



# Monitoring of fly population using spot cards







# Sanitation

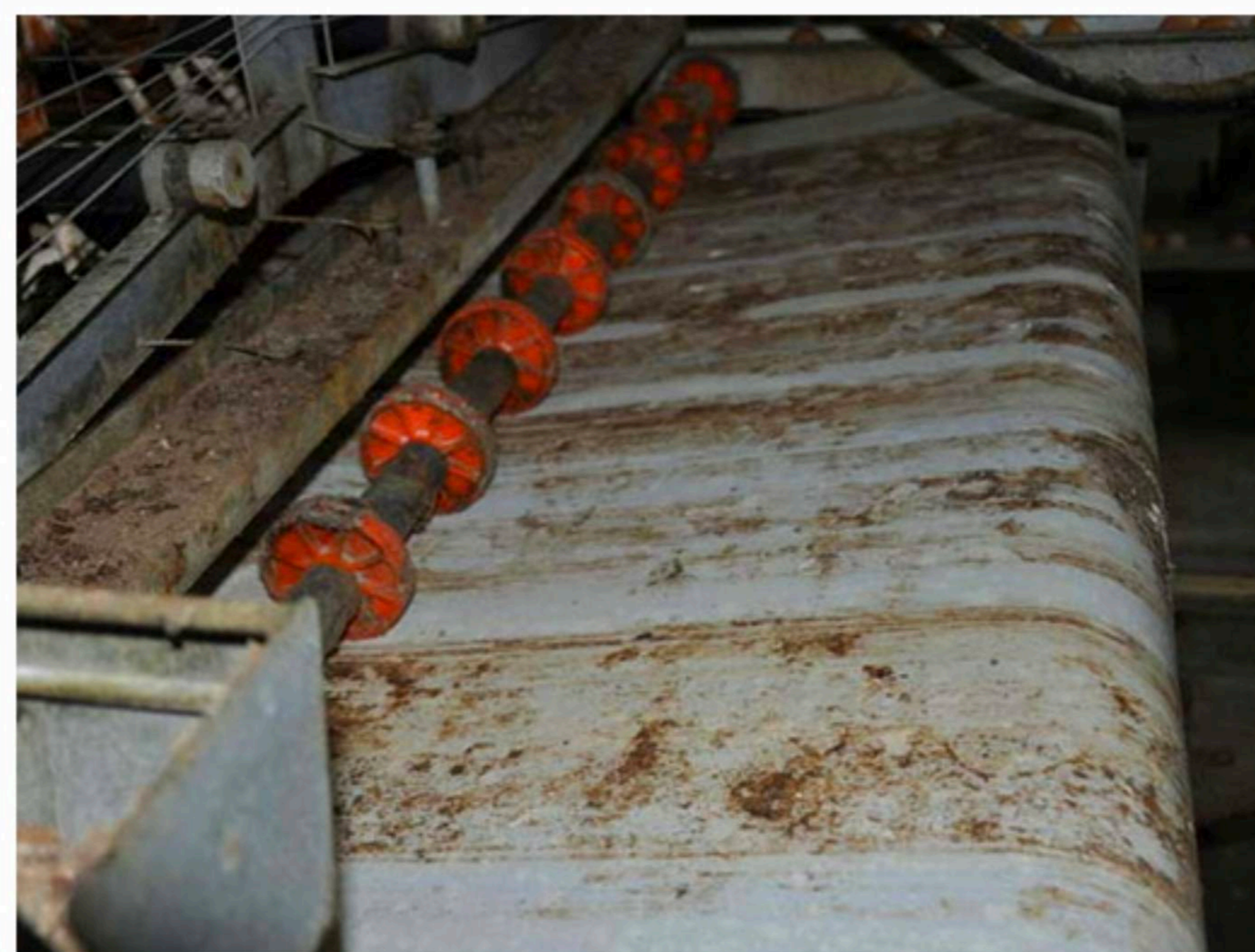
- ▶ This method is employed to subtly change the environment to prevent breeding of the flies
- ▶ The best method involves elimination of potential breeding sites







# Automatic manure scraper







# Covering the heaped manure





## Structural Defences

- **Maintenance of biosecurity barriers prevents outdoor flies and other pests from entering bird areas**







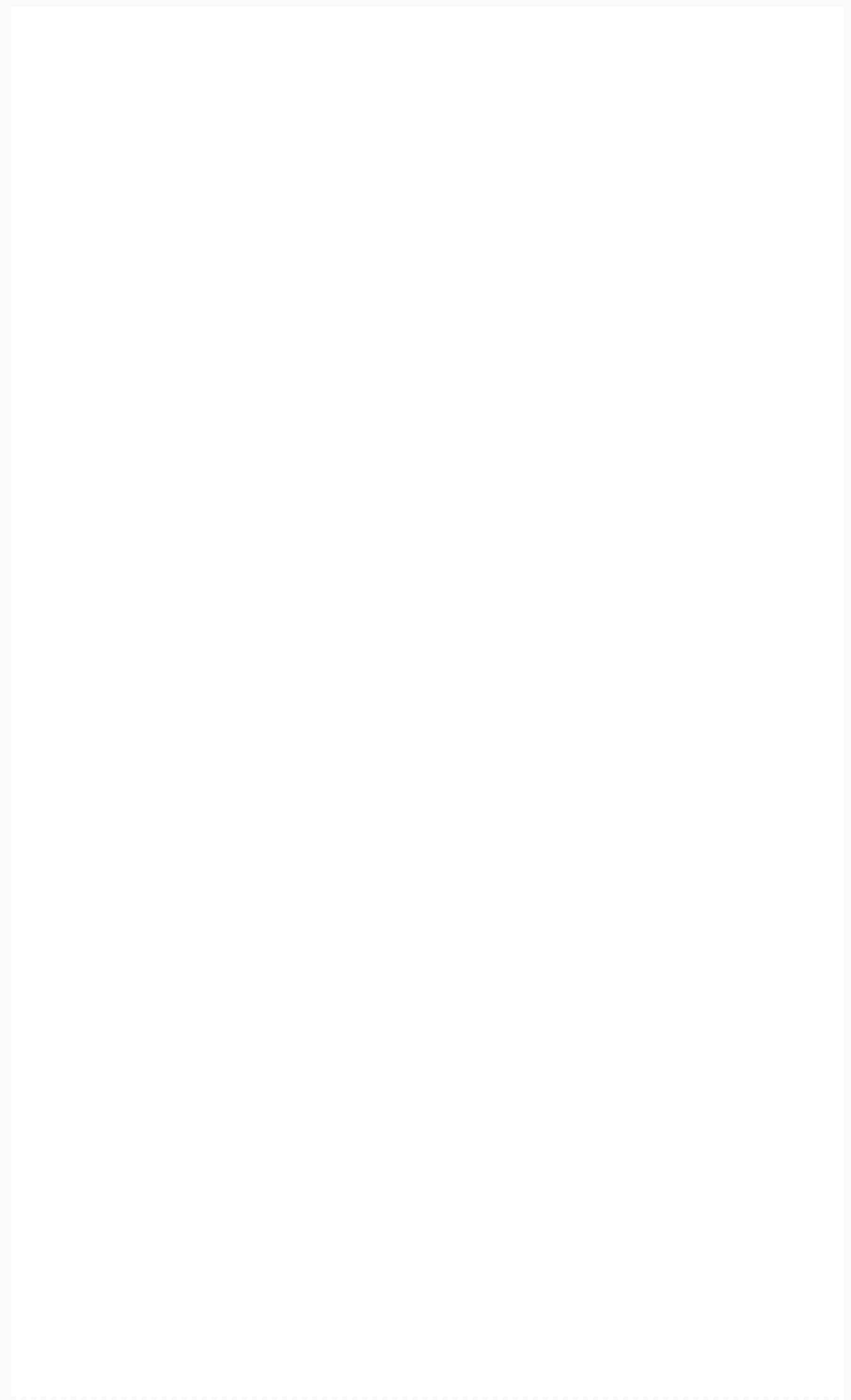
## Biological Defences

- ▶ These are measures which are already in place in nature to limit the presence of flies. Hence, maintaining populations of other organisms that compete with or prey on flies will help to reduce the population of flies. Certain mites like *Macrocheles muscae domesticae* thrive in poultry manure and feed on fly eggs and larvae. Certain parasitic wasps when introduced near fly breeding areas will seek the fly pupae and lay eggs inside them and destroys the eggs. However, biological control may be overwhelmed by very large population of flies and hence this method of control should be used along with other strategies such as in a integrated pest management program.
- ▶ Microorganisms that harm flies such as the bacterium *Bacillus thuringiensis* causes disease in flies, but does not affect the poultry or the people. It is generally either spread on chicken manure directly, or fed to chicken as a feed additive.





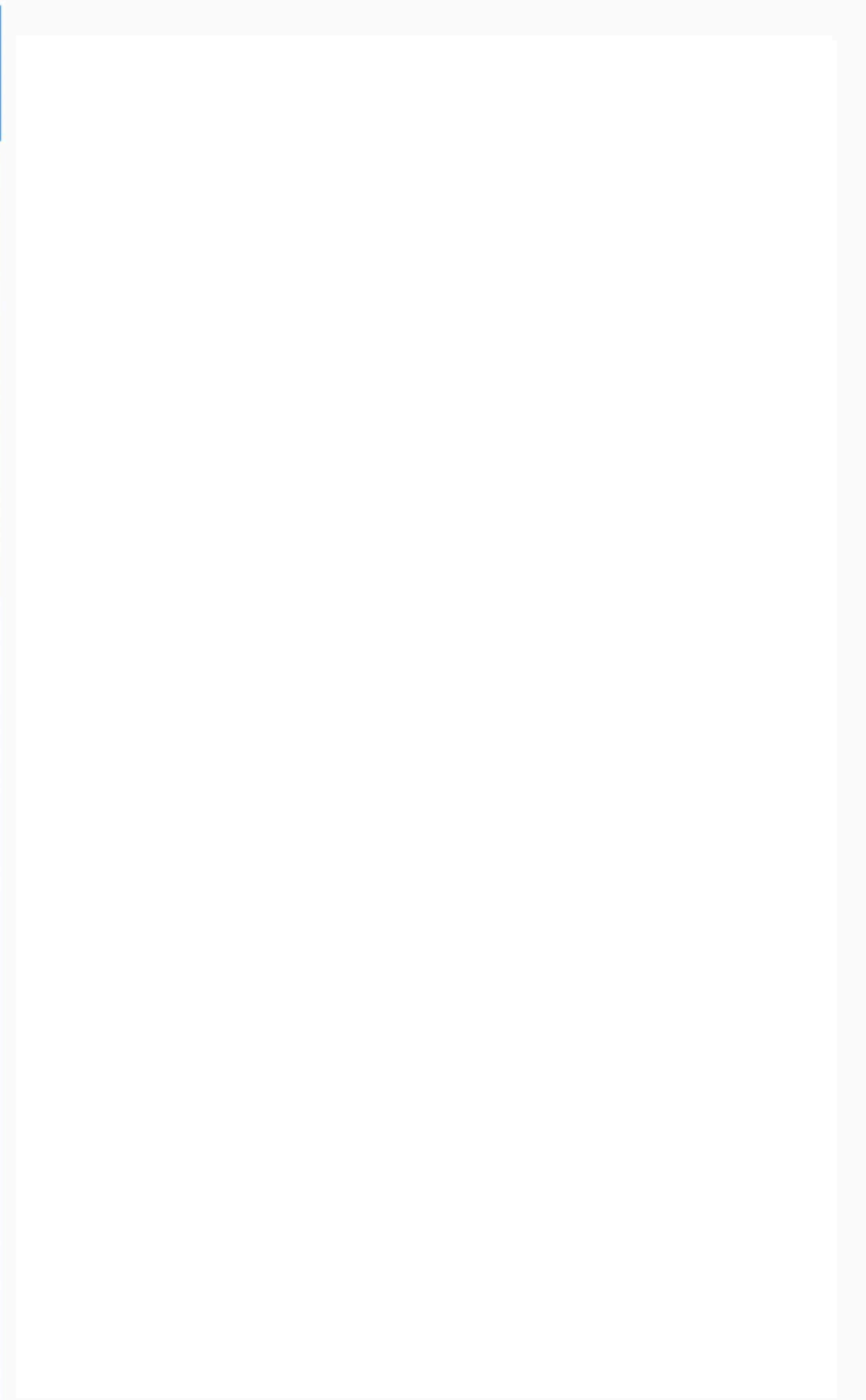
# *Macrocheles muscae domesticae*







# Macrocheles- feeding on Musca domestica larvae







# Chemical Control

**There are four basic types of chemical insecticide fly control:**

- ▶ **Larvicides**
- ▶ **Residual adulticides**
- ▶ **Baits**
- ▶ **Contact adulticides**







## Current control measures

- ▶ **The four important families of insecticides are organochlors, organophosphates, carbamates and pyrethroids. Some of these insecticides are used as space sprays or residual sprays. Residual sprays do not get destroyed immediately and kill flies over a period of several days.**





## IGR

- ▶ **Insect growth regulators such as cyromazine are used to control larvae of house flies. IGRs are administered in poultry feed as premix and these chemicals when excreted in the droppings, interfere with the moulting process of breeding house fly larvae, thereby affect the normal life cycle resulting in formation of larval-pupal and pupal-adult intermediate stages which do not survive and house fly population is reduced**
- ▶ **Diflubenzuron 25%. This affects the chitin development in the exoskeleton of house flies thereby preventing moulting and killing flies. Since the residues of Diflubenzuron get accumulated in egg and meat, it should not be used as a feed mix. It can be used as spray at 0.6 to 0.8 per cent levels.**

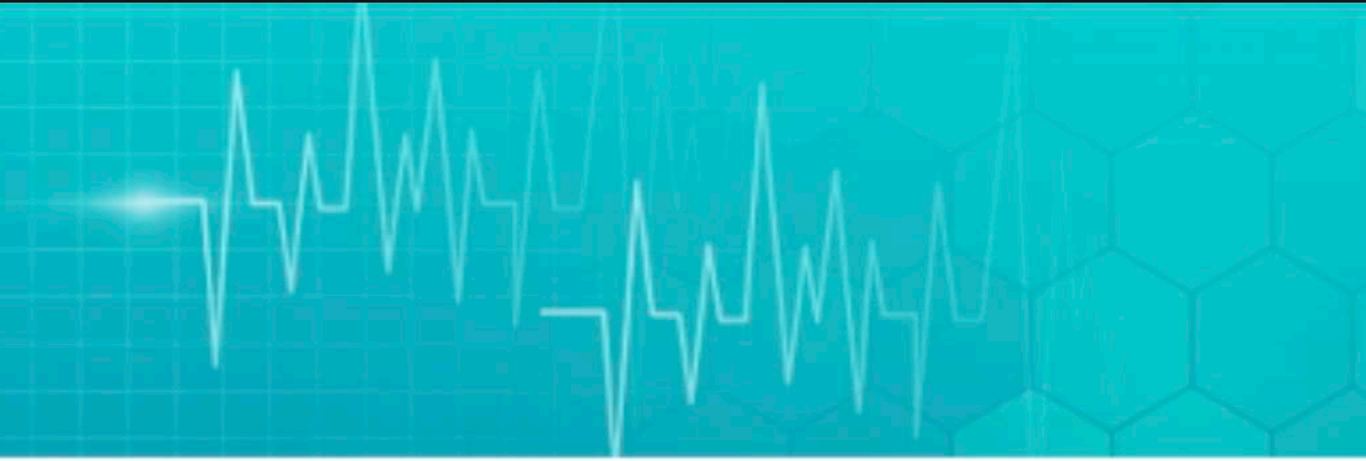




## Non chemical control

- ▶ **Neem has the potential to affect the growth of flies. Research says that extracts from leaves and seeds of neem have detrimental effects on flies. Powdered neem seeds when fed to birds as 2% feed mix for 4 weeks reduce fly numbers considerably**





## House fly traps

- Several house fly traps are commercially available. Hodge's garbage trap, Babers Fly trap, Solar traps, Electric traps, Jug traps and Delta traps are used to lure and kill house flies and can play a vital role in integrated house fly management practices
- Simple glue traps can be used with fish meal powder, molasses and sugar as baits



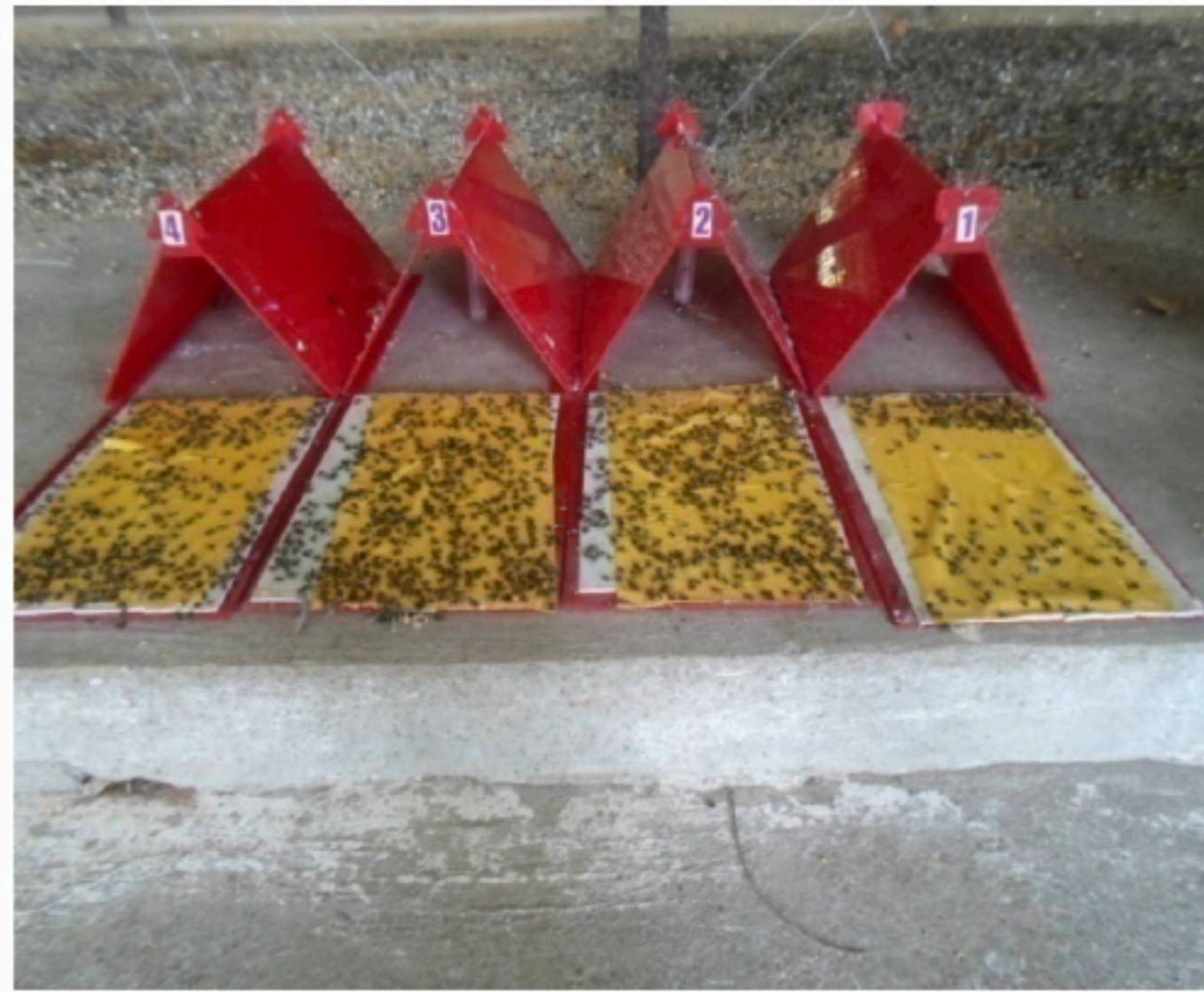




## Pheromone based control

- ▶ The sex pheromone (Z)-9-tricosene also functions as an aggregation pheromone and is called muscalure. Muscalure is formulated with sugar, fish meal or molasses. It is commercially available as fly bait for population suppression, as well as used at times for monitoring the house fly population









## Oviposition pheromone for fly control

- ▶ Baits, oviposition attractant mixture (OAM) consists of Ethyl palmitate, Ethyl linoleate, Methyl linoleate, Linoleic acid in 10:24:6:0.2
- ▶ OAM can be used as efficient bait to trap female flies and can be combined with other baits like pheromone bait (Z)-9-Tricosene for increased





# Dealing with fly menace in poultry units







*Thank you*

