



## Plant mite bioinvasions as a rising challenge to crop protection\*

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Crop protection confronts several defies often related to globalisation, one of which is the introduction of new pests from one region, or even from one continent to another, often resulting from movements of humans and commodities. Together with environmental modifications linked to climate change, which might also favor bioinvasions, these are some of the key challenges agriculture increasingly has to face.

The number of reports of invasions is rising over time and mites are also on the bioinvasions wave. Several *Tetranychus* mites, a group including several damaging pests, are on the list of invasives to many countries. I will here focus on two well-studied species, the two spotted spider mite, *Tetranychus urticae*, presently having a cosmopolitan distribution and the red-tomato spider mite, *Tetranychus evansi*, with a Sud American origin it has currently reached three other continents. The two species are examples of mites known for respectively being ancient and recent colonizers. By using a combination of approaches, including population genetics to estimate species diversity, together with measures of fitness in response to drought and also modeling computation to predict species distribution, I investigate how host plant shifts, but also adaptation to harsh environmental conditions can be seen as features favouring invasiveness. These are also conditions that can explain observed growing pest crop outbreaks. My talk will stress the interest in having a global overview of the invasion process to predict future colonization chances of non-native mites as well as to help to establish measures to mitigate pest invasions impact.

**Keywords:** Invasions, spider mites, climate change, populations genetics, adaptation, modelling