## **Supporting Information Tables S1-S3**

## **New Phytologist Supporting Information**

Article title: Belowground abiotic and biotic heterogeneity shapes aboveground infection

outcomes and spatial divergence in a host-parasite interaction Authors: Tack AJM, Laine A-LL, Burdon JJ, Bissett A, Thrall PH

The following Supporting Information is available for this article:

- **Table S1.** Methods and units for quantification of the soil structure and chemistry. Samples
- were analysed by Incitec Pivot Ltd, Southbank, Australia
- 3 (http://www.incitecpivotfertilisers.com.au/Soil%20Plant%20Tests/Nutrient%20Advantage)

Measurement	Method	Unit				
pН	1:5 CaCl <sub>2</sub>					
Electric conductivity						
(EC)	Sat Ext	dS/m				
Organic carbon (OC)		%				
Soil texture						
Nitrate nitrogen	$NO_3$	mg/kg				
Phosphorus	Colwell	mg/kg				
Potassium	Amm-acet	Meq/100g				
Calcium	Amm-acet	Meq/100g				
Magnesium	Amm-acet	Meq/100g				
Sodium	Amm-acet	Meq/100g				
Aluminium	KCl	mg/kg				
Chloride		mg/kg				
Copper	DTPA	mg/kg				
Iron	DTPA	mg/kg				
Manganese	DTPA	mg/kg				
Zinc	DTPA	mg/kg				
Sulfate	KCl40	mg/kg				

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**Table S2.** Experimental inoculation matrix. Shown are the number of inoculations for combinations of plant lines (rows) and pathogen strains (columns). Due to restricted seed availability, we subdivided plant lines and pathogen strains in three blocks (which can be identified by background colour). Selected plant-pathogen combinations were tested in four environmental conditions based on moisture ('low', 'high') and soil biota ('bog type', 'hill type'). Seeds were missing or did not germinate for 44 plants, and an additional three plants died during the experiment; further deviations from the original design are due to seed limitation. Plant lines and pathogen strains from the hill ecotype are shown in italic font.

		G2-		P1-		CBL BOG-		CBL BOG-		G2-	P1-				CBL BOG-	G2-		P1-			
	CBL HILL-3	6	G3-9	6	SH2-4	2	CEM-3	11	CBL HILL-10	8	9	CEM-5	G3-4	SH2-7	6	2	G3-8	3	SH2-10	CBL HILL-4	CEM-7
CBL BOG-3	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CBL HILL-4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CEM-5	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G2-3	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P1-7	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SH2-5	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G3-2	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G2-5	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CBL BOG-4	0	0	0	0	0	0	0	4	4	4	4	4	4	4	0	0	0	0	0	0	0
CBL HILL-10	0	0	0	0	0	0	0	4	4	4	4	4	4	4	0	0	0	0	0	0	0
CEM-10	0	0	0	0	0	0	0	4	4	4	4	4	4	4	0	0	0	0	0	0	0
G3-5	0	0	0	0	0	0	0	4	4	4	4	4	4	4	0	0	0	0	0	0	0
SH2-9	0	0	0	0	0	0	0	4	4	4	4	4	4	4	0	0	0	0	0	0	0
P1-2	0	0	0	0	0	0	0	4	4	4	4	0	0	0	0	0	0	0	0	0	0
CBL BOG-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4
CBL HILL-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4
CEM-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4
G3-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	3
SH2-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	3	3
P1-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0

**Table S3.** F-values and associated degrees of freedom for the statistical results reported in Table 1 in the main manuscript. Analysed are the effect of host ecotype, pathogen ecotype, soil humidity, soil biota and their interactions on host resistance and pathogen performance for the interaction between flax rust (*Melampsora lini*) and wild flax (*Linum marginale*).

Response variable	Host ecotype	Pathogen ecotype	Soil moisture	Soil biota	Host ecotype x Pathogen ecotype	Host ecotype x Soil humidity	Host ecotype x Soil biota	Pathogen ecotype x Soil humidity	Pathogen ecotype x Soil biota	Soil humidity x Soil biota	Host ecotype x Pathogen ecotype x Soil humidity	Host ecotype x Soil humidity x Soil biota	Pathogen ecotype x Soil humidity x Soil biota	Host ecotype x Pathogen ecotype x Soil humidity x Soil biota
Infectivity (n = 541)	F <sub>1,5</sub> = 11.81		-	-	-	-	-	-	-	-	-	-	-	-
Resistance level (n = 541)	$F_{1,5} = 7.06$	$F_{1,5} = 3.52$	$F_{1,499} = 1.74$	-	$F_{1,499} = 8.61$	-	-	$F_{1,499} = 6.86$	-	-	-	-	-	-
Leaf abscission (n = 541)	F <sub>1,5</sub> = 16.89	$F_{1,5} = 5.42$	-	$F_{1,500} = 5.14$	$F_{1,500} = 5.39$	-	-	-	-	-	-	-	-	-
Incubation period (n = 531)	$F_{1,5} = 5.80$	$F_{1,5} = 0.68$	$F_{1,489} = 0.39$		$F_{1,489} = 6.66$	-	-	F <sub>1,489</sub> = 7.47	-	-	-	-	-	-
Latent period (n = 517)	$F_{1,5} = 3.06$	$F_{1,5} = 0.96$	$F_{1,471} = 0.06$	$F_{1,471} = 0.00$	F <sub>1,471</sub> = 4.50	-	-	$F_{1,471} = 0.73$	$F_{1,471} = 0.32$	F <sub>1,471</sub> = 6.01	=	=	F <sub>1,471</sub> = 4.62	-
Time between flecking and pustules (n = 517)	-	F <sub>1,5</sub> = 6.46	-	-	-	-	-	-	-	-	-	-	-	-