

Livestock Insects-Cattle

Horn Flies

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Identification and Field Biology

The horn fly is a small (one-half size of a house fly), obligate parasite. As adults, they spend most of their time on cattle, feeding on blood 30-40 times per day. The females deposit eggs in fresh manure. The life cycle consists of egg, larva, pupae and adult, and can be completed in two weeks during warm weather. The fly overwinters in the pupal form under or near manure pats. If left untreated, the population will reach several hundred per animal by mid-July.

Animal Response and Economic Losses

If left untreated, horn fly numbers may reach several hundred per animal by late July or early August. At this level, cattle will usually bunch, fail to graze properly and expend considerable energy in tail switching, head throwing and stamping in an attempt to dislodge flies.

High numbers (over 200) of horn flies may reduce weaning weights, because of reduced cow milk production, yearling weights and cow body condition scores. The degree of loss is associated with quantity and quality of forage available and climate. Hot, dry weather and horn fly stresses seem to be synergistic in Nebraska studies. Weaning weight losses ranged from an average of 22 pounds per calf on a hot, dry year to three pounds on a cool, wet year with an average reduction of 11 pounds per calf over a 10-year study period. Nebraska and Canadian studies indicated that at population levels of less than 200 horn flies per animal, neither weaning nor yearling weights were affected. At elevations of over 6500 feet, horn fly populations may not surpass 200 per animal, and therefore, are non-economic.

Management Approaches

Cultural

There are no cultural methods available to reduce horn fly numbers.

Biological

There are some predators and pupal parasites that reduce horn fly numbers to some degree but not enough to control them. It would not be practical to rear and release these predators or parasites.

Chemical

Insecticides used for control of horn flies are administered primarily for self-treatment by the cattle. These would include dust bags, oilers, ear tags impregnated with insecticides

and mineral blocks or feed treated with an insecticide. Dust bags and oilers can be either forced use or free choice. Forced use is when cattle must pass through a gate with dust bags or oilers hung in it to obtain water, feed or mineral. Free choice is where cattle have access to dust bags or oilers but don't have to use them. Ear tags contain an insecticide, which moves to the surface of the tag from ear movement and is then wiped on the haircoat of the animal, where horn flies come into contact with it. When first used, ear tags containing pyrethroid insecticides provided excellent seasonal control. However, within a few years, horn fly resistance to pyrethroids was widespread. After resistance developed, horn fly control recommendations returned to those made prior to the ear tags. Animal health companies then developed ear tags containing phosphate insecticides with no history of resistance, boluses that contained methoprene, a juvenile hormone, and ivermectin, a broad spectrum parasiticide and newer, more toxic pyrethroids often with a synergist added to increase toxicity or a mixture of a phosphate and pyrethroid insecticides.

None of the newer insecticide ear tags to date have provided either the degree or length of control as the original pyrethroid-only tags. At about 60 days after application, the current ear tags start to decline in efficiency because of a reduction in the amount of insecticide released.

Sprays and pour-on insecticides will control horn flies for 2-3 weeks after application and could be used when the ear tags start to decline in efficacy. Using sprays or pour-ons for seasonal control probably is not practical for range cattle because of the difficulty in rounding up cattle for treatment. The stress of handling the cattle might offset treatment gains.

Extension entomologists developed a set of recommendations to delay or prevent the development of resistance in horn fly populations to the newer insecticides contained in ear tags. These include: 1) delay tagging animals until horn fly numbers are at an economic level (200+ per animal); 2) rotate insecticides at least yearly, a phosphate with a pyrethroid; 3) provide alternate treatment methods when ear tag efficacy declines; 4) treat only animals in a weight gain mode, i.e., cows with calves and yearlings; 5) remove ear tags at the end of the fly season.

Insecticide Recommendations

Insecticide	Application Method	Application Rate	Restrictions and comments
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Insecticide	Application Method	Application Rate	Restrictions and comments
Coumaphos (Co-Ral)	Spray	11.6 % ELI 2.5 oz/4 gal water	Restricted-Use Pesticide Do not treat animals younger than three months Do not treat lactating dairy cattle.
(Co-Ral Fly & Tick Spray)	Spray	6.15 % EC 2 qt/50 gal water or 5 oz/4 gal water	Spray to run-off. Treat no more than six times per year. Do not make applications less than 10 days apart.
(Co-Ral Plus)	Ear Tag	20 % Coumaphos + 20 % Diazinon AI	Two tags per animal. Calves less than 3 months of age should not be tagged.
Beta-Cyfluthrin (CyLence Ultra)	Ear Tag	8 % Beta-cyfluthrin + 20 % PBO AI	Two tags per animal. Calves less than 3 months of age should not be tagged.
Cyfluthrin (CyLence)	Pour-on	1 % AI 4 ml/400 lb body wt.	
(Cutter Gold)	Ear tag	10 % AI	Two tags per animal.
Doramectin (Dectomax)	Pour-on	5 mg/ml AI 1 ml/22 lb body wt.	Treatment-slaughter interval 45 days. Do not treat lactating dairy cows or heifers over 20 months old.
Diazinon (Terminator)	Ear tag	20 % AI	Two tags per animal.
(Optimizer)	Ear tag	20.4 % AI	Two tags per animal.
(Cutter 1)	Ear tag	40 % AI	Two tags per animal.
(Patriot)	Ear tag	40 % AI	Two tags per animal.
(Warrior)	Ear tag	40 % AI	Two tags per animal.
Eprinomectin (Eprinex)	Pour-on	5 mg/ml AI 1 ml/22 lb body wt.	Do not treat calves under eight weeks of age.
Ethion (Commando)	Ear tag	36 % AI	Two tags per animal.
Fenvalerate (Ectrin)	Ear tag	8.6 % AI	Two tags per animal.

Insecticide	Application Method	Application Rate	Restrictions and comments
Permethrin (Atroban Extra)	Ear tag	10 % Permethrin + 13 % PBO	Two tags per animal.
(Atroban DeLice)	Pour-on	1 % AI 15 ml(2 oz)/100 lb body wt.	Do not apply more than once every two weeks. Maximum of 5 oz per animal.
(Atroban EC)	Spray	11 % EC 1 pt/25 gal water	Spray to thoroughly wet animal.
(Boss)	Pour-on	5 % AI 3 ml/ 100 lb body wt.	Maximum of 30 ml per animal.
(Ultra Boss)	Pour-on	5 % Permethrin + 5 % PBO 3 ml/100 lb body wt.	Maximum of 30 ml per animal.
(Brute)	Pour-on	10 % AI 3 ml/100 lb body wt.	Do not treat more than once every two weeks.
(DeLice Synergized)	Pour-on	1 % Permethrin + 1 % PBO 15 ml(2 oz)/100 lb body wt.	Maximum of 5 oz per animal. Do not treat more than once every two weeks.
(Ectiban) (Insectiban)	Spray	5.7 % AI 1 qt/25 gal water	Spray to thoroughly wet animal.
(Gardstar Plus)	Ear tag	10 % AI	Two tags per animal.

Insecticide	Application Method	Application Rate	Restrictions and comments
(Gardstar)	Spray	40 % EC 4 oz/25 gal water (High pressure spray) 4 oz/2.5 gal water (Low pressure spray)	Spray to thoroughly wet animal
(Permethrin)	Pour-on	1 % AI 2 oz/100 lb body wt.	Maximum of 5 oz per animal. Do not treat more than once every two weeks.
(Permethrin CDS)	Pour-on	7.4 % Permethrin + 7.4 % PBO 2 ml/100 lb body wt.	Maximum of 20 ml per animal.
(Permethrin)	Spray	10 % AI 1 pt/100 gal water	Spray to thoroughly wet animal.
(Permethrin)	Dust bag	0.25% AI dust	Do not use in pyrethroid resistant areas.
Phosmet (Del-Phos)	Spray	11.6 % EC 1 gal/50 gal water	Treatment-slaughter interval 3 days. Do not treat non-lactating dairy cattle within 28 days of freshening.
	Back rubber	1 gal/50 gal of fuel oil, or other suitable carrier	
Pirimiphos-methyl (Dominator)	Ear tag	20 % AI	Apply two tags per animal.
(Double Barrel)	Ear tag	6.8 % Lambda-cyhalothrin + 14 % Pirimiphos methyl	Apply two tags per animal.

Insecticide	Application Method	Application Rate	Restrictions and comments
Stirofos (Rabon)	Dust bag	3 % dust	Follow label directions.
	Spray	24 % EC	
	Back rubber Spray	50 % WP 4 lb/75 gal water	Apply 0.5 to 1 gal per animal.
	Mineral additive	1.23 % AI	Follow label directions.
(Ravap)	ROL	7.76 % AI Premix	Follow label directions.
	Spray	23 % Rabon + 5.3 % Vapona 1 qt/50 gal water	Do not use on dairy animals.
	Back rubber	1 qt/25 gal of approved back rubber oil	
Zeta-cypermethrin	Dust bag	0.075 % Dust Zetacypermethrin + 0.10 % PBO	
PYthon	Ear tag	20 % Zeta-cypermethrin + 10 % PBO (9.5 g)	Apply two tags per animal.
Python (Magnesium)	Ear tag	10% Zeta-cypermethrin + 20% PBO (15.1 g)	Apply only 1 tag per animal and do not apply Calves under 3 months of age

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Categories: Livestock insects, Cattle, Horn flies

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