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Genetic basis of acaricide resistance

Identification and characterization of the risk and mechanisms of resistance to bifenthrin, acequinocyl, and the novel acaricide pyflubumide in Tetranychus urticae

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Authors contributions

Chapter 2. Identification and characterization of new mutations in mitochondrial cytochrome b that confer resistance to bifenazate and acequinocyl in the spider mite *Tetranychus urticae*

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SMF, TVL, and NW conceived and designed research. SMF and ZT conducted experiments. SMF, TVL, and NW analyzed data and wrote the manuscript.

Chapter 3. Resistance risk assessment of the novel complex II inhibitor pyflubumide in the polyphagous pest *Tetranychus urticae*

Seyedeh Masoumeh Fotoukkaiai, Catherine Mermans, Nicky Wybouw and Thomas Van Leeuwen

SMF, TVL, and NW conceived and designed research. SMF and CM conducted experiments. SMF, TVL, and NW analyzed data and wrote the manuscript.

Chapter 4. Gene amplification of cytochrome P450 reductase and detoxification by cytochrome P450 CYP392A16 underlie pyflubumide resistance in *Tetranychus urticae*

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SMF, TVL, and NW conceived and designed research. SMF, DT, NW, and PS conducted experiments. SMF, TVL, NW, AK, DT, and PS analyzed data and wrote the manuscript with the input from RK and JV.

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Biography

Seyedeh Masoumeh Fotoukkaiai was born on 19 September 1987, in Ramsar, Iran. She obtained her high school diploma in 2005 and started a Bachelor's of Crop Protection degree at the University of Zanjan, Iran, in the same year. In 2009, she started her Masters studies in Agricultural Entomology at Guilan University, Iran, and graduated in 2011. In 2013, Masoumeh successfully passed the PhD entrance exam of Iran and started a PhD at the Department of Plant Protection of the University of Tehran. In 2015, she came to the Institute for Biodiversity and Ecosystem Dynamics (IBED) of the University of Amsterdam as a guest researcher. In 2016, she started a new PhD program in the lab of Prof. Thomas Van Leeuwen at the IBED.

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- Fotoukkaiai SM**, Wybouw N, Kurlavs A, Tsakireli D, Spyridon P, Clark R, Vontas J and Van Leeuwen T. **2020**. Gene amplification of cytochrome P450 reductase and detoxification by cytochrome P450 *CYP392A16* underlie pyflubumide resistance in *Tetranychus urticae* (in preparation).
- Fotoukkaiai SM**, Mermans C, Wybouw N, and Van Leeuwen T. **2020**. Resistance risk assessment of the novel complex II inhibitor pyflubumide in the polyphagous pest *Tetranychus urticae*. *Journal of pest science*. 93(3):1085-1096.
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Seyedeh Masoumeh Fotoukkaiai
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