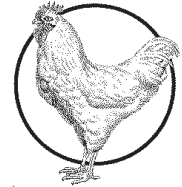




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# Internal Parasites



Internal Parasites can be classified into two basic groups, worms and protozoa. Parasitic disease differs from bacterial and viral disease in specific ways:

- Parasites have a complex lifecycle.
- Parasites are transmitted from bird to bird differently than viruses or bacteria.
- Serology (blood analysis) doesn't work for diagnosing parasites.
- Quarantine and disinfection are of little use in controlling parasites.

Modern commercial confinement systems have significantly reduced the incidence of worm infestation by limiting the bird's access to many parasites' alternate hosts. On the other hand, confinement systems and high-density stocking rates have led to an increase in the incidence of protozoan parasitic disease in these flocks.

Intestinal parasites - worms - are common in backyard and free-range flocks. Low levels of parasitism don't usually cause a problem. If the infestation becomes severe, however, worms can lead to significant losses of production, feed efficiency, and overall health.

## Worms

### **Ascarids: Large Roundworms**

Large roundworms or ascarids are the most damaging of the worms common to backyard flocks. Mild infections of ascarids often go unnoticed, but severe infestations can cause a reduction in nutrient absorption, intestinal blockage and death.

Severe infestation not only makes the birds less efficient, it also makes them more susceptible to other disease organisms. Large roundworms are about the thickness of a pencil lead and grow up to four and one-half inches long. They are easily seen with the naked eye and occasionally migrate up the hen's reproductive tract and become encased in a newly forming egg.

The life cycle of the large roundworm is direct, meaning that the parasite eggs are found in the droppings of infected birds and are passed directly to birds who consume contaminated feed, water or feces.

Signs of ascarid infestation include lethargy, weight loss and diarrhea. Large roundworms can be controlled by strict sanitation, complete cleaning of housing between groups of birds, and segregation of younger birds. Use of clean range for each group of birds will help to reduce the level of Ascarid infestation in a flock.

Piperazine, the only de-wormer currently approved for use in poultry, is effective in the control of adult large roundworms only. It isn't effective against other internal parasites of poultry. The use of any other de-wormer in poultry requires a prescription from a licensed veterinarian.

### **Cecal Worms**

The Cecal worm is a common parasite of backyard poultry flocks. As the name implies, the cecal worm inhabits the cecum of the bird. Cecal worms cause little or no damage to chicken flocks but the cecal worm can carry the organism that causes blackhead disease in turkeys.

Earthworms ingest the infected cecal worm egg from poultry litter; turkeys that consume the earthworms become infected with the blackhead organism. Turkeys can also become infected with the blackhead organism from direct oral contact with the infected cecal worms. Turkeys and chickens shouldn't be housed together and turkeys shouldn't range where chickens have ranged.

Levamisole and Ivermectin are both effective in the control of cecal worms, though both require a veterinarian's prescription for use in poultry.

### **Capillaria: Capillary or Thread Worms**

There are several species of capillaria in poultry; they affect different parts of the bird and cause a variety of symptoms. Species that occur in the crop and esophagus cause thickening and inflammation of the mucus membranes. Turkeys and game birds may suffer severe losses due to these parasites. Other species of capillaria are prevalent in the lower intestinal tract and cause inflammation, hemorrhage and erosion of the intestinal lining. Severe infestation can lead to death.

Some species of thread worms have a direct life cycle and some an indirect lifecycle. Control of threadworms that have an intermediate host can be achieved by the control of the alternate host. Capillaria are a common problem of deep litter houses; heavy infestations result in reduced growth, reduced egg production and reduced fertility. If present in large numbers thread worms can be seen during necropsy; eggs are difficult to find in bird droppings as they are very small.

Levamisole and fenbendazole are effective, though both require a vet's prescription for use in poultry.

### **Tapeworms**

Several species of tapeworms affect poultry. They range in size from very small (not visible with the naked eye) to 13 inches long. Each species of tapeworm attaches to a different section of the digestive tract using four pairs of suckers located on their heads. Most tapeworms are host-specific, with chicken tapeworms affecting only chickens.

Tapeworms require an alternate host to complete their lifecycle. Hosts include ants, beetles, houseflies, slugs, snails and termites. The system for raising the birds determines the likely alternate host, with caged birds being infected by houseflies, litter-raised birds being infected by termites and beetles, and free-ranged birds infected by snails and earthworms.

Tapeworms are made up of multiple flat sections, shed in groups of two to three on a daily basis. Each section of tapeworm contains hundreds of eggs and each tapeworm is capable of shedding millions of eggs in its lifetime.

Control of tapeworms can be achieved by controlling the alternate host. Different housing situations can make this difficult, impractical or impossible. Although there are no approved drugs to control tapeworm, Valbazen is commonly used to control tapeworm and is also effective against roundworms. A veterinarian's prescription is required.

### **Protozoa**

Protozoa are single celled organisms, found in most all habitats, and include some important parasitic pathogens of humans and domestic animals. There are seven phyla or families of protozoa, two of which are of importance to the poultry industry; these include intercellular protozoa, flagellates and amoebas. Fortunately the worst protozoan parasites aren't found in North America.

### **Coccidiosis**

By far the most common protozoan parasite of the chicken is the Eimeria family of protozoa, commonly referred to as coccidia. Nine types of coccidia affect chickens; seven affect turkeys.

Coccidia are host-specific; this means the coccidia that affect your chickens won't affect your turkeys or other livestock. Coccidia live and reproduce in the digestive tract, where they cause tissue damage. The damage to the digestive tract can reduce nutrient and fluid absorption and cause diarrhea and blood loss. Coccidiosis can increase a bird's susceptibility to other important poultry diseases, such as salmonella.

Coccidia are found everywhere there are chickens. Chicks develop immunity over time, with most severe disease occurring between 3-6 weeks of age. Signs of coccidiosis include bloody diarrhea, watery diarrhea, weight loss, lethargy, ruffled feathers and other signs of general malaise. Outbreaks range from mild to severe and may predispose your flock to other opportunistic organisms.

Medicated feeds control but don't eliminate coccidia, allowing young birds to develop resistance to the coccidia most prevalent in their environment. If exposed to a different species of coccidia, they won't have immunity and disease symptoms may result.

Coccidiosis can be controlled, but not eliminated, with good sanitation, adequate nutrition, clean water and dry litter. Chickens housed in a floor-based system are exposed to coccidia all their lives. Properly fed and managed, they will develop resistance. If they are stressed, depending on the level of infective oocysts in the environment, they may develop symptoms.

Cage-raised birds aren't exposed to the infective materials and develop no resistance. Changing their housing system can result in severe disease and losses due to a lack of resistance in conjunction with exposure.

Vaccines are currently available that give newly-hatched birds a small amount of exposure to coccidia, allowing them to develop immunity without developing disease. With proper vaccination and management, routine anti-coccidial medications are no longer absolutely necessary.

Cryptosporidiosis is a form of coccidia caused by *C. baileyi*. Cryptosporidia aren't specific to chickens and can infect other birds. *C. baileyi* is frequently spread from flock to flock on the feet of animals and people, and can be carried by wild birds.

Intestinal cryptosporidiosis is common and symptoms are usually mild. Frequently the only symptom is pale skin in the yellow-skinned breeds. Cryptosporidiosis can also spread by inhalation, resulting in respiratory infection that is more severe than the intestinal form. Birds 4-17 weeks of age are more susceptible to the respiratory form of the disease. There is no treatment. Supportive therapy and guarding against secondary opportunistic infection are the only courses of action. Once recovered, birds are immune to future infection.

### **Histomoniasis**

Histomoniasis is also known as blackhead disease, and is a serious disease of turkeys. Chickens carry and pass the parasite but are generally immune. Blackhead is most common in range-raised birds.

A chicken may eat an earthworm carrying the eggs of the cecal worm, which has been infected with the histomonad protozoa parasite. The blackhead parasite infects the cecum of the chicken and eventually the parasites are shed in the eggs of the cecal worm. Turkeys raised in close proximity to chickens or on range infected with the cecal worm eggs will pick up the parasite and develop the disease.

Histomonads won't survive long in the environment unless they are protected within the body of an earthworm or within a cecal worm egg.

There is no effective treatment for blackhead disease. Control involves controlling cecal worms to reduce the spread of the blackhead parasite. Turkeys shouldn't be housed or ranged in areas that previously contained chickens.

### **Parasite prevention and control**

A few internal parasites don't cause significant harm and may even be of value to the health of your flock. With proper attention to housing, nutrition and insect control parasite infestation can be kept to a minimum. Monitor your flock for signs of parasite infestation and identify the parasite likely to be the cause before determining the proper treatment for the most effective control. Blanket application of de-wormers is expensive and can contribute to the development of parasite resistance to approved treatments.

Note: Piperazine is the only de-wormer approved for use in Poultry. ALL extra-label use requires a prescription from a licensed veterinarian.

## De-Wormers

Active Ingredient	Brand Name	Effective Against				Dosage
		Roundworm (ascarids)	Cecal Worms	Capillaria (threadworms)	Tapeworms	
Albendazole	Valbazen	yes	yes	yes	yes	4.5 mg/lb, orally
Ivermectin	Ivomec	yes	yes	yes	no	1/4cc Standard* 6-7 drops, Bantams
Levamisole	Prohibit	yes	yes	yes	no	10 ml/gal drinking water for 1 day
Piperazine	Wazine	yes	no	no	no	follow label, repeat in 7-10 days

\*1 mm square of Ivermectin paste (large end of a flat toothpick) will de-worm a standard bird. Ivermectin is also effective against many external parasites.

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*Fact sheet by Tina Savage, UNH Cooperative Extension Agricultural Resources Educator in collaboration with  
 Dr. Michael J. Darre, Professor of Animal Science and Extension Poultry Specialist, University of Connecticut, 8/08*

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