

FEB 23 1979

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Common Internal Parasites of Swine

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Swine performance can be seriously affected by internal parasites of various kinds. Even light infestations of some internal parasites can cause unthriftiness and poor performance. In a survey of internal parasites on swine farms in Missouri, a high percentage of all farms had one or more kinds of parasites. Animals on about half of these farms had levels high enough to need treatment. Producers can reduce loss from parasites by planned prevention programs and use of improved treatment techniques.

Large Roundworms

Most hogs have roundworms. If you are in doubt, ask your veterinarian to take a sample of the hogs' droppings for a worm egg examination.

The large intestinal roundworm (*Ascaris suis*) is a thick worm, about the length and diameter of a pencil and yellow to pink in color.

The adult worms live in the small intestine where they lay eggs. The eggs are passed out with the manure and become infective in about two to three weeks. The hogs eat these infective eggs which then hatch in the intestine. The larvae and immature worms penetrate the intestinal wall and are carried to the liver by the bloodstream. After the worms grow a little in the liver, the circulating blood carries them to the lungs where they are coughed up and swallowed. The roundworms complete their life cycle by developing in the intestine where a single female worm lays thousands of eggs daily. A new generation usually develops from egg stage to egg stage in 50 to 60 days.

Damage is caused mostly by the larvae when they migrate through the various organs and tissues. They cause "white-spotted livers" which are condemned on meat inspection. They pave the way for pneumonia which may result in "thumps." Unthrifty hogs and permanently stunted pigs may result from such damage. The greatest harm is done to pigs up to four to five months old.

A number of chemicals are recommended for control of roundworms (see table), but careful management and rigid sanitary measures are also necessary. If possible, confine pigs for a few days after treatment in a pen not intended for their permanent use.

Try to keep pigs on areas free of worm eggs. Keep all hogs, other than sows, away from young pigs. Other suggested management practices to reduce roundworm and other parasite buildup include the following:

1. Scrub farrowing crates, stalls, and pens at least a week before little pigs are expected.
2. Wash the sides and udders of the sow with warm, soapy water before putting her into the clean crate or pen.
3. Haul the sow and pigs from the hog house to clean ground, not pastured the previous year, or farrow in clean, disinfected facilities on clean pasture.

4. Remove manure frequently from concrete floors, platforms, and aprons of farrowing, creep, growing, and finishing units.

Lungworms

Signs of lungworm infection are severe coughing, difficult breathing, and loss of appetite. Parasitic pneumonia may develop, especially in young pigs. These conditions result from irritation and obstruction of the air passages by the lungworms.

Like the large roundworms, swine lungworms (*Metastrongylus*) live in the pigs' lungs. They remain there to maturity, however, whereas the large roundworms do not. The lungworm varies from white to pinkish-red in color and grows to 2 inches long.

The adult worms live in air passages of the lungs where they feed on the discharges of inflamed tissue. Their eggs are coughed up and swallowed by the pig and are finally passed in the manure. Earthworms are necessary for further development of the eggs, because the eggs hatch in the earthworms which, in turn, are eaten by the pigs.

The young lungworms or larvae become infective to pigs in about three to four weeks, and a single earthworm may harbor two thousand of them. Pigs swallowing the earthworms quickly free the larvae, which penetrate the intestinal wall and eventually find their way to the lung where they complete their development and mate. Female lungworms produce eggs three to four weeks after pigs eat earthworms.

If infection is severe, parasitic pneumonia may develop, especially in young pigs. The effect of lungworm parasitism on the growth and health of pigs is hard to evaluate on the farm because it is often complicated by other disease-producing agents like bacteria, viruses, and other parasites. Lungworms have been proven to be a reservoir for swine influenza virus and are indirectly responsible for many outbreaks of influenza.

A broad-spectrum anthelmintic that controls lungworms, large roundworms, and nodular worms in pigs is available to swine producers. Tramisol soluble pig wormer has been cleared for use as a single treatment dewormer. Strict sanitation and preventing contact between young pigs and lungworm-infected earthworms also will prevent the buildup of lungworms. Once a pasture or lot has had many infected earthworms on it, it may remain contaminated for years. Infected pigs should be removed from the lots on which they picked up the worms and placed in a dry, clean pen with a concrete floor or slotted floor, or they should be placed on well-drained, temporary pasture that has not been used for pigs several years and that is free of trash, manure, litter, and excess humus.

INTERNAL PARASITE TREATMENT SCHEDULE

Pest or Parasite	Chemical	Recommendations	Remarks
Large round worm and nodular worm	Hygromycin B	12 g./Ton of feed	Feed as directed to sows as preventative.
	or		
	Thiabendazole	.005-.1% in feed	Follow specific feeding directions.
	or		
	Dichlorvos	Mix in feed	Treat sow 7-10 days prior to farrowing. Pigs 4-5 wks. of age.
Lungworm	Piperazine	Mix in feed or water	Treat sows 7-10 days prior to farrowing. Treat pigs 6 wks. of age or older.
	or		
	Tramisole	8 mg./2.2 lbs. of body weight administered in water	Treat pigs 1-2 wks. after weaning and repeat again in 30 days if necessary.
	Tramisol	Same as above	Raise pigs in confinement. Avoid ingestion with earthworms.
Strongyloides	Thiabendazole	.05-.1% in feed	See veterinarian.

Nodular Worms

Adult nodular worms are slender, whitish, or grayish-brown worms, from 1/3 to 1/2 inch long. Female worms discharge eggs into the lumen (the passage within a tubular organ) of the intestine. Eggs reach the outside with the droppings, and under favorable conditions they hatch in a day or so. The newly hatched larvae undergo two molts after which they are capable of infecting susceptible pigs which might happen to swallow them with contaminated feed or water.

Upon being swallowed, the larvae penetrate the wall of the large intestine. The wall becomes peppered with nodules, each containing a young developing worm. They eventually migrate from the nodule to the lumen of the intestine.

Nodular worm infestation contributes to unthriftiness, weakness, constipation or diarrhea, and other symptoms of parasitism. Swine infested with nodular worms are also usually infested with other parasites. Prevention measures used to control roundworms will also help reduce nodular worm problems.

Intestinal Threadworm (Strongyloides ransomi)

There is still some question as to the economic importance of Strongyloides infestation in Missouri swine herds. In a Missouri parasite study, Strongyloides ransomi infestation was found in five of six geographic areas surveyed.

The adult worms live in the small intestine. They are fine, delicate, and whitish in appearance, about 1/6 inch long and 1/30 inch wide. Eggs produced by the worms are eliminated with droppings. They hatch within a few hours under favorable conditions and develop to a stage infective to swine.

Pigs become infected from ingesting the worms and also as a result of the penetration of the larvae through their skin. There is some evidence that newborn pigs may be infected through the milk of the sow.

Threadworms are most severe on baby pigs. Those

heavily infested may suffer from diarrhea, loss of appetite, and death.

Strict sanitation is important where this parasite is a problem. Thiabendazole has been used successfully as a treatment in recent trials.

Kidney Worms (Stephanurus dentatus)

Until recently scientists thought Missouri winters were too severe for survival of kidney worms outside the host. However, several sows with severe kidney worm damage were slaughtered from south-central and southern Missouri. Some packer-buyers in some south Missouri areas stopped buying sows or greatly reduced the selling price for this reason.

Adult kidney worms are found in the kidneys, ureters, and surrounding tissues. The eggs are passed in the urine, and infective larvae develop shortly. Hogs become infected by eating the larvae, or larvae may enter the body through skin abrasions. The kidney worm larvae migrate to the liver where they do extensive damage. The worms eventually settle in the kidneys.

Affected swine may lose weight. However, the principal economic loss results from condemnation of affected organs and body parts at slaughter.

A diagnosis may be made by detecting eggs in the urine but is usually made at time of slaughter or post-mortem examination.

Control kidney worms by keeping only first litter gilts and marketing them when the pigs are weaned. The kidney worm has a long life cycle and hogs less than six months of age seldom if ever pass eggs. Usually hogs are 10 months of age or older before kidney worms are old enough to lay eggs. Once the life cycle is broken by using gilts and young boars, a closed herd is maintained.

Tramisol has not been approved for use as a treatment for kidney worms; however, it is thought to be effective and has been approved for treatment of other swine internal parasites.