

1 **Evidence for niche differentiation in the environmental responses of co-occurring**  
2 **mucoromycotinian fine root endophytes and glomeromycotinian arbuscular mycorrhizal**  
3 **fungi**

4 Felipe E. Albornoz<sup>1</sup>, Suzanne Orchard<sup>1</sup>, Rachel J. Standish<sup>2</sup>, Ian A. Dickie<sup>3</sup>, Gary D. Bending<sup>4</sup>,  
5 Sally Hilton<sup>4</sup>, Tim Lardner<sup>1</sup>, Kevin J. Foster<sup>1</sup>, Deirdre B. Gleeson<sup>1</sup>, Jeremy Bougoure<sup>1</sup>, Martin J.  
6 Barbetti<sup>1</sup>, Ming Pei You<sup>1</sup>, Megan H. Ryan<sup>1</sup>.

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8 Supporting Information

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10 <sup>1</sup> UWA School of Agriculture and Environment, and the UWA Institute of Agriculture, The  
11 University of Western Australia, 35 Stirling Hwy, Crawley (Perth), WA 6009, Australia.

12 <sup>2</sup> Environmental and Conservation Sciences, College of Science, Health, Engineering and  
13 Education, Murdoch University, 90 South Street, Murdoch, WA 6150, Australia.

14 <sup>3</sup> School of Biological Science, University of Canterbury, Christchurch, New Zealand.

15 <sup>4</sup> School of Life Sciences, University of Warwick, Coventry, CV4 7AL, United Kingdom

16 **Author for correspondence:** Dr. Felipe Albornoz (Ph +61 8 64885914; Email:

17 [felipe.albornoz@uwa.edu.au](mailto:felipe.albornoz@uwa.edu.au); [felipealbornoz.ramirez@gmail.com](mailto:felipealbornoz.ramirez@gmail.com)).

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20 **Tables**

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22 **Table S1.** Data used in this study. Monthly mean minimum temperature and mean annual rainfall were obtained from the Australian Bureau of Meteorology  
 23 (<http://www.bom.gov.au>). Nutrients are phosphorus (P), organic carbon (OC), aluminium (Al).

Sample ID	Monthly mean minimum temperature (°C)	Mean annual rainfall (mm)	Richness of AMF	Richness of FRE	Root colonisation by AMF (%)	Root colonisation by FRE (%)	Soil pH (in CaCl <sub>2</sub> )	Soil plant available P (mg kg <sup>-1</sup> )	Soil OC (%)	Soil plant available Al (mg kg <sup>-1</sup> )
22.2	6	597	42.7	6.0	45.1	0.0	5.2	26	2.9	0.1
24.1	7.2	437	33.9	9.2	34.1	4.9	6.9	24	1.3	0.1
25	8.3	439	57.6	7.9	60.3	10.1	4.6	8	1.3	0.2
26	9.9	1198	76.9	8.5	54.2	5.2	4.2	14	5.3	0.4
28	9.9	1198	70.7	12.2	59.1	51.4	4.4	71	6.9	0.3
29	9.9	1081	80.6	9.9	46.3	26.2	4.9	28	4.8	0.2
30	9.9	1081	62.6	15.4	23.5	14.6	4.4	45	5.6	0.3
31	9.9	1198	74.6	9.5	57.0	30.8	4.8	22	3.6	0.3
32	9.9	1198	56.1	14.2	46.0	47.8	4.4	63	2.7	0.5
33	9.9	1169	66.2	7.4	52.3	12.4	5.1	15	2.8	0.2
34	9.9	1169	45.9	8.7	37.8	26.1	4.3	22	2.6	1.0
35	9.9	1081	55.6	1.1	63.9	2.3	7.0	25	1.3	0.1
36	8.1	1069	86.2	10.2	49.5	25.6	5.2	52	3.7	0.2
37.2	8.9	645	56.6	9.3	21.2	6.0	5.6	15	1.1	0.1
38.2	8.3	700	26.0	6.6	23.4	23.3	4.8	69	4.1	0.2
41.1	4.2	575	32.6	13.2	72.5	0.0	5.0	44	3.9	0.1
41.2	4.2	575	53.2	6.2	53.4	7.5	4.9	49	3.5	0.2
43.2	7	493	53.3	9.8	30.9	0.5	5.6	49	2.9	0.1
44.2	4	781	34.5	14.1	22.9	6.1	5.8	60	3.0	0.1
45.1	7	493	30.7	9.0	24.5	4.7	5.0	63	1.6	0.2

45.2	7	493	33.2	6.0	22.8	1.4	5.5	59	1.3	0.1
47.2	1.7	498	26.5	6.1	24.9	0.6	5.9	55	2.6	0.1
48.1	8.9	645	46.7	10.8	3.2	2.6	5.1	17	3.3	0.1
48.2	8.9	645	53.8	9.5	18.3	5.0	4.9	17	3.2	0.1
50.1	1.9	603	42.0	11.3	34.9	8.7	5.8	47	2.8	0.0
51.1	1.9	603	42.7	8.2	40.3	10.4	6.4	18	1.6	0.0
52.1	1.5	552	33.1	8.9	32.3	11.5	5.4	52	1.9	0.0
52.2	1.5	552	32.5	6.3	19.2	0.0	5.9	55	1.9	0.0
53.1	6	597	54.0	6.5	65.4	0.0	5.7	16	2.6	0.0
53.2	3	556	56.6	8.3	68.5	9.7	4.8	20	3.7	0.1
56.1	6	597	56.1	11.6	57.0	19.1	4.6	16	2.7	0.2
56.2	6	597	29.6	12.0	30.2	1.5	5.2	51	3.0	0.1
59.1	3.3	559	27.6	2.9	33.2	0.0	6.1	52	2.8	0.0
59.2	3.3	559	42.2	9.2	20.3	0.0	6.1	55	2.7	0.0
60.1	7	397	41.1	8.7	22.1	8.5	5.2	21	1.2	0.1
60.2	7	397	43.4	9.7	61.9	0.0	4.8	31	2.3	0.2
80.1	3	605	42.8	4.9	11.3	0.0	5.4	24	1.1	0.0
85.1	6.5	589	54.2	8.0	22.3	1.2	4.3	13	1.1	0.5
86.1	6.5	589	53.1	5.4	24.9	0.0	5.7	89	3.1	0.0
87.1	1.1	754	42.3	14.4	34.2	0.0	4.8	50	2.8	0.3
87.2	1.1	705	20.4	15.7	23.8	2.8	4.5	37	2.2	0.4
88.2	-1	707	23.5	16.9	43.7	17.4	5.8	39	2.3	0.0
89.2	1.1	705	40.3	11.8	42.7	1.1	4.9	29	2.8	0.1
91.1	1.5	588	30.8	11.2	46.5	2.3	5.0	54	4.7	0.1
91.2	1.5	588	47.9	9.0	25.9	0.0	5.3	33	2.3	0.1
93.1	6	597	39.7	13.1	42.0	0.0	5.1	25	4.7	0.6
99.1	2.8	995	41.8	6.5	17.0	0.0	5.5	143	3.2	0.1
99.2	2.8	995	53.3	14.4	40.1	0.3	4.7	25	3.5	0.2
109.2	2.4	1355	39.4	3.8	21.7	0.0	5.8	62	2.6	0.1
110.1	2.5	810	40.3	14.8	48.3	0.7	5.0	102	5.3	0.1
117.2	4.3	709	39.5	13.8	44.2	0.0	5.3	44	5.4	0.1
119.1	3.5	690	29.2	13.3	43.7	13.9	4.7	19	3.5	0.1
119.2	3.5	694	44.9	14.6	12.1	2.9	4.9	71	4.5	0.2
120.1	1.7	527	20.7	6.7	45.0	3.6	7.0	37	5.0	0.1
125.2	0.4	873	40.7	6.0	51.4	2.1	5.6	37	2.0	0.1
135.2	-0.4	640	45.1	10.3	45.9	0.6	4.2	25	2.0	0.5
136.1	2.5	810	31.9	13.3	31.1	1.2	4.1	34	3.0	1.3
137.2	3	544	34.0	8.2	49.8	3.8	6.9	45	2.8	0.1

25 **Table S2.** Model comparison using Fisher's C. In red are p-values below the acceptable  
 26 threshold (i.e. < 0.05). Rows in green show the best model taking into account all four model fit  
 27 metrics. Variables tested were: monthly mean minimum temperature (T °C), mean annual  
 28 rainfall, soil pH, organic carbon (OC), available phosphorus (P), exchangeable aluminium (Al),  
 29 potassium (K), and sulfur (S).

Model	Explanatory variables	$\chi^2$	
		Fit	p-value
model 1	T °C, rainfall, pH, OC	10.836	0.013
model 2	T °C, rainfall, pH, P, OC, Al, K, S	5.66	0.46
model 3	T °C, rainfall, pH, O, OC, Al	11.573	0.009
model 4	T °C, rainfall, pH, P, Al	13.502	0.019

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33 **Figures**

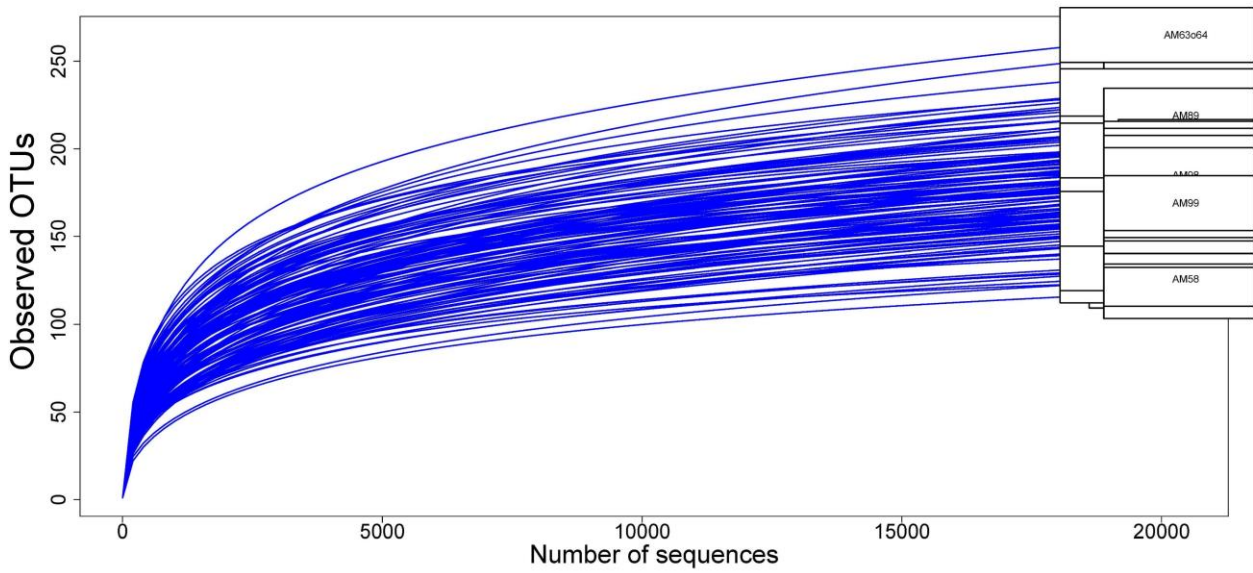
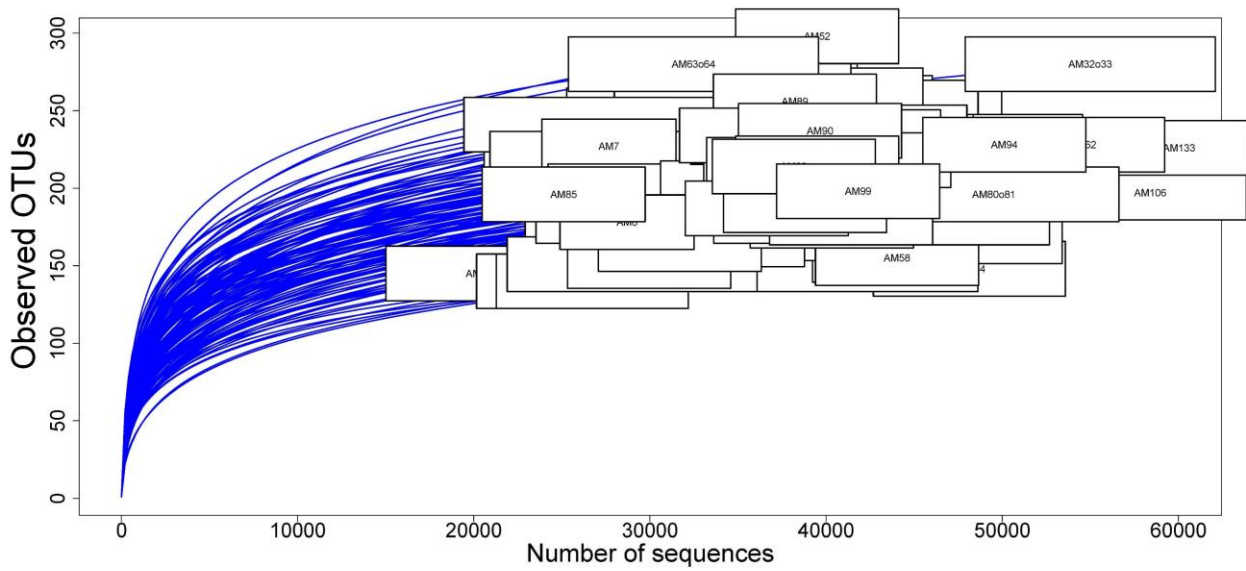


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35 **Figure S1** An example of a returned sample kit holding clods of soil containing *Trifolium*  
 36 *subterraneum* (left) and soil samples (right) which had been placed into the plastic containers  
 37 and sent by courier to The University of Western Australia for root processing and assessment  
 38 (photo courtesy of Kevin Foster).

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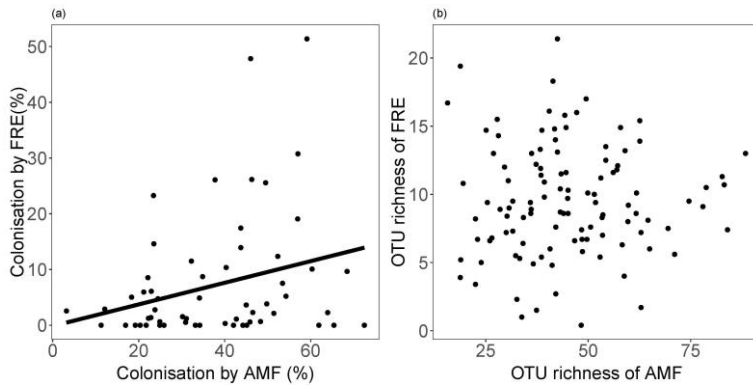
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42 [Figure S2 Rarefaction curves showing the effect of sequencing depth on the number of](#)  
 43 [observed operational taxonomic units \(OTUs\) found in each sample from \(A\) raw and \(B\)](#)  
 44 [rarefied \(at 20,464 sequences\) sequence tables.](#) Each line and box represent a single root  
 45 sample.

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50 **Figure S3:** panel a: correlation between the percentage of root length colonised by FRE and  
51 AMF ( $P < 0.003$ ;  $r = 0.28$ ). Panel b: correlation between OTU richness of FRE and AMF ( $P =$   
52  $0.89$ ).