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Protecting Cattle from Horn Flies

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For cattle in Texas, the most damaging insect pest is the horn fly (Fig. 1). Research has shown that a calf infested with more than 200 horn flies will gain 15 to 50 pounds less than normal from birth to weaning and sale (about 4 to 6 months). Horn flies can also reduce milk production in dairy cows by up to 20 percent.

To control horn flies effectively and economically, it is helpful to know how to distinguish them from other flies, what control methods to use for different stages of their life cycle, when to take action and how to reduce the pest's resistance to chemicals.

Figure 1. Horn flies resting on the back of a cow.

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Identifying horn flies

Horn flies look like houseflies and stable flies, but horn flies are slightly smaller. However, they do have piercing mouthparts like that of the stable fly.

To distinguish horn flies from stable flies, observe their feeding behavior. Horn flies rest on a cow between feedings; stable flies remain on the cow only while feeding. Also, horn flies feed most often on an animal's back, shoulders and sides, whereas stable flies feed principally on the legs.

Life cycle

Horn fly eggs are laid in cow manure pats, where they hatch as maggots. Horn flies develop from the egg to adult stage within 10 to 20 days, and the adults live for about 3 weeks, feeding 20 to 30 times a day.

In Central Texas, horn flies are usually first observed in early spring. Populations tend to peak in early summer, then decline when the weather becomes hot and dry. In the fall, horn fly populations usually surge again when the temperatures drop and rainfall increases. Generally, they are no longer a problem after September or October, depending on the weather.

Control methods

Three types of control methods are used to suppress horn flies: biological, cultural and chemical. Producers who use all three methods (that is, they employ integrated pest management practices) will reduce horn fly populations the most while incurring the least expense.

Biological control: Parasitic wasps and fire ants suppress horn fly populations naturally. Producers wanting to use parasitic wasps for controlling horn flies can order fly pupae parasitized with the wasps from insectaries in Texas or across the United States. However, to date, no research results have been published showing that releasing parasitic wasps suppresses horn flies.

The parasitized pupae can be spread around barns near where the pest flies are developing. These pupae should be placed in areas where they will not be stepped on and where they will be out of direct sunlight.

Cultural methods: Removing and properly disposing of fresh manure from barns and stalls interrupts the horn fly's life cycle and helps prevent new populations from developing.

Chemical control: Several chemical control methods can help reduce the number of horn flies on cattle: ear tags, sprayers and dusters, feed additives and boluses.

Ear tags

Ear tags (Table 1) are 2- to 3-inch plastic tags impregnated with an insecticide and attached to a cow's ear. Several insecticides are formulated for use in ear tags, and many brands of tags are available. This large selection can make it difficult to decide which tag to use and when.

Following these guidelines will help you use ear tags effectively:

- Avoid tagging cattle until there are more than 100 horn flies per cow. This will minimize the chance for the flies to develop early-season resistance to the insecticide in the tag. If you do not tag cattle until March or later, the tags will still be effective late in the year, when horn fly numbers are high.
- Read the ear tag labels carefully to determine when to remove them from the animals. Do not use the tags beyond their recommended useful life – if left in longer, the flies will be exposed to lower doses of the insecticide and may increase the chances of fly populations developing resistance.
- Rotate classes of insecticides (not brand names of tags) every year. Most ear tags contain one of two classes of insecticide – pyrethroid and organophosphate. If you use the same class of insecticide 2 years in a row, horn flies can quickly become resistant.
- Do not use ear tags that contain both pyrethroids and organophosphates. These combination tags do not slow resistance development and may increase this problem.
- After tagging cattle, add a supplemental treatment – such as pour-on, back rub, etc. – at mid-season (July or August).

Sprayers and dusters

Free-range cattle can be treated with small sprayers (Table 1) and dusters powered electrically from the back of a truck. Sprays can also be applied during seasonal roundups. However, they usually do not suppress horn flies for long.

Feed additives

Both free-range and confined cattle can be given feed additives that suppress horn flies. These products contain insecticides that pass through the digestive system of the animal and exit in the manure where horn fly maggots develop. Feed additives can kill many fly larvae.

A disadvantage of using feed additives is the difficulty of regulating each cow's feed intake. Some animals might take in the proper amount; others might receive too little.

Boluses

Another method for controlling horn flies is boluses, which are large pills. When given to a cow, boluses are retained in the reticulum (second stomach) and dissolve slowly, releasing the insecticide into the digestive tract. Unlike feed additives, boluses release the insecticide continuously.

Summary

Regardless of the method chosen, follow these guidelines:

- Do not treat infestations of less than 200 flies per cow. Treating when horn fly populations are below this level will not provide an economic return, and the unnecessary use of insecticides can speed the development of resistant fly populations.
- Read the label of the treatment to make sure it is suitable for use on beef or lactating dairy cows.
- Be careful when applying insecticides, and wear protective clothing.

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Table 1. Various insecticides used to suppress horn flies on cattle. Please read the label to determine if the product is approved for use on lactating animals.

Insecticide and dosage	Method	Comments
Pour-on sprays		
GardStar 40%	4 fl oz/50 gal water High pressure spray	1 qt coarse spray per animal. See label for other spray considerations.
GardStar 40%	4 fl oz/25 gal water (High-pressure spray) or 4 fl oz/2.5 gal water (Low-pressure spray)	Follow label directions.
Rabon + Vapona (Ravap) 23% + 5.3% = 2 qt/100 gal water	Use 0.5 to 1 gal spray per animal.	Treatment interval no less than 10 days. No waiting period.
Permethrin: (Pyrethroids) Ectiban 5.7% EC 1 qt/25-50 gal water	Spray to thoroughly wet animal.	Can reapply in 14 days if needed. No waiting period.
Insectaban 5.7% EC 1 qt/25-50 gal water		
Atroban 11% EC 1 pt/50 gal water		
Permectrin 10% EC 1 qt/200 gal water		Re-treat in 14-21 days.
Permectrin 25% WP 1 lb/50 gal water		
Synergized DeLice 1% + 1% PBO 0.5 fl oz/100 lb body weight	Ready-to-use pour-on Maximum 5 oz/animal	Pour along back. Do not treat more often than every 14 days. PBO = piperonyl butoxide, a material that increases the effectiveness of some pyrethrin and pyrethroid insecticides. Follow label directions.
Brute 10%	Ready-to-use pour-on	Read the label carefully for proper rates based on the weight of the animal.
Cyfluthrin 1% (Cylence)	Ready-to-use pour-on	Read the label for proper rate based on weight of the animal.
Lambda-cyhalothrin	Ready-to-use pour-on	
Ear tags		
Organophosphate tags: Diazinon 18-21.4% Terminator Optimizer Optimizer calf Diazinon 18% + 2% PBO Z-Diazinon Boyagard Diazinon 40% Patriot Cutter 1 Diazinon 30% + Chlorpyrifos 10% Warrior	Read label.	Follow label instructions.

Insecticide and dosage	Method	Comments
Ear tags (continued)		
Organophosphate tags: Pirimiphos-methyl 20% Dominator Fenthion 20% + PBO 15% Cutter Blue Ethion 36% Commando **Pyrethroid tags:** Permethrin 10% Ear Force GardStar Plus Atroban, Deckem, Expar, GardStar, Z-Permethrin Fenvalerate 8.6% Ectrin Cyfluthrin 10% Cutter Gold Lambda-cyhalothrin 10% + PBO 13% Saber Extra Zetacypermethrin 10% + PBO 20% Python Magnum Zeta Gard Python **Combination ear tags with pyrethroids:** Diazinon 30% + chlorpyoifos 10% Warrior Cypermethrin 7% + Chlorpyrifos 5% + PBO 3.5% Max Con Lambda-cyhalothrin 6.8% + Pirimiphos methyl 14.0% Double Barrel		PBO = piperonyl butoxide, a material that increases the effectiveness of some pyrethrin and pyrethroid insecticides.
Backrubber applications		
Mix the insecticide formulations listed below as directed on the label for use in homemade or commercial backrubbers. Backrubbers are most effective when they are placed in a forced-use situation, such as gateways, doors or alleyways. Install them so that all animals use them once a day. If backrubbers cannot be installed in a forced-use situation, place them in areas where animals often loaf. To be effective, backrubbers must be maintained and filled often. Use only No. 2 diesel fuel, No. 2 fuel oil or an approved backrubber oil to mix insecticides for backrubbers. **Do not use fresh or used motor oils.**		
Co-Ral 11.6% ELI	Restricted-use pesticide	See footnote.
Co-Ral 5.8% Livestock Insecticide Spray (LIS) 4 qt/13 gal (9.75 oz/gal) of No. 2 fuel oil or No. 2 diesel fuel	Backrubbers only	

Insecticide and dosage	Method	Comments
Backrubber applications (continued)		
Malathion 57% EC 2.25 pt/4 gal No. 2 diesel fuel or approved backrubber oil	Backrubbers	Follow label instructions for mixing. No waiting period before slaughter for any of these materials
Rabon + Vapona (Ravap) 23% + 5.7% 1 gal/25 gal diesel or 5 oz/1 gal diesel		
Permethrin: (Pyrethroid insecticides) Ectiban 5.7% EC		
Insectaban 5.7% EC 1 qt/10 gal No. 2 diesel fuel or approved backrubber oil.		
Permectrin 10% EC 1 qt/20 gal No. 2 diesel fuel or approved backrubber oil.		
Synergized DeLice 1% + 1%		
PBO 1 pt/gal No. 2 diesel fuel or approved backrubber oil.		PBO = piperonyl butoxide, a material that increases the effectiveness of some pyrethrin and pyrethroid insecticides

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