



University of Natural Resources and Life Sciences (BOKU) Vienna  
Department of Crop Sciences, Division of Plant Protection

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## **4<sup>th</sup> Symposium on Palaearctic Thysanoptera Vienna, Austria, 8<sup>th</sup> – 11<sup>th</sup> September 2014**

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**ABSTRACTS**

**Editors**

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**Published by:**

University of Natural Resources and Life Sciences (BOKU) Vienna

Department of Crop Sciences

Division of Plant Protection

Peter Jordan-Straße 82, 1190 Vienna, Austria

**ISBN 978-3-900932-19-0**

## Speciation in the *Thrips tabaci* cryptic species complex

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**Abstract.** Based on mitochondrial DNA sequences, *Thrips tabaci* has been divided into three lineages: arrhenotokous tobacco-associated type, arrhenotokous leek-associated type and thelytokous leek-associated type. It is believed that the reproductive mode and host fidelity have been driving the speciation in this cryptic complex. The arrhenotokous leek-associated type is proposed to be the ancient form of *T. tabaci* and the tobacco-associated type diverged from it and adapted to solanaceous host plants around 28 million years ago. This type is relatively rare compared to the other types but usually a more efficient vector of tospovirus species. Since the divergent line retained arrhenotoky the question arises: does host fidelity mean a complete or partial isolation between these two forms? Previous studies reported that *T. tabaci* populations collected from both host plants thrived on leek, but those originally collected from leek failed to survive on tobacco. This most likely reduces the occurrence of gene flow between the two types but cannot prevent it completely. The third lineage of *T. tabaci* diverged from the ancient form around 21 million years ago. Host specialization of this lineage did not seem to evolve to an extent as in the first divergent lineage, the ancient arrhenotokous form, and this most recent divergent form shares many host plants. A recent study reported better performance of the thelytokous leek-associated type on cabbage than on onion. Since the so-called thelytokous leek-associated type could outcompete the ancient arrhenotokous leek-associated type on cabbage plants, it might be more accurate to identify it as the thelytokous cabbage-associated type. The divergence of this lineage was most likely driven by the appearance of thelytoky in this cryptic species complex. However, our recent work has demonstrated that gene flow can occur in these sympatric populations suggesting they are not completely isolated.

**Keywords:** *Thrips tabaci*, speciation, arrhenotoky, thelytoky