

Investing in Diagnostic Testing

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The favorable cattle prices have continued into the new year, and many of us are making investments back into our herds. In addition to those management practices that are necessary to the health of our cattle, you may also be considering some optional or value-added management strategies that can be implemented now without as much impact on your bottom line. Just as vaccinations can be seen as investments in the health of the herd, utilizing diagnostic testing strategies now can result in beneficial effects on overall herd health in the future.

This month we will take a look at some common pathogens and diseases that cattle producers can test for, and explain how testing programs can be used on your operation. Voluntary herd health programs often require whole or partial herd testing for specific diseases or pathogens through blood, fecal, or tissue sampling. Discussing diagnostic testing strategies for disease prevention and control is a good way to strengthen the relationship you have with your veterinarian and also improve overall herd health.

What diseases are commonly tested for?

Bovine Viral Diarrhea (BVD) – Bovine viral diarrhea is a costly disease caused by the BVD virus (BVDV). BVD can be a significant cause of reproductive failures, diarrhea, respiratory disease weak calves, and much more. Infection with BVDV often causes immunosuppression, a reduction in the animal's immunity, resulting in other disease problems and production losses. Infected animals can be either transiently infected or persistently infected (PI). While vaccines are available to protect against BVDV, a PI animal will remain infected for life and serve as a source of infection to other animals. A recent video auction site has reported that "BVD-PI Free" calves brought an average of \$14 more per head. Seedstock producers may wish to market negative BVD animals or certify their operation as a participant in herd testing, while stocker operators may be more interested in identifying and removing persistently infected BVD calves. Testing usually involves taking an "ear notch," or skin sample from calves and adults. Testing can also be performed on blood. Mississippi also has a Voluntary Bovine Viral Diarrhea Control Program for producers wishing to test their herds for infected animals.

Johne's disease – Johne's disease is caused by *Mycobacterium avium* subspp. *Paratuberculosis* (MAP), a hardy organism that is spread through the feces of positive animals. Infection is chronic, which means that it can take years for infected animals to show clinical signs of the disease. According to the USDA, approximately 8% of beef herds in the United States are infected with Johne's Disease. There is no treatment or cure for Johne's disease, and infected animals will suffer from poor production and eventually die. The economic effects in an infected herd can be significant due to poor production and early culling. Testing is recommended for those who suspect JD in their herd and wish to make management decisions based on the status of their cattle. Whole-herd testing can also be beneficial for those seedstock producers who wish to market negative animals. A screening test is performed using a blood sample on animals older than two years of age. Confirmation of a positive blood sample requires a fecal sample. The Mississippi Voluntary Johne's Disease Program consists of both a test-negative "Status Program" for producers wishing to certify the status of their herd for marketing purposes, and a "Management Plan" for herds with infected animals.

Brucellosis (Bang's) and Tuberculosis (TB) - Brucellosis (*Brucella abortus*) and Tuberculosis (*Mycobacterium bovis*) are two diseases which have fallen under federal-state cooperative eradication programs for many years. As in most other states, Mississippi is currently "free" of brucellosis and

tuberculosis. Small outbreaks of TB have occurred recently in Texas, and brucellosis has been detected periodically in beef cattle in Montana. Female cattle under 12 months of age can be vaccinated against brucellosis, but there is no vaccine against TB. Historically, producers have maintained negative TB and brucellosis herd status to facilitate sales and exhibitions, especially those involving interstate movement. In addition, some states still maintain individual animal testing requirements prior to entry. Brucellosis testing requires a blood sample, while TB testing is a skin test which requires a follow-up examination 72 hours after initial testing.

Bovine leukosis - Bovine leukosis (aka lymphosarcoma, malignant lymphoma, and bovine leukemia) is a blood borne disease in cattle caused by the bovine leukosis virus (BLV). BLV infection is common in cattle in the United States, and more prevalent in the south. It has been estimated that approximately 40% of beef herds are positive for BLV, and 10.3% of cows within these herds were infected. The economic impacts to cattle producers can be significant and include reduced performance, treatment and diagnostic testing costs, death losses, and costs of replacements. In addition, affected animals may be condemned at slaughter. There is no treatment for BLV, but fortunately, only a small number of infected cattle actually develop clinical disease. Purebred or seedstock producers may face additional economic losses if their cattle are found to be BLV positive. Many countries will not accept animals or animal products testing positive for the disease, and breeding companies may reject positive heifers, bulls or semen. Herd testing for BLV can help to determine the prevalence in your herd, to identify which animals are infected, and to monitor progress in your control program. Testing requires a blood sample. Due to the high prevalence of the disease, however, a test and removal strategy may not be practical on every operation.

What are some considerations for testing?

First and foremost, before implementing any disease testing program, the **goals of the operation** need to be clearly understood. Are there plans to increase herd size, or change management? What will you gain by testing your herd? Do you want a marketing advantage? Are you looking to ensure a premium on your marketed calves, or just ensure that there are no infected calves prior to shipping? Knowledge of your herd's current disease status can be very helpful when planning your herd health program.

Just as important, you need to consider **what you will do with the test results**. This may be one of the most important questions when deciding whether or not to actually test your cattle. Are you willing to cull animals testing positive for disease? If you are looking to maintain and market a negative herd in any of these diseases, it's important to practice good biosecurity, which includes isolation/culling of any positives and taking precautions not to introduce new infections. If you have no intention of using your test results to make management decisions, then it may be hard to justify the expense of testing.

One of the most obvious considerations when deciding whether or not to test is the **cost of a disease outbreak** versus **cost of preventing or reducing disease** through diagnostic testing strategies. With the previous examples, diagnostic testing can cost up to \$9.00 per test per animal. This doesn't include the time, labor, shipping costs, and other expenses involved. For most infectious diseases of cattle such as BVD or Johne's, the cost of disease prevention is much lower than the cost of disease control or a disease outbreak. Abortion storms or shipping fever outbreaks can devastate your calf crop, taking years to recover.

Another consideration is the **accuracy of the test**. *No test is 100 percent perfect*, and anytime we test animals we risk false positive or false negative test results. Under most circumstances, an apparently healthy animal with a positive test will have to be re-tested for confirmation. Likewise, just because an animal may test negative for a disease or pathogen doesn't guarantee that they are free from infection. Your veterinarian can help you determine which diagnostic tests are most appropriate for your operation.

Obviously, other herd health management factors, including vaccination and biosecurity plans, must be considered when deciding whether or not to test for a particular disease. What is the overall risk to a particular disease on your operation? Do you maintain a closed herd, or do animals move between operations or livestock shows? What other herd health measures are in place that may be just as valuable, or even more valuable, than whole-herd testing? Biosecurity practices will help reduce new disease introduction to your operation as well as reduce transmission of pathogens between animals already in your herd. Always isolate and test new additions, and make sure all animals are current on their vaccinations. Maintaining animal identification and accurate health records are essential. Research has shown that cattle buyers are willing to pay more for animals backed by information documenting their health status, such as BVD.

Deciding whether or not to test your cattle for these serious diseases is not an easy task. I can't answer that question for you, but hopefully I have provided you with some issues to discuss with your herd veterinarian. Disease testing strategies can add value to your herd, or they can be a waste of time of money. This year you will likely invest a lot of time and money into your herd health program. Protect your investments and consult with your veterinarian as you are planning your herd work. Investing in improving your herd health program now may bring you even better returns in the future.

Some questions to discuss with your veterinarian before testing for disease:

- *What are the goals of your operation?*
- *Have you had these particular disease problems in the past?*
- *What will you do with the results of testing?*
- *What tests are available for a particular disease, and how accurate are they?*
- *What are costs of disease prevention, versus costs of disease treatment?*
- *What other herd health practices are performed?*
- *What is your overall biosecurity plan?*



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