

dependent on ingestion of any of this material by the fly. For this reason, it is highly important that a good, uniform deposit of the insecticide be achieved, either on barn wall or on the hide of the animal.

Hand sprayers, in general, are not effective. Enough pressure must be applied to drive the insecticide under the hair, in the case of spraying cattle, or to plaster the material against the wall, when barns are being treated.

In addition, all approved residual

materials are wettable powders, which means that sprayers equipped with agitators in the spray tank are desirable to keep chemicals in suspension. Knapsack sprayers, if used, should be upended from time to time to agitate the spray mixture.

In barn spraying, all feed, mangers, watering cups and milking equipment should be covered to protect them from insecticide deposits. A gallon of spray per 500 square feet will treat most barn surfaces to the point of run-off. Barns should not be

sprayed within a week after whitewashing since the insecticide will not remain effective on top of fresh whitewash. The amount of deposit visible on walls from the last spray application is no indication that the insecticide is still active, as this may be merely the inert ingredients in the wettable powder.

In general, it is felt that too many dairymen concentrate on the interior of the barn and neglect the exterior.

Keep dairy cows comfortable at all times.

Plane Insurance Ruling Modified

MONTANA FLYING farmers need not carry liability insurance to spray or dust their own cropland. This modification of the Montana Aeronautics commission ruling on aircraft operators' insurance was made recently at the request of the Montana Flying Farmers and Ranchers Assn., according to Louis G. True, secretary.

This chart of livestock insect control recommendations is intended for quick reference only. Before going ahead with any livestock insect control program, see your county agent and obtain all of the information as it applies to your particular problem. Prepared by the office of the state entomologist.

Control of Livestock Insects

Name of Insect or Mite	When to Treat	Special Conditions	Control
INSECTS ON RANGE CATTLE			
CATTLE GRUBS	First spraying just prior to the emergence of the first grubs from the back. Second spraying 50 to 60 days after the first spraying.	Spray grubby area once with 400 to 600 P.S.I., then massage back with a dull hoe and spray the same area again. See Montana Extension Circular No. 222.	Spray: 7½ pounds of 5% Rotenone powder (not liquid or powder made from spraying liquid on a dust), 100 gallons water, and 1 pound of Tide or Dreft.
CATTLE LICE	In the fall.	Dipping is more effective than spraying. When spraying use 300 to 400 P.S.I. and cover all parts of the animal's body so as to wet the hair coat clear through to the hide. See Montana Extension Circular M-221.	Dip or Spray: 1/30 of 1% mixture of gamma isomer of either crude Benzene Hexachloride or Lindane (1 pound of 25% gamma isomer wettable powder to 100 gallons of water). Use wettable powders only.
HORN FLIES	First spraying when first flies appear in the early summer. Repeat sprayings every 3 to 4 weeks through fly season.	A fairly thorough spraying usually gives a longer residual effect. See USDA Leaflet No. 270.	Spray: ½ of 1% DDT either emulsion or wettable powder. (8 pounds of 50% DDT wettable powder to 100 gallons of water.)
EAR TICK	Look for ear ticks in the early spring and spray when they are found. Examine animals every two weeks after spraying and repeat treatment when necessary.	Cover tick infested area with the spray. See USDA, BE&PQ Circular EC-10.	Spray: ½ of 1% Toxaphene either emulsion or wettable powder. (16 pounds of 25% Toxaphene wettable powder to 100 gallons of water.)
INSECTS ON DAIRY CATTLE			
CATTLE GRUBS	Same as range cattle above.	Same as range cattle above or use a hand wash. See Montana Extension Circular No. 222.	Spray: Same as range cattle above. Hand Wash: 1 pound of 5% Rotenone powder (not liquid or powder made from spraying liquid on dust) to 5 quarts of water.
CATTLE LICE	In the fall or when needed.	For spraying, same as range cattle above. Hand dusting may be used effectively. See Montana Extension Circular M-221.	Spray: Same as range cattle above, except use Lindane only. Dust: 1% Lindane, 1% Rotenone, or a Pyrenone louse dust.
HOUSE AND HORN FLIES	First spraying at the start of the fly season and repeat every 2 to 3 weeks or as often as is needed.	Spraying is supplemental to good sanitation practices, it will not replace these practices. See USDA, BE&PQ Leaflet No. 283.	Spray on Cattle: ½ of 1% Methoxychlor (8 pounds of 50% Methoxychlor wettable powder to 100 gallons of water), or Pyrenone diluted according to directions on the label. Spray on Inside of Dairy Barn: ½ of 1% Lindane (16 pounds of 25% Lindane wettable powder to 100 gallons of water). Do not allow spray to contact feed, feed boxes, watering equipment or milk processing equipment.
STABLE FLIES	First spraying when the first flies appear and repeat as often as is needed.	Spraying is usually ineffective unless fresh manure, wet straw and moist trashy areas are eliminated. See USDA, BE&PQ Leaflet No. 283.	Spray: Pyrenone mixed in accordance with directions on the label (mix 1 part of an emulsion concentrate containing 1% of pyrethrins and 10% of piperonyl butoxide with 9 parts of water).
INSECTS ON SHEEP			
SHEEP TICK	In the fall.	Dipping is better than spraying. See Montana Extension Leaflet M-1.	Dip or Spray: 8 ounces of 5% Rotenone powder to 100 gallons of water.
INSECTS AND MITES ON HOGS			
HOG LICE	In the fall, or when needed. If a second treatment is needed, spray 10-14 days after the first treatment.	Thoroughly spray all of the animal with enough pressure to wet through to the hide (usually 250 P.S.I. is enough).	Spray: 0.12% Lindane (4 pounds of 25% Lindane wettable powder to 100 gallons of water) or 0.25% Chlordane (5 pounds of 40% Chlordane wettable powder to 100 gallons of water).
HOG MANGE	When needed.	Good sanitation must be practiced in addition to spraying. Spray in same manner as for hog lice above.	Same as hog lice above.
INSECTS ON HORSES			
HORSE LICE	When needed.	Dust all parts of the animal, rubbing the dust in to the hide.	Dust: 5% or 10% DDT dust.