

Bovine TB Updates

Bovine TB Stakeholders Conference Recap

The University of Minnesota (U of M) Extension Beef Team recently hosted the first **Minnesota Bovine Tuberculosis (TB) Stakeholders Conference** July 27-28 in Grand Rapids. The conference brought together industry, agencies, and stakeholders that have been impacted by bovine TB to discuss current TB regulations and offer suggestions for the future of the program, to learn more about TB transmission, and to understand the social and economic impacts on the livestock and recreational industries. The conference also included a tour of the University of Minnesota's research facility where results from research projects funded by the Rapid Agricultural Response Fund were presented.

The economic impact session included presentations on MN and MI's experiences with TB and the impact of the disease on local communities, the recreational segment, and cattle production systems. Brian Buhr, head of the University's Department of Applied Economics, reported cost to the producer for infected herds per cow was \$130. In addition, uninfected herds cost about \$35 per cow/year. Buhr indicated that under a statewide Modified Accredited status, total direct cost of TB to Minnesota's beef industry would be an estimated \$15.9 million per year. Under the current Split State Status, the cost is approximately \$3.3 million per year.

The TB transmission session included presentations on the challenges of deer removal in MN, MI, and Canada's Riding Mountain National Park, managing cattle to deer interactions, and TB transmission through indirect contact (i.e. feedstuffs). The last session focused on the epidemiology of TB transmission, current strategies for TB control and eradication, as well as new approaches for managing TB. A summary of the recent "Future of the National TB Program" meeting in Denver was also provided.

Panels discussions during the conference consisted of producers, veterinarians, animal health officials, wildlife and livestock industry leaders. Also included was a

border state/USDA veterinary panel consisting of Minnesota, Michigan, Iowa, Nebraska, North Dakota, South Dakota, Wisconsin, and Manitoba state vets.

Panel discussions produced many questions regarding the direction of the national TB program. State veterinarians provided input on the current state line TB zoning system and whether the U.S. should base zones on epidemiology and science instead. Other topics discussed included animal ID and its importance in disease investigations, accuracy of the current testing method and the need for developing new test, and the lack of federal dollars for testing and depopulating herds infected with TB. The most discussed topic was comingling of Mexican-origin cattle and what should be done to minimize risk to the country's domestic herd.

The wildlife action plan panel discussed eradication of TB in the wildlife population. Deer reduction efforts have become more aggressive and surveillance will continue until no infection is found for five consecutive years. Thus far, this disease has not been found in younger deer. During the livestock action plan panel, it was heard that the livestock industry needs to demand and implement biosecurity and develop better herd management plans. The Beef Profitability Task Force in MN should address how to handle Mexican branded cattle, as well as how to engage the dairy industry.

The conference was attended by 72 representatives from the beef, dairy, and goat associations; four state agencies, three federal agencies, state veterinarians from seven states and Manitoba, nine stakeholder groups, and Senator Rod Skoe.

The last issue of the Bovine TB Updates newsletter will be in December, 2009. Additional bovine TB resources can be found on the web at: www.mntbfree.com or www.extension.umn.edu/beef.

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Managing Feed Intake in Beef Cattle Herds to Reduce TB Transmission Risk

Efforts to prevent or reduce transmission of bovine tuberculosis must involve potential interactions between cattle and wildlife at feeding sites. This includes management of hay and/or supplements presented to wintering beef cows. Objectives of this project were to determine whether processing hay (ground vs whole) or placement (in a structure such as a bunk or hay ring vs on the ground) affected the amount of hay consumed and wasted by wintering beef cows. Additionally, we were interested in determining whether supplement moisture (dry vs wet) or placement (piled or scattered within a structure or scattered without a structure) affected hay, supplement or total intake and waste by wintering beef cows.

In Study 1, regardless of type of structure and processing, cows fed hay in structures wasted less feed than those fed on the ground. These findings confirm what we had suspected, cows that are given access to feed on the ground will waste more feed; approximately 5 lb DM/cow more than those fed in structures. In Study 2, cows fed no energy

supplement consumed more hay than cows fed wet or dry supplements with the exception of cows fed corn screenings either in a bunk or tire. Similarly, hay waste was less by cows fed no energy supplement and for those fed hay and screenings or hay and wet beet pulp in a tire or on the ground. Surprisingly, cows fed hay and wet beet pulp in a bunk wasted 18% of the hay. Cows fed grain screenings had no supplement waste, while those fed wet beet pulp wasted as much as 22% of the beet pulp presented. **Great-est waste was accumulated by cows fed wet beet pulp on the ground.** Due to this, cows fed beet pulp on the ground consumed less supplement than those fed beet pulp in a structure. Interactions between hay processing and presentation and between moisture content of energy supplement and presentation determine the amount of hay intake and waste. Structures reduce waste, while moisture level of supplement increases waste.

Alfredo DiCostanzo and Jeff Jaderborg, University of Minnesota Extension Beef Team

Evaluation of a Novel Fence for Excluding White-Tailed Deer from Stored Feed

Bovine tuberculosis has recently been identified in free-ranging deer in Michigan and Minnesota where it has had detrimental impacts on the livestock industry. In both states, deer share space and resources with cattle and have been implicated for transmitting TB to cattle. Bovine TB can be readily transmitted from animal to animal and through contaminated feeds. Practical, cost-effective means are needed to limit deer contact with cattle and cattle feed, especially during late winter when deer are most food stressed and motivated to consume feed meant for cattle. To this end, we evaluated a temporary fencing strategy that

could be implemented temporarily when needed. During late winter 2008 in northwestern Minnesota, we evaluated a temporary electric fence that incorporated positive and negative wires into a single strand of polytape. **Deer visits to protected sites dropped abruptly after we erected our baited 4-strand, 1.2 m-tall fences**, where at unprotected sites they declined slowly with the onset of spring. The innovative fence has potential to become a valuable tool used to temporarily alleviate damage caused by a variety of wildlife species.

Kurt VerCauteren et. al., USDA APHIS WS

Assessment of Bovine TB Diagnostic Testing Strategies

Testing strategies for bovine tuberculosis (bTb) are confusing for producers, veterinarians, regulators and scientists alike. Despite over 100 years of using tuberculin skin tests for identification of bTb positive animals and herds, efforts to completely eradicate the disease have proven unsuccessful. To better understand why bTb testing strategies are not eliminating the disease, a literature review of all bTb skin test studies completed in the U.S. has been conducted, and **results show a wide variation in skin test parameters.** This variation challenges the widely accepted understanding that diagnostic test parameters are static for a given test.

Preliminary study results were presented at the MN bTb stakeholders meeting in July, 2009, to a number of individuals including state veterinarians from Iowa, North and South Dakota. The results of this study will be published in a peer-reviewed journal and should help further understanding of the performance of currently available bTb diagnostic tests, their limitations and most successful means for application.

Tim Goldsmith (DVM) and Mac Farnham (DVM, MS), Center for Animal Health & Food Safety

Assessment of the Value of Spayed Heifers for Marketing

An experiment was conducted to evaluate effectiveness of spaying and implanting feeder heifers versus the traditional practice of supplementing MGA to growing and finishing heifers on feedlot performance, carcass characteristics, and beef quality. During backgrounding, spayed heifers consumed slightly more feed (16.3 vs 15.4 lb/d) but gained 10% less weight than intact heifers (3.21 vs. 3.55 lb/d). Therefore, spayed heifers were less efficient at converting feed-to-gain (5.12 vs. 4.36) to result in lighter backgrounding end weights (840 vs. 864 lb) than intact heifers. Likely, administration of a low-potency anabolic implant (Synovex® C) to all heifers and simultaneous supplementation of MGA, an estrus suppressing feed additive shown to enhance performance, to only intact heifers contributed to performance differences observed during the backgrounding phase.

During finishing, final live bodyweight, daily intake and gain, feed conversion, and carcass characteristics were

similar between spayed and intact heifers. Thus, it appears **performance and efficiency advantages gained by intact heifers during backgrounding were not maintained throughout the entire feeding phase.** Reduction in weight gain induced by spaying may have been reversed by concurrent administration of Synovex® H or Synovex® Plus. However, heifers receiving a moderate (Synovex® H) terminal implant consumed slightly more feed (21.4 vs. 20.6 lb/d) but had similar gains and consequently slightly poorer feed conversions (6.57 vs. 6.25) compared to heifers receiving a more aggressive (Synovex® Plus) terminal implant. Although not different in this experiment, there are concerns of aggressive or long-term implant strategies reducing carcass quality and meat tenderness, so choice of implant should be carefully considered.

Grant Crawford and **Jolene Kelzer**, University of Minnesota Extension Beef Team

Qualitative Risk Assessment of Bovine TB in Northern MN

A qualitative risk assessment is being developed to evaluate the risk of transmission of bovine tuberculosis in the Minnesota cattle population and has resulted in a **pathways analysis that characterizes the different sources of infection of bovine tuberculosis to cattle.** Available published research from around the world has been evaluated to identify practices critical to disease transmission and prevention, including those specific to Minnesota, and to identify areas where future research is needed. Evaluated areas include roles of fomites, environment, white-tailed deer,

other wildlife, domestic animals, and humans. Some areas with lacking information include the role of fomites, persistence in the environment, as well as the role of other species in transmission. This information will improve our understanding of bovine tuberculosis in order to develop more specific research efforts to help prevent disease transmission and lead to eradication.

Scott Wells (DVM), **Tim Goldsmith** (DVM), **Barb Knust** (DVM), Center for Animal Health & Food Safety

Risk Assessment of Cattle – Deer Interactions on Cattle Farms in Northwest Minnesota

This study sought to characterize the risk of interactions between cattle and white-tailed deer in northern Minnesota to prevent *M. bovis* transmission. A semi-quantitative deer-cattle interaction risk assessment tool was used at 53 cattle herds in the region adjacent to bovine tuberculosis-infected cattle herds and deer. Two evaluators each scored the farm separately, and created a management plan for the farm that prioritized the areas of greatest risk for deer-cattle interactions. Fifty-one percent of herds visited had reported deer damage to stored feeds within the past year. **A strong association was found between increasing percentage of land that could serve as deer cover and the presence of deer damage to stored feeds on the farm.** Farms most frequently had deer damage to stored hay, although the feed with the highest proportion of damage by deer was silage. The total risk score was significantly associated with the

probability of a farm having deer damage. Most frequent recommendations made were to fence or otherwise protect hay storage, move the feeding location for cattle, move a feed storage site, reduce amounts of feed fed at a time, or fence in beet pulp storage. Results from this study showed that management practices in many herds in northwest Minnesota allow significant risk of deer-cattle interactions. In order to prevent potential transmission of bovine tuberculosis between deer and cattle, continued development of biosecurity practices is needed. The on-farm risk assessment evaluated in this study served as a valuable tool in prioritizing a farm's biosecurity risks.

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