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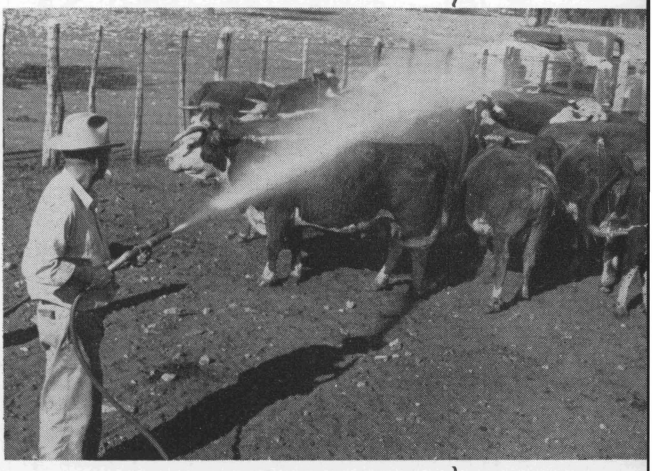
TEXAS GUIDE
FOR CONTROLLING

External Parasites of Livestock and Poultry



TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. HUTCHISON, DIRECTOR, COLLEGE STATION, TEXAS

Guide for Controlling External Parasites of

LIVESTOCK AND POULTRY

In Texas — 1958

EXTERNAL PARASITES of livestock and poultry are a constant menace. They lower production of meat, milk and eggs by sucking blood from the animals; they transmit diseases; and they cause loss in energy from annoyance. Organic insecticides will control the major external parasites. There is little excuse for allowing them to exist.

HOW TO SPRAY

Always weigh and measure an insecticide carefully to insure the correct dosage.

Use enough spray to cover the animal thoroughly, especially for control of ticks, lice and mites. Adequate spraying equipment, consisting of a high-volume piston pump with a suitable agitator, must be used when applying sprays made from wettable powders. The sprayer should be operated at a pressure of at least 200 pounds per square inch. The use of coarse spray nozzles is desirable. Guns equipped with several types of nozzles are useful and worth the extra expense.

Sprays give adequate control of external parasites and are preferred to dips. Some insecticide formulations have been used successfully as dips, but others have failed.

Inexpensive garden sprayers or similar equipment can be used to control parasites on a small number of animals. Hand sprayers with agitators are necessary for applying wettable powders.

INSECTICIDE FORMULATIONS

WETTABLE POWDERS—**Formulations of wettable powders are considered safer to use than emulsions.** All organic insecticides are toxic to warm-blooded animals and should be handled with caution. Exact dosages recommended in the Table should be used.

EMULSIONS—If emulsions are used, follow the recommendations of the manufacturer printed on the label. **In general, emulsions are considered more toxic to animals than wettable powders. However, some emulsions on the market are no more toxic than wettable powders, and are satisfactory for use in hand sprayers. Only emulsions manufactured for use on livestock are recommended.**

AMOUNT OF MIXED SPRAY TO USE

For good fly control, 1 to 2 quarts of spray per animal is sufficient. One gallon of spray per animal is required to give adequate control of ticks, mites and lice.

FLIES

HOUSE FLIES—House flies do not bite animals but when present in large numbers cause considerable annoyance. They may also spread diseases and eggs of internal parasites.

Chemical control must supplement the prevention of fly breeding to obtain adequate control. Manure should be spread thinly in fields so that fly eggs and larvae will be killed by drying and heat. If manure is stored in compost piles, the material added each day should be sprinkled with equal quantities of calcium cyanamid and superphosphate (1 pound of mixture to each bushel of manure). The addition of water will spread the chemicals more thoroughly and thus give better control of fly larvae.

Poultry manure in **cage laying houses** may be treated with 2½ percent malathion, 2½ percent DDT or 0.5 percent lindane emulsion sprays as needed for fly larvae control. Sugar baits containing 1 or 2 percent malathion, or 1 percent diazinon or 1 percent Dipterex may be used in cage laying houses for adult fly control.

In dairy barns sugar baits containing malathion and Dipterex may be used to supplement residual sprays for house fly control.

Spray dairy barns with 5 percent methoxychlor, 0.3 to 0.5 percent lindane, 2½ percent malathion or 0.5 percent diazinon. Other barns may be sprayed with the same materials or 5 percent DDT or 3 to 5 percent chlordane.

For controlling house flies on dairy cattle, a water spray containing 0.1 percent pyrethrin and 1 percent piperonyl butoxide should be applied at the rate of 1 quart per animal. This spray also is effective for a few hours if applied as a mist using about 1 ounce per animal. If an oil spray containing these toxicants is used, it should also be applied as a mist using only 1 ounce per animal twice a day.

STABLE FLIES—Stable flies are blood suckers and irritate animals. Loss in flesh and reduction of milk flow may be severe. These flies breed in mixtures of manure and decaying litter around barns. Disposal of manure and litter should be handled as indicated for house flies.

Insecticides cannot completely control stable flies. Breeding areas must be eliminated. Areas where flies are found resting should be sprayed as for house fly control.

See above for control on dairy animals.

HORN FLIES—Horn flies alone cost the producer from 20 to 30 pounds of beef per animal each year. These flies breed in fresh manure. Use sprays as recommended in the Table for control.

HORSE FLIES AND DEER FLIES—Horse flies and deer flies are vicious biters and cause livestock to lose weight. These flies may carry anaplasmosis, anthrax and other diseases. Most insecticides have proved ineffective for the control of horse flies. An effective spray consists of a mixture of 0.1 percent pyrethrin and 1 percent piperonyl butoxide applied several times a week. The animals' bodies should be covered with a fine mist, but not wet. Keep animals out of low bottoms near breeding areas during the breeding season.

SCREW-WORM FLIES—Female screw-worm flies are attracted to fresh wounds where they deposit eggs. The screw-worms feed on the flesh and may kill animals if the wounds are not treated.

EQ 335 screw-worm smear, in which lindane is the toxicant, is recommended for screw-worm control. Wounds should be treated weekly with this smear to prevent damage.

BLACK BLOW FLY—Wool maggots attack sheep but do not cause death directly. However, secondary infections may follow wool maggots. They appear around the rump in urine-soaked wool and near wounds. (See Table for sprays to control wool maggots.)

HEEL FLIES—Cattle grubs are immature forms of heel flies. Cattle often are seen in the spring running from heel flies or standing in water to protect themselves from the flies that are trying to lay their eggs. The grubs hatch from eggs that usually have been laid below the hock and bore into the flesh. They spend several months tunneling in the animal's body. The grubs move up to the back in the fall and winter to complete their development.

The first treatment (see Table) for grubs should be given in the fall when they first appear in the backs of animals.

LICE

Several species of lice attack cattle. Some of the species are blood suckers and one species is a biting louse. Cattle infested with lice have a rough, course

appearance and do not gain normally. Lice are more abundant during the winter and spring when the hair is long. The best time to treat cattle for lice is in the fall.

The hog louse is a blood-sucking parasite. The lice transfer from one animal to another when the animals come in close contact.

Several species of lice attack sheep and goats. Sheep and goats infested with lice will bite and pull wool which encourages infestations of screw-worms.

Poultry are attacked by several species of biting lice that irritate the birds and cause loss of weight, egg production and even death.

MITES

Mange mites burrow into the skin, producing tunnels in which the eggs are deposited. Scab mites deposit their eggs at the base of hairs or on the skin and produce scabs. Both kinds of mites are prevalent on animals throughout the State.

The chicken mite is an intermittent feeder, usually remaining on the host only a short time. The northern fowl mite and the tropical fowl mite usually spend their entire life cycle on the host.

Depluming mites burrow into skin of chickens and cause irritation around the base of the feathers. These mites may be controlled by dipping the chickens in a mixture of 2 ounces sulfur and 1 ounce soap in 1 gallon of water. Wet the feathers to the skin.

Chiggers are often serious pests of chickens and turkeys raised on the range. For control, treat the infested area with 2 pounds actual toxaphene or chlordane or 0.25 pound actual lindane per acre as a spray or dust. Since these materials are toxic, birds should be removed from the treated area for at least 7 days.

TICKS

Several species of ticks attack animals. The **lone star tick** occurs principally in wooded or brush areas. The **Gulf Coast tick** generally is found within a 150-mile radius of the Gulf Coast. The adults attack livestock around the ears, poll and top of neck. The **spinose ear tick** is found in dry areas. These ticks attack deep within the ears of livestock. This immature tick is picked up by animals around mineral boxes, feed troughs or watering troughs. To eliminate these breeding areas, move the mineral boxes and troughs periodically and spray the infested areas with creosote or a mixture of one-half crankcase oil and one-half kerosene. (See Table for sprays to control ticks.) The **fowl tick** (blue bug) injures poultry by sucking blood, causing loss in weight, lowered egg production and blemishes which greatly reduce market value.

FLEAS

Several species of fleas attack poultry and household pets. Since the immature stages of the insect are spent in the soil, fleas often become a nuisance in garages and home lawns. Fleas may serve as intermediate hosts for certain internal parasites of household pets and may spread disease.

See L-311 for flea control on dogs.

To control fleas on the lawn and in garages, use a 2½ percent malathion spray, 4 percent malathion dust or 0.5 percent diazinon spray. See the Table for use of malathion on poultry. At present only pyrethrum and rotenone preparations are recommended for cats.

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CAUTION AND TOLERANCES

The Pure Food and Drug Administration has established tolerances for residues of DDT, methoxychlor, malathion and toxaphene in the meat of certain animals. Due to this fact, several insecticides have been omitted from the recommendations for livestock and poultry.

The following tolerances have been established:

DDT—7 parts per million in the fat of beef cattle, hogs and sheep.

Malathion—4 parts per million in or on meat and meat byproducts from cattle, hogs and poultry; 0 parts per million in eggs.

Methoxychlor—3 parts per million in the fat of beef cattle, hogs and sheep.

Toxaphene—7 parts per million in the fat of beef cattle, sheep and goats.

Since residue studies indicate that if beef animals are sprayed, dipped or dusted with DDT, the tolerance will be exceeded, *DDT is omitted from the recommendations for controlling pests of beef cattle. Do not use DDT on hogs or sheep within 30 days of slaughter. Toxaphene should not be applied to beef cattle, sheep and goats within 4 weeks of slaughter. Methoxychlor can be applied without restriction to beef cattle, hogs and sheep as recommended in this guide. Lindane should not be applied to dairy animals or animals being finished for slaughter. Malathion should not be applied to lactating dairy animals or calves under 1 month of age.*

Most of the organic insecticides are toxic to man, livestock and poultry, and should be handled with care. Spraying is preferred to dipping since there are few accurate methods for determining the concentration of insecticide in a dipping vat.

Poultry are especially susceptible to insecticide poisoning. Apply sprays when birds are not in the house.

Avoid contaminating feed, feed containers and drinking water. Use only the recommended amount of insecticides. *Only formulations sold for use on livestock should be used on animals.*

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The recommendations in this circular are based upon results of experiments conducted by the Texas Agricultural Experiment Station, the Texas A. & M. College System, Entomology Research Division, Insects Affecting Man and Animal Research Branch, United States Department of Agriculture. For additional information contact your county agent or write the extension entomologist, College Station, Texas.

CONTROL PROGRAM

Parasites	Treatment	Remarks
BEEF CATTLE AND NON-LACTATING DAIRY CATTLE		
1. Cattle grubs	1. 7½ lb. of derris or cube containing 5% rotenone per 100 gal. of water as a spray. OR 7½ lb. of derris or cube containing 5% rotenone + 10 lb. wettable sulfur per 100 gal. of water as a dip. OR 1 lb. of derris or cube containing 5% rotenone to 2 lb. of heavy nonalkaline dust diluent, OR a prepared dust containing 1.67% rotenone.	1. Treat at 30-day intervals as long as necessary, starting when grubs first make a hole through the skin on the animal's back. A minimum of 3 oz. of dust mixture should be worked thoroughly into the hair on the back of the animal. If spray is used, the spray machine should develop at least 200 lb. of pressure. If dip is used, try a long-handled brush with stiff bristles to scrub the animal's back as it swims through the vat.
2. Lice	2. 0.5% toxaphene, OR 0.5% methoxychlor, OR 0.03% lindane, OR 0.006% rotenone as a spray or dip, OR 0.5% malathion, OR 0.025% pyrethrin as a spray.	2. Two applications at 2-week intervals of the spray or dip as recommended for cattle grubs will control lice. Two applications may be needed at 2-week intervals if pyrethrin, OR rotenone, OR lindane is used. One application of the other materials is usually sufficient. (See Caution.)
3. Horn flies	3. 0.5% toxaphene, OR 0.5% methoxychlor as a spray or dip.	3. An application of either of these materials will give protection for 3 weeks or longer. (See Caution.)
4. Screw-worms	4. EQ 335 Screw-worm Remedy	4. Lindane is the toxic agent in smear EQ 335 and should not be used in excessive amounts on calves under 2 weeks old.
5. Ticks	5. 0.5% toxaphene, OR 0.5% toxaphene + 0.03% lindane as a spray or dip.	5. An application will give protection for 2 to 3 weeks. To control ear ticks, the ears should be flushed out at low pressure to avoid injury to the ear. Repeat applications when needed. (See Caution.)
6. Mange and scab mites	6. 0.06% lindane as a spray or dip, OR 2% polysulphides of lime-sulfur, OR .05-.07% nicotine as a dip.	6. Lindane should not be used on animals under 1 month of age or animals in poor condition. Lime-sulfur and nicotine should be used at a temperature of from 95° to 105°F. (See Caution.)
LACTATING DAIRY CATTLE		
1. Cattle grubs	1. Same as beef cattle	
2. Lice	2. 0.1% pyrethrin + 1% piperonyl butoxide OR 0.006% rotenone as a spray or dip.	2. See Caution.
3. Horn flies	3. Same as lice. (See text for additional information on fly control.)	3. See Caution.
4. Screw-worms	4. Smear 62 or 82 or benzene.	
5. Ticks	5. 1% rotenone, OR 0.1% pyrethrin + 1% piperonyl butoxide	5. Thorough and repeated applications are necessary to reduce tick populations.
6. Mange and scab mites	6. 2% polysulphides of lime-sulfur, OR 0.05-.07% nicotine as a dip.	6. Same as beef cattle. (See Caution.)
SHEEP AND GOATS		
1. Lice	1. 0.25% toxaphene, OR 0.25% DDT, OR 0.25% methoxychlor, OR 0.03% lindane as a dip.	1. If animals are sprayed, the concentration should be double that recommended for dipping. Use same insecticides on milk goats as recommended for dairy cows. METHOXYCHLOR AND DDT ARE NOT APPROVED FOR USE ON GOATS. (See Caution.)
2. Screw-worms	2. EQ 335 Screw-worm remedy	
3. Fleece worms or wool maggots	3. EQ 335 screw-worm remedy diluted 1 part to 9 parts of water, OR 0.5% toxaphene as a spray.	
4. Sheep tick or "ked"	4. Same as for sheep and goat lice, OR 8 oz. of derris or cube containing 5% rotenone to 100 gal. water as a spray, OR 1½% dieldrin dust. (1.5 oz. per animal.)	4. USE ONLY ONE APPLICATION OF DIELDRIN. DO NOT APPLY DIELDRIN WITHIN 90 DAYS OF SLAUGHTER. DIELDRIN IS APPROVED FOR USE ON SHEEP ONLY.
5. Ticks	5. Same as for beef cattle.	5. On milk goats use same insecticides and concentrations as recommended for dairy cattle.
6. Mange and scab mites	6. 0.06% lindane OR 1.5% polysulphides of lime-sulfur, OR 0.05-0.07% nicotine as a dip.	6. Same as for beef and dairy cattle.
7. Nose fly or sheep bot	7. No satisfactory chemical control known.	
SWINE		
1. Lice	1. 0.5% DDT, or 0.5% toxaphene, or 0.5% methoxychlor, OR 0.06% lindane, OR 0.5% malathion.	1. Sows with suckling pigs or young pigs should not be sprayed with the recommended concentrations until weaning time. (See Caution.)
2. Sarcoptic mange mite	2. 0.125% lindane.	2. In severe cases of mange it may be necessary to make a second application in 10 to 15 days.
3. Demodectic mange mite	3. No satisfactory chemical control known.	3. Demodectic mange is not common in Texas.
POULTRY		
1. Lice	1. 3% malathion perch paint OR spray inside of house with 1% malathion, OR dust litter with 4% malathion, OR 1 part of sodium fluoride mixed with 2 parts of a diluent dusted into feathers, OR dust individual birds with 4% malathion or spray with 0.5% malathion.	1. 1 pint of perch paint will treat 150 linear feet of perch. Use 2 lb. of malathion dust per 80 to 100 sq. ft. of floor space. Apply 1 gal. of diluted malathion spray per 100-150 birds.
2. Fleas	2. 4% malathion dust, OR 2½% malathion as a spray on floors of infested house or grounds.	2. Avoid spraying or dusting the feed troughs, water troughs or the birds. Remove birds from house for 24 hours after treating.
3. House flies	3. Spray poultry house with 2½% malathion. (See Text.)	3. Avoid spraying the feed troughs, water troughs or the birds.
4. Fowl ticks (blue bugs)	4. 3% malathion as a spray in houses and on roosting places.	4. All cracks and crevices in the poultry house as well as trees and fence posts where poultry roost, should be treated thoroughly. Do not apply on birds or while birds are in house.
5. Chicken mite and northern fowl mite	5. OFF HOST: 2½% malathion as a residual spray to house, OR 3% malathion perch paint OR 4% malathion dust to litter. ON HOST: dust individual birds with 4% malathion or spray with 0.5% malathion or dust with 325-mesh dusting sulfur.	5. Avoid spray in feed or water troughs and on birds. Apply 1 gal. of diluted malathion spray per 100-150 birds. Use 2 lb. of malathion dust per 80 to 100 sq. ft. of floor space.
6. Scaly-leg mite	6. Dip scaly part of legs in kerosene, OR crude oil.	6. Two or three treatments at 2-week intervals may be necessary for control. Do not wet legs above where the feathers start.

DILUTION CHART FOR MIXING SPRAYS

Amount of Concentrate to Add to Water for Desired Spray

Percent	2½%		1%		0.5%		0.25%		0.125%		0.06%		0.03%	
concentrate	100 gal.	5 gal.	100 gal.	5 gal.	100 gal.	5 gal.	100 gal.	5 gal.	100 gal.	5 gal.	100 gal.	5 gal.	100 gal.	5 gal.
25% WP[1]			16 lb.	12.8 oz.	16.7 lb.	0.8 lb.	8.3 lb.	0.4 lb.	4 lb.	0.2 lb.	2 lb.	1.5 oz.	1 lb.	¾ oz.
25% EC[2]					2 gal.	¾ pt.	1 gal.	0.8 cup	2 qt.	6½ tbsp.	1 qt.	3 tbsp.	1 pt.	4½ tsp.
40% WP[1]					10.5 lb.	0.5 lb.	5¼ lb.	¼ lb.						
40% EC[2]					10 pt.	1 cup	5 pt.	½ cup						
50% WP[1]					8.3 lb.	0.4 lb.	4.1 lb.	0.2 lb.						
50% EC[2]	5 gal.	1 qt.			1 gal.	0.8 cup	2 qt.	6½ tbsp.						
57% EC[2]			1 gal.	0.4 pt.	3⅛ qt.	10 tbsp.								

[1]WP—wettable powder. [2]EC—emulsion concentrate.

Example: To mix 5 gallons of a 0.06 percent spray from a 25 percent wettable powder, use 1.5 ounces of the 25 percent wettable powder in 5 gallons of water.