

Extension Bulletin E-2731, New, September 2000

The Comparative Cervical Tuberculin Test

By Dan Grooms, DVM, MSU College of Veterinary Medicine, Large Animal Clinical Sciences,
and John Molesworth, DVM, Michigan State University Extension

Diagnosis of bovine tuberculosis (TB) in cattle involves several steps. The result of each test determines if follow-up tests are necessary. The first test used in this process is called the caudal-fold tuberculin test (CFT). The caudal-fold tuberculin test is the primary screening test used to identify cattle herds potentially infected with bovine TB. Since the caudal-fold tuberculin test is a screening test, results are not indicative that an animal or herd has bovine TB. However, it is used to identify cattle and herds that need to undergo further testing for bovine TB. Cattle that are "positive" on the caudal-fold tuberculin test are classified as responders (or suspects) and must undergo further testing.

The comparative cervical tuberculin (CCT) test is the official tuberculin test used for the retesting of cattle classified as responders to the caudal-fold tuberculin (CFT) test for bovine tuberculosis. A response to the caudal-fold tuberculin test indicates that the animal has mounted an immune response capable of recognizing



The CCT test is performed by injecting biologically balanced bovine PPD tuberculin at one location in the neck area and avian PPD in another.

Mycobacterium bovis, the bacterium that causes bovine tuberculosis. However, exposure or infection with other closely related bacteria, most commonly *Mycobacterium avium* (avian tuberculosis), could also cause a caudal-fold tuber-



The thickness of the skin at the injection sites is measured before and after the tuberculin injections. The measurements are plotted on a standardized CCT test graph.

culin test response. The comparative cervical tuberculin test is a more definitive test designed to determine if a response noted on the caudal-fold tuberculin test is more likely due to infection with *Mycobacterium bovis* or *Mycobacterium avium*.

The comparative cervical tuberculin test can only

be performed by a state or federal regulatory veterinarian. When used as a follow-up test to the caudal-fold tuberculin test, the comparative cervical tuberculin test must be performed within 10 days or after 60 days of the time the initial caudal-fold tuberculin test was administered. Until the comparative cervical tuberculin test is completed, all cattle on the farm must be quarantined. The comparative cervical tuberculin test is performed in the cervical (neck) region. An area is shaved and two separate locations within this area are identified. The thickness of the skin at these two areas is measured using calipers and recorded. The test is performed by injecting bovine purified protein derivative (PPD) tuberculin at one location and avian PPD at the other location. In 72 hrs (+/- 6 hrs), the thickness of the skin is again measured. The difference between the original skin thickness and the post-test skin thickness is calculated for each injection site and plotted on a standardized comparative cervical tuberculin test graph. Results are then classified as negative, suspect or reactor depending on where the skin measurements are plotted on the graph.



CCT Test-negative Cattle

Cattle whose test results are plotted in the negative zone on the standardized comparative cervical tuberculin graph are classified as bovine TB negative. If all caudal-fold test suspect cattle from a farm test negative using the comparative cervical tuberculin test, the quarantine is then lifted from that farm.

CCT Test-suspect Cattle

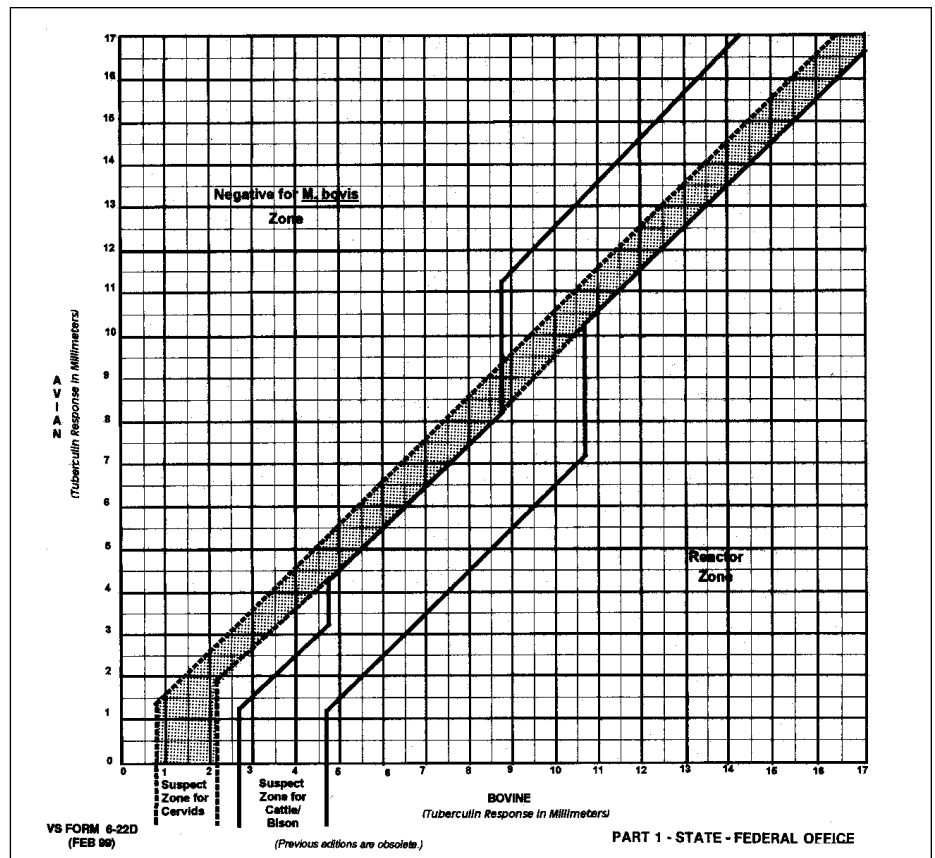
Cattle that are plotted in the suspect zone are classified as bovine TB suspects. The producer then has the option to wait 60 days and retest using the comparative cervical tuberculin test or submit the animal for necropsy and further diagnostic testing. If the option of retesting is selected, all cattle on the farm remain quarantined until the testing is completed. Cattle classified as suspects on a second comparative cervical tuberculin test are automatically reclassified as reactors and are subject to the rules and regulations governing this classification.

CCT Test-reactor Cattle

Cattle that are plotted in the reactor zone on the comparative cervical tuberculin test graph are classified as a bovine TB reactor. Cattle classified as reactors are subject to federal regulations overseeing reactor classification. These animals are quarantined to the premises where they are disclosed until a state or federal movement permit can be obtained. Within 15 days, the animals must be submitted to an appropriate animal diagnostic laboratory for necropsy and further diagnostic testing. Until diagnostic testing is completed, all cattle on the farm are quarantined.



Animal with swelling at injection sites, exhibiting reactions to both avian and bovine PPD 72 hrs. following injection.



The difference of the skin thickness at the injection site measured before and 72 hrs following injection, is plotted on a standardized USDA graph. Depending on which zone an animal plots, it is classified as negative, reactor, or suspect for bovine tuberculosis.