

# Distribution of *Scaphoideus titanus* in Slovenia: its new significance after the first occurrence of grapevine “flavescence dorée”

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## Abstract

The occurrence and continuous spread of *Scaphoideus titanus* Ball (Hemiptera Cicadellidae) in the south-western part of Slovenia is well-known since 1983. Due to its significant role in spreading of grapevine “flavescence dorée” (FD), it has regularly been surveyed since 2002. In 2003 its first occurrence was confirmed in the eastern part of Slovenia too. In the following years it has rapidly spread all over the whole subpannonian winegrowing region of Slovenia. Now *S. titanus* is present in all three winegrowing regions of Slovenia. Its spread in the adjacent regions in Austria and Croatia as well as in the whole southern Pannonian edge from Serbia to Austria is also recorded. In 2005 the occurrence of FD was confirmed in Slovenia for the first time. Appropriate phytosanitary measures were undertaken in order to prevent the spread of FD by its vector *S. titanus*.

**Key words:** *Scaphoideus titanus*, distribution, Slovenia, grapevine.

## Introduction

*Scaphoideus titanus* Ball (Hemiptera Cicadellidae) has been known to occur in Slovenia since 1983. Subsequently it has rapidly spread in the southwestern sub-mediterranean part of the country (Seljak, 1987; 1993; 2002). Even though its populations were sometimes rather large, there were no records about direct damage in vineyards. As the grapevine “flavescence dorée” phytoplasma (FD) has not been present in Slovenia until recently, special control of this pest by using insecticides was considered as unjustified and was mainly omitted. After the first occurrence of FD in a limited area close to the Adriatic coast in 2005 the situation has changed. More detailed investigations on the distribution and population dynamics of *S. titanus* have been started and additional control measures have been introduced.

## Materials and methods

Yellow sticky traps of different shapes were mainly used to monitor the presence and the abundance of adults in vineyards. A large number of participants were included in this survey in order to cover all winegrowing regions of Slovenia as uniformly as possible. In the FD-infected and endangered area 16 samples of *S. titanus* adults were collected in 2005 and 2006 for laboratory testing of the presence of the phytoplasma. For this purpose, the sweeping or the beating methods were used. Each sample comprised 20 specimens preserved in 96% ethanol. Laboratory tests were made by the National Biological Institute in Ljubljana using the real time PCR method.

## Results and discussion

Until 2002 the occurrence of *S. titanus* was restricted to the southwestern submediterranean part of Slovenia. In 2003 first findings were recorded in the northeastern part of the country (Maribor, Sebeborci) near to the Slovene-Austrian border and were confirmed by samples. In the period after 2003 many new localities of *S. titanus* were found in the northeastern, as well as in the southern part of Slovenia. Some specimens were found even in gardens in the central non-winegrowing region. The population rate on these new locations has been continuously increasing. In the same period its occurrence was recorded in the adjacent parts in Austria (Steffek *et al.*, 2007) and in Croatia (Budinščak *et al.*, 2005). The origin of these continental populations has not been clarified yet. Most likely the pest has been spread in the egg stage with planting material from the infested parts in Slovenia and/or from some other European countries. Now *S. titanus* occurs in all three winegrowing regions of Slovenia. In the southwestern Primorska region it is widely spread and fairly common. Its population may vary considerably from vineyard to vineyard depending mostly on the insecticide use or not against the grape moths. In figure 1 the current distribution of *S. titanus* in Slovenia is given.

According to available data, *S. titanus* is gradually invading almost the whole winegrowing southern edge of the Pannonian lowland, from Serbia, Hungary, Croatia and Slovenia to Austria (Seljak, 2002; Magud and Toševski, 2004; Budinščak *et al.*, 2005; Steffek *et al.*, 2007; Der *et al.*, 2007). Its threat to viticulture in these areas might be of high priority, when the FD phytoplasma will spread.

After the FD occurrence was confirmed in Slovenia, appropriate phytosanitary measures were approved (Seljak and Orešek, 2007). They require obligatory treatments

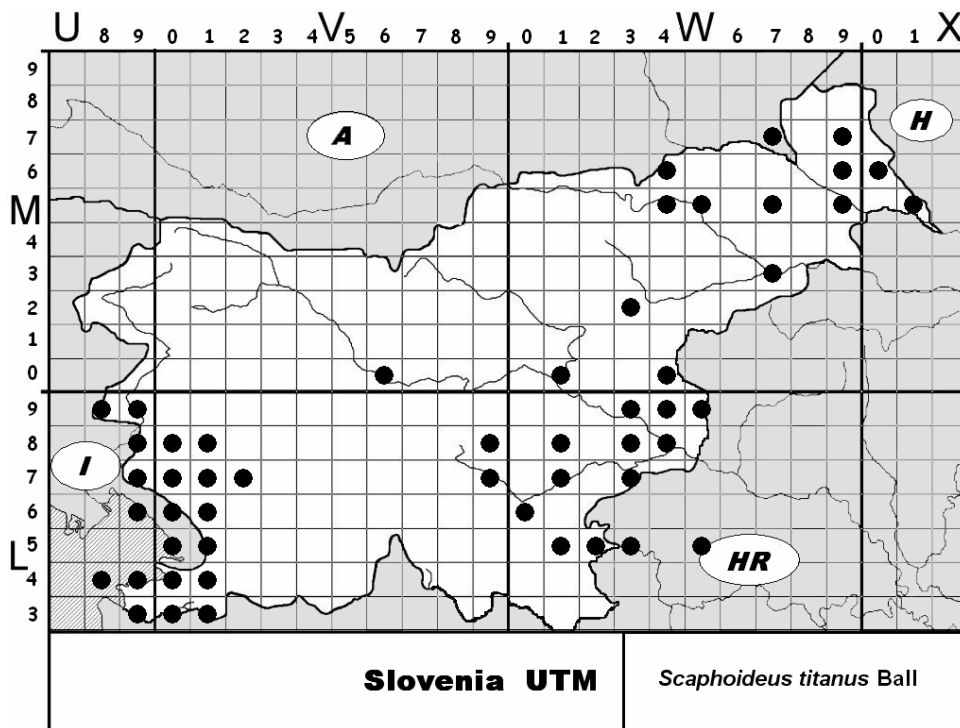


Figure 1. Distribution of *S. titanus* in Slovenia in 2007.

against *S. titanus* in the infected and endangered zones and precautionary treatments in all mother stands and nurseries in all winegrowing regions. In the infected area a large initial population of *S. titanus* was established. However, preliminary examinations in 2007 show a significant population reduction after two years of insecticide treatments. Chlorpyrifos-ethyl and chlorpyrifos-methyl were mostly used.

All laboratory tests on the presence of FD in *S. titanus* adults hitherto made on samples taken in the infected area were negative. These results can be explained with a still very low concentration of FD in this area. Until now only 6 vine stocks infected by the FD have been found in the infected area.

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