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SP604

The University of Tennessee
Agricultural Extension Service

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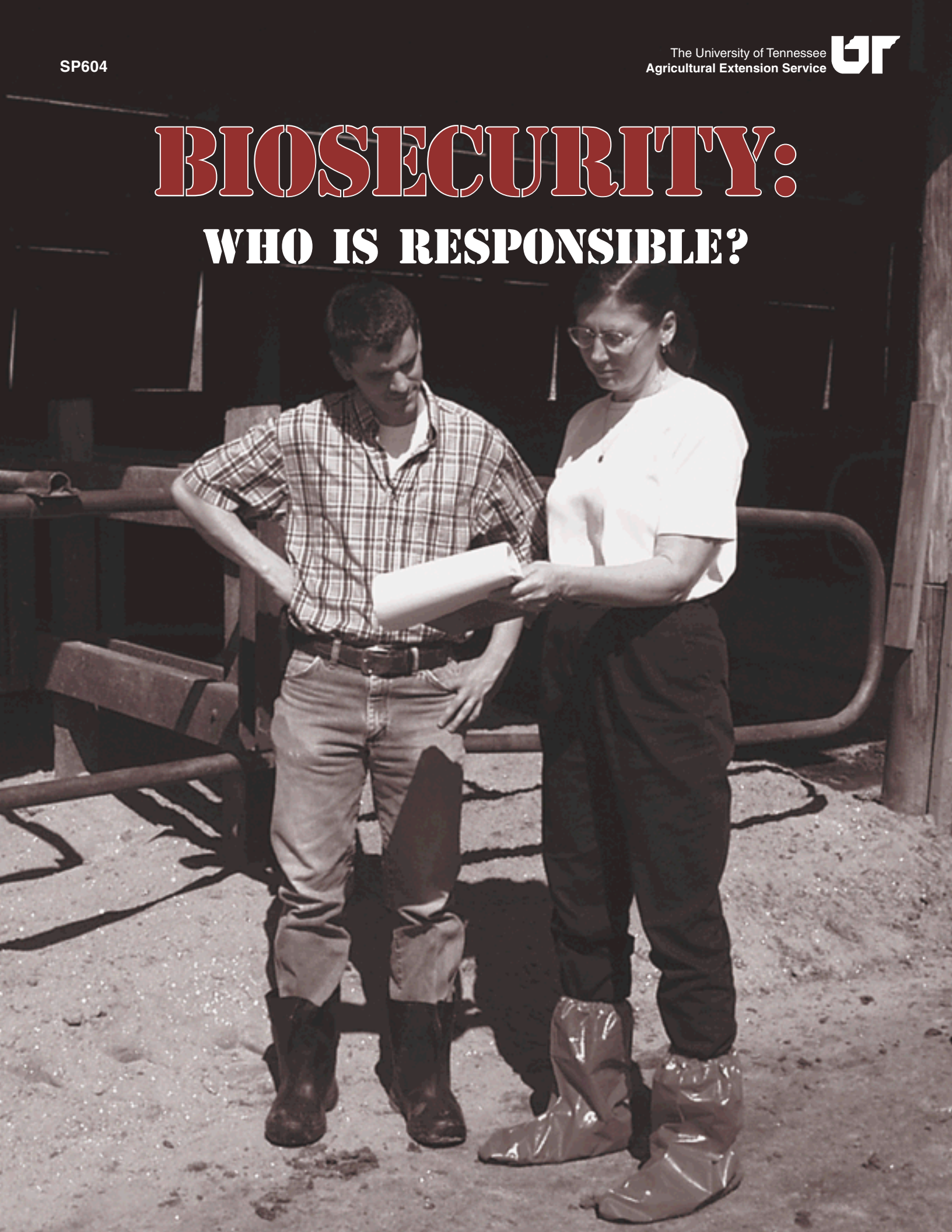

BIOSECURITY:

WHO IS RESPONSIBLE?

A 12-Step Program for Farm Consultants

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Biosecurity is not a new issue or concern for U.S. livestock operations. For years, producers have been overwhelmed with information on the importance of biosecurity. However, adoption of biosecurity programs for much of the livestock industry has been slow. Most producers employ some biosecurity practices, such as quarantining new animals, using clean needles or segregating animals by age, but they do not have a comprehensive program. Typical biosecurity plans in use today by U.S. livestock producers do not address the issues of people and traffic control.

Agricultural communities have a long tradition of being open, accessible and welcoming to visitors. They don't want to scare away visitors or give the impression their farm is infected with disease. Additionally, most operations do not want to insult their neighbors by implying other farms are infected. Other livestock producers simply do not realize the real dangers of not requiring visitors to adhere to a biosecurity protocol. For instance, in 1996 only half of U.S. dairy producers were knowledgeable of Johne's disease and only a small percentage of them practiced biosecurity to prevent this and other diseases (USDA, 1997).

All farms host a wide variety of visitors, from meter readers, carpenters, electricians, sales persons, delivery persons, nutritionists, consultants and veterinarians to government agents. (For simplicity, all will be referred to as consultants.) Most consultants must have contact on multiple farms to conduct their business. For this reason, consultants pose a significant threat to individual farms and the livestock industry as a whole. In a single day, one consultant may visit a dozen or more farms. If one of those farms harbors a significant disease, all of the other farms are at serious risk of contracting that disease.

The responsibility for protecting livestock has traditionally fallen on individual producers. Literature on biosecurity is typically directed towards livestock producers as how-to guides for implementing protocols. Consultants, in general, are not informed of the importance of biosecurity or their role in biosecurity. However, shouldn't all persons who gain their livelihoods from the livestock industry be responsible for insuring the health and safety of livestock, not just the hands that feed the animals?

So the question has been raised: Who should be responsible for biosecurity on livestock farms? The answer is simple: If you own, conduct business with or visit a livestock operation, **you** are responsible. Farms (e.g., your clients) are at risk for diseases for which you can be a vector or carrier.

Disease carriers are no longer just new stock, but anything and/or anybody that comes in contact with non-herd animals or equipment. Infected animals shed bacterial or viral particles through feces, exhaled air, milk, saliva, nasal secretions and/or urine. Most of these particles can survive in feces, bedding, the air and almost anywhere in the environment for varying lengths of time. When your boots, clothing, skin, hair and vehicle enter this 'contaminated' environment, they too become contaminated. When you then enter a new environment, it is now contaminated as well.

What are the chances that you've spread a devastating disease? The possibility of spreading diseases from one farm to another is difficult to quantify, which is why there is not much research published in this area. However, knowing the nature of diseases and the organisms that cause those diseases, one can only conclude that real potential to spread disease exists. In some cases with closed herds (no new animals coming in), contaminated visitors are the only possible way to spread some diseases.

In a single day, one consultant may visit a dozen or more farms. If one of those farms harbors a significant disease, all of the other farms are at serious risk of contracting that disease.

The answer is not as simple as avoiding farms with diseased animals. For example: Johne's disease is a chronic, infectious disease of domestic ruminants, including beef and dairy cattle, sheep and goats. The disease is caused by *Mycobacterium paratuberculosis,* which is a slow-growing bacteria that causes

thickening of the intestinal wall, thereby reducing absorptive capacity. Infected animals suffer from persistent diarrhea, progressive weight loss and eventually death. The disease progresses slowly and is untreatable. Johne's disease can have a latent period of two to five years, in which many animals could be infected but not show clinical signs (i.e., subclinical). This results in many cows being infected for every one cow showing clinical signs (Stehman).

M. paratuberculosis can survive in the environment (soil and water) for more than a year (Ott, et.al.), and it has been recovered from nematode larvae cultured from feces of Johne's-positive sheep (Whittington, et.al.). Although the main vehicle for transmission of these bacteria is direct contact with an infected animal, overwhelming evidence suggests that indirect transmission is not only possible, but probable. People and vehicles are potential transmitters of Johne's and other diseases.

Diseases in livestock not only affect the producers who own the animals, they have huge national economic implications. A national study of U.S. dairies (NAHMS Dairy '96) found that approximately 22 percent of the dairy herds in the U.S. had at least 10 percent of the herd infected with Johne's. When averaged across all herds, this disease costs the U.S. dairy industry $200 to $250 million annually in reduced productivity alone (USDA, 1997). An outbreak of Exotic Newcastle disease of poultry in Southern California in 1971 cost taxpayers $56 million during a two-year campaign to locate and destroy almost 12 million birds. This figure does not include the cost of the disruption to the poultry industry and the increased prices of poultry and poultry products to consumers (USDA, 1988).

There are a few simple steps that consultants should take to help protect their clients and the livestock industry. This list is not exhaustive. There are other practices that farm visitors can follow to help protect livestock. This is only a guide of minimum practices that should be followed.

1. Call ahead and schedule an appointment.

On some livestock operations, all visitors must make appointments. Giving the farm advance notice of a visit will allow them to prepare for the visit. A pre-visit conversation will also give you the opportunity to ask the producer which biosecurity practices you will be required to follow. Some may not have any specific requirements, and others will require you to clean your vehicle, change clothes and shower in/shower out. Addtionally, a conversation prior to your visit will allow you to explain your biosecurity practices.

2. Minimize the number of farms visited in a single day.

This will not always be possible, but visiting fewer farms in one day will decrease your exposure. If visiting multiple farms, inform each producer that you plan to visit other farms on the same day prior to your scheduled visit. Some operations prefer not to receive visitors who have been in contact with other farms within a specified time (12 - 96 hours). According to the Swine 2000 data, to prevent visitors from accidentally introducing organisms, a 24-hour 'no swine contact' period was required on 66 percent of operations with 2000 or more animals (USDA, 2003). Additionally, if visiting multiple poultry farms in one day, make every attempt to visit farms stocked by the same company. It is possible to transmit a disease from one poultry company to another. Also remember, not all diseases are species-specific.

3. Adhere to all biosecurity requests and instructions provided by the farm.

Farms that implement a biosecurity protocol do so to protect their herd or flock from potentially devastating diseases. Do not assume that all biosecurity protocols are the same and that one standard will fit every situation. Biosecurity protocols are developed for individual farms and situations. Each farm you visit may have different requirements.

4. Wear clean (laundered) clothing or disposable coveralls.

Do not wear clothing that you have worn at other farms. If visiting

Disposable coveralls are a convenient alternative when visiting multiple farms.

more than one farm, change clothing. It is helpful to designate 'clean' and 'dirty' areas of your vehicle. The clean area could be the passenger space, and the dirty area could be the trunk or truck bed. Do not allow clean clothing to come into contact with dirty items.

5. Wear clean and disinfected boots or disposable boots at all times.

When exiting your vehicle, place clean boots on your feet. Boots should be disinfected when arriving and when leaving the farm. Most disinfectant solutions are not effective in the presence of organic material (i.e., manure, bedding, etc.). Therefore, it is imperative that boots be scrubbed free of all soil and manure before spraying or dipping in a disinfectant. Simply scrubbing or hosing off boots will not suffice, because microorganisms can remain on boots even though they look clean. Since many disease-causing organisms are viral, disinfectants should contain a virucide. Numerous brands of disinfectants are available at most farm supply stores. Be sure to follow label instructions. In many situations, disposable boots may be the best solution.

Disposable boots are an inexpensive and convenient method of eliminating manure transference on footwear.

6. Avoid livestock housing areas.

If it is necessary to conduct business in a housing area, wash your hands and disinfect boots upon entering and exiting. If you need to visit multiple housing units on the same farm, visit high-health-status production facilities first and then visit other sites if necessary. For example, you should not visit a lactating cow barn and then calf facilities. Young calves may contract E. coli scours, Salmonella, Johne's, Bovine Viral Disease and a number of other diseases from contact with infected adult feces. Do not drive vehicles into any livestock-holding areas. Tires can spread diseases as easily as shoes.

8. Avoid feed-storage areas.

Do not enter feed storage barns or silos, feed troughs and bunks or water troughs. Feed contaminated with manure is the primary route of infection for most diseases. If it is necessary to take feed samples, have farm personnel take the samples.

9. Limit vehicle movement on the farm.

Park vehicles away from animal wastes and runoff. Disease-causing organisms can survive in the environment for extended periods of time (this includes on vehicles). If it is necessary to drive in pasture areas, wash your vehicle of all visible soil and manure at a high-pressure car wash before traveling to another livestock operation.

A sample of important livestock diseases in which people can serve as carriers.

Disease	Associated problems	Means of infection	Incubation period	Survival in environment
Cattle				
Bovine Viral Diarrhea (BVD)	Abortion, pneumonia, fever, diarrhea	Manure, bodily secretions	5-10 days	Up to 14 days
Mycobacterium paratuberculosis (Johne's Disease)	Chronic intestinal disorder, diarrhea, progressive wasting	Manure, milk	Years	Months to years
Salmonella spp. *poses human health risk*	Diarrhea	Manure, bodily secretions, milk	1-4 days	Months+ (survives well in manure solids, lagoons and flush water)
Cryptosporidium parvum (protozoan parasite) *human risk*	Gastrointestinal illness (infectious dose is very low)	Manure, aerosol	Immediately infective	Viable in manure 10+ days, survives chlorination of water, indefinite survival on inanimate objects *(Anderson)*
Swine				
Porcine Repro. Respiratory Syndrome (PRRS)	Reproductive failure, respiratory disease	Manure, nasal secretions, aerosol	3-27 days	Up to 11 days in water *(Mohr)*
Pseudorabies Virus (PRV); also known as Aujeszky's disease	Loss of appetite, neurological signs, respiratory signs, abortions, stillbirths, death	Manure, nasal	2-4 days	Up to 3 weeks *(Kluge et.al.)*
Poultry				
Avian Influenza	Decreased egg production, respiratory distress, depression, diarrhea, death	Aerosol	3-7 days	Days to weeks
Mycoplasma infections	Chronic respiratory disease, lesions	Aerosol, mucus	Variable	Days
Exotic New Castle Disease	Respiratory distress, neurological signs, sudden death, high mortality	Feces, bodily secretions	2 days to 2 weeks	Several weeks
Infectious laryngotracheitis (ILT)	Severe respiratory disease, coughing, gasping, death	Aerosol, feces	1-2 weeks	Weeks *(Whiteman & Bickford)*

10. Wash and disinfect all tools or instruments before and after each visit.

Clean instruments are a must. Forage particle size separators, surveying equipment, shovels or anything that comes in contact with animals, animal waste, bedding, facilities or feed has the potential to spread disease-causing organisms. For example, dairy herds where the primary hoof trimmer also trimmed cows' hooves on other operations are nearly three times more likely to have high incidence of digital dermatitis (hairy heel warts) due to lack of or improper disinfection (Wells, et.al., 1999).

11. If you have visited a country with Foot-and-Mouth Disease (FMD), disinfect all clothing and personal items upon returning and do not visit ANY livestock operation for at least five days.

FMD is extremely contagious and can be spread by contaminated clothing and boots. It also remains in human throat and nasal passages for as long as 28 hours. Updates on confirmed outbreaks throughout the world can be found on the 'Virus Group Pages' of the Institute for Animal Health (UK): www.iah.bbsrc.ac.uk/primary_index/research.htm

12. Use common sense and don't assume anything.

Most livestock disease organisms are shed in bodily secretions and excretions. Many are also aerosols. The potential for farm visitors to spread diseases from farm to farm are exponential. Don't assume that the animals on the farms you are visiting are not infected with disease just because they don't 'look sick.' Many diseases have incubation periods of days to months to years, and clinical signs may or may not be present at the

Implementing your own biosecurity practices can be cumbersome at first. However, it should become a part of every farm visitor's routine. Be conscious of your role in the livestock industry and the impact you can have on it. Producers depend on it, and consumers will appreciate the effort.

References

Anderson, B.C. 1998. Cryptosporidiosis in bovine and human health. J. Dairy Sci. 81:3036-3041.

Kluge, J.P., G.W. Beran, H.T. Hill, K.B. Platt. 1992. Pseudorabies (Aujeszky's Disease). In diseases of swine (7th Ed.). Leman et.al. (Eds). Iowa State Univ. Press, Ames.

Mohr, M.F. 1993. Porcine reproductive and respiratory syndrome: A review of an emerging swine disease. Compen. Contin. Educ. Pract. Vet. 15 (9): 1255-1261.

Ott, S.L., S.J. Wells, B.A. Wagner. 1999. Herd-level economic losses associated with Johne's disease on U.S. dairy operations. Prev. Vet. Med. 40:179-192.

Stehman, S.M. 1990. Johne's disease (paratuberculosis). In: Smith, B. (Ed.), Large Animal Internal Medicine, The CV Mosby Co., St. Louis pp.823-829.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 1988. Exotic Newcastle Disease: A deadly form of a familiar poultry disease. PA No. 1414.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 1997. Johne's disease on U.S. dairy operations. NAHMS Dairy '96, Center for Animal Health Monitoring, Report N245, 797.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 2003. Biosecurity and health management on U.S. swine operations. Swine 2000, Center for Animal Health Monitoring, Report N383.

Wells, S.J. 2000. Biosecurity on dairy operations: Hazards and risks. J. Dairy Sci. 83: 2380-2386.

Wells, S.J, L.P. Garber, B.A. Wagner. 1999. Papillomatous digital dermatitis and associated risk factors in U.S. dairy herds. Prev. Vet. Med. 38:11-24.

Whiteman, C.E., A.A. Bickford. 1989. Avian Disease Manual. 3rd Ed. Kendall/Hunt Pub. Co., Dubuque, IA.

Whittington, R.J., J.B. Loyd, L.A. Reddacliff. 2001. Recovery of Mycobacteriumavium-subsp. paratuberculosis from nematode larvae cultured from the faeces of sheep with Johne's disease. Vet. Microbio. 81:273-279.

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