

OFF THE HOOF

KENTUCKY BEEF CATTLE NEWSLETTER, JANUARY 10, 2023



**Cooperative Extension Service
University of Kentucky**

Beef IRM Team

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Timely Tips

Dr. Les Anderson, Beef Extension Professor, University of Kentucky

Spring-Calving Cow Herd

- Study the performance of last year's calf crop and plan for improvement. Plan your breeding program and consider a better herd sire(s). Select herd sires which will allow you to meet your goals and be willing to pay for superior animals.
- Consider vaccinating the cows to help prevent calf scours.
- Keep replacement heifers gaining to increase the probability of puberty occurring before the start of the spring breeding season.
- Start cows on the high magnesium mineral supplement soon. Consider protein supplementation if hay is less than 10% crude protein. If cows are thin, begin energy (grain) supplementation now. Cows must reach a body condition score of 5 before calving to maximize their opportunity for reproductive success. Supplementation now allows adequate time for cows to calving in adequate body condition score.
- Get ready for the calving season! See that all equipment and materials are ready, including obstetrical equipment, record forms or booklets, ear tags, scales for obtaining birthweights, etc. Prepare a calving area where assistance can be provided easily if needed. Purchase ear tags for calves and number them ahead of time if possible. Plan for enough labor to watch/assist during the calving period.
- Move early-calving heifers and cows to pastures that are relatively small and easily accessible to facilities in case calving assistance is needed. Keep them in good condition but don't overfeed them at this time. Increase their nutrient intake after they calve.

Fall Calving Cow Herd

- Provide clean windbreaks and shelter for young calves.

- Breeding season continues. Keep fall calving cows on accumulated pasture as long as possible, then start feeding hay/grain/supplement. Don't let these cows lose body condition!
- Catch up on castrating, dehorning and implanting.

General

- Feed hay in areas where mud is less of a problem. Consider preparing a feeding area with gravel over geotextile fabric or maybe a concrete feeding pad. Bale grazing is an option for producers to help control mud while spreading nutrients across pastures.
- Increase feed as the temperature drops, especially when the weather is extremely cold and damp. When temperature drops to 15°F, cattle need access to windbreaks.
- Provide water at all times. Cattle need 5 to 11 gallons per head daily even in the coldest weather. Be aware of frozen pond hazards. Keep ice "broken" so that cattle won't walk out on the pond trying to get water. Automatic waterers, even the "frost-free" or "energy-free" waterers can freeze up in extremely cold weather. Watch closely.
- Consider renovating and improving pastures with legumes, especially if they have poor stands of grass or if they contain high levels of the fescue endophyte. Purchase seed and get equipment ready this month.

Product-Market Fit and Taking the Random Out of Production

Dr. Les Anderson, Beef Extension Professor, University of Kentucky

I received an email last week about receiving an award for 25 years of service to Extension. It seems like yesterday when I rolled down to Lexington to start this new career. One of my most vivid memories was the first UK Beef IRM Committee meeting. The IRM committee had just finished the analysis of a huge survey of beef producers. The only question that stuck in my mind was "Why do you own beef cows?". I thought the answer would be easy; to make money. But the number one response was "because I like cows". "To make money" was the number three reason of those surveyed.

At the time, honestly, I was stunned. Now, after 25 years, I understand a little better. The beef business may be one of the few where profit is likely not the driving factor of ownership. A romanticism exists in agriculture about beef production and/or ranching. But can't we make money and "like cows" at the same time? Profit is possible in the beef industry if producers reorganize the way they think about their beef cattle operation.

The IRM survey suggests that most beef producers don't think of their operations as a small business. Successful small businesses plan and analyze their business to control as many variables as possible. They avoid "random" because random is the opposite of predictable. Small businesses need a predictable product to help achieve product-market fit. The phrase "product-market fit" is used routinely in the business world and it indicates when a business's product addresses and solves the needs of its buyers or the market. Perhaps in the beef industry, we can redefine this as "Does our product match how we are marketing our cattle?"

Random is the norm for production in the beef cattle industry. More than half of beef operations simply turn a bull out with a set of cows and let them calve whenever they want. These operations sell cattle a

few at a time and normally sell singles. Selling singles can help pay some bills but it is not a marketing plan, and it does not help producers maximize the value to their product. It doesn't help you profit.

How can we decrease the “randomness” of production? First, control the calving season. Limit your cows to calving over shorter periods of time to help assemble bigger marketing groups. Limiting the calving season also improves labor and production efficiency. Second, control genetics. The best method to control genetics is to AI because of its flexibility. Estrus synchronization and AI requires planning and a little labor but the short- and long-term impact on profitability are well established. Use of this technology also enables producers to control the gender of the calf. Steers typically are \$150-200 more valuable at marketing than heifers so removing the randomness of gender can help improve profitability. Imagine managing a 30-cow herd and having 24 steers born within a 30-day period. Not only is this possible but beef producers in Kentucky are already doing this. One of them said “If I am going to stick a straw in them, I may as well stick a straw in that will make me money!”. Very true. Reducing “random” suddenly makes marketing easier and profit more attainable.

Controlling the calving season and genetics sets the table. Profitable beef cattle small business owners also control the quality of the product (health and nutrition programs) and minimize the costs of production by implementing quality forage and grazing programs.

The last tool to use to reduce “randomness” of production is record keeping and using the data to help drive production decisions. Beef cattle producers are great note takers but not very good at producing reports and using this data to drive decisions. Collecting and using production data clinches the nail on predictability and, with these other tools, can reduce the randomness of production as much as possible.

Managing a cattle operation for profit is a challenge. One cooperator I had in the UK IRM Farm Program made a statement that really resonates with me. This producer went from a 340-day calving season with no plan to a well-oiled machine that profits even in difficult markets and/or high input costs. He said, “My time is worth more than money. Now I make twice as much and spend half the time!”. How did he do it? He removed randomness and improved his product-market fit. One last comment. This producer had cows because he liked cows. Now he likes them quite a bit more!

2023 Mid-South Stocker Conference Back in Person

Dr. Jeff Lehmkuhler, Extension Professor, University of Kentucky

The Mid-South Stocker conference planning committee is hosting this year's conference in person at Western Kentucky University. The event will be held at the WKU L.D. Brown Ag Expo Center, Bowling Green, KY. The program will start on the evening of February 21 at 5:30 with registration followed a meal and vendor product reviews. Dr. Michelle Arnold, UK Extension Veterinarian, will wrap up the evening with a review of necropsy findings.

The program resumes the next day on February 22nd with registration at 8:30 and tradeshow. Given high feed costs, everyone is asking how to get more from their forage program. Dr. Kim Mullenix, Auburn University, will share forage-livestock considerations under changing environmental conditions. Following her presentation, Dr. Brittany Harlow, USDA Food Animal Production Research Unit, will discuss recent findings on the benefits of red clover to cattle on tall fescue.

Market outlook and economic risk management should be top of mind as well moving through 2023. Dr. James Mitchell, University of Arkansas, will provide a market outlook for the southeast for 2023. Our own, Dr. Kenny Burdine will then share considerations for using the Livestock Risk Protection program. Given the importance of keeping stocker cattle healthy to be profitable, Dr. Arnold will join us again to give a health update. Finally, the virtual tours of stocker operations in the region will once again be a part of the program.

To register, use the Eventbrite link <https://www.eventbrite.com/e/483761211807> or use the qr code below. The cost is \$70 for both days or \$50 for a single day. College and high school student registration is \$15.

We look forward to hosting you this year in person for the Mid-South Stocker Conference on February 21-22, 2023. Be sure to register and mark your calendars.



Frost Seeding Clover: A Recipe for Success

Chris D. Teutsch, S. Ray Smith, and Jimmy Henning

Legumes are an essential part of a strong and healthy grassland ecosystems (Figure 1). They form a symbiotic relationship with *Rhizobium* bacteria in which the bacteria fix nitrogen from the air into a plant available form and share it with the legume. Clover also increases forage quality and quantity and helps to manage tall fescue toxicosis. In the past, the positive impact of clover on tall fescue toxicosis has always been thought to simply be a dilution effect, but [new research from the USDA's Forage Animal Production Unit in Lexington](#) shows that compounds found in red clover can reverse vasoconstriction that is caused by the ergot alkaloids in toxic tall fescue. The primary compound found in red clover is a vasodilator called Biochanin A.

Clover stands in pastures thin overtime due to various factors and require reseeding every three to four years. There are several techniques for reintroducing clover into pastures including no-till seeding, minimum tillage, and frost seeding. Of these techniques, frost seeding requires the least amount of equipment and is the simplest to implement. Frost seeding is accomplished by broadcasting clover seed onto existing pastures or hayfields in late winter and allowing the freezing and thawing cycles to incorporate the seed into the soil (Figure 2 and 3). This method works best with red and white clover and annual lespedeza. It is NOT recommended for seeding grasses or alfalfa. This article covers the important factors for successful frost seeding.



Figure 1. Clover and other legumes are an important part of sustainable grassland ecosystems. They form a symbiotic relationship with Rhizobium bacteria in which nitrogen from the air into a plant available form, improve nutritive value, and help to alleviate tall fescue toxicosis. (Photo by Chris Teutsch)

Frost Seeding Tips

- *Control broadleaf weeds.* Ideally, broadleaf weeds should be controlled prior to seeding legumes since most herbicides will damage clover seedlings. This is best accomplished by controlling weeds the season prior to renovation. More information on controlling weeds in pastures and hayfields can be obtained contacting your local [extension office](#) or consulting [AGR-207 Broadleaf Weeds of Kentucky Pastures](#).
- *Soil test and adjust fertility.* For clover and other improved legumes to persist and thrive in pastures, an environment conducive for their growth must be created. This starts with proper soil fertility. Prior to frost seeding clover, soil test pastures and hayfields then lime and fertilize pastures according to the soil test recommendations.
- *Suppress sod and decrease residue.* The existing sod must be suppressed and plant residue reduced prior to seeding. The reduction in plant residue allows seed to reach the soil surface where it can be incorporated by freezing and thawing events. Sod suppression and residue reduction is best accomplished by hard grazing in late fall and early winter.
- *Ensure good soil-seed contact.* Good soil-seed contact is required for seed germination and emergence. In frost seedings, this occurs when freeze and thaw cycles form cracks in the soil surface, often referred to as a honeycomb (Figure 3).
- *Seed on proper date.* Frost seeding is best accomplished in late winter or very early spring (February and early March). Frost seeding is accomplished by simply broadcasting the seed on the soil surface and allowing the freeze and thaw cycles to incorporate the seed into the soil. Success with frost seeding can be enhanced by dragging the pasture as the seed is being broadcast or immediately after. Rolling the field with a corrugated roller after seeding will also improve success.
- *Use high-quality seed and adapted varieties.* Choose clover varieties that have been tested in Kentucky. The most current variety testing results can be found on the [UK Forage Extension](#) website or by visiting your local [county extension office](#). Using the [Long-Term Summary of Kentucky Forage Variety Trials](#), choose varieties that have performed above average (>100%) for multiple site-years. This indicates that they are well adapted to conditions found in Kentucky. Use either a



Figure 2. Frost seeding is accomplished by broadcasting clover seed onto closely grazed pastures in late winter or early spring. Using GPS guidance helps operators maintain equal spacing between passes and consistent speed (inset picture). (Photos by Chris Teutsch)



Figure 3. Freeze and thaw cycles during late winter result in the formation of cracks in the soil surface often referred to as a “honeycomb”. This heaving incorporates clover seeds into the soil and is commonly referred to as “frost seeding”. (Photo by Jimmy Hennina)

certified or proprietary seed to ensure high germination, good seed genetics, and low noxious weed content. Do NOT use common or VNS (Variety Not Stated) seed since there is no way to tell how it will perform in Kentucky.

- *Legume mixture for Kentucky.* In Kentucky, a good mixture for renovating pastures with is 6-8 lb/A of red clover, 1-2 lb/A of ladino or intermediate white clover. On rented farms or where soil fertility is marginal, adding 10-15 lb/A of annual lespedeza can be beneficial. Annual lespedeza is a warm-season annual legume that was used extensively in the past before producers had ready access to lime and fertilizer. In general, cool-season legumes (red and white clover) will be more productive under good growing conditions.

- *Use correct seeding rate.* Make sure to maintain and calibrate broadcast seeding equipment prior to planting (see video on [KYForages YouTube Channel on seeder](#))

[calibration](#)). Seeding at too high of a rate needlessly results in higher seed costs. On the other hand, seeding at too low a rate results in weak stands and lower productivity.

- *Inoculate legume seed.* Most improved clover seed comes with a lime-based seed coating that contains inoculant. Make sure that the seed is fresh and has not been stored under adverse conditions. If the seed is not pre-inoculated, inoculate it with the proper strain of nitrogen-fixing bacteria prior to seeding. This is relatively inexpensive insurance that optimum nitrogen fixation will take place.
- *Check seed distribution pattern.* When using a spinner type spreader/seeder make sure and check your spreading pattern. In many cases small-seeded forages are not thrown as far as you think. This can result in strips of clover in your pastures rather than a uniform stand. Also check your seed distribution pattern. Single disk spinners often throw more seed to one side if not correctly adjusted.
- *Use GPS guidance to maintain a consistent distance between passes and speed.* It is often difficult to see where seed has already been broadcast and many ATV/UTVs do not have a functioning speedometer. Using a portable GPS unit can reduce misses and overlaps and help the operator maintain a consistent speed (Figure 2).
- *Control post-seeding competition.* Not controlling post-seeding competition is one of the most common causes of stand failures. One of the best management practices is to leave cattle on pastures that have been overseeded with clover until the clover seedlings have germinated and are tall enough that the cattle start to graze them. Then remove animals from the pasture and allow the clover to reach a height of 6-8 inches. At that time the paddock can be placed back into the rotation. If the existing vegetation is not controlled, the new clover seedlings will be shaded out.

For more information on frost seeding contact your local extension agent or visit the [UK Forage Extension Website](#).

Frost Seeding at a Glance

- ✓ Legumes are an essential part of sustainable grassland ecosystems.
- ✓ Overseeding may be required to maintain and thicken stands.
- ✓ Frost seeding is the simplest method for reintroducing clover back into pastures.
- ✓ Control broadleaf weeds prior to frost seeding.
- ✓ Soil test and apply any needed lime or fertilizer before frost seeding.
- ✓ Suppress the existing sod and reduce residue with hard grazing in the fall and winter.
- ✓ Choose well adapted varieties of red and white clover using the UK forage variety testing data.
- ✓ Calibrate seeder and check spread pattern.
- ✓ Broadcast 6-8 lb/A of red clover and 1-2 lb/A of white clover that has been inoculated in February or early March.
- ✓ Control post seeding competition by grazing pastures until clover seedlings become tall enough to be grazed off.
- ✓ Put pasture back into rotation once seedlings reach a height of 6-8 inches.

Bovine Venereal Diseases - Should You be Concerned?

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

“Reproductive failure” is an all-encompassing term if a cow loses a calf during pregnancy or if she fails to get pregnant. Causes of reproductive failure are frequently divided into infectious and non-infectious categories. Examples of “non-infectious” include poor cow nutrition (lack of energy and micronutrients such as selenium/Vitamin E); bull infertility, disease and injury; breeding season management errors (shortened breeding season, insufficient bull-to-cow ratios); genetic and some congenital abnormalities that result in fetal death; and toxic agents such as nitrates, phytoestrogens, and drugs including steroids and prostaglandins. “Infectious” causes are bacteria, viruses, protozoal and fungal agents that directly or indirectly damage the placenta and/or the fetus. Examples include the BVD virus, IBR virus, the protozoan *Neospora caninum*, the bacterium *Leptospira*, and the venereal diseases trichomoniasis and vibriosis, among many others. This series of articles will explore the most common infectious causes of abortion and reproductive failure in cattle and available options for control and prevention.

The most common venereal diseases of cattle are trichomoniasis and vibriosis, often referred to as “trich” and “vibrio”, respectively. Bovine trichomoniasis is caused by the protozoan *Tritrichomonas foetus* (*T. foetus*) while vibriosis is caused by the bacterium *Campylobacter fetus* subsp. *venerealis* (*C. fetus*). Although both are infrequently diagnosed, the results of infection on reproduction can be devastating. Both trich and vibrio are transmitted through physical contact when a bull breeds a cow. Once a cow is infected, she acts as a source of infection for other non-infected bulls within the herd which then spread disease to other cows. Infected bulls show no signs of disease, however, either pathogen in cows causes genital infection characterized by early abortions, low pregnancy rates, and prolonged calving seasons. In herds that do not check females for pregnancy, these diseases appear simply as cows coming up open that should be calving. Economic losses result due to the reduced size of the calf crop, reduced weaning weights because of late calves, and the costs associated with diagnosing, culling and replacing infected cattle. Diagnostic testing for venereal diseases is not necessarily easy or inexpensive, so prevalence and economic impact are likely underestimated. If a bull tests positive for either disease, he will most likely remain infected for life. There is no effective treatment, so the cornerstone of control is based on identifying and culling infected bulls and replacement with virgin bulls.

T. foetus, the protozoan parasite responsible for trich, lives deep within the folds of skin (crypts) on the bull’s penis and prepuce (Figure 1). Once infected, bulls are considered infected for life and there is no effective treatment available, although young bulls (1-2 years old) can occasionally clear the infection. Older bulls, ages 5 and above, have more mucosal folds and deeper crypts than younger bulls, creating the perfect environment for persistent survival of the organism. Infected bulls show no signs of disease and semen appears normal on a breeding soundness examination (BSE) but spread of the organism to cows often results in abortions early in the first trimester. These pregnancy losses are typically noticed as an increased number of repeat breeders, irregular heat cycles, longer calving intervals and reduced pregnancy rates. Newly infected cows may still conceive but the pregnancy is resorbed 40-70 days post-breeding. In some infected cows, the uterus may become filled with pus that can be observed on the tail of the infected cow or heifer. Affected cows can mount an immune response and clear the infection from the reproductive tract in as little as 90 days but usually 4-5 months are necessary before the cow can rebreed, conceive then carry a calf to term. Immunity in the cow does not last and cows can be re-infected with the organism. There is no treatment for bulls infected with trich. Once diagnosed in a herd,

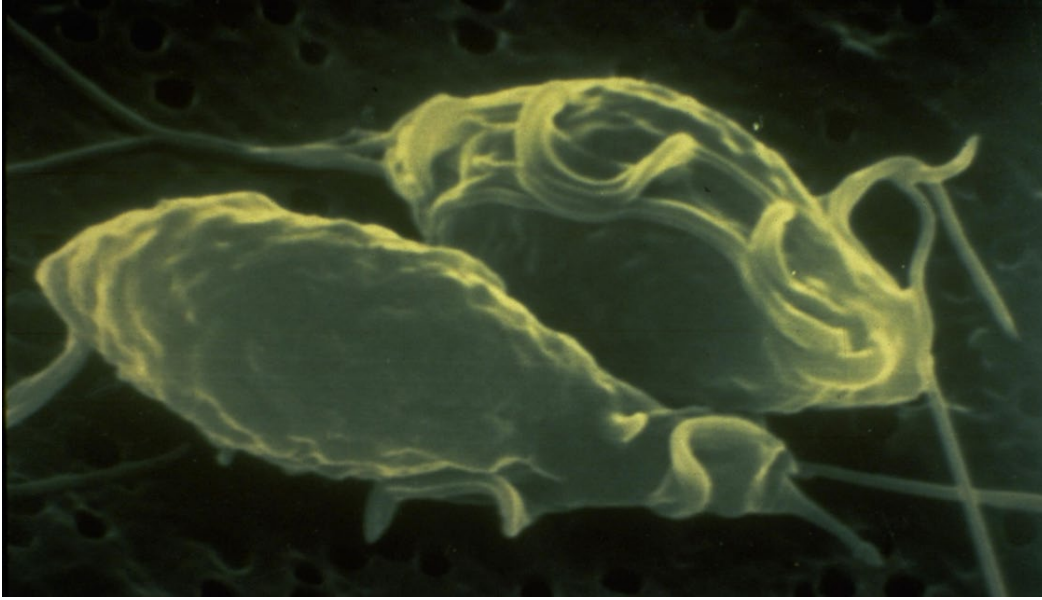


Figure 1: *Tritrichomonas foetus* is a protozoan parasite that can cause reproductive failure in cattle

recommendations include either culling all bulls or test and cull positive bulls and replacing them with virgin bulls that are satisfactory breeders based on breeding soundness examinations. A vaccine is available (TrichGuard® by Boehringer-Ingelheim Vetmedica) and considered a useful management tool for cows experiencing problems or at

increased risk for exposure to the disease. In a herd outbreak, it is generally recommended for all females to be given two doses of the *T. foetus* vaccine to decrease the convalescent period. Females exposed to the bull and found open should be culled or segregated into a separate breeding group for breeding after immunity develops. Consult with your local veterinarian for vaccination recommendations and protocols tailored to your specific farm needs.

Diagnosis of trich is by identification of the organism either from a skin scraping of the penis or a sample of cervical mucus from an infected cow placed in special media (a “trich pouch”) and shipped at room temperature to a veterinary diagnostic laboratory. The UKVDL has a polymerase chain reaction (PCR) test that accurately identifies this organism. Trichomoniasis diagnosis and control are coordinated at the state, not federal, level. Therefore, each state determines cattle entry requirements, the test to be used and whether positive results are required to be reported to state officials. Most states require bulls to have either one negative PCR test or three negative cultures taken at one week intervals to be considered test negative. Bulls must have a minimum of 4 days without sexual activity before they are sampled. Some states have adopted a new, more sensitive PCR that does not require a 24-hour incubation in the “trich pouch” and must be shipped cold or frozen.

Campylobacter fetus subsp. *venerealis* (*C. fetus*), the cause of vibriosis, is also found on the skin of the prepuce and penis of bulls. As with trich, bulls do not show any signs of infection, no alteration of semen and bulls remain infected for life. Infected cows exhibit reproductive failure, irregular heat cycles, and embryonic or fetal death. The cow may remain infertile for 3-5 months before immunity develops. However, a major difference from trich is that there are effective vaccines for use in cows and bulls available against vibriosis, typically denoted by a “V” in the name of the vaccine. Consistent use according to label directions provides strong protection against genital infection. Testing for vibrio usually involves the collection and culture of a sample scraped from the sheath of a bull or vaginal fluids from a suspect cow. The bacterium responsible for vibrio is very temperature sensitive and commonly dies on the way to the diagnostic laboratory if transport of more than 24 hours is required. PCR tests

have been developed and while not perfect, they are a vast improvement over previous diagnostic methods. Testing for vibriosis is only recommended for investigating poor reproductive performance when other causes have been ruled out.

Appropriate management of the breeding herd helps prevent introduction of venereal diseases. The most important step is to purchase only virgin or test negative bulls for herd sires and virgin heifers as replacements. Additional recommendations include:

- Maintain as young a bull battery as possible as older bulls are more likely to develop chronic infections;
- Do not borrow, rent, lease or buy untested bulls that have been used for breeding (see Figure 2). Test non-virgin bulls at least once by PCR before introducing them into the herd;
- For routine screening of larger bull batteries with a low risk of disease, many labs offer PCR on pooled samples of up to 5 bulls on one test;
- Breed purchased cows and heifers in a separate herd for at least one season;
- Control animal movement between farms by maintaining good fences to prevent infected bulls from mixing with uninfected animals;
- Utilize artificial insemination, when possible, to eliminate the risk of sexually transmitted diseases as well as improve the genetics of the calves;
- Cull all open cows and heifers and strongly consider culling those that conceived late in the breeding season; culture any cows with pus in the uterus found during pregnancy examination;
- Submit all aborted fetuses and placental tissue to a veterinary diagnostic laboratory for determination of the cause of any reproductive failure.;
- A short, controlled breeding season and good records help identify a breeding problem quickly.

Reproductive failure can result from a wide variety of infectious and non-infectious causes. A sound herd health program, developed with your veterinarian, will help minimize the risk of this failure and the associated economic loss.

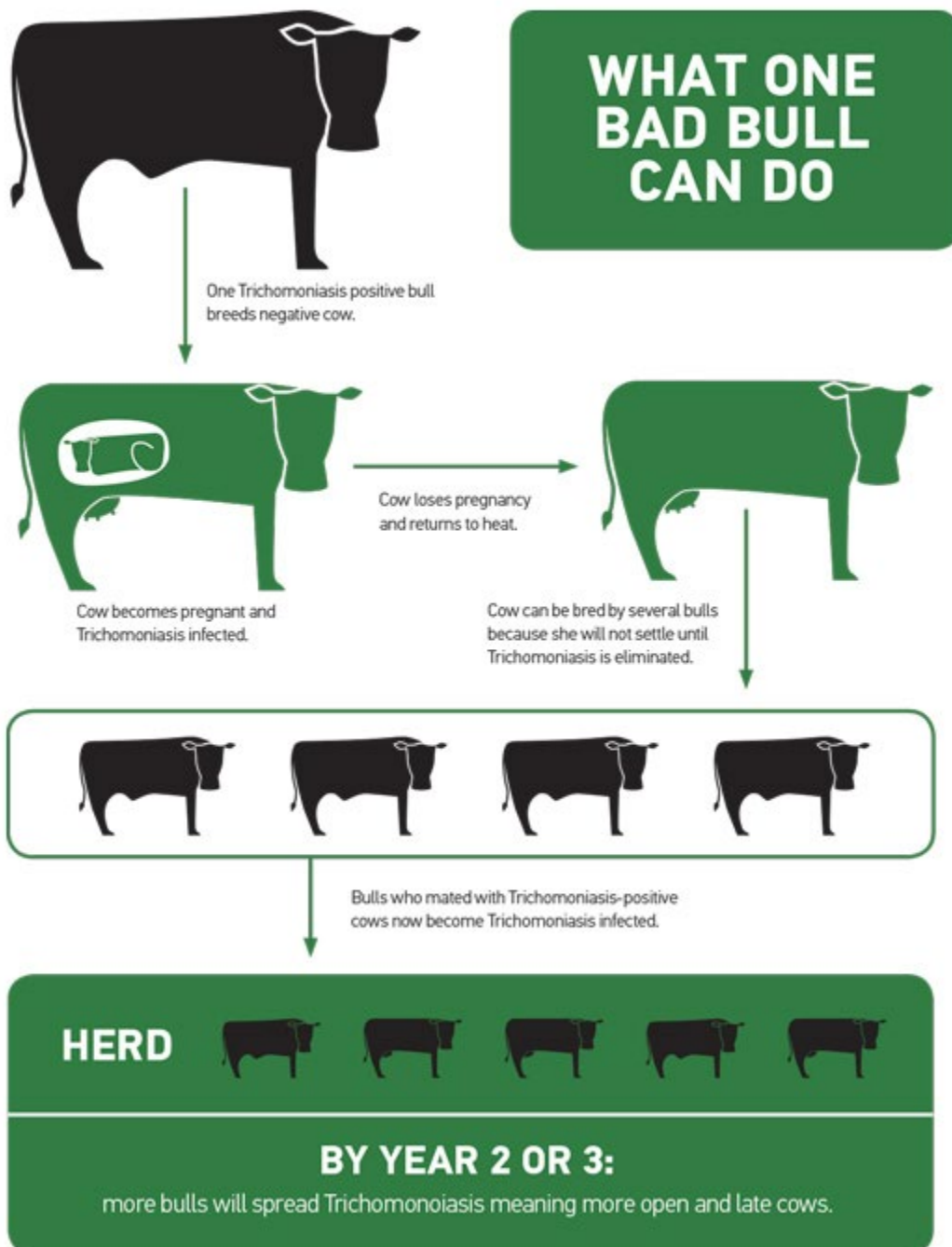


Figure 2 Graphic reprinted from <https://www.bi-vetmedica.com/species/cattle/products/TrichGuard.html#trichonomics>