Supplementary Material

**Do epiphytes affect the fitness of their phorophytes? The case of *Tillandsia recurvata* on *Bursera copallifera***

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**Figure S1**. Schematic representation of the experimental design to test the effect of *Tillandsia recurvata* on *Bursera copallifera*. Further details are available in the article main text.

**Table S1**. Response variables and the models used for their analysis. Models are expressed in the r language used in the libraries lme4 (Bates et al*.* 2015), or survival (Therneau 2022).

|  |  |
| --- | --- |
| Response variable | Model |
|  |  |
| **a.- Preliminary branch traits.** Compared to testing the effect of the factor (with six treatments) at the beginning of the experiment. A lack of effect points out that branches are similar between the treatments. | |
|  | |
| Branch diameter | Linear mixed-effects model: lmer(Diameter ~ Factor + (1 | Tree), data = datos) |
|  |  |
| Number of shoots  (Poisson) | Generalized linear mixed-effects model: glmer(Shoot\_initial ~ Factor + (1 | Tree), data = datos, family=poisson) |
|  |  |
| **b.- Outcomes from the experiment.** Compared to test the effect of the factor (six treatments). A significant effect shows that the response variable differs from the general mean in at least one treatment. | |
|  | |
| Shoot survival (Binomial) | Log-rank test (Survival analysis): survdiff(Surv(Time, Delta)~ Factor, data=datos) |
|  |  |
| New shoots (Poisson) | Chi-square goodness of fit test for more than two categories (six treatments) |
|  |  |
| Shoot growth (Relative growth rate - RGR) | Linear mixed-effects model: lmer(RGR ~ Factor + (1 | Tree), data = datos) |
|  |  |
| Number of inflorescences (Poisson) | Generalized linear mixed-effects model: glmer(Inflorescences ~ Factor + (1 | Tree), data = datos, family=poisson) |
|  |  |
| Number of fruits (Poisson) | Generalized linear mixed-effects model: glmer(Fruits ~ Factor + (1 | Tree), data = datos, family=poisson) |
|  |  |
| Relative fitness | Model-based on the results of the previous analysis (new shoots, shoot survival, and number of fruits). The transition between the generation of new shoots, shoot survival, and fruit production gives us an estimate of the relative fitness of the branches in each treatment. |

**Table S2**. Mean (±S.D.) branch diameter, shoot size, and growth of *Bursera copallifera* shoots on branches subjected to six treatments of removal and transplantation of epiphytes.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Treatment | Branch diameter (cm) | Initial shoot number per branch | Shoot length (cm) | | Relative growth rate |
| initial | final |
| Not removed | 1.4 ± 0.28 | 6 ± 2.5 | 3.2 ± 2.4 | 3.8 ± 2.7 | 0.3 ± 0.5 |
| Removed | 1.3 ± 0.29 | 7 ± 3.7 | 3.0 ± 2.1 | 3.7 ± 2.4 | 0.4 ± 0.9 |
| Removed and replanted | 1.4 ± 0.31 | 6 ± 2.1 | 3.3 ± 2.0 | 3.9 ± 2.2 | 0.3 ± 0.9 |
| Without epiphytes | 1.3 ± 0.28 | 6 ± 2.3 | 2.6 ± 2.0 | 3.3 ± 2.4 | 0.4 ± 0.6 |
| Transplanted | 1.3 ± 0.24 | 6 ± 2.2 | 2.9 ± 2.4 | 3.9 ± 2.7 | 0.9 ± 3.3 |
| Artificial tussocks | 1.3 ± 0.24 | 6 ±2.6 | 3.1 ± 2.0 | 4.0 ± 2.5 | 0.5 ± 1.4 |

**Table S3**. Mean (± S.D.) number of inflorescences and fruits in the shoots of branches of *Bursera copallifera* subjected to six treatments of transplantation and removal of epiphytes. Inflorescences were counted in two reproductive seasons (2010 and 2011).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mean number of  inflorescences per shoot | |  | Number of fruits per shoot | |
| Treatment | 2010 | 2011 |  | 2010 | 2011 |
| Not removed | 1.2 ± 1.3 | 0.2 ± 0.6 |  | 6.0 ± 4.9 | 0.0 ± 0.0 |
| Removed | 1.5 ± 1.3 | 0.6 ± 1.0 |  | 2.8 ± 3.0 | 0.0 ± 0.0 |
| Removed and replanted | 1.9 ± 1.3 | 0.2 ± 0.5 |  | 4.6 ± 5.4 | 0.0 ± 0.0 |
| Without epiphytes | 2.1 ± 1.2 | 0.6 ± 1.0 |  | 6.6 ± 8.2 | 0.5 ± 1.7 |
| Transplanted | 1.5 ± 1.2 | 0.6 ± 1.0 |  | 5.4 ± 6.6 | 0.0 ± 0.0 |
| Artificial tussocks | 2.4 ± 1.2 | 0.6 ± 1.0 |  | 3.8 ± 3.9 | 0.5 ± 1.4 |