

## Preliminary data on the Cixiid fauna of the vineyard agro-ecosystem in Piedmont (North-Western Italy)

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### Abstract

Studies on the Cixiid fauna present in vineyards affected by "bois noir" (BN) and their surroundings are presented. In 2006 the planthoppers were sampled using yellow sticky traps while in 2007 transparent sticky traps were used to test their capability in capturing them along with the sweep net used in the inter-rows, in the rows, and around the vineyard on different plants. *Reptalus panzeri* (Löw) and *Reptalus quinquecostatus* (Dufour) are the most represented cixiid species on grapevine, but other cixiids, like *Hyalesthes scotti* Ferrari, were abundant even if they have not been found BN positive yet.

**Key words:** planthopper, grapevine, "bois noir", sampling methods, host plants.

### Introduction

One of the most important, especially in the last years, Grapevine yellows is "bois noir" (BN) as results in several vicultural damage (Albertin *et al.*, 2007). Stolbur phytoplasma proposed as "*Candidatus* Phytoplasma solani", group 16SrXII-A, can be transmitted by many polyphagous insect vectors to a wide range of cultivated and wild host plants (Trivellone *et al.*, 2005). Although *Hyalesthes obsoletus* Signoret (Homoptera Cixiidae) is currently the unique species confirmed vector of BN to grapevine (Maixner *et al.*, 1995; Sforza *et al.*, 1998; Alma *et al.*, 2002; Lessio *et al.*, 2007), other planthoppers belonging to the same family such as *Reptalus panzeri* (Löw) (Palermo *et al.*, 2004; Botti *et al.*, 2005), *R. quinquecostatus* (Dufour) and *H. luteipes* Fieber, were found positive to Stolbur-phytoplasma (Trivellone *et al.*, 2005). In this work we report the first results of the sampling carried out in some vineyards of Piedmont (NW Italy) to obtain a preliminary check list of the cixiids present in vineyard agro-ecosystems.

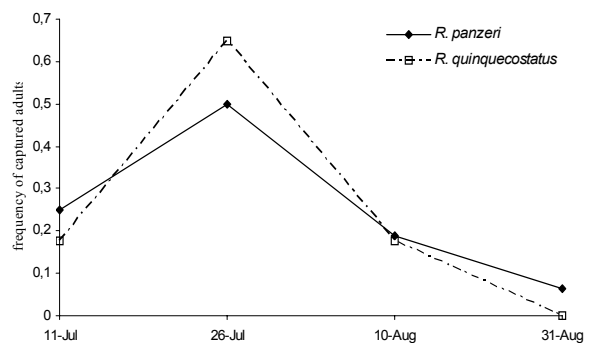
### Materials and methods

The study was conducted in 2006 and 2007 in different Piedmontese vineyards where BN known to occur. In 2006 planthoppers were detected on yellow sticky traps placed at canopy level to capture *Scaphoideus titanus* Ball (Homoptera Cicadellidae). In 2007 we used instead transparent sticky traps placed near the ground close to the grapevine's rootstock and in the wild grasses nearby. Moreover, adults were sampled by means of sweep net along the inter-rows, in the row and around the vineyard on different plants, either herbaceous or woody. Both samplings took place every 15-20 days, starting from the middle of June until the end of August. Each captured specimen was then determined in laboratory by observing first the external morphological features and then male-genitalia (Holzinger *et al.*, 2003).

### Results

During the surveys in 2006, 128 specimens of Cixiidae were intercepted by yellow sticky traps, but only 42 have been possible to determine certainly by observing male genitalia. Six species were identified: *H. luteipes*, *H. obsoletus*, *H. scotti* Ferrari, *R. melanochaetus* (Fieber), *R. panzeri* and *R. quinquecostatus*. *R. panzeri* and *R. quinquecostatus* were the most abundant species respectively with 38.1% and 40.5% of the total specimens recorded; both of them showed a peak of presence on the grapevine at the end of July (figure 1).

In 2007 only one Cixiidae, a female of *Reptalus* sp., was intercepted by transparent sticky traps. On the other hand, 222 specimens were captured by using the sweep net on 13 different host plants, in the surroundings of the vineyards object of study (table 1). Many of these species have been reported as hosts for Stolbur phytoplasma (Credi *et al.*, 2006). The number of species of planthoppers caught amount to 8 which are: *Cixius wagneri* China, *H. obsoletus*, *H. scotti*, *H. luteipes*, *R. cuspidatus* (Fieber), *R. panzeri*, *R. quinquecostatus* and *R. melanochaetus*.



**Figure 1.** Seasonal presence of *R. panzeri* and *R. quinquecostatus*, monitored with yellow sticky traps, in Piedmontese vineyards in 2006.

**Table 1.** Species of Cixiidae captured with sweep net on different wild host plants in the surrounding of vineyards during 2007. The plant species with “\*” were found positive for Stolbur after PCR test according to Credi *et al.* (2006).

	<i>C. wagneri</i>	<i>H. obsoletus</i>	<i>H. scotti</i>	<i>H. luteipes</i>	<i>R. cuspidatus</i>	<i>R. panzeri</i>	<i>R. quinquecostatus</i>	<i>R. melanochaetus</i>
<i>Salix alba</i> *		●					●	
<i>Ulmus campestris</i> *			●	●			●	●
<i>Malus domestica</i>							●	
<i>Urtica dioica</i> *		●					●	
<i>Chenopodium album</i> *							●	
<i>Amaranthus retroflexus</i> *							●	
<i>Clematis vitalba</i>			●					
<i>Erodium</i> sp.					●			
<i>Calystegia sepium</i> *		●						
<i>Convolvulus arvensis</i> *		●			●		●	
<i>Echium</i> sp.					●			
<i>Ambrosia artemisiifolia</i>		●						
<i>Artemisia vulgaris</i> *					●	●		

## Discussion

In 2007 we decided to use the transparent sticky traps instead of the yellow ones, in order to verify their efficacy to capture cixiids in vineyard. The results we obtained show as these insects seem to have a reduced flight activity, so that the few specimens captured by traps of both types have to be considered accidental and the sweep net resulted the most efficient method as asserted by Milanese *et al.* (2005). Although many species of Cixiidae were identified within the vineyard agroecosystem, only *R. panzeri* and *R. quinquecostatus* seemed to move onto grapevine. Both species were already found to be positive to Stolbur phytoplasma, therefore, their role as possible vectors for BN must be investigated. *H. scotti* was also abundant in the surroundings of the vineyards, however it hasn't been found BN positive yet.

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