

For Poultry...

Insect and Mite Control

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Materials and rates of application listed are based on the latest information available at the time this publication went to press. Supplemental information will be disseminated as the need arises, usually through the offices of county agricultural agents.

All insecticides are poisonous in varying degrees. They should be handled cautiously so that they will not poison livestock, children, or the user. Read the label on the package carefully for instructions on how to use all insecticides.

Note: The information in this bulletin is for use on chickens, turkeys, and other barnyard fowl. Because of the dangers of off-flavoring eggs and contaminating meat with insecticides, follow all label directions for use of chemicals around poultry. Especially, do not use insecticides that are not listed in this bulletin, or are not approved on up-to-date package labels. Stop treatments the required number of days before slaughter of birds.

Lice and mites may reduce egg production. Birds go off feed, become droopy, develop diarrhea, or often die. *Note:* Common chicken mite control is very similar in most aspects to that for poultry lice and northern fowl mite. The essential difference, of course, is that lice and northern fowl mites are on the birds all the time and the common chicken mite only when they feed for blood, usually at night. Hence, control must be done primarily on the birds for lice and northern fowl mite and throughout the building and equipment for common chicken mite. Consequently, common chicken mite, northern fowl mite, and poultry lice control should be planned as a single project.

For, whatever is done about one pest will help control the others.

Northern Fowl Mite

The adult northern fowl mite is small ($\frac{1}{16}$ inch long); its body is oval to elongate and has eight legs. The adult is usually blackish-brown, although color variations sometimes give it a banded appearance. The eggs are usually deposited on the birds. These mites may be found on the birds at all times. Control measures should be taken when these mites are seen on the birds, or in the nests.

Common Chicken Mite

The adult mite is about $\frac{1}{16}$ inch long and has eight legs. It is grayish, but when filled with blood, it is red to nearly black. The chicken mite lives in wood cracks and other hiding places in, and around, poultry houses. It visits chickens and other fowl only when feeding. Common chicken mites are usually found on the birds only at night. Control measures should be taken when these mites are seen (most abundant in the summer) in the poultry house or during general fall and spring clean up.

Poultry Lice

Several kinds of lice bother poultry by chewing feathers and skin scales. No sucking lice infest domestic fowl.

Poultry lice are wingless, flat bodied, six-legged, and have a rounded head in front. When full grown, some are $\frac{1}{8}$ inch long and vary in color from gray, to yellow, to black. Lice live their entire life on the birds and deposit their eggs on the feathers. Control

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measures should be taken in the spring and fall or when the lice are bothering the birds.

Beetles, Grain Mites, and Fly Maggots

In recent years, deep litter has created a number of new mite and insect problems in poultry houses. Two conditions are mainly responsible: first, high organic content and secondly, abundant grain-food supply found in this type of litter.

Normally, control of these insects requires removal of the litter and thorough cleaning of the floors and at least the lower-half of the walls. Only after this has been done, should an insecticide be used. Apply the treatment to the bare floor and walls.

Wire Cages or Batteries: Nowhere in the production of poultry is sanitation as important as when birds are housed in wire batteries (cages). Floors and areas around the legs or stands of the cages must be kept free of litter and other materials that harbor common chicken mites.

Flies in Poultry Houses

No fly control program can be successful unless larval development in droppings can be prevented. Flies may come into poultry houses from distances of 2 or more miles. When heavy fly populations are observed in untreated areas, it is time to take immediate action to reduce the fly population by use of fogs or space sprays. Treatments should be repeated as needed.

Sanitation

Cleanliness in poultry houses is a must at all times for control of mites, lice, and other insects. *A thorough cleaning and elimination of insects and mites before housing a new flock in the fall will greatly reduce the annoyance created during the winter by these pests.*

- Remove manure from beneath caged layers as frequently as feasible.
- Scatter manure lightly outdoors so that fly eggs and larvae can be killed by drying. *Avoid piling manure, as it will create a fly breeding site.*
- Remove floor litter, droppings, and nesting materials at regular intervals.
- Maintain low moisture levels in the manure by proper ventilation. Repair or replace leaking water troughs, individual water valves, or other faulty fittings. Dry manure is less suitable as a fly breeding site.

Mechanical

Use a fan to blow air through a screened doorway from the egg room or other work areas into the main poultry house. Flies will not move against the wind into the egg room or other work areas.

Baits

Never use baits where loose birds are housed. Scatter bait where flies rest on floor areas not satisfactorily treated by sprays. Follow label instructions and precautions on use of baits.

Residual Sprays

- Apply a 1% dimethoate residual spray (1 gallon of 23.4% EC in 25 gallons of water) to ceilings, walls, etc., to the point of run-off. Apply one gallon of spray to 500 to 1,000 sq. ft. of surface. Be sure to *remove birds* from the building before spray application.
- Apply a 1% ronnel (Korlan) residual spray (1 lb. of 25% WP or 1 pint of 24% EC in 3 gallons of water). Apply 3 gallons per 1,000 sq. ft. of ceilings, walls, etc. Birds do *not* have to be removed from the building before spraying.
- Apply 1% malathion spray (5 ounces of 25% WP, or 4 tablespoons of 57% EC per 1 gallon of water). Apply liberally to litter, walls, ceilings, roosts, nests, and adjacent areas. Force-spray into cracks and crevices. Birds do *not* have to be removed from the building before spraying.

Building Atomizers (Stationary)

Use pyrethrum oil-base space sprays (0.1% pyrethrins plus 1% piperonyl butoxide) at the rate of ½ fluid ounce per 1,000 cu. ft. on a daily basis for fly control in closed egg rooms.

Mist Machines (Portable)

These mechanical foggers are labor-saving, especially for caged birds. However, these machines are concentrate applicators which use different dosage rates than ordinary sprayers. Use 10 tablespoons of malathion 57% EC, or 6 ounces of carbaryl (Sevin) 80% sprayable powder, or 10 ounces of carbaryl (Sevin) 50% WP per 1 gallon of water at the rate of 1½ gallons per 1,000 birds. **FOLLOW LABEL INSTRUCTIONS AND PRECAUTIONS.**

Manure Drenches

When other recommended measures cannot be used, treat the manure with a fuel oil or water drench of dimethoate (Cygon), ronnel (Korlan) or malathion.

Use dimethoate (Cygon 2-E), ½ pint in 5 quarts of oil or water; or ronnel (Korlan 4E), 1 quart in 6 gallons of oil or water; or malathion, 5 ounces 25% WP per 1 gallon of oil or water, as a coarse spray on poultry droppings in caged layer houses and on manure piles.

A sprinkling can may be used to apply the larvicide lightly, but evenly, over the manure. Water emulsions can be used, but they may liquefy manures and increase the fly problem. An oil solvent is preferable since it inhibits fly development.

It is not necessary to remove caged layers when using the above insecticides as a manure drench. Avoid direct spray contact with the birds.

Fly Traps and Electrical Grids

Many mechanical traps, using baits or grids, are available commercially. They often trap and kill large numbers of flies. However, their primary function is to supplement sanitation and insecticidal control programs. Satisfactory control of heavy fly populations is not obtained by these devices alone.

The use of pesticides is necessary to safeguard the health of poultry as well as increase production efficiency. When properly used, pesticides are safe and effective, but they can be injurious to humans or animals, or result in harmful residues in meat and eggs if used improperly. Avoid contamination of feed and water.

General warnings for all materials suggested in this bulletin:

• READ LABEL BEFORE USING ANY INSECTICIDE.

- Provide ventilation during the use of all materials.
- Avoid undue exposure of the birds to mists and vapors during application. Do not apply any material directly on the birds unless directions say you can do so safely.
- Do not breathe any form of the insecticides. Face masks can be purchased for protection.
- If any form of insecticides, whether concentrated or dilute, are spilled on the skin, wash immediately with soap and water.

In Case of Poisoning:

1. *Call your physician.* NOTE TO PHYSICIAN: The table below lists Poison Control Centers in Michigan which can furnish specific information including antidotes for various trade and common named poisons. Services of the Centers are intended mainly for Medical Doctors. However, offices remain open 24 hours a day and can give emergency poison treatment advice over the phone.

- Meat and eggs should not come in contact with any chemical which may contaminate it.
- Chemically treated manure should not be applied to any areas in which vegetables are grown, unless specific materials are approved for such vegetables. Read the label for this information.
- Do not contaminate feed, watering cups, wells, ponds or streams with pesticides.
- Store pesticides in their original, plainly labeled containers, safely away from livestock, pets, and children. *Keep them under lock.*

ALL INSECTICIDES AND MITICIDES are poisonous in varying degrees. Handle them cautiously so that they will not poison livestock, children, or the user. When using insecticides, do not increase the dosage. Measure all materials carefully.

Apply chemicals no closer to slaughter than the time given in this bulletin. Read the package label for additional instructions on how to use pesticide chemicals safely. Meat and eggs can be seized if they contain more insecticide or miticide than allowed.

Do not allow insecticides or miticides to drift onto pastures, hayfields, food crops, wood lots, non-crop areas, lakes, or ponds. Certain restrictions placed on chemicals when used on animal or human food crops are listed in this bulletin. When applied to water or wildlife areas, some of the materials listed may kill fish or wildlife.

To determine the dangers of drift, read the label on the package. Follow the same restrictions for insecticide and miticide drift as for direct application of the same materials to food crops. For dangers of fish and wildlife poisoning from insecticides and miticides applied to water or areas other than lands, contact your County Agricultural Agent.

Michigan Poison Control Centers

2. *For poisons spilled on the skin:* Wash thoroughly with large amounts of soap and warm water. Particles in the eyes may be removed by thorough flushing with plain water. For phosphate materials absorbed through the skin, give atropine by injection or in tablet form.

3. *For poisons that have been inhaled:* Place the patient in the open air. Give atropine as directed above if a phosphate material is responsible. Administer artificial respiration when necessary.

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4. For poisons that have been swallowed, induce vomiting as soon as possible. To do this, gently stroke the inside of the throat and/or give an emetic such as warm salt water (1 tablespoon in a glass of water). Repeat until the vomit fluid is clear. After the stomach has been emptied give a demulcent such as raw egg white mixed with water.

5. When the physician arrives, he may inject 1/30 to 1/60 of a grain of atropine sulfate at hourly inter-

vals for phosphate materials, or phenobarbital for chlorinated hydrocarbon chemicals.

NOTE: A new antidote, specific for phosphate chemicals, is available to doctors for emergency treatment of phosphate poisoning. This antidote, called PAM (protopam chloride or pralidoxime) can be injected intravenously by doctors or prescribed in tablet form. In several instances persons poisoned by phosphate chemicals have responded to PAM when atropine failed to give desired results.

POISON INFORMATION CENTER

DETROIT

Detroit City Health Department
1151 Taylor Avenue 48202
TR2-1540

POISON TREATMENT CENTERS

(Information and Treatment)

ADRIAN

Emma L. Bixby Hospital
815 Riverside Ave. 49221
205-6161

FLINT

Hurley Hospital
6th Avenue & Begole 48502
Cedar 2-1161

MARQUETTE

St. Luke's Hospital
West College Avenue 49855
Canal 6-3511

ANN ARBOR

University Hospital
1405 E. Ann Street 48104
794-5102

GRAND RAPIDS

Blodgett Memorial Hospital
1840 Wealthy, S.E. 49506
456-5301

MIDLAND

Midland Hospital
4005 Orchard Drive 48640
TE 5-6711

BATTLE CREEK

Community Hospital
200 Tomkins St. 49016
963-5521

BUTTERWORTH

Butterworth Hospital
100 Michigan, N.E. 49503
451-3591

MONROE

Memorial Hospital of Monroe
700 Stewart Road 48161
CH 1-6500

BAY CITY

Mercy Hospital
100 Fifteenth St. 48706
Twinsbrook 5-5511

GRAND RAPIDS OSTEOPATHIC HOSPITAL

1919 Boston St., S.E. 49506
452-5151

PETOSKEY

Little Traverse Hospital
416 Connable 49770
Diamond 7-2551

BERRIEN CENTER

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

HANCOCK

St. Joseph's Hospital
300 Michigan Avenue 49930
482-1122

PONTIAC

St. Joseph Mercy Hospital
900 Woodward Avenue 48053
338-9111

COLDWATER

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

HOLLAND

Holland City Hospital
602 Michigan Avenue 49423
396-4661

FORT HURON

Mercy Hospital
2601 Electric Avenue 48600
Yukon 5-9531

DETROIT

Children's Hospital of Michigan
3901 Beaubien 48201
494-5711
Mount Carmel Mercy Hospital
6071 W. Outer Drive 48235
864-5400

KALAMAZOO

Bronson Methodist Hospital
252 E. Lovell Street 49006
342-9821

SAGINAW

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

ELOISE

Wayne County General Hospital
30712 Michigan Avenue 48132
722-2500 ext. 6230 or 6231

LANSING

St. Lawrence Hospital
1210 W. Saginaw Street 48914
372-3610

TRAVERSE CITY

Munson Medical Center
Sixth Street 49684
947-6140

INSECTICIDES FOR POULTRY PESTS

Pest	Material and Formulation ¹	Minimum Days Last Application to Slaughter	Amount per Bird or Area If Appropriate	Comments
BEDBUGS AND FLEAS	Use carbaryl (Sevin) bird dust treatment and poultry premise (spray) treatment as under Chicken Mites.			
CHICKEN MITES (Hide on roosts and in wall cracks during day and feed on birds at night).	carbaryl (Sevin), 5% dust (Use as bought).	7	1 lb. per 100 birds.	Use shaker can, squeeze bottle or hand duster. Direct dust to vent and fluff areas. Repeat within 4 weeks, if necessary. Do not contaminate eggs, feed, drinking water, or nest litter.
	carbaryl (Sevin), 5% dust (Use as bought).	7	2½ lbs. per box for 50 birds.	Dust both box treatment. ² Do not contaminate nests, eggs, feed or water troughs.
	carbaryl (Sevin), ½% in water spray.	7	1 to 2 gal. per 1,000 sq. ft.	Mix 2 pounds carbaryl, 50% WP in 25 gallons of water. Spray roosts and walls for thorough coverage, and force-spray into cracks. Do not treat eggs or nest litter.
	coumaphos (Co-Ral), ¼% in water spray.	0	1 gal. per 1,000 sq. ft. of surface.	Litter treatment. Mix 6 ounces of Co-Ral, 25% WP in 5 gallons of water. Thoroughly cover litter, walls, ceilings, floors, roosts, nests, and adjacent areas. Repeat as necessary.
	coumaphos (Co-Ral), ½% dust (Use as bought).	0	Dust thoroughly	Do not use more than once per week. Do not dust within 10 days of vaccination or other stress periods. Provide thorough ventilation while dusting.
	coumaphos (Co-Ral), ½% dust (Use as bought).	0	3 lb. per box for 50 birds	Self treatment dust box. Do not contaminate meat, eggs, feed or water troughs.
	malathion, 4% dust (Use as bought).	0	Amount to use depends on size of birds.	Get thorough coverage directly to birds. Apply with a rotary hand duster, puff duster, or by sprinkling from a can or other container.
	malathion, 0.7% in water spray.	0	1 to 2 gal per 1,000 sq. ft.	Mix 4 tablespoons malathion, 57% EC or 5 ounces 25% WP in 1 gallon water. Apply liberally to litter, walls, ceilings, roosts, nests, and adjacent areas. Force spray into cracks and crevices. Use a sprinkling can.
	Rabon, ½% in water spray.	0	1 gal. per 100 birds	Direct application—Mix 4 lbs. Rabon, 50% WP or 1 gal. 24.3% EC in 50 gallons of water. Apply to vent and fluff area with high pressure equipment. Repeat in 2 weeks if necessary.
	Rabon, ½% in water spray.	0	2 gal. per 1000 sq. ft.	Litter treatment—Mix 4 pounds Rabon, 50% WP or 1 gal. 24.3% EC in 50 gal. of water. Apply evenly to litter, walls, roosts and cracks. Birds can be present when applied.
DARKLING BEETLE (lesser mealworm)	carbaryl (Sevin), 5% dust (Use as bought).	7	1 lb. dust per 40 sq. ft.	Treat floor litter. Employ sanitary measures. Apply dust thoroughly and force dust into cracks. Read the label.
	ronnel (Karlen), ½% in water spray.	0	2 gal. per 100 sq. ft.	Mix 8 ounces Karlen 24% EC in 25 gal. water. Spray floors, footings and lower 2 ft. of inside walls. Allow spray to dry before birds are placed on litter. Read the label before spraying on certain types of foam insulation.
LICE	carbaryl (Sevin), 5% dust (Use as bought).	Some as for Chicken Mites for both the direct dusting and the dust both box treatments.		

	carbaryl (Sevin), 4% in water mist spray.	7	1½ gal. per 1,000 birds.	Mist-spray birds. Mix 6 ounces of Sevin, 80% sprayable or 10 ounces of Sevin, 50% WP in 1 gallon of water. Ventilate while spraying. Avoid treating nest litter. Do not repeat treatment within 4 weeks.
	roanel (Karlan), 5% granules (Use as bought).	0	1 lb. of granules per 100 sq. ft.	Scatter granules evenly over manure piles, under caged layers. May be used in layer, broiler and replacement pullet houses. Read the label.
	coumaphos (Co-Ral), ¼% in water spray.	Same as for Chicken Mites litter treatment.		
	coumaphos (Co-Ral), ¼% in water spray.	0	1 gal. to 100 to 125 birds or ½ ounce of the spray per individual bird.	Spray birds directly. Mix 6 ounces of Co-Ral, 25% WP in 5 gallons of water. Repeat when necessary, but not within 1 week. Do not spray within 10 days of vaccination or other stress or in conjunction with other organophosphate compounds. Do not spray in a confined, non-ventilated area.
	malathion, 4% dust (Use as bought).	0	Amount to use depends on size of birds.	Dust birds thoroughly. Repeat in 4 to 8 weeks, or when necessary.
	Rabon, ½% in water spray.	Same as for Chicken Mites for both the direct application and litter treatments.		
	Nicotine sulfate, 40% solution (in oil or water).	0	1 pint per 150 to 200 ft. of running roost.	Paint on roosts only. Repeat in 10 days. Use caution in application. Avoid spillage on skin and wash off promptly.
NORTHERN FOWL MITE (Lives on bird all the time—since roosters do not dust themselves, catch and dust each one individually).	carbaryl (Sevin), 5% dust (Use as bought).	Same as for Chicken Mites for both the direct dusting and the dust bath box treatment.		
	carbaryl (Sevin), 5% dust (Use as bought).	7	1 lb. dust per 40 sq. ft.	Get thorough coverage and force dust into cracks. Treat floor litter. Read the label.
	carbaryl (Sevin), 4% in water mist spray.	Same as for Lice mist spray treatment.		
	coumaphos (Co-Ral), ¼% in water spray.	Same as for Lice, spray birds directly.		
	coumaphos (Co-Ral), ½% dust (Use as bought).	Same as for Chicken Mites litter treatment.		
	malathion, 4% dust (Use as bought).	Same as for Lice bird treatment.		
	malathion, 4% dust (Use as bought).	0	1 lb. per 50 to 60 sq. ft. of litter.	Get thorough coverage and force dust into cracks. Treat floor litter, nests, roosts and adjacent areas. Read the label.
	Rabon, ½% in water spray.	Same as for Chicken Mites for both the direct application and litter treatments.		

¹Abbreviations used in this bulletin: WP — Wettable Powder EC — Emulsifiable Concentrate, or Emulsion SC — Suspension Concentrate D — Dust

²Dust boxes are a simple method of getting birds to dust themselves. Use a box about 1½ feet long by 1 foot wide by 3 inches deep (one box for every 30 floor birds). Read the label on all insecticides BEFORE using them.