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## **Aphid parasitoids (Hym., Braconidae, Aphidiinae) of Reunion Island**

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**Abstract:** *Aphidius colemani* VIER., *A. camerunensis* MACK., *A. matricariae* HAL., *A. rosae* HAL. and *Diaeretiella rapae* (M'INT.) were reared from various aphid species in Reunion Island.

**Key - words :** Reunion Island, aphids, parasitoids, fauna, biocontrol

*Aphidius colemani* was found the dominant species. Parasitoid spectrum of (pest) aphids was determined as very poor, represented mostly by a single species. Recommendations for introduction of other parasitoid species as biocontrol agents are presented.

Research on aphids and their parasitoids of the ethiopian region (see REMAUDIÈRE & AUTRIQUE 1985) has stimulated interest paid to the utilisation of the obtained results in some of the neighbouring areas as well.

The Reunion Island represents such an area. Very little has been known on the aphid parasitoids. STARÝ, REMAUDIÈRE & LECLANT (1973, 1977) recorded three species. QUILICI et al. (1988) published a review of aphids and their natural enemies of Reunion Island, but the new information on the aphidiid parasitoids is low.

The aphid and parasitoid material used in the present paper was collected and reared by J. Etienne, a small part comes also from the IRAT collection (S.Quilici). Aphids were identified by G. Remaudiere and the parasitoids by P. Starý.

## Review of parasitoid/host associations

### *Aphidius camerunensis* MACKAUER

*Sitobion* sp.: La Bretagne, 25.10.1976.

### *Aphidius colemani* VIERECK

*Aphis craccivora* KOCH: La Bretagne, 7.10.1971 (STARÝ et al. 1973, as *A. platensis* BRETH. Dtto, on Compositae. Dtto, 20.10.1976, *Glyricidia maculata* (STARÝ & al. 1973). Dtto, 30.11.1977, *Glyricidia* sp. Dtto, 30.11.1977, 24.11.1973, *Desmanthus virgatus*. Dtto, 24.11.1973, *Desmodium intortum*. Dtto, 14.8.1973, *Glyricidia maculata*. Gambuston, 12.9.1973, *Portulaca oleracea*.

*Aphis gossypii* GLOV: La Plaine St. Paul, 19.9.1973, *Hibiscus lilliflorus* GLOV. Bois de Nefles, Ste. Clotilde, 17.9.1973, *Cucumis sativus*. La Bretagne, 17.9.1973. Ste. Marie, 19.1.1975, *Callophyllum* sp. Foret de Beboar, 27.11.1975, *Senecio ambavilla*. Cambaie, 2.6.1977, *Cucumis* sp. Moufia, 18.6.1977, *Hibiscus sadbariffa*. Cilaos, 9.8.1973, *Sida* sp.

*Aphis nerii* B. d. F.: La Chaloupe, 22.1.1970, *Gomphocarpus cornutus*.

*Aphis* sp.: Cilaos, 13.9.1973, *Waltheria americana*. St. Leu, 4.10.1973.

*Brachycaudus helichrysi* KALT.: La Roche Ecrite, alt. 2777 m, 18.11.1973, *Senecio salicifolius*. Les Colimacons, alt. 800 m, 16.10.1975, *Centaurea* sp. Riviere St.Erienne, 4.10.1973, *Ageratum conyzoides*. Dtto, 4.10.1973, *Gnaphalium lutes-album*. Moufia, 23.8.1973, *Gynura* sp.

*Lipaphis erysimi* KALT.: Cambuston, 12.9.1973, *Brassica oleracea europea*. Salazie, 6.9.1973, *Brassica sinensis* (STARÝ & al. 1977).

*Myzus persicae* SULZ.: Les Colimacons, alt. 800 m, 17.3.1977, *Solanum tuberosum*. Cambuston, 13.6.1978, *Capsicum frutescens*. Dtto, 30.9.1973, *Chenopodium anthemiticum*. Dtto, 9.10.1973, *Solanum nigrum*.

*Rhopalosiphum maidis* FITCH: Cambuston 12.9.1973, *Panicum maximum*. La Bretagne, 17.8.1973, *Zea mays*.

*Toxoptera aurantii* B. d. F.: Salazie, 12.9.1973, *Citrus aurantium amara*. Bellepierre, 15.8.1971, *Schinus terebinthifolius* (STARÝ & al. 1973, as *A. platensis* BR.)

*Toxoptera* sp.: (QUILICI & al. 1988). aphids: St. Denis, Bois de Nefle, 12.8.1982, agrumes (leg. Quilici, IRAT). Moufia, 12.8.1982 (leg. Quilici, IRAT)

*Aphidius matricariae* HALIDAY

*Brachycaudus helichrysi* KALT.: Bras.Panon, 16.10.1977, *Crotalaria* sp.

***Aphidius rosae* HALIDAY**

*Macrosiphum rosae* L.: Entre Deux, 23.8.1973, *Rosa* sp. (STARY & al. 1977).

***Diaeretiella rapae* (M'INTOSH)**

*Brevicoryne brassicae* L.: "La Reunion", 1973.

*Lipaphis erysimi* KALT.: "La Reunion", 8.6.1977, *Brassica*. Les Colimacons, alt. 800 m, 16.10.1975, *Cheiranthus cheiri*. Les Hts. du Guillaume St. Paul, 8.7.1975, *Brassica* sp. Cilaos, 13.9.1973, *Brassica sinensis*. Cambuston, 12.9.1973, *Senebiera didyma*. Dtto, 12.9.1973, *Brassica oleracea europaea*. Salazie, 6.9.1973, *Brassica sinensis* (also QUILICI & al. 1988).

*Myzus persicae* SULZ.: (QUILICI & al. 1988). aphids: Piton Hyacinthe, 7.10.1982, *Solanum tuberosum*, (leg. Quilici, IRAT). Petit France, 5.6.1982 (leg. Quilici, IRAT).

**Host – Parasitoid associations**

*Aphis craccivora* – *Aphidius colemani*.

*Aphis gossypii* – *Aphidius colemani*.

*Aphis nerii* – *Aphidius colemani*.

*Aphis* sp. – *Aphidius colemani*.

*Brachycaudus helichrysi* – *Aphidius colemani*, *Aphidius matricariae*.

*Brevicoryne brassicae* – *Diaeretiella rapae*.

*Lipaphis erysimi* – *Aphidius colemani*, *Diaeretiella rapae*.

*Macrosiphum rosae* – *Aphidius rosae*.

*Myzus persicae* – *Aphidius colemani*, *Diaeretiella rapae*.

*Rhopalosiphum maidis* – *Aphidius colemani*.

*Sitobion* sp – *Aphidius camerunensis*.

*Toxoptera aurantii* – *Aphidius colemani*.

*Toxoptera* sp – *Aphidius colemani*.

**Faunal relationships**

The parasitoid species found in the Reunion Island can be divided into several groups, as follows

None of the species is endemic to the Island.

*Diaeretiella rapae* is a species of palearctic origin, which has become widespread and cosmopolitan in distribution.

*Aphidius matricariae* is a similar case, although its distribution is of a lesser range.

*Aphidius rosae* is also a palearctic species, which has become accidentally introduced in many parts of the world namely due to its association with *Macrosiphum rosae* on roses.

*Aphidius camerunensis* and *Aphidius colemani* are the dominant species in the ethiopian region (see STARÝ, REMAUDIÈRE & AUTRIQUE 1985); of them, *A. colemani* is a pan.-tropical presumably oriental in origin (STARÝ 1975).

TARDIEUX & RABASSE (1988) proved the occurrence of an apparently peculiar strain of *Aphidius colemani* in Reunion Island. They also exported a population of this parasitoid from Reunion Island for hybridization tests in the laboratory (on *Myzus persicae*) in France.

The faunal relationships to the ethiopian region are apparent. The dispersal of the faunal elements by air streams and/or aphid-infested plants from the african mainland may be presumed. The closer relationships to the aphid parasitoid fauna of Madagascar cannot be determined as our respective knowledge is very poor: Of the two species known from Madagascar (GRANGER 1949), *Ephedrus persicae* FROG. (= *E. impressus* GRANGER 1949) is a holarctic species of cosmopolitan distribution, and *Aphidius seyrigi* GRANGER 1949 has not been found outside Madagascar yet.

### **Perspectives in biological control**

*Aphidius colemani* and *Diaeretiella rapae* are apparently the key parasitoid species in Reunion Island. Of them, *A. colemani* is dominant in most of the host aphid species.

An analysis of the parasitoid spectrum as well as the composition of the pest aphid fauna indicates that in most cases the spectrum is represented by a single species, *Aphidius colemani*. This state should stimulate activities to supplement *A. colemani* by some other species through introduction.

Some species of *Lysiphlebus*, namely *L. testaceipes* CRESS. might be promissive (see STARÝ, REMAUDIÈRE, AUTRIQUE 1985). Too, the composition of the pest aphid fauna indicates that biocontrol might become multilateral in that several aphid species fall within the host range of the same parasitoid species. On the other hand, all the aphid species found to be parasitised in Reunion Island are not indigenous but widely distributed species, so that there is no risk of possibly adverse effects of introduced parasitoids to the indigenous aphid fauna.

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