

(No endorsement of this company is implied.)

Cultural Controls

Add cultural controls such as tapes, traps, and lights ("bug zappers") to your arsenal. These generally target adult flies and don't harm beneficials.

Pesticides

- Use pesticides as a last resort.
- To avoid pesticide resistance spray only when necessary.
- Minimize harm to beneficial species. Non-persistent space sprays such as natural pyrethrins are short-lived pesticides that only affect the current crop of insects. Those *M. raptor* adults that emerge a day or two later won't be hurt. Avoid residual premise sprays and manure and bedding treatments.
- Change classes of insecticide between successive applications to minimize the potential for resistance.
- Always read and follow label directions.

What about baits?

Baits are attractive to adult flies only and don't harm beneficials. Follow label instructions regarding rate and placement.

More Questions?

Ask for *Integrated Management of Flies in and around Dairy and Livestock Barns* (Fact Sheet 102DMFS450.00), *Pest Management Recommendations for Dairy Cattle*, and our video, *Integrated Fly Management Around Confined Livestock* (Video 622VIFM) from Cornell Cooperative extension offices or from the Resource Center, 7 Business and Technology Park, Cornell University, Ithaca, NY 14850. Related information: *Cattle Lice* (Fact Sheet 102GFSDI-1). You may also visit the Livestock and Field Crops web page at <http://www.nysipm.cornell.edu/lfc.html>

If you have other questions, call your local Cornell Cooperative Extension dairy specialist.

New York State Integrated Pest Management (IPM) Program

We encourage people to adopt a sustainable approach to managing pests, combining methods that minimize economic, health, and environmental risks.

The IPM strategy integrates the use of several pest-suppression technologies, including

- Biological control: beneficial organisms, such as insect predators
- Cultural techniques: practices such as crop rotation, sanitation
- Mechanical and physical methods: screens, traps, cultivation, and temperature modification
- Chemical control: judicious use of pesticides and other chemicals
- Genetic control: traditional selective breeding and new biotechnology practices that produce pest-resistant varieties
- Regulatory control: state and federal regulations that prevent the spread of pest organisms.

The New York State IPM Program funds projects to improve IPM strategies and offers educational programs and resources.

Many organizations and individuals assist in this effort. The New York State Department of Agriculture and Markets, New York State Department of Environmental Conservation, Cornell University, and Cornell Cooperative Extension jointly fund the NYS IPM Program.



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program and employment opportunities.*

Barn Flies

Biological Controls



Traps & lights

Baits & sprays

Proper Sanitation

Management Guide

Sanitation

Good sanitation is the most effective and economical way to manage house and stable flies in dairy barns.



Where do flies breed?

In manure, bedding, spilled feed (hay, grain, and silage), or any other organic material.

How does sanitation help to control flies in the barn?

Females can lay up to 100 eggs at a time, every four days. Eggs can hatch within hours, and maggots (larva) may take only 7–10 days to become adult flies during summer months.

Moist, undisturbed organic material keeps eggs and maggots from drying out and provides maggots with food. Cleaning up at least every seven days breaks the cycle.

My main barn is very clean, but I still have flies. Why?

Flies are probably breeding in other areas. Housing areas for calves, heifers, and dry cows are often neglected. Check watering (keep an eye out for leaky pipes and faucets) as well as feed mixing and distribution areas, along with any nooks and crannies that aren't cleaned regularly.

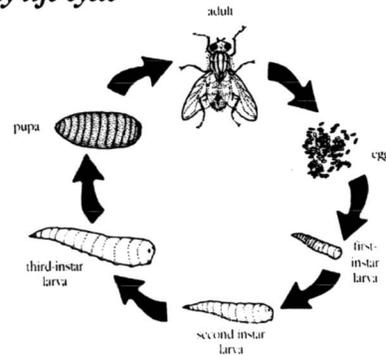
Biological Controls

All sorts of naturally-occurring “beneficials”—spiders, beetles, mites, and diseases—attack flies in all life stages. Even the crushing weight of cows' hooves kill many. But barnyards are such fly-friendly environments that the beneficials need a boost.

You can supplement these beneficials with releases of the parasitoid (*Muscidifurax raptor*). It attacks house and stable fly pupae (the life stage when maggots transform into adults).

Biological controls only work if you have a strong sanitation program in place.

Housefly life cycle



Does *M. raptor* sting?

M. raptor parasitoids are hardly bigger than fruit flies. They never sting or bite humans, cows, dogs, or cats. They won't harm anything but the target species: house flies and stable flies.



When should parasitoids be released?

Release during warm summer months when fly breeding is at its peak: mid- to late May through August in New York. By September, most flies in the barn are migrants from elsewhere, so later releases are unwarranted.

How often do I release them?

Research shows that weekly releases are effective. Other schedules such as biweekly releases haven't been tested.

How many *M. raptor* should I release at a time?

In general, use two hundred parasitoids per milking cow per week. For instance, if you have a milking herd of one hundred, order twenty thousand *M. raptor* (two colonies) per week.

IF YOU HAVE INDIVIDUAL CALF HUTCHES, ORDER MORE (see below). You may vary this based on your sanitation efforts and your tolerance of fly populations.

How do I handle a shipment?

M. raptor pupae are shipped in cheesecloth bags. They are packed in colonies of ten thousand or half-colonies of five

thousand. Unpack and hang bags immediately, but DON'T open them.

M. raptor adults will crawl out of the bags and seek fly pupae soon after arrival. They emerge over a week or more.

Where do I put the bags?

Hang bags high near fly breeding areas, such as maternity and hospital pens, housing for calves, dry cows, and heifers, and places where you know sanitation is less than optimal. Bags should be hung inside, out of the sun and weather. Keep them out of reach of cows—they'll eat them. If necessary, protect bags from birds by relocating the bags or by installing hardware-cloth barriers.



What about calf hutches and confinement areas?

Calf hutches and similar places are ideal fly-breeding areas, so you'll need extra parasitoids. **We recommend one thousand *M. raptor* per week per hutch** in addition to the regular order. **Remove them from the bag and sprinkle them around the inside edges of each hutch. Split a full-colony bag among ten hutches.**

Isn't this expensive?

Biological control combined with good sanitation costs no more than a conventional pesticide program, especially when you consider application costs. In 2001, *M. raptor* cost about \$13.00 per colony (depending on total quantity ordered). Shipping was an additional \$5.00 to \$6.50 per shipment. Altogether, it cost \$5–\$6.50 per milker to supply a hundred-cow dairy at recommended rates.

When purchasing, be sure to ask for disease free stock. And insist on northeast-adapted parasitoids.

Where can I get *M. raptor*?

The only current source of northeast-adapted *M. raptor* is IPM Laboratories, Inc., in Locke, NY (315-497-2063)