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Thirty Questions and Answers
ON
Bovine Tuberculosis

Prepared by
IOWA DEPARTMENT OF AGRICULTURE
M. G. THORNBURG, Secretary

In Co-operation with
U. S. BUREAU OF ANIMAL INDUSTRY
J. A. BARGER, Inspector in Charge

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THIRTY QUESTIONS AND ANSWERS ON BOVINE TUBERCULOSIS

1. WHAT IS TUBERCULOSIS?

A diseased condition caused by infection by tubercule bacilli, characterized by the formation of tubercles, either isolated or confluent within some organ or tissue. Tuberculosis in live stock is objectionable as it is a menace to human health and causes an economic loss in the production of live stock.

2. HOW IS TUBERCULOSIS CONTRACTED?

Animals contract the disease through feed, water or air that is contaminated with tubercule bacilli germs thrown off by diseased animals. Calves and pigs contract the disease by drinking uncooked milk from cows that are tubercular. Hogs may also contract the disease by eating the droppings of affected cattle.

3. IS TUBERCULOSIS HEREDITARY?

Tuberculosis is not hereditary. There are a few cases on record where animals were born with tuberculosis but only in cases where the reproductive organs of the mother were diseased. Young animals contract tuberculosis mainly through contact and milk food.

4. DO HUMANS CONTRACT BOVINE TUBERCULOSIS?

Yes. Milk from tubercular cows is the most dangerous source of the disease with humans. Meat products should also be carefully inspected. Medical authorities have estimated that from 25 to 30 per cent of all tuberculosis found in children under five years of age is contracted from bovine sources. For proof of the danger of bovine tuberculosis to humans, we would refer you to your local physician, your local representative of the Iowa Tuberculosis Society, or to any of the following authorities:

Mayo Clinic, Rochester, Minnesota.

Dr. William H. Park, University Medical College and Director of the Department of Health, New York City, New York.

Dr. John H. Peck, 1222 Bankers Trust Building, Des Moines, Iowa.

Dr. R. M. Olin, Michigan Department of Health, Lansing, Michigan.

5. CAN BOVINE TUBERCULOSIS BE CONTRACTED BY OTHER ANIMALS?

Yes. Most of the hogs condemned for tuberculosis under federal meat inspection have the bovine type of disease. (The avian (poultry) type of tuberculosis is responsible for a large number of retained carcasses in swine where only a small portion of the carcass is condemned.)

6. CAN TUBERCULOSIS BE ERADICATED?

Yes. Tuberculosis in live stock can be eradicated by using the tuberculin test to detect diseased animals which are slaughtered, thereby removing the source of infection. Premises must also be cleaned up and disinfected so as to remove or kill tubercule bacilli that may have been left on the premises by infected animals.

7. HAS THE TUBERCULIN TEST PROVEN EFFECTIVE?

Yes. Iowa has already had 54 counties that have been declared modified, accredited areas by the federal government as tuberculin testing of cattle has reduced tuberculosis to less than one-half of one per cent. The retesting of a large number of these counties after they have been clean areas for three years shows that this method of cleanup has lowered the percentage of infection on the second test.

8. HOW IS THE INTRADERMAL TEST APPLIED?

This test consists of introducing from one to two drops of tuberculin into the skin of the animal. In healthy animals it produces no effect whatever but in tuberculous animals a local reaction follows at 60 to 120 hours after the injection. The reaction is usually most noticeable at 72 hours, when the test is read by veterinarians. Ophthalmic and subcutaneous tuberculin tests may also be used but experience has proven that the intradermal test is the most practical in testing large numbers of cattle.

9. WHAT IS TUBERCULIN?

Tuberculin is a product prepared by sterilizing, filtering and concentrating the liquid upon which tubercule bacilli have been grown under properly controlled and supervised laboratory conditions. It contains no bacteria of any kind and is simply the sterilized liquid upon which bacteria have grown.

10. CAN INJECTING TUBERCULIN CAUSE TUBERCULOSIS, CONTAGIOUS ABORTION OR ANY DISEASE?

No. There are no living or dead germs of any kind in tuberculin and, therefore, it cannot produce any disease and has no effect whatever on healthy animals.

11. IS THE TUBERCULIN TEST RELIABLE?

Yes. It is regarded as the most faultless biological test known and has been adopted for use in bovine tuberculosis eradication work in every state. From 92 to 93 per cent of the reactors removed on the first test show lesions of tuberculosis when slaughtered. Later or subsequent tests of the same herds show a higher percentage of "no visible lesion" cases as the disease has not progressed to the extent that the lesions are visible on post mortem examination. The tuberculin test is also widely used in hospitals for the detection of tuberculosis in humans. (Write United States Bureau of Animal Industry, Washington, D. C., for bulletin "Reliability of Tuberculin Test.")

**12. ARE LESIONS OF TUBERCULOSIS FOUND ON ALL RE-
ACTORS?**

No. In some cases the disease has not progressed to the point where the tubercule bacilli have caused lesions or pus sacks, which are visible to the naked eye. Such cases represent a very small proportion of the total number of reactors.

13. WHAT IS A "NO VISIBLE LESION" REACTOR?

An animal in which no pus sacks or other tubercular processes are found on post mortem examination. Laboratory examination of the glandular tissue of such animals usually shows the presence of tuberculosis in the majority of cases.

**14. ARE CASES WHERE NO LESIONS ARE FOUND ON
POST MORTEM EXAMINATION OF REACTORS TO BE
REGARDED AS AN ERROR IN THE TEST?**

No. A thorough study of so-called "no visible lesion" reactors has shown that in most cases the disease actually exists in remote parts of the body. The best scientific evidence and observations of millions of carcasses indicate that the tuberculin test is more reliable than the post mortem examination as a means of detecting tuberculosis. This conclusion is based on the fact that the majority of laboratory examinations of glandular tissue in "no visible lesion" cases have shown the presence of tubercule baccilli. In more than in 68 per cent of the "no visible lesion" cases in Iowa, other animals from the same herd have shown the presence of tuberculosis when slaughtered, thus proving that the cattle came from diseased herds and that the disease in them would have developed if time had permitted.

**15. DO CATTLE WHICH ARE BADLY DISEASED WITH TU-
BERCULOSIS REACT TO THE TUBERCULIN TEST?**

Yes. The records show that 10 to 12 per cent of the reactors in Iowa are generalized cases of tuberculosis, meaning that the disease is found in every part of the body. This shows that badly diseased animals react to the test. In addition to the reactors that are condemned entirely, the major portion of the reactors show lesions in some part of the body, thereby proving the presence of the disease and causing a severe loss in value when slaughtered.

**16. DOES THE TEST SHOW THE EXTENT OF THE DISEASE
IN THE ANIMAL?**

No. The reaction indicates the presence of the disease but does not show the progress which the disease has made in the body.

**17. SHOULD THE ENTIRE CARCASS OF ALL REACTORS BE
CONDEMNED AS UNFIT FOR FOOD?**

No. Tuberculosis is not a blood disease like Blackleg or Anthrax. In the early stages it affects only the lymphatic glands adjacent to the throat, lungs and intestines; therefore, it is only necessary that the head, lungs and intestines, as the case may be, be condemned. If the

disease is advanced so as to show the possibility of the presence in the meat structures of the body, then the entire carcass must be condemned as unfit for food. The slogan of the Federal Meat Inspection System is that all meat food products passed by it shall be sound, healthful, wholesome and fit for human food.

18. DOES THE TUBERCULIN TEST IMMUNE AGAINST TUBERCULOSIS?

No. The tuberculin test will tell whether or not an animal has tuberculosis at the time the test is made but does not cause immunity against future tests when conducted 60 or 90 days later.

19. WHAT SHOULD BE DONE TO PREVENT HOGS FROM CONTRACTING TUBERCULOSIS?

Do not allow them to follow or drink milk from tuberculous cattle. Chickens that are affected with tuberculosis also convey the disease to hogs but the losses from such infection are not as great as from bovine tuberculosis. Hogs kept for breeding purposes, where either cattle or chickens are affected with tuberculosis, should be isolated from such stock, raising the young pigs if possible under clean-ground conditions.

20. HOW MUST REACTOR CATTLE BE HANDLED SO THAT OWNER WILL RECEIVE INDEMNITY?

Reactors are tagged, and branded on the left jaw with the letter T. They are then shipped for slaughter to a market where there is government inspection. A check for the selling price of the reactor is forwarded to the owner. This is called salvage. The owner is then entitled to receive indemnities from the state covering one-third of the difference between the appraised value of the animals and the salvage. A like one-third is paid by the federal government, subject to the maximum state and federal indemnities. The maximum indemnity that can be paid by the state is \$50 on grades and \$75 on pure breds. The maximum indemnity paid by the federal government is \$35 on grades and \$70 on pure breds. No indemnity is paid on steers and no federal indemnity is paid on grade bulls. When state or federal funds are exhausted then the same indemnities are paid out of county funds. The accompanying table shows a sample claim which illustrates how indemnity is calculated.

TAG NUMBER	DESCRIPTION			APPRAISAL	SALVAGE PAID TO—	DIFFERENCE	AMOUNT DUE FROM—	
	Breed—pure bred or grade	Sex	Age				United States	State
17651	Grade.....	Cow	3	90.00	55.00	35.00	11.67	11.67
17652	Grade.....	Cow	7	60.00	7.00	53.00	17.67	17.67
17653	Pure Bred Reg. No. 00000...	Cow	5	175.00	60.00	115.00	38.33	38.33
17654	Grade.....	Bull	4	60.00	40.00	20.00	None	6.67
17655	Pure Bred Reg. No. 00000...	Bull	2	300.00	40.00	260.00	70.00	75.00
17656	Grade.....	Steer	1	None	40.00	None	None	None
	Total.....			685.00	202.00	483.00	137.67	149.34

Records for the last six months of 1929 show that the average appraised value of all cattle condemned in Iowa, including both grades and pure breeds of all ages, was \$126.35. The average salvage per head for the same reactors was \$51.75. The average indemnity paid for reactors from state, federal or county funds was \$48.26, making the total returns to farmers \$100.01 from both salvage and indemnity, or an average loss to the cattle owner of \$26.34, or 21 per cent of the value.

21. WHAT IS DONE WITH THE MONEY RAISED BY THE COUNTY LEVY FOR TUBERCULOSIS ERADICATION?

This money is used to pay indemnities and to pay veterinarians for testing cattle after the state and federal allotments to the county have been expended.

22. HOW IS THE STATE AND FEDERAL ALLOTMENT OF MONEY MADE?

The allowance to each county is based upon the number of dairy and breeding cattle within the county as shown by the last report of the assessor.

23. CAN STEERS OR OTHER FEEDING CATTLE BE BROUGHT INTO THE COUNTY WITHOUT BEING TESTED?

Yes. Steers do not need to be tested if they are kept separate from breeding cattle. Untested female cattle of beef breeds, that are to be used as feeders, may be brought in on special permits providing such cattle are marked for identification by being branded with the letter F on the right jaw. (Local veterinarians will furnish detailed information on any point that is not clear.)

24. WHAT ABOUT THE DISINFECTING OF BARN?

Germs of tuberculosis will live for months in the litter and manure but they will not live for more than a few hours when exposed to the sun. Consequently the parts of the barn which have contained tuberculous cattle should be carefully cleaned and disinfected. Lots should also be cleaned up in order to remove all such sources of infection.

25. CAN LOCAL VETERINARIANS APPLY THE TEST?

Yes. Local accredited veterinarians are asked to participate in the testing of cattle under the area plan if their regular practice will permit.

26. HOW ARE CATTLE APPRAISED?

Before testing is begun the owner and veterinarian agree upon the appraisal of each animal. If an agreement cannot be reached this way, the law provides that one person may be appointed by the owner, one by the state department of agriculture and the third by the two persons thus appointed. The appraisal agreed upon by these parties shall be final. (See Sec. 2668, Iowa Code of 1927 as amended by the 43rd General Assembly.)

27. *CAN AN OWNER APPEAL FROM THE DECISION OF THE VETERINARIAN AS TO WHETHER OR NOT HIS ANIMAL IS A REACTOR?*

Yes. Regulation 19-A of the State Department of Agriculture permits an appeal from the decision of the veterinarian and provides how the owner may proceed. A veterinarian is to be selected by the owner, one by the State Department of Agriculture and the third by the two veterinarians designated. (The veterinarian making the test will furnish full particulars.)

28. *IS IT PRACTICABLE TO EXAMINE COW'S MILK MICROSCOPICALLY TO DETERMINE THE PRESENCE OR ABSENCE OF TUBERCULE BACILLI?*

No. Tuberculous abscesses may break open and give off tubercule bacilli and pus cells and then heal over and not break open again for several weeks.

29. *HAVE THE COURTS SUSTAINED THE TUBERCULOSIS ERADICATION LAW?*

Yes. Courts have held that the eradication of disease in cattle is within the police power of the state and that the law is constitutional. Three Iowa Supreme Court cases have definitely sustained the Iowa law. Courts in other states and also the United States Supreme Court have upheld the law in all essential points.

In the Webster county, Iowa, case of Fevold vs. Board of Supervisors the Iowa Supreme Court said:

"Prevention of the spreading of dangerous diseases among cattle is now universally recognized in this country as within the police power * * * *."

In the Black Hawk county, Iowa, case the Iowa Supreme Court in the Peverill vs. Board of Supervisors said:

"That laws of this character have been held by this Court and other courts to come within the purview of the police power is now settled."

In the Webster county, Iowa, case the Iowa Supreme Court settled the question of the relationship of tuberculosis eradication to public health when they stated:

"It is clear from the foregoing cases that the legislature had power to determine that the interests of public health required the testing of cattle for tuberculosis, and to determine, what measure should be taken to that end * * * *."

A Nebraska decision on a similar subject states:

"That bovine tuberculosis is dangerous to the human family is fully sustained by expert testimony and warrants the legislature in enacting laws to suppress it under the police power of the state."

In the Black Hawk county, Iowa, case the Supreme Court of Iowa stated:

"As the statute is clearly a measure for the protection of the public against disease, it is not within the constitutional inhibition against taxation for private purposes, etc."

In the Harrison county, Iowa, case the question of depriving cattle owners of their constitutional rights was answered by the Iowa Supreme Court in the following language:

"We are unable to see where any constitutional provision whatever has been impinged or violated by these sections of the statute, * * * * and we can

Also in the Webster county, Iowa, case the Supreme Court states:

In the Black Hawk county, Iowa, case the Iowa Supreme Court also stated:

The Supreme Courts in Ohio, New York, Nebraska, as well as the United States Supreme Court have upheld tuberculosis eradication laws similar to the one in Iowa.

30. HOW MUCH WORK HAS BEEN ACCOMPLISHED IN ERADICATING TUBERCULOSIS FROM THE CATTLE IN IOWA?

The accompanying map shows the results of the work accomplished better than it is possible to describe it in words. There are now 54 counties that have completed the work and have been recognized by the federal government as accredited areas on account of having reduced the percentage of bovine tuberculosis to less than one-half of one per cent. All of the remaining counties of the state have made a levy with the testing being actively conducted in over half of the remaining counties. Work will start in the remaining counties as funds and workers will permit.

