

There is an alternative to a test-and-slaughter program in known infected herds. This alternative is depopulation of all cattle in such herds, as well as all other susceptible species. The federal government will pay up to \$100 indemnity for each grade bovine so depopulated and up to \$200 indemnity on each purebred bovine. In addition, many states pay varying amounts of indemnity on this class of cattle.

Thirty-seven of the 52 infected herds found in FY 1976 were depopulated. Depopulation is at the option of the herd owner and is not mandatory. It, therefore, becomes an economic decision for the infected-herd owner, which does not always lend itself to the best disease eradication procedures. Depopulation of all exposed cattle in an *M. bovis*-infected herd is the only way we can be sure we won't leave infection behind to serve as a reservoir to perpetuate bovine tuberculosis. Program records show that for the past three years,

30% of the herds depopulated contained one or more nonreacting cattle with lesions of tuberculosis on post-mortem.

**It is interesting to note that Illinois, long a leader in tuberculosis eradication, has depopulated every known infected herd in the state for the past 10 years. Illinois regulations are such that an infected-herd owner has the choice between permanent quarantine of his herd or depopulation. More states should adopt this posture.**

The majority of infected herds are either dairy herds or are registered beef herds (involve accredited herds). We depend on slaughter surveillance and private testing by practicing veterinarians to point us to infected herds.

Again, we in regulatory veterinary medicine ask your continued support in the endeavor to eradicate bovine tuberculosis.

## Update of National Brucellosis and Tuberculosis Eradication Programs

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The brucellosis eradication program was making progress towards reducing the number of infected herds until about 1972. A number of problems, including a reduction in funds and manpower due to the detailing of personnel to the VEE eradication program, the exotic Newcastle disease eradication efforts, and the hog cholera eradication campaign, resulted in an increase in the incidence of brucellosis throughout the country. This increase was observed in both the high-risk and the predominantly clean populations.

A review of the nature of the disease and program activities at that time provided favorable support to the premise that brucellosis remained a disease that could be eliminated within a reasonably limited time frame. The livestock industry voiced their concern that the program gains acquired must be preserved and that efforts to detect and eliminate the numerous foci of infection, primarily in southern states, must be intensified.

Since 1975, major efforts have been taken to strengthen the program to achieve eradication within the earliest acceptable time frame. These efforts include:

1. *Research.* Because progress was being made toward eradication, brucellosis research had nearly ceased. Renewed emphasis is now being placed on improving brucellosis diagnosis and immunity. Projects

underway include studies on *Brucella melitensis* H-38 bacterin at the University of California, Davis, California, *Brucella abortus* Strain 45/20 bacterin in selected herds in Mississippi and Texas, adult vaccination trials with *Brucella abortus* Strain 19 in several large dairies in Florida, nonspecific stimulation of resistance to brucellosis at Michigan State University, and studies to improve diagnostic capabilities at three separate locations.

2. *Vaccination.* Just as was the case with research, calfhood vaccination had been de-emphasized. Because of the increased incidence of the disease, calf vaccination with *Brucella abortus* Strain 19 vaccine is encouraged for areas where the prevalence of the disease is high and in low-prevalence areas that provide replacement animals to high-incidence areas.

3. *Resources.* Increases in federal funding were received in FY 1975, 1976, and 1977. Additional manpower ceilings are desperately needed in order to support eradication efforts in high-incidence areas.

4. *Program Reviews.* Internal reviews of individual state programs and external reviews by scientists and legislative bodies.

The increase in funding has provided the means to increase eradication activities in most states. There has been a significant increase in the number of animals being tested, both on farms and through marketing channels. There were 22 million animals

tested in FY 1976, compared to 11.8 million in 1972. A major portion of this increase was in the number of animals tested at livestock markets and at slaughter where over 14.6 million animals were tested in FY 1976. The reactor rate in animals tested under the Market Cattle Testing Program, which had been increasing since 1972, was reduced in FY 1976 to 0.658 from 0.71 in 1975.

Surveillance in the dairy population with the milk ring tests showed 2,323 herds reacting to the BRT, representing 0.30% of the herds sampled. Tests were conducted on 2,174 herds with infection disclosed in 594 herds. This is down from 641 infected herds in 1975.

A total of 16,910 infected herds was disclosed in the 50 states in FY 1976. This represents a 3.1% increase over the previous years, but is encouraging when compared with a 30.4% increase in the number of animals being sampled under the MCI program.

Over 90% of the total infected herds were again found in the modified-certified states. Texas accounted for 34.9% of the total. During FY 1976, most of the certified-free states in the north central and northeastern areas of the U.S. saw a reduction in the number of infected herds, while the states in the West continued to show increases.

In looking at FY 1977 (October 1, 1976, to September 30, 1977) we are accelerating activities in two southeastern states (Georgia and Tennessee) that will result in a rapid reduction in the incidence of brucellosis. It is anticipated that this will be increased to include additional states next year. The United States Animal Health Association recently voted to recommend that adult vaccination with Strain 19 be included as a program standard in infected herds under certain conditions. This would be on approval by the state and federal regulatory officials in the states. This, if approved by USDA, may provide a useful tool in large dairies and certain large beef herds. We hope that increased appropriations will allow more herd depopulations in low-incidence states. Zero infection has been attained in a number of northeastern states already and is a reasonable goal for several more states during the next one to two years. Outbreaks and increased incidence in the certified-free states here in the West are now a major concern. Program standards that will reduce this spread must be enforced.

### Summary

1. Believe the program is much sounder today.
2. Great deal of investigation and challenge last year.

3. Much more emphasis on research and program adjustments.

4. More involvement of practicing veterinarians in the South.

5. Trends have been reversed.

### Discussion

Question: In Texas many veterinarians feel that the increased problems with the program began when we started using the Card test, and now that we are going to supplemental tests we are finding more and more animals that have reacted positively to the Card test are negative to the supplemental test. I guess my question to you is how do you evaluate the Card test and do you foresee this to be one of the primary diagnostic tests in the program?

Answer: I believe that for a while yet the Card test will be one of the primary diagnostic tests, particularly in the South where the disease incidence is the highest. Now, in most of the northern, western, midwestern and eastern states it is not utilized too much. I will admit, along with anyone else who is very familiar with the test, that it is a relatively sensitive test. It was put into the program in Texas; it was made part of the state law down there that this was the only official diagnostic test for a while that they could use. It has the convenience of being able to give you a response very promptly. It could be run on the ranch; it could be run corral-side and the animals branded before the man ever let his cattle back out to pasture. In Texas this was quite an important point. They wanted to be able to brand them while they had them up. It did eliminate a very high percentage of the animals that on the plate test would have shown some degree of response that would have put them into the suspect, or in some cases a reactor, category. So it did save a lot of these borderline or questionable animals that on the plate test might have been called suspects or reactors. Now, I believe that in dealing with the high incidences of the disease we can afford to err, and we must err a little bit on the safe side. Now, since you've started using supplemental tests as you indicate, rivenol or heat inactivation—well, probably not that, but mercaptilethenol, complement fixation—you have eliminated some of these questionable ones. But can you afford to do this on a mass basis where you need to have your results today? Now, in a sales barn where you are testing all these animals, you can't afford to take them in and run these other tests; you've got to run either the Card test or the plate test. And I believe, of the two, you're much better off with the Card test, and I think that the industry, if we ever are to go back to it as a sale barn screening procedure in the South, would feel the same way.

Question: Doctor, do you feel like there should be any stress put on testing heifers prior to vaccination in infected areas?

Answer: Well, I think this could be done, and some people are doing it. It seems that the immune system of a nonsexually mature calf is quite refractory to the disease. In other words, the organism, we feel, may in a very small percentage of the cases be present, but they don't carry on an immune process whereby their antibodies levels detect it. Usually, if you find antibody levels in calves, it is because they are nursing a reactor dam where they are getting a continual re-exposure of maternal antibody. I believe that testing of calves used to be a common situation. Personally, I would like us to get to the point where we could afford to take the calf off the reactor dam and send it to slaughter with the dam, so that we did not have that potential left in the herd for an inapparent carrier until sexually mature. I see nothing wrong with testing calves prior to vaccinating, but I believe that in most cases it would be an effort that would not be too productive.