



# Parasite Control in Youth Market Hog Projects

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS101E

No “one size fits all” recommendations can be made regarding deworming youth market hog project animals. Variables include deworming and other care given before purchase of the project animal, quality of the project animal’s feeding program, sanitation, length of the project, environment, stress, and genetic factors that influence performance in spite of parasitism.

## Sanitation is Essential

Sanitation plays a big role in determining the types and numbers of parasites that affect pigs. Prompt removal of feces from the pig’s environment will lessen the chances of a pig re-infesting itself with worms. Keeping pigs on solid surfaces such as concrete with bedded areas will allow frequent hosing and disinfection of soiled areas. Although letting pigs roam and root is good for their feet, legs, and general well-being, this management practice exposes them to some serious additional parasites.

## Intestinal Parasite Life Cycle Example

Review of the swine roundworm (*Ascaris suum*) life cycle will help youth producers understand the crucial role that environment can play in an intestinal parasite’s life cycle. As shown in Figure 1, adult roundworms in a pig’s intestine produce eggs, which are released in the pig’s feces (A). These eggs mature a little in the environment (B, C); sometimes they are ingested by earthworms (D). Pigs become infested and re-infested when they ingest dirty feed, water, manure, soil, or earthworms that contain these eggs (E). After being swallowed, immature roundworms move from the intestines (F) to the liver (G) and lungs (H), causing damage all along the way. In the final steps of the roundworm life cycle, the pig coughs up the immature parasite from its lungs then swallows it (I), so the parasite finally matures into an adult within the pig’s intestines. The cycle begins again when the parasite produces eggs.

## To Deworm or Not to Deworm?

If a project pig was dewormed early in life and is fed an excellent diet and kept in sanitary conditions, *perhaps* it may not require more deworming before going to market.

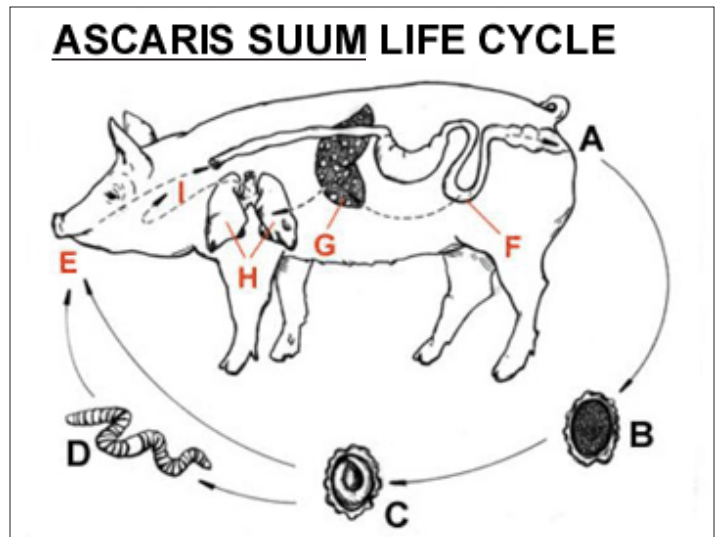


Figure 1. Swine roundworm life cycle. (Diagram adapted from University of Pennsylvania School of Veterinary Medicine Laboratory of Parasitology, used with permission.)

However, this can only be determined through a fecal analysis for parasites. This procedure can be performed at a veterinary clinic or by producers who have learned how to do the procedure. Many project pigs are owned and managed for about three months, so perhaps just one deworming will be needed; it will depend on the animal’s exposure to parasites, appearance, general health, and performance (rate of gain). Fecal analysis can reveal the types and severity of parasite infestation, which, in turn, will influence the decision about which, if any, dewormer should be used.

## External Parasites

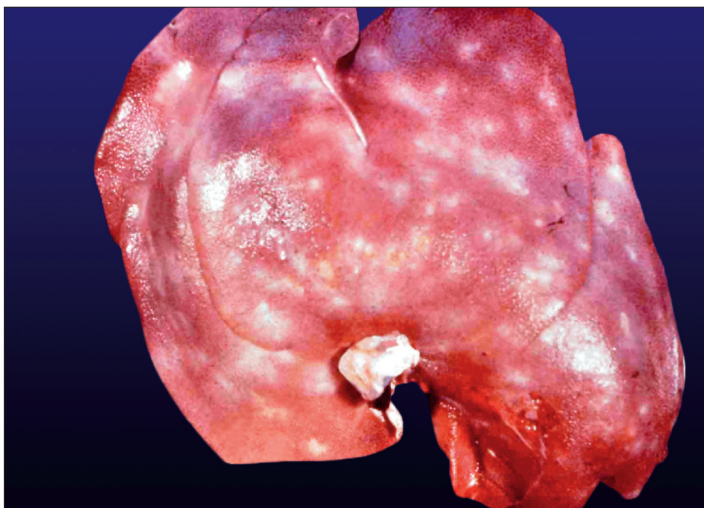
External parasites of swine include lice, ticks, mites, and flies. These parasites can cause pigs to scratch and damage their skin. They also induce stress, reduce feed intake, and slow weight gain.

Ivermectin-type products will kill ticks, mites and some types of lice; other lice must be killed with chemicals applied to the pig’s skin—check with your veterinarian for more information.

Good sanitation will help minimize fly populations, but if your animal is still harassed by flies, you may need to use predator wasps or chemicals approved for use in livestock environments. Be sure to follow all label instructions carefully and use personal protection to prevent human exposure.

## Internal Parasites

Internal parasites are a constant challenge to keeping pigs healthy and growing well. They are of special concern in young and pastured animals. Different internal parasites can live in the intestinal, respiratory, muscular and urinary systems, so the signs of illness will relate to the affected tissues. Signs of internal parasitism can include diarrhea, constipation, colic, poor appetite, hiccoughs (“thumps”), poor growth, anemia, weakness, difficulty breathing and even death. In market animals, parasites are a quality assurance issue as well, reducing rate of gain and causing valuable products to be discarded (Figure 2).



**Figure 2. Pig liver showing scarring (“milk spots”) from roundworm migration. This liver is unfit for human consumption. (Photo from University of Pennsylvania School of Veterinary Medicine Laboratory of Parasitology, used with permission.)**

## Treatment

Fortunately, most swine dewormers work against multiple parasites and are considered safe and easy to administer. Most are fairly cost-effective as well. Check with other 4-H youth who have market hog projects in your area and share the cost of an effective product because most products will expire before a small-scale producer can use up an entire container. See Table 1 for a summary of medications appropriate for use against the most common internal parasites of swine. However, be aware that medication availability can change at any time.

Worm resistance to specific dewormers may develop on individual farms due to underdosing, overuse or other management errors. For example, even though piperazine is labeled as effective against the nodular worm, on many farms it is completely ineffective against this parasite.

## Aspects of a Veterinarian-Client-Patient Relationship (VCPR)

- A veterinarian has assumed the responsibility for making medical judgments regarding the health of an animal and the need for medical treatment, and the animal’s owner or caretaker (client) has agreed to follow the veterinarian’s instructions.
- The veterinarian knows enough about the patient to make a preliminary diagnosis of the animal’s condition.
- The licensed practicing veterinarian is available in case of problems or lack of response to treatment.
- Such a relationship exists only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal by way of examination and/or visits to the animal’s premise.
- The veterinarian maintains records on each patient.

*Adapted from information at [www.avma.org](http://www.avma.org).*

Read medication labels to check for claims about effectiveness against specific parasites and follow all label instructions carefully, being sure to withhold meat from human consumption for the required period of time. Several swine parasites can be transmitted to humans, so be sure to wash your hands well after handling pigs and other livestock. Always cook fresh ground pork to an internal temperature of 160°F and fresh pork cuts to 145°F.

## Valid Veterinarian-Client-Patient Relationship is Essential

As long as you use over-the-counter swine deworming products exactly as instructed on the label and follow all meat withholding guidelines, you are following all U.S. Food and Drug Administration (FDA) requirements and are staying within federal law. However, if you use a product not approved for use in pigs or if you use a product approved for use in pigs in a manner other than exactly as instructed on the product label, you are violating federal law and are subject to fines and even prosecution. If your veterinarian determines it is necessary for your pig’s health that you give your animal a non-approved product or a different dose of an approved product, it is legal as long as you have a valid veterinarian-client-patient relationship and you follow the veterinarian’s recommendations exactly. Your veterinarian will tell you how long to withhold meat from market; you must record and keep all this information (injection site, dose, date, medication name and lot number, animal identification, etc.) to document this legal extra-label use of a medication.

**Table 1. Summary of common intestinal parasites of swine and approved medications.<sup>1</sup>**

Parasite	Common name	Location	Approved medications	Notes
<i>Trichuris suis</i>	Whipworm	Large intestine	Fenbendazole, Dichlorvos, Hygromycin B	May cause bloody diarrhea and stunting. Eggs very hardy in environment.
<i>Oesophagostomum dentatum</i>	Nodular worm	Large intestine	Pyrantel, Piperazine, Levamisole, Fenbendazole, Ivermectin, Doramectin, Dichlorvos, Hygromycin B	Eggs very hardy in environment.
<i>Strongyloides ransomi</i>	Threadworm	Small intestine	Levamisole, Ivermectin, Doramectin, Thiabendazole	Big concern in young piglets. Larvae can be ingested in feed, water, or sow's milk, and can penetrate skin. Sanitation important.
<i>Metastrongylus</i> spp.	Lungworm	Lung	Levamisole, Fenbendazole, Ivermectin, Doramectin	Eggs coughed up, swallowed, and passed in manure. Earthworms are required part of life cycle, so outdoor pigs are at risk.
<i>Stephanurus dentatus</i>	Kidney worm	Kidney	Fenbendazole, Doramectin, Ivermectin, Levamisole	Lives in and around kidney; damages liver and muscle too. Larvae are in environment and can contaminate feed, penetrate skin, and be consumed in infected earthworms.
<i>Ascaris suum</i>	Ascarid or large roundworm	Small intestine	Ivermectin, Fenbendazole, Levamisole, Pyrantel, Dichlorvos, Piperazine, Thiabendazole, Hygromycin B, Doramectin	Common in young pigs. Eggs very hardy in environment. Larvae migrate through liver and lungs.
<i>Hyoststrongylus rubidus</i>	Red stomach worm	Stomach	Fenbendazole, Ivermectin, Doramectin	Cause stomach inflammation and anemia. Good sanitation stops re-infestations.
<i>Ascarops strongylina</i>	Thick stomach worm	Stomach	Dichlorvos, Ivermectin	Life cycle involves beetles, which pig must consume to become contaminated. Good sanitation prevents re-infestation.
<i>Macracanthorhynchus hirudinaceus</i>	Giant thorny-headed or spiny-headed worm	Small intestine	No approved medications, although some are effective. Get approval from veterinarian for use.	Life cycle involves beetles, which pig must consume to become contaminated. Good sanitation prevents re-infestation.
<i>Trichinella spiralis</i> <sup>2</sup>	Trichinosis worm	Small intestine and muscles	No treatment necessary in pigs.	Humans can contract disease by eating undercooked meat. Prevention: boil food wastes fed to pigs for 30 minutes.
<i>Taenia solium</i> <sup>2</sup>	Tapeworm	Muscles	No treatment necessary in pigs.	Prevent infecting humans by properly cooking pork and preventing swine contact with human waste.
<i>Eimeria</i> and <i>Isospora</i> spp.	Coccidia	Small intestine	No approved medications.	Eggs hardy in environment. Control through good sanitation and waste management.

<sup>1</sup> Note: Some medications come in more than one form (for example, feed pre-mix and injectable), and not all forms of a medication may be effective against the same parasites. Confirm by reading the label before treatment. Some forms are available over-the-counter and others by veterinary prescription.

<sup>2</sup> Transmissible to humans.

## Conclusions

Otherwise-healthy market hogs kept in environments with excellent sanitation may need only minimal deworming during the market project period. Some immunity to parasites develops as pigs mature, so most parasite concerns are focused on young pigs. Increase your market hog's resistance to parasites by maintaining a clean environment, providing a balanced diet, minimizing stress, and housing pigs together according to age. Parasite control should not rely only on dewormers; overuse of dewormers has caused parasite resistance to develop in other livestock species and we do not want to face this situation in swine as well.

## Disclaimer

The information herein is supplied for educational or reference purposes only, and with the understanding that no discrimination is intended. Listing of commercial products implies no endorsement by WSU Extension. Criticism of products or equipment not listed is neither implied nor intended. Changes in medication availability may invalidate the information in this publication.

## Further Reading

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When medicating animals, you must use over-the-counter medications and products exactly as instructed on the label and follow all instructions on how long to withhold meat and milk produced from treated animals for human consumption after treatment. If your veterinarian determines it is necessary for your animal's health that you give a non-approved product or a different dose of an approved product, it is legal as long as you follow specific requirements from the FDA, including having a valid veterinarian-client-patient relationship, following the veterinarian's recommendations exactly and keeping detailed and accurate records of the animal's identity, medication used as well as its lot number, dose administered, administration route, person who administered the dose, date and meat and milk withholding times; keep such records for at least three years. Your veterinarian will tell you how long to withhold meat and milk produced from the treated animal after medication is administered.

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