

Combining EM/EM5 and Parasitoids in the Biocontrol of Flies in Confined Animal Production

J.P.T. Kapongo & J.H. Giliomee

University of Stellenbosch

Entomology & Nematology

Private Bag X1

Matieland, 7602. South Africa

Abstract

House flies are arthropods that breed in the manure, which, accumulates in poultry houses and dairies. They irritate the animals and people on these premises and are potential vectors of a number of serious diseases. The Stable Fly sucks blood of cows and horses, with the result that animals don't feed properly and lose weight. For many years, farmers have relied solely on chemical treatments to control fly populations, but flies have rapidly developed resistance mechanisms against most of these chemicals and even to the insect growth regulator "cyromazine" which is recently added to poultry feed. The use of chemicals can be detrimental to human and animal health and pollutes the environment, therefore biological control is recommended.

Good biological control was achieved with a combination of EM/EM5 and wasp parasitoids (*Muscidifurax raptor* and *Spalangia endius*). One month before fly season begins, we start by spraying EM stock/EM5 6% (1litre for 10.65 m²) and three days later releasing four parasitoids per hen in the form of parasitised fly pupae at weekly basis.

Introduction.

Flies are breeding in the manure that accumulates in animal confined production (chicken, cow, horse and pig). They irritate animal and people on these premises, as well as in surroundings. The stable fly sucks blood of cows and horses resulting in the animals' not feeding properly and losing weight. Flies are potential vectors of a number of serious diseases (transmitting ascarids, viruses, rickettsias, protozoae etc... (Thomas and Skoda, 1993).

For many years, farmers have relied solely on chemical treatments (such as organochlorine, organophosphate, carbamate and pyrethroid insecticides) to control fly populations, but flies have rapidly developed resistance mechanisms against most of these (Skovgard and Jespersen, 1999). Currently the insect growth regulator Cyromazine is added to poultry feed to control flies, but resistance to this new chemical has also been detected (Patterson and Morgan, 1986). The use of chemicals can be detrimental to human and animal health, also pollute the environment (Rutz, 1993), therefore the biological control is needed.

The biological control is applied to keep fly population below threshold injury level. Some hymenopterans have ability to kill flies during their pupal stage by laying eggs into them. Kapongo and Giliomee (1999) increased the house flies parasitism level by spraying either EM stock or EM5 at 6% on the chicken manure.

Material and methods

The experiment was conducted in poultry houses at Malmesbury, Western Cape, South Africa and started in September 1999 (a month before fly season) and ended in June 2000.

One month before fly season begins, we sprayed EM stock/EM5 6% dilution (6% EM + 6% molasses + 88% water) using normal sprayer three days on chicken manure before the release

of parasitoids (mixture *Muscidifurax raptor* and *Spalangia Endius*). This treatment is conducted at weekly basis and a liter of the product must cover 10.65m² and four parasitoids per hen were released. The fly populations were weekly monitored with six sticky ribbon traps disposed at equal distance in each house. We had 12 houses of 15,000 hens each, two treatments and one control randomly allocated in these.

Results

Table 1: Fly populations during experimentation

Months	Average of flies number/Trap/House										
	Sept.99	Oct.99	Nov.99	Dec.99	Jan.00	Feb.00	Mar.00	Apr.00	Mai.00	Jun.00	Average
Control	300	288	694	850	896	981	898	819	208	291	622.5
Larvadex	304	294	279	300	175	220	215	243	195	209	243.4
EM+Wasps	313	308	210	223	199	231	240	228	201	198	235.1

Discussion and Conclusion

Anova analysis ($P < 0.01$) shows that there is statistical significant difference between control and treatments, but no difference among treatments. Thus because of many advantages from natural control on chemical one, we do not hesitate to advise farmers to use the combination EM and parasitoid wasps in their premises (farms) to control flies.

References

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