

Comunicação Científica

The Spotted Alfalfa Aphid, *Therioaphis trifolii* (Monell) f. *maculata* in Brazil: First Record

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O Pulgão-Manchado-da-Alfafa, *Therioaphis trifolii* (Monell) f. *maculata* no Brasil: Primeiro Registro

RESUMO - Este é o primeiro registro do pulgão-manchado-da-alfafa no Brasil, detectado em alfafa, *Medicago sativa*, em 1990, em Castrolanda, PR. A partir de então tem sido coletado sobre alfafa em outros municípios paranaenses e também em armadilhas amarelas de água desde 1992, na região metropolitana de Curitiba, PR, que não é uma área produtora de alfafa. O pulgão-amarelo-do-trevo, *Therioaphis trifolii* (Monell) f. *trifolii*, que é considerado um biótipo ou mesmo uma espécie "sibling", também foi detectado na região de Curitiba, sobre *Trifolium repens* e *Medicago lupulina*. A semelhança morfológica e a extensa variação intraespecífica dificultam grandemente a identificação destas duas formas, cuja separação baseia-se principalmente na preferência da forma *maculata* por *Medicago* spp. e da *trifolii* por *Trifolium* spp.

PALAVRAS-CHAVE: Insecta, Homoptera, Aphididae, pulgão-amarelo-do-trevo, ocorrência.

The spotted alfalfa aphid (SAA), *Therioaphis trifolii* (Monell) f. *maculata* (Aphididae: Drepanosiphinae), is originary from the Old World and is a serious alfalfa pest where it occurs. This species has been mentioned for Europe, North and South Africa, Middle East, India, Pakistan, and Japan (Blackman & Eastop 1984). In the United States it was first found in New Mexico, in 1954 and, within three years, it spread throughout the continental US and Mexico (Dickson 1959). In 1981, it was reported in Canada (Wilson *et al.* 1981). The

first record in Australia was in 1977 (Passlow 1977) and in New Zealand, in 1982 (Cameron *et al.* 1983). In South America, it was reported on alfalfa in Argentina (1986/1987) and Chile (1988), by Zúñiga & Aguilera (1989).

In the US, the SAA has been found, besides alfalfa, on *Medicago falcata*, *M. lupulina*, *M. ruthenica*, and on some species of *Melilotus* and *Trifolium* (Peters & Painter 1957). It is normally anholocyclic in southern US, but has acquired the ability to produce viable sexuals and eggs at northern lati-

tudes (Manglitz *et al.* 1966).

The SAA is a yellow-green aphid with rows of dark spots with capitate spines on the dorsum. Infestation starts on lower leaves of the alfalfa plants and spreads to the stems as it progresses. The attacked leaves turn yellow and fall off; in addition, the plant growth is stunted due to the toxicogenic saliva injected by the aphids. Even small populations (5-10 aphids/plant) can kill seedlings at the 2-5 leaf stage (Cameron *et al.* 1983). The sticky honeydew produced by the aphids creates favorable conditions for the growth of the sooty mold, which affects photosynthesis.

A very similar aphid, the yellow clover aphid (YCA), *Therioaphis trifolii* (Monell) f. *trifolii*, is present in the US since 1882 and is more or less restricted to *Trifolium*; it is normally holocyclic and it is not a notorious pest. However, it is not morphologically distinguishable from the SAA in the Old World, where they are regarded only as forms, segregates or biotypes of *T. trifolii*, according to Carver (1978); but in the US they are regarded as different species (Dickson 1959).

In Brazil, the first collection of the SAA on alfalfa (cv. Crioula) was in the spring of 1990, in Castrolanda, Paraná, southern Brazil, by R.S. Furiatti. However, it is believed that it was introduced by 1988-1989 because farmers from that region complained of a general yellowing of the lower leaves, which was attributed to nutritional deficiencies associated to an unusual large aphid infestation. The SAA was detected among the pea aphid, *Acyrtosiphon pisum* (Harris) and the blue-green aphid, *Acyrtosiphon kondoi* Shinji, but it was not reported by that time. After then it has been collected on alfalfa in other places in Paraná: Castro, Palmeiras, Witmarsum, and Bandeirantes. In Witmarsum, growers reported heavy infestations of a yellowish aphid in the early fall of 1994 mentioning that trucks and machinery became sticky and with lots of aphids crawling all over. Dickson (1959) mention that this species spreads rapidly and usually passes through a period of abnormally high

populations, characteristic of newly introduced species. It has also been collected, since 1992, with yellow pan traps in Curitiba and metropolitan area, which are not alfalfa growing areas; although, some specimens of *T. trifolii*, close to *maculata*, have been collected on *Melilotus indica* in this region. They were more abundant in the traps during November and December. Some specimens of SAA from Witmarsum were measured and compared by Dr. Mary Carver, from the Commonwealth Scientific and Industrial Research Organization, Australia (CSIRO), who indicated that they were very similar to those from California she had in her collection.

According to Eastop *et al.* (1993), *T. trifolii* would be introduced into Brazil through the southern states. Rio Grande do Sul is the southernmost state and first producer of alfalfa in the country, but the species has not been found neither there nor in Santa Catarina. The SAA may have entered into Paraná from the neighbour Argentina. Based on the rapid pattern of spread, it is believed that the SAA is already present in Rio Grande do Sul, Santa Catarina, and probably in the Southeast Region of Brazil, especially in Minas Gerais, where alfalfa is also grown, although it has not been reported until now.

Alfalfa is a relatively new crop in Brazil; the main growing states are Rio Grande do Sul, Paraná, Santa Catarina, and more recently, Minas Gerais. Its utilization is mainly as hay for horses and as supplementary diet for dairy cows during the winter when pastures are reduced; it may also enter in the composition of some feed and for human consumption as alfalfa sprouts.

The YCA was collected on *Trifolium repens* and *M. lupulina*, in Curitiba, in 1994, but it has been probably present for longer time in the region. The aphids are morphologically very similar to the SAA, but the color is very yellow and they show some differences on morphometrics and host preference. They are frequently found on the underside of the leaves of clover, but never forming large populations.

The climatic conditions in southern Brazil are favorable for the development of the SAA, consequently it may become a serious pest of alfalfa here as it is abroad. In the US, an intensive program of integrated management, based mainly on biological and chemical means, has kept the SAA under satisfactory control. Australia and New Zealand have also adopted integrated control measures, mainly the introduction of parasitic wasps, resistant alfalfa cultivars, and strict quarantine.

Biological and ecological studies of *T. trifolii*, followed by an efficient monitoring and adequate integrated control are necessary in alfalfa growing areas. It is necessary to determine whether there are efficient natural enemies, especially parasitoids, in these regions or not. It is also necessary to test the common alfalfa cultivars for resistance. A good chemical control may be required until biological agents become established.

All the specimens collected have been deposited on the Entomological Collection Pe. Jesus S. Moure of the Departamento de Zoologia, Universidade Federal do Paraná, where other studies on *T. trifolii* are been conducted.

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Literature Cited

- Blackman, R.L. & V.F. Eastop. 1984.** Aphids on the world's crop: an identification and information guide. New York, Willey, 466p.
- Cameron, P.J., R.G. Sunde & G.P. Walker. 1983.** Discovery, identification, and host plant interaction of spotted alfalfa aphid (Homoptera: Aphididae) in New Zealand. N. Zeal. J. Agric. Res. 26: 511-518.
- Carver, M. 1978.** The scientific nomenclature of the spotted alfalfa aphid (Homoptera: Aphididae). J. Aust. Entomol. Soc. 17: 287-288.
- Dickson, R.C. 1959.** On the identity of the spotted alfalfa aphid in North America. Ann. Entomol. Soc. Am. 52: 63-68.
- Eastop, V.F., C.L. Costa & R.L. Blackman. 1993.** Brazilian Aphidoidea. III. Subfamily Drepanosiphinae. Pesq. Agropec. Bras. 28: 1349-1355.
- Manglitz, G.R., C.O. Calkins, R.J. Walstrom, S.D. Hintz, S.D. Kindler & L.L. Peters. 1966.** Holocyclic strain of the spotted alfalfa aphid in Nebraska and adjacent states. J. Econ. Entomol. 59: 636-639.
- Passlow, T. 1977.** The spotted alfalfa aphid, a new pest of lucerne. Queensland Agric. J. 103: 329-330.
- Peters, D.C. & R.H. Painter. 1957.** A general classification of available small seeded legumes as hosts for three aphids of the "Yellow Clover Aphid Complex". J. Econ. Entomol. 50: 231-235.
- Wilson, G.C., D.E. Swincer & K.J. Walden. 1981.** The origins, distribution and host range of the spotted alfalfa aphid *Therioaphis trifolii* (Monell) f. *maculata*, with a description of its spread in South Australia. J. Entomol. Soc. South Africa 44: 331-341.
- Zúñiga S., E. & A. Aguilera P. 1989.** Presencia del pulgon manchado *Therioaphis trifolii* (Monell) (Homoptera: Aphididae) en Chile: características y generalidades sobre su control. Agric. Téc. Chile 49: 164-168.

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