance of short duration in the cow; the resistance is estimated to last for about 12 weeks. Even though the vaccine has not been shown to increase the male's resistance level to the disease, vaccination will not harm the bull. The disease challenge in an infected herd can be reduced by removing infected bulls, culling open cows, shortening a long breeding season, and purchasing only tested trich-free bulls or virgin bulls. A trich-free bull is one that has been sexually rested for two weeks before testing begins and has tested negative three times at two week intervals. A virgin bull is one that has never bred a cow and has never been pastured or housed with a bull that has bred a cow.

The following diagrams may explain how to better handle a trich-infected herd.

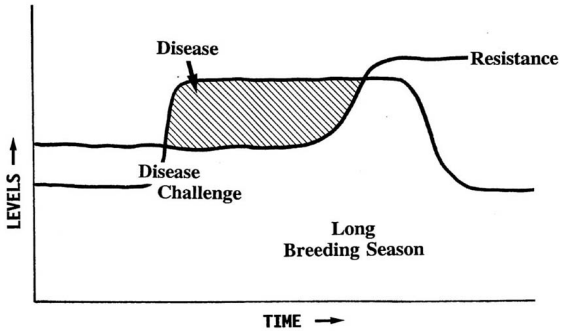

Figure 1. Following a trich infection and a subsequent disease period in a herd with a long breeding season, the resistance may increase in the cow to a level that will allow her to re-breed, conceive, and carry a calf to term.

Trich vaccine is available as a single antigen vaccine or in combination with other antigens such as vibrio antigen. When using the combination vaccine, keep in mind that the adjuvant used to enhance the animal's response to one of the vaccine's antigens

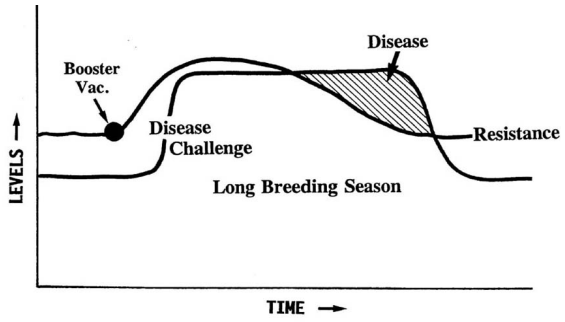

Figure 2. Because of the relatively short duration of medium level resistance stimulated by the trich vaccine, using *vaccine alone* to prevent trich disease may not be adequate in a cow herd with a long breeding season.

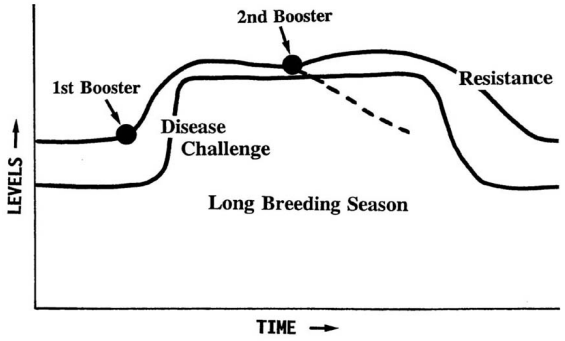

Figure 3. When using vaccine alone to prevent disease, a trich-infected herd with a long breeding season may require two booster vaccinations to keep the resistance level elevated for the duration of the challenge.

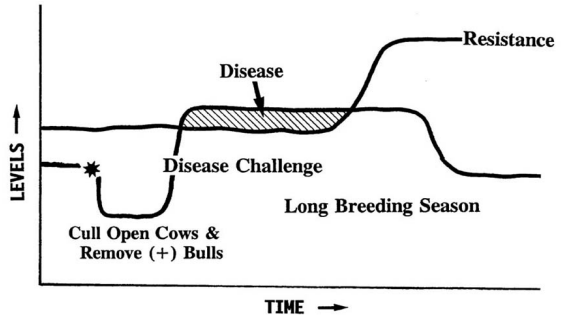

Figure 4. Because trich-infected animals can not always be detected, using tools that will only reduce the challenge in an infected herd may not prevent trich disease.

may not necessarily enhance the response to the other antigens in the combination. See the following diagram for a graphic representation of this concept.

To prevent a herd from becoming infected with trich may be an impossibility in today's management systems with the movement of cattle in and out of herds; however, a few simple management

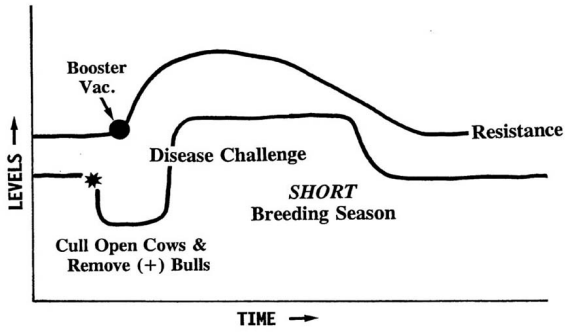

Figure 5. Using a single booster vaccination to raise the resistance and the tools to reduce the challenge may prevent disease in trich-infected herds with short (45-75 day) breeding seasons.

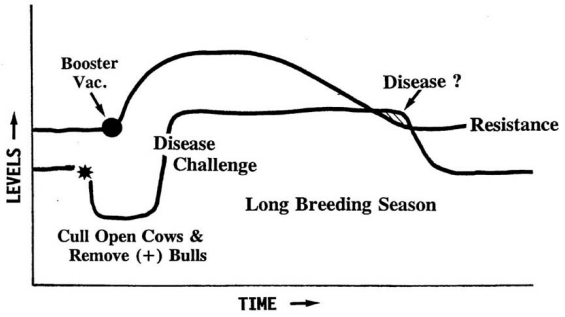

Figure 6. A single booster vaccination used in conjunction with tools that reduce the challenge may not totally prevent disease in trich-infected herds having breeding seasons longer than 75 days.

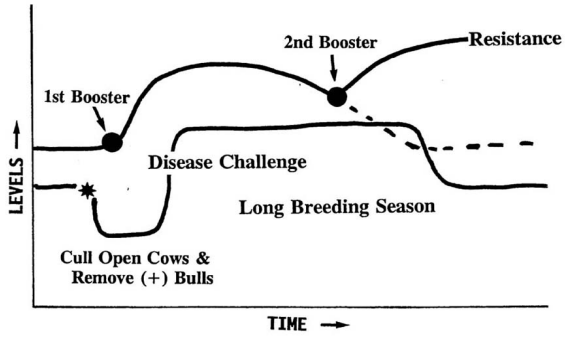

Figure 7. A trich-infected herd with a long breeding season may require two booster vaccinations used in conjuction with the tools that will reduce the challenge to prevent the occurrence of trich disease.

procedures can assist in reducing the possibility of a herd getting infected. Those procedures include:

1. Maintain a young bull battery.
2. Fertility exam and culture all bulls before the breeding season.

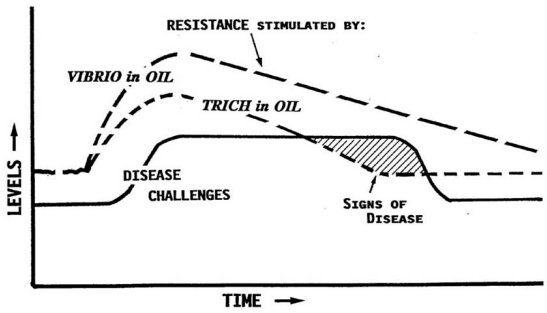

Figure 8. Combining vaccine antigens in a specified adjuvant does not necessarily stimulate a resistance level or duration of resistance that is equal for all antigens.

3. Purchase only virgin, yearling bulls.
4. Do not share or lease bulls.
5. Do not purchase older cows, and especially cull cows for your herd.
6. Maintain a defined breeding season to identify reproductive problems.
7. Pregnancy test all cows and heifers 120 days after the breeding season and cull the open females.
8. Keep fences in good repair to keep your neighbor's herd out.
9. You may elect to vaccinate, but vaccine alone will not prevent the disease from getting into the herd.