

## Rearing techniques for multiplication of housefly, *Musca domestica* pupal parasitoid, *Nasonia vitripennis* (Pteromalidae)



*N. vitripennis*

### Technology description

A pteromalid *Nasonia vitripennis* is a pupal parasitoid that is effective against the muscids. Although promising bioagents have been identified, implementing the program involving the use of bioagents is second only to chemical insecticides because of the difficulty faced in mass production of the parasitoids. A mass rearing technique of housefly parasitoid, *N. vitripennis* on the pupa of housefly, *Musca domestica* has been developed.

### Background

The house fly, *Musca domestica* (L.), is a significant public health pest for humans and domestic animals. They are mechanical carriers of over 100 human and animal intestinal diseases and are responsible for protozoan, bacterial, helminthic, and viral infections. They are a serious pest in animal rearing facilities, where they transmit disease, cause annoyance to people working and staying close to animal or poultry sheds. Synthetic insecticides are widely used to control *M. domestica*. They have become less acceptable due to their persistence in the environment, toxicity to non-target organisms and resistance development to several established insecticides. Therefore, an alternative approach using the bioagents for vector control that environmentally safe demands for search for bioagents that can keep the fly population at low.

### Benefits and utility

Farmers involved in animal husbandry and poultry rely on use of insecticides for the control of housefly. In poultry sector over Rs. 2,00,000 is spent per annum for maintaining sheds housing one lakh birds. These flies are managed using the chemical pesticides. In majority of the cases the pesticides are used indiscriminately, and this has led to development of resistance. This situation warrants increased level of pesticides to be used over a period to control the flies. Increase the load of pesticides in animal sheds and poultry only adds to exposure of pesticide residues that are harmful to nontargets and the consumers. The parasitoids of housefly *N. vitripennis* is effective in parasitizing the housefly pupae. This bioagent fits perfectly in the housefly IPM umbrella. Innundative release of the pupal parasitoid will help to bring down the population of houseflies and thereby decrease the dependence on the pesticides.

## Technologies Ready for Agribusiness

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These parasitoids can be reared easily utilizing the locally available materials making this technology suited for local conditions.



Parasitized *M. domestica* pupae

### Scalability

Its suited as a small scale industry. It can be taken up by Self Help Groups and unemployed youth in rural and urban areas.

### Business and commercial potential

As the farmers in poultry sheds and Animal sheds spend over two lakhs on insecticides use of the parasitoids manage the houseflies is a clean and green technology. Innundative release of the parasitoids will scale down the fly populations. The technology can be used in poultry, animal husbandry and waste management sector.

### Financial requirement

An investment of Rs. 100000 is required to produce over twenty lakh parasitoids. Insect rearing cages and plastic containers are the capital required.

### Target Market/Customer

- Farmers
- Farming companies
- Self-help groups
- Bioagents mass multiplying companies
- This technology already commercialized to one firm.

### Social Impact of the Technology

- *N. vitripennis* is safe biological control agents and are specific against insect pests.
- Use of the bioagents will help to scale down the population of flies by scaling down the use of pesticides.