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Technical and economic evaluation of different types of control of *Brevipalpus phoenicis* (Acari: Tenuipalpidae) in citrus leprosies management*

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Abstract

The objective of this work was to evaluate the effect of acaricide applications and pruning of symptomatic branches in citrus leprosis management in Brazil. It was conducted in an orange plantation of the 'Pera' variety, grafted onto the 'Cleopatra' tangerine, in two seasons (2006–2007 and 2007–2008). The experimental design was randomized blocks in a factorial scheme consisting of the following factors: (A) acaricide, in three levels: spirodiclofen and cyhexatin applied in rotation, lime sulphur; no acaricides; (B) pruning to remove branches that showed symptoms of leprosis, with two levels: with pruning, without pruning. We carried out periodic assessments of *Brevipalpus phoenicis* (Geijskes) populations (vector of the leprosis virus), leprosis incidence and severity, fruit yield, and the economic feasibility of the applied strategies. Based on the results, we concluded that spirodiclofen and cyhexatin were more effective than lime sulphur in *B. phoenicis* control. Control with lime sulphur required more applications than spirodiclofen and cyhexatin in rotation, making it more expensive. Pruning of symptomatic branches used in isolation was not sufficiently effective to control leprosis and significantly increased control costs. Profits were higher when the control involved sprayings of spirodiclofen and cyhexatin in alternation, with or without pruning.

Key words: *Citrus sinensis*, CiLV, Citrus leprosis mite, organic citrus.

Introduction

Leprosis has for several decades been considered one of the most serious citrus disease problems in Brazil. Its causal agent is the non-systemic CiLV (Citrus Leprosis Virus). Particles of CiLV are observed only on tissues with typical leprosis lesions (Kitajima *et al*., 1972). Presence of the only known vector, the mite *Brevipalpus phoenicis* (Geijskes, 1939) (Tenuipalpidae), and the existence of infected plants in the plantation are fundamental conditions for the dissemination of the disease on the plant or between plants of a grove (Kitajima *et al*., 1972). The non-systemic condition of the virus considerably increases the importance of the vector in the epidemiology of the disease (Rodrigues *et al*., 1994).

Control of leprosis is based almost exclusively upon applications of acaricides to control *B. phoenicis*. However, this mite becomes the vector of the causal agent only after feeding on plant tissues infected by the CiLV virus; there is no vertical transmission of the virus in the mite population (Chiavegato & Mischam, 1987).

According to Rodrigues (2002), the epidemiology of such disease in plantations without chemical control indicates that infection levels increase proportionally to the availability of diseased tissues. Thus, it has been suggested that due to particularities of the vector and of the CiLV virus, control measures should not be based only on reducing the vector population, but also on the efficient elimination of virus sources by pruning symptomatic branches (Bitancourt, 1955; Feichtenberger *et al*., 1997). However, the time-consuming nature of pruning and need for specialised labour are the main economic obstacles for the adoption of this practice by growers, as a complement to chemical control of the vector.

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