

e x t e r n a l

**LIVESTOCK PARASITE
CONTROL**

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University of California · Agricultural Extension Service

TABLE OF CONTENTS

	Page
Abbreviations Used in Tables	3
House Flies	3
Beef Cattle	4, 5
Dairy Cattle	6
Sheep	7
Swine	8

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EXTERNAL PARASITES OF LIVESTOCK

Lice, ticks, mites, and numerous kinds of flies are included among the most important pests of livestock. Losses they cause take the form of decreased weight gains, decreased milk production, damage to hides, death from their direct attack in some instances, and the transfer of disease agents from animal to animal by several of the pests.

Recent legislative changes, notably Public Law 518, have made necessary review and revision of recommendations for the control of livestock pests. The suggested control measures given here are designed to provide effective and safe control of the common livestock pests; followed carefully, they should result in no residues of insecticides beyond federally permitted tolerances in livestock or their products at the time of marketing.

Formulations

Commonly used insecticide formulations for use on livestock are prepared as dusts, wettable powders or emulsion concentrates. Dusts are often prepared in the ready-to-use form and are

particularly useful in cold weather or when only few animals are to be treated. Wettable powders are formulations designed to be mixed with water, in which they form suspensions which will settle out on standing. Prior to use of such suspensions as sprays or dips, they should be well mixed, and spray tanks should be fitted with mechanical agitators. Emulsion concentrates are liquid preparations which are meant to be diluted with water and thoroughly mixed before applying as sprays. When used as dips, only formulations especially designed for dipping tanks should be used in order to avoid rapid break down of the emulsion, producing a scum of oily material containing the concentrated insecticide on the surface of the dip. Animals treated with such unstable preparations may carry out injurious quantities of the insecticide on their hides. Dips should not be held for re-use for periods longer than indicated as safe.

PRECAUTIONS

Many insecticides are poisonous to man and other animals; particularly is this true of concentrates prior to dilution for application. All precautions on the labels should be followed for their use and storage. Read the label carefully!

Waste and spillage from dipping and spraying procedures should not be allowed to drain into lakes or streams, since most insecticides are toxic to fish and other beneficial aquatic life. Livestock should be fenced off from pools or vats of insecticides to prevent their drinking the material. Prior to dipping livestock, it is recommended they be allowed access to drinking water. Avoid contamination of feed and water with insecticides.

Use of Trade Names

For the sake of clarity, trade names have been used in some instances. This is not to be interpreted as an endorsement of a particular brand, nor is it intended to discriminate against similar products which are not mentioned by name.

The suggestions given here are not the only ones available for livestock pest control, but they are considered the safest to use under California conditions. Proper usage of these recommendations should not cause injury to the animals nor leave excessive residues in marketable animal products.

Abbreviations Used in Tables

WP	=	Wettable powder
EC	=	Emulsion concentrate
gal(s)	=	gallon(s)
lb(s)	=	pound(s)
pt(s)	=	pint(s)
qt(s)	=	quart(s)
psi	=	pounds per square inch

HOUSEFLIES

In most areas of California, houseflies are resistant to DDT; and also if not already resistant, seem to develop resistance rapidly to methoxychlor, toxaphene, lindane, dieldrin, and other related chlorinated hydrocarbon insecticides. Most effective fly control is to be found in basic sanitation aimed at disposal of breeding material -- such as manure, feed residues, and other barn wastes -- combined with application of insecticides.

Fly control measures, limited to the immediate area where fly control is desired, will seldom yield satisfactory results if flies are also breeding in nearby manure or other organic refuse. Flies will move into the control area from such sources faster than they can be killed by fly sprays. When such breeding sites are eliminated by measures, such as spreading and drying, pit composting, or screening, the resid-

ual fly problem can usually be satisfactorily controlled by insecticides. Inside and outside walls of barns and outbuildings, exclusive of milk handling and processing rooms, should be treated with residual fly sprays.

Sprays containing 1% Diazinon, or 2.5% Malathion, are suggested if resistance to chlorinated hydrocarbons occurs. Where resistance to insecticides has not developed, the interior of dairy barns may be sprayed with a suspension of 40 pounds of 50% methoxychlor wettable powder in 100 gallons of water, or a 5% emulsion spray of methoxychlor. Sprays containing 0.25% to 0.5% of lindane are applicable for the same situation.

Dry baits containing Bayer L 13/59 (Dipterex), or Diazinon at 1% concentration, or malathion at 2% concentration, are commercially available. Local concentrations of flies may be controlled by daily applications at the rate of 2 to 4 ounces of bait per 1000 square feet in areas where flies congregate.

Liquid baits may be used containing 1% of either Bayer L 13/59 (Dipterex), Diazinon, or 2% malathion, plus 10% molasses, sugar, or other sweetening material, dissolved in water. Apply at rate of 1 gallon per 1000 square feet on surfaces where flies congregate. Repeat as necessary.

BEEF CATTLE

PEST	When to Treat	WHAT TO USE				Method of Application	REMARKS
		Chemical	Formulation	Concentration	Amount		
HORN FLIES	Warm months when flies abundant	Methoxy-chlor	WP	50%	8 lbs/100 gals.	Spray 2 qts/animal	Thorough wetting of back and flanks. Repeat as necessary. Do not market toxaphene-treated animals within two months. Apply 1 gal. of the 5% mixture to 15 to 20 linear feet of rubbing device sacking. Re-treat every 3 to 4 weeks.
		Toxaphene	WP	40%	10 lbs/100 gals.		
		Methoxy-chlor	EC	25%	1 qt. in 1 gal. fuel oil	Cattle back rubber	
		Toxaphene	EC	60%	1 qt. in 2½ gals. fuel oil		
HEEL FLIES (Cattle grubs) (Ox warble)	Make first treatment 40 to 45 days after first warbles appear on back	Rotenone	WP	5%	7½ lbs/100 gals.	Spray 2 qts/animal 350 to 400 psi	Repeat applications at 45-day intervals as long as grubs are appearing on back. Dusts and washes are best suited for small herds.
			Dust	1.5%		3 ozs/animal thoroughly rub into hairs of back with a rotary motion of fingers	
			Dust	5%	12 ozs/gal plus ½ oz. wetting agent	1 to 2 pints per animal. Rub into back with stiff brush	
SCREW WORMS	Summer and early fall	Lindane	EQ 335 Smear (Lindane Pine oil White mineral oil Emulsifier Silica aerogel)	3% 35% 42% 10% 10%	Sufficient to saturate wound	Small paint brush.	Apply once a week until wound heals. EQ 62 and 82 smears will also provide satisfactory protection.
HORSE FLIES	Spring summer fall when flies abundant	Pyrethrine plus Synergist (piperonyl butoxide) or sulfoxide or N-propyl isome or MGK 264	EC	1% 10%	Full strength	Mist spray by means of automatic treadle operated chute 1/30th oz per head per application	Locate chute where cattle must pass through it daily. Also effective for horn and stable flies.

BEEF CATTLE

PEST	When to Treat	WHAT TO USE				Method of Application	REMARKS		
		Chemical	Formulation	Concentration	Amount				
LICE	Fall and early winter	Toxaphene	WP	40%	10 lbs/100 gals.	Spray 2-4 gals. per head or Dip	1 to 2 treatments at 2-week intervals. Entire animal should be wet. For emulsion dip, use only formulations especially prepared for dipping vats. Do not market within 2 months of treatment.		
			EC*	50%	Dilute to 0.5% (1 gal per 99 gals water)	Dip			
		Methoxy-chlor	WP	50%	8 lbs/100 gals.	Spray, 2-4 gals per head		2 treatments at 2-week interval. Wet entire animal.	
		Lindane	WP	25%	1 lbs/100 gals.	Spray as above		1 to 2 treatments as above. Do not market animals within 1 month of treatment.	
		Rotenone plus Sulfur	Powder	5%	10 lbs.	100 lbs. plus 1000 gals. water		Spray 2 to 4 gals. per head or dip	Treat 2 or more times at 14-day intervals. Sulfur should be 325 mesh or finer.
			WP	Technical grade					
		Lindane	EC	25%	1 qt. in 2 gals. fuel oil	1 qt. in 1 gal. fuel oil		Cattle back rubber	Apply about 1 gallon of dilute mixture to each 15 to 20 linear feet of rubbing device sacking.
Methoxy-chlor	EC	25%							
TICKS (Wood Ticks)	Treat when ticks abundant; particularly spring and fall	Toxaphene	WP	40%	10 lbs/100 gals.	Spray 2 to 4 gals. per head or dip	2 to 3 weeks protection. For emulsion dip, use only formulations especially prepared for dipping vats. Do not market animals within 2 months of treatment.		
			EC*	50%	1 gal. per 99 gals. water				
SPINOSE EAR TICKS	When ticks abundant, particularly in late fall	Lindane	Solution: Lindane xylene pine oil (steam distilled)	12% pure	5 parts	Apply 1/2 oz. per ear by means of spring bottom oil can with rubber tipped spout			
				12% pure	10 parts				
				85 parts					
		Toxaphene				Spray in ears 30 psi pressure	Same as for Wood Ticks.		
		BHC	WP	12% gamma isomer	2 lbs/100 gals.	Spray in ears 30 psi pressure			
MANGE MITES (Sarcoptic mange)	When observed	Lindane	WP	25%	2 lbs. per 100 gals.	Spray at 200 to 400 psi	Treat twice at 10 to 12-day interval.		
		Benzene hexachloride	WP	12% gamma isomer	4 lbs. per 100 gals.	4 to 5 gals. per head	Do not market animals within 1 month of treatment.		
SCAB MITES (Psoroptic scab) (Chorioptic scab)		Lime sulfur	Proprietary solution.			Dip - hold in vat 2 to 3 minutes. Temperature of 95° to 105° F	Lime sulfur or nicotine dips are only official treatments recognized by U. S. Department of Agriculture. Finished nicotine dip should contain 0.05% nicotine. Four treatments at 10 to 12-day intervals required for Mange. Two treatments for Scab.		
		Nicotine	Dilute according to instructions on container.						

*Special formulation for dipping.

DAIRY CATTLE

PEST	When to Treat	WHAT TO USE				Method of Application	REMARKS
		Chemical	Formulation	Concentration	Amount		
HORN FLIES	Warm months when flies abundant	Methoxy-chlor					Same as for Beef Cattle.
		Pyrethrine plus Synergist (piperonyl-butoxide) or sulfoxide or N-propyl isome or MGK 264	EC	1% 10%	1 part of concentrate to 19 parts of water	Spray 2 qts / animal	Spray every 4 or 5 days.
HEEL FLIES							Same as for Beef Cattle
SCREW WORMS							Same as for Beef Cattle
HORSE FLIES							Same as for Beef Cattle
LICE	Fall and early winter	Methoxy-chlor					
		Rotenone plus Sulfur					Same as for Beef Cattle
TICKS	When abundant particularly spring and fall	Rotenone	WP	5%	10 lbs/100 gals.	Spray	Partial control with repeated applications. Completely effective treatment cannot be recommended on milking animals because of possible residues in milk.
SPINOSE EAR TICK		Lindane					Same as for Beef Cattle.
MANGE and SCAB MITES		Lime Sulfur or Nicotine				Dips	Same as for Beef Cattle.

SHEEP

PEST	When to Treat	WHAT TO USE				Method of Application	REMARKS	
		Chemical	Formulation	Concentration	Amount			
SHEEP KED	Spring following shearing	Rotenone	Powder	5%	8 ozs/100 gals. water	Dip	Make thin paste of powder and small amount water; then add to remainder of water.	
		Methoxy-chlor	WP	50%	4 lbs/100 gals. water	Dip		
					8 lbs./100 gals. water	Spray - 4 to 6 qts per animal		
		BHC	WP	12% gamma isomer	1 1/2 lbs/100 gals. water	Dip	Do not market animals within 1 month of treatment.	
					4 lbs/100 gals. water	Spray - 4 to 6 qts per animal		
		Toxaphene	WP	40%	5 lbs/100 gals. water	Dip	Do not market animals within 2 months of treatment.	
					10 lbs/100 gals. water	Spray - 4 to 6 qts per animal		
		Chlordane	WP	50%	4 lbs/100 gals. water	Dip	Do not market animals within 3 months of treatment.	
					8 lbs/100 gals. water	Spray - 4 to 6 qts per animal		
		WOOL MAGGOTS (Fleece worms)	Warm, humid weather in areas having history of wool maggot problem	BHC	WP	12% gamma isomer	4 lbs/100 gals. water	Dip or Spray 1 to 2 qts/animal
16 lbs/100 gals. water	Breech spray							
Toxaphene	WP			40%	10 lbs/100 gals. water	Dip or Spray 1 to 2 qts/animal	Do not market animals within 2 months of treatment.	
					40 lbs/100 gals. water	Breech spray		
Chlordane	WP			50%	8 lbs/100 gals. water	Dip or Spray 1 to 2 qts/animal	Do not market animals within 3 months of treatment.	
					32 lbs/100 gals. water	Breech spray		
SCREW WORMS						Same as for Beef Cattle.		
SHEEP BOT FLY (Nasal Bot)						No Effective Treatment.		
TICKS (Wood Ticks)						Same as for Beef Cattle. Treatment seldom necessary.		
SPINOSE EAR TICKS						Same as for Beef Cattle.		
SCAB MITES	When observed	Lindane	WP	25%	2 lbs/100 gals. water	Dip	Do not use on emaciated ewes with lambs. A single treatment is effective. Do not market animals within 1 month of treatment	
		Benzene hexachloride	WP	12%	4 lbs/100 gals. water			
		Lime Sulfur					As for Beef Cattle. 2 treatments necessary.	
		Nicotine						
LICE	In fall; or in spring after shearing	Methoxy-chlor	WP	50%	4 lbs/100 gals. water	Dip	Do not market animals within 2 months of treatment.	
					8 lbs/100 gals. water	Spray		
		Toxaphene	WP	40%	5 lbs/100 gals. water	Dip		
					10 lbs/100 gals. water	Spray		
		Lindane	WP	25%	2 lbs/100 gals. water	Dip		Do not market animals within 1 month of treatment.
		Benzene hexachloride	WP	12% gamma isomer	4 lbs/100 gals. water	or Spray		
		Rotenone	Powder	5%	1 lb/100 gals. water	Dip		

SWINE

PEST	When to Treat	WHAT TO USE				Method of Application	REMARKS
		Chemical	Formulation	Concentration	Amount		
LICE	As needed	Methoxy-chlor	WP	50%	8 lbs/100 gals.	Spray	
		Lindane	WP	25%	1 lb/100 gals.	Spray	Do not market animals within 1 month of treatment.
		Toxaphene	WP	40%	10 lbs/100 gals.	Spray	Do not market animals within 2 months of treatment.
MANGE MITES	When mange mites are found associated with scabby areas of skin	Lindane	WP	25%	1-2/3 lb/100 gals.	Spray	Do not market animals within 1 month of treatment.
		Benzene hexachloride	WP	12%	3½ lbs/100 gals.	Spray	