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

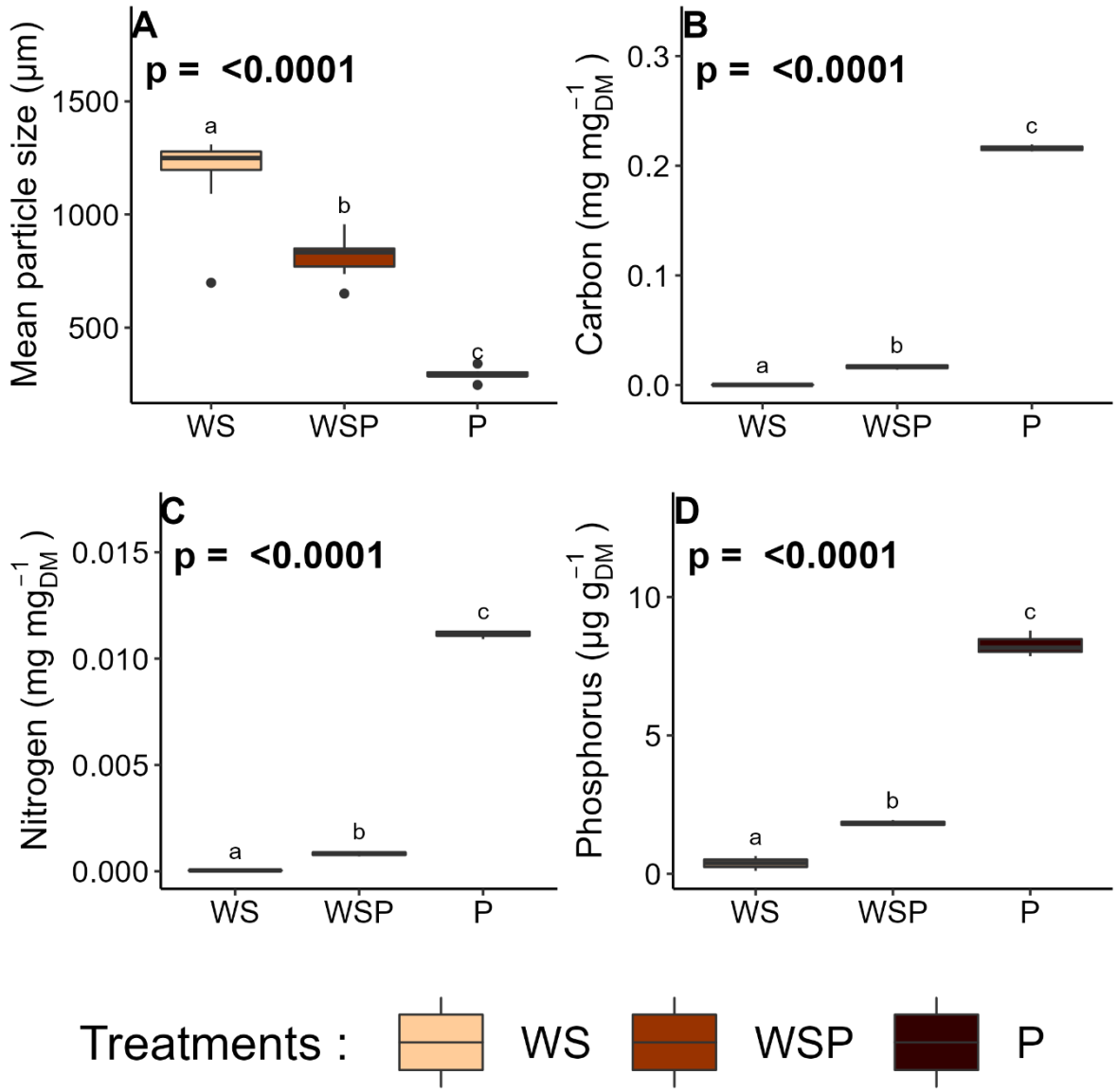

Figure S1 Treatment granulometry and CNP content. Boxplots for (A) substrate mean particle diameter (µm^{-1}), (B) substrate N (mg g$^{-1}_{DM}$), (C) substrate C (mg g$^{-1}_{DM}$), and (D) substrate P (µg g$^{-1}_{DM}$) contents. Different letters indicate significant differences between treatments based on pairwise t test ($\alpha<0.05$) after significant Anova ($\alpha<0.05$). p is the p value of the Anova test. WS, white sand; WSP, white sand/potting soil; P, potting soil

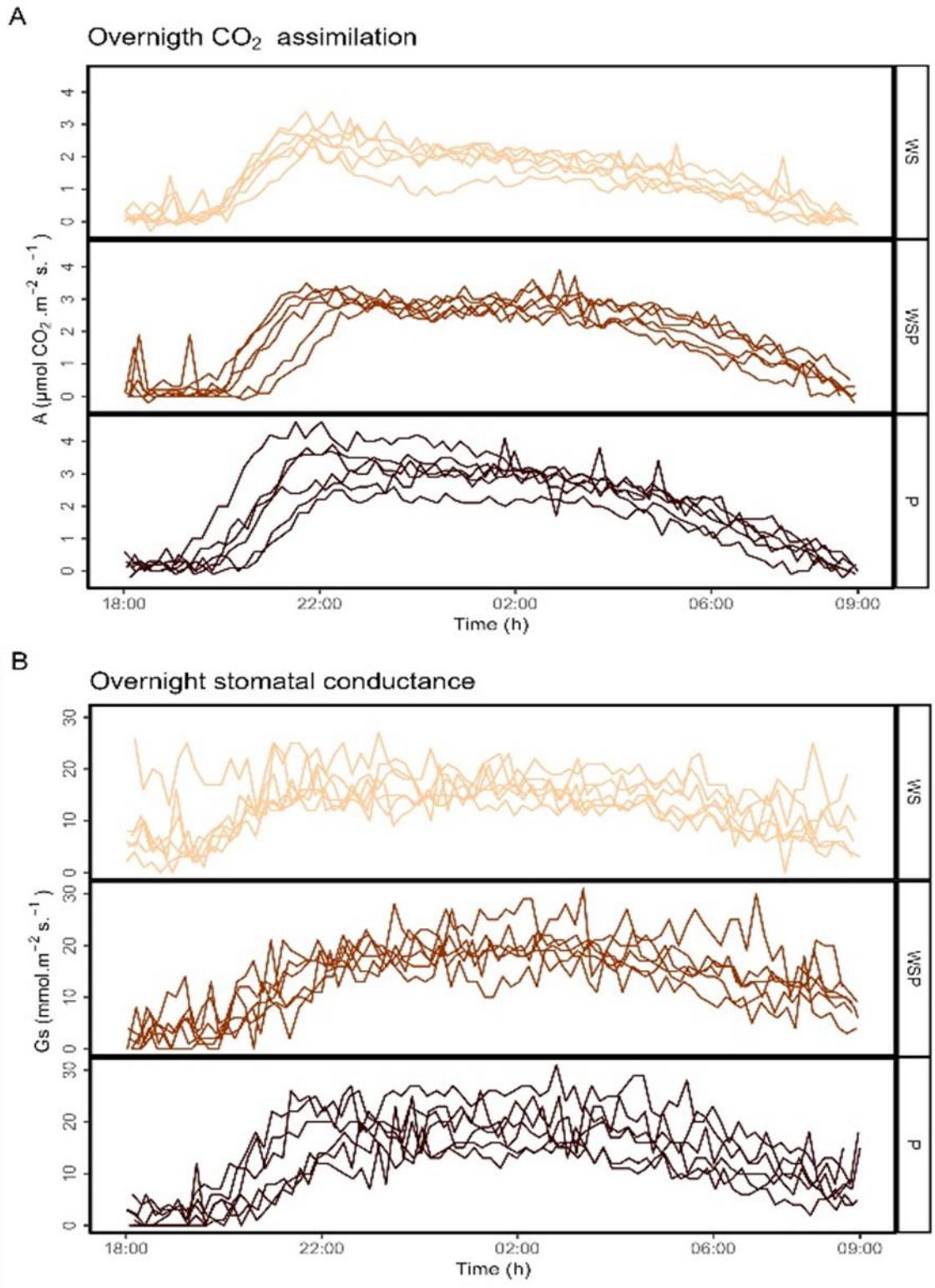

Figure S2: Overnight CO_2 assimilation and stomatal conductance curves. Curves of overnight (A) CO_2 assimilation (A, µmol m^{-2} s^{-1}) and (B) stomatal conductance (Gs, mmol m^{-2} s^{-1}). These measurements were conducted on 6 extra plants per treatments. One plant per day with one of each treatment 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 Chi^2 and P-values are shown. Significant P-values (<0.05) are in bold. Letters indicates significant pairwise differences based on Wilcoxon pairwise test ($\alpha < 0.05$). Growth, A_{max}, GS_{max} and A_{int} 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 (F_v/F_m); maximum electron transport rate (ETR_{max}); maximal assimilation (A_{max}); stomatal conductance (GS_{max}); overnight integrated assimilation (A_{int}); 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 (g_{DM} g_{FM}^{-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 g_{DM}^{-1})	402 ± 11.3 (a)	429 ± 6.2 (b)	427 ± 4.27 (b)	3.47	19.500	**<0.0001**
Leaf N (mg g_{DM}^{-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 g_{DM}^{-1})	1.27 ± 0.351	1.53 ± 0.246	1.44 ± 0.122	19.20	4.000	0.135
CHL (µg g_{DM}^{-1})	3.96 ± 0.98	3.91 ± 1.2	3.14 ± 1.04	30.1	5.546	0.0624
F_v/F_m	0.726 ± 0.0151	0.738 ± 0.0144	0.732 ± 0.028	2.74	3.700	0.157
ETR_{max} (µmol m^{-2} s^{-1})	47.3 ± 6.45	46.1 ± 10.2	42.7 ± 9.94	19.60	1.520	0.468
A_{max} (µmol CO_2 m^{-2} s^{-1})	2.7 ± 0.443 (a)	3.38 ± 0.172 (a)	3.63 ± 0.662 (a)	18.50	7.420	**0.0244**
GS_{max} (µmol m^{-2} s^{-1})	22 ± 3.69	24.3 ± 4.03	23.8 ± 4.49	17.00	0.936	0.626
A_{int} (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 g_{DM}^{-1})	352 ± 44.1 (a)	450 ± 18.4 (b)	466 ± 5.94 (c)	13.70	21.100	**<0.0001**
Root N (mg g_{DM}^{-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 g_{DM}^{-1})	0.856 ± 0.067 (a)	1.03 ± 0.106 (b)	1.39 ± 0.231 (c)	24.70	24.400	**<0.0001**

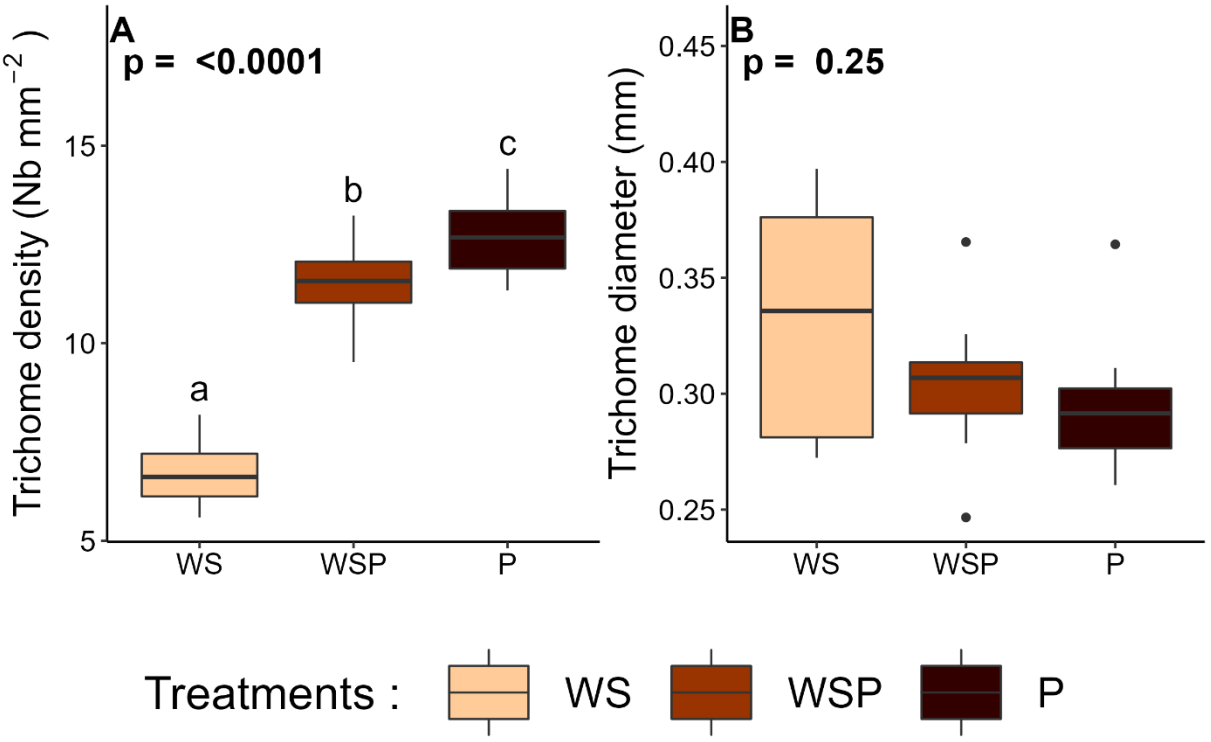

Figure S3: Effect of substrate fertility on leaf trichomes. Boxplots for (A) trichomes density (Nb mm^{-2}) and (B) trichome diameter (mm). Different letters indicate significant differences between treatments based on pairwise Wilcoxon test ($\alpha<0.05$) after significant Kruskal-Wallis ($\alpha<0.05$).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

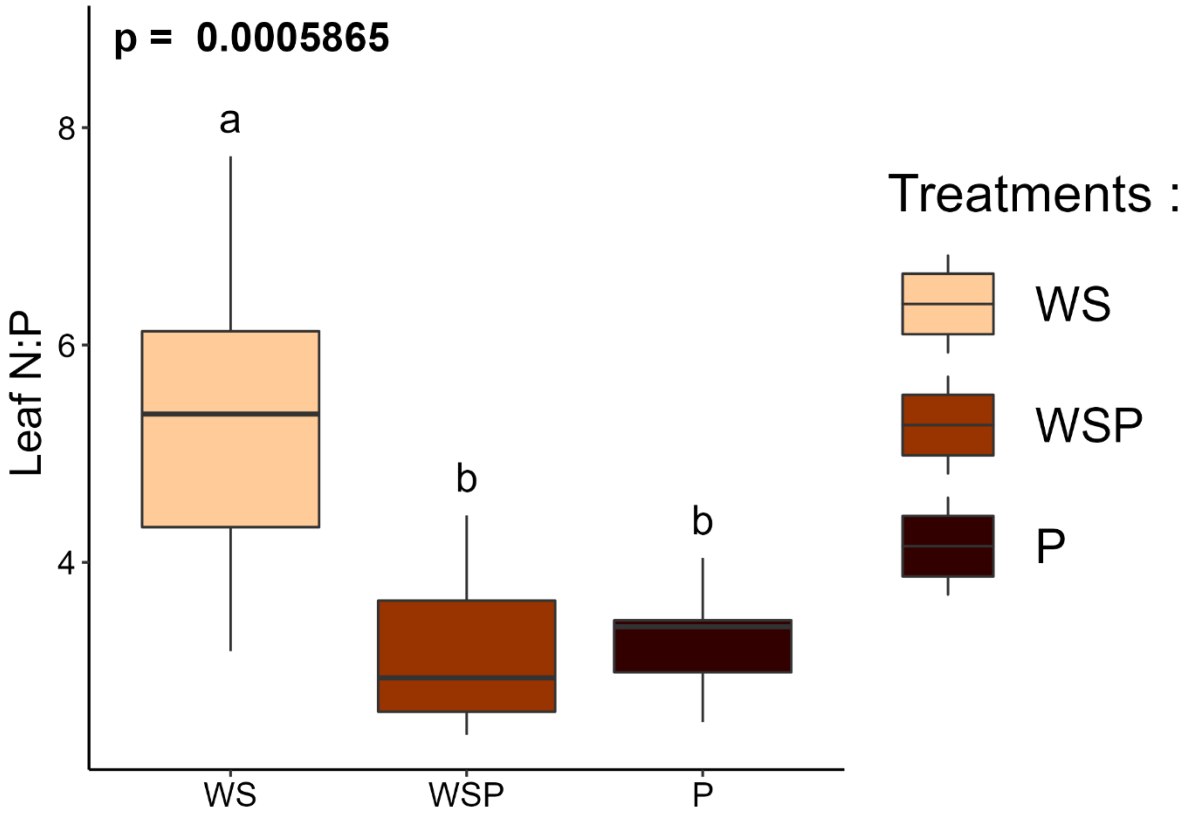

Figure S4: Effect of substrate fertility on leaf N:P ratio. Boxplots for N:P ratio. Different letters indicate significant differences between treatments based on pairwise Wilcoxon test ($\alpha<0.05$) after significant Kruskal-Wallis ($\alpha<0.05$). p is the p value of the Kruskal-Wallis test. WS,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