Online Appendix

Bogdziewicz et al. (2017). The Moran effect and environmental vetoes: phenological synchrony and drought drive seed production in a Mediterranean oak. Proceedings of the Royal Society B

Table S1. Full output of the fitted models, after removing non-significant interaction terms. Site-level average seed production is included as response variable, and forest plot as random effect. × denotes interaction term. Note that the 1-order effects should not be directly interpreted if the 2-order significant interaction terms are included (Zuur et al. 2009). Explanatory variables were standardized before model fitting to allow direct comparisons of effect sizes.

a) Crop size vs. weather variables.

Fixed effect	β (SE)	t-value	P-value
Intercept	4.12 (0.20)	19.99	> 0.001
Average mean max temp. during pollen season (current year)	0.19 (0.18)	1.08	0.28
Average mean max temp. during the pollen season (previous year)	0.19 (0.16)	1.15	0.24
Average per day rainfall during pollen season	0.15 (0.14)	1.07	0.28
Summed rainfall January-June	1.44 (0.13)	10.50	> 0.001
Crop size in the previous year	-0.12 (0.14)	-0.85	0.39
Average per day rainfall during last year pollen season	-0.76 (0.16)	-4.72	> 0.001
Average mean max temp. during the pollen season in the current year × average mean max temp. during the pollen season in the previous year	0.57 (0.13)	4.30	> 0.001
Crop size in the previous year × summed rainfall January-June	0.55 (0.17)	3.25	0.001
Average mean max temp. during the pollen season × average per day rainfall in the previous year	0.77 (0.14)	5.43	> 0.001

b) Crop size vs. pollen parameters and spring water deficit.

Fixed effect	β (SE)	t-value	P-value
Intercept	4.86 (0.23)	19.88	> 0.001
Length of the pollen season	-0.11 (0.19)	-0.60	0.55
Pollen abundance	-0.32 (0.19)	-1.63	0.11
Crop size in the previous year	0.21 (0.14)	1.55	0.12
Spring water deficit	-1.10 (0.18)	-5.99	> 0.001
Summer rainfall January-June	0.79 (0.20)	3.87	> 0.001
Length of the pollen season in the previous year	0.28 (0.12)	2.33	0.02
Spring water deficit in the previous year	0.14 (0.30)	0.48	0.62

Length of the pollen season × spring water deficit	-0.97 (0.15)	-6.50	> 0.001
Length of the pollen season (current year) × length of the pollen season (previous year)	0.58 (0.18)	3.17	0.002
Spring water deficit (current year) × spring water deficit (previous year)	0.54 (0.24)	2.23	0.03

Table S2. Comparison of the models with the onset of flowering and the length of the pollen season (proxy of phenology synchrony) as explanatory variables for the acorn crop size. Models are compared using the AICc, as a rule of thumb models that have ΔAIC ~ 2 are similarly supported by the data, while models between 4 and 7 have considerably less support, and models with ΔAICc > 10 are essentially not supported. Note that models that simultaneously include both onset of flowering and length of the pollen season could not be build due to high collinearity of these two variables (variance inflation factor = 4.01). logLik – log-likelihood; AICc – Akaike's information criterion adjusted for small sample size; $\Delta AICc = AICc_i - minAICc$; w_i – model weight. × denotes interaction term.

Model	**D.f.**	**logLik**	**AICc**	**ΔAICc**	**w_i**
Length of the pollen season + Total pollen + Crop size in the previous year + Water deficit + Water deficit × Length of the pollen seasons + Summed rain January - July + Water deficit in the previous year × Water deficit	11	-338.74	701.0	0	0.98
Onset of flowering + Total pollen + Crop size in the previous year + Water deficit + Water deficit × Onset of flowering + Summed rain January - July + Water deficit in the previous year × Water deficit	11	-343.01	709.5	8.54	0.02

Figure 1S. Map of study sites. Pollen stations are given in red, acorn production monitoring plots in yellow.

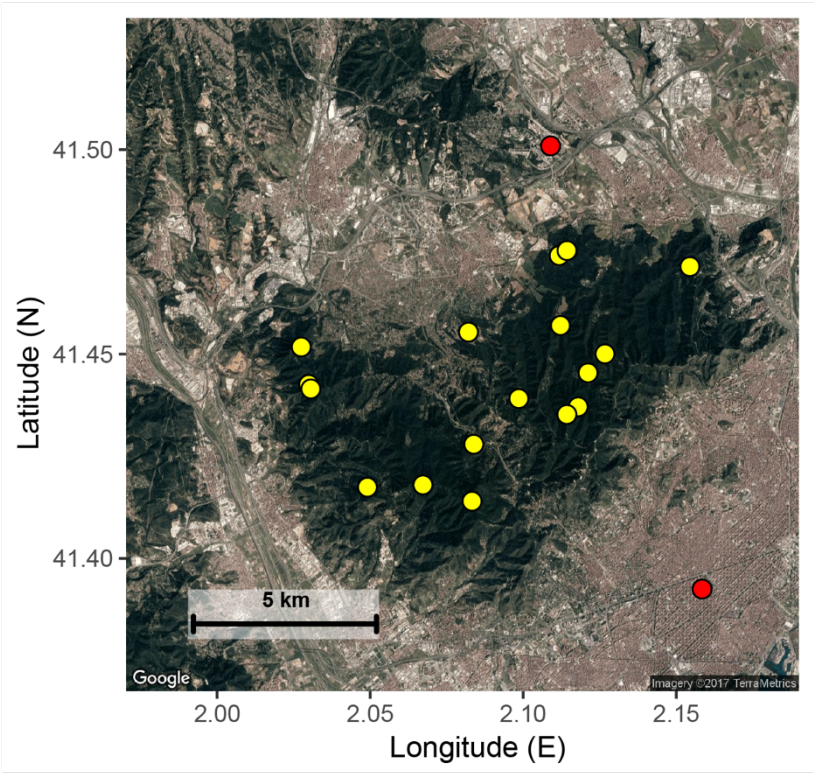

Figure 2S. The relationships between flowering onset, temperature during pollen seasons, and length of the pollen season. Pearson correlation for the mean maximum temperature during pollen season and flowering season equals 0.56 ($p < 0.001$), while for the length of the pollen season and flowering onset -0.62 ($p < 0.001$).