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Controlling Mites and Insects of Beef Cattle
Michigan State University Extension Service
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Controlling

MITES and INSECTS of BEEF CATTLE

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COOPERATIVE EXTENSION SERVICE

MICHIGAN STATE UNIVERSITY

Ray L. Janes' and Arthur Wells'

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

The suggestions in this bulletin are for beef cattle only. For dairy animals, use Extension Bulletin 351, Farm Science Series, Michigan State University.

Apply chemicals to beef cattle no closer to slaughter than the time given in this bulletin. Read "Warnings About the Insecticides," page 6, before treating any animal. Read the package label for additional instructions on how to safely use pesticide chemicals. Meat can be seized if it contains more insecticide or miticide than allowed.

There is some danger to beef cattle when spraying them in winter. Instead, use a dust when possible. If you must spray in winter treat on a warm day and, if this is done in a barn, turn the animals out immediately to dry. You are taking a risk if you spray during cold weather.

Do not allow insecticides, fungicides, or nematocides to drift onto pastures, hay fields, food crops, wood lots, noncrop areas, lakes, or ponds unless there is no danger involved. Certain restrictions placed on chemicals when used on animals or human food crops are listed in this bulletin. Three general conditions concerning the problem follow:

1. One of the most important sources of meat and milk contamination from insecticides is feed (hay, silage, or grain) upon which there is excessive or unallowable insecticide residues.
2. Little danger exists from unwanted residues when approved materials are used. *Dosage rates, residues resulting from drift, and cut-off dates before harvest of crops fed to livestock must, however, be observed carefully to make approved materials safe.*
3. 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, fungicide, and miticide drift as for direct

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application of the same materials to food crops. For dangers of fish and wildlife poisoning from insecticides, fungicides, and nematocides applied to water or areas other than crop lands get information from your county agricultural agent.

CATTLE GRUBS

These maggots occur in the backs of native cattle from January to June, depending on the species of cattle grub flies. The common cattle grub occurs first, January to March; the northern bomb fly, March to June. Both cause lumps to form along the back. The maggots are spiny, legless, and curved-bodied. Until they are mature, cattle grub maggots are white; at maturity they turn brown, or black, and escape from the backs of the animals. They pupate in the ground, and the adult emerges from there.

Cattle brought from areas outside Michigan usually need treating at different times than native animals. Use the following information to time cattle-grub treatments:

Native Cattle—September 15 to November 1.

Texas and Southwest—April 1 to July 30.

Oklahoma and Kansas—May 1 to August 31.

Iowa, Nebraska, Colorado—June 1 to September 30.

Dakotas, Wyoming, Montana—July 1 to October 31.

Canada—September 1 to December 31.

Do not apply any treatment after the warbles (grubs) appear in the backs of animals. In cattle brought from various regions, first warbles usually occur in the backs of the animals as follows:

Michigan—January 1 to June.

Canada—April or earlier.

Dakotas, Wyoming, Montana—January.

Iowa, Nebraska, Colorado—December.

Oklahoma and Kansas—November.

Texas and Southwest—October.

Note: The appearance and length of time grubs stay in the backs of animals varies with the season, location, and species. Generally, the common cattle grub occurs in the backs first and the northern cattle grub, or bomb fly, last.

Use only one of the following methods for cattle-grub control:

Spray

Different spray pressures are needed for control of some insects and mites affecting beef cattle. For example, sprays for mites must be applied at higher pressures than for lice. Pressures of 100 to 250 pounds are normally high enough to control most insects and mites of cattle, PROVIDING THE HIGHER PRESSURES ARE USED FOR MITES CAUSING MANGE AND FOR CATTLE GRUBS.

Note: When spray pressures of less than 100 pounds are used, a small amount of wetting agent improves

sticking and penetration (see instructions on the label for amount). Do not add too much wetting agent because it causes excessive runoff, reducing the effectiveness of the spray.

Treatments applied from catwalks along holding pens often give better results than applications from the ground.

When the amount of water in the sprayer is less than 100 gallons, use a proportionate amount of insecticide. For example, for 50 gallons of spray use one-half the amount of insecticide suggested for 100 gallons of spray, etc.

To 100 gallons of water use only one of the following materials:

Coumaphos (Coral), 12 pounds of 25% wettable powder.

Ruelene, 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon.

Wet the entire body to the skin (which takes about 1 gallon of spray). Do not continue to apply treatment after the animal is thoroughly wetted.

Pour-On

To 3 gallons of water add only one of the following materials:

Coumaphos, 4 pounds of 25% wettable powder. Depending on the animal's size, use $\frac{1}{8}$ to $\frac{1}{2}$ pint of the mixture per animal.

Ruelene, 1½ gallons of an emulsion containing 2 pounds of active ingredient per gallon ($\frac{1}{2}$ gallon to 1 gallon of water). Use 1 fluid ounce of the mixture to each 100 pounds of cattle body weight. Do not apply more than 8 fluid ounces of the mixture to an animal weighing more than 800 pounds.

Apply either mixture evenly to the backline of each animal. Do not concentrate it on one area of the back; blistering may result. Pour-on treatment can be applied at time blood testing, pregnancy palpitation or other activities are being carried out.

Dip

To each 100 gallons of water in a dipping vat add 8 pounds of 25% coumaphos wettable powder. (Note: when the amount of water in the dipping vat is less than 100 gallons use a proportionate amount of insecticide. For example, for 50 gallons of dip use one-half the amount of insecticide suggested for 100 gallons of dip, etc.). The insecticide is normally kept mixed with the water by animals passing through the vat, but mix the chemical thoroughly with the water before starting to dip.

For best results, both the body and the head must be dipped. Allow no animal to escape dipping. Make a new batch of dip when it becomes dirty.

Warnings about spray, pour-on, and dip treatments:

1. Do not add chemical to old dipping water. Start from scratch when making a new dip or adding more chemical. If a chemical is concentrated in the dip by using too much, or by adding to an old dip, poisoning of animals and excessive residues in the meat can result.
2. For control of grubs in Michigan cattle do not apply spray, pour-on, or dip treatments before September 15 or after November 1. Especially, do not apply a chemical when warbles are in the backs of the animals. For cattle bought outside the state use the treatment timing information at the beginning of this section.
3. Keep spray, dip, or pour-on mixture agitated, especially if it contains wettable powder.

See the hazard and use warnings at the end of the bulletin.

CATTLE LICE

Three important lice infest cattle. One is the red chewing louse, which is 1/12 inch long when mature. The short-nosed cattle louse is 3/8 inch long, slate-gray, wingless, and has a short pointed head. It has sucking mouth parts and feeds by sucking blood. The eggs are white and glued to the hair. The long-nosed cattle louse is 1/10 inch long, blue, wingless, and has a long pointed head. Its eggs are black.

Lice bother most in winter. Hence, a treatment applied in late fall (before cold weather) checks an increase in their numbers and delays damage to animals until later in the winter. Treating twice (14 days apart) with malathion or other suitable insecticides will normally eliminate lice from a herd, providing newly purchased animals are isolated and treated before turning them in with the other cattle. Apply any treatment thoroughly.

The proper time to apply treatments for cattle grubs and cattle lice are not especially compatible. For example, cattle grub systemic treatments for native Michigan cattle must be applied no later than November 1. The best time to apply cattle lice treatments would be after the November 1 date for cattle grubs. December treatments for lice are usually better than those applied in September, October, or even November.

Spray

For instructions on how to use a spray follow those given in the section on spraying for cattle grubs. But for the chemicals to apply do this: To 100 gallons of water add *only one* of the following:

Dioxathion (Delnav): 2-2/5 pints of an emulsion containing 4 pounds of active ingredient per gallon.

Coumaphos (Coral): This material controls lice, as well as cattle grubs. When using the chemical for both grubs and lice, use the dosage and methods of application given for grubs. For lice only, use 8 pounds of 25% wettable powder, but do not use if cattle grub warbles are in the backs of the animals.

Lindane: 1 pound of 25% wettable powder, or 1 1/4 pints of an emulsion containing 1.6 pounds of active ingredient per gallon.

Malathion: 16 pounds of 25% wettable powder, or 6 1/2 pints of an emulsion containing 5 pounds of active ingredient per gallon.

Methoxychlor: 8 pounds of 50% wettable powder, or 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon. Double the amount for tail louse, but only spot treat for this insect.

Ronnel (Korlan): 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon.

Toxaphene: 1 gallon of an emulsion containing 4 pounds of active ingredient per gallon (1/2 gallon of an emulsion containing 8 pounds), or 8 pounds of 50% wettable powder.

Ruelene: 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon.

Spray with any mixture until hair and skin are thoroughly wetted. The amount of spray to use on each animal will depend on its size and the amount of hair. Once an animal is thoroughly treated, stop spraying.

Dip

For instructions on how to use a dip follow those given in the section on dipping for cattle grubs. But for the chemicals to apply do this: To each 100 gallons of water in the dipping vat add *only one* of the following insecticides:

Coumaphos (Coral): 4 pounds of 25% wettable powder.

Dioxathion (Delnav): 2-2/5 pints of an emulsion containing 4 pounds of active ingredient per gallon.

Lindane: 1 pound of 25% wettable powder, or 1 1/4 pints of an emulsion containing 1.6 pounds of active ingredient per gallon.

Ronnel (Korlan): 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon.

Toxaphene: 1 gallon of an emulsion containing 4 pounds of active ingredient per gallon (1/2 gallon

of an emulsion containing 8 pounds), or 8 pounds of 50% wettable powder.

Dust

Dusts are used as bought, without further dilution with fillers or mixing with water. Apply carefully to louse-infested areas, and generally over the animal's body. Dusters should be power-driven. If only a few animals are to be treated a hand duster may be all right.

Use only one of the following materials:

- Lindane*, 1%.
- Malathion*, 4 or 5%.
- Methoxychlor*, 10%.
- Toxaphene*, 5%.
- Rotenone*, $\frac{3}{4}$ of 1%.

See the hazard and use warnings at the end of the bulletin.

SARCOPTIC MANGE

This trouble is caused by a mite. It bores into the hide; the skin of the infested animal is rough and scabby. The damage done by the mite may also thin the hair.

Apply treatments in the spring and fall or when the problem is present. To 100 gallons of water add only one of the following:

Lindane, 2½ pints of an emulsion containing 1.6 pounds of active ingredient per gallon, or 2 pounds of 25% wettable powder.

Toxaphene, 1 gallon of an emulsion containing 4 pounds of active ingredient per gallon (½ gallon of an emulsion containing 8 pounds), or 8 pounds of 50% wettable powder. Generally, an emulsion is preferred to wettable powder for mange. Wet the entire hide thoroughly, paying special attention to the scabby areas.

See the hazard and use warnings at the end of the bulletin.

HORN FLY

This fly is grayish-black and about one-half the size of the house fly. It has sucking mouth parts and remains constantly on the cattle.

Spray

For horn flies use the following materials: Dioxathion (Delnav), methoxychlor, toxaphene, ronnel (Korlan), coumaphos, malathion, or ruelene. The dosage rates and limitations for each insecticide are the same as those given for cattle lice control.

Back rubbers

These are also suitable for horn-fly control. Use one of the following materials in No. 2 fuel oil:

- Methoxychlor*, or *toxaphene*, 5%.
- Ronnel (Korlan)*, or *Ciodrin*, 1%.
- Malathion*, 2%.

Use 1 gallon of any of these materials to 20 feet of cable. Saturate the back-rubber. Do not use water with the treatment.

Other self-treating devices

Treadle and other types of self-treater machines are also suitable for treating beef cattle for horn, horse, deer, and stable flies. Some of these can be operated by cattle as they pass through the machine. Use one of the following and do not dilute with water:

- Pyrethrum* oil solution (distillate) containing 2/10 of 1% pyrethrins plus 2% piperonyl butoxide.
- Dichlorvos (DDVP or Vapona)*, 1% mist oil spray.
- Ciodrin*, 2% mist oil spray.

Of any material, apply 1 to 2 fluid ounces per animal to the back and underline area primarily. Apply once daily (no more) preferably in the morning. Do not wet the hair or skin.

Some animals may overtreat themselves with self-treating machines. Limit these animals to one treatment a day.

See the hazard and use warnings at the end of the bulletin.

HORSE, DEER, STABLE, FACE AND HORN FLIES, AND MOSQUITOES

HORSE AND DEER FLIES are large, ranging from about ¼ to 1 inch long. They are usually brown. Many of them have brilliantly colored eyes. The smaller kinds have brown-banded wings. The females cut the skin with knifelike mouth parts and suck blood.

The maggots of horse and deer flies live in the mud on the bottom of shallow lakes, ponds, and swampy areas. Hence these flies will be worse in the vicinity of those types of water areas.

THE STABLE FLY is ¼ inch long and grayish in color. It differs from the house fly in having seven rounded dark spots on top of the abdomen, and mouth parts formed into a piercing and sucking beak. Both males and females live on blood.

FACE FLIES resemble the house fly, but are darker and larger. Females have a grayish-green abdomen and are hard to tell from house flies. Males have abdomens with a black line down the center and eyes that almost touch. They feed in summer on nectar and pollen and are not found on animals. Female face flies feed on animal secretions around the eyes, the lips,

and in and around the nostrils—hence, their name. Larvae feed in fresh cow dung, and possibly in other kinds of excrement.

Control

These insects are not so easily controlled as horn flies. Face flies, especially, are hard to control. Any type of treatment must be applied to the face, shoulders, and front legs of the animals for face flies. Back-rubbers give considerable control of face flies, but must be arranged to entice animals to rub their faces. If horn flies are controlled along with horse flies, deer flies, stable flies, and mosquitoes, use the materials listed for horn flies. If, however, these insecticides do not control the face fly satisfactorily try the following:

Ciodrin, 2 gallons of an emulsion containing 2 pounds of active ingredient per gallon to 100 gallons of water. This treatment is suitable for pen or corral spraying with high-pressure equipment. Apply 1 to 2 quarts per animal.

Pyrethrum, oil base distillate insecticide containing 2/10 of 1% pyrethrins plus 2% piperonyl butoxide. An automatic treadle or treater-type machine may be used for this treatment. It can be applied once daily.

Dichlorvos (DDVP, Vapona), 1% in oil solution. Apply 1 to 2 fluid ounces of the treatment, depending on the size of the animal. An automatic treadle or treater-type machine may be used. Application can be made once daily. Do not wet the hide.

For additional information about treadle applications, see the section on horn flies. See the hazard and use warnings at the end of the bulletin.

OTHER FLY CONTROL MEASURES

Barn surfaces vary in the amount of spray that can be applied to them. For example, smooth surfaces take less, rough ones more. The instructions for each insecticide are a guide to how much to apply. However, no more gallons of spray than given should be used to 1,000 square feet of barn surface.

Add one of the following to 25 gallons of water:

Dimethoate, 1 gallon of an emulsion containing 2 pounds of chemical per gallon. Apply 1 gallon of the mixture to 1,000 square feet.

Malathion, 8 pounds of 25% wettable powder or 3 pints of an emulsion containing 5 pounds of chemical per gallon. Apply 1 to 2 gallons of the mixture to 1,000 square feet.

Diazinon, 4 pounds of 50% wettable powder or ½ gallon of an emulsion containing 4 pounds of chemical per gallon. Apply 1 to 2 gallons of the mixture to each 1,000 square feet of barn surface.

Ronnel (Korlan), 1 gallon of an emulsion containing 2 pounds of active ingredient per gallon. Apply 1 to 2 gallons of the mixture to each 1,000 square feet of barn surface.

Dichlorvos, 1 quart of an emulsion containing 4 pounds of chemical per gallon. Apply 1 quart of the mixture to each 1,000 square feet of barn surface.

Lindane, 2½ pounds of 25% wettable powder. Apply 1 gallon per 1,000 square feet of wall surface.

Ciodrin, 1 gallon of an emulsion containing 2 pounds of chemical per gallon. Apply 1 gallon per 1,000 square feet of wall surface.

Cords, resin vaporizers, and residual bands

Use these with baits. Generally, wall and ceiling sprays are not needed with fly cords, resin vaporizers, or residual bands. Fly cords are made by treating heavy-type cord string (about ¼ inch diameter) with parathion, Diazinon, or other suitable materials. Resin vaporizers are plastic-like bands from which such materials as dichlorvos vaporize. Plastic residual bands contain Dimetilan.

Warning: Fly cords may be dangerous to make. Hence, buy treated cords; follow label instructions carefully when hanging them inside barns. Use resin vaporizers and residual bands according to manufacturer's directions.

Baits

Use one of the following dry or wet baits.

DRY BAITS: Use 1% ronnel (Korlan) or dichlorvos; or 1 or 2% Diazinon or trichlorfon (Dipterex); or 3½% malathion, or ½% naled (Dibrom). Follow manufacturer's label directions carefully.

WET BAITS: A. Add ½ pint of a malathion emulsion containing 5 pounds of chemical per gallon plus 1 cup of sugar syrup to 3 gallons of water. Apply with a sprinkling can or other suitable equipment. B. Use 1/10% trichlorfon (Dipterex) or Diazinon, or ½% naled, or 2% ronnel (Korlan) liquid bait. Follow label directions carefully.

Warning: (1) Apply baits to clean cement or areas where flies gather. These places are usually sunlit. (2) Do not apply baits where animals can slip and fall. (3) Baits can be used alone or with wall and ceiling sprays.

Fly maggots in manure

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

Diazinon, 4 pounds of 50% wettable powder.

Malathion, 3 pints of an emulsion containing 5

pounds of chemical per gallon or 8 pounds of 25% wettable powder.

Ronnel (Korlan), 1 gallon of an emulsion containing 2 pounds of active ingredient per gallon.

Dichlorvos, 2 quarts of an emulsion containing 4 pounds of chemical per gallon.

Dimethoate, 1 gallon of an emulsion containing 2 pounds of chemical per gallon.

Wet the surface of the manure. It is not necessary to soak it. Repeat as needed.

Warnings: Do not apply Diazinon, dimethoate, malathion, ronnel, or dichlorvos to livestock unless the package label or Michigan State University literature gives instructions to do so. Chemically treated manure should not be applied to any areas in which vegetables are grown, unless specific materials are approved for such vegetables.

Another treatment for manure piles is a half-and-half mixture of Cyanamid and super-phosphate. Apply 1 pound of this mixture to each bushel of manure or to each 2 square feet of the surface of the manure pile. Wet the treatment down immediately after applying but avoid drenching. The Cyanamid-super-phosphate treatment also adds fertilizer to the manure.

Sprays for outside barns

Use dimethoate, malathion, Diazinon, ronnel, dichlorvos, or lindane as given for treating inside walls and ceilings of barns. Follow carefully all label instructions for use outside dairy barns. In particular, do not apply to water and feed crops.

Sprays for feed lots

Regular removal of manure from these areas is absolutely required for fly control. For sprays around fences, over manure piles and inside walls of loafing pens, use Ciodrin, dichlorvos, or ronnel as given for treating inside walls and ceilings of barns.

Warnings:

Do not spray the animals directly with these materials, unless other sections of this bulletin give approval.

Avoid treating cattle resting areas. Keep these clean and well bedded.

WARNINGS ABOUT THE INSECTICIDES

As a general rule avoid treating sick, overheated and stressed animals with any insecticide.

Avoid contamination of feed and water.

Get Extension Bulletin 351 (Farm Science Series, Michigan State University), for control of mites and

insects of dairy cattle. This Bulletin also includes treatments for dairy barns and milk houses.

Coumaphos (Coral): Do not treat sick animals, or those under stress from disease, overheating, or other causes. Do not treat animals for 10 days before shipping, after shipping or before weaning. Spray animals 3 to 6 months old lightly and those less than 3 months not at all. Avoid using coumaphos with pyrethrum containing synergists, such as piperonyl butoxide, etc., or with synergists alone. Do not use it with oral drenches. Discontinue using coumaphos 7 days before slaughter.

Ciodrin: A thorough treating of animals is permissible, but prolonged spraying or drenching should be avoided. Do not apply more often than every 7 days, except for mist treatment which can be applied daily if needed. Avoid contamination of feed and water.

Dichlorvos (DDVP, Vapona): Daily use in water as a mist spray is permissible. However, continue treatments only as long as they are needed. Avoid contamination of feed and water.

Dioxathion (Delnav): Do not use within 30 days of slaughter. Avoid dipping animals less than 3 months of age. Apply it only at 2-week or longer intervals.

Diazinon: Apply to buildings only.

Dimethoate: Apply to buildings only.

Lindane: Stop dust or spray treatments 30 days before slaughter; dips 60 days before slaughter. Avoid treating sick animals. Do not dip, dust, or spray animals less than 3 months old. Do not use the amount suggested for buildings for treating animals.

Malathion: Do not treat sick animals or those less than 1 month of age. There is no limitation as to days before slaughter of animals, but treating too close to slaughter may have no practical value.

Methoxychlor: This material is fairly free of hazard, but prolonged or too close application of treatments should be avoided.

Pyrethrum: This material is fairly free of hazard, but prolonged treating should be avoided.

Ronnel (Korlan): Do not use on sick animals. Apply at 2-week or longer intervals. Stop treating 6 weeks (42 days) before slaughter of any animal when using a back-rubber. For dips and sprays stop treatments 56 days before slaughter.

Ruelene: Do not apply the chemical closer to slaughter than 28 days. Space treatments 28 days apart. Use 1 gallon of ½% spray to 300 pounds or more of animal body weight. Apply less for smaller animals.

Toxaphene: Avoid prolonged treating. Stop its use 28 days before slaughter of any type of animal.

READ THE LABEL — FOLLOW DIRECTIONS