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Phytoseiid mites (Acari: Phytoseiidae) from vineyards in Rio Grande do Sul State, Brazil

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Abstract

In this paper we report on the phytoseiid mites associated with grapevine in the state of Rio Grande do Sul, Brazil, which may be natural enemies of the pest mites *Calepitrimerus vitis*, *Colomerus vitis* (Eriophyidae), *Panonychus ulmi* (Tetranychidae) and *Polyphagotarsonemus latus* (Tarsonemidae). A total of 1,538 phytoseiid mites belonging to 30 species was found. *Neoseiulus californicus* showed the highest abundance with 844 specimens, followed by *Euseius inouei*, with 274 specimens. The majority of mites (83%) were observed on vine plants and 17% on the uncultivated plants. Of the 30 species found, 22 were observed on vine plants, 15 on the uncultivated plants and 10 species on both types of plants. When the phytoseiid species were collected in both places, on vine and on the associated plants, greater populations were found on vine plants.

Key words: predatory mite, natural enemy, *Neoseiulus californicus*, *Euseius inouei*

Introduction

The grapevine (*Vitis vinifera* L.) is cultivated in nearly all regions of Brazil. It was introduced to Brazil in 1532 during the Martin Afonso de Souza expedition in the state of São Paulo (Lorenzi *et al*., 2006) and was then developed in the state of Rio Grande do Sul due to European immigration, mainly from Italy. Currently, the northeast (Serra Gaúcha) is the most important vineyard region. More recently, vines have also been planted in the southwest region (Campanha), the flatter region bordering Uruguay and Argentina, characterized by well drained sandy soils (Mello, 2008). The climate in the state is humid temperate with well differentiated seasons and rain well distributed through the year (Köeppen, 1948).

In the state of Rio Grande do Sul, *Calepitrimerus vitis* (Nalepa, 1905), *Colomerus vitis* (Pangestecher, 1857) (Eriophyidae), *Polyphagotarsonemus latus* (Banks, 1904) (Tarsonemidae) and *Panonychus ulmi* (Koch, 1836) (Tetranychidae) are significant pests (Ferla, 2005; Ferla & Botton, 2008; Moraes & Flechtmann, 2008; Johann *et al*., 2009). *Calepitrimerus vitis*, found on abaxial leaves, and *Colomerus vitis*, present in buds, are common in most regions of the state mainly on European varieties (Johann, 2008; Klock, 2008). *Polyphagotarsonemus latus* develops mainly on young leaves, turning down their edges, and causing browning and necrosis (Monteiro, 1994). It occurs mainly on new leaves after green pruning (Johann *et al*., 2009). *Panonychus ulmi* was recently observed on grapevine in Rio Grande do Sul, where leaves showed browning, with reddish branches on the adaxial face and premature leaf fall (Ferla & Botton, 2008).

Phytoseiid predatory mites are commonly associated with Tetranychidae on plants (McMurtry & Croft, 1997) and they are extensively used for the control of mite pests in various countries. They are considered the most important predator of phytophagous mites on grapevines (Duso & De Lillo, 1996; Papaioannou-Souliotis *et al*., 1999; Kreiter *et al*., 2000; Tixier *et al*., 2006; Johann *et al*., 2009). These predatory mites are associated with the presence of *Calepitrimerus vitis* in Australia, where *Euseius victoriensis* (Womersley, 1954) and *Typhlodromus*

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