FLY CONTROL NEWS TO MOO ABOUT:

FEED-THROUGH FLY CONTROL

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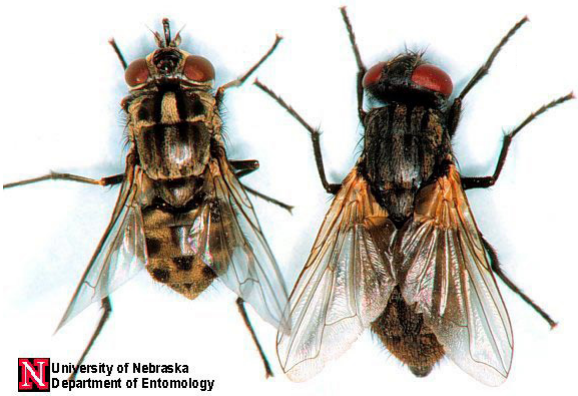

Fig. 1. Stable fly (left) and house fly (right) adults.

Fig. 2. Horn flies (smaller, numerous) and face flies (larger, few in number) on face of Angus cow

FLY MAGGOTS WERE SPOTTED for the first time this year wiggling in the wet bedding in my horses' stalls this past weekend. For dairy producers, that means we are well into the filth fly season and a planned strategy to deal with the flies should be in place. A couple of dairy managers in the lower Yakima Valley have indicated that they will be trying the feed-through fly control products with their calves this year. Here is a summary of the feed-through products available for use on Washington dairies—how they work, how to use them, and their benefits and drawbacks.

Significance of flies Fly maggots complete their life cycle in what we call the "Dairy Underground": the bedding in calf housing that gets mixed with urine, manure, spilled milk and grain, and water, creating an environment rich in organic matter and bacteria, an ideal situation for filth flies to thrive and increase in number. On most dry-lot dairies, the two main filth fly species are house fly (does not bite) and stable fly (bites readily) (Fig. 1). House flies are a nuisance to animals and humans and can transfer disease organisms throughout the dairy. Stable flies bite and suck blood; it only takes five or fewer stable flies sucking blood from a bovine to cause a reduction in weight gain or milk production. If dairies have pasture, there are two other flies breeding in the manure that can be a problem for cattle—horn fly and face fly (Fig. 2). Horn flies bite and suck blood, leading to reduced weight

gain, reduced milk production and consequent economic loss. Face flies can indirectly result in economic loss when they transmit the bacteria responsible for pinkeye disease.

How feed-through fly control works A number of feed-through fly control products on the market are available for use on dairies. Most of the products contain either (S)-methoprene or diflubenzuron and are consumed by the animals and passed out in the manure to prevent fly development in the manure. Both of these insecticides are considered insect growth regulators (IGRs) but they work in different ways. (S)-methoprene mimics a juvenile hormone found only in insects and interferes with the growth and development of horn fly larvae, which kills the larvae. Diflubenzuron acts by inhibiting the construction of chitin when the larva (maggot) molts or sheds its outer covering. The outer covering of an insect, called the exoskeleton, contains chitin as the main building block. When chitin cannot be laid down as the fly larva molts to a larger stage, the larva dies. In contrast to (S)-methoprene, which is effective against horn fly only, diflubenzuron works against four species of flies: house fly, stable fly, horn fly, and face fly.

Fate of chemicals in cattle Once the animal consumes a product containing (S)-methoprene, it either goes through the digestive tract and out in the manure or urine unchanged or it is broken down into smaller compounds that are incorporated into fatty acids, lactose, and cholesterol and rapidly eliminated from the animal's body via manure, urine, or expired breath. When used as directed, no harmful residues are left in the meat or milk. In the manure, (S)-methoprene and its breakdown products are not active against beneficial beetles, flies, or bees. Because of the nature of (S)-methoprene's metabolism in the animal and fate in the environment, the U.S. Environmental Protection Agency (EPA) in 2003 granted an exemption from a tolerance requirement for (S)-methoprene in or on all food commodities when it is used for maggot control. In contrast, diflubenzuron is metabolized in the animal's body, and while 70 to 85% of the consumed diflubenzuron is eliminated in the manure, some of the breakdown products end up in body tissues and trace residues are found in the milk. The established residue tolerance for meat, animal fat, and milk is 0.05 ppm, and for meat by-products, 0.15 ppm. When used as directed, diflubenzuron is not harmful to adult beneficial insects such as dung beetles and parasitic wasps. However, as this insecticide is active against any growing organism that has chitin, it will harm dung beetle larvae that are feeding on treated manure. In addition, care should be taken to avoid using products containing diflubenzuron near freshwater and marine bodies of water because it is toxic to aquatic invertebrates such as shrimp and stoneflies.

Products available Products containing (S)-methoprene are labeled for horn fly control on all cattle, including breeding and lactating cattle and calves. Various formulations are available, including mineral tubs, mineral supplements, liquids, and premixes to be incorporated with grain. Read the label for amounts to be fed based on animal's weight. For best results, products containing (S)-methoprene should be fed to animals just before the beginning of horn fly season (late March to early April). If (S)-methoprene is mixed with feed later in the season, it will still be effective but control of horn flies will be delayed a few weeks.

Products containing diflubenzuron are available for beef and dairy cattle and calves. An array of formulations are available, including premixes to be incorporated into grain rations or mineral supplements, and daily add-packs for use with whole milk or milk replacer for calves. An add-pack for milk would help ensure pre-weaned calves were getting the proper dose, as they do not eat much grain at that stage in their lives. Read the label for amounts to be fed based on animal's weight. The label recommends beginning to feed 30 days before flies appear and continuing feed-through fly control until cold weather hampers fly activity. As with (S)-methoprene, if feeding is initiated later, product efficacy would be delayed several weeks. In the meantime, insecticidal control of adult fly populations would likely be necessary.

Another larvicide, Dimilin® 2L (a restricted use pesticide requiring a pesticide license), contains diflubenzuron and can be considered as an option; it is registered for use as a diluted spray on manure, bedding, buildings, and pasture on livestock operations.

Cost effectiveness The cost for feed-through fly control is dependent on how many cattle/calves you are treating and how much they weigh. Online calculators are available to assist the dairy manager in determining if this strategy will be cost-effective for their dairy operation. One example of a calculated cost for Clarifly® larvicide containing diflubenzuron is: 2 to 2.5 cents per day to treat a 500 lb calf.

Use in IPM program These feed-through products should be used in conjunction with a regular manure management and sanitation program in the pastures, feedlots, and calf hutches. Neither (S)-methoprene nor diflubenzuron control adults. If adult flies are present in sufficient numbers to cause problems (e.g., considerable migration from neighboring untreated herds can occur), on-animal treatments or premise sprays containing a pyrethroid insecticide would be warranted.

For more information:
http://www.altosidigr.com/uploads/resources/4e9481ab82f0e_AltosidIGR_product.pdf
http://www.centralflycontrol.com/resources.php?type=FAQs
http://pnwhandbooks.org/insect/sites/default/files/pdfsection/livestock.pdf

Disclaimer: The mention of a brand name does not indicate endorsement. Always read the product label. Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

IF YOU HAVE QUESTIONS OR COMMENTS REGARDING THIS INFORMATION, PLEASE CONTACT:

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IN THE NEXT ISSUE: Preliminary results from the 2012 Washington Dairy Pest Management Practices Survey will be presented. Thank you to all Washington dairies who participated in this survey!

LINK TO PAST ISSUE:

April 2013--Summer 2012 Results: http://www.wadairyfederation.org/wp-content/uploads/2012/03/Fly-Research-April-2013-Ferguson.pdf