HEART OF AMERICA
DHIA
NEWSLETTER

Johne's and Leukosis Testing now available through Heart of America DHIA

To expand options available to Heart of America customers, the DHIA is partnering with AntelBio to provide Johne's disease and leukosis diagnostic services on regularly collected milk samples.

Johne's disease, caused by *Mycobacterium paratuberculosis* (MAP), is identified as a leading health issue in the dairy industry, attracting attention both because of concerns relating to production losses and potential human implications.

Johne's disease reduces milk production, lengthens calving intervals and increases mortality rate in individual animals. Estimates for the annual production losses in the U.S. associated with Johne's exceed $1 billion.

Johne's is estimated to cost U.S. dairy producers almost 1.4 billion pounds of milk, premature culling of 11,000 cows and nearly 20,000 cow deaths annually. Based on the level of clinical cases of Johne's in cull cows, USDA has calculated the loss to be $60 - $250 per cow in the herd per year.

Another reason Johne's is gaining attention is the human implications from evidence of MAP in Crohn's patients. Although cause and effect have yet to be established, similarities in disease symptoms in Johne's and Crohn's patients, and reports that this microorganism survives pasteurization makes Johne's a potential time bomb for the dairy industry.

The impact of Johne's results from MAP invading the animal's small intestine, inducing a thickening of the intestinal wall, and ultimately reducing the absorptive capability of the intestine. Due to the slow, progressive nature of the infection, signs of Johne's disease are generally unnoticeable until years after the onset of infection. Clinical symptoms of Johne's disease include profuse watery diarrhea, weight loss, and lowered milk production, although appetite will stay the same or increase. These signs of Johne's disease can also be easily confused with several other diseases, including intestinal parasites, salmonella, even hardware disease.

Calves have the highest risk of contracting Johne's disease. Transmission of the infection occurs mainly through the fecal-oral route, but may also occur via colostrum, milk and in utero. The highest concentrations of Johne's bacteria are usually found in the manure, so the primary method of transmission of infection is through fecal contamination of the environment, including milk, feed, and water. It is important to note that the management practices used to control Johne's are generally simple and inexpensive to implement on the farm. The recommendations include: manure management, colostrum and milk management, as well as identification and removal of infected animals. Making sure calves aren't exposed to manure from adult animals by cleaning and disinfecting maternity pens after each use, preventing manure contamination of feed and water supplies, using separate equipment for manure handling and moving feed, and not feeding calves waste milk or colostrum from known infected cows will all aid in reducing transmission. However, because the disease could be present in cows that appear healthy, producers may also consider feeding calves colostrum and milk replacer. All farms should work with a veterinarian to implement a Johne's disease management program.

Leukosis is a viral infection with no effective cure or vaccine. Infection can occur at any age and persists for the remainder of the animal's life. Transmission occurs by the transfer of bodily fluids that contain infected white blood cells (blood, colostrum, milk, etc.) to uninfected animals or fetuses. Given the mode of transmission and the multitude of shared equipment on any given dairy, countless mechanisms can be imagined that transmit leukosis.

For these reasons, leukosis is widely prevalent, however clinical cases, which are associated with the majority of perceived health and productivity losses, are relatively rare. Many producers become aware of leukosis as a result of a cull cow condemned for tumors. Symptoms may also include enlarged lymph glands, congestive heart disease and paralysis.

Many countries have official leukosis eradication programs and will not import animals unless tested free of leukosis. Therefore, AI organizations and breed associations are sensitized to the presence of leukosis because of lost marketing opportunities. Other economic losses related to slaughter value, culling rates and reproductive performance are secondary because clinical cases are relatively rare. Its overall significance must be measured relative to the magnitude of other economic factors, but prevalence alone warrants considering leukosis when updating herd management programs.

Testing is the most definitive way to determine the presence of Johne's and leukosis in a herd. The AntelBio Milk ELISAs are designed to detect an antibody response in milk samples. In herds confirmed with Johne's disease, if the milk ELISA test is positive, there is a 99 percent probability that the animal has Johne's. However, due to the nature of the intermittent expression of antibodies in milk, a negative test does not necessarily mean the cow is Johne's free. About 50 percent of the time, an infected animal may not have a positive test, so repeated testing, or testing a large proportion of the herd at defined intervals will greatly improve the predictability of the Johne's ELISA.

In contrast, the leukosis ELISA is extremely accurate, since the antibody response to leukosis infection is rapid, substantial, and persistent. These factors make testing a valuable component of eradication programs.

The prevalence of leukosis, rather than the effects of the disease itself, will continue to be a concern of U.S. dairy producers. High prevalence rates make rare occurrences (such as clinical leukosis, contact transmission and neonatal infection) more frequent and each of these instances bring about losses in productivity and profitability. Control and eradication programs are feasible because testing is not only able to accurately differentiate positive and negative cows, but, when structured correctly, is able to pinpoint the most probable routes of transmission. Identifying and implementing key corrective procedures should rapidly result in the decline of new leukosis infections.

In summary, though some aspects of leukosis and Johne's disease are quite different, some common management procedures will assist in making progress in control of both, and for that matter in the prevention of other herd health concerns as well. Now that joint Johne's and leukosis testing is available through Heart of America DHIA, testing and control programs can be more closely integrated to enhance progress in herd health. Contact your DHIA technician for more information on testing options.