Effects of Environmental Factors on the Nonstructural Carbohydrates in *Larix principis-rupprechtii*

Supplementary material

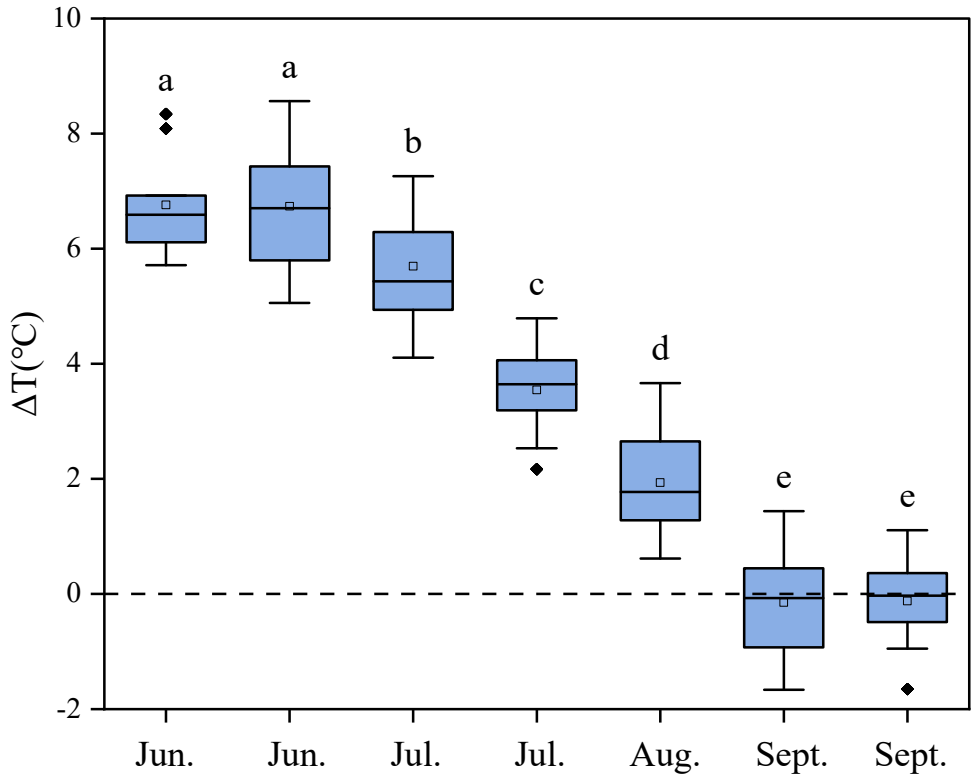

Figure S1. Temperature gradients (ΔT=Ta − Ts) for Ts (soil temperature) to Ta (air temperature) during the growing season. According to the results of Tukey's multiple range test, the boxes with the same lowercase letters are not significantly different at the 0.05 level.

Table S1. Model fitted for the NSC and its components in different organs vs. environmental factors.

		Needle		Shoot		Stem		Root		Overall	
		Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Sugar	α	7.077	**0.006**	4.864	**0.033**	4.004	**0.000**	7.465	**0.000**	4.951	0.103
	β_{Ta}	-0.512	**0.000**	0.213	0.118	0.065	0.160	-0.034	0.692	-0.017	0.783
	β_{Ts}	0.922	**0.000**	0.711	**0.000**	0.015	0.827	0.115	0.368	0.486	**0.000**
	B_{VPD}	9.669	**0.006**	2.143	0.517	-2.147	0.060	0.999	0.637	3.471	**0.026**
	B_{SWC}	-0.070	0.989	-3.091	0.499	-5.90	**0.002**	-3.366	0.212	-3.583	0.146
	$\delta_{Altitude}$	1.214		0.706		0.163		0.138		0.451	
	δ_{Organ}									19.23	
	ε	13.403		23.37		1.403		7.849		4.045	
	R^2m	0.1083		0.172		0.169		0.012		0.034	
	R^2c	0.1824		0.196		0.256		0.029		0.598	
Starch	α	13.548	**0.000**	11.42373	**0.000**	15.561	**0.000**	20.05	**0.000**	14.693	**0.000**
	β_{Ta}	-0.220	0.111	-0.73755	**0.000**	-0.304	**0.016**	-1.145	**0.000**	-0.684	**0.000**
	β_{Ts}	0.575	**0.006**	1.12381	**0.010**	0.278	0.138	0.682	**0.000**	0.842	**0.000**
	B_{VPD}	10.835	**0.002**	8.28946	**0.000**	1.323	0.664	3.404	0.229	7.846	**0.000**
	B_{SWC}	-25.36	**0.000**	-5.46481	0.102	-4.897	0.307	-2.404	0.395	-10.834	**0.000**
	$\delta_{Altitude}$	4.136		0.859		1.26		0.000		0.922	
	δ_{Organ}									2.482	
	ε	11.969		8.683		10.10		16.92		13.70	
	R^2m	0.268		0.254		0.052		0.283		0.132	
	R^2c	0.456		0.321		0.157		0.283		0.305	
NSC	α	19.271	**0.000**	16.032	**0.000**	18.641	**0.000**	27.693	**0.000**	19.440	**0.000**
	β_{Ta}	-0.713	**0.000**	-0.5386	**0.005**	-0.230	0.118	-1.191	**0.000**	-0.706	**0.000**
	β_{Ts}	1.4771	**0.000**	1.872	**0.000**	0.295	0.180	0.825	**0.003**	1.344	**0.000**
	B_{VPD}	20.805	**0.000**	11.077	**0.018**	-0.428	0.904	4.778	0.271	11.616	**0.000**
	B_{SWC}	-21.92	**0.011**	-8.652	0.232	-8.728	0.138	-6.784	0.214	-14.235	**0.000**
	$\delta_{Altitude}$	8.017		3.288		2.726		0.439		2.58	
	δ_{Organ}									12.94	
	ε	28.00		44.41		13.479		33.51		35.85	
	R^2m	0.179		0.188		0.055		0.171		0.089	
	R^2c	0.362		0.244		0.214		0.182		0.364	
SSR	α	0.579	0.164	0.471	**0.007**	0.314	**0.000**	0.199	0.260	0.299	0.329
	β_{Ta}	-0.056	**0.022**	0.080	**0.000**	0.010	**0.001**	0.034	**0.003**	0.029	**0.000**
	β_{Ts}	0.082	**0.025**	-0.041	**0.008**	-0.007	0.095	0.002	0.905	-0.002	0.846
	B_{VPD}	0.275	0.645	-0.497	0.053	-0.277	**0.000**	0.226	0.429	-0.098	0.582
	B_{SWC}	1.891	**0.046**	0.384	0.241	-0.362	**0.024**	-0.097	0.777	0.581	**0.041**
	$\delta_{Altitude}$	0.036		0.002		0.00002		0.001		0.004	
	δ_{Organ}									0.241	
	ε	0.396		0.148		0.007		0.146		0.186	
	R^2m	0.125		0.206		0.181		0.072		0.022	
	R^2c	0.199		0.216		0.184		0.083		0.578	

SSR: soluble sugar–starch ratios; Significant parameters are in bold. Following the equation, α is the intercept of the fixed effect; β_{Ta}, β_{Ts}, β_{VPD}, and β_{SWC} are coefficients of air temperature (Ta, °C), soil temperature (Ts, °C), vapor pressure deficit (VPD, kPa), and soil water content (SWC, m^3/m^3) in the model, respectively; $\delta_{Altitude}$ and δ_{Organ} are the standard deviation for the altitude and organ random effect, respectively; and ε is the final residual. R^2m: caused by fixed effects R^2. R^2c: caused by both fixed effects and random effects R^2.

Table S2. Model fitted for the NSC and its components in different organs vs. ΔT (ΔT=Ta − Ts).

		Needle		Shoot		Stem		Root		Overall	
		Estimate	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*	*Estimate*	*p*
Sugar	α	11.895	**0.000**	11.698	**0.000**	2.164	**0.002**	7.112	**0.000**	8.123	**0.033**
	$\beta_{\Delta T}$	-0.293	**0.001**	0.061	0.503	0.012	0.680	-0.018	0.731	-0.031	0.439
	$\delta_{Altitude}$	0.921		0.461		0.538		0.106		0.423	
	δ_{Organ}									19.257	
	ε	14.038		27.621		1.501		7.846		14.88	
	R^2m	0.048		0.001		0.0006		0.0004		0.0002	
	R^2c	0.106		0.017		0.264		0.014		0.570	
Starch	α	8.720	**0.000**	13.839	**0.000**	13.719	**0.000**	15.435	**0.000**	13.166	**0.000**
	$\beta_{\Delta T}$	0.242	**0.006**	-0.511	**0.000**	-0.209	**0.006**	-0.768	**0.000**	-0.376	**0.000**
	$\delta_{Altitude}$	5.727		0.677		2.002		0.077		1.073	
	δ_{Organ}									2.477	
	ε	13.555		9.282		9.944		18.576		14.179	
	R^2m	0.026		0.254		0.030		0.205		0.063	
	R^2c	0.315		0.321		0.193		0.208		0.251	
NSC	α	20.60	**0.000**	25.544	**0.000**	15.873	**0.000**	22.553	**0.000**	21.288	**0.000**
	$\beta_{\Delta T}$	-0.048	0.719	-0.452	**0.000**	-0.194	**0.028**	-0.789	**0.000**	-0.406	**0.000**
	$\delta_{Altitude}$	9.74		2.089		4.748		0.225		2.43	
	δ_{Organ}									12.96	
	ε	31.10		51.531		13.267		35.028		37.33	
	R^2m	0.0005		0.032		0.018		0.126		0.026	
	R^2c	0.239		0.069		0.277		0.131		0.310	
SSR	α	1.529	**0.000**	0.860	**0.000**	0.163	**0.000**	0.525	**0.000**	0.735	0.057
	$\beta_{\Delta T}$	-0.067	**0.000**	0.050	**0.000**	0.00025	**0.001**	0.025	**0.001**	0.013	**0.005**
	$\delta_{Altitude}$	0.0332		0.003		0.0010		0.002		0.0035	
	δ_{Organ}									0.242	
	ε	0.404		0.163		0.0078		0.150		0.192	
	R^2m	0.082		0.115		0.006		0.033		0.003	
	R^2c	0.152		0.131		0.114		0.043		0.562	

SSR: soluble sugar–starch ratios; Significant parameters are in bold. Following the equation, α is the intercept of the fixed effect; β_{Ta} is the coefficient of ΔT [air temperature (Ta, °C) minus soil temperature (Ts, °C)] in the model; $\delta_{Altitude}$ and δ_{Organ} are the standard deviation for the altitude and organ random effect, respectively; and ε is the final residual. R^2m: caused by fixed effects R^2. R^2c: caused by both fixed effects and random effects R^2.