Host-parasitoid relationship in cattle manure in Brazil

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Abstract

The dipterous included in the infra-order Muscomorpha have medical and veterinary importance, since they may produce myiasis and act in carrying pathogens to man and animals. They have been found to carry more than 100 species of disease-causing organisms such as bacteria, protozoa and helminthes. Parasitoids are responsible for reducing the populations of flies that proliferate on various substrates. Evaluation of these species for natural control over these insects is important for enabling studies that aim towards subsequent selection of species for use in biological control programs. The purpose of this paper is to report the host-parasite relationship in cattle manure in Brazil. The pupae were obtained by the flotation method. They were individually placed in gelatin capsules until the emergence of adult dipterous or their parasitoids. Ninety-two pupae of Brontaea debils (Thomson) (Diptera: Muscidae) from bovine feces, from which 31 specimens of parasitoids Spalangia drosophilae (Ashmaed) (Hymenoptera: Pteromalidae) were emerged. The percentage of parasitism was 33.7%. It is possible to control these insects, by using the natural regulators such as parasitoids, which are the responsible agents for the reduction of the
insects pests populations.

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Parasitoids are responsible for reducing the populations of flies that proliferate on various substrates. Evaluation of these species for natural control over these insects is important for enabling studies that aim towards subsequent selection of species for use in biological control programs (Marchiori et al., 2000).

The genera *Spalangia* (Hymenoptera: Pteromalidae) presents pupal parasitoids associated with flies of the families Muscidae, Calliphoridae, Sarcophagidae, Drosophilidae, Chloropidae, Sepsidae and others (Mendes and Linhares, 1993). Many known species develop in hosts that live in feces, and decaying meat plant tissues. *Spalangia* species, predominantly associated with manure, are parasitoids of pupae. The purpose of this paper is to report the host-parasite relationship in cattle manure in Brazil.

Every fortnight, 10 plates of fecal cake (of approximately 3 kg each) were produced from fresh bovine feces that were collected immediately after defecation in pastures and in corrals. The material was collected in plastic buckets and was homogenized. It was then placed in 10 round plastic supports of 20 cm in diameter, with a hole to allow rainwater to drain away. This methodology was used for precise determination of the time between the emission of the fecal cake and its collection. The feces remained exposed (five in the pastures and five in the corrals) for 15 days. After this period, the feces were taken to the laboratory for extraction of pupae by means of the flotation method. The pupae were removed with the aid of a sieve; they were counted and individually stored in gelatin capsules until the dipterous and/or parasitoids emerged. The parasitoids and dipterous that emerged were identified with the aid of a stereoscopic and were conserved in 70% alcohol.

Ninety-two pupae of *Brontaea debilis* (Thomson) (Diptera: Muscidae) from bovine feces, from which 31 specimens of parasitoids *Spalangia drosophilae* (Ashmaed) (Hymenoptera: Pteromalidae) were emerged. The percentage of parasitism was 33.7%. The parasitism successful rate can be influenced by the availability of resources, density hosts and to the searching capacity of the parasitoids.
*Spalangia drosophilae* is cited in the literature as parasitoid of pupae of small dipterans of the families Drosophilidae and Chloropidae (Marchiori, 2002).

Among the means for controlling flies, chemical insecticides are the most widely used. However, these may lose their efficiency as populations gradually become insecticide-resistant. The resistance to insecticides shows the growing need to introduce alternative insect control programs, for instance the biological control.

REFERENCES


