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Controlling Insects and Mites on Sheep and Goats  
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Cooperative Extension Service  
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# Controlling Insects and Mites ON SHEEP and GOATS

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## WARNINGS AND INFORMATION

Pest control in livestock requires year-round management. Livestock are never free of insects and mites.

Pests can lower meat and milk production and make animals more susceptible to disease. Further injury occurs when animals rub against fences, barbed wire, etc., to relieve itching. Improperly used pesticides can injure humans and animals or result in harmful and illegal residues in meat and milk.

Pest control clearly requires that you take the following precautions:

1. Use only the suggested dosages; measure carefully.
2. Do not apply chemicals closer to slaughter than the days given in this bulletin.
3. Read labels before using, and follow all instructions on labels.
4. Provide ventilation while using pesticides.
5. Prevent drift to adjacent cropland, yards, woodlots, lakes or ponds. Some materials may kill fish or wildlife.
6. Avoid treatment when animals are sick (especially in winter), overheated or stressed (shipping, dehorning, castration, recent weaning).
7. Use dust if possible instead of spray on sick or weak animals in winter, or spray on warm day. If sprayed indoors, turn out immediately to dry. Avoid undue exposure of animals to mists and vapors. Do not apply material directly on animals unless directions permit. Read label.
8. Avoid contamination of feed and water.
9. Do not breathe any form of insecticide. Use face masks.
10. If you spill any form of insecticide on the skin, wash immediately with soap and water.

11. Do not add chemical to old dipping water. Start with fresh water to avoid poisoning animals and excess residues in meat.

12. Keep meat and milk away from contaminating chemical.

13. Do not spread treated manure on vegetable cropland unless specific materials are approved. Read label.

14. Do not contaminate feed, mangers, watering cups, milking equipment, milk, wells, ponds or streams with pesticides.

15. Store pesticides in the original, plainly labeled containers, safely locked away from livestock, pets, and children.

16. Provide ventilation during the use of all materials.

## FLY CONTROL IN BARN AND BARNYARDS

For best results, use a combination of formulations such as baits, residual sprays, larvicides, barn atomizers, etc., during the fly season. Act promptly. Treat as fly populations begin to build-up. Treat regularly.

### SANITATION

- Clean out pens as frequently as possible.
- Spread manure thinly outdoors to kill fly eggs and larvae by drying.
- Get rid of silage seepage areas, wet litter, manure stacks, wet hay or straw and other organic matter.
- Provide proper drainage in barnyards.

### SPRAYS

Barn surfaces vary in how much spray can be applied to them. Smooth surfaces take less, rough ones more. Follow instructions for each insecti-

cide. NOTE: Use no more gallons of spray than given in the tables to 1,000 square feet.

Add one of the insecticides to water as indicated in Table 1.

### BAITS

Apply baits to clean concrete or wherever flies gather. Baits can be used alone, but should be used in conjunction with wall and ceiling sprays.

Use one of the following:

**DRY BAITS** — 1% ronnel (Korlan) or dichlorvos; or 1% trichlorfon (Dipterex, Dylox, Neguvon); or 3½% malathion; or ½% naled (Dibrom). Follow manufacturers' label directions. Do not use Diazinon in dairy barns or milkrooms.

**WET BAITS** — (1) Add ½ pint of a malathion 57% EC plus 1 cup of sugar syrup to 2½ gallons of water; or 2 ounces of Diazinon 50% WP plus 1 pound of sugar in 5 gallons of water. Apply with a sprinkling can or other suitable equipment. (2) Use 1/10% trichlorfon (Dipterex, Dylox, Neguvon); or 1/10% dichlorvos; or 2% ronnel (Korlan) liquid bait. Follow label directions carefully. **Do not use Diazinon in dairy barns or milkrooms.**

**Warnings** — Do not apply where animals can slip and fall. Keep away from children.

### FLY MAGGOTS IN MANURE

Treat manure piles with one of the following mixed in 25 gallons of water:

**Dimethoate** — 1 gallon emulsion containing 2 pounds chemical per gallon.

**Malathion** — 3 pints emulsion containing 5 pounds chemical per gallon or 8 pounds 25% wettable powder.

**Rabon** — 4 pounds 50% wettable powder.

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**Table 1. — INSECTICIDE MATERIALS FOR SPRAY APPLICATION IN BARN.**

Chemical	Amount per 1,000 sq. ft.	Comments and Warnings
Dimethoate, 1% in water spray.	1 gal.	Mix 1 gal. of 23.4% EC in 25 gal. of water. Apply thoroughly as a surface spray to interior and exterior surfaces. Remove animals before spraying. Do not contaminate milk or milking equipment.
Fenthion (Baytex), 1.25% in water spray.	2 gals.	Mix 1 quart of 93% LC in 25 gals. of water. Apply thoroughly to walls, ceilings, etc. Do not apply directly to animals. Do not use as a space spray. Do not contaminate milk or milking equipment.
Malathion, 1% in water spray.	1 to 2 gals.	Mix 8 lbs. of 25% WP or 2 quarts of 57% EC in 25 gals. of water. Apply thoroughly to walls, ceilings, etc. Do not contaminate milk or milking equipment.
Ronnel (Korlan), 1% in water spray.	1 gal.	Mix 1 gal. 24% EC in 25 gals. of water. Apply to walls, ceilings, etc. Do not contaminate milk or milking equipment.
Diazinon, ½% in water spray.	1 to 2 gals.	Mix 2 lbs. of 50% WP in 25 gals. of water. Apply thoroughly to walls, ceilings and other areas where flies congregate. <b>Do not use in dairy barns, milkrooms or poultry houses.</b> Do not contaminate food, feed, or water.
Ravap (23% Rabon and 5.3% dichlorvos) 1% in water spray.	1 gal.	Mix 1 gal. Ravap in 25 gals. water. Apply to walls, ceilings, etc. of beef and dairy barns, livestock sheds, calf and hog barns and other farm buildings. Do not contaminate milk or milking equipment.

**Ronnel (Korlan)** — 1 gallon emulsion containing 2 pounds active ingredient per gallon.

**Diazinon** — 10 ounces of 50% wettable powder. Wet the surface of the manure. It is not necessary to soak it. Repeat as needed.

**Warnings:** — Do not apply dimethoate, malathion, ronnel or Rabon to livestock unless the package label or Michigan State University literature gives instructions to do so. Do not apply chemically treated manure to vegetable cropland unless specific materials are approved.

#### SPRAYS FOR FEED LOTS

Removal of manure from feedlots is a must. For sprays around fences, over manure piles and inside walls of loafing pens, use Rabon or ronnel as given for treating inside walls and ceilings of barns.

**Warnings:** — Do not spray animals directly with these materials unless other sections of this bulletin give approval. Avoid treating livestock-resting areas. Keep these clean and well bedded.

#### SPRAY FOR OUTSIDE BARN

Use dimethoate, malathion, ronnel, or Fenthion as given for treating inside walls and ceilings. Follow all label instructions for use outside dairy barns. Do not apply to water and feed crops. Do not use Diazinon in dairy barns or milkrooms.

#### SPACE OR AEROSAL SPRAYS

Space sprays or aerosols containing 0.1% pyrethrins and 1% piperonyl

butoxide (½ fluid ounce per 1,000 cubic feet) give satisfactory knock-down and kill of flies. A 1% dichlorvos (Vapona) or naled (Dibrom) insecticide applied as a fog or mist is effective. One pint of a 1% solution will treat 8,000 cubic feet (40 x 20 x 10). Do not use this fogging solution in areas where animals have received a direct application within the previous 8 hours. Avoid contamination of milk and milk utensils. Daily use of atomizers or foggers is necessary when they are used alone. Read the label for mixing instructions.

### SHEEP, GOAT PESTS

#### LICE

All stages of the biting louse, the blood sucking body louse and the foot louse live on the animals. Eggs are attached to the hairs, but can hatch even after being dislodged from the animals for several weeks. Immature and adult lice can survive for a week off the host.

#### BITING OR RED CHEWING LOUSE

It is 1/20 inch long with a light brown body. The head is reddish and broadly rounded in front. Each segment of the abdomen has one row of hairs running across it. It crawls about chewing wool fibers and skin scales, causing irritation to the animal and damage to the wool.

#### BLOOD SUCKING BODY LICE

This pest infests the entire body and face next to the skin, often clustering in large groups. It closely resembles the blood-sucking foot louse,

but is more slender, and head is twice as long as broad. It is up to 1/12 inch long and dark-gray or bluish in color. The blood-sucking body louse injures sheep mainly by sucking blood.

#### BLOOD SUCKING FOOT LICE

It is about 1/12 inch long and dark-gray or bluish in color. The head is about as long as wide. Each segment of the abdomen has two rows of hairs running across it. The foot louse is found on the legs in the short hairs below the true wool. Generally, it is not so damaging to sheep as the blood sucking body louse or the red chewing louse.

Five lice infest goats and can be controlled as suggested for sheep lice.

#### SHEEP TICK OR KED

This wingless fly is brown, ¼ inch long and has 6 legs. The abdomen is sac-like; and the mouth parts are of the sucking type. Its food is blood and lymph taken from sheep and occasionally from goats. The insect stains the wool and robs animals of nutrition.

Sheep keds usually spend their entire lives on the animals except when accidentally dislodged. However, they crawl readily from ewes to lambs. The females give birth to living young (maggots) which are attached immediately to hairs, mainly on the belly and neck. Immature maggots are ⅛ inch long, whitish, oval and without legs. Within 24 hours, the skin of the maggots turn brown, forming pupal cases. The adult keds "hatch" from the pupal case in 3 to 5 weeks, depending on the temperature, since more time is needed to

change from maggots to the adults in winter.

**FLEECE WORMS**

These worms may be one or more of several fly maggots, but usually the green and bluebottle flies (blow flies) are responsible. The maggots have blunt tails and pointed heads. They live in matted and soiled wool. They often occur in open wounds.

**MITES**

**SHEEP SCAB OR SCABIES**

This trouble is caused by a mite. It is white or yellowish and very small

— barely visible to the unaided eye. It pierces the skin with very sharp mouth parts, causing inflammation and itching. Scabs form over the mites where blood and serum ooze from the wounds.

Sheep infested with scabies are subject to State and Federal quarantine. Consequently, all known or suspected sheep must be reported to the State Veterinarian's Office. When reporting, you may ask the help of your county agricultural agent, your local veterinarian, or the Animal Husbandry Department, Michigan State University, East Lansing, Michigan.

**Warning:**

None of the materials suggested in this bulletin for control of keds, lice, stable fly and fleece worms (blow flies) can be used for scabies unless approved by the State of Michigan Veterinarian's Office.

**Abbreviations in this bulletin:**

- WP means Wettable Powder
- EC means Emulsifiable Concentrate, or Emulsion
- LC means Liquid Concentrate
- SC means Suspension Concentrate
- D means Dust
- Tbsp. means tablespoon
- tsps. means teaspoons

**HORN FLY**

**Horn Fly** — grayish-black, half the size of house fly; sucking mouth parts. Feed primarily on withers, around horns, along back. In hot weather or rain, may move to belly; on cool nights may cluster between hind legs. Eggs laid in fresh manure;

hatch in about 20 hours; maggots grow for about 5 days before pupating; 5-days later adults emerge.

**Note:** Back rubbers used with year-round control will help control horn flies, possibly other pests. Place back rubbers so as to force animals to use them — near feed sup-

plements, water or along fenced run where animals must pass.

**STABLE FLY**

**Stable Fly** — ¼ in. long, grayish, seven rounded dark spots on top of abdomen; piercing and sucking beak. Lays eggs in manure, decay-

ing vegetation. When not on animal, rests in shade on wooden posts, trees, buildings. Prefers active animals, ears and legs.

**FACE FLY**

**Face Flies** — resembles house flies, but darker, larger. Females have a grayish-

green abdomen; hard to tell from house flies. Male abdomen has black line down center; eyes almost touch. Males not found on animals. Female feeds around eyes, lips, in and around nostrils, and may aid spread of eye diseases. Larvae feed in fresh cow dung.

**Table 2. — INSECT AND MITE CONTROL PROGRAM FOR SHEEP AND GOATS**

Pest	Material and Formulation	Min. Days from Last Appl. to Slaughter	Amount per Animal or Area, if Appropriate	Comments
General warning: Do not use oil-base emulsion on sheep; oil types tend to stain the wool and do not penetrate it as well as others.				
LICE (Dipping is the most reliable method of eliminating the 3 kinds of lice.)	Ciovap EC (10% Ciodrin and 2.5% dichlorvos), ¼ % in water spray. Use in water sprays, coumaphos (Co-Ral), ¼ %; or diazinon 0.06% or lindane 0.06%; or malathion ½ %; or ronnel (Korlan), ¼ %; or toxaphene ½ %.	0	Depends on size of animal and length of wool or hair.  Same as for Ticks (keds).	Mix 2½ pints of Ciovap EC in 16 gals. of water. Spray animals thoroughly. Repeat as necessary but not more often than once in 7 days. <b>READ THE LABEL.</b>  Use Diazinon on <i>sheep only</i> .  Korlan — Do not use within 28 days of slaughter.
SCAB (SCABIES)	Sheep scab in a reportable disease subject to State and Federal quarantine and control operations must be supervised by personnel of the State Veterinarian's Office. Rigid regulations against importation of this disease are in effect. If you suspect scab, ask for help from your County Agricultural Agent.			
TICKS (Keds), HORN FLIES	coumaphos (Co-Ral), ¼ % in water spray.	15	Depends on animal size and wool or hair length.	Mix 4 lbs. Co-Ral 25% WP for ticks or 2 lbs. Co-Ral 25% WP for horn flies in 100 gals. of water. Do not treat animals less than 3 months old. Spray thoroughly. <b>READ THE LABEL.</b>
	coumaphos (Co-Ral), 0.5% dust, (Use as bought.)	15	1 to 2 oz. per sheep.	Dust treatment recommended in cold weather. Follow label directions. Use a hand duster. <b>READ THE LABEL.</b>
	diazinon, (Sheep only). 0.06% in water spray.	14	Use about 1 quart per animal.	Mix 1 lb. diazinon 50% WP per 100 gals. of water. Spray thoroughly. Use low pressure sprayer. Do not use for horn fly control. <b>READ THE LABEL.</b>
	diazinon, (Sheep only). 2% dust.	14	1½ oz. per animal.	Dust treatment recommended in cold weather. Follow label directions. Use a hand duster. <b>READ THE LABEL.</b>
	lindane, 0.06% in water spray.	30	Depends on animal size and wool or hair length.	Mix 1 quart of lindane 20% EC, or use 2 lbs. of lindane 25% WP in 100 gals. of water. A second spray application 2 to 3 weeks later may be necessary. Spray thoroughly. Do not use lindane on dairy goats.
		60	— — — — —	Applied as a dip.

**Table 2. — INSECT AND MITE CONTROL PROGRAM FOR SHEEP AND GOATS — continued**

<b>Pest</b>	<b>Material and Formulation</b>	<b>Min. Days from Last Appl. to Slaughter</b>	<b>Amount per Animal or Area, if Appropriate</b>	<b>Comments</b>
	malathion, ½ % in water spray	0	2 to 4 quarts after shearing.	Mix 1 gal. of malathion 57% EC or 16 lbs. of malathion 25% WP per 100 gals. of water. Repeat application after 2 or 3 weeks, if needed. Spray thoroughly. Do not use for horn fly control. Do not apply to milk goats. READ THE LABEL.
TICKS (Keds), HORN FLIES (Continued)	ronnel (Korlan), ¼ % in water spray.	28	1 quart.	Mix 1 gal. of Korlan 24% EC in 100 gals. of water. Do not apply more frequently than once every 2 weeks.
	toxaphene, ½ % in water spray.	28	Depends on animal size and wool or hair length.	Mix 3 quarts of 60% emulsifiable toxaphene in 100 gals. of water. May also be used in a dip. Hold the animal in the vat at least 30 seconds and completely immerse twice. Keep the dipping solution clean. Do not use on dairy goats.
FACE FLY	pyrethrum oil solution 0.1% plus 1.0% synergist.	0	1 to 2 fl. oz.	Apply daily as a mist (in the morning). Do not wet hair or skin. Apply to head, neck and front legs.
WOOL MAGGOTS (fleece worms)	coumaphos (Co-Ral), ¼ % in water spray.	15	Depends on animal size and wool or hair coat.	Mix 8 lbs. of Co-Ral 25% WP per 100 gals. of water. Spray thoroughly.
	coumaphos (Co-Ral), 0.5% dust. (Use as bought.)	15	1 to 2 oz. per sheep.	Dust treatment. Follow label directions. Use a hand duster.
	ronnel (Korlan), ½ % in water spray.	28	Depends on animal size and wool or hair coat.	Mix 2 gals. of Korlan 24% EC per 100 gals. of water. Repeat if necessary but not more often than once every 2 weeks. Spray thoroughly.
	toxaphene, ½ % in water spray.		Same as for Ticks (keds).	Apply as a spray or as a dip.

**WARNING:** Avoid dumping dipping vat or spray solutions into or near ponds, wells, or streams. Malpractices have resulted in large fish kills and severe fines to the offender.

**POISON INFORMATION CENTER**

**DETROIT**

Detroit City Health Department  
1151 Taylor Avenue 48202  
(313) TR2-1540

**POISON TREATMENT CENTERS  
(Information and Treatment)**

**ADRIAN**

Emma L. Birby Hospital  
818 Riverside Ave. 49221  
(313) 263-2412

**FLINT**

Hurley Hospital  
6th Ave. & Begole 48502  
(313) 232-1161 ext. 220

**LANSING**

St. Lawrence Hospital  
1210 W. Saginaw Street 48914  
(517) 372-3610 ext. 305

**ANN ARBOR**

University Hospital  
1405 E. Ann Street 48104  
(313) 764-5102

**GRAND RAPIDS**

Blodgett Memorial Hospital  
1840 Wealthy, S.E. 49506  
(616) 774-7740

**MARQUETTE**

Marquette General Hospital  
425 W. Fisher Street 49855  
(906) 228-9440 ext. 416

**BATTLE CREEK**

Community Hospital  
200 Tomkins St. 49016  
(616) 963-3521

Butterworth Hospital  
100 Michigan, N.E. 49503  
(616) 774-1774

**MIDLAND**

Midland Hospital  
4005 Orchard Drive 48640  
(517) 835-6771 ext. 308 or 328

**BAY CITY**

Bay Medical Center  
100 15th Street 48706  
(517) 893-5511

Grand Rapids Osteopathic Hospital  
1919 Boston St., S.E.  
(616) 452-5151

**MONROE**

Mercy-Memorial Hospital Corp.  
700 Stewart Road 48161  
(313) 241-6509

**BERRIEN CENTER**

Berrien General Hospital  
Dean's Hill Road 49102  
(616) 471-7761

**HANCOCK**

St. Joseph's Hospital  
200 Michigan Avenue 49930  
(906) 482-1122

**PETOSKEY**

Little Traverse Hospital  
416 Connable 49770  
(616) 347-7373 ext. 251

**COLDWATER**

Community Health Center  
of Branch County  
274 E. Chicago Street 49036  
(517) 278-7361

**HOLLAND**

Holland City Hospital  
602 Michigan Avenue 49423  
(616) 396-4661

**PONTIAC**

St. Joseph Mercy Hospital  
900 Woodward Avenue 48053  
(313) 858-3000

**DETROIT**

Children's Hospital of Michigan  
3901 Beaubien 48201  
(313) 494-5711  
Mount Carmel Mercy Hospital  
6071 W. Outer Drive  
(313) 864-5400 ext. 417 or 864-5536

**JACKSON**

W. A. Foote Memorial Hospital  
205 N. East Street 49201  
(517) 783-2771

**PORT HURON**

Port Huron Hospital  
1001 Kearney St. 48060  
(313) 982-8511

**ELOISE**

Wayne County General Hospital  
30712 Michigan Avenue 48132  
(313) 722-3748 8 a.m.-11 p.m.  
274-3000 11 p.m.-8 a.m.

**KALAMAZOO**

Borgess Hospital  
1521 Gull Road 49001  
(616) 383-4815  
Bronson Methodist Hospital  
252 E. Lovell Street 49006  
(616) 383-6338 — 383-6386

**SAGINAW**

Saginaw General Hospital  
1447 N. Harrison Road 48602  
(517) 753-3411

**TRAVERSE CITY**

Munson Medical Center  
Sixth Street 49684  
(616) 947-6140 ext. 280