

TUBERCULOSIS IN POULTRY AND SWINE

By

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Tuberculosis is a chronic disease characterized by the formation of small, distinct, clearly defined nodules called tubercles. In addition to the changes in the tissue there is generally a loss of flesh and eventually death of the infected subject. The bacteriologists recognize three types of tuberculosis; these are avian or bird type, bovine or cattle type, and the human type.

Bovine tuberculosis has been reduced to a very low incidence by means of a testing and sanitation program initiated in 1917. The discussion which follows will be limited to the avian type.

Avian tuberculosis is widespread in this area. The organism responsible for avian tuberculosis is not only infective for birds but may cause serious diseases in other species. There are records of avian tuberculosis germs causing disease in human beings, cattle, sheep, and particularly swine.

From an economic standpoint avian tuberculosis is important particularly as a disease of chickens and swine. In chickens tuberculosis causes loss of weight, the development of tubercles in the liver, spleen and along the intestines and eventual death of the bird. Swine do not show the characteristic symptoms and lesions of tuberculosis. They may fatten well and appear normal, but at the time of post mortem inspection at the packing plant they may be "retained" because of infected lymph nodes in the throat. The inspectors determine whether "retained" animals will be "passed" for food purposes or condemned for tankage. North Dakota leads the nation in the percentage of swine "retained" because of avian tuberculosis in swine.

The question of the control and eventual eradication of avian tuberculosis is not only a problem for the poultryman, it is of equal importance to the swine producer.

There are several methods of attacking the problem of avian tuberculosis in poultry and swine. In those areas where efforts have been properly directed at tuberculosis control the results have been very satisfactory.

Controlling Tuberculosis in the Poultry Flock

Tuberculosis in chickens is a disease of older birds. For the most part it is unlikely that there will be many deaths from tuberculosis in a pullet flock. One of the most satisfactory methods of eradicating avian tuberculosis is a combination of strict sanitation and the elimination of hens over one year old. The poultry producer can combine his efforts at the control of both leucosis and tuberculosis by using a strict and complete program of sanitation. The poultryman must realize that the tuberculosis organisms are spread in the droppings of infected birds and that under North Dakota conditions these germs will live in the ground for at least three years.



Fig. 1. Tuberculosis in a chicken showing Emaciation and Liver tubercles.

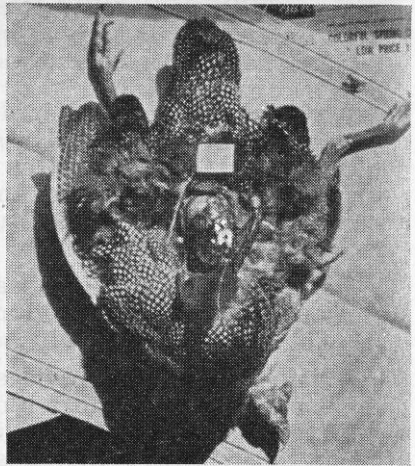


Fig. 2. Tuberculosis in a Guinea fowl showing Emaciation and Liver tubercles.

There is very little danger that chicks hatched in an incubator are exposed to tuberculosis. If these chicks are then brooded in a well disinfected brooder house there is little danger of their becoming infected by the time they go on range. The spread of tuberculosis takes place for the most part on summer range and in the laying house. The range used for the young flock should be a field seeded to a vigorously growing grass or legume and on land not used the previous year for poultry or swine. This is important because of the resistance of the tuberculosis germs. It is very important that the range used be far enough away from the farmstead so that the birds do not come in contact with swine because the disease appears to be readily transmitted from poultry to swine.

On a farm where avian tuberculosis exists the pullets should be left on the range until they are ready to start laying. The flock should then be carefully culled and the birds that are to be kept moved into a cleaned and disinfected laying house. The old birds should be disposed of at least two weeks before. The birds should not be allowed out of the house at any time and the house should be maintained in a sanitary manner. The water and feed troughs should be protected so as to prevent contamination with droppings from the birds. Either a droppings pit or wired dropping boards should be used under the roosts. Plenty of litter should be used and a ventilating system installed in order to keep the laying house dry.

It must be realized that the eradication of tuberculosis is based entirely on prevention of infection. Many flock owners report losses from tuberculosis every year. Under conditions such as to cause yearly losses from tuberculosis it is necessary to use utmost

care in raising and maintaining the flock in order to prevent the birds contacting infective material.

The important points in tuberculosis control in poultry are:

1. **Market all old birds before pullets are brought off the range.**
2. **Thoroughly clean and disinfect the laying house before bringing in the pullets.**
3. **Thoroughly cull the pullet flock.**
4. **Feed a well balanced ration.**
5. **Keep the laying house dry.**
6. **Keep the layers confined to house and sunporch to prevent spread of disease on premises.**

Tuberculosis Control in Swine

The swine grower is also concerned with establishing a tuberculosis-free drove. His problem is somewhat different from the poultryman in that the young pigs are born directly from the dam and raised by her. If the sow is infected with tuberculosis it is not unlikely that the pigs will become infected. The swine producer who wishes to raise tuberculosis-free animals must follow the same general plan as outlined for the poultryman but in addition it is best for him to have his sows and gilts tested with tuberculin and the reactors removed. This test is equally effective for poultry but because of the economics of egg production only the breeder of pedigreed birds can economically maintain two and three year old hens in the laying flock.

The swine producer can arrange for the pigs, from tuberculosis-free sows, to be farrowed in disinfected houses. The sows and pigs can be reared on ground not recently used by poultry or swine and tuberculosis-free swine reared. An additional advantage of this type of program would be that the pigs would also be free from round worms.

In order to fatten the pigs for market it is desirable to pen them up. The fattening pens should either be made with concrete floors that can be thoroughly cleaned or new ground should be used each year. Fattening pigs can become infected with tuberculosis and go to market without showing symptoms of disease. This type of pig is frequently "retained" because of infected lymph nodes in the throat.

The important points in tuberculosis control in swine are:

1. **Select a tuberculosis free foundation drove by means of the tuberculin test.**
2. **Maintain the foundation animals in new or well cleaned, disinfected quarters.**
3. **Farrow in houses that have been cleaned and disinfected and the sows udders washed.**
4. **Feed a balanced ration.**
5. **Rear pigs in pastures not recently used by either swine or poultry.**
6. **Market the older sows, not needed for the next crop of pigs.**
7. **Fatten pigs on concrete floors or on new ground not previously used by swine.**
8. **Keep poultry and swine separated.**

The plans suggested for the control of tuberculosis in poultry and swine are essentially the same as would be suggested for the control of numerous other diseases. If these plans are followed there will be a noticeable decline in the frequency of occurrence of all diseases in these species.

HISTORY AND PROGRESS OF THE NDAC INSECT COLLECTION

By

Richard L. Post¹

History of the Insect Collection: When Professor C. B. Waldron came to North Dakota Agricultural College from Michigan in 1890, he brought his personal insect reference collection housed in a wooden cabinet containing 36 boxes. This was the foundation of the present insect collection. The majority of insects in the Waldron collection were labeled "Agricultural Coll. Mich." and were collected from 1887 to 1890. Of his collection, 2412 specimens remain and are still in good condition. In addition to being horticulturist, he served as entomologist for the North Dakota Agricultural College throughout the period 1890 to 1921 when the Department of Agricultural Entomology was established with Dr. R. L. Webster appointed as its first chairman or head. From 1921 to 1926 Dr. Webster added 2,800 specimens that bear his personal collector's label.

Dr. J. A. Munro succeeded Dr. Webster in 1926. Two thousand two hundred sixteen specimens have his name as collector and he has added several thousand additional specimens to the collection.

Professor O. A. Stevens, a member of the Botany Department with wide interests, has added 2,237 specimens to the insect collection. As a result of his donations, 359 specimens representing 139 species of Hymenoptera (bees, wasps and ants), this order of insects is one of the best represented in the collection.

In addition to the forementioned, the following collectors have many insects bearing their names: (The names in bold-face especially have contributed to the collection.)

Ainslie, C. N.	Challey, C. J.	Pearson, O.
Baker, Wm.	Evans, Nevada S.	Saugstad, S.
Brenckle, J. F.	Fattig, P. W.	Stangle, H. E.
Bruce, W. G.	Fox, Adrian	Telford, H. S.
Bruner, L.	Hallock, H. C.	Waldron, C. B.
Butcher, Fred	Harris, B. K.	Walster, H. L.
Butcher, F. Gray	Knapp, R. B.	Webster, F. M.
Campbell, J. R.	Munro, A. C.	Will, George W.
Carruth, L. A.	Oderkirk, Alvan	Will, O. H.

In 1947 Dr. Richard L. Post was appointed the first curator of the Insect Collection.

Progress of the NDAC Insect Collection During 1947: In addition to the 4941 specimens and collecting equipment recorded as donations by Post and Munro (1947) additional gifts have been received totaling 1113 specimens valued at \$224.95. The donors and their contributions are as follows:

From Dr. C. E. Abbott, Westminster College, Salt Lake City, Utah, formerly Zoology Department, NDAC. 46 Australian and 233 N. American bees and wasps.....	\$15.00
From Mr. Wm. G. Bradley, U. S. Corn Borer Laboratory, Toledo, Ohio. 12 corn borer adults and 6 injury.....	\$ 2.40

¹Associate Entomologist, NDAC Experiment Station and State Seed Department; Associate Professor of Entomology, School of Agriculture and Curator of Insect Collection.