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INSECT CONTROL RECOMMENDATIONS FOR SWINE AND SHEEP IN NEBRASKA

by

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Insect control recommendations in this publication are based on USDA recommendations and Environmental Protection Agency label registrations. Study labels carefully to insure proper mixing and correct usage. Note and follow label restrictions such as number of days between treatment and slaughter, minimum age of animals for treatment, compatability between insecticides and other medication, and cautions prohibiting insecticide treatment of sick animals.

CAUTION: All insecticides are poisonous and should be used with caution. All pesticides should be stored in original containers and out of reach of children and pets.

Be careful in selection and use of insecticides so that illegal meat residues do not occur.

SWINE

Swine management practices have changed in recent years and some of these changes have brought about insect problems. The "Pig-Poke" system of confined housing is one such change. Manure drops through the slatted floors of the housing and is allowed to accumulate under the housing. This creates an ideal breeding situation for the common house fly and *Ophyra leucostoma*, a black blow fly. The latter is probably a predator of the house fly, but is still annoying to the farm operators.

Sanitation: The first step in the control of a fly problem of this nature should be sanitation. Clean out this manure at least once a week to avoid fly breeding. "Pig-Pokes" were designed to be moved so that manure cleaning would be relatively easy.

Another method is to build pits under the "Pig-Pokes" and handle the manure from these pits on a liquid basis.

Extension Service, University of Nebraska-Lincoln College of Agriculture Cooperating with the
U. S. Department of Agriculture and the College of Home Economics
E. F. Frolik, Dean J. L. Adams, Director

From a management standpoint, however, these methods may not be practical. Chemicals, if used in combination with some sanitation and on a regular basis, can give good results.

Chemical Treatment of Breeding Areas: Generally, application of insecticides to fly breeding areas is not practical. It is costly to apply enough insecticides to give fly control and the currently used insecticides decompose fairly rapidly in a high acid medium such as manure. In addition, insect resistance to an insecticide could occur fairly rapidly with this type of treatment.

Lime can be used with fairly good results and if available, should be reasonable in price. Apply the lime evenly throughout the fly breeding area. This method can be used by keeping swine on one-half the housing and applying lime through the slatted floor. Wash the floors thoroughly so that no lime remains because of danger of skin burns on the swine or possible feeding on it. More swine to the other half of the housing and repeat the process. This should be done at weekly intervals.

Residual Sprays: Flies rest on the sides, under the eves and on the ceiling of swine housing. Residual insecticides can be applied to these resting areas. Flies absorb enough insecticide while resting to kill them. House flies in particular rest at night inside housing and thus the residual sprays are fairly effective in controlling them.

Apply the spray to the point of run off but do not allow to puddle. Make sure food and water is not contaminated. Many sprays are not registered for use on animals so take care not to spray them.

The following materials can be used as residual sprays:

Insecticide	Mixture	Surface application rate
Fenthion (Baytex)	4 oz 46% EC[a] or 5/6-1 2/3 fl. oz. 93% L.C.[a] to 1 gal. water	1 gallon per 1000 sq. ft.
Dimethioate	2 qts. 43.5% EC to 25 gals water	1 gallon per 1000 sq. ft.
Methoxychlor[b]	4 gals 25% EC or 4 lbs 50% W.P.[a] to 25 gals water	
Malathion	1 pint 57% EC to 7 gals water	
Korlan (ronnel)	4 gals 24% EC in 25 gal water	
Rabon (Gardona)	4 lbs 50% W.P. in 25 gal water	
Diazinon	4 lbs 50% W.P. or 4 gals 24% EC in 25 gal water	2 gallons per 1000 sq. ft.

[a] EC=emulsifiable concentrate. L.C.=Liquid concentrate. W.P.=Wettable Powder.

[b] Methoxychlor: House flies may be or become resistant to methoxychlor.

Area Sprays: Apply area sprays in and around buildings, feeders and vegetation--wherever flies congregate. Area sprays are contact sprays and have little residual action--they must contact the fly at application to be effective. These sprays can be applied by mist blowers, hydraulic sprayers and fogging devices. Hydraulic sprayers can be adjusted to deliver a fine mist. Foggers should be used only when the wind will allow the fog to drift slowly through the fly-infested area.

Naled (Dibrom), dichlorvos (Vapona) and malathion are the only insecticides registered as area sprays. Apply these sprays at rates of about 5 gallon/acre of ½% insecticide-water mixture with mist-blowers and at a rate 40 gal/hour of 1% solution (300-400 ft. swath width) with a fogger. Fogger mixtures may require special additives to prevent clogging and to provide correct temperature. Area sprays may have to be applied one or two times per week during the fly season.

Wet or Animal Sprays: This type of spray is generally not practical in a swine operation for house fly control. Stable flies are only occasional pests of hogs. The area or residual sprays described above will also control stable flies.

Baits: Fly baits by themselves are not enough to control flies but will help, if used in conjunction with one or more of the methods described above. Distribute dry baits along walls, fences, or other areas where flies congregate, but away from feed and water. Apply liquid baits to burlap bags, papers or other removable surfaces. Organic phosphate insecticides used in baits decompose in one week or so. Collect dead flies and old bait and place new bait at about weekly intervals. The following baits can be used:

Material	Formulation	Amount
Malathion	3.5% dry	Sprinkle daily where flies congregate
Naled (Dibrom)	1.25% liquid	
	0.5% dry	
	0.5% liquid	
Trichlorfon (Dipterex)	1.0% dry	4 oz./1000 sq. ft.
	2.0% liquid	4 tbsp./1000 sq. ft.
	1.0% dry	Spot treatment with brush or spray
	1.0% liquid	

Baits can be made by mixing the three insecticides listed or diazinon as baits with sugar and water. The mixture should not have an excess of 1% insecticide in it.

External parasites of swine include the hog louse and two species of mange mites, the itch mite, and the more common hog follicle mite. Excessive scratching and rubbing by swine and the hair sticking up may indicate an infestation of hog lice. These lice are large and thus easily seen.

Oilers, either homemade or the commercial metal types using oil plus an insecticide, can be used with good results for control of hog lice. Co-Ral (coumaphos), ciodrin (crotoxyphos), Delnav (dioxathion), lindane, malathion, methoxychlor, ronnel (Korlan) and toxaphene, may all be used on swine. Some of these insecticides are available in prepared oiler mixtures. Label instructions should be followed for mixing and for restrictions on treatment of young or sick animals or other restrictions. All of these insecticides can also be used as wet sprays. Good coverage of the animal should be obtained. Follow label instructions for mixtures, amounts, restrictions, and cut-off time between treatment and slaughter.

In addition to sprays and oilers, ronnel (Korlan) 5% granules can be applied in swine bedding. Apply granules evenly over the bedding area at a rate of 1/2 pound per 100 sq. ft. of bedding area.

Excessive scratching and rubbing may also be signs of mange mites. In addition, swine infested with the common hog hair follicle mite (Demodex phylloides) may have inflamed skin around the eyes, ears and along the top of the neck and back. The skin in these areas may be scruffy and scabby in appearance. It may have pimples ranging from pinhead to marble in size. These lumps may be located around the muzzle, eyes, base of the tail or on the skin on the inner sides of the legs.

To make a correct diagnosis of mange mites, scrape the infected area until the blood starts in order to force mites out of the pimples. When these are broken, a discharge of yellowish thick pus is usually evident. The mite is small and slender (wormlike) with four pairs of short legs. Magnification is needed for detection. Secondary infection by bacteria may occur where the mites have burrowed.

Lindane is the only insecticide registered for control of mange mites. However, control is difficult and slaughter may be the best course to follow.

The other mange mite (Sarcoptes scabiei) is not as severe a pest. The signs are about the same, the pimples are usually smaller. These mites burrow tunnels just below the skin surface. The scraping mentioned above forces mites out of the tunnels. These mites are pale-colored, minute, and round with eight legs. Lindane will control these mites more readily than the follicle mite.

SHEEP

Flies: The flies mentioned in the section on swine may also be a nuisance around sheep facilities. Control procedures are the same.

Sheep ked: The best known and most common insect pest of sheep is the sheep ked (sheep tick). This insect is a wingless fly that spends its entire life on the sheep. The female deposits living young, one at a time, on wool strands. The young ked forms a red barrel-shaped puparium around itself. After about three weeks, the fully developed ked emerges from the puparium.

Lambs become ked infested from contact with infested ewes. The sheep ked appears to be detrimental to range sheep, but when lambs are placed on feedlot rations, the ked population declines rapidly. Insecticide control of the sheep ked on feeder lambs may not be economically feasible as far as weight gain performance of the lambs is concerned. The feeding punctures made by the sheep ked cause a condition in the sheep skin known as "cockle." The "cockle" weakens the skin and causes skin buyers to dock the product so the packer does suffer economic loss from the sheep ked.

Several insecticides and methods of application are effective in the control of sheep keds. Insecticides can be applied as sprays with power sprayers, dips in dipping vats, or dusts by hand or with power dusters. The most convenient and efficient time to treat is at shearing. Co-Ral (coumaphos), Ciodrin (crotoxyphos), diazinon, Vapona (dichlorvos), Delnav (dioxathion) lindane, malathion, Korlan (ronnel), Rulex (Ruelene) and toxaphene are all registered for sheep ked control.

Sheep lice: Sheep, like cattle, have both sucking lice and chewing (biting lice). The sucking lice include the African sheep louse, sheep-foot louse and goat sucking louse. The sheep biting louse is the only non blood-sucking species. Distribution and abundance of the species is not well known.

Heavy infestations of lice cause sheep to rub and scratch to the point of denuding areas of skin. Heavy populations cause anemia and make animals more susceptible to respiratory and other diseases.

Control recommendations for sheep ked control will also control sheep lice. Low pressure sprays with enough spray to penetrate to the skin are adequate. A detergent added to the spray increases the sticking capacity of the spray.

Blow flies: Some species of blow flies, the black blow fly in particular, lay eggs in dirty wool on the sheep, particularly in the crutch area or on wounds. The fly maggots, upon hatching, spread over the animal and feed on the skin surface which causes irritation. Maggot infested sheep become restless, stamp their feet, try to bite at the point of irritation and may leave the flock to hide in a secluded place.

Control includes care and medication of wounds and early shearing or clipping and cleaning dirty areas on the sheep before the spring blow fly season. After maggot infestation has occurred, spraying or dipping with the insecticides mentioned for sheep ked will control the maggots.

Sheep scab: Psoroptic scab caused by scab mites is a highly contagious skin disease of sheep. State and Federal quarantines and treatment have reduced the incidence of this pest to only a few cases per year.

Positive diagnosis can only be made by scraping lesions on the sheep with a knife and observing the mites from the scrapings. The mite is small with a white or yellow body with brown legs. Uneven wool that looks picked and thin and scabbing surface wounds are signs of the mites. A veterinarian should examine animals suspected of having scab because of Federal and State quarantine and treatment regulations. Federal regulations call for infected sheep to be dipped twice within a 10-14 day period with a special formulation of toxaphene.

Sheep Nose Bot Fly: Female bot flies deposit living fly larvae in the nostrils of sheep. These larvae migrate up the nostril passages into the head sinuses. After development in the sinuses, the larvae migrate back out of the nostril and drop to the ground where they pupate. Adult flies emerge from the pupae and start the life cycle over again. In the northern states there is only one generation per year. Further south there are two generations per year.

The "strikes" of the fly in depositing the larvae in the nostril irritates the sheep. They keep their noses down to the ground and try to avoid the fly. When the bots are migrating to and from the head sinuses, the nasal membranes are irritated and secondary infections can occur at the site of irritation. This condition causes a discharge from the nostril. Blood flecks in the nasal discharge and sheep banging their heads against feed bunks, fences, or the ground indicate the presence of the nose bots. One animal may be infested with over 100 bots. Severely infested older or weak sheep may die as a result of the bots.

Rulex (Ruelene) pour-on or oral drench is registered and is effective in control of the sheep nose bot. Treat in the fall after the activity of adult bot flies has ceased. The bot larvae are still small and easier to control at this time.