

Globally Consistent Response of Plant Microbiome Diversity Across Hosts and Continents to Soil Nutrients and Herbivores

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Supplemental Material

Figure S1. Full meta-model used in SEM. Double-headed, dashed arrows indicate relationships modeled as correlated errors.

Full Model

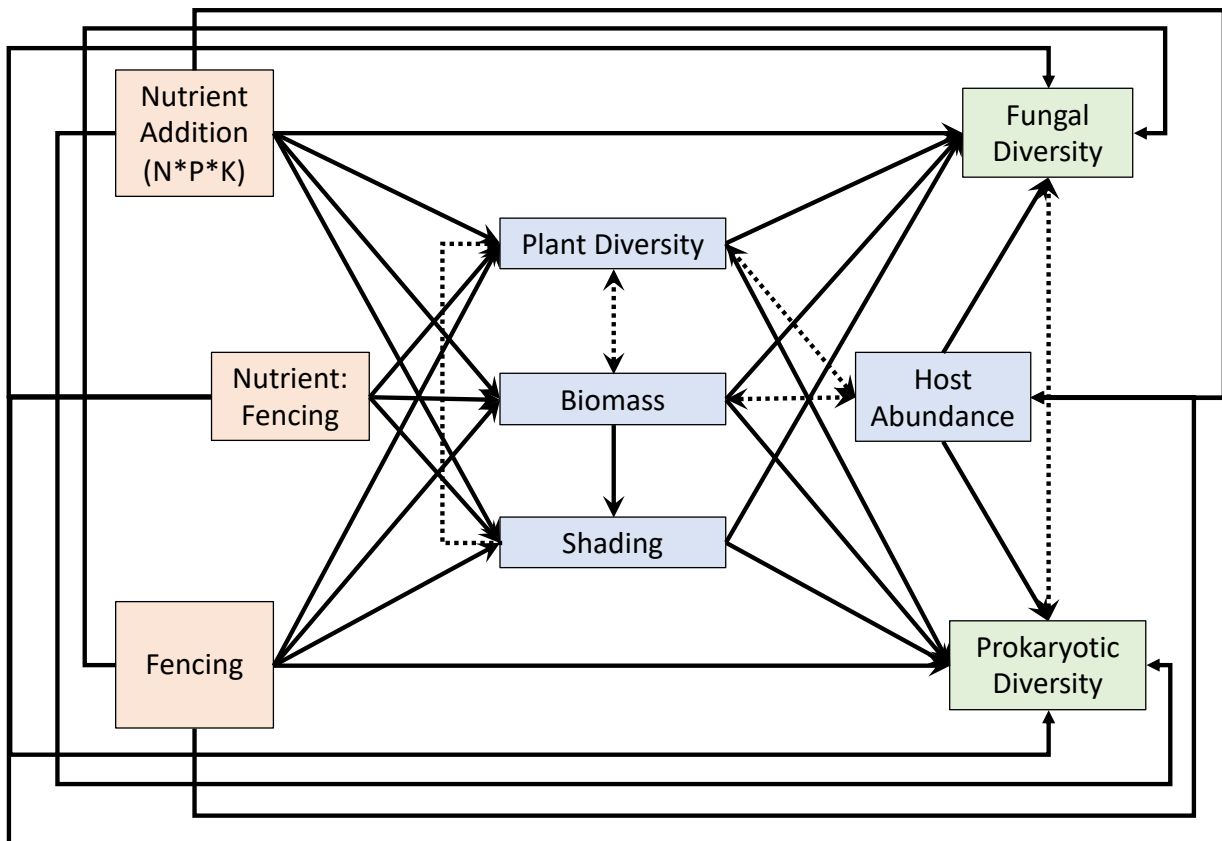


Figure S2. Full SEM (Model 1) with only significant links shown. Arrow width represents magnitude of standardized coefficients. Double-headed, dashed arrows indicate relationships modeled as correlated errors. Black arrows represent positive coefficients and orange arrows represent negative coefficients.

Full Model (Fitted)

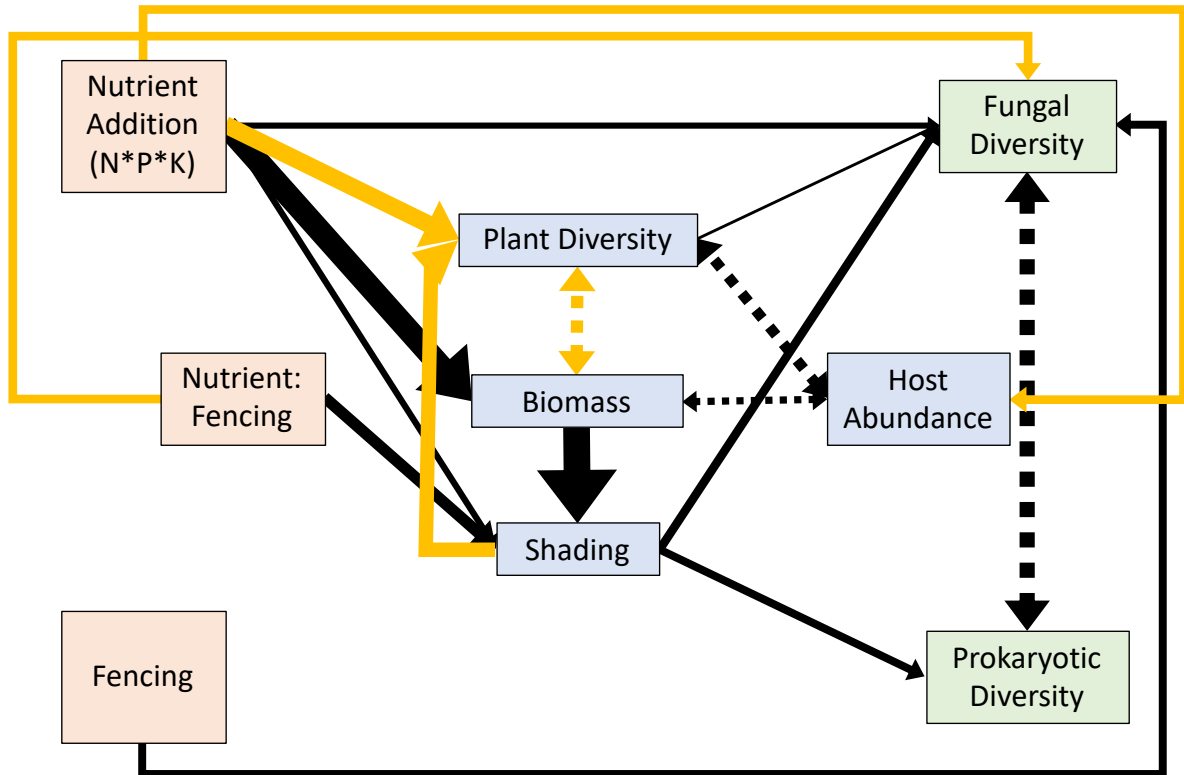
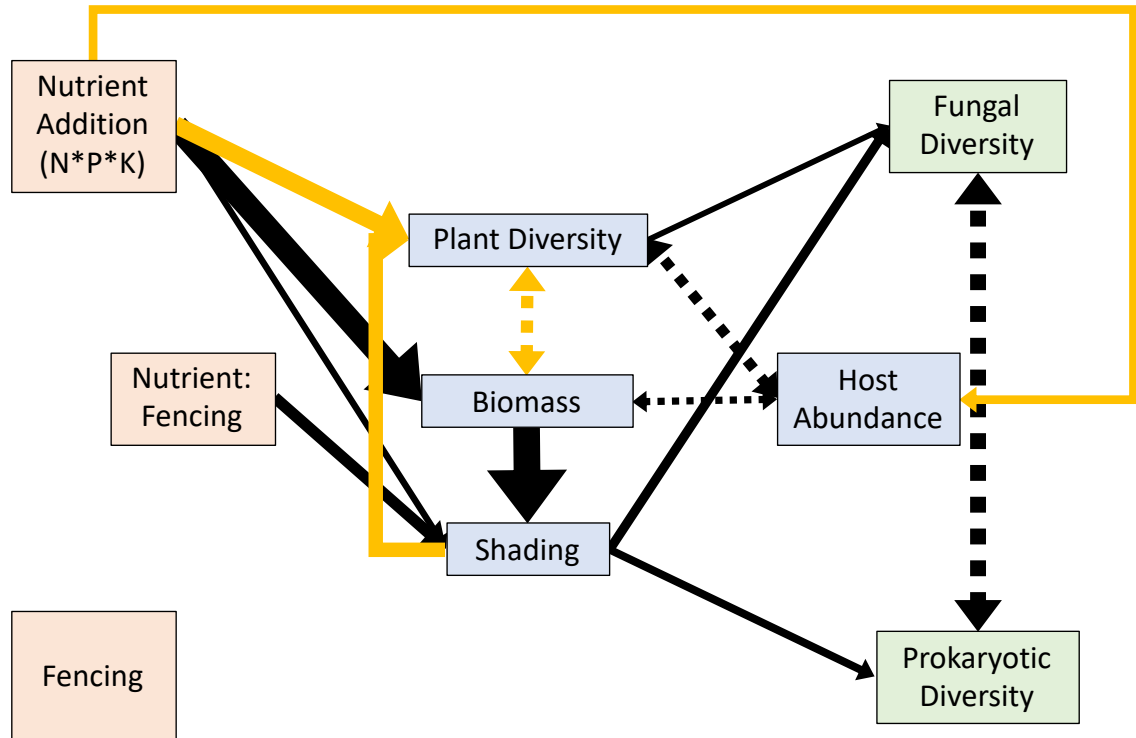


Figure S3. Plant-mediated SEM (Model 2) with only significant links shown. Arrow width represents magnitude of standardized coefficients. Double-headed, dashed arrows indicate relationships modeled as correlated errors. Black arrows represent positive coefficients and orange arrows represent negative coefficients.

Plant Mediation Model (Fitted)



B.

Bacterial & Archaea Abundance by Site

Color is Log10 Abundance (0 == 1%)

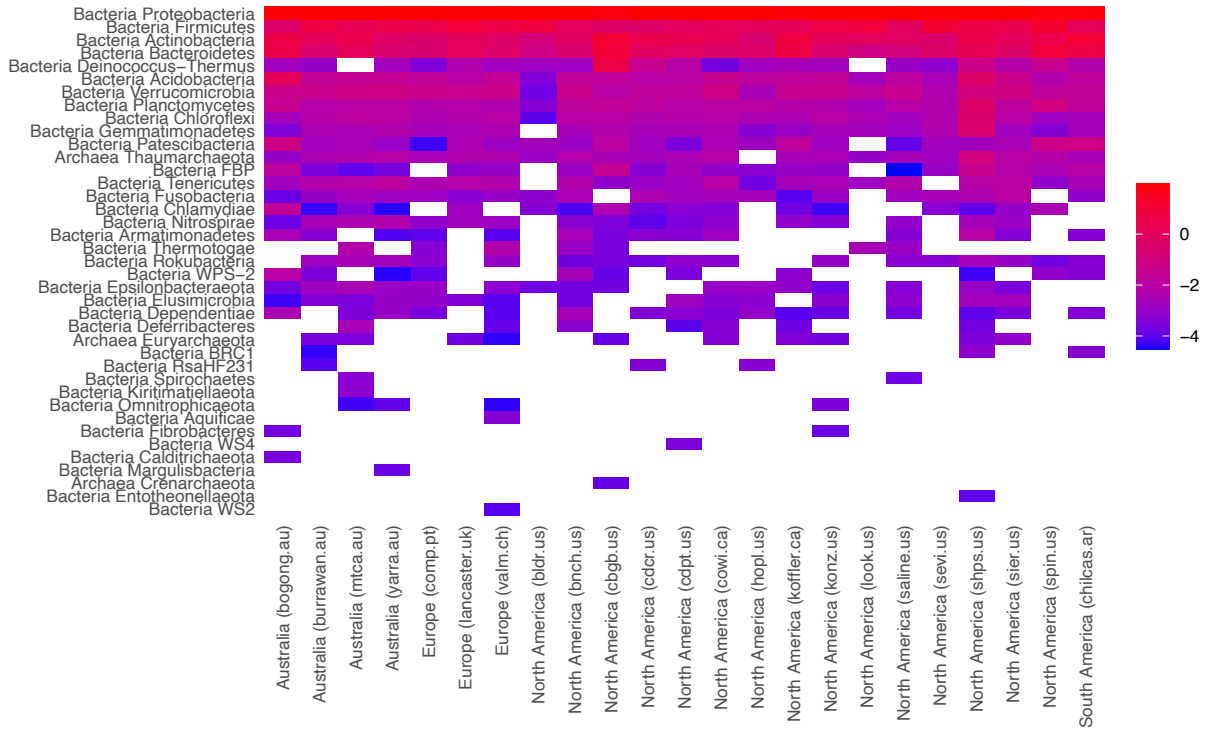


Table S1. Site characteristics, host species, and microbiome diversity.

Site Code	Continent	Country	Focal Host Species	Mean Annual Rainfall (mm yr ⁻¹)	Mean Annual Temperature (°C)	Live Biomass (log g m ⁻²)	Shade (Proportion)	Leaf-scale Fungal Diversity (ENS _{PIE})	Leaf-scale Prokaryote Diversity (ENS _{PIE})
bogong.au	Australia	Australia	<i>Poa hiemata</i>	1678	6.0	6.41	0.39	9.66	4.78
burrawan.au	Australia	Australia	<i>Eragrostis curvula</i>	643	18.2	5.88	0.63	9.93	2.32
mtca.au	Australia	Australia	<i>Austrostipa nitida</i>	324	17.7	6.02	0.65	6.00	2.08
yarra.au	Australia	Australia	<i>Setaria parviflora</i>	844	17.3	6.33	NA	4.77	1.62
valm.ch	Europe	Switzerland	<i>Festuca rubra</i>	681	0.1	5.52	NA	4.42	1.76
comp.pt	Europe	Portugal	<i>Avena barbata</i>	564	16.6	6.36	0.64	6.28	2.56
lancaster.uk	Europe	United Kingdom	<i>Holcus lanatus</i>	1522	8.0	5.40	0.39	4.03	2.23
cowi.ca	North America	Canada	<i>Aleopecurus pratensis</i>	762	10.4	6.17	0.92	8.17	2.37
koffler.ca	North America	Canada	<i>Bromus inermis</i>	853	6.3	6.58	0.93	16.61	11.51
bldr.us	North America	United States	<i>Sporobolus airoides</i>	487	9.9	5.02	NA	2.90	1.87
bnch.us	North America	United States	<i>Bromus carinatus</i>	1618	6.8	5.46	0.83	2.69	3.61
cbgb.us	North America	United States	<i>Schizachyrium scoparium</i>	871	9.3	6.68	0.91	25.33	24.93
cdcr.us	North America	United States	<i>Andropogon gerardii</i>	740	6.3	5.60	0.86	5.07	3.15
cdpt.us	North America	United States	<i>Stipa comata</i>	456	9.6	5.68	0.72	13.33	4.33
hopl.us	North America	United States	<i>Bromus hordeaceus</i>	1065	13.2	5.50	0.85	4.82	2.96
konz.us	North America	United States	<i>Andropogon gerardii</i>	889	12.1	6.70	NA	5.22	3.17
look.us	North America	United States	<i>Bromus carinatus</i>	1877	6.9	4.76	0.59	4.74	5.10
saline.us	North America	United States	<i>Andropogon gerardii</i>	608	12.1	5.80	0.58	6.26	2.47
sevi.us	North America	United States	<i>Bouteloua eriopoda</i>	252	13.1	4.98	NA	4.64	1.55
shps.us	North America	United States	<i>Pseudoroegneria spicata</i>	246	5.3	NA	NA	5.93	3.44
sier.us	North America	United States	<i>Bromus hordeaceus</i>	936	16.3	5.47	0.90	4.69	3.40
spin.us	North America	United States	<i>Poa pratensis</i>	1152	12.5	6.21	0.91	13.98	9.61
chilcas.ar	South America	Argentina	<i>Schenodorus phoenix</i>	955	15.1	6.70	0.85	10.01	11.60

Table S2. Drivers of population-scale fungal and prokaryotic (bacteria and archaea) diversity. Models are shown for the full set of 22 sites with all covariates, the subset of 17 sites at which we measured shading, and the subset of 14 sites at which we also measured soil chemistry. Results are based on multi-model inference from a suite of mixed effects models. The importance of the parameter is the sum of the Akaike weights summed across the set of models within 4 AICc units of the top model (lowest AICc) in which a parameter is included. Importance ranges from 0 (parameter has no explanatory weight) to 1 (parameter is in all top models). All tests are two-tailed.

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance
All Sites	Fungi	Full	Intercept	2.384	0.136	16.426	0.000		
			Plant Biomass	0.934	0.282	3.103	0.002	7.000	1.000
			Plant Diversity	-0.062	0.208	0.288	0.773	2.000	0.188
			Host Abundance	-0.045	0.192	0.224	0.823	2.000	0.164
			Site Plant Richness	-0.007	0.092	0.074	0.941	1.000	0.098
			Precipitation	0.002	0.087	0.018	0.986	1.000	0.094
			Temperature	-0.001	0.089	0.011	0.991	1.000	0.094
		Conditional	Intercept	2.384	0.136	16.426	0.000		
	Plant Biomass		0.934	0.282	3.103	0.002	7.000	1.000	
	Plant Diversity		-0.330	0.377	0.830	0.407	2.000	0.188	
	Host Abundance		-0.272	0.405	0.640	0.522	2.000	0.164	
	Site Plant Richness		-0.074	0.286	0.243	0.808	1.000	0.098	
	Precipitation		0.018	0.284	0.059	0.953	1.000	0.094	
	Temperature		-0.011	0.290	0.036	0.972	1.000	0.094	
Prokaryotes	Full	Intercept	1.313	0.171	7.201	0.000			
		Plant Biomass	0.490	0.468	1.019	0.308	17.000	0.661	
		Temperature	-0.289	0.424	0.666	0.505	12.000	0.438	
		Precipitation	0.192	0.338	0.552	0.581	12.000	0.360	
		Plant Diversity	-0.077	0.333	0.227	0.820	10.000	0.312	
		Host Abundance	-0.206	0.441	0.458	0.647	7.000	0.178	
		Site Plant Richness	0.002	0.145	0.013	0.989	6.000	0.113	
		Conditional	Intercept	1.313	0.171	7.201	0.000		
	Plant Biomass		0.742	0.381	1.837	0.066	17.000	0.661	
	Temperature		-0.659	0.407	1.533	0.125	12.000	0.438	
	Precipitation		0.532	0.368	1.358	0.175	12.000	0.360	
	Plant Diversity		-0.436	0.684	0.617	0.537	10.000	0.312	
	Host Abundance		-0.661	0.568	1.119	0.263	7.000	0.178	
	Site Plant Richness		0.018	0.432	0.040	0.968	6.000	0.113	

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance
Light Sites	Fungi	Full	Intercept	2.584	0.134	17.700	0.000		
			Plant Biomass	1.053	0.283	3.410	0.001	7.000	1.000
			Temperature	-0.022	0.112	0.186	0.852	1.000	0.111
			Shading	-0.012	0.095	0.114	0.909	1.000	0.092
			Potential Evapotranspiration	-0.006	0.085	0.068	0.946	1.000	0.085
			Host Abundance	-0.003	0.090	0.026	0.979	1.000	0.082
			Precipitation	-0.000	0.087	0.004	0.997	1.000	0.082
			Site Plant Richness	-0.000	0.083	0.000	1.000	1.000	0.082
		Conditional	Intercept	2.584	0.134	17.700	0.000		
			Plant Biomass	1.053	0.283	3.410	0.001	7.000	1.000
			Temperature	-0.201	0.280	0.656	0.512	1.000	0.111
			Shading	-0.128	0.289	0.405	0.686	1.000	0.092
			Potential Evapotranspiration	-0.073	0.282	0.238	0.812	1.000	0.085
			Host Abundance	-0.032	0.314	0.092	0.927	1.000	0.082
			Precipitation	-0.004	0.303	0.012	0.990	1.000	0.082
Site Plant Richness	-0.000	0.289	0.001	0.999	1.000	0.082			
Prokaryotes	Full	Full	Intercept	1.497	0.199	6.889	0.000		
			Shading	0.347	0.462	0.726	0.468	9.000	0.478
			Temperature	-0.258	0.418	0.597	0.550	7.000	0.374
			Plant Biomass	0.209	0.390	0.517	0.605	7.000	0.328
			Precipitation	0.123	0.321	0.370	0.712	5.000	0.209
			Host Abundance	-0.009	0.136	0.062	0.951	3.000	0.068
			Site Plant Richness	0.001	0.118	0.011	0.991	3.000	0.066
			Conditional	Intercept	1.497	0.199	6.889	0.000	
		Shading		0.726	0.413	1.612	0.107	9.000	0.478
		Temperature		-0.690	0.411	1.537	0.124	7.000	0.374
		Plant Biomass		0.637	0.437	1.340	0.180	7.000	0.328
		Precipitation		0.588	0.467	1.164	0.244	5.000	0.209
		Host Abundance		-0.132	0.506	0.243	0.808	3.000	0.068
		Site Plant Richness		0.022	0.461	0.043	0.965	3.000	0.066

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance
Soil Sites	Fungi	Full	Intercept	2.681	0.156	15.331	0.000		
			Plant Biomass	1.069	0.339	2.825	0.005	10.000	1.000
			Soil P	0.093	0.232	0.383	0.702	1.000	0.194
			Soil N	-0.020	0.118	0.154	0.878	1.000	0.070
			Soil C:N	-0.013	0.105	0.113	0.910	1.000	0.059
			Host Abundance	-0.012	0.099	0.107	0.914	1.000	0.058
			Shading	-0.010	0.091	0.096	0.924	1.000	0.056
			Precipitation	-0.009	0.093	0.086	0.931	1.000	0.054
			Temperature	-0.006	0.081	0.064	0.949	1.000	0.051
			Site Plant Richness	0.005	0.082	0.053	0.958	1.000	0.050
			Potential Evapotranspiration	0.004	0.079	0.051	0.960	1.000	0.050
				Conditional	Intercept	2.681	0.156	15.331	0.000
	Plant Biomass	1.069	0.339		2.825	0.005	10.000	1.000	
	Soil P	0.478	0.305		1.393	0.164	1.000	0.194	
	Soil N	-0.281	0.356		0.702	0.482	1.000	0.070	
	Soil C:N	-0.219	0.375		0.520	0.603	1.000	0.059	
	Host Abundance	-0.203	0.364		0.496	0.620	1.000	0.058	
	Shading	-0.173	0.349		0.442	0.658	1.000	0.056	
	Precipitation	-0.165	0.368		0.399	0.690	1.000	0.054	
	Temperature	-0.113	0.342		0.293	0.769	1.000	0.051	
	Site Plant Richness	0.096	0.353		0.243	0.808	1.000	0.050	
	Potential Evapotranspiration	0.089	0.342		0.233	0.816	1.000	0.050	
	Prokaryotes	Full	Intercept		1.623	0.179	8.087	0.000	
			Soil C:N	-1.168	0.490	2.217	0.027	7.000	0.952
Temperature			-0.359	0.448	0.769	0.442	3.000	0.480	
Soil P			0.184	0.367	0.482	0.630	3.000	0.283	
Site Plant Richness			-0.028	0.154	0.172	0.864	1.000	0.059	
Precipitation			0.026	0.143	0.169	0.865	1.000	0.058	
		Conditional	Intercept	1.623	0.179	8.087	0.000		
Soil C:N			-1.227	0.424	2.618	0.009	7.000	0.952	
Temperature			-0.748	0.358	1.858	0.063	3.000	0.480	
Soil P			0.651	0.415	1.414	0.157	3.000	0.283	
Site Plant Richness			-0.479	0.436	0.978	0.328	1.000	0.059	
Shading			-0.510	0.522	0.859	0.390	1.000	0.051	

Table S3. Drivers of leaf-scale fungal and prokaryotic (bacteria and archaea) diversity. Models are shown for the full set of 22 sites with all covariates, the subset of 17 sites at which we measured shading, and the subset of 14 sites at which we also measured soil chemistry. Results are based on multi-model inference from a suite of mixed effects models. The importance of the parameter is the sum of the Akaike weights summed across the set of models within 4 AICc units of the top model (lowest AICc) in which a parameter is included. Importance ranges from 0 (parameter has no explanatory weight) to 1 (parameter is in all top models). All tests are two tailed.

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance	
All Sites	Fungi	Full	Intercept	1.789	0.054	32.695	0.000			
			Pop. Fungal Diversity	1.134	0.109	10.292	0.000	7.000	1.000	
			Temperature	-0.007	0.048	0.151	0.880	2.000	0.174	
			Plant Diversity	0.006	0.039	0.144	0.885	2.000	0.173	
			Host Abundance	-0.003	0.030	0.090	0.928	1.000	0.123	
			Plant Biomass	0.002	0.031	0.052	0.958	1.000	0.120	
			Precipitation	0.000	0.036	0.001	0.999	1.000	0.118	
	Prokaryotes	Full	Conditional	Intercept	1.789	0.054	32.695	0.000		
				Pop. Prokaryotic Diversity	1.134	0.109	10.292	0.000	7.000	1.000
				Temperature	-0.042	0.108	0.382	0.702	2.000	0.174
				Plant Diversity	0.033	0.090	0.366	0.714	2.000	0.173
				Host Abundance	-0.022	0.082	0.265	0.791	1.000	0.123
				Plant Biomass	0.014	0.089	0.152	0.879	1.000	0.120
				Precipitation	0.000	0.104	0.002	0.998	1.000	0.118
All Sites	Fungi	Full	Intercept	1.149	0.051	22.335	0.000			
			Pop. Fungal Diversity	1.293	0.114	11.260	0.000	11.000	1.000	
			Plant Diversity	-0.078	0.103	0.756	0.450	11.000	1.000	
			Host Abundance	-0.159	0.110	1.434	0.151	7.000	0.812	
			Plant Biomass	0.291	0.090	3.210	0.001	5.000	0.516	
			Precipitation	-0.020	0.064	0.319	0.750	4.000	0.261	
			Temperature	0.019	0.064	0.290	0.772	4.000	0.254	
	Prokaryotes	Full	Conditional	Intercept	1.149	0.051	22.335	0.000		
				Pop. Prokaryotic Diversity	1.293	0.114	11.260	0.000	11.000	1.000
				Plant Diversity	-0.152	0.098	1.545	0.122	11.000	1.000
				Host Abundance	-0.195	0.088	2.201	0.028	7.000	0.812
				Plant Biomass	0.291	0.090	3.210	0.001	5.000	0.516
				Precipitation	-0.078	0.105	0.740	0.459	4.000	0.261
				Temperature	0.074	0.110	0.663	0.507	4.000	0.254

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance	
Light Sites	Fungi	Full	Intercept	1.916	0.063	30.157	0.000			
			Pop. Fungal Diversity	1.153	0.128	8.964	0.000	16.000	1.000	
			Shading	0.026	0.069	0.370	0.712	6.000	0.280	
			Plant Diversity	0.014	0.052	0.274	0.784	6.000	0.246	
			Plant Biomass	-0.008	0.043	0.179	0.858	3.000	0.155	
			Host Abundance	-0.002	0.033	0.059	0.953	3.000	0.138	
			Precipitation	0.003	0.046	0.069	0.945	3.000	0.137	
		Temperature	0.001	0.047	0.021	0.983	3.000	0.136		
		Conditional	Intercept	1.916	0.063	30.157	0.000			
			Pop. Fungal Diversity	1.153	0.128	8.964	0.000	16.000	1.000	
			Shading	0.092	0.104	0.869	0.385	6.000	0.280	
			Plant Diversity	0.058	0.092	0.630	0.529	6.000	0.246	
			Plant Biomass	-0.051	0.100	0.500	0.617	3.000	0.155	
			Host Abundance	-0.014	0.088	0.161	0.872	3.000	0.138	
	Precipitation		0.023	0.123	0.190	0.849	3.000	0.137		
	Prokaryotes	Full	Full	Intercept	1.305	0.060	21.545	0.000		
				Pop. Prokaryotic Diversity	1.326	0.132	9.999	0.000	11.000	1.000
				Host Abundance	-0.231	0.108	2.133	0.033	11.000	1.000
				Plant Biomass	0.418	0.105	3.947	0.000	10.000	0.956
				Plant Diversity	-0.043	0.084	0.512	0.609	4.000	0.354
				Temperature	0.022	0.079	0.278	0.781	4.000	0.244
				Shading	0.009	0.055	0.165	0.869	3.000	0.187
		Precipitation	0.005	0.055	0.090	0.928	3.000	0.179		
		Conditional	Full	Intercept	1.305	0.060	21.545	0.000		
				Pop. Prokaryotic Diversity	1.326	0.132	9.999	0.000	11.000	1.000
				Host Abundance	-0.242	0.098	2.451	0.014	11.000	1.000
				Plant Biomass	0.418	0.105	3.947	0.000	10.000	0.956
				Plant Diversity	-0.122	0.102	1.188	0.235	4.000	0.354
Temperature				0.091	0.140	0.646	0.518	4.000	0.244	
Shading	0.049			0.120	0.406	0.685	3.000	0.187		
Precipitation	0.028	0.128	0.217	0.828	3.000	0.179				

Data Set	Response	Type of Averaging	Predictor	Estimate	Standard Error	z	p	Number of Models	Importance		
Soil Sites	Fungi	Full	Intercept	2.001	0.065	30.506	0.000				
			Pop. Fungal Diversity	1.211	0.142	8.428	0.000	78.000	1.000		
			Soil C:N	-0.050	0.094	0.527	0.598	46.000	0.560		
			Shading	0.124	0.149	0.825	0.410	27.000	0.343		
			Soil N	0.054	0.114	0.472	0.637	32.000	0.339		
			Host Abundance	0.032	0.077	0.414	0.679	24.000	0.253		
			Plant Biomass	-0.026	0.076	0.334	0.738	21.000	0.224		
			Soil P	0.009	0.051	0.167	0.867	16.000	0.145		
			Precipitation	0.003	0.065	0.045	0.965	14.000	0.133		
			Plant Diversity	-0.003	0.037	0.084	0.933	12.000	0.123		
			Temperature	0.007	0.054	0.131	0.896	11.000	0.107		
				Conditional	Intercept	2.001	0.065	30.506	0.000		
			Pop. Fungal Diversity		1.211	0.142	8.428	0.000	78.000	1.000	
			Soil C:N		-0.146	0.110	1.314	0.189	46.000	0.560	
	Shading	0.221	0.136		1.614	0.107	27.000	0.343			
	Soil N	0.160	0.147		1.080	0.280	32.000	0.339			
	Host Abundance	0.127	0.108		1.170	0.242	24.000	0.253			
	Plant Biomass	-0.114	0.125		0.904	0.366	21.000	0.224			
	Soil P	0.069	0.129		0.532	0.595	16.000	0.145			
	Precipitation	0.022	0.176		0.123	0.902	14.000	0.133			
	Plant Diversity	-0.029	0.110		0.265	0.791	12.000	0.123			
	Temperature	0.049	0.135		0.363	0.717	11.000	0.107			
	Prokaryotes	Full	Intercept		1.445	0.073	19.570	0.000			
			Pop. Prokaryotic Diversity	1.286	0.165	7.721	0.000	26.000	1.000		
			Host Abundance	-0.282	0.142	1.976	0.048	26.000	1.000		
			Plant Biomass	0.496	0.124	3.963	0.000	24.000	0.943		
Plant Diversity			-0.071	0.114	0.617	0.537	12.000	0.422			
Temperature			0.065	0.126	0.515	0.606	13.000	0.373			
Soil C:N			-0.006	0.049	0.124	0.901	4.000	0.124			
Soil N			-0.004	0.051	0.071	0.943	4.000	0.120			
Precipitation			-0.003	0.054	0.047	0.962	4.000	0.118			
Soil P			-0.005	0.055	0.084	0.933	4.000	0.117			
Shading		-0.000	0.052	0.004	0.997	4.000	0.113				
		Conditional	Intercept	1.445	0.073	19.570	0.000				
Pop. Prokaryotic Diversity			1.286	0.165	7.721	0.000	26.000	1.000			
Host Abundance			-0.299	0.127	2.325	0.020	26.000	1.000			
Plant Biomass			0.496	0.124	3.963	0.000	24.000	0.943			
Plant Diversity			-0.168	0.121	1.372	0.170	12.000	0.422			
Temperature			0.175	0.153	1.135	0.257	13.000	0.373			
Soil C:N			-0.049	0.131	0.375	0.708	4.000	0.124			
Soil N			-0.031	0.147	0.211	0.833	4.000	0.120			
Precipitation			-0.022	0.156	0.138	0.890	4.000	0.118			
Soil P	-0.040		0.156	0.252	0.801	4.000	0.117				
Shading	-0.002	0.155	0.011	0.991	4.000	0.113					

Table S4. Nutrient and herbivore effects on leaf-scale fungal and prokaryotic (bacteria and archaea) diversity. Results are based on mixed-effects models, and all tests are two tailed.

Predictors	Fungal Diversity			Prokaryotic Diversity		
	Estimates	Standard Error	p	Estimates	Standard Error	p
Intercept	1.841	0.154	<0.001	1.220	0.187	<0.001
Nutrient	0.136	0.069	0.048	0.144	0.065	0.028
Fence	0.164	0.071	0.021	0.076	0.068	0.260
Nutrient*Fence	-0.180	0.101	0.076	-0.043	0.096	0.652
Random Effects						
σ^2	0.2169			0.1535		
τ_{00}	0.0370 _{plot:(block:site)}			0.0475 _{plot:(block:site)}		
	0.0049 _{block:site}			0.0867 _{block:site}		
	0.3411 _{site}			0.4991 _{site}		
Observations	515			515		

Table S5. Nutrient and herbivore effects on the host community. Results are based on mixed-effects models, and all tests are two tailed.

Predictors	Plant Biomass			Shading			Plant Diversity			Host Abundance		
	Estimates	Standard Error	p	Estimates	Standard Error	p	Estimates	Standard Error	p	Estimates	Standard Error	p
Intercept	5.615	0.126	<0.001	0.667	0.048	<0.001	1.391	0.098	<0.001	-2.222	0.353	<0.001
Nutrient	0.469	0.051	<0.001	0.108	0.018	<0.001	-0.323	0.045	<0.001	-0.509	0.194	0.009
Fence	0.063	0.053	0.241	0.010	0.019	0.609	-0.107	0.046	0.021	-0.146	0.201	0.467
Nutrient*Fence	-0.093	0.076	0.223	0.083	0.027	0.002	0.016	0.066	0.811	-0.109	0.286	0.704
Random Effects												
σ^2	0.1809			0.0228			0.1359			2.5683		
τ_{00}	0.1163 _{block:site}			0.0054 _{block:site}			0.0657 _{block:site}			0.6348 _{block:site}		
	0.1931 _{site}			0.0327 _{site}			0.1152 _{site}			1.4846 _{site}		
Observations	515			515			515			515		

Table S6. Structural Equation Models (SEMs) linking nutrient addition and herbivore exclusion to changes in the plant community and microbiome diversity. The full model (Model 1) does not differ from the model in which all nutrient and herbivore effects were mediated through changes in the plant community (Model 2; $p=0.2875$) or the most parsimonious model in which all effects are mediated through changes in shading (Model 3; $p=0.181$). Double-headed arrows indicate relationships modeled as correlated errors. All tests are two-tailed.

Model 1: Global goodness-of-fit: Fisher's C = 3.157; $p= 0.206$ on 2 DF; AIC = 95.157

Response	Predictor	Estimate	Standard Error	DF	p	Standard Estimate
Host Abundance	↔ Nutrient	-0.519	0.208	496.7	0.013	-0.121
Host Abundance	↔ Fence	-0.107	0.214	497.2	0.617	-0.025
Host Abundance	↔ Nutrient:Fence	-0.115	0.307	496.6	0.708	-0.022
Plant Biomass	↔ Nutrient	0.463	0.061	496.5	0.000	0.330
Plant Biomass	↔ Fence	0.068	0.063	496.8	0.287	0.048
Plant Biomass	↔ Nutrient:Fence	-0.081	0.091	496.4	0.371	-0.048
Shading	↔ Plant Biomass	0.134	0.013	507.5	0.000	0.375
Shading	↔ Nutrient	0.044	0.019	497.5	0.020	0.088
Shading	↔ Fence	0.004	0.018	495.5	0.816	0.009
Shading	↔ Nutrient:Fence	0.097	0.026	495.3	0.000	0.162
Fungal Diversity	↔ Nutrient	0.146	0.066	494.8	0.026	0.096
Fungal Diversity	↔ Fence	0.172	0.063	492.6	0.006	0.112
Fungal Diversity	↔ Plant Biomass	-0.032	0.050	506.2	0.515	-0.030
Fungal Diversity	↔ Shading	0.380	0.151	507.0	0.013	0.125
Fungal Diversity	↔ Plant Diversity	0.112	0.056	505.2	0.048	0.085
Fungal Diversity	↔ Host Abundance	-0.010	0.013	503.4	0.444	-0.029
Fungal Diversity	↔ Nutrient:Fence	-0.215	0.091	493.0	0.018	-0.118
Prokaryotic Diversity	↔ Nutrient	0.089	0.066	494.2	0.178	0.051
Prokaryotic Diversity	↔ Fence	0.079	0.063	492.4	0.210	0.045
Prokaryotic Diversity	↔ Plant Biomass	0.047	0.050	504.7	0.353	0.038
Prokaryotic Diversity	↔ Shading	0.384	0.153	506.3	0.013	0.111
Prokaryotic Diversity	↔ Plant Diversity	0.023	0.057	503.5	0.683	0.016
Prokaryotic Diversity	↔ Host Abundance	-0.022	0.013	501.6	0.096	-0.055
Prokaryotic Diversity	↔ Nutrient:Fence	-0.085	0.091	492.8	0.354	-0.041
Plant Diversity	↔ Shading	-0.463	0.111	504.6	0.000	-0.200
Plant Diversity	↔ Nutrient	-0.276	0.051	498.5	0.000	-0.238
Plant Diversity	↔ Fence	-0.082	0.051	495.9	0.113	-0.070
Plant Diversity	↔ Nutrient:Fence	0.045	0.074	495.8	0.545	0.032
Fungal Diversity	↔ Prokaryotic Diversity	0.208	-	515.0	0.000	0.208
Plant Diversity	↔ Plant Biomass	-0.168	-	515.0	0.000	-0.168
Plant Diversity	↔ Host Abundance	0.154	-	515.0	0.000	0.154
Host Abundance	↔ Plant Biomass	0.102	-	515.0	0.010	0.102

Response	Marginal r^2	Conditional r^2
Host Abundance	0.02	0.37
Plant Biomass	0.09	0.51
Shading	0.21	0.68
Fungal Diversity	0.02	0.60
Prokaryotic Diversity	0.02	0.66
Plant Diversity	0.12	0.49

Model 2: Global goodness-of-fit: Fisher's C = 12.847; p= 0.232 on 10 DF; AIC = 92.847

Response		Predictor	Estimate	Standard Error	DF	p	Standard Estimate
Host Abundance	⇐	Nutrient	-0.519	0.208	496.7	0.013	-0.121
Host Abundance	⇐	Fence	-0.107	0.214	497.2	0.617	-0.025
Host Abundance	⇐	Nutrient:Fence	-0.115	0.307	496.6	0.708	-0.022
Plant Biomass	⇐	Nutrient	0.463	0.061	496.5	0.000	0.330
Plant Biomass	⇐	Fence	0.068	0.063	496.8	0.287	0.048
Plant Biomass	⇐	Nutrient:Fence	-0.081	0.091	496.4	0.371	-0.048
Shading	⇐	Plant Biomass	0.134	0.013	507.5	0.000	0.375
Shading	⇐	Nutrient	0.044	0.019	497.5	0.020	0.088
Shading	⇐	Fence	0.004	0.018	495.5	0.816	0.009
Shading	⇐	Nutrient:Fence	0.097	0.026	495.3	0.000	0.162
Plant Diversity	⇐	Shading	-0.463	0.111	504.6	0.000	-0.200
Plant Diversity	⇐	Nutrient	-0.276	0.051	498.5	0.000	-0.238
Plant Diversity	⇐	Fence	-0.082	0.051	495.9	0.113	-0.070
Plant Diversity	⇐	Nutrient:Fence	0.045	0.074	495.8	0.545	0.032
Fungal Diversity	⇐	Plant Biomass	-0.016	0.049	509.4	0.751	-0.014
Fungal Diversity	⇐	Shading	0.387	0.145	510.0	0.008	0.127
Fungal Diversity	⇐	Plant Diversity	0.094	0.055	508.5	0.091	0.071
Fungal Diversity	⇐	Host Abundance	-0.012	0.013	507.1	0.364	-0.034
Prokaryotic Diversity	⇐	Plant Biomass	0.059	0.049	507.8	0.231	0.047
Prokaryotic Diversity	⇐	Shading	0.413	0.145	508.9	0.005	0.119
Prokaryotic Diversity	⇐	Plant Diversity	0.008	0.055	506.7	0.879	0.006
Prokaryotic Diversity	⇐	Host Abundance	-0.024	0.013	505.1	0.069	-0.060
Fungal Diversity	⇔	Prokaryotic Diversity	0.215	-	515.0	0.000	0.215
Plant Diversity	⇔	Plant Biomass	-0.168	-	515.0	0.000	-0.168
Plant Diversity	⇔	Host Abundance	0.154	-	515.0	0.000	0.154
Host Abundance	⇔	Plant Biomass	0.102	-	515.0	0.010	0.102

Response	Marginal r ²	Conditional r ²
Host Abundance	0.02	0.37
Plant Biomass	0.09	0.51
Shading	0.21	0.68
Fungal Diversity	0.12	0.49
Prokaryotic Diversity	0.02	0.59
Plant Diversity	0.02	0.65

Model 3: Fisher's C = 28.712; p = 0.153 on 22 DF; AIC = 96.712

Response		Predictor	Estimate	Standard Error	DF	p	Standard Estimate
Host Abundance	⇐	Nutrient	-0.519	0.208	496.7	0.013	-0.121
Host Abundance	⇐	Fence	-0.107	0.214	497.2	0.617	-0.025
Host Abundance	⇐	Nutrient:Fence	-0.115	0.307	496.6	0.708	-0.022
Plant Biomass	⇐	Nutrient	0.463	0.061	496.5	0.000	0.330
Plant Biomass	⇐	Fence	0.068	0.063	496.8	0.287	0.048
Plant Biomass	⇐	Nutrient:Fence	-0.081	0.091	496.4	0.371	-0.048
Shading	⇐	Plant Biomass	0.134	0.013	507.5	0.000	0.375
Shading	⇐	Nutrient	0.044	0.019	497.5	0.020	0.088
Shading	⇐	Fence	0.004	0.018	495.5	0.816	0.009
Shading	⇐	Nutrient:Fence	0.097	0.026	495.3	0.000	0.162
Plant Diversity	⇐	Shading	-0.463	0.111	504.6	0.000	-0.200
Plant Diversity	⇐	Nutrient	-0.276	0.051	498.5	0.000	-0.238
Plant Diversity	⇐	Fence	-0.082	0.051	495.9	0.113	-0.070
Plant Diversity	⇐	Nutrient:Fence	0.045	0.074	495.8	0.545	0.032
Fungal Diversity	⇐	Shading	0.302	0.123	512.1	0.015	0.099
Prokaryotic Diversity	⇐	Shading	0.514	0.124	509.7	0.000	0.148
Fungal Diversity	⇔	Prokaryotic Diversity	0.214	-	515.0	0.000	0.214
Plant Diversity	⇔	Plant Biomass	-0.168	-	515.0	0.000	-0.168
Plant Diversity	⇔	Host Abundance	0.154	-	515.0	0.000	0.154
Host Abundance	⇔	Plant Biomass	0.102	-	515.0	0.010	0.102

Response	Marginal r^2	Conditional r^2
Host Abundance	0.02	0.37
Plant Biomass	0.09	0.51
Shading	0.21	0.68
Fungal Diversity	0.12	0.49
Prokaryotic Diversity	0.01	0.57
Plant Diversity	0.02	0.66