Lice, Mange and Other Swine Insect Problems

Major pests of swine are hog lice, sarcoptic mange mites, and several species of flies. Lice and mange reduce feeding efficiency and rate of gain. Flies bother or bite the swine, can carry diseases, and can result in neighborhood complaints and lawsuits.

Successful pest management requires preventive management; that is, avoiding or reducing opportunities for pests combined with wise pesticide use as needed. Overdependence on any one type of pesticide may lead to pest resistance to that material.

Sanitation

Sanitation is essential for fly control. Fly maggots develop in manure and decaying organic matter, so frequent removal of manure, spilled feed, and soiled bedding should be routine. Buildings being vacated must be immediately cleaned to deprive roaches, beetles, and flies of hiding places and breeding sites. Exposure to open air helps dry the pens and takes advantage of the natural antiseptic action of oxygen and light. Facilities should be constructed to minimize crevices and hiding places for insects, rodents and birds, and to facilitate thorough cleaning.

How to Use This Guide

This publication was written specifically for swine producers in Kansas. Each listing of insecticides and miticides is alphabetical by common chemical name, followed by representative trade names in parentheses. **Sequence does not indicate order of preference.** Trade names are used in this publication to identify commonly available insecticides, for educational purposes; inclusion or omission is not intended to imply endorsement or discrimination by K-State Research and Extension.

Any chemical is subject to changing patterns of use, or withdrawal by regulatory agencies, at any time. Products classified as **Restricted Use Pesticides** are for purchase and application only by Certified Private Applicators or Commercial Applicators certified in livestock pesticide application.

Pesticides and Pesticide Safety

Pesticides are available in several formulations. Choose products and formulations on the basis of safety, legality, effectiveness, compatibility with your application equipment, placement and versatility as well as cost.

Mix and apply exactly as directed on the product label.

The label carries the force of law. Carefully follow all label instructions. All insecticides are capable of causing injury or death to humans and other animals.

- Obey label requirements for applicator safety: impermeable gloves, goggles, breathing apparatus, protective clothing.
- Never use a product on swine unless the label includes specific directions for use on swine.
- Pay special attention to label restrictions on: (1) dosage; (2) pre-slaughter waiting interval; (3) frequency of applications; (4) use in conjunction with other insecticides, synergists, or medications, and; (5) age and condition of animals to be treated.
- Keep animals under observation after treatment. Consult a veterinarian if signs of poisoning develop.
- Do not allow feed or water to become contaminated by insecticide drift.
- If in need of medical treatment because of exposure to an insecticide, take the insecticide container label with you. It has valuable information the physician will need. **FOR POISON CONTROL INFORMATION CALL 800-332-6633.**

For more information on pesticides and pesticide safety, see K-State Research and Extension publications: *Private Applicator Certification Manual* (MF-531) and the *Pesticide Application Training Guide for Category 1B, Animal Pest Control* (S-13).

Pesticide Resistance

To avoid pesticide resistance in pest populations, pesticides of different chemical families should be alternated at least after every few applications (*see Table 1*).

Sarcoptic Mange

Sarcoptic mange is a skin disease caused by mites that can reduce weight gain and feeding efficiency.

The female mite burrows a tiny tunnel beneath the upper layer of skin, laying eggs behind her at the rate of two or three per day. Eggs usually hatch in three to five days. Mites develop rapidly; a complete life cycle requires only 10 to 14 days.

In a study in Minnesota, 40 percent of sarcoptic mange mites lived five days or more off the host in a 39°F environment. At 77°F, 85 percent of the mites died within three days. They are spread among hogs by contact and shared bedding.

Signs of infestation include inflamed, scurfy skin, restlessness, and itching which causes the host animal to scratch itself and rub against fences and other objects for relief. This activity may compound the skin damage. Early signs are usually on the face, neck, ears and belly. More advanced

Table 1. Chemical families of insecticides used in swine operations.

Chemical family	Common chemical names
avermectin	ivermectin
carbamate	methomyl
chlorinated hydrocarbon	lindane, methoxychlor
formamidine	amitraz
nitromethylene	nithiazine
organophosphate	coumaphos, diazinon, dichlorvos, dimethoate, fenthion, naled, phosmet, tetrachlorvinphos, trichlorfon
pyrethroids	cyfluthrin, fenvalerate, lambda-cyhalothrin, permethrin, pyrethrins

cases may include all parts of the body and exhibit thickened, raw, cracked, scab-encrusted skin. Positive diagnosis requires scraping the skin with a knife blade to the point of drawing flecks of blood and examining the scrapings under magnification for mange mites and eggs.

Hog Lice

Hog lice are bluish-black to brown with a black head and tail end. Adults range up to ¼-inch long. Immature lice (nymphs) look much like the adults but are smaller. Adults and nymphs pierce the skin several times daily to suck blood. Crawling around on the host's body and feeding produce irritation and itching. Hog lice may transmit eperythrozoonosis and possibly other swine diseases.

Female lice live three to four weeks after reaching adulthood, and lay up to 90 eggs apiece. The yellowish-white eggs are attached to hair shafts or bristles and are easily seen. Eggs hatch in 12 to 20 days. Nymphs grow rapidly and may mature, mate, and begin laying eggs in as little as 12 days after hatching. Hog lice primarily spread by pig-to-pig contact. Lice that come off one host may infest another, but they seldom if ever survive more than three days off the host.

In diagnosing swine for lice, look for the lice and their eggs, especially on and inside the ears, under the neck, and in the leg axillae or flanks. You may notice pinpoint reddened areas from feeding punctures. With prolonged infestations, the skin may become cracked, tender and sore. Swine behavior and skin condition caused by lice and sarcoptic mange are somewhat similar, and hogs often have lice and mange simultaneously.

Planning for Control of Sarcoptic Mange and Swine Lice

Many insecticides control lice without controlling mange, but proper application of materials that control sarcoptic mange also will control lice if they are present. Some products kill few eggs of mites and lice, so they must be used repeatedly at recommended intervals.

Eliminate lice and mange on sows before farrowing. Infestations transfer quickly from sows to their baby pigs, and many pesticides cannot be used on pigs under weaning age. Keep boars free of lice and mange because they can spread the parasites to the sows they service. Treat all swine on the farm at the same time. If this is not possible, treated pigs should not be mixed with untreated pigs nor share a fenceline with them. Workers who handle infested pigs can carry lice and mange to uninfested animals on their clothing. Do not breed infested and uninfested sows with the same boar.

A louse-and-mange-free herd can be established by treating the entire herd, including label-recommended repeat treatments. Maintain by treating all incoming swine twice, two weeks apart, while keeping them in isolation for an additional week. Such isolation should be a routine part of disease and parasite prevention and control.

Sarcoptic Mange and Louse Controls

The following products are registered for control of either or both swine lice and mange:

Inject ivermectin (Ivomec) subcutaneously, 18-day pre-slaughter required.

Pour-on with amitraz (Point-Guard), 7-day pre-slaughter required.

Spray or dip with amitraz (Tactic), 1-day pre-slaughter interval; or permethrin (Gard-Star 40EC, Permectrin II, Permectrin WP), 5-day pre-slaughter interval.

Spray only with fenvalerate (Ectrin WDL), 1-day pre-slaughter required; permethrin (liquid formulations only; many trade names, e.g., Atroban, Ectiban, Expar, Hard Hitter, Insectaban, Insectrin, Permethrin), 5-day pre-slaughter interval; or phosmet (Prolate), 1-day pre-slaughter required and do not use on suckling pigs. Be sure to spray thoroughly, including inside the ears, in wrinkles of the neck and jowls, and inside the legs and flanks.

Oral larvicide (feed-through): ivermectin (Ivomec Swine Premix); only for pigs up to 220 pounds; 5-day pre-slaughter interval.

Additional Louse Controls

The following products are registered for control of swine lice but not sarcoptic mange:

Pour-on with fenthion (Tiguvon), 14-day pre-slaughter interval and do not treat suckling pigs; or fenvalerate (Ectrin WDL), 2-day pre-slaughter interval.

Spray or dip with methoxychlor (Marlate 50WP).

Spray only with coumaphos (Co-Ral WP, Co-Ral LIS, or the Restricted Use Pesticide, Co-Ral ELI); methoxychlor (Methoxychlor 2EC, Sur-Noxem); or tetrachlorvinphos (Rabon 50WP).

Dust with a dust formulation of coumaphos (Co-Ral), methoxychlor (Marlate), permethrin (Gordon's Dairy & Livestock Dust, Hard Hitter, Insectrin, Permectrin), phosmet (Prolate), or tetrachlorvinphos (Rabon).

Demodectic Mange

Demodectic or follicular mange is caused by slender, microscopic *Demodex* mites. They have eight short, bud-like legs. Demodectic mange does not seem to cause itching nor affect swine productivity. Signs range from small pimples to hard nodules in the skin, up to an inch in diameter. These are often most visible around the nose and eyelids, on the abdomen or udder, and on inner thigh areas. Sometimes the nodules become infected, abscess and rupture. No product is registered for control of *Demodex* mites.

Flies

Several fly species are troublesome to swine and around swine premises. The common house fly usually is the most numerous. House flies do not bite, but they annoy the swine, workers, and sometimes the neighbors and may be involved in mechanical spread of disease organisms.

Another major pest of swine is the stable fly. Similar to the house fly in size and general appearance, stable flies suck blood and can be very irritating to swine and other animals, as well as people. On hogs, they generally feed on the ears or legs or at cracks or scratches in the skin. Stable flies spend most of their time on fences, walls, or feeders—mostly in shady sites or, if it is windy, on leeward sides of objects. They come to animals for blood only once or twice per day. Stable flies can transmit eperythrozoonosis and may cause direct reduction in feeding efficiency and rate of gain.

House fly larvae develop in animal excrement under a wide range of conditions from fresh to rather aged manure. Stable flies develop in manure-and-urine-soaked hay or straw, wet and decaying spilled feed, piles of green chop or grass cuttings, and in manure that is two or three weeks or more in age. The life cycle from egg, through maggot and pupal stages, to egg-laying adult is usually eight to 14 days for house flies and three to four weeks for stable flies. Manure-handling schedules should assure that no generation of fly larvae is allowed to develop without interruption. Solids floating above the waterline or encrusted on walls of liquid manure pits may teem with maggots and produce many flies.

Other fly species, such as the little house fly, the dump fly, and various blow flies may be important in some swine units. Prevention and control require sanitation and insecticides used as for controlling house flies.

Chemical Control of Flies

Along with sanitation, various insecticides and application methods often are necessary for fly control. Residual sprays usually are the most effective and economical. Space sprays, mists and fogs, and direct application to animals may provide immediate, temporary relief as needed. Baits, oral larvicides (feed-throughs), and larvicidal spraying of manure sometimes are useful.

In selecting a chemical, note whether the label calls for coarse spraying, fine mist spraying, high pressure, etc., and be sure you are equipped to apply the material as intended.

Apply residual sprays where flies rest or gather on walls and other surfaces. If the flies have been disturbed and are mostly in the air, concentrations of fly specks indicate favored resting sites. Yellow-gray and other pale specks are made by house flies and often are abundant on ceilings and rafters. Stable fly specks (the product of digested blood) are black and are most common within 3 or 4 feet of the floor.

Do not apply premise treatments directly to animals. Premise treatments usually are mixed at a higher concentration than the same products mixed for application to livestock. Some products are registered as premise treatments and are not to be applied directly to animals.

Products shown below, with an asterisk (*) should not be applied when animals are present.

Short-term residual sprays (probably 2 or 3 days): dichlorvos (DDVP, Vapona).

Longer-term residual sprays: cyfluthrin (Countdown*, liquid and WP formulations of Tempo*); diazinon (Dryzon WP*, or one of the Restricted Use Pesticides—D.Z.N 4E* or Diazinon 50WP*); dichlorvos (Double Shift MEC*); dimethoate (Cygon 2E*); fenvalerate (Ectrin WDL); lambda-cyhalothrin (Grenade WP*); methoxychlor (Marlate 50WP, Methoxychlor 2EC, Sur-Noxem); permethrin (e.g., Atroban, Ectiban, Expar, Gard-Star 40EC, Hard Hitter, Insectaban, Insectrin, Permectrin, Permethrin, Pounce); tetrachlorvinphos (Rabon 50WP); tetrachlorvinphos + dichlorvos (Ravap); or trichlorfon (Dipterex*, Dylox*).

Indoor space sprays: dichlorvos (Vapona), methoxychlor (Methoxychlor 2EC), pyrethrins (many trade names).

Outdoor space sprays: methoxychlor (Methoxychlor 2EC), naled (Dibrom, Fly Killer D, Naled), permethrin (GardStar 40EC, Permectrin II EC).

Fly bait (house flies): methomyl ready-to-use baits (Apache, Fatal Attraction, Fly Bait Plus, Fly Belt, Flytek, Fly Patrol, Golden Muscamyl, Improved Golden Malrin, Tailspin) or mix sugared bait-spray, according to label, using diazinon (Dryzon WP*, or one of the Restricted Use Pesticides—D.Z.N. 4E* or Diazinon 50WP*); naled (Fly Killer D*); or trichlorfon (Dipterex*, Dylox*). Or, use nithiazine (QuikStrike) fly abatement strips tacked to or hung on surfaces where house flies rest.

Direct animal spraying: pyrethrins (many trade names).

Larvicide sprays: Larvicides applied to fly-breeding sources may be used when weather or other factors have disrupted the usual sanitation schedule or in spot-treating sites, but should not be relied upon continually. Use dichlorvos (DDVP, Vaponite*), dimethoate (Cygon 2E*), tetrachlorvinphos (Rabon 50WP), or tetrachlorvinphos + dichlorvos (Ravap).

Insect strips (indoors): dichlorvos (Insect Strip, Pest Strip).

Oral larvicide (feed-through): tetrachlorvinphos (Rabon Oral Larvicide) **for swine of weaning age and older.** Oral larvicide acts by killing maggots in manure of animals to which the product is fed. Livestock is protected

from adult flies only to the extent that the source of flies is manure from treated animals. Flies developing in wet, spilled feed, garbage, decaying ensilage, or other sources may still be a problem.

Swine Wound Treatments

Several products are sold ready-to-use for killing maggots in wounds and protecting wounds on swine from flies. These include coumaphos (5 percent dust in a squeeze bottle or 3 percent spray or spray foam in pressurized cans) and lindane (3 percent spray in pressurized can).

Ticks

To control ticks on pastured swine, check the labels of insecticides listed for louse control. Many of them are labeled for control of ticks. If ticks inside the ears are a problem, direct sprays there; also check labels of insecticides listed under wound treatments.

Cockroach and Beetle Control in Swine Units

Before treating, remove anything that provides refuge for crawling insects (and rodents). Spray, as crack and crevice treatment, with: cyfluthrin (Countdown*, liquid or WP formulations of Tempo*), dichlorvos (VIP Spray Formula), permethrin—liquid and WP formulations (Ectiban, Hard Hitter, Insectaban, Insectrin, Permectrin; and the Restricted Use Pesticide, Pounce).

Beetle and Roach Control in Feed Rooms

Cockroaches are often abundant in feed-mixing and storage areas. With care not to contaminate feed, the above-listed *permethrin* (not pyrethrin) treatments could be used in these areas.

Darkling beetles also are common on pests in such areas. The most common species in Kansas is a slender, dull black to brown beetle about ⅝ inch long. Its larvae are waxy-looking mealworms. Adults and larvae consume and contaminate feed, and larvae damage styrofoam insulation by tunneling. Another grain-infesting beetle, the cadelle, is oblong, flat, black, and about ⅓ inch long. Its larvae tunnel into wood structures as well as styrofoam insulation.

Make a general cleanup of the area, then apply spray to cracks and crevices, in corners between walls, along baseboards, and treat “shot-holed” walls or insulation infested by beetle larvae. Use cyfluthrin (Countdown, liquid or WP formulations of Tempo), dichlorvos (VIP Spray Formula), lambda-cyhalothrin (Grenade WP—a Restricted Use Pesticide), or permethrin (Permethrin-10).

Wasps and Hornets

Wasps and hornets can be a nuisance in and around swine buildings. Many products are available to control them. It is preferable to spray them from several feet away. Treat the nests at night when all of the wasps are present. Never stand directly beneath a nest while treating it, as the wasps often drop downward, dying, but still able to sting.

A particularly useful formulation provides rapid demobilization of wasps and hornets on contact. It is available under the trade names *Wasp Freeze* and *Chill Kill.* Alternatively, “Wasp & Hornet Sprays,” often containing diazinon, are sold in pressurized cans. Also, check the labels of residual spray products listed above in the section on Chemical Control of Flies; many of these also list wasps as target pests.

For more information, see K-State Research and Extension publication, MF-793, *Bees and Wasps.*

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