

BUZZ OFF!

Are you and your cow herd ready for another fly season? A one-two swat approach of good sanitation and a well-planned insecticide program is still recommended by entomologists.

by Janet Mayer

As the old saying goes, "Two things in life you can't escape are death and taxes." If you're a livestock producer, add flies to that list.

Each year as the weather warms and fly populations rise, so does the cost of controlling this small winged insect. The U.S. Department of Agriculture (USDA) estimates that flies cost the U.S. beef cattle industry more than \$2.2 billion annually. Over the course of a grazing season, the loss of weight from horn flies, a blood feeding insect about half the size of a house fly, can run as high as 12 to 30 pounds per animal.

Philosophically all insects, including the fly, are in some sense beneficial to the overall plan of nature. It is known that several species, such as the horn and face flies, lay their larvae in manure which helps decompose the manure making it beneficial as a fertilizer for soil.

However, for livestock producers, too much manure and too many flies create havoc. Flies are usually defined as a costly irritant that can never be completely eradicated. A compromise is to employ a fly control program that keeps the number of flies on your cattle beneath the economic threshold of 200 to 250 flies per animal.

Because cattle seek escape from flies by spending much of their time in shade and dark areas of shelter, reduced grazing time can mean a significant reduction of milk which



Self-oilers are an economical fly control methods for cow herds.

can inhibit the growth rate of calves. Injuries can also result from animals trying to escape the continual annoyance and irritation of the insects. In addition, flies are responsible for transmitting diseases among cattle, such as epizootic bovine abortion, anaplasmosis, blue tongue and pinkeye. All these factors add up to an increase of time and labor and a loss of profits for producers.

An equal culprit, the face fly, an insect that resembles a

house fly and feeds on animal secretions, serves as the primary carrier of the bacterial disease pinkeye. USDA surveys show cattle producers lose more than \$200 million each year because of pinkeye infections.

The disease, which is usually prevalent from June until as late as mid-November, is found naturally in the environment and tends to spread rapidly throughout herds, usually affecting both eyes of an

animal. Initial symptoms are watery, runny eyes with infection usually starting in one eye and spreading to the second within 48 to 72 hours. Discharge from affected eyes attracts flies; they in turn pick up the disease and carry it to other cattle.

Entomologists recommend sanitation practices to protect cattle against flies. Insecticides should be used as a supplement to a good sanitation program, not as a replacement. Resistance to chemicals such as pyrethroid, an insecticide used on ear tags, complicates fly control. A large variety of methods are on the market today to aid in the control of insects:

Ear tags — This type of control takes minimum labor and does not stress cattle. Usually two tags per animal are recommended. Tags will last an average of two months to one full season. They should be removed at the end of the season.

Dust bags — Bags last two or more years. They must be checked and filled weekly with insecticide dust. Labor requirements are low; their use is not stressful to cattle.

Back rubbers, self-oilers — Commercial back rubbers may last several years. They must be checked and refilled weekly with insecticide solution. This method has low labor requirements and creates minimum stress to cattle.

Sprays or Dips — Spray effectiveness may last up to three weeks, but rain can wash the insecticide off, making earlier retreatment necessary. Maximum labor is required for application of this method, with fairly high stress to cattle, especially during hot weather.

Pour-ons — Mainly for control of grubs and lice, but effective as short term control of horn flies. One treatment per year necessitates restraining cattle in a chute and involves maximum labor.

Oral larvicide — Controls larvae in manure. The product must be kept available to cattle during fly season or given as a time release bolus that lasts for five months. Minimum labor is required with minimum stress on cattle by using the feed additive type. The one-time bolus treatment requires more intense labor to administer.

Biological fly control — This is not to be overlooked as an alternative to insecticides. For years the use of good insects to control pest insects has been researched by universities and the USDA as a more environmental-friendly method of control. But at this point in time, the list of biological control programs is short.

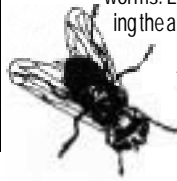
One program currently being researched is the control of house and stable flies by releasing parasitic wasps, a non-stinging species from the Pteromalidae family. While in the developing larvae stage, the wasp lives and feeds inside the pupae of house and stable flies. Preliminary research suggest the wasps can restrict fly hatches, but determining the correct species of wasp for different regions of the country and calculating numbers required to do the job are still big problems.

Don E. Mock, Extension livestock entomology specialist at Kansas State University, suggests that breeders do

Identify That Fly

Pennsylvania State University College of Agriculture Extension Service lists the following fly species as those most commonly found throughout much of the United States:

FACE FLIES — Closely resembling the common house fly, this insect is responsible for carrying pinkeye and eye worms. Large populations interfere with the vision and breathing of the animal and prevent normal grazing, forcing the animal to leave pastures and seek relief in wooded areas and shelters.

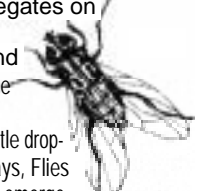


Although a great deal of time is spent away from the host animal, the adult female of this species clusters around the eyes, mouth and muzzle of the animal, causing extreme annoyance throughout the summer. The males are not found on animals. The species does not bite, but feeds on animal secretions. Development takes place in fresh cattle droppings, with the egg-to-adult life cycle being completed in two to three weeks, depending on the weather. In the fall, face flies enter buildings to hibernate.

HORN FLIES — This species, about half the size of a house fly, gained its name because it's often found resting at the base of the animal's horn. But it does not confine itself to this location; it also congregates on the backs, shoulders and bellies of cattle, feeding twice a day or more.

The fly remains on the animal day and night. Bites from their piercing mouth parts are painful and annoying, producing irritation, loss of blood and reduced vitality. In the South, sores may become infested with screw worms.

The horn fly spends most of its adult life on the host animal. Females lay their eggs in fresh cattle droppings. The complete life cycle, egg to adult under optimum conditions, is completed in 10 to 20 days. Flies remain abundant until frost kills them. Their eggs develop, wintering as pupae, then another generation emerge in late April or May.



STABLE FLIES — About the size of a house fly, the bite of the stable fly causes pains and blood loss along with fatigue that develops from fighting the flies. The population of this species is at its peak during July and August. Cattle stomping their feet is an indication this species is present, since they attack the legs and bellies. Both male and female stable flies spend about 30 minutes a day feeding on animals. Taking one to two drops of blood at each meal and feeding several times a day, this species stays on the animal only long enough to feed. The remainder of the day is spent on shaded wooden posts, trees and buildings, digesting their meal.



Sanitary conditions are a detriment to stable flies since breeding takes place in wet straw, manure, spilled feeds, silage and decaying vegetation. Under optimum conditions, transition from egg to adult takes three weeks. Each female lives 20 to 30 days, laying 200 to 400 eggs. They spend the winter as larvae or pupae.

HORSE AND DEER FLIES — In some parts of the United States, cattle that are pastured near woods or wet areas may be attacked by these two species. Making an appearance in early summer, the horse fly, which is 3/4 to 1 inch in length, and the deer fly, which is slightly larger than a house fly, land on the head, neck, shoulder or back of an animal.

The females of the species cut through the skin with knife-like mouth parts and feed on the blood for several minutes. The wound continues to bleed after the fly leaves. Moderate infestations many reduce beef gains on pasture by 1/4 to 1/2 pound a day. Horse and deer flies have been implicated in the transmission of bovine anaplasmosis. Eggs are laid on leaves or stems of plants near moist locations. Life cycles take from 70 days to two years. The two species pass through the winter as nearly full-grown larvae in the mud around lakes and water holes.

two things before implementing a fly control program this season: Find a program that is correct for the particular area of the country in which you are located and take into consideration the size of your herd.

"Obviously, a producer with a small herd in the East will not treat the fly problem the same as an individual with a large herd in the West," Mock says.

Horn and face flies are the two species of flies that seem to be prevalent on pastured cattle throughout much of the country. He strongly recommends that all cattle be vacci-

nated for pinkeye because of the spread of the disease by the face fly. But Mock cautions that fly control is important even though cattle have received the vaccine. With an infestation of face flies, vaccinated cattle can still display symptoms of watery eyes associated with pinkeye.

It has been proven in a study done in Kansas, that when cattle displaying these symptoms are sold, prices can be discounted as much as \$7 to \$8 per hundredweight. However, the face fly does not cause loss of weight or a reduction of milk production as does the horn fly.

Speaking of the horn fly, Mock cites a dusting device used at his university as proving economical and successful in their control. The device is a combination mineral feeder and dust bag. He describes it as basically a tripod stand with a center pole running up through a mineral tub. A couple of feet above the tub is a basket that holds blocks of mineral. The whole thing is topped with a round lid that looks like a big hog feeder lid. Hanging from the lid's circumference is a skirt that's actually a dust bag.

When the cattle approach mineral feeder, they get dust

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on their heads and backs of their necks. Mock has seen anywhere from 60 percent to almost a 100 percent control of horn flies using this device. The control was excellent on horn flies and also had some effect on face flies for about \$1.60 per cow-calf pair, figuring in a three- to four-year life of the device.

Charlie Pitts, Extension entomologist at Pennsylvania State University, says the cattle industry encountered fly resistance problems with the use of ear tags impregnated with the popular ingredient synthetic pyrethroid. With the advent of the tags came a high percentage of control due to constant pressure on the insect population, he explains. But horn flies rapidly developed a resistance to the chemical. Studies show that flies do not actually develop an immunity to the insecticides; rather, flies with some genetic resistance

mate with other resistant flies, thus creating higher levels of resistance.

"If a producer is going to use ear tags in a control program, it is wise not to use the same type of ear tag year after year," Pitts says. "Change the brand of tags, making sure the compound used on new tags is different from the one used before." In addition to pyrethroid tags are others with organophosphate.

In addition to learning to manage fly control, the producer must learn to control resistance. Pitts suggests this can be done by employing other methods along with the tags, such as back rubbers and other self-treating devices. Feed-through products or oral larvicide that destroy the fly larvae in the manure are another alternative.

Since both the horn and face flies develop in manure, this method is efficient. However, it works well only if the cattle are isolated or if neighboring herds employ a good fly control program.

Jack Campbell, Extension entomologist at the University of Nebraska, says the oral larvicide is good, but ranchers with large herds throughout his state don't use this method because of migration.

"Some ranchers have used the oral method, but they use it only one season," Campbell says. "It works early in the season, but after seven or eight weeks you can't tell the difference between the herd and one that was not treated because other flies have migrated into the area. Face flies are worse than the horn flies in this situation."

Nebraska has been conducting grant-funded research projects which are trying to reduce the amount of pyrethroid resistance in flies. Since the university maintains more than one herd in different locations on the same ranch, researchers were able to try various methods, using dust bags and a variety of ear tags.

"This was an effort on our part to see if we could disrupt

the resistance problems everyone has been experiencing," Campbell says. "At this point, we have dropped from a factor of 13X resistance to a 4X, which is a fairly good reduction. But the problem is the resistance to pyrethroid is retained in the population. If you pressure it, it will come back more rapidly than it occurred in the first place."

Campbell knows most producers use ear tags, so he advises them to rotate the tags on a yearly basis, using insecticides other than pyrethroid. In addition, he strongly suggests that producers restrict access to water, forcing the cattle to use dust bags placed at access points.

If using this method is too difficult at water sources, Campbell recommends using the dust bags in conjunction with salt or mineral sources. "For range herds, many ranchers use mineral or salt boxes with frames around them that hold the dust bags. This can also be very effective."