## Annexes Chapitre I : Light intensity mediates phenotypic plasticity and leaf trait regionalisation in a tank bromeliad

Graphical user interface

Description automatically generated with medium confidenceFigure S1 Treatment granulometry and CNP content. Boxplots for (A) substrate mean particle diameter (µm-1), (B) substrate N (mg g-1DM), (C) substrate C (mg g-1DM), and (D) substrate P (µg g-1DM) contents. Different letters indicate significant differences between treatments based on pairwise t test (α<0.05) after significant Anova (α<0.05). p is the p value of the Anova test. WS, white sand; WSP, white sand/potting soil; P, potting soil

A graph of different colored lines

Description automatically generated with medium confidenceFigure S2: Overnight CO2 assimilation and stomatal conductance curves. Curves of overnight (A) CO2 assimilation (A, µmol m-2 s-1) and (B) stomatal conductance (Gs, mmol m-2 s-1). These measurements were conducted on 6 extra plants per treatments. One plant per day with one of each treatment every three days over a month. WS, white sand; WSP, white sand/potting soil; P, potting soil.

Table S1: Statistical summary table: Mean and standard deviation (SD) of each trait are displayed for the three treatments (WS, white sand; WSP, white sand/potting soil; P, potting soil). The global coefficient of variation (CV) is given in %. The associated Kruskal Wallis Chi² and P-values are shown. Significant P-values (<0.05) are in bold. Letters indicates significant pairwise differences based on Wilcoxon pairwise test (α < 0.05). Growth, Amax, GSmax and Aint have been measured on 6 extra bromeliads. Abbreviations: relative growth rate (RGR); total root length (TRL); leaf mass area (LMA); leaf dry mass content (LDMC); trichome area index (TAI); leaf chlorophyll content (CHL); PSII maximum quantum efficiency (Fv/Fm); maximum electron transport rate (ETRmax); maximal assimilation (Amax); stomatal conductance (GSmax); overnight integrated assimilation (Aint); specific tip root average (STRA); specific root length (SRL); average root diameter (ARD); root tissue density (RTD).

| **Traits** | **Mean ± SD** | | |  | **CV** |  | **Significance** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **WS** | **WSP** | **P** |  | **%** |  | **KW.chi** | **P.val** |
| **Overall plant performance** | | | | | | | | |
| Number of leaves | 8.7 ± 1.89 (a) | 13.9 ± 1.1 (b) | 14.2 ± 1.4 (b) | | 24.00 | | 18.300 | **0.000107** |
| Number of roots | 25.7 ± 5.08 (a) | 51.5 ± 12.7 (b) | 72.3 ± 13.3 (c) | | 44.40 | | 23.100 | **<0.0001** |
| Total DM (g) | 1.09 ± 0.372 (a) | 10.7 ± 1.97 (b) | 16.3 ± 3.08 (c) | | 71.50 | | 25.100 | **<0.0001** |
| Tank capacity (ml) | 4.15 ± 1.83 (a) | 81 ± 17.2 (b) | 145 ± 34.7 (c) | | 81.40 | | 25.100 | **<0.0001** |
| RGR (mg month-1) | 0.464 ± 0.02 (a) | 0.618 ± 0.013 (b) | 0.646 ± 0.012 (c) | | 14.4 | | 25.055 | **<0.0001** |
| Root-to-shoot-ratio | 17.1 ± 8.18 (a) | 4.16 ± 1.87 (b) | 3.84 ± 1.22 (b) | | 93.90 | | 18.600 | **<0.0001** |
| Leaf length (cm) | 14.6 ± 1.84 (a) | 25.1 ± 1.95 (b) | 26.5 ± 2.28 (b) | | 26.00 | | 20.300 | **<0.0001** |
| Leaf thickness (mm) | 6.21 ± 0.262 (a) | 7.75 ± 0.272 (b) | 8.3 ± 0.356 (c) | | 12.70 | | 23.600 | **<0.0001** |
| TRL (cm) | 328 ± 96.5 (a) | 832 ± 436 (b) | 1460 ± 464 (c) | | 67.80 | | 20.900 | **<0.0001** |
| **Leaf traits** | | | | | | | | |
| LMA (g m-2) | 46.1 ± 3.95 (a) | 64.1 ± 16.4 (ab) | 76 ± 13.3 (b) | | 27.90 | | 14.000 | **0.000891** |
| LDMC (gDM gFM-1) | 0.0859 ± 0.0105 | 0.0938 ± 0.0243 | 0.104 ± 0.0193 | | 20.80 | | 5.030 | 0.081 |
| Stomata density (Nb mm-2) | 23.2 ± 3.56 (a) | 37.1 ± 5.61 (b) | 34 ± 4.04 (b) | | 23.70 | | 19.200 | **<0.0001** |
| TAI (%) | 46.68 ± 15.62 (a) | 66.66 ± 16.13 (b) | 68.62 ± 13.9 (b) | | 29.37 | | 8.322 | **0.015** |
| Leaf C (mg gDM-1) | 402 ± 11.3 (a) | 429 ± 6.2 (b) | 427 ± 4.27 (b) | | 3.47 | | 19.500 | **<0.0001** |
| Leaf N (mg gDM-1) | 6.48 ± 0.982 (a) | 4.71 ± 0.62 (b) | 4.68 ± 0.371 (b) | | 20.70 | | 18.600 | **<0.0001** |
| Leaf P (mg gDM-1) | 1.27 ± 0.351 | 1.53 ± 0.246 | 1.44 ± 0.122 | | 19.20 | | 4.000 | 0.135 |
| CHL (µg gDM-1) | 3.96 ± 0.98 | 3.91 ± 1.2 | 3.14 ± 1.04 | | 30.1 | | 5.546 | 0.0624 |
| Fv/Fm | 0.726 ± 0.0151 | 0.738 ± 0.0144 | 0.732 ± 0.028 | | 2.74 | | 3.700 | 0.157 |
| ETRmax (µmol m-2s-1) | 47.3 ± 6.45 | 46.1 ± 10.2 | 42.7 ± 9.94 | | 19.60 | | 1.520 | 0.468 |
| Amax (µmol CO2 m-2s-1) | 2.7 ± 0.443 (a) | 3.38 ± 0.172 (a) | 3.63 ± 0.662 (a) | | 18.50 | | 7.420 | **0.0244** |
| GSmax (µmol m-2s-1) | 22 ± 3.69 | 24.3 ± 4.03 | 23.8 ± 4.49 | | 17.00 | | 0.936 | 0.626 |
| Aint (mmol CO2 m-2) | 12.7 ± 2.33 (a) | 17.5 ± 1.41 (b) | 18.3 ± 3.66 (ab) | | 22.10 | | 9.090 | **0.0106** |
| **Root traits** | | | | | | | | |
| STRA (root tips g-1) | 5880 ± 3890 | 3460 ± 803 | 4840 ± 2120 | | 57.20 | | 4.760 | 0.0927 |
| SRL (m g-1) | 0.6 ± 0.085 (ab) | 0.706 ± 0.119 (a) | 0.58 ± 0.0625 (b) | | 16.70 | | 8.880 | **0.0118** |
| ARD (mm) | 30.9 ± 19.2 | 21.9 ± 5.64 | 28.9 ± 14.3 | | 52.40 | | 1.370 | 0.505 |
| RTD (g cm-3) | 0.139 ± 0.0451 | 0.142 ± 0.0368 | 0.145 ± 0.0502 | | 30.10 | | 0.379 | 0.827 |
| Root C (mg gDM-1) | 352 ± 44.1 (a) | 450 ± 18.4 (b) | 466 ± 5.94 (c) | | 13.70 | | 21.100 | **<0.0001** |
| Root N (mg gDM-1) | 3.4 ± 0.53 (a) | 4.26 ± 0.536 (b) | 4.94 ± 0.715 (c) | | 20.60 | | 16.000 | **0.000336** |
| Root P (mg gDM-1) | 0.856 ± 0.067 (a) | 1.03 ± 0.106 (b) | 1.39 ± 0.231 (c) | | 24.70 | | 24.400 | **<0.0001** |

Chart, box and whisker chart

Description automatically generated

Figure S3: Effect of substrate fertility on leaf trichomes. Boxplots for (A) trichomes density (Nb mm-2) and (B) trichome diameter (mm). Different letters indicate significant differences between treatments based on pairwise Wilcoxon test (α<0.05) after significant Kruskal-Wallis (α<0.05). p is the p value of the Kruskal-Wallis test. WS, white sand; WSP, white sand/potting soil; P potting soil.

Chart, box and whisker chart

Description automatically generatedFigure S4: Effect of substrate fertility on leaf N:P ratio. Boxplots for N:P ratio. Different letters indicate significant differences between treatments based on pairwise Wilcoxon test (α<0.05) after significant Kruskal-Wallis (α<0.05). p is the p value of the Kruskal-Wallis test. WS, white sand; WSP, white sand/potting soil; P, potting soil.