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## Phytoseiid mites (Acari) associated with yerba mate in southern Brazil, with description of a new species

DINARTE GONÇALVES<sup>1</sup>, GUILHERME LIBERATO DA SILVA<sup>1</sup> & NOELI JUAREZ FERLA<sup>2</sup>

<sup>1</sup>Departamento de Fitossanidade, Faculdade de Agronomia "Eliseu Maciel," FAEM-UFPEL, Universidade Federal de Pelotas, Capão do Leão, 96001-970, RS, Brasil. E-mail: [dinartegoncalves@gmail.com](mailto:dinartegoncalves@gmail.com), [gibaliberato\\_148@hotmail.com](mailto:gibaliberato_148@hotmail.com)

<sup>2</sup>Laboratório de Acarologia, Museu de Ciências Naturais, UNIVATES - Centro Universitário, 95900-000 Lajeado, RS, Brazil. E-mail: [njferla@univates.br](mailto:njferla@univates.br)

### Abstract

Yerba mate is a plant of great socioeconomic importance in southern South America. Little has been published about the phytoseiid mite fauna of yerba mate. This paper presents information about the morphology and distribution of phytoseiid mites collected in yerba mate in the Ilópolis and Putinga counties of Brazil between 2002 and 2004. Four areas with different forms of cultivation in every county were sampled. A list of the species recorded from that state, and a key for their identification are provided. Sixteen phytoseiid mites species were identified, belonging to 11 genera in the subfamilies Amblyseinae (13 species) and Typhlodrominae (three species). The most abundant genus was *Amblyseius* with three species. *Phytoscutus sexpilis* Muma, 1961 and *Typhloseiopsis dorsoreticulatus* Lofego, Demite & Feres, 2011 are reported for the first time from Rio Grande do Sul state. This study also includes the description of a new species, *Typhlodromips pallinii* n. sp.

**Key words:** *Euseius ho*, *Ilex paraguariensis*, *Iphiseiodes moraesii*, natural enemy, predatory mites

### Introduction

*Ilex paraguariensis* Saint-Hilaire (Aquifoliaceae) is a plant of great socioeconomic importance in southern South America. Known as *erva mate* or *yerba mate*, its leaves are collected to prepare a popular drink, *chimarrão* or *tererê*. Tea extracted from its leaves has been used in herbal medicine as a tonic, diuretic, and as a stimulant to reduce fatigue, suppress appetite, and aid gastric function (Taylor, 2004).

Mites of the family Phytoseiidae are considered important predators of phytophagous mites (Moraes *et al.*, 2004). A few studies have been performed to identify mites on this crop, but only 11 species of phytoseiid mites were reported in *yerba mate* in Rio Grande do Sul state (Ferla & Moraes, 2002; Ferla *et al.*, 2005). Recently, *Iphiseiodes moraesii* Ferla & Silva, 2011 has been described from the same plant (Ferla & Silva, 2011). In Paraná state, *Euseius concordis* (Chant, 1959) and *Iphiseiodes zuluagai* Denmark & Muma, 1972 were reported associated with yerba mate (Gouvea *et al.*, 2006). From Argentina, only known *Euseius concordis* (Chant, 1959) and *Metaseiulus camelliae* (Chant & Yoshida-Shaul, 1983) (Trujillo, 1995) are known from this host plant.

The aim of this paper is to present the species associated to yerba mate, with their measurements, to describe a new species and to provide an identification key for species associated with this plant in the Taquari Valley, in Rio Grande do Sul state, Brazil.

### Material and methods

This survey was conducted in orchards located in Ilópolis (52°7'29"W, 28°55'43"S) and Putinga (52°9'26"W, 29°0'1"S) between September 2002 and August 2004. Both counties are situated in the northeast of Rio Grande do Sul state, Brazil (Figure 1). Four areas in every county were sampled, with different yerba mate cultivation

6. Setae *s4*, *Z4* and *Z5* long measuring, respectively, 88, 102 and 188  $\mu\text{m}$ . . . . . 7  
 - Setae *s4*, *Z4* and *Z5* shorter . . . . . 11
7. All shields more strongly sclerotised and mostly reticulate; no erect setae on *St I*. . . . . *Iphiseiodes* De Leon . . . . . 8  
 - All shields lightly sclerotised and slightly reticulated or smooth; erect setae on *St I*. . . . . *Amblyseius* Berlese . . . . . 9
8. Three pairs of setae on ventrianal shield; two pairs of metapodal plates, movable digit with three tooth. . . . .  
 . . . . . *Iphiseiodes saopaulus* Denmark and Muma  
 - Four setae on ventrianal shield; one pair of metapodal plate, one tooth on movable digit. . . . . *Iphiseiodes moraes* Ferla and Silva
9. Ventrianal shield vase-shaped, with constriction after *JV3*. . . . . *Amblyseius herbicolus* (Chant)  
 - Ventrianal shield never vase-shaped . . . . . 10
10. Ratio seta *Z5*: *Z4* ( $2.4 \geq 1.0$ ) . . . . . *Amblyseius operculatus* De Leon  
 - Ratio seta *Z5*: *Z4* ( $1.8 \leq 1.0$ ) . . . . . *Amblyseius neochiapensis* Lofego, Moraes and McMurtry
11. Spermatheca with major duct swollen, with constriction basal on cervix, bladder-like or flaring distally . . . . .  
 . . . . . *Typhlodromips* De Leon . . . . . 12  
 - Spermatheca without major duct, without constriction basal on cervix, with atrium nodular . . . . . 13
12. Macrosetae on leg IV not knobbed, ventrianal dorsal shield smooth . . . . . *Typhlodromips pallinii* n. sp.  
 - Macrosetae on leg IV knobbed, ventrianal shield slightly reticulate . . . . . *Typhlodromips japi* Lofego, Demite & Feres
13. Ratio seta *s4*: *Z1*  $> 3.0$ : 1.0 . . . . . *Amblydromalus manihoti* (Moraes)  
 - Ratio seta *s4*: *Z1*  $< 3.0$ : 1.0 . . . . . *Typhlodromalus aripo* De Leon
14. Legs without macrosetae; setae along margins of dorsal shield long and slightly serrated and *St3* on platelets . . . . .  
 . . . . . *Typhlodromina tropica* (Chant)  
 - Legs with or without macrosetae; only setae *Z4* and *Z5* serrated, *St3* on the sternal shield . . . . . 16
15. Macrosetae *Sge IV*, *Sti IV* and *St IV* knobbed. . . . . *Typhloseiopsis dorsoreticulatus* Lofego, Demite & Feres  
 - Leg IV with 0 to 3 macrosetae not knobbed. . . . . *Metaseiulus camelliae* (Chant & Yoshida-Shaul)

## Discussion

*Phytoscutus sexpilis* and *Typhloseiopsis dorsoreticulatus* are reported for the first time from Rio Grande do Sul state. The numbers of specimens of each species reported in this do not necessarily represent the relative abundance of the species, given that only a fraction of the specimens collected were mounted for examination. The subfamily Amblyseiinae was the most diverse so far, being the same results also observed for Phytoseiidae in yerba mate culture in that state.

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