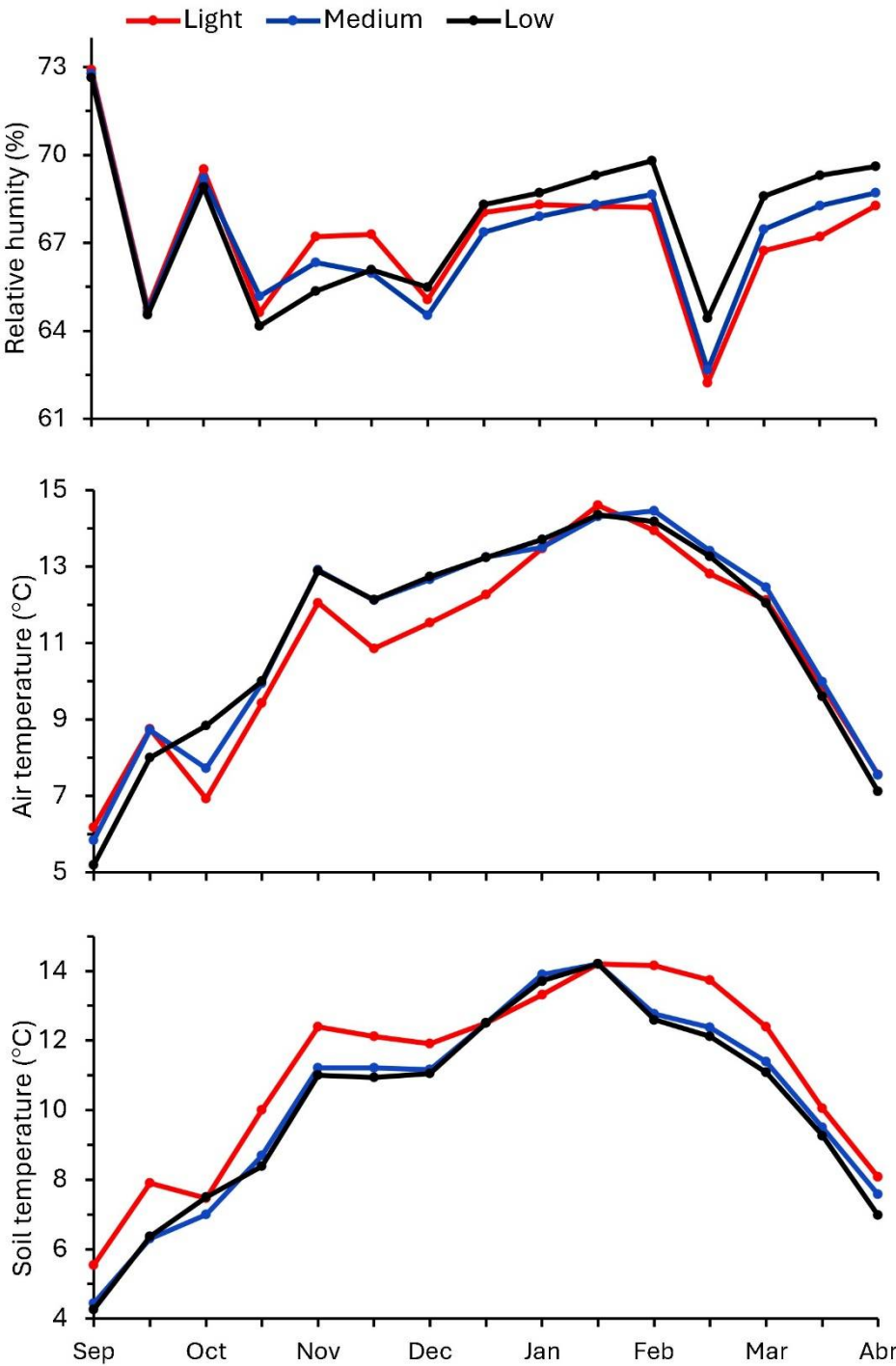


Supplementary Material

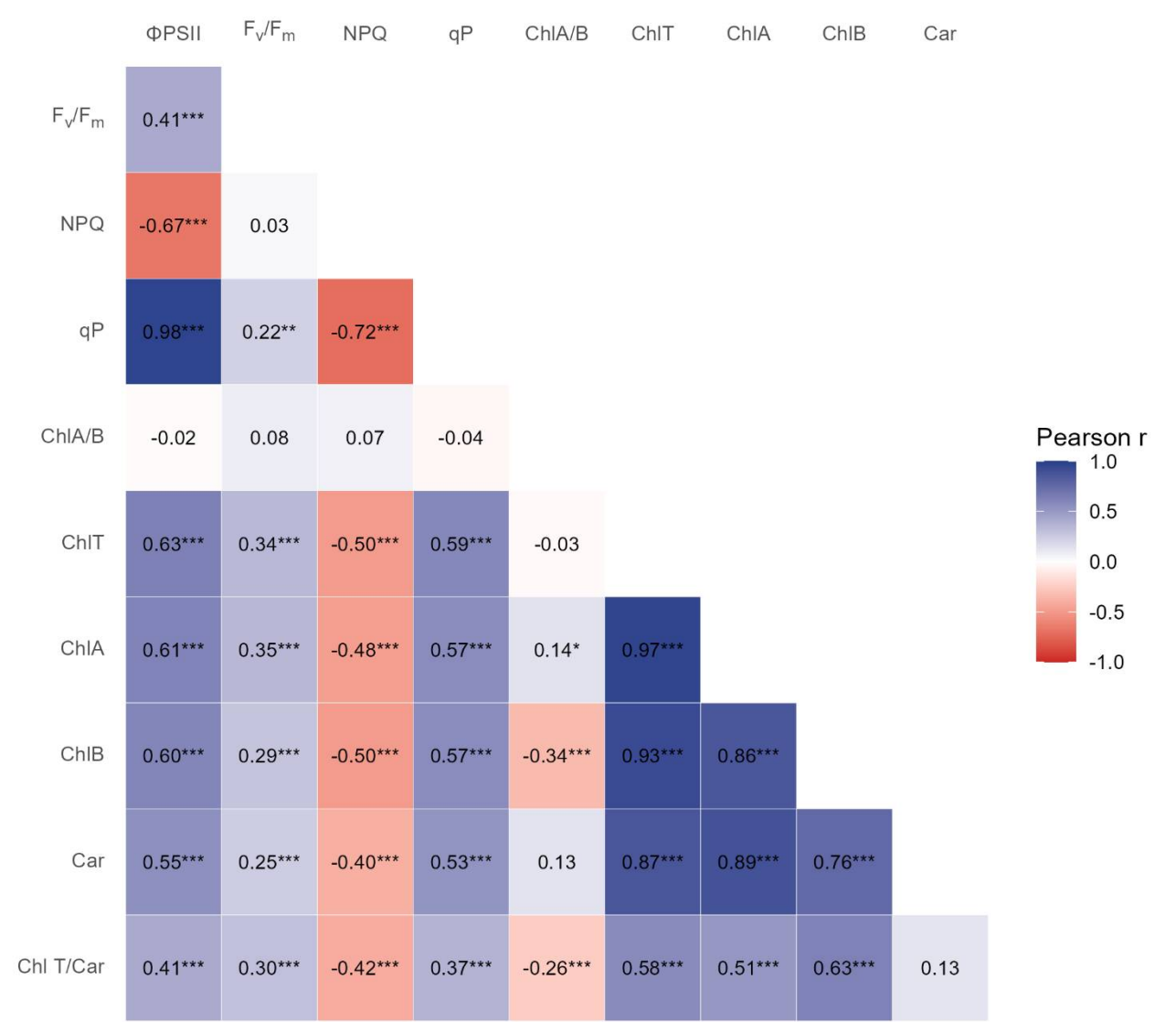
Fig. S1 - Seasonal variation in air relative humidity, air temperature, and soil temperature during the growing season under three light-intensity treatments (high, medium, and low) in the greenhouse. Points represent mean values for each variable, averaged over approximately 15-day intervals (twice per month).



Tab. S1 - ANOVA results of fluorescence parameters in *Nothofagus pumilio* seedlings and considering month, light intensity and soil moisture as factors and their interactions. Analysed parameters were: fluorescence in the absence of photosynthetic light (F_0), maximum fluorescence level (F_m), maximum fluorescence in the light (F'_m), steady-state yield of fluorescence in the light (F_t) and zero level fluorescence in the light (F'_0). F(p) = F statistic and probability at $p = 0.05$.

Main effects	F_0	F_m	F'_m	F_t	F'_0
A = Month F(p)	8.97 (<0.001)	18.63 (<0.001)	33.67 (<0.001)	9.08 (<0.001)	11.55 (<0.001)
B = Light intensity F(p)	50.77 (<0.001)	81.47 (<0.001)	64.38 (<0.001)	68.98 (<0.001)	55.32 (<0.001)
C = Soil moisture F(p)	0.60 (0.261)	0.61 (0.434)	2.03 (0.155)	0.01 (0.921)	0.49 (0.484)
Interactions F(p)					
AxB	2.17 (0.021)	2.33 (0.013)	4.21 (<0.001)	3.31 (0.001)	1.99 (0.036)
AxC	2.14 (0.063)	3.98 (0.002)	4.39 (0.001)	4.30 (0.001)	3.83 (0.002)
BxC	7.23 (0.001)	8.28 (0.001)	3.73 (0.026)	7.40 (0.001)	6.02 (0.003)
AxBxC	1.20 (0.292)	2.16 (0.022)	1.97 (0.038)	1.67 (0.091)	1.98 (0.037)

Fig. S2 - Pearson correlation coefficients between all response variables of *Nothofagus pumilio* seedlings. Asterisks indicating statistical significance: $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.001$ (***). Correlations that are not significant are shown without asterisks. Φ PSII: Efficiency of PSII photochemistry; F_v/F_m : Maximum quantum yield of PSII; NPQ: Non-photochemical quenching; qP: Photochemical quenching; ChlA: Chlorophyll a; ChlB: Chlorophyll b; ChlT: Total chlorophyll; ChlA/ChlB: Ratio between chlorophyll a and b; Car: Carotenoids; ChlT/Car: Ratio between total chlorophyll and carotenoid.



Tab. S2 - Loadings of eco-physiological variables on the first two principal components (PC1 and PC2) from the PCA performed for October, January, and March. ChlB: Chlorophyll b; NPQ: Non-photochemical quenching; Car: Carotenoids; ChlA/ChlB: Ratio between chlorophyll a and b; ChlA: Chlorophyll a; Φ PSII: Efficiency of PSII photochemistry; ChlT/Car: Ratio between total chlorophyll and carotenoids.

Variable	OCTOBER		JANUARY		MARCH	
	PC1	PC2	PC1	PC2	PC1	PC2
ChlB	0.916	-0.312	0.972	-0.097	0.897	0.115
NPQ	-0.176	-0.726	-0.198	0.640	-0.326	0.450
Car	0.694	0.513	0.664	0.674	0.483	0.826
ChlA/B	-0.390	0.626	0.005	0.908	-0.576	0.390
ChlA	0.847	0.147	0.942	0.305	0.609	0.679
Φ PSII	0.463	0.396	0.423	-0.343	0.594	-0.484
ChlT/Car	0.438	-0.599	0.706	-0.529	0.745	-0.346