Supplementary Tables & Figures

Supplementary Tables

Table S1 – Analyses of differences in interspecific competition in the cadmium environment. (A) Summary of the ANOVA (type III) to estimate the effect of evolving on plants with cadmium on the strength of interspecific competition for *T. urticae* and *T. evansi*. (B) Contrasts between the strength of interspecific competition for the *T. evansi* cadmium and non-cadmium selection regimes. Contrasts were obtained using the emmeans function, from the linear model including the selection regimes of focal and competitor individuals as well as their interaction.

A)

	T. urticae		***T. evansi***	
Parameter	**Chisq**	**Pr(>Chisq)**	**Chisq**	**Pr(>Chisq)**
Tu Regime	0.1325	0.7158	0.9035	0.3419
Te Regime	1.3768	0.2407	13.0935	0.0003***
Tu Regime: Te Regime	0.1188	0.7304	5.6283	0.018*

* 0.05 >= P-value > 0.01; ** 0.01 >= P-value > 0.001; *** P-value < 0.001

B)

Contrasts *T. evansi*	**Estimate**	**T ratio**	**P-value**
Te no cadmium: Tu no cadmium - Te cadmium: Tu no cadmium	-0.0531	-3.6180	0.0031***
Te no cadmium: Tu no cadmium - Te no cadmium: Tu cadmium	-0.0148	-0.9510	0.3592
Te no cadmium: Tu no cadmium - Te cadmium: Tu cadmium	-0.0157	-1.0070	0.3323
Te cadmium: Tu no cadmium - Te no cadmium: Tu cadmium	0.0383	2.4610	0.0286 *
Te cadmium: Tu no cadmium - Te cadmium: Tu cadmium	0.0374	2.4050	0.0318 *
Te no cadmium: Tu cadmium - Te cadmium: Tu cadmium	-0.0009	-0.0540	0.9581

* 0.05 >= P-value > 0.01; ** 0.01 >= P-value > 0.001; *** P-value < 0.001

Table S2 – Analyses of differences in interspecific competition in the no-cadmium environment. Summary of the ANOVA (type III) to estimate the effect of evolving in cadmium on the strength of interspecific competition for *T. urticae* and *T. evansi*. The linear model included the selection regimes of focal and competitor individuals as well as their interaction.

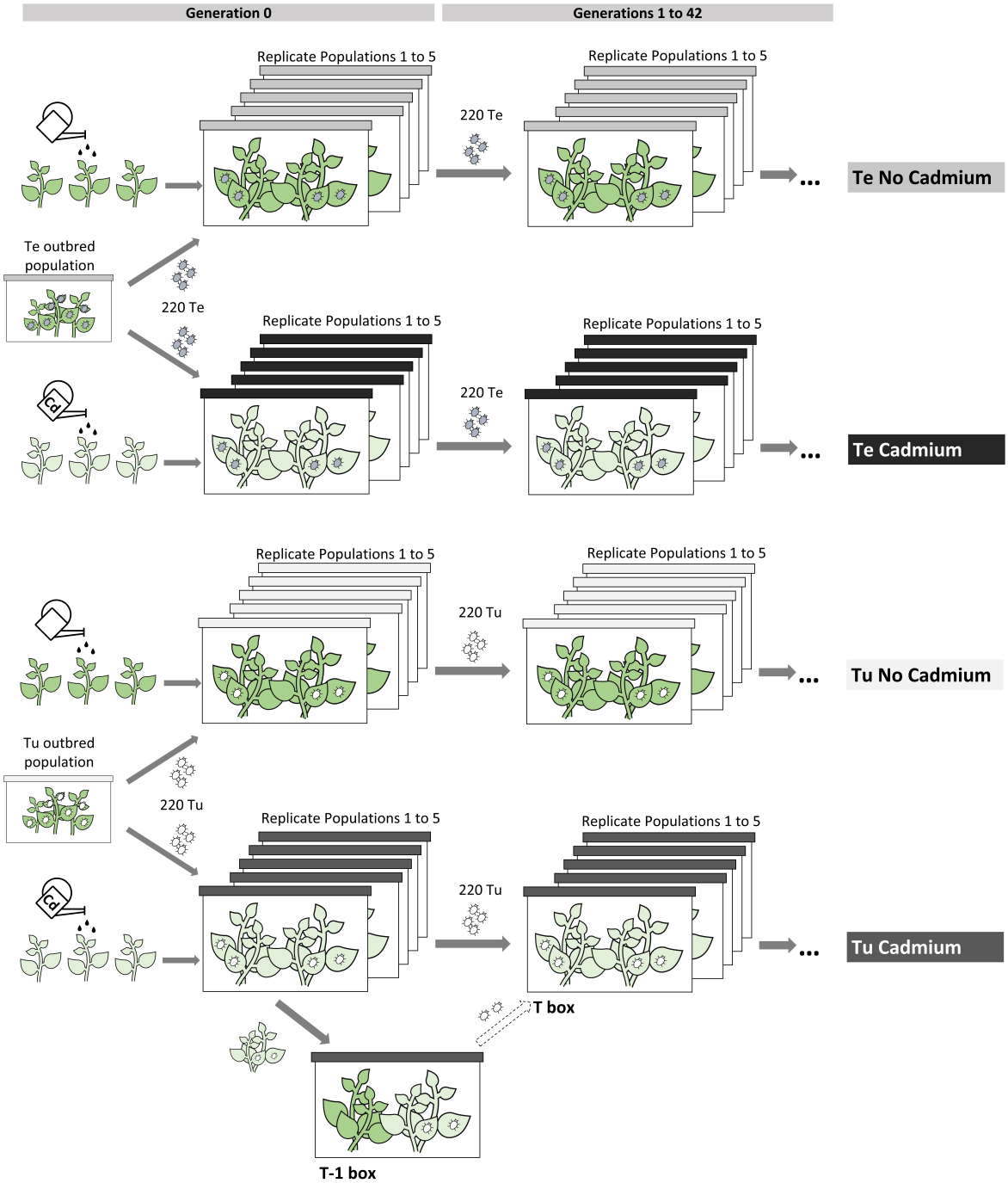
	T. urticae		***T. evansi***	
Parameter	**Chisq**	**Pr(>Chisq)**	**Chisq**	**Pr(>Chisq)**
Tu Regime	0.026	0.872	1.233	0.267
Te Regime	0.321	0.571	0.141	0.708
Tu Regime: Te Regime	0.452	0.502	0.029	0.865

Table S3 – Average proportion of *T. evansi* females obtained from the experiment to estimate the growth rate of populations with both intra and interspecific competitors. Each treatment corresponds to a combination of selection regimes (no Cadmium Te: no-cadmium Tu, cadmium Te: no-cadmium Tu, no-cadmium Te: cadmium Tu and cadmium Te: cadmium Tu) and was composed of 10 replicate populations. Each box was initialized with 6 females of the two species.

Replicate population	**Selection Regime Te**	**Selection Regime Tu**	**Environment**	**Proportion of Te females** (per replicate)
1	No Cadmium	No Cadmium	Cadmium	0.9578
2	No Cadmium	No Cadmium	Cadmium	0.9992
3	No Cadmium	No Cadmium	Cadmium	0.9381
4	No Cadmium	No Cadmium	Cadmium	0.9622
5	No Cadmium	No Cadmium	Cadmium	0.9555
1	No Cadmium	No Cadmium	No Cadmium	0.6236
2	No Cadmium	No Cadmium	No Cadmium	0.6481
3	No Cadmium	No Cadmium	No Cadmium	0.7699
4	No Cadmium	No Cadmium	No Cadmium	0.7732
5	No Cadmium	No Cadmium	No Cadmium	0.7222
1	Cadmium	No Cadmium	Cadmium	0.9704
2	Cadmium	No Cadmium	Cadmium	0.9148
3	Cadmium	No Cadmium	Cadmium	0.9794
4	Cadmium	No Cadmium	Cadmium	0.9567
5	Cadmium	No Cadmium	Cadmium	0.9571
1	Cadmium	No Cadmium	No Cadmium	0.6015
2	Cadmium	No Cadmium	No Cadmium	0.5636
3	Cadmium	No Cadmium	No Cadmium	0.9167
4	Cadmium	No Cadmium	No Cadmium	0.5065
5	Cadmium	No Cadmium	No Cadmium	0.7478
1	No Cadmium	Cadmium	Cadmium	0.9184
3	No Cadmium	Cadmium	Cadmium	0.8195
4	No Cadmium	Cadmium	Cadmium	0.9129
5	No Cadmium	Cadmium	Cadmium	0.9236
1	No Cadmium	Cadmium	No Cadmium	0.6484
3	No Cadmium	Cadmium	No Cadmium	0.6837
4	No Cadmium	Cadmium	No Cadmium	0.7885
5	No Cadmium	Cadmium	No Cadmium	0.8269
1	Cadmium	Cadmium	Cadmium	0.8336
3	Cadmium	Cadmium	Cadmium	0.9518
4	Cadmium	Cadmium	Cadmium	0.9070
5	Cadmium	Cadmium	Cadmium	0.9662
1	Cadmium	Cadmium	No Cadmium	0.7917
3	Cadmium	Cadmium	No Cadmium	0.7228
4	Cadmium	Cadmium	No Cadmium	0.8712
5	Cadmium	Cadmium	No Cadmium	0.8225

Supplementary Figures

A)



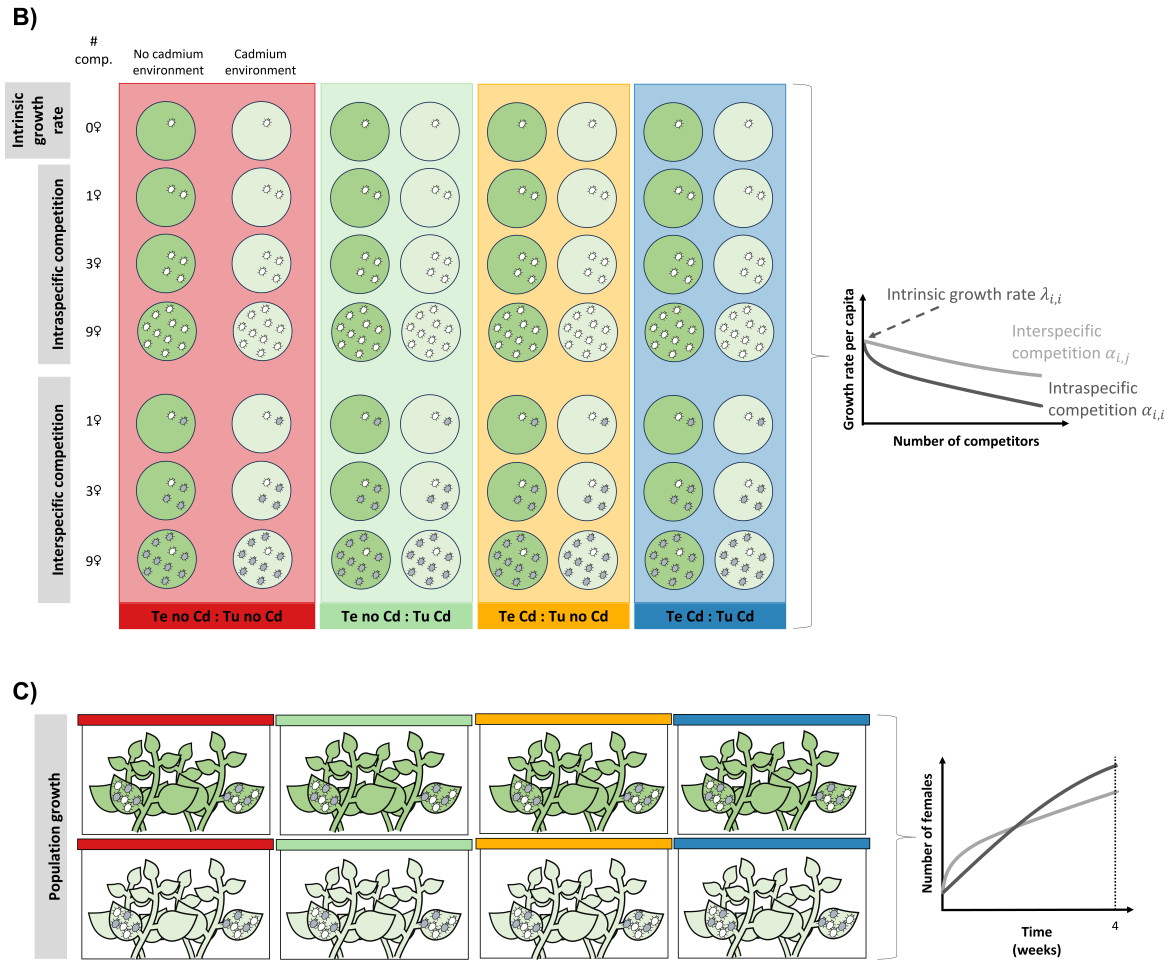


Figure S1 – Overview of the experimental procedure. A) Experimental evolution: 220 females from the *T. urticae* (Tu) or *T. evansi* (Te) outbred populations were transferred to create four experimental regimes: No cadmium (plants grown in soil without cadmium, dark green) and Cadmium (plants grown in soil with 2mM cadmium, light green), for each mite species evolved in absence of interspecific competition. Each selection regime was replicated five times. Every two weeks (roughly corresponding to one spider mite generation), 220 females were transferred from each population to a new box with the same plant treatment. This procedure was followed for 42 mite generations. **B) Experiment to estimate strength of competition**: Females from the four experimental regimes were placed on a leaf disk of a plant grown with (light green) or without (dark green) cadmium. Focal females were exposed to a gradient of intraspecific or interspecific female competitors stemming from the cadmium or no-cadmium selection regimes. In total, four possible combinations of cadmium and no-cadmium selection regimes were performed: Te no cadmium: Tu no cadmium (red), Te no cadmium: Tu cadmium (green), Te cadmium: Tu no cadmium (yellow), Te cadmium: Tu cadmium (blue). The number of adult female offspring was measured after two weeks to calculate the per capita offspring production (total number of offspring divided by the number of focal females initially added to the patch). These data were then used to parameterize a Ricker model to estimate the intrinsic growth rate and the intra and interspecific competition coefficients. The parameters were then used to estimate 1) the relative impact of intra and interspecific competition by predicting the number of offspring produced under different

scenarios (cf. Figure 1 in main text) and 2) the long-term coexistence outcomes of competition between the different selection regimes (cf. Figure 2 in main text). **C) Population experiment:** Six females from each experimental evolution selection regime were placed in a box with two leaves from plants grown with or without cadmium. Boxes were created for the four possible combinations of cadmium and no-cadmium selection regimes: Te no cadmium: Tu no cadmium (red), Te no cadmium: Tu cadmium (green), Te cadmium: Tu no cadmium (yellow), Te cadmium: Tu cadmium (blue). After two weeks, two more plants were added, and the number of adult female offspring of each mite species was counted four weeks later. Figure adapted from Godinho et al (2024).

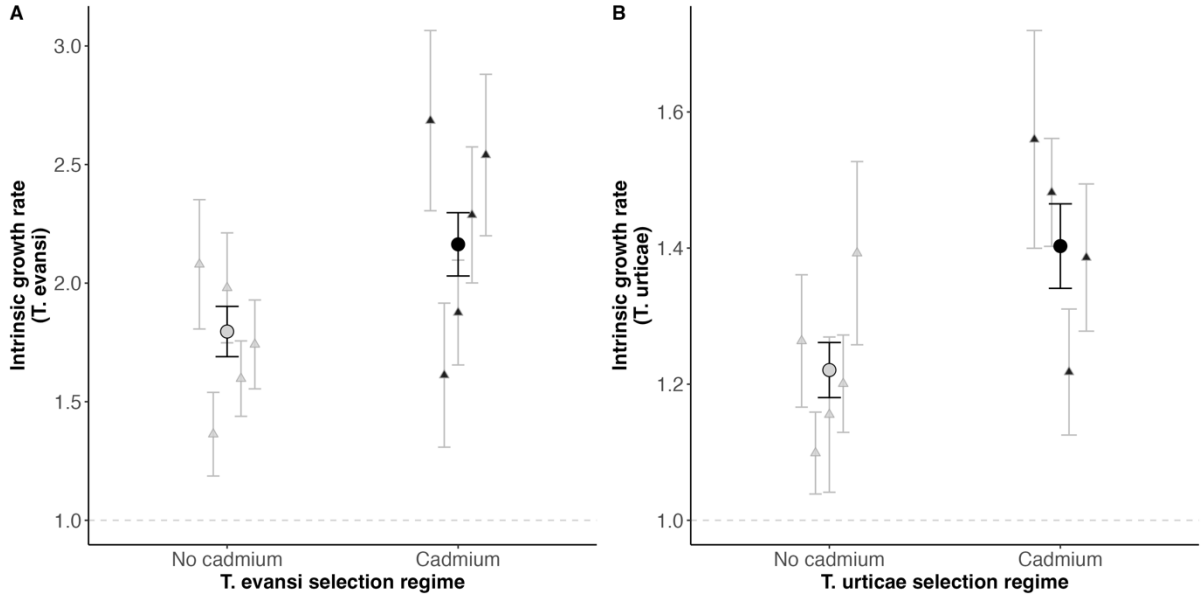


Figure S2 – Intrinsic growth rate of *T. evansi* (A) and *T. urticae* (B) from the cadmium and the no cadmium selection regimes, when tested in the cadmium environment. No cadmium and cadmium selection regimes are represented in light and dark colours, respectively. Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

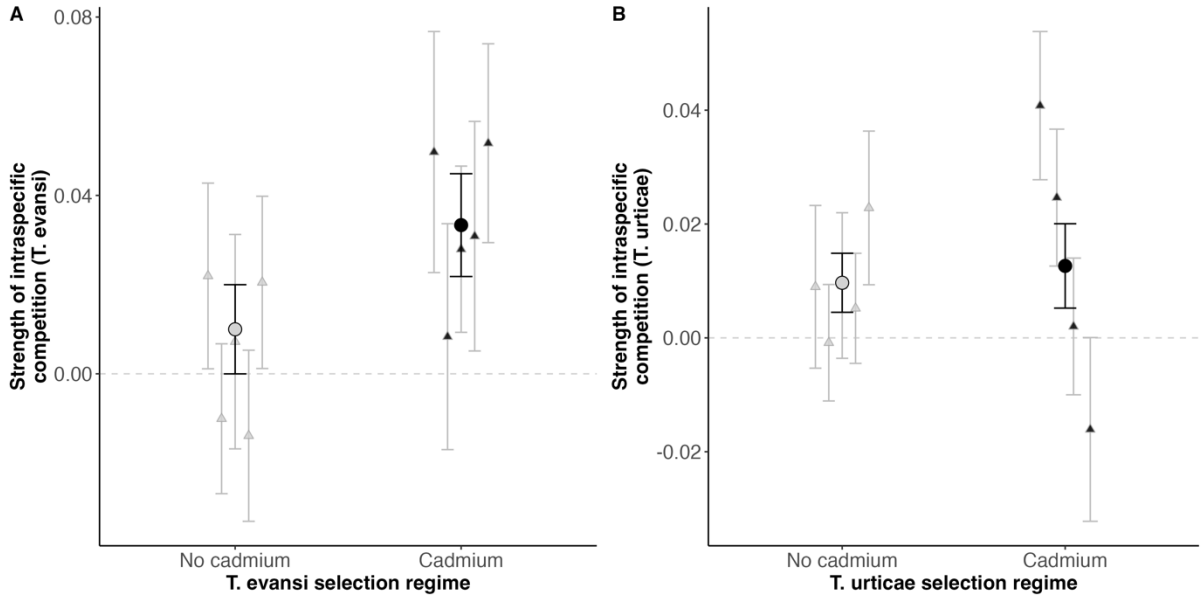


Figure S3 – Strength of intraspecific competition for *T. evansi* (A) and *T. urticae* (B) selection regimes in the cadmium environment. No cadmium and cadmium selection regimes are represented in light and dark colours, respectively. Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

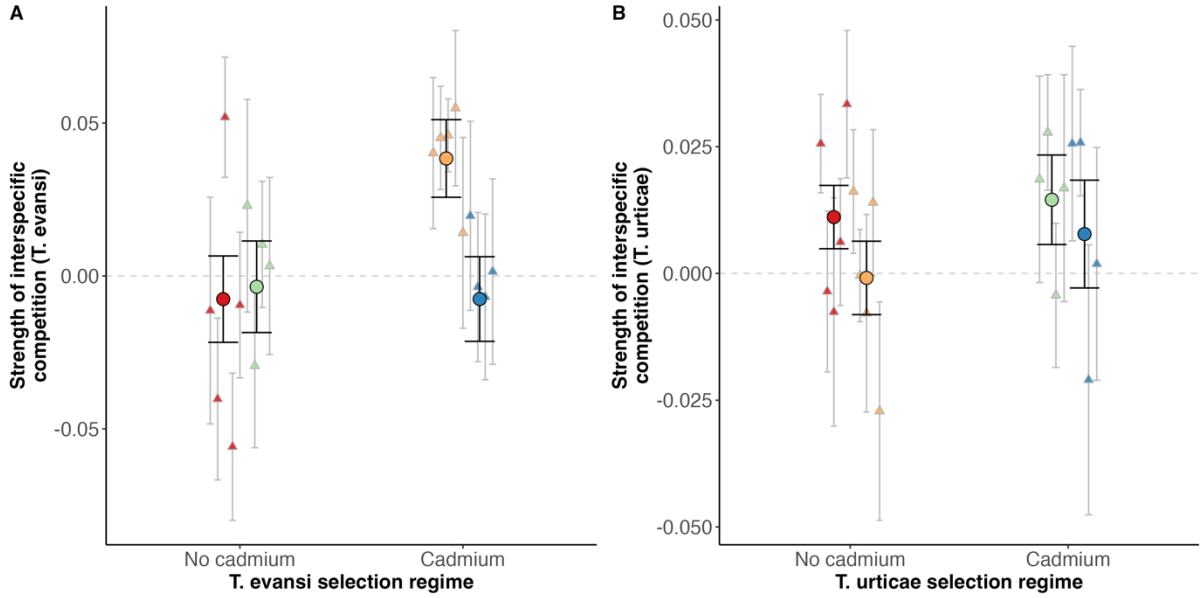


Figure S4 – Strength of interspecific competition for *T. evansi* (A) and *T. urticae* (B) selection regimes in the cadmium environment. Colors indicate the four possible combinations of cadmium and no-cadmium selection regimes were performed: Te no cadmium: Tu no cadmium (red), Te no cadmium: Tu cadmium (green), Te cadmium: Tu no cadmium (yellow), Te cadmium: Tu cadmium (blue). Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

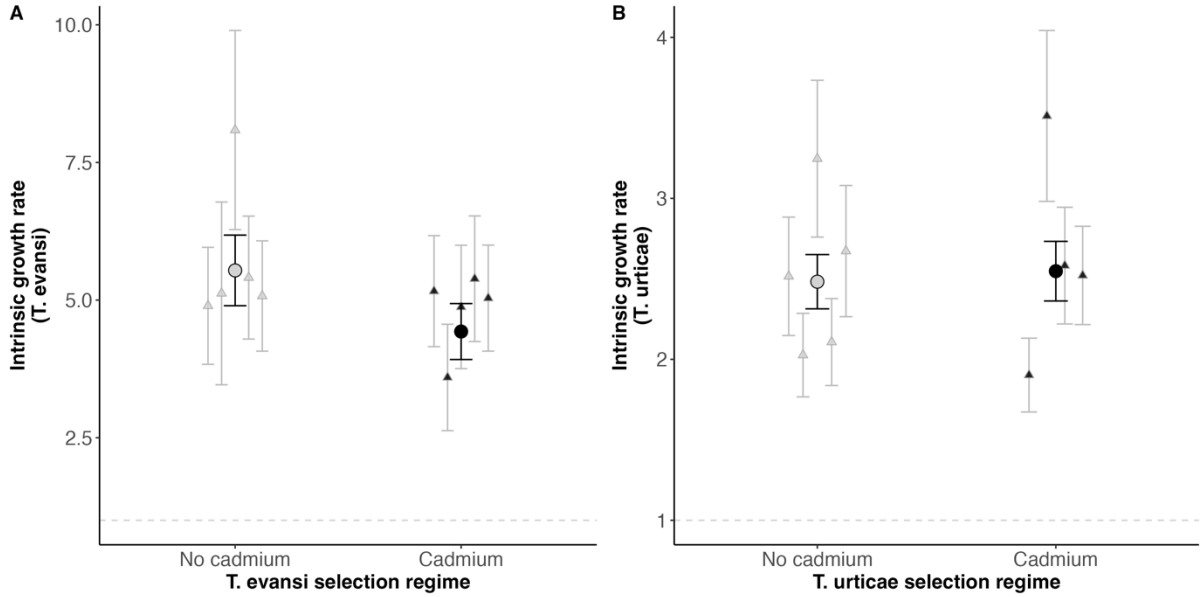


Figure S5 – Intrinsic growth rate for *T. evansi* (A) and *T. urticae* (B) selection regimes in the no cadmium environment. No cadmium and cadmium selection regimes are represented in light and dark colours, respectively. Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

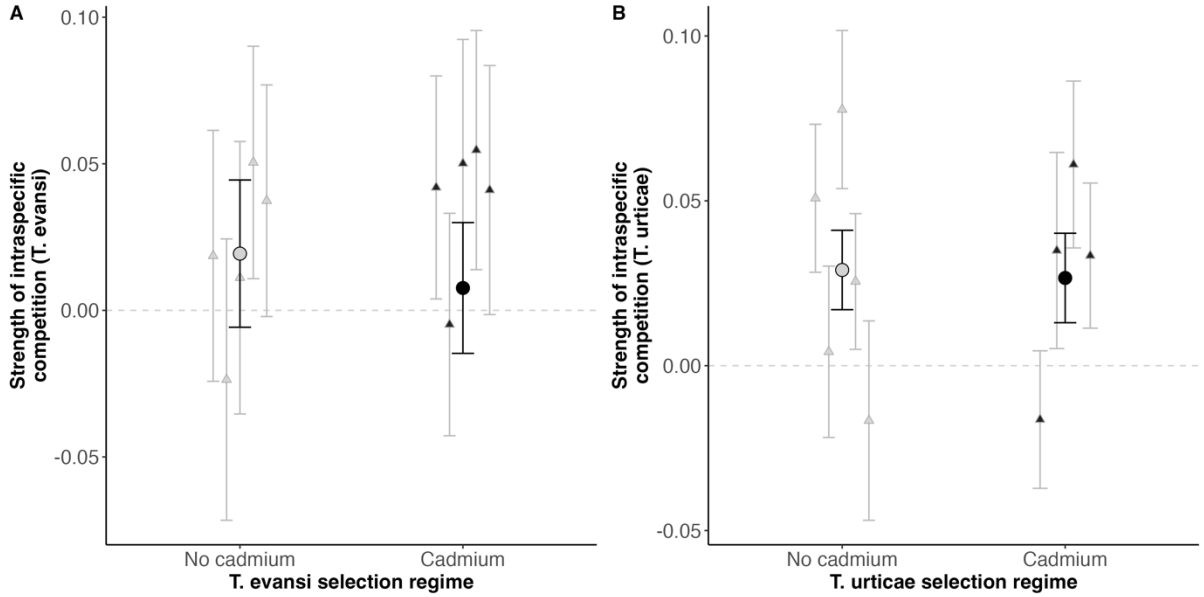


Figure S6 – Strength of intraspecific competition for *T. evansi* (A) and *T. urticae* (B) selection regimes in the no cadmium environment. No cadmium and cadmium selection regimes are represented in light and dark colours, respectively. Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

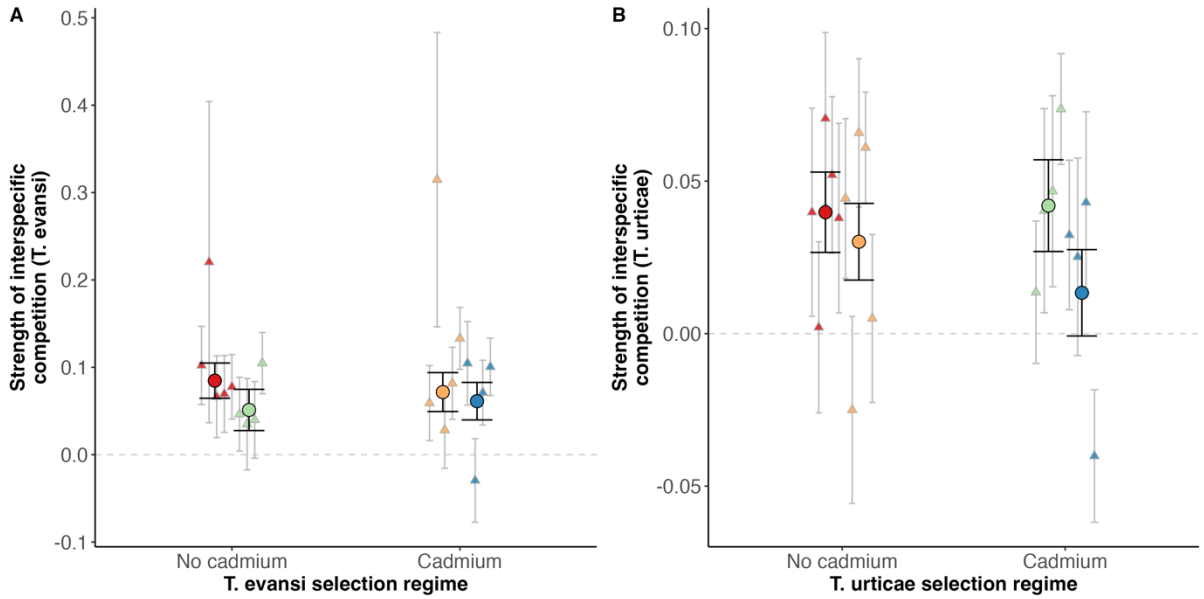


Figure S7 – Strength of interspecific competition for *T. evansi* (A) and *T. urticae* (B) selection regimes in the no cadmium environment. Colors indicate the four possible combinations of cadmium and no-cadmium selection regimes were performed: Te no cadmium: Tu no cadmium (red), Te no cadmium: Tu cadmium (green), Te cadmium: Tu no cadmium (yellow), Te cadmium: Tu cadmium (blue). Error bars were calculated based on standard error obtained from 1000 bootstrap samples. Circles correspond to the parameters estimated from all replicates pooled and triangles to parameters estimated from each replicate. Note that the scales are different between the two panels.

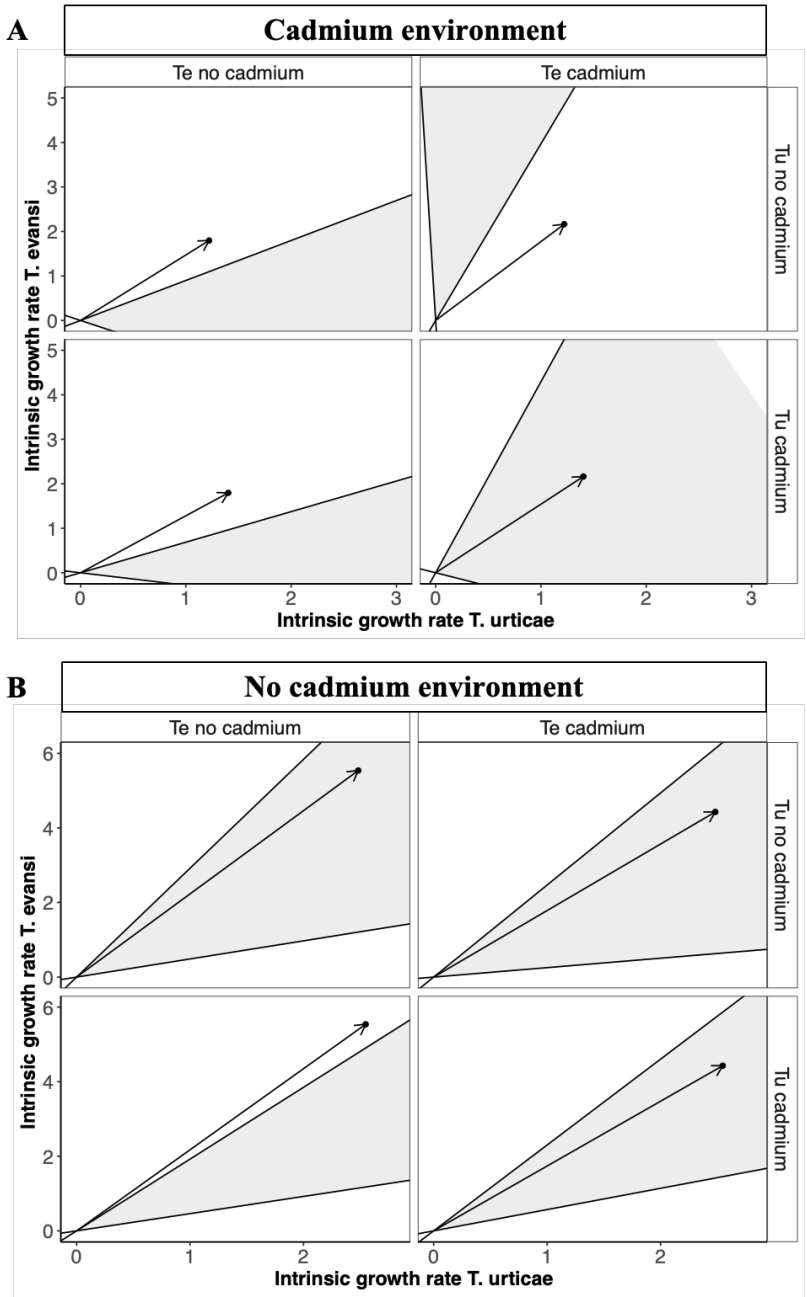


Figure S8 – Feasibility domain for the different combinations of selection regimes (cadmium and no-cadmium) in which *T. urticae* (Tu) or *T. evansi* (Te) have evolved in (A) the cadmium and (B) the no cadmium environment. The arrow represents the vector of intrinsic growth for each of the two species and the edges of the cone delimit the area under which the isoclines cross at positive abundances (i.e., the feasibility domain, in which coexistence is possible). Arrows that fall outside of the cone indicate that Te excludes Tu, except in the upper-right panel of figure A (Te cadmium- Tu no cadmium), in which Tu excludes Te.

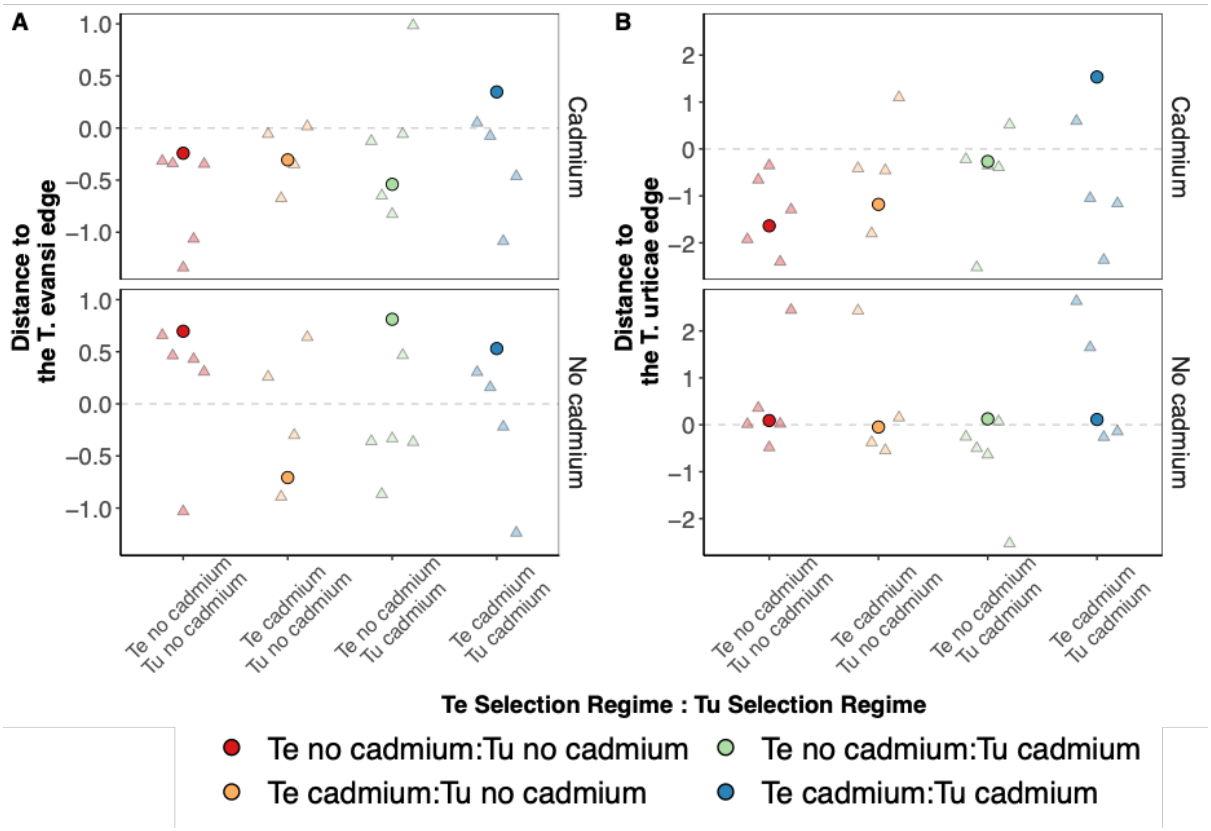


Figure S9 – Distance to the two edges of the feasibility domain for the different combinations of cadmium and no-cadmium selection regimes of *T. urticae* (Tu) and *T. evansi* (Te) in the cadmium and the no-cadmium environment. Distance between the realized growth rates and the edges of the feasibility domain for which Te (A) or Tu (B) will be excluded, in the cadmium (upper panels) and no-cadmium (lower panels) environments for the different treatments (i.e. combinations of no cadmium or cadmium selection regimes, cf. colour codes). Positive distances indicate that the vector of growth rates is inside of the feasibility domain (i.e., coexistence is possible), and negative distances indicate that the vector is outside of the feasibility domain (one species is excluded). Circles correspond to the distance calculated with data from all replicates pooled and triangles to distance calculated per replicate. Note the differences in scales between panels.