

Evaluation of temperature on searching ability and parasitism rates of *Muscidifurax raptorellus* and *Muscidifurax raptor* in dairy barns and calf hutches

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ABSTRACT

A study on the effects of ambient temperature on the searching abilities and parasitism rates of two house fly pupal parasitoids, *M. raptor* and *M. raptorellus* in dairy barns and calf hutches was conducted near Ithaca, NY during the summer of 1997. *M. raptor* is an aggressive wasp that is native to NY and widely available to producers, however, females only deposit one egg in each house fly pupa. *M. raptorellus* is indigenous to Chile and is an efficient parasitoid in feedlots. Because it can deposit many eggs in an individual pupa, *M. raptorellus* has excellent potential as a biological control agent.

We observed that both parasitoid species killed more house fly pupae located on the surface of the straw bedding than pupae that were buried 2.0 cm beneath the straw bedding. Neither parasitoid was able to locate buried pupae within 24 hours. More pupae were killed in the calf hutch than in the barn. Parasitism rates did not differ between species when compared within 3 temperature ranges. *M. raptorellus* produced multiple progeny only when temperatures exceeded 18 °C.

Because *M. raptorellus* can produce multiple progeny per host, populations can build more quickly than *M. raptor*. This phenomenon occurs at warmer temperatures and suggests that under such conditions, *M. raptorellus* populations, comprised of released and self-replenishing individuals, may exceed population levels of already effective *M. raptor*. The result is potentially lower house fly populations on Northeast dairies.

A comparison of sustained mass releases of these two species on dairies has not been performed. Such a comparison would provide valuable information necessary to properly recommend the use of either *M. raptorellus* or combinations of the two species.

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