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Protect Swine From External Parasites

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External parasites can become pests and limit production in Arkansas' swine industry. Damage to swine includes wound formation and skin irritation that cause stress and discomfort to the animal. Lice and mange mites are two common external parasites found on swine. These infestations are often more prevalent in confined swine operations where animal-to-animal contact is more likely. Other insects, such as house flies, stable flies and cockroaches, may also become pests in swine production.

Lice and Mange

Hog lice (*Haematopinus suis* L.) are nearly 1/4-inch long and large enough to be easily seen with the naked eye, although they are often overlooked. It is the largest blood-sucking louse infesting domestic animals. The slate-blue color of the hog louse often resembles the skin of the hog. Lice are first noticed in small clumps inside the ears or in folds of skin around the neck. Another favored location is on the inside surface of the legs, near the body. These insects pierce the skin and suck blood, causing the skin to become thick, cracked, tender and sore. A heavily infested animal may have a skin condition that resembles measles, resulting in loss of hide quality. Hog lice will attack hogs of any age or condition; however, stressed or unthrifty hogs are more susceptible. This pest is spread through contact with infested animals. Injury is more severe during the winter months, but lice can be found any time of the year. All stages of the hog louse are found on the animal. Louse eggs are laid directly on the hog's bristles next to the skin. The complete life cycle requires from 25 to 30 days. From eight to 12 generations per year may occur.

In adult hogs, damage is primarily irritation. Infested animals often scratch with their feet or rub against objects, such as feeders, posts or other stationary objects. Animals also become restless, eat less and lose weight. In addition, the hog louse can contribute to anemia in young pigs and can transmit swine pox, a potentially fatal viral disease characterized by pockmark lesions on the hog's belly. Hog lice have also been implicated as a potential vector of hog cholera and eperythrozoonosis.

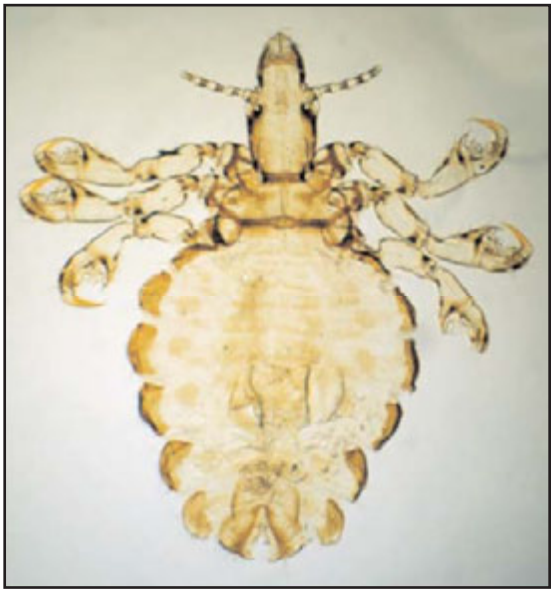

Figure 1. Hog louse *(Photo credit: J.F. Butler, University of Florida, Institute of Food and Agricultural Sciences)*

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Hog mange (Sarcoptic mange) is caused by tiny itch mites (*Sarcoptes scabiei* L.) that burrow through the skin, making thread-like tunnels 0.1 to 1.0 inch long. These mange mites are too small to readily see with the naked eye but are visible with a hand lens.

Clues to a mange outbreak include scratching, rubbing and the presence of inflamed areas that can spread over the entire body. The skin around the eyes and ears and along the top of the neck and back becomes scaly, inflamed, scabby and, eventually, raw and cracked. The bristles also become stiff and stand upright, giving the animals a rough, unkempt appearance. Mange is highly contagious and may spread rapidly through a herd of hogs. Mange mites are capable of completing a generation in two weeks, thus the population can build rapidly.

Mange-infested animals exhibit reduced rate of growth, reduced vitality and may have an increased death rate. Secondary bacterial infections may occur in areas where mites have burrowed. Lesions associated with mange also attract flies and compound the situation. It takes three to six weeks from the time of infestation until symptoms can be seen. An infestation of sarcoptic mange mites is confirmed by observing scrapings of suspect mange areas under magnification. Skin scrapings are taken by scraping the margin of suspected infested areas or pustules with a dull knife. Mange infestations are contagious, resulting in the necessity to treat the herd to prevent spread.

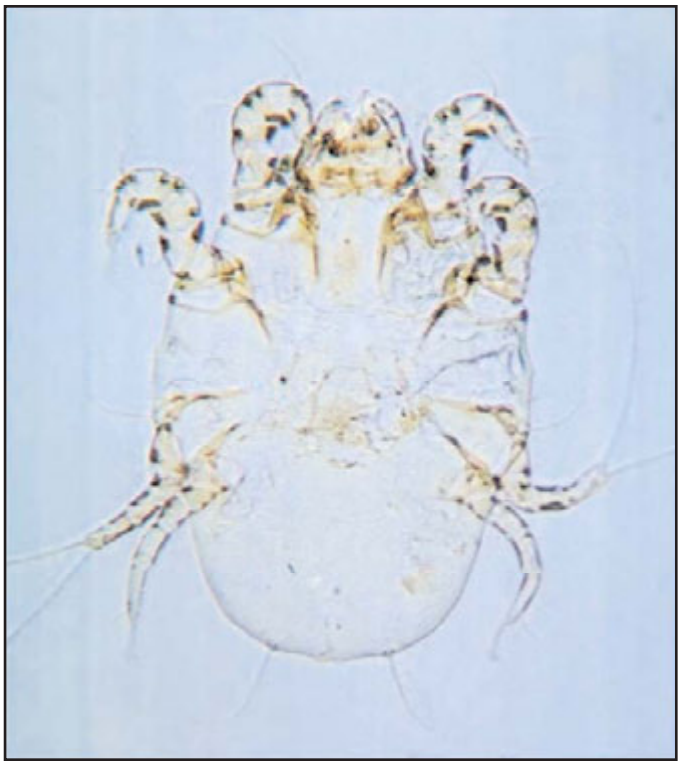

Figure 2. Sarcoptic mange mite *(Photo credit: J.F. Butler, University of Florida, Institute of Food and Agricultural Sciences)*

Demodex mange is caused by a microscopic, cigar-shaped, follicular mite (*Demodex phylloides* Csokor) that lives in the hair follicles of skin. All stages of the follicular mite are found in the hair follicle. Demodex mange can cause the formation of nodular lesions that sometimes break and produce holes in the hide. Because follicular mites are located deep within the hide, demodex mange is very difficult to control; fortunately, it is not too common in hogs. Often, severely infested animals are euthanized and destroyed. Less severely infested animals are often marketed for slaughter.

Control

Hog lice and sarcoptic mange are managed in a very similar manner. Good management and prevention will go a long way in controlling these pests. For example, hog lice and mange mites are often introduced into the herd through new animals. New animals should be isolated (in a separate building or pen) and treated for internal and external parasites before being introduced into the herd. In many cases, the entire herd will require treatment. In most cases, all feeder pigs should be treated in the fall.

If an insecticide spray is used, a second application is normally required approximately 14 days following the first application. Spray hogs with a power sprayer or other equipment large enough to thoroughly wet the animals. Spray thoroughly but avoid prolonged treatment. Spray only on warm, sunny days so treated animals will dry rapidly. Also spray pens, hog houses and bedding at the same time the animals are treated. Ready-to-use dust formulations are available for hog louse control. In addition, ready-to-use pour-on formulations can be used for lice and mange control. Endectocide (ivermectin or doramectin) injections are also effective against both mange and lice. Some insecticides, such as coumaphos, are labeled for lice control only. Other insecticides, such as those containing permethrin, amitraz, phosmet, fenvalerate, ivermectin or doramectin, are effective against both hog lice and mange. Carefully follow label directions, and follow specified application rate or dose and withdrawal period. Table 1 lists insecticides labeled for sarcoptic mange and lice. A more detailed listing of products labeled for control of swine pests is available at <http://www.uaex.uada.edu/Other_Areas/publications/PDF/MP144/B_Animals_Swine.pdf>.)

Flies

Swine operations often produce large quantities of fly-breeding material, resulting in potential fly problems. Although other filth-breeding flies may be present, the house fly is the most common. The stable fly may also be present but is usually less numerous than the house fly. Unlike the house fly, stable flies will suck blood from animals including hogs and

Table 1. Insecticides and Miticides Labeled for Controlling Sarcoptic Mange and Hog Lice

Pest and Formulation	Compound	Trade Name
Sarcoptic Mange and Lice (Spray)	permethrin	Gard Star 40% EC, Atroban 11% EC, Ectaban 5.7% EC
	fenvalerate	Ectrin 10% WDL
	amitraz	Tactic 12% EC
	phosmet	Prolate/Lintox-HD
Sarcoptic Mange and Lice (Pour-on)	permethrin	Swine Gard Pour-on
	amitraz	Point-Guard
Sarcoptic Mange and Lice (Injection)	ivermectin	Ivomec 1% Injection
	doramectin	Dectomax Injection
Lice only (Spray)	coumaphos	Co-Ral Fly and Tick Spray, Co-Ral Emulsifiable Livestock Insecticide
	tetrachorvinphos	Rabon 50% WP
Lice only (Dust)	permethrin	Ectiban, Insectrin, Permethrin Dusts
	coumaphos	Co-Ral Dust

humans. Sanitation and proper manure and waste management practices are essential in managing these and other filth-breeding fly pests.

The **house fly**, *Musca domestica* L., is a premise fly that is not parasitic on animals. They are the 1/4-inch long, non-biting flies often seen around the premises. They are dull gray with four black stripes on the thorax. House flies breed in manure, decaying feed, organic matter and garbage. Their life cycle (Figure 3) consists of egg, larval (maggot), pupal and adult stages and is normally completed in 10 to 21 days, although flies can develop in as little as a week. Females usually lay up to 600 eggs during their lifetime, and 1 pound of manure is sufficient for more than 1,500 maggots. Flies have multiple generations per year and overwinter in all life stages.

Figure 3. The life cycle of the house fly *(Photo credit: Clemson University, USDA Cooperative Extension Slide Series, Bugwood.org)*

Large numbers of house flies can become a serious nuisance around swine operations and to nearby neighbors, and the flies potentially pose public health threats through the transmission of pathogens. House flies have also been implicated in transmission of hog cholera in swine.

The **stable fly** (Figure 4), *Stomoxys calcitrans* (L.), is a parasite found feeding on animals rather than a premise pest. They are blood-feeding flies about the same size as the house fly but are darker gray in color. Unlike the house fly, stable flies have mouthparts similar to other blood-feeding flies, such as horn flies. The piercing mouthparts of stable flies protrude from under their heads and allow them to take blood meals. Both male and female stable flies feed on blood.

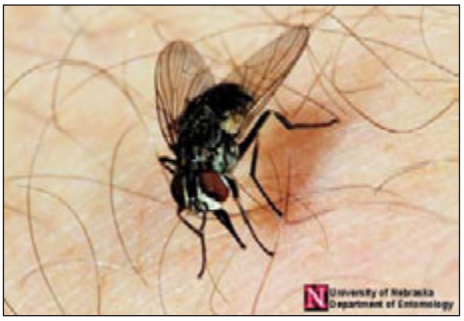

Figure 4. The stable fly *(Photo credit: Leon Higley, UNL Entomology)*

The life cycle consists of the same stages as a house fly, but stable flies breed only in decaying organic material, such as hay mixed with manure and urine, spilled feed or silage and litter. Adults can live 20 to 30 days, and a female can lay 200 to 400 eggs in her lifetime. The entire life cycle of a stable fly can be completed in about three weeks. The flies may overwinter as adults and immatures (larval stage). The overwintering of stable flies is not completely known, but they likely develop slowly during winter months under the frost line and move toward

the soil surface to pupate as temperatures rise. These flies are important from the standpoint of annoyance and blood loss when they are abundant. They are also potential vectors of some swine diseases such as leptospirosis and hog cholera.

Fly Control

Sanitation is a must to successfully manage house flies and stable flies around a swine operation. Elimination of filthy fly breeding sites rather than sole reliance on chemical control will, in most cases, maintain fly populations at a manageable level. For example, twice weekly removal of moist manure, decaying plant matter, spilled feed and moist straw is necessary to break the life cycle of house, stable and other filth-breeding flies. This can be accomplished by 1) thinly spreading waste matter and moist manure to dry or 2) placing manure in manure pits or lagoons so that it becomes liquefied. Dry breeding material and liquefied breeding material will not support fly development.

Control of house flies with insecticides consists primarily of residual sprays, baits and fogs or mists. Of these insecticide formulations, fly baits are the least detrimental to beneficial insects that can provide some level of fly control. Residual sprays are applied to fly resting areas. Mist or fog sprays are designed to provide quick knockdown of fly populations and have limited residual activity. Sometimes a combination of these chemical methods may be necessary to combat high fly numbers. Carefully follow label directions and specified application rate, dose and site restrictions. Table 2 lists insecticides labeled for house fly control in and around swine barns. A more detailed listing of products labeled for control of swine pests is available at <http://www.uaex.uada.edu/Other_Areas/publications/PDF/MP144/B_Animals_Swine.pdf >. Sticky fly ribbons are useful in estimating house fly populations, evaluating the effectiveness of control methods and helping manage small populations.

Stable flies are best managed through sanitation and manure or waste management. Insecticide applications may be required when stable fly populations increase. Some insecticides labeled for control of lice and mange are also labeled for biting flies. Permethrin and synergized pyrethrins are routinely used in managing biting flies. Carefully follow label directions and specified application rate, dose and age restrictions.

Table 2. Insecticides Labeled for Controlling Flies

Formulation	Compound	Trade Name
Bait	imidacloprid	Bayer QuickBayt
	methomyl	Golden Malrin and others
	spinosad	Elector Fly Bait
Sprays	permethrin	Pounce 3.2 EC Atroban 11% EC GuardStar 40% EC
	fenvalerate	Ectrin 10% WDL
	deltamethrin	Annihilator
	lambda-cyhalothrin	Grenade ER
	malathion	Malathion 5 EC and others
	diclorvos	Vapona Concentrate Insecticide
	tetrachlorvinphos	Rabon 50% WP
	synergized pyrethrins	Several formulations and trade names

All chemical information is given with the understanding that no endorsement of named product is intended, nor is criticism implied of similar products that are not mentioned. Before purchasing or using any insecticide, always read and carefully follow the directions on the container label.

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