

## First report of *Aphelinus semiflavus* Howard, 1908 (Hymenoptera: Aphelinidae) in Brazil

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Received April 30, 2010 – Accepted September 14, 2010 – Distributed February 28, 2011

The occurrence of several parasitoid species associated with aphids that colonize Brassicaceae are reported in Brazil and *Diaeretiella rapae* (McIntosh, 1855) (Hymenoptera: Braconidae, Aphidiinae) was recorded as the most common species (Cividanes, 2002; Vaz et al., 2004; Starý et al., 2007). Noyes (2003a) listed four parasitoid species of *Aphelinus* Dalman, 1820 (Hymenoptera: Aphelinidae) in *Brassica oleracea* L. cultures: *Aphelinus albipodus* (Hayat and Fatima, 1992), *A. asychis* (Walker, 1839), *A. varipes* (Förster, 1841), and *Aphelinus sp.*. In Brazil, occurrences have been reported for *A. abdominalis* (Dalman, 1820) (De Santis, 1989), *A. asychis* (Gomez and Rumiatto, 1989), *A. chaonia* Walker, 1839 (De Santis, 1989), *A. gossypii* Timberlake, 1924 (Fernandes et al., 2000), *A. mali* (Haldeman, 1851) (De Santis, 1980; Monteiro et al., 2004) and *A. marlatti* (Ashmead, 1888) (Hayat, 1994).

Samples of *Aphelinus semiflavus* Howard, 1908 were obtained from mummies of *Lipaphis erysimi* (Kaltenbach, 1843) and *Myzus persicae* (Sulzer, 1776) present in experimental aphid breeding from the Laboratório de Ecologia dos Insetos at Departamento de Fitossanidade at Faculdade de Ciências Agrárias e Veterinárias at Universidade Estadual Paulista “Júlio de Mesquita Filho”, Jaboticabal Campus – São Paulo state, Brazil. *Lipaphis erysimi* and *M. persicae* were reared in isolation on cabbage plants (*B. oleracea* var. *acephala* cultivar Georgia) cultivated in pots (500 mL) inside wooden cages (45x50x70 cm) covered with *voil*-type cloth and kept under ambient conditions in a greenhouse.

*Aphelinus semiflavus* was described by Howard (1908) parasitising samples of *M. persicae*. Noyes (2003a) listed the aphids *M. persicae* and *L. erysimi* as hosts of *A. semiflavus* and reported their association with the Brassicaceae *B. chinensis* L.

The species is relatively common in North America as a parasite of several Aphididae (Mackauer, 1982). *Aphelinus semiflavus* has been recorded in the following countries: Canada, Germany, Spain, Italy, Hawaii, India, Iran, Israel, Turkey (Noyes, 2003b). This parasitoid was used with success to control several species of aphids in

the greenhouse at Winnipeg, Canada (Richardson and Westd, 1964).

Characteristics that may limit abundance and effectiveness of the introduced strain of *A. semiflavus* as a parasite of aphids include little, if any flight by the adults, and death of the offspring when in competition with Aphidiine parasites inside an aphid (Shands et al., 1965)

*Aphelinus semiflavus* spend five to eight days from egg to mummy (temperature mean of 26 °C) and required another six to nine days in the cocoon before adult emergence, the feeding of the adult parasite in the aphid nymphs results in immediate death of the nymphs. (Manglitz and Schalk, 1970). The longevity of females ranges from 18 to 19.6 days and the fecundity of 281-311 eggs (Mackauer, 1982).

This is the first record of the occurrence of this parasitoid in Brazil. In South America, its occurrence has been recorded only in Argentina (Peck, 1963).

**Acknowledgements** – The authors thanks the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) and also the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for PhD scholarships and financial support. The last author thank the Instituto Nacional de Ciência e Tecnologia dos Hymenoptera Parasitoides da Região Sudeste Brasileira (INCT - HYMPAR/Sudeste).

### References

- CIVIDANES, FJ., 2002. Impacto de inimigos naturais e de fatores meteorológicos sobre uma população de *Brevicoryne brassicae* (L.) (Hemiptera: Aphididae) em couve. *Neotropical Entomology*, vol. 31, no. 2, p. 249-255.
- DE SANTIS, L., 1980. *Catalogo de los Himenopteros Brasileños de la serie Parasítica, incluyendo Bethyloidea*. Curitiba: Editora da Universidade Federal do Paraná. 170 p.
- , 1989. *Catalogo de los Himenopteros Calcidoideos (Hymenoptera) al sur de los Estados Unidos*. *Acta Entomologica Chilena*, vol. 15, p. 9-90.
- FERNANDES, AMV., FARIAS, AMI., FARIA, CA. and TAVARES, MT., 2000. Ocorrência de *Aphelinus gossypii* Timberlake (Hymenoptera: Aphelinidae) parasitando *Aphis gossypii* Glover (Hemiptera: Aphididae) em algodão no Estado de Pernambuco.

- Anais da Sociedade Entomológica do Brasil*, vol. 29, no. 4, p. 831-833.
- GOMEZ, SA. and RUMIATTO, M., 1989. *Avaliação do controle biológico de Schizaphis graminum (Rondani, 1852) por parasitos alienígenas introduzidos*. Reunião da Comissão Centro-Sul-brasileira de pesquisa do trigo. Resultados da pesquisa com trigo-1988. UEP/PAED – EMBRAPA Agropecuária Oeste. p. 163–164. Documentos, vol. 39.
- HAYAT, M., 1994. Taxonomic studies on *Aphelinus* (Homoptera: Aphelinidae): 7. A new species from Nepal and records of three known species. *Entomon*, vol. 19, no. 3-4, p. 85-89.
- HOWARD, LO., 1908. Upon the aphid-feeding species of *Aphelinus*. *Entomological News*, vol. 19, no. 8, p. 365-367.
- MACKAUER, M. 1982. Fecundity and host utilization of the aphid parasite *Aphelinus semiflavus* (Hymenoptera: Aphelinidae) at two host densities. *The Canadian Entomologist*, vol. 114, p. 721-726.
- MANGLITZ, GR. and SCHALK JM., 1970. Occurrence and hosts of *Aphelinus semiflavus* Howard in Nebraska (Hymenoptera: Eulophidae). *Journal of the Kansas Entomological Society*, vol. 43, no. 3, p. 309-314.
- MONTEIRO, LB., SOUZA, A. and BELLI, EL., 2004. Parasitism on *Eriosoma lanigerum* (Homoptera: Aphididae) by *Aphelinus mali* (Hymenoptera: Encyrtidae) on Apple orchards, in Fraiburgo county, state of Santa Catarina, Brazil. *Revista Brasileira de Fruticultura*, vol. 26, no. 3, p. 550-551.
- NOYES, JS., 2003a. *Universal Chalcidoidea Database*. London: The Natural History Museum. Available from: <<http://www.nhm.ac.uk/research-curation/projects/chalcidooids/>>. Access in: 08 jan. 2010.
- , 2003b. *Universal Chalcidoidea Database*. London: The Natural History Museum. Available from: <<http://www.nhm.ac.uk/jdsml/research-curation/research/projects/chalcidooids/countries.dsml?ValFamTrib=&VALGENUS=Aphelinus&VALSPECIES=semiflavus&VALAUTHOR=Howard&HOMCODE=0&VALDATE=1908&ValidAuthBracket=false&&>>. Access in: 28 ago. 2010.
- PECK, O., 1963. A catalogue of the Nearctic Chalcidoidea (Insecta; Hymenoptera). *Memoirs of the Entomological Society of Canada = The Canadian Entomologist*, vol. 95, no. 30, p. 1-1092. Supplement.
- RICHARDSON, HP. and WESTD, PH., 1964. Use of *Aphelinus semiflavus* Howard for control of aphids in a greenhouse. *The Canadian Entomologist*, vol. 97, p. 110-111.
- SHANDS, WA., SIMPSON, GW., MUESEBECK, CFW. and WAVE, HE., 1965. Parasites of potato-infesting aphids in northern Maine. *The Maine Agricultural Experiment Station Technical Bulletin*, no. T-19. 77 p.
- STARÝ, P., SAMPAIO, MV. and BUENO, VHP., 2007. Aphid parasitoids (Hymenoptera, Braconidae, Aphidiinae) and their associations related to biological control in Brazil. *Revista Brasileira de Entomologia*, vol. 51, no. 1, p. 107-118.
- VAZ, AL., TAVARES, MT. and LOMÔNACO, C., 2004. Diversidade e tamanho de himenópteros parasitóides de *Brevicoryne brassicae* L. e *Aphis nerii* Boyer de Fonscolombe (Hemiptera: Aphididae). *Neotropical Entomology*, vol. 33, no. 2, p. 225-230.