

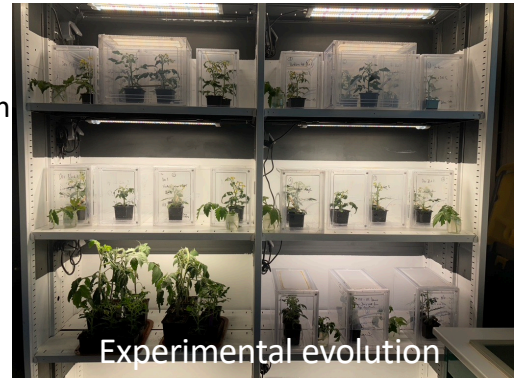


## Evolution of *Tetranychus evansi* traits in coinfections

*T. evansi* is a spider mite that specialises on *Solanaceae* plants. In the lab we keep it on mini tomato plants at 25°C. It takes ~2 weeks from egg to adult.

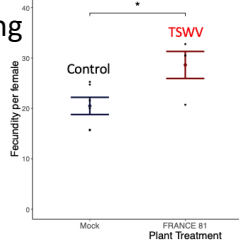
**Experimental evolution in coinfections:** We are evolving an outbred population of *T. evansi* under 4 different regimes in the presence of a competitor, another spider mite species *T. urticae* and/or in coinfection with tomato spotted wilt virus which facilitates *T. evansi*. The treatments are:

1. Single *T. evansi* (control)
2. Coinfection *T. evansi* and tomato spotted wilt virus (TSWV)
3. Coinfection *T. evansi* and *T. urticae*
4. Coinfection *T. evansi*, *T. urticae* and TSWV.

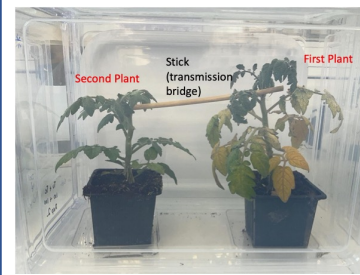


### Facilitation of *T. evansi* by TSWV

increases the number of offspring becoming adult. This probably occurs because infection with TSWV prevents the plant from mounting an immune response against *T. evansi*.



**Question: Does evolution under facilitation select for reduced virulence and lower fitness in the absence of TSWV?**



**A control population:** each generation 255 *T. evansi* females are placed on the first plant, 3 weeks later we take 255 daughters that are on the second plant for the next generation.

**Competition with *T. urticae*** reduces the number of *T. evansi* offspring becoming adult. *T. evansi* and *T. urticae* compete for food and space on the plant. They also interact via the plant immune system.



*T. urticae*

**Question: Does evolution in coinfections with *T. urticae* select for higher virulence and transmission?**

### Other questions:

*Prior to evolution *T. evansi* has no effect on TSWV load. Does evolving in coinfection with TSWV change this?*

### Correlated responses,

*-does evolution in competition with *T. urticae* select for *T. evansi* better able to benefit from facilitation by TSWV?*

*-does evolution with TSWV select for *T. evansi* that are worse competitors against *T. urticae*?*

If you are interested in any of the above questions send me an email: [Alison.duncan@umontpellier.fr](mailto:Alison.duncan@umontpellier.fr)

**Where are we?** We are part of the Experimental Evolution of Communities team at the Institute of Evolutionary Science of Montpellier at the University of Montpellier (Building 22 at the Triolet Campus)

