Ecography

ECOG-03326
Moreira, X., Castagneyrol, B., Abdala-Roberts, L., Berny-Mier y Teran, J. C., Timmermans, B. G. H., Bruun, H. H., Covelo, F., Glauser, G., Rasmann, S. and Tack, A. J. M. 2017. Latitudinal variation in plant chemical defences drives latitudinal patterns of leaf herbivory. – Ecography doi: 10.1111/ecog.03326

Supplementary material

Appendix 1

Table A1. Generalized linear mixed models testing the effect of latitude on leaf herbivory and plant traits in *Quercus robur* trees belonging to 38 populations. We included population as a random factor. Degrees of freedom, t-values and *P*-values are shown. Significant ($P < 0.05$) *P*-values are typed in bold.

Variable	$DF_{num,den}$	t-value	*P*-value
Herbivore damage	1, 147	-5.50	**<0.001**
Total phenolics	1, 151	4.25	**<0.001**
Flavonoids	1, 151	2.30	**0.023**
Lignins	1, 151	-5.61	**<0.001**
Condensed tannins	1, 151	9.91	**<0.001**
Hydrolysable tannins	1, 151	1.67	0.096
Phosphorus	1, 151	2.01	**0.046**
Nitrogen	1, 151	3.13	**0.002**

Table A2. Multiple regression testing for the effects of the concentration of leaf flavonoids, lignins, condensed tannins, and hydrolysable tannins on leaf herbivory in *Quercus robur* trees belonging to 38 populations. β = slope estimator, r^2 = partial correlation coefficient. Significant ($P < 0.05$) *P*-values are typed in bold.

	Leaf herbivory		
	β	r^2	*P*-value
Flavonoids	-0.053	0.014	0.497
Lignins	-0.183	0.002	0.808
Condensed tannins	-0.363	0.256	**0.002**
Hydrolysable tannins	0.139	0.069	0.126

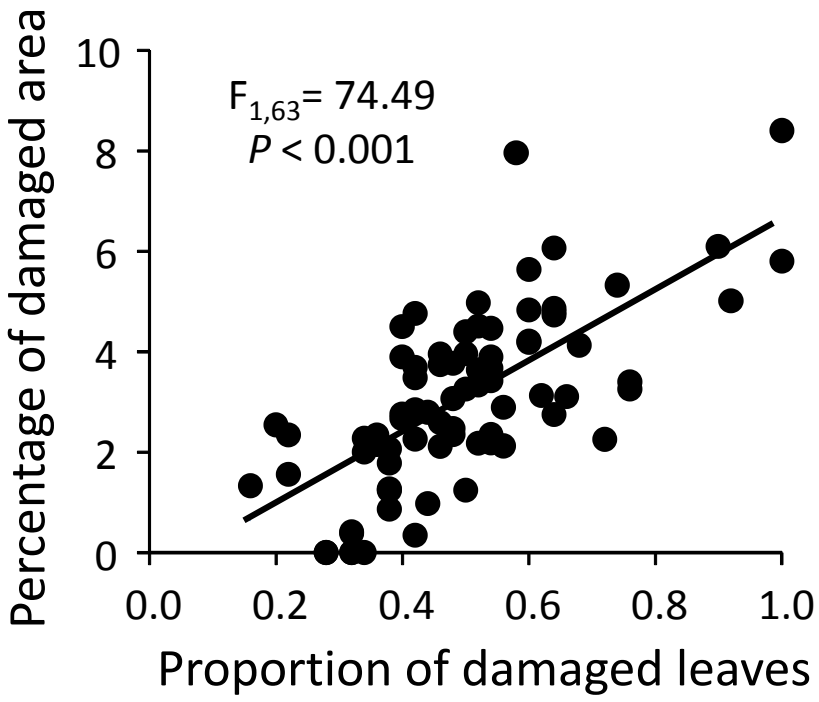

Figure A1. Relationship between the percentage of herbivore-damaged leaf area and the proportion of herbivore-damaged leaves in *Quercus robur* individuals sampled from 16 populations distributed from northern Spain to Denmark. For this analysis, we performed a generalized linear mixed model (PROC MIXED in SAS 9.4) using tree as unit of replication and including population as a random effect. F-value, degrees of freedom and *P*-values are shown. Circles represent individual trees (N = 80 trees).

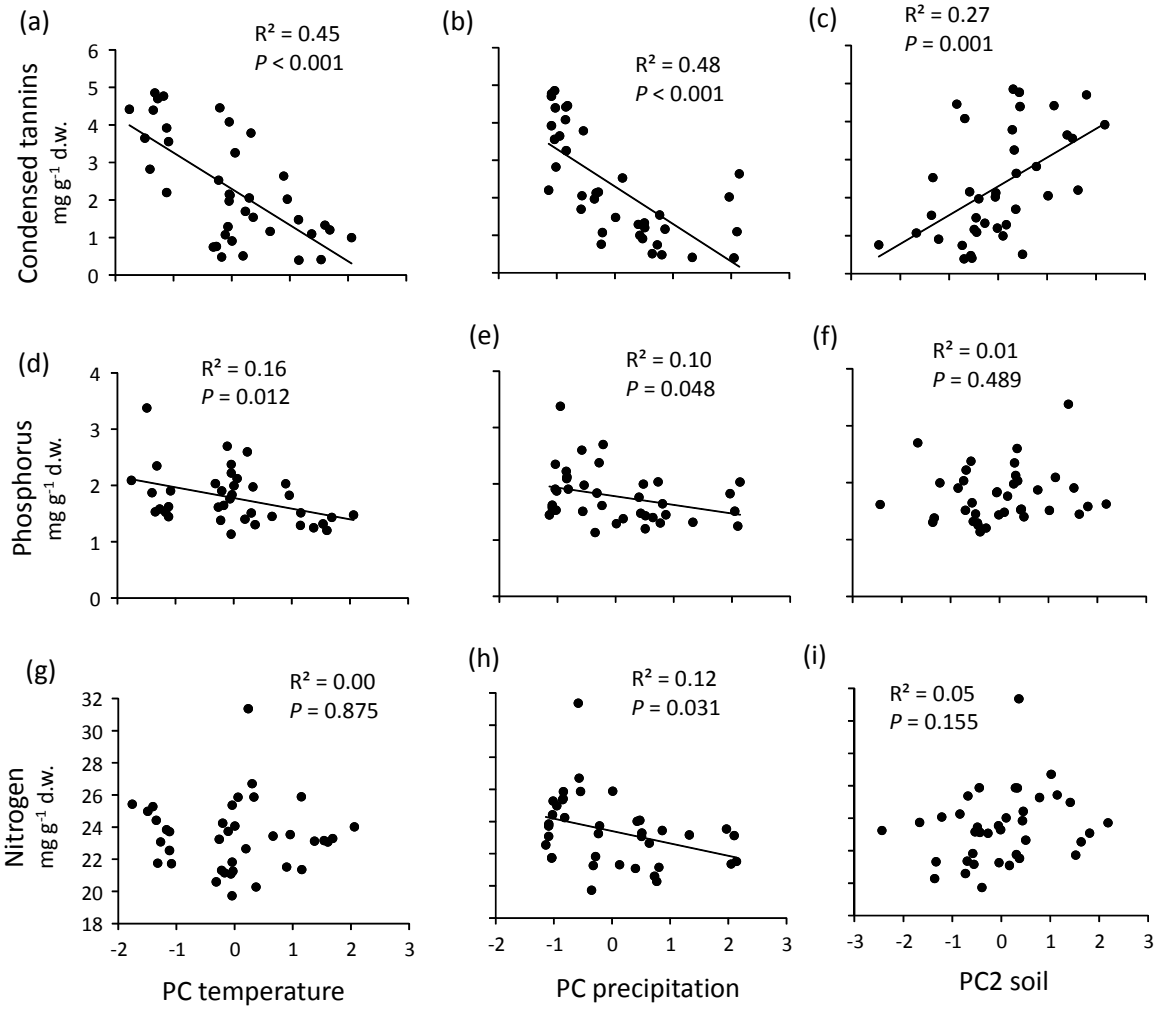

Figure A2. Pairwise correlations between PC temperature, PC precipitation and PC2 soil and concentration of condensed tannins (a, b, c), phosphorus (d, e, f) and nitrogen (g, h, i) in leaves of *Quercus robur* trees from 38 populations distributed along a latitudinal transect from Spain to Sweden. R-squared coefficients (R^2) and *P*-values are shown. Circles represent population means (N = 5 trees per population).

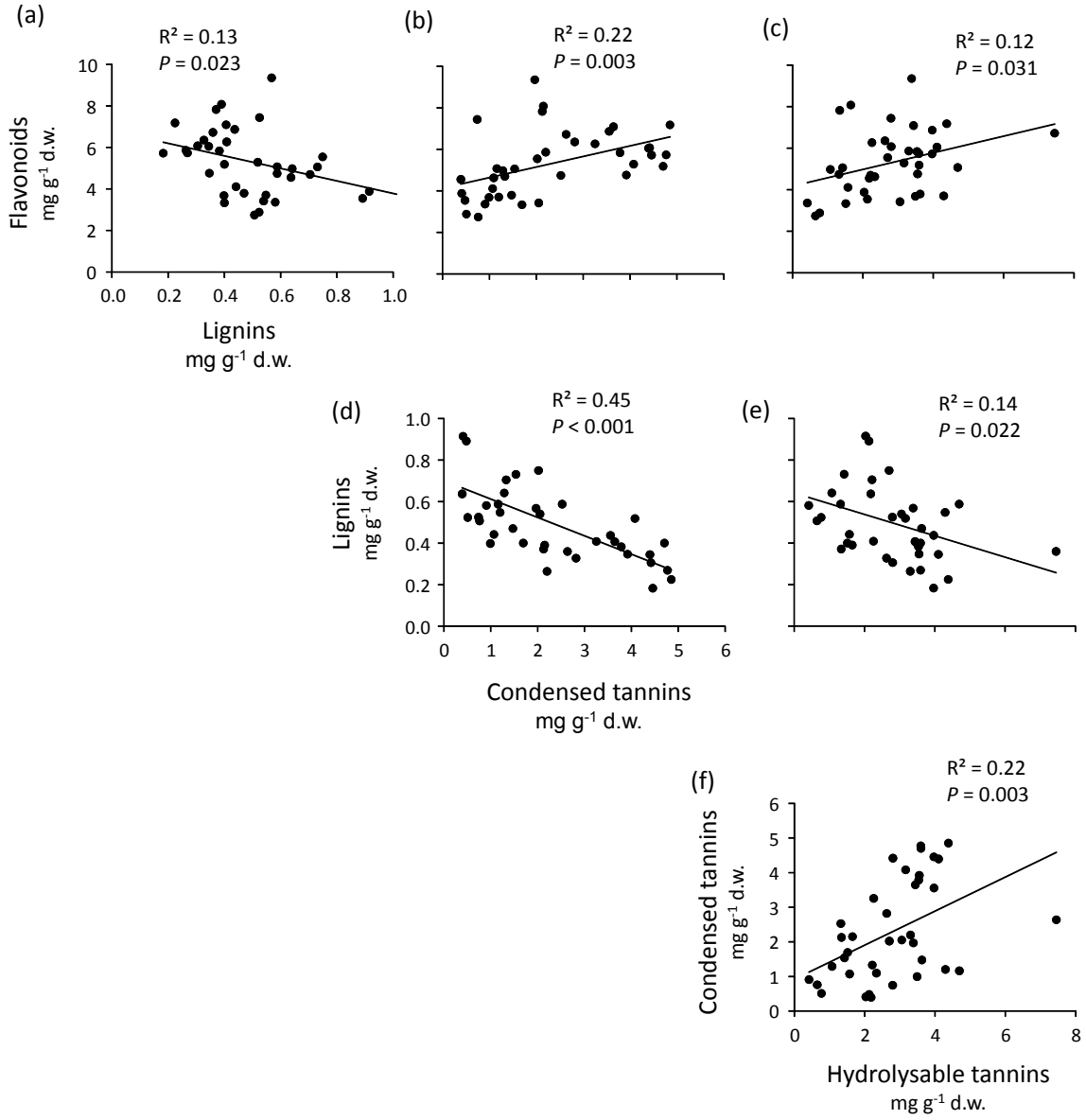

Figure A3. Pairwise correlations between concentration of flavonoids, lignins, and condensed tannins in leaves of *Quercus robur* trees from 38 populations distributed along a latitudinal transect from Spain to Sweden. R-squared coefficients (R^2) and *P*-values are shown. Circles represent population means (N = 5 trees per population).