



ENTFACT -502

## BIOLOGICAL CONTROL OF FLIES

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Several tiny, parasitic wasps attack immature stages of flies. The wasps insert their eggs into eggs, maggots, or pupae of several species of flies. The white, legless wasp larvae feed inside the host and eventually kill it. The wasp completes its development, emerges as an adult wasp and continues the process by searching out more hosts. These small wasps only attack flies, they neither sting nor bite other insects, animals, or humans.

Commercially available parasites attack house flies and stable flies, pests associated with feedlots and dairies. Releases of wasps have provided effective fly control in some poultry houses but there is not enough information to evaluate their effectiveness around confined livestock and dairy facilities. These programs are not directed toward pasture fly pests such as the face fly and horn fly.

Companies sell fly parasites for use in biological control programs and are used against house flies and stable flies. They generally recommend periodic releases of the wasps before and during the fly season. The number of parasitic wasps released generally depends upon the number of livestock present. Usually, the company provides a formula or guidelines to calculate the numbers of wasps to use. Continued releases are needed to keep large numbers of wasps available throughout the summer.

### Several Wasp Species Available

Several species of parasitic wasps are available. These species may be identified by their scientific names in advertisements or brochures. The small amount of research data available from the Midwest indicates that *Spalangia nigroaenea* is the commercially available parasite that is most likely to attack both house fly and stable fly pupae in feedlots. *Muscidifurax raptor* and *Muscidifurax zaraptor* will provide some parasitism of house flies. *Spalangia nigra*, *Spalangia cameroni*, and *Spalangia endius* will provide some parasitism of stable flies. Producers should not buy unspecified "blends" of species or shipments of *Nasonia vitripennis*. Field trials have shown that *N. vitripennis* is not effective in Midwest feed lots.

### Critical Factors

Most of these programs recommend periodic but not complete manure removal, effective water management, and control of weeds and vegetation around buildings.

Manure management is critical. Most manure and mixtures of straw and feed or manure must be removed to eliminate fly breeding areas. However, some must be left in place so that parasites can increase in numbers. The wasps search these area for prey. Total removal leaves them no place to become established because there are no hosts on which to develop. Usually this is not a problem. On the other hand, excessive amounts of manure will allow fly production that can overwhelm the control ability of the wasps.

Effective water management is essential. Wet manure and mixtures of manure, feed and straw are essential for fly development. Regularly check for broken or overflowing waterers. Dry manure and wastes will not produce large numbers of flies so fly problems can be greatly reduced if there are few ideal breeding sites.

Weeds around buildings and pens will hide manure and spoiled hay or feed. They will also allow areas to stay wet longer and may prevent areas from being cleaned thoroughly. Weed control affects fly control.

### Effectiveness

At this point, there is no clear answer to the effectiveness of using parasites to reduce fly populations. Chances for success are greatest when coupled with waste and water management, and chemical control as needed. Chemical controls should be limited to fly baits (for house flies), sprays or other application techniques that will not come in contact with manure and kill the parasites. Wasps releases are needed each year, do not count on establishing a population on your farm.

A control program is successful if flies are kept at or below acceptable levels. It is difficult to determine just what factors had the greatest effect on flies. As far as

parasites go, the only way to assess their impact is to collect some fly pupae from different breeding sites and hold them in a jar to see if flies or wasps emerge from them. At this time, use of parasitic wasps to control house flies and stable flies is in the experimental stage. Wasps may supplement an integrated program based on sanitation but are unlikely to provide adequate control when numerous breeding sites are available.

### **Some Questions To Consider**

Are house flies and stable flies your major problems? If the answer is no, then the parasite release program is not a good alternative because the wasps are best against those two pests.

What type of waste management program do you have? Is most all manure, spilled feed and hay around bunks removed regularly? If the answer is no, then there may be too much breeding area for house flies and stable flies for wasp releases to be effective.

What types of wasps is the company offering and what will be the total cost of the program? How does that compare to your current expenditures for fly control?