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# Control of Biting Flies Attacking Cattle

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Biting flies cause losses to cattle during the warmer months when the adults are active. Cattle suffer reduced weight gains from the bloodsucking activity, reduced milk production, flesh loss from "brushing up" instead of grazing and physical injury while trying to get relief from flies.

## Horn Fly

The horn fly is a common pest of range and pasture cattle throughout Idaho. Economic numbers of horn flies develop in June and the flies are abundant during July, August and September. Many Idaho cattlemen have found chemical control of horn flies essential for good herd management.

The small, bloodsucking flies cluster on the back, sides and underline of all cattle breeds. A thousand or more flies may infest an individual animal. Feeding by the flies on animals results in considerable discomfort and annoyance, in addition to the loss of blood. Tormented cattle toss their heads, switch their tails and rub through brush in an attempt to lessen the attacks of these flies. Heavily infested cattle do not graze during the day and "brush up" for long periods to avoid fly attack.

Single grazing season studies with yearling heifers and steers have shown increased weight gains of 15 to 50 pounds per animal when horn flies are controlled. When cows are heavily infested with horn flies, milk production may be reduced 10 to 20 percent.

**Identification.** The horn fly is about half the size of the common house fly. It is light gray in color and about 3/16 inch in length. It has piercing-sucking mouthparts. At rest, the head of the horn fly usually points downward. The wings are held flat over the back at an angle of about 60 degrees. The fly burrows among the hairs of the host to feed.

The flies are usually observed on the backs of cattle when the weather is cloudy or cool. During sunny weather the air temperature seems to determine their location on an animal. As the air temperature rises in the morning, the flies are first observed on the sunny side of the animal, then on the shaded side and later on the underside along the animal's midline.

As the air temperature lowers during the late afternoon and evening, the flies return to the sides and back of the animal. When disturbed they will fly up in a swarm but return quickly to individual animals.

**Life History.** Adult flies spend their entire life on the host, except when the females leave to deposit eggs on fresh, undisturbed cattle droppings. The eggs hatch in approximately 24 hours. The maggots complete their development in the droppings within 4 to 5 days and the mature maggot transforms into an adult fly in 5 to 7 days. The life cycle from egg to adult usually take 10 days to 2 weeks depending on temperature and moisture conditions. There are many overlapping generations each summer. Horn flies spend the winter as maggots or pupae beneath cattle droppings.

## Stable Fly

Stable flies are distributed throughout Idaho. They are mostly a pest around fenced pastures and feedlots and are generally not a problem in range situations. They are most abundant from midsummer through autumn.

These flies are vicious biters and they frequently change positions or move to several animals to feed. The behavior of interrupted feeding increases their annoyance factor. Stable flies feed mainly on the legs of cattle and can be found resting on sunny or light colored surfaces.

**Identification.** Similar in appearance to house flies, stable flies are brownish gray in color with broken stripes on the thorax. The abdomen is checkered in appearance and shorter than the abdomen of the house fly. Wings of stable flies when at rest are held in an angular position similar to horn flies. Their prominent proboscis protrudes forward in front of the head.

**Life History.** The female lays small white eggs in decaying organic matter. Eggs will sometimes be laid in manure but soggy hay, grain or straw around feed bunks are preferred for oviposition. In 3 days the eggs hatch into typical maggot-type larvae. After feeding for 2 to 3 weeks the larvae crawl to

drier areas of the food source and pupate. Adult flies emerge from the pupa in 9 to 13 days. The egg to adult period averages 35 days. Most adults live around 3 weeks during the summer. Winter is passed as a larva or pupa.

### Tabanids, Mosquitoes and Blackflies

Several different kinds of tabanids (horse flies and deer flies), mosquitoes and blackflies (buffalo gnats) attack cattle in summer pastures or under range conditions. A few horse flies per animal can excite cattle and cause considerable trouble, whereas cattle generally tolerate fairly large numbers of mosquitoes and blackflies. In most instances actual weight loss, blood loss or other damage caused by these flies has not been measured in Idaho. Control mea-

sures specifically for these insects have been impractical to date. However, controls for horn fly will give some control of tabanids, blackflies and mosquitoes.

**Tabanids.** Horse fly and deer fly larvae develop in wet soil at the edges of streams and lakes and in marshy areas. Larvae of these species are mostly predaceous, feeding on other insects, earthworms, snails and crustaceans. Usually one year is spent in the larval stage with adults emerging from late spring throughout the summer, depending on the species. Like mosquitoes, only female tabanids feed on blood. Adult females live about a month and stay in the vicinity of the aquatic habitat.

**Mosquitoes.** Adult female mosquitoes must have blood meals to develop eggs. The eggs are laid and the larvae live in

## BITING F

Insecticide	Dosage — Amount of insecticide per 100 gallons as spray or . . . Use as indicated	Remarks and restrictions
<b>SPRAYS</b>		
Ravap — .45% coarse spray	Mix 1 1/3 gal. 28% EC. Use 1/2 to 1 gal. spray per animal depending on size and length of hair coat.	No time limitation. Do not treat more often than every 10 days.
Ruelene — 0.375% as spray	1 1/2 gal. 25% EC.	Do not apply within 7 days of slaughter or 3 days of freshening. Observe other precautions on label.
Delnav — .15% as spray	Use 1/2 gal. 30% EC or 1 gal. 15% EC.	Do not use on dairy animals. Do not use more than every 2 weeks or treat calves under 3 months old.
Rabon — 0.35% as spray	5 1/3 lb. 50% WP.	Use between 1/2 and 1 gal. per animal depending on size and coat. No time limitation between application and slaughter. Beef cattle only.
Ciovap — 0.5% as coarse spray	Use 8 gal. EC. Apply 1 to 2 qt. per animal depending on hair coat.	Repeat no more often than every 7 days. Do not treat animals within 1 day of slaughter. Do not use on calves less than 6 months old.
toxaphene — 0.5% as spray	10 lb. 40% WP, or 2 1/4 qt. EC containing 8 lb. toxaphene per gal.	Beef cattle only. Do not apply within 28 days of slaughter.
malathion — 0.5% as spray	16 lb. 25% WP, or 1 gal. 57% EC.	No time limitation between application and slaughter. Do not spray calves less than 1 month old. Beef and nonmilking cattle only.
GX 118 — 0.25% spray	Mix 1 gal. 11% EL with 49 gal. water. Apply to runoff (about 1 gal. per mature animal).	Beef cattle only. Do not apply within 21 days of slaughter. Do not treat sick, convalescent or stressed cattle or calves less than 3 months old.
methoxychlor — 0.5% as spray	8 lb. 50% WP.	No time limitation between application and slaughter. Beef and nonlactating dairy cattle.
Co-Ral — 0.06% as spray	2 lb. 25% WP or 2 qt. 1 lb/gal. EL.	No time limitation between application and slaughter. Beef and nonlactating dairy cattle.
Korlan — 0.5% as spray	2 gal. 24% EC.	Do not apply within 7 days of slaughter or freshening. Do not treat sick animals.
<b>DIP</b>		
Delnav — 0.15%	Use 1/2 gal. 30% EC or 1 gal. 15% EC.	Do not use on dairy animals. Do not use more often than every 2 weeks.

Insecticide	Dosage	Remarks and restrictions
<b>DUSTS</b>		
Co-Ral — 1% dust	Dust Bags — Apply in dust bags suspended in livestock holding pens, feedlots, loafing sheds, near mineral or salt licks, between pasture and water, or other situations where cattle must use frequently.	Apply in dust bags. Do not contaminate feed or water. Adjust bags so that the bottoms of the bags are 4 to 8 inches below the topline of the cattle.
Co-Ral — 1% dust	Shaker Can — Dust evenly into hair over the head, neck, shoulders, back and tailhead. Apply no more than 2 oz/animal.	Repeat as necessary.
methoxychlor — 3% dust	Apply directly to animals.	No time limitation between application and slaughter. Beef cattle only.
methoxychlor — 3% dust	Apply in dust bags suspended in loafing areas frequented by cattle or located in corral gates between pasture and salt, etc., where cattle must frequent.	

various aquatic habitats. Some species of Idaho mosquitoes develop in snow melt pools in mountain valleys and meadows. Other species develop in overflow or seep pools next to creeks, rivers or irrigation canals. Eggs are laid on the water surface or moist soil. Once in the water or covered with water (in the case of eggs laid on the soil) the eggs hatch in 3 to 4 days. Larval development takes 2 to 3 weeks. The pupal stage lasts 2 to 4 days before adults emerge.

Mosquito abatement districts have been formed in Idaho and Wyoming to make previously unusable summer pastures available for livestock use.

**Blackflies.** Buffalo gnats breed in running water and are present in streams in Idaho as well as certain irrigation canals. Eggs are laid on rocks or trailing vegetation or dropped

onto the water surface. Eggs hatch within a few days. Depending on the species, water temperatures and food availability, larval development takes from 2 weeks to a year. Most species in mountain streams have 1 or 2 generations per year. Those species breeding in the warmer irrigation canals of southern Idaho produce 10 to 12 generations per year.

Large numbers of blackfly adults have killed livestock in Canada due to blood loss and toxemia. Under moderate blackfly attack, cattle will lay down, "brush up" or stand in water to avoid blackfly attacks. Feeding is interrupted and milk production decreases. Blackflies are particularly hard to control because the adults can migrate long distances (unlike horse flies and mosquitoes). Control is best obtained

## CONTROL

Insecticide	Dosage	Remarks and restrictions
Rabon — 3% dust	Hand dust animals. Apply approximately 2 oz. dust per animal.	No time limitations
Rabon — 3% dust	Dust Bags — Use one dust bag for each 25-30 animals.	
<b>BACKRUBBERS</b>		
Delnav — backrubber 1.5% in oil	Use 1 gal. 30% EC or 2 gal. 15% EC and diesel oil or an approved backrubber base oil to make 20 gal.	Do not use on dairy animals. Do not spray animals with oil solution. Keep backrubber charged.
Ciovap — in oil — ready-to-use backrubber	Use 1 pt/3 gal. diesel oil. 1 gal/20 ft. of cable.	May be used on dairy or beef animals.
Ravap — 1.25% in oil backrubber	Mix 1 qt. in 6 gal. of diesel oil or approved backrubber base oil.	Keep backrubber charged. Use with beef animals only.
toxaphene — 8% in oil	Follow label directions for mixing. Use diesel oil or approved backrubber oil. Do not mix insecticides with used motor oil.	For use on backrubbers. Use 1 gal. mixture/20 ft. of cable. Where toxaphene is used, do not allow cattle access to backrubbers within 28 days of slaughter. Do not use on dairy animals.
Korlan — 1% in oil	Mix 1 gal. Korlan 24E with 27 gal. no. 2 fuel or mineral oil. Do not mix with used motor oil.	No time limitations.
Co-Ral — 1% in oil	Use 1 gal. Co-Ral 1 lb/gal. EC/13 gal. no. 2 diesel or fuel oil.	Suspend backrubber at a height that will prevent straddling. Do not mix with used motor oil. May be used on beef or dairy animals.
<b>FEED ADDITIVES</b>		
Rabon — oral larvicide	Use as mineral or feed additive.	Use according to individual feed or mineral manufacturer's label directions.
methoprene	Free choice feeding as minerals or mix in feed ration ¼ to ½ lb/100 lb. body weight per month.	No time limitations.
Ronnel — 5.5% (block or granular concentrate) "Rid-Ezy"	Feed at rate of 0.25 lb/100 lb. of animal weight per month.	Withdraw from dairy heifers 10 days before calving. Withdraw 10 days before slaughter. Do not feed to dairy cattle. Use as only source of Ronnel medication.
— 5.5% insecticide mineral	Feed at the rate of 0.25 lb/100 lb. of body weight per month.	

## CHEMICAL CONTROL

Many effective chemicals are registered for biting fly control and several methods of application. The products listed are registered for horn flies. One or more should fit your operation. Read and heed all labels and precautions and restrictions on each product.

### CAUTION—POISON

All pesticides are poisonous and must be handled with

care in order to protect the applicator, livestock, adjacent property and the consumer. Read and follow the label carefully each time a material is used. Keep accurate records of the pesticides you apply.

**Pesticide Residues.** These recommendations are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical.

*To simplify information, trade names have been used. No endorsement of named products is intended, nor is criticism implied of similar products not mentioned.*

with chemicals to kill the larvae. This type of program has been successful in southern Idaho for controlling blackflies attacking sheep. Cattle in the treated areas are also protected.

## CONTROL

Several methods are available for control of biting flies. Most of these methods use insecticides, but prevention and sanitation can be used in certain situations.

### *Prevention and Sanitation*

This method of control is applicable mainly to the stable fly in feedlot situations. The stable fly can be virtually eliminated by keeping spilled grain and unused hay, straw or ensilage cleaned up along with fixing leaking faucets, water troughs, etc. Denial of a breeding site is the purpose of this type of control measure.

It is not practical to remove manure fast enough to prevent horn fly breeding.

### *Sprays*

Sprays are useful in feedlots but spraying is not always a practical method of horn fly control when cattle are on summer range or pasture. The time and labor required to gather widely scattered cattle, the weight loss caused by handling them and the stress cause by treatment may outweigh the benefits of controlling horn flies. Spraying is also a temporary measure and must be repeated several times during the fly season. Sprays are useful along with sanitation for controlling the stable fly.

### *Pour-ons*

Fly control with pour-ons is basically the same as with sprays; the effects are temporary and cattle must be handled. The only advantage of pour-on formulations over sprays is their ease of application.

### *Feed Additives*

These insecticides are designed to pass through an animal's digestive tract and kill fly larvae in the manure. Only the horn fly, face fly and stable fly can be killed using this method. Additives can be mixed directly with feed or set out in mineral or salt blocks for range herds. A major problem with additives is getting the proper amount per day per animal. Fly control is erratic because salty range vegetation and other factors affect how much additive is consumed. A great deal of effort must be expended to make additives work properly.

### *Dust Bags*

Dust bags containing biting fly insecticide provide the most practical method of control under Idaho conditions. This method has the fewest disadvantages and is very economical.

Dust bags are readily accepted when placed in an area where cattle congregate. If some animals in a herd refuse to use dust bags, forced use by placing the bags between pas-

ture and water or salt usually improves their effectiveness. Forced use should be a common practice.

Dust bags should hang level and be separated by a 6-inch space between bags. Use a strong cord to secure the bags to a cross. Allow 8 to 10 inches between the pole and the bags so the bags swing freely when cattle move under them. Hang the bag so the bottom is approximately 38 inches from the ground. This will permit the animal to treat its head and backline. Use a minimum of one dust bag for every 25 head of cattle.

Check the bags often when they are first put into use. Some animals may overwork bags in confined areas and waste dust. Only bags with an adequate supply of insecticide dust will allow the animals to properly treat themselves. Bags should contain 8 to 10 pounds of insecticide.

Homemade bags should consist of a double burlap bag, 30 x 20 inches, and a polyethylene lining sewn inside the top two-thirds of the burlap. The plastic will protect the insecticide dust from excessive moisture. Three grommets at 10-inch intervals at the top of the bag aid in proper hanging. Sew 2 vertical seams, each 20 inches long across the bag from the bottom up to create 3 pockets. This helps prevent excessive dust loss in the event of a tear in the bag. Dust bags are often too high for small calf use but control on the larger animals should control the herd population. Also, if horned animals are in the herd, backrubbers may have to be used.

### *Backrubbers*

Cable-type backrubbers are useful for controlling biting flies in range situations. They must be placed properly, since cattle must use backrubbers daily for best results. This can be achieved by forcing cattle to use them in order to get to minerals, salt or water.

Backrubbers are fairly effective in fly control but may be difficult to install. They also require frequent maintenance for recharging and repair and are relatively expensive. However, they have a good use if you have horned animals in the herd because horned animals will occasionally rip dust bags. Erect a backrubber when dust bags, spray and dust treatments are not practical to prevent biting fly attack. Their use will also prevent louse build-up and aid in winter louse control.

Commercial models are available. Or you can construct an effective simple backrubber by installing braced posts 15 to 20 feet apart with an eye bolt 4 feet above the ground. String a cable, twisted wire or chain between the poles and wrap it with layers of burlap sacks to about a 3-inch thickness. Tie the burlap to the cable with twine at 6-inch spacings. The middle portion of the backrubber should be 18 to 20 inches above the ground. Soak the burlap sacks with a solution of insecticide and oil every 2 weeks.

About 1 gallon of insecticide-oil mixed solution per 20 linear feet of cable will be needed to wet the sacks. Mix chemicals with No. 2 diesel fuel or furnace oil. Never use crankcase oil because it causes severe blistering of the skin and excessive amounts can cause illness or even death. Commercial backrubbers require recharging periodically.

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