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Worm eggs: Cost you money

E.F. Frolik

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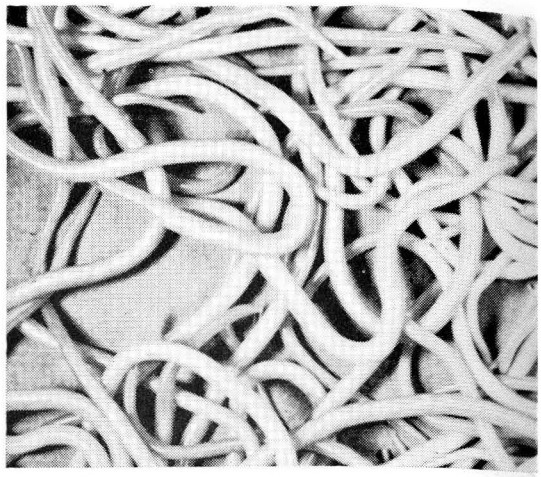
worm eggs

COST YOU MONEY

Controlling the Large Roundworm of Swine

EXTENSION SERVICE
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE
AND U. S. DEPARTMENT OF AGRICULTURE
COOPERATING
E. F. FROLIK, DEAN E. W. JANIKE, DIRECTOR



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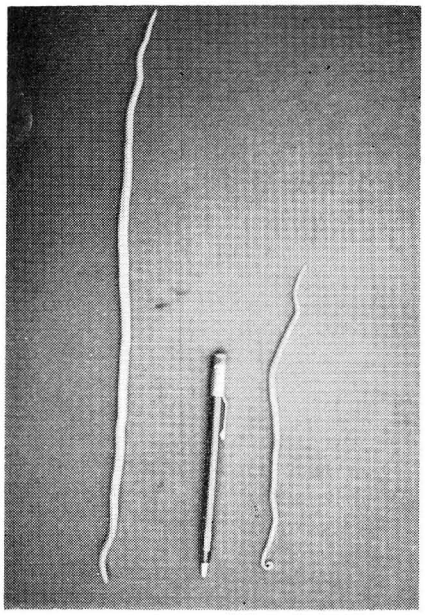

Fig. 2. Male (right) is identified by a sharply curled tail and small size. The female is filled with reproductive organs and can lay up to one million eggs each day.

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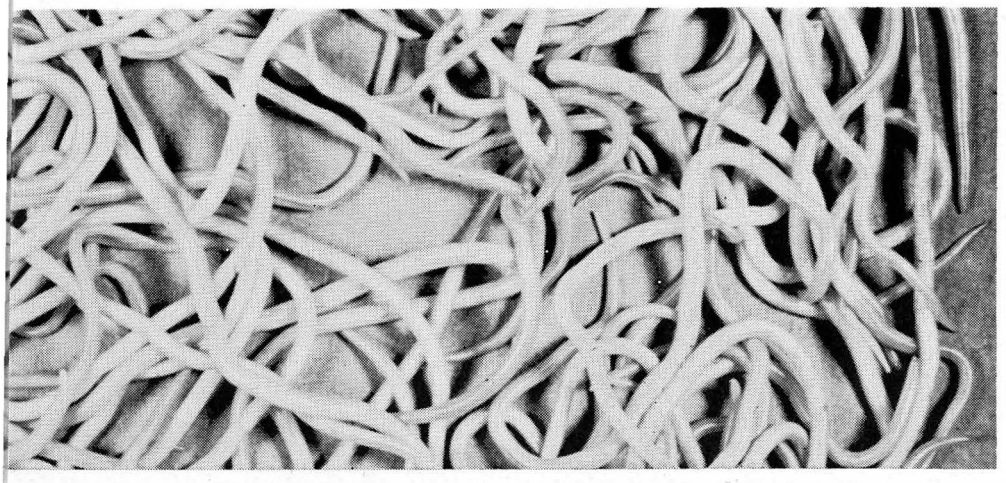


Fig. 1. Adult roundworms taken from the gut of a pig. These worms are pink and resemble large earthworms.

Large Roundworm in Swine

George W. Kelley and
E. Crosby Howe[1]

The large roundworm of swine, *Ascaris suum,* (Figs. 1 and 2) is the pig's most widespread worm parasite. You can find this worm in almost every herd in Nebraska, and it is not unusual to find several hundred worms per pig. Control this parasite to increase profits of your swine program.

1,000,000 Eggs Daily

Swine roundworms can be found in almost every herd because the female worm lays so many eggs. Each female lays more than a million eggs a day (Fig. 3). This is important when you consider that one pig harboring 10 female worms and kept in a 10 x 10 foot pen will spread 100,000 eggs per square foot of pen space each day. Even a lightly infected pig seeds so many eggs that contamination of feed and water is bound to take place.

To prevent worms keep your pigs from eating these eggs. Each egg is about the diameter of a human hair and is almost invisible to the naked eye. Each egg carries a tiny worm surrounded by a shell tough enough to withstand most of the disinfectants used to sterilize equipment. In addition, the roundworm eggs can live for many years. Because the eggs are so numerous and tough there will probably always be some around to infect your pigs. Keep the number as low as possible.

[1] GEORGE W. KELLEY is Associate Professor of Veterinary Science and Associate Animal Parasitologist; E. CROSBY HOWE is Assistant Professor of Veterinary Science (Agricultural Extension).

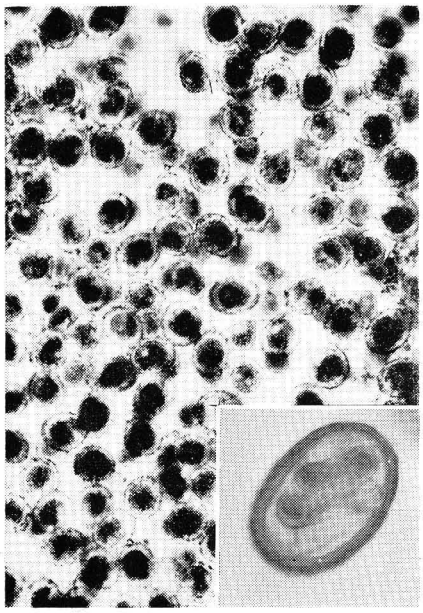


Fig. 3. Eggs of the large roundworm are about the same diameter as a hair and are resistant to disinfectants. Insert: Egg containing worm.

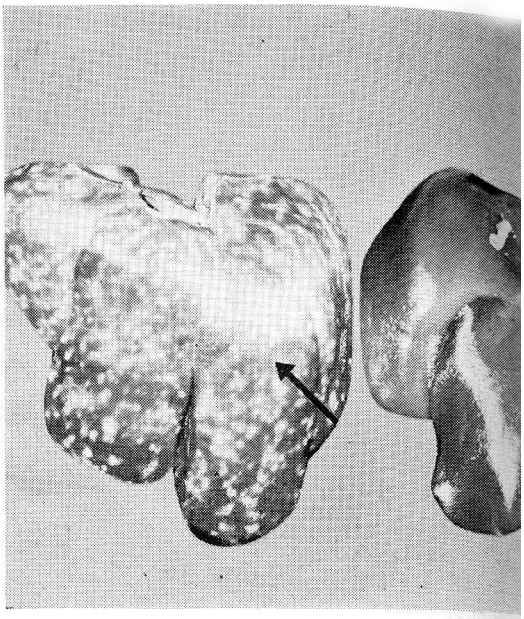


Fig. 4. Liver damaged when worms passed throu within the pig. Healthy liver is shown o

Damaging Trip

Eggs are eaten with contaminated food and water. They hatch in the small intestine, penetrate the gut wall and are carried by the blood to the liver of the pig.

The worms burrow through the liver into the blood vessels leading to the heart and are pumped into the lungs.

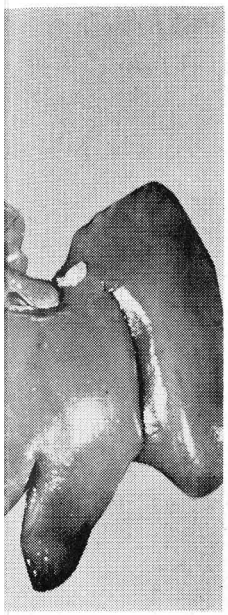
The microscopic worms puncture the air sacs of the lungs and work their way through the air tubes to the windpipe. Coughing carries the worms into the throat. There they are swallowed and pass into the intestine—this time to feed and grow into egg-laying adults.

It takes about four days for the majority of the worms to reach the liver and about nine days to reach the lungs.

Almost all of the worms are back in the small intestine 15 days after the eggs are eaten. The newly hatched worm grows to an egg-laying adult in 60 days.

Both young and adult worms cause damage. Young worms destroy the liver tissue, causing abscesses and scars (Fig 4). They rupture lung blood vessels, causing bleeding, and stop up the air passages. Labored breathing, thumping and pneumonia result when the worms break into the lungs (Fig. 5).

Adults in the intestine rob the pig of food, block the gut and excrete substances which prevent digestion. They may crawl into the



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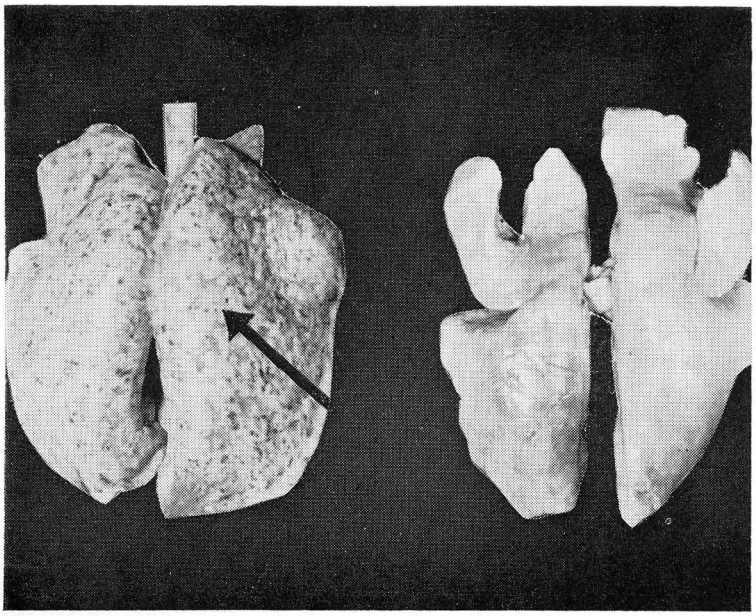


Fig. 5. Worms cause bleeding (arrow) of lungs when they burst into the air sacs. Normal lung on right.

bile duct, stopping it up (Fig. 6). Worms in the bile duct cause spread of bile into the flesh. Bile colored pork is not edible and such carcasses are condemned and destroyed.

Common respiratory diseases are much more severe when worms are present. Underdahl and Kelley[2] (University of Nebraska) found that virus pneumonia is 10 times more severe in pigs with worms than in pigs without worms (Fig. 7).

To cut losses, prevent migrating worms by eliminating the egg-laying female. Regular treatment kills the females and stops the spread of eggs.

[2] Journal American Veterinary Medical Association, 1957.

Worm Remedies

Good worm remedies are (1) easy to give, (2) effective against both young and old parasites, (3) nonpoisonous to the pig, and (4) cheap.

The ideal way to give wormers is to mix them into the feed or water. Drugs must have no undesirable taste if they are to be given in the feed.

Young worms are harder to kill with drugs than are older worms. It is important to kill the young worms; otherwise, they mature and lay eggs between treatment periods.

Drugs that kill worms are almost all somewhat poisonous to the pig. Good drugs are more poisonous to the worms than to the pig. Most new wormers can be given safely if reasonable care is used.

Cost of treatment may be paid for by additional production from present animals and by increased production from future pigs on the premises. But you must consider carefully the unit cost of the treatment in your choice of remedies.

Modern Worm Remedies

Piperazine is the active ingredient in most hog wormers. It is given in drinking water or feed. Allow no other feed or water until the remedy is consumed—usually four to six hours. Piperazine knocks out the worms so that they are dislodged and swept out. It gets most of the younger worms as well as the adults.

Piperazine is nearly non-poisonous and if directions are followed you will have no trouble. It can be given safely to pregnant sows up to one month before farrowing.

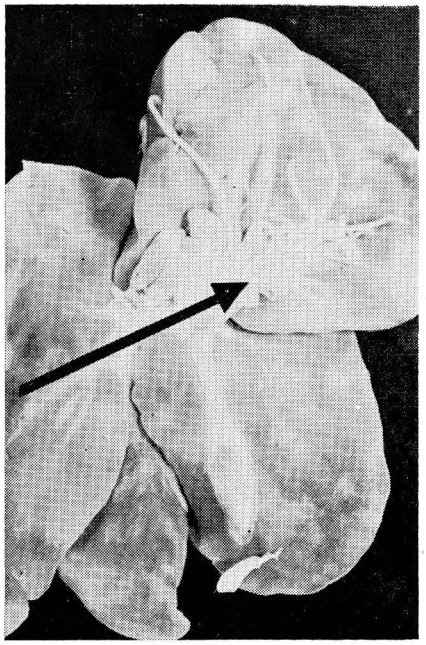


Fig. 6. Adult worms often crawl into the gall bladder tube (arrow) obstructing bile flow and causing jaundice in the pig.

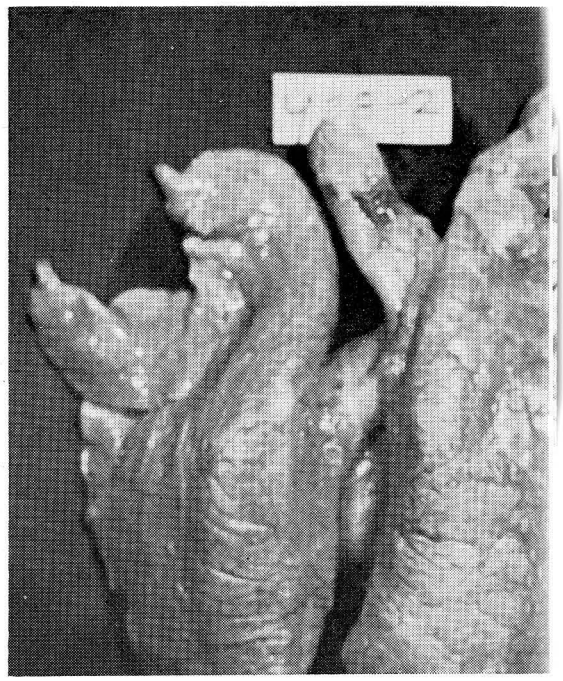
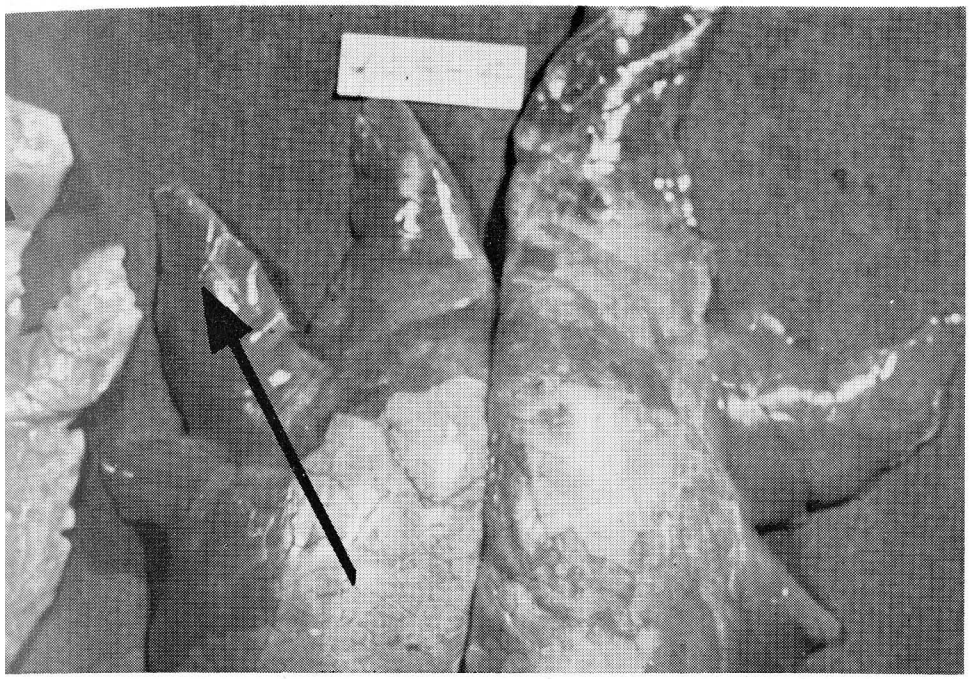


Fig. 7. The migrating worms increase severity of respiratory infections. The lungs at left had only

It costs about 3 cents to worm a 50-pound pig with piperazine and about 9 cents for a 150-pound pig.[3]

All pigs may not eat enough of the drug to dislodge their worms because the remedy is present too short a time. Pigs will usually consume the medication in 4-6 hours. Some animals may not have taken their share during this time. If any worms are left in the gut, eggs are still being spread. Remedies which are before the pigs for a longer

[3] Based on costs quoted by Lincoln, Nebraska dealers, 1961.



virus pneumonia (VPP) while the two lungs on the right had virus pneumonia when worms were moving through the lungs. Darkened areas (arrows) are regions of pneumonia.

time may do a more complete job.

Hygromycin B[4] is an antibiotic wormer fed continuously in a complete ration. It is added to milled feed by the feed manufacturer. It must be fed for three weeks to remove all worms. There will be no further worms as long as the remedy is in the ration.

Hygromycin B causes deafness in a few older pigs when fed through the entire life cycle. Feed only to growing pigs (30 to 125 pounds) to prevent this.

Feeding Hygromycin B from 30 to 125 pounds will cost about 22 cents per pig. The advantage is continuous freedom from egg-laying worms and no schedule to remember.

Six thousand units of Hygromycin B per pound of complete ration is required for complete worming. Buying hygromycin-fortified supplements to be added to corn or to be fed free choice is hazardous because there is a possibility that not enough of the drug will be consumed to remove the worms.

Cadmium oxide (0.015 percent of feed) given for three days is the active portion of some wormers. It removes worms slowly.

Cadmium oxide is nearly nonpoisonous for hogs but is poisonous for humans. It must not be used in hogs just before butchering. The

[4] Hygromycin B is a fermentation product of *Streptomyces hygroscopicus,* a mold which grows in wooded areas.

drug deposits in flesh; animals must be held for 30 days following treatment before slaughtering to allow removal of the cadmium.

It costs about 7 cents to treat a 50-pound pig with cadmium and about 15 cents for a 150-pound pig.

Sodium fluoride is still one of the best wormers. It kills worms well but may poison the pigs. Mix one pound sodium fluoride into 99 pounds of dry feed. Pigs don't like the taste of sodium fluoride so mix only about two thirds as much feed as is usually given for a single feeding. Sodium fluoride treated feed is poisonous for other stock. Destroy any unused treated feed. Do not give as a wet mash or poisoning will result.

Sodium fluoride is the cheapest wormer, costing about ½ cent to treat a 50-pound pig. Care must be used to see that it is administered safely.

A Control Program

Stop spreading of worm eggs. Kill the female worms to stop egg production. Sixty days are required for a worm to reach egg-laying size. Treat every 60 days to prevent development of egg-laying females. No eggs—no worms in the new pig crop.

Clean out the eggs already on the place. Scrub the sow before farrowing. Farrow in a cleaned house. Move the sow and pigs to a cleaned slab or newly tilled pasture. Keep the baby pig away from worm eggs.

Controlling the Large Roundworm In Swine

Each female worm lays more than 1 million eggs daily.

This egg source must be eliminated to prevent worms in baby pigs.

The merits and application of commonly used wormers for removing this egg source are presented in this circular.

ACKNOWLEDGMENT

Mr. James Adams, Superintendent, North Platte Experiment Station, and the members of the University of Nebraska Department of Animal Husbandry have been most generous in providing swine for the evaluation of commercial worm remedies.