

Considering feed-through fly control this year?

Take the necessary steps to maximize efficacy

Jason Smith, Assistant Professor and Extension Beef Cattle Specialist, Department of Animal Science, University of Tennessee Institute of Agriculture

Feed-through fly control has without doubt become one of the most popular types of feed additives utilized in pasture-based beef production systems. As a result, many floor-stocked free-choice mineral supplements and other feed products containing one of these technologies will soon become available for the upcoming grazing season. Feed-through fly control can be a valuable component of a comprehensive fly control program, however its misuse often results in lost opportunities and limited return on investment. Thus, it is important to understand the science behind these products and how they should be used in order to maximize their efficacy.

One thing that all feed-through fly control products have in common is that they have no direct effect on the animal – rather they have their effect in the animal's manure. While they are consumed by the animal, they move through its digestive tract relatively unchanged, and are deposited in the animal's manure. This is where they wage their war against flies. Although they are delivered to the manure in a similar manner, their differences lie in mode of action. As such, these additives generally fall into one of two categories: insect growth regulators (IGR), or larvicides.

Insect growth regulators are compounds that typically interfere with the progression of normal fly development. In other words, these products work through inhibiting or delaying the progression of fly larvae from one stage of development to the next. Because of this, IGR products are generally species-specific, and thus target only a single fly species. Most commonly available IGR products are only effective on horn flies. The most common of these – shown as active drug ingredient (ex: *product/trade name*; company) – include S-methoprene (ex: *Altosid*; Central Life Sciences), and ADM methoprene (*Dipteracide*; ADM Animal Nutrition).

In contrast to IGR, larvicides elicit a structural change in the fly that leads to death before it is able to reproduce. In other words, these products prevent flies from breeding. Because of this mode of action, larvicides generally are not species-specific, and thus target more than one species of fly. As a result, larvicides target not only horn flies, but also face flies and stable flies. The most common of these include Diflubenzuron (ex: *Clarifly*; Central Life Sciences) and Tetrachlorvinphos (ex: *Rabon*; Bayer Animal Health).

Because of their differences, it is important to make sure that you are using the correct product to achieve your goals for fly control – and similarly, meet your expectations. For example, occasional situations arise where an IGR is being used, but the producer does not believe it is working because they still see flies. Since that product is intended to control horn flies, do not expect it to reduce pressure from face flies or stable flies. This often results in mistakenly

assuming that the product is not working, when in fact it is. In this or similar situations, the issue has been a lack of understanding in what the specific product is designed to do, rather than lack of efficacy. Similarly, larvicides may affect insects other than flies that also reproduce in manure.

In order to maximize efficacy of either a feed-through IGR or larvicide, it is important to ensure that they are used correctly. Since they elicit their effect on flies in manure, they must be present in the manure in order to do so. This means that you need to be ahead of the game, and begin feeding these products at least one month prior to fly emergence. If you don't begin feeding either of these products until flies are already a problem, you're going to limit their efficacy, as flies have been given the opportunity to breed and develop in manure that has not been exposed to the product. In this situations, flies have essentially been given a one-month head start. Similarly, product efficacy is dependent upon feeding these products throughout the duration of the fly season. As a result, it is necessary to extend feeding through the second major killing frost.

Because these products work in a dose-dependent manner, it is imperative that cattle consume the necessary (labelled) amount of product. This means that cattle must consume the amount of feed required to deliver the necessary level of IGR or larvicide, and they must do so on a consistent basis. Take steps to ensure that these products are being consumed in a manner that will allow consistent delivery of the necessary amount of drug to manure. If using a free-choice mineral supplement as your vehicle of delivery, this requires tracking mineral consumption, and re-locating mineral feeders as necessary to achieve consistent intake of the necessary amount.

Another factor that limits the efficacy of feed-through products is their use as the sole means of fly control. While they may still provide some benefit when used alone, feed-through pesticides are not a "silver bullet," and perform best when used as a component of a comprehensive fly control program. Thus, it is recommended that they be used in combination with other methods of control, such as insecticide-impregnated ear tags (fly tags), administration of topical insecticides (sprays, pour-ons, rubs, etc.), and proper manure management. The latter of these – proper manure management – is the area that is most commonly overlooked. In scenarios without manure management – and trust me, they exist – the efficacy of these products is substantially limited, as flies will almost always have access to manure that was not exposed to the product. Take the necessary steps to ensure that "old manure" doesn't limit product efficacy.

Due to regulatory jurisdiction, most mineral supplements or other feed products that contain a feed-through pesticide are also medicated with another drug. Currently, the most commonly paired drug is an ionophore, such as Bovatec or Rumensin. In addition, some products can be purchased as "add-packs" and incorporated into a free-choice mineral supplement or other feed on-farm, however doing so may increase costs considerably when compared to purchasing a pre-manufactured supplement or feed that already contains the product. It is important that you put pencil to paper to determine the most economical option.

While IGR and larvicide products are valuable components of a comprehensive fly control program, their misuse, along with a lack of understanding of their mode of action and factors that drive their efficacy, creates lost opportunity and substantially limits their value. Use this information to ensure that you are using the correct tool for the job, and using it in a way that will maximize its benefit to your operation.

****Any mention of specific drugs, product/trade names, or companies was done so solely for educational purposes, and not intended to promote any product over another.****