pork industry handbook

AGRICULTURAL EXTENSION SERVICE • UNIVERSITY OF MINNESOTA • ST. PAUL, MINNESOTA
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External Parasite Control

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External parasitism is a continuing problem for pork producers. Estimates of annual losses to lice and mange infestations range from $10 million to $50 million. Lice and mange mites can also mechanically transmit diseases such as swine pox and eperythrozoonosis. The major problems are caused by hog lice—*Haemotopinus suis*—and mange mites—*Sarcoptes scabiei* and *Demodex phylloides*.

Life Cycle of Hog Lice

Hog lice (Figs. 1 and 2) are blood-sucking parasites that feed exclusively on swine. They are large (1/4 in. long) pests that cling to the hair of the neck, behind the ears and in the folds of the skin. They can survive for 2-3 days off the pig in warm bedding, but they will not generally live on other species. The life cycle of lice takes about 25-30 days to complete from adult-egg-adult. The adult life span is about 35 days. An adult female will lay 3-4 eggs daily for approximately 25 days. These eggs are attached to the hair shaft and hatch as nymphs (immature forms) in 12-20 days. Nymphs are similar in structure but smaller than the adult. The nymphs will go through three maturation stages to adulthood. During development, lice may feed in clumps, generally on the more tender areas of the skin. Lice infestations start around the ear and expand to the lower body and then to soft-skinned abdominal areas. All stages of the life cycle occur on the skin surface. The pest does not burrow into the skin.

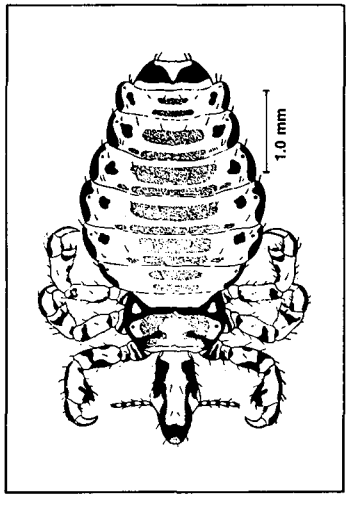

Figure 1, left. The hog louse is a bluish-black pest, approximately 1/4 in. long. It is readily observed on the necks of infested pigs. (From Whitehead, 1942. Used by permission from Diseases of Swine, 4th ed., ed. by Howard W. Dunne and Allen D. Leman 1975 by the Iowa State University Press, Ames, Iowa 50010).

Figure 2, right. Lice may feed in clumps, generally on the more tender areas of the skin.

Symptoms

Mild lice infestations may cause no clinical problems. In more extensive infestations, the pests can be seen as dark bluish-black discolorations on the skin. The continuous sucking of blood and lymph causes irritation to the skin, leading to some itching. Damage from lice is primarily irritation, making the hogs restless and decreasing feed intake and growth rate in growing-finishing pigs. In addition, anemia may occur in young pigs because of the blood loss. Lice are also capable of mechanically carrying swine pox virus, *Eperythrozoon suis* and other diseases to susceptible pigs.

Life Cycle of Mange Mites

Two types of mange mites affect swine. *Sarcoptes scabiei* var. *suis* are the most common mites found on swine. *S. scabiei* burrow into the upper two-thirds of the dermis. Initially, an infestation generally begins on the inner side of the ear and spreads over the head, along the neck and then across the body. The life cycle takes as little as 8-17 days to complete. New females, as they mature, mate close to the skin surface and then begin new tunnels for their young (Figs. 3 and 4). This is the only external exposure during the life cycle. The adult female lays 1-3 eggs daily for about 14 days. In approximately 3-5 days these eggs hatch in tunnels, maturing to adults in 5 days. The mature female dies approximately 30 days after reaching maturity.

Infestations by *Demodex phylloides* are uncommon in swine. These mites live in the hair follicles and produce a pimple-like lesion. The complete life cycle is not known, but the mites require about 3 weeks to develop through 3 larval stages to the adult. Adults will live for 1-2 months. Initially, an infestation begins around the nose and eyelids, then moves to the abdomen and inner thigh areas. No serious pruritus (itching) or other clinical problem is involved with this parasite. Occasionally, the pimples become infected and an abscess develops.

Transmission

Mange mites and hog lice infest only swine. The pests are not carried on other animals, so pig-to-pig contact is the major means of transmission. Hog lice and sarcoptic mites can live in warm bedding for several days or longer under ideal conditions before attaching to a new host. Occasionally, this will result in uninfested animals being infected without direct animal contact. However, primary transmission is by direct contact with infested pigs. Demodectic mites are very susceptible to drying and low temperatures and will live only a day or two away from the host.

Treatment

Successful treatment of lice and mange is a difficult assignment because it requires a complete break in the parasite's life cycle. Because of the increased susceptibility of baby pigs to lice and mange and the higher toxicity of many chemicals to pigs under weaning age, the sow becomes a focal point for pest control measures.

Sows should be routinely sprayed for mange control 45 days prior to farrowing. An additional spraying at 30-35 days pre-farrowing may be needed for satisfactory control. Use of lindane immediately before farrowing may cause baby pig problems. Small residues of lindane kill suckling pigs. Sows treated within a week of farrowing should have the udder washed prior to farrowing. Mange mites, because of their habit of burrowing deep into the skin and the tissue debris which results, are protected from many surface-applied products. High-pressure spraying (100-250 psi) is required, particularly around the head and neck, to force insecticide into the tunnels and to cover the animal completely with 2-4 qt. of finished spray. A non-foaming detergent (0.25 lb. per 25 gal. spray) may be added to the spray to help maintain coverage. Because of the better coverage and penetration of approved insecticides—malathion and lindane—spray applications currently are most successful in mange control. Eradication of sarcoptic mites is extremely difficult under field conditions; however, routine spraying or dipping will keep the pest in check.

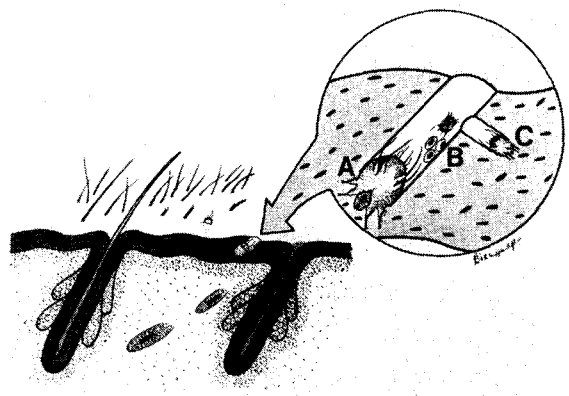

Figure 3. Drawing of the life cycle for the sarcoptic mite. The life cycle is completed in the skin. The adult (A) lays eggs (B) which develop into immature nymph stages (C).

Figure 4. Close-up view of Sarcoptes-infested outer ear showing thickened skin with scab formation.

A successful sow control program should be followed by a maintenance program for the growing-finishing pig. Animals about 8 weeks of age should be sprayed or dipped with an approved insecticide. A follow-up treatment in 2 weeks is recommended for better control. Additional applications can be made as needed to market weight provided withdrawal restrictions are followed.

If the sow pest control program has not been followed, mange infestation in suckling pigs can be reduced by applying malathion dust to the pigs. When they are more than 8 weeks of age, the control program listed above must be followed.

Successful lice control can be accomplished with all the products labeled for mange control. Additionally, CoRal®, Clodrin®, Ciovap®, and Rabon® sprays; Tiguvon® pour-on; and Co-Ral®, malathion and Rabon® dusts have been used successfully. Use of Rabon®, malathion or Co-Ral® dust on bedding in conjunction with spray application may make the treatment more effective. Malathion dusts can be used directly on the suckling pig for lice control. However, these

treatments of the suckling pig are not routinely needed if a successful gestating-sow pest control program is carried out. For lice control in lactating swine, Tiguvon® 3% pour-on can be used without adversely affecting the suckling pig. No known treatment for demodectic mites is available. Infected animals should be removed from the herd to minimize further transmission.

Weather Influences

During severely cold weather, malathion, CoRal® or Rabon® dust as bedding treatments, or malathion or Rabon® as direct applications can be used for temporary lice control. Spray applications can be made during winter months by selecting sunny, calm days when the temperature is above freezing. Small portable, low-volume misting applicators can be used for good parasite control. Insecticides are prepared in an oil or water base and a small quantity (4-6 oz. per animal) applied. Because of the smaller volume, fewer problems of chilling are encountered during cold weather application.

Table 1 lists currently labeled products found successful in external parasite control. Products, use concentrations and approved uses may change periodically. You are encouraged to read and follow the product container label to insure safe and effective treatment.

Withdrawal periods must be carefully observed because of the residue-producing potentials of these chemicals. Read the label for information on withdrawal times, proper product usage, and application rates. Do not overtreat animals with any pesticides.

Table 1. External parasite control products.

Compound	Usage instructions	Sarcoptes	Demodex*	Lice	Withdrawal times (days)	Special instructions
coumaphos						
Co-Ral® 25% w.p.	Mix 1 lb./50 gal. water			X	0	
Co-Ral® 1% dust	1 oz./head			X	0	
crotoxyphos						
Ciodrin® 13.1% e.c.	3 1/3-8 1/3 pt./50 gal. water			X	0	
fenthion						
Tiguvon® 3% pour-on	0.5 fl. oz./100 lb. body weight			X	14	May be used on gestating and lactating sows.
lindane 20% e.c.**	Mix 1 pt./50 gal. water	X		X	30	Do not treat pigs before weaning.
lindane 12.4%**	Mix 1½ pt./50 gal. water	X		X	30	
malathion 4-5% dust	Apply 1/4-1/2 tbsp.	partial		X	0	Can be used on pigs less than 30 days old.
malathion 57% e.c.	Mix 2 qt./50 gal. water	X		X	0	
methoxychlor 24% e.c.	Mix 1 gal./50 gal. water			X	0	
permethrin						
Ectiban® 5.7% e.c.	Mix 1 qt./25 gal. water	X		X	5	Can be used on all age pigs. Use this higher level (0.05%) for treatment in severe infestations. Repeat in 14 days.
Ectiban® 5.7% e.c.	Mix 1 qt./50 gal. water	X		X	5	Use as above but for control of mange mites.
tetrachlorvinphos						
Rabon® 50% w.p.	Mix 4 lb./50 gal. water			X	0	
Rabon® 3% dust	3-4 oz./head			X	0	

This table represents general usage and withdrawal information as presented on current labels. Label changes can occur at any time. Before using any pesticide, read and follow the label directions. Specific formulations may have longer withdrawal times.

The amended Federal Insecticide, Fungicide and Rodenticide Act of 1974 requires that all pesticides be classified for general or restricted use. Producers purchasing or using restricted-use pesticides after October 21, 1977, must become certified or additional state regulations may limit use of certain pesticides. Check with your state Extension specialists for certification or use requirements and for the specific latest control recommendations.

*There are no known treatments available for Demodex infections in swine.

**Do not use benzene hexachloride (BHC) in making this formulation.