Fly parasites tech sheet

We offer a fly parasite mix which includes *Spalangia endius*, *Muscidifurax raptor* and *Nasonia vitripennis* . These are tiny wasps (2 to 3mm long) that are naturalised to Australia. They are specific fly parasitoids which only target nuisance flies and are harmless to other animals.

The adult female wasps lay their eggs into immature fly pupae. After hatching, each wasp larva feeds on its fly pupa host, ultimately killing it before it develops into an adult fly. After about three weeks an adult wasp emerges from a small hole in the fly pupal case to mate and continue the cycle.

When to release

Regular releases should be made each year from Spring through to Autumn, starting well before fly populations escalate to unmanageable levels.

Storage and handling

The wasps are supplied as the immature stage (parasitised fly pupae). They are mixed with vermiculite and packaged in paper bags.

They should be released as soon as possible after delivery. In the event of adverse weather such as extreme heat or high rainfall, they may be stored for several days before release in a dark room at 15 – 20°C. They should not be refrigerated.

Be aware that wasps may not begin to emerge for up to 2 weeks. Once the process of emergence has begun it may take a further 2 weeks to complete.

How to release

Before release, check prior history of chemical applications to ensure toxic residues are no longer present. See notes on chemical use below.

Transfer the pupae to parasite release units (available from Bugs for Bugs). Hang release units along fence lines or other suitable sites close to where flies breed (e.g. drains, sedimentation basins, silage pits, spilt feed or patches of undisturbed manure). In horse stables and other indoor environments they can be sprinkled around the pens and feeding troughs.

Monitoring after release

New generations of adult wasp parasites will emerge and seek out their hosts in manure piles and other fly breeding sites. They burrow down into the manure to deposit their eggs into the fly pupae.

It is difficult to detect the adult wasps after release because of their small size and their habit of concealing themselves. Regular monitoring is recommended to check for establishment. Fly pupae can be collected and kept until either a fly or a parasite emerges. This procedure will help to determine the levels of parasitism.

A reduction in the adult fly population may not be noticeable for several weeks because the parasites only attack fly pupae (not adult flies).

BUGS FOR BUGS

A selection of parasitoid wasps for nuisance fly control

Key target pests

- House flies
- Stable flies

Advantages

- A very reliable and effective biocontrol agent
- Easy to handle and release
- Excellent persistence once established

Pack sizes

2,500 immature wasps
10,000 immature wasps

Suitable environments

Our fly parasite mix can be used wherever nuisance flies thrive.

These pests are commonly found associated with feedlots, piggeries, poultry farms, horse studs, refuse centres and landfill sites. They cause problems anywhere intensive animal husbandry is practised.

These flies cause significant annoyance to livestock, staff and neighbours and can carry disease.

Chemical control of fly pests is possible but the development of resistance is an increasing problem. Whenever chemicals are used near animals, there exists a risk that residues may occur in meat and milk products.

Recommended release rates

Releasing modest numbers weekly or fortnightly is better than a limited number of large releases. This reduces risk, improves establishment and accelerates the development of multiple overlapping generations. It is important to start releasing early in the season and continue until cold weather prevails.

Situation	Release rate
Large animals (e.g. cows and horses)	100-500 wasps/animal/fortnight
Medium animals (e.g. pigs)	40-100 wasps/animal/fornight
Small animal husbandry (e.g. poultry)	2-5 wasps/animal/fortnight

Cultural practices to aid establishment

Historically chemicals have been used to control nuisance flies. Increasing problems with resistance to pesticides and the threat of residues in meat and milk products have led to a worldwide trend towards more ecologically sustainable control methods. We encourage farmers to adopt an integrated pest management (IPM) approach to nuisance fly control.

The following practices are highly recommended:

- Practice good sanitation. This impedes fly breeding and assists the establishment of natural enemies including wasp parasites.
- Regularly remove fly breeding substrates such as manure, spilt feed and vegetation.
- Carcasses should be covered completely (preferably more than 1m deep) to prevent blowflies from breeding.
- Mow vegetation around feedlots, sedimentation systems and effluent ponds to reduce areas where flies can shelter.
- Use yellow sticky traps or rolls to mass trap adult flies wherever practical.

Chemical use

Our fly parasites are very effective biocontrol agents but they are delicate organisms and easily harmed by insecticides. Most chemicals used against adult flies are toxic to parasitoid wasps. Following insecticide application, wasp populations will take much longer to recover than flies so biological control is reduced during this period.

If chemical treatment is required, care must be taken to minimise harm to the wasps. Larvicides (e.g. cyromoazine) generally tend to be less harmful to wasps and the environment and often provide better control over an extended period of time. Granular baits and bait strips should also be used as part of an IPM approach to nuisance fly control.

Images: 1. Adult Spalangia wasp **2.** Wasp emerging from parasitised fly pupa **3.** Wasp emergence holes in fly pupae **4.** Wasp parasite release unit