

Supplementary material III-S11

Model

```
model = '  
Soil.C.2018 ~ Soil.C.2010 +  
            CURV_PR +  
            CN.litterfall + ENL +  
            TSP.RD + RD  
  
Soil.C.2010 ~ SLOPE + CURV_PL  
  
ENL ~ Sp.rich + SLOPE + CURV_PL + CURV_PR  
  
mic.bio ~ ENL +  
          TSP.SRL + TSP.RD + FDis.SRL + RD +  
          Soil.C.2018 +  
          temperature + Soil.humidity +  
          Soil.N.2018 +  
          litter.CN  
  
temperature ~ ENL  
Soil.humidity ~ CN.litterfall + TSP.SRL  
Soil.N.2018 ~ CN.litterfall + FDis.SRL + SRL  
litter.CN ~ CN.litterfall + ENL + TSP.FRic.RD + AM.ECM  
'
```

Results

Explained variance

Variable	R-squared (%)
Soil.C.2018	18.9
Soil.C.2010	10.8
ENL	34.5
mic.bio	54.2
temperature	20.2
Soil.humidity	15.0
Soil.N.2018	6.3
litter.CN	26.1

Grouped summary

Relation	Effect size
Environment ~ Neighbors aboveground productivity & traits	1.2486435
Environment ~ Neighbors root traits	0.5059349
Environment ~ TSP root traits	0.5529788
Environment ~ Environment	0.8391214
Mic. biomass ~ Environment	0.6101499
Mic. biomass ~ Neighbors root traits	0.1750829
Mic. biomass ~ Soil C 2018	0.5616956
Mic. biomass ~ TSP root traits	0.3851936
Mic. biomass ~ Mic. biomass	0.1101626
Neighbors aboveground productivity & traits ~ Topography	0.5162855
Neighbors aboveground productivity & traits ~ Tree species richness	0.2479654
Neighbors aboveground productivity & traits ~ Neighbors aboveground productivity & traits	0.1626816
Soil C 2010 ~ Topography	0.5325651
Soil C 2010 ~ Soil C 2010	0.2215193
Soil C 2018 ~ Neighbors aboveground productivity & traits	0.4486605
Soil C 2018 ~ Neighbors root traits	0.2840931
Soil C 2018 ~ Soil C 2010	0.2632743
Soil C 2018 ~ Soil C 2018	0.2063896

Full summary

Response	Operator	Explanatory	Estimate	SE	p-value
Soil.C.2018	~	Soil.C.2010	0.2632743	0.0767598	0.0006039
Soil.C.2018	~	CURV_PL	0.1635416	0.0873079	0.0610464
Soil.C.2018	~	CN.litterfall	-0.1999060	0.0771914	0.0096047
Soil.C.2018	~	ENL	0.2487545	0.0835580	0.0029106
Soil.C.2018	~	TSP.RD	0.1402688	0.0916951	0.1260836
Soil.C.2018	~	RD	-0.2840931	0.0949800	0.0027799
Soil.C.2010	~	SLOPE	0.1753616	0.0830657	0.0347620
Soil.C.2010	~	CURV_PL	0.3572036	0.0830657	0.0000171
ENL	~	Sp.rich	0.2479654	0.0687963	0.0003129
ENL	~	SLOPE	0.2151084	0.0723778	0.0029585
ENL	~	CURV_PL	-0.1897770	0.0971164	0.0506872
ENL	~	CURV_PR	0.3011770	0.1008265	0.0028165
mic.bio	~	ENL	-0.0058516	0.0638538	0.9269837
mic.bio	~	TSP.SRL	0.1962537	0.0728819	0.0070863
mic.bio	~	TSP.RD	0.1889399	0.0827128	0.0223546
mic.bio	~	FDis.SRL	-0.0425622	0.0571996	0.4568165
mic.bio	~	RD	-0.1750829	0.0691727	0.0113706
mic.bio	~	Soil.C.2018	0.5616956	0.0546386	0.0000000
mic.bio	~	temperature	-0.2864916	0.0600708	0.0000018
mic.bio	~	Soil.humidity	-0.1118651	0.0566677	0.0483756
mic.bio	~	Soil.N.2018	-0.0257387	0.0545010	0.6367402
mic.bio	~	litter.CN	0.2117932	0.0556415	0.0001410
temperature	~	ENL	-0.4492955	0.0719909	0.0000000
Soil.humidity	~	CN.litterfall	-0.2589748	0.0765287	0.0007143
Soil.humidity	~	TSP.SRL	-0.3562751	0.0765287	0.0000032
Soil.N.2018	~	CN.litterfall	-0.1512382	0.0795412	0.0572520
Soil.N.2018	~	FDis.SRL	-0.1530869	0.0799635	0.0555616
Soil.N.2018	~	SRL	0.1590020	0.0798791	0.0465322
litter.CN	~	CN.litterfall	0.2412895	0.0743530	0.0011737
litter.CN	~	ENL	-0.2990837	0.0720974	0.0000335
litter.CN	~	TSP.FRic.RD	0.1967037	0.0719495	0.0062586
litter.CN	~	AM.ECM	0.3469329	0.0742888	0.0000030
Soil.C.2018	~~	Soil.C.2018	0.2063896	0.0235203	0.0000000
Soil.C.2010	~~	Soil.C.2010	0.2215193	0.0252445	0.0000000
ENL	~~	ENL	0.1626816	0.0185393	0.0000000
mic.bio	~~	mic.bio	0.1101626	0.0125542	0.0000000
temperature	~~	temperature	0.1982378	0.0225913	0.0000000
Soil.humidity	~~	Soil.humidity	0.2111682	0.0240649	0.0000000
Soil.N.2018	~~	Soil.N.2018	0.2327641	0.0265259	0.0000000
litter.CN	~~	litter.CN	0.1969512	0.0224447	0.0000000
CURV_PL	~~	CURV_PL	0.2483766	0.0000000	NA
CURV_PL	~~	CN.litterfall	0.0176342	0.0000000	NA
CURV_PL	~~	TSP.RD	-0.0364343	0.0000000	NA
CURV_PL	~~	RD	-0.0332459	0.0000000	NA
CURV_PL	~~	SLOPE	-0.0995559	0.0000000	NA
CURV_PL	~~	Sp.rich	0.0228885	0.0000000	NA

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Response	Operator	Explanatory	Estimate	SE	p-value
CURV_PL	~~	CURV_PR	-0.1797195	0.0000000	NA
CURV_PL	~~	TSP.SRL	0.0113570	0.0000000	NA
CURV_PL	~~	FDis.SRL	-0.0351465	0.0000000	NA
CURV_PL	~~	SRL	0.0121095	0.0000000	NA
CURV_PL	~~	TSP.FRic.RD	-0.0020780	0.0000000	NA
CURV_PL	~~	AM.ECM	0.0430630	0.0000000	NA
CN.litterfall	~~	CN.litterfall	0.2483766	0.0000000	NA
CN.litterfall	~~	TSP.RD	-0.0382589	0.0000000	NA
CN.litterfall	~~	RD	-0.0754086	0.0000000	NA
CN.litterfall	~~	SLOPE	0.0082185	0.0000000	NA
CN.litterfall	~~	Sp.rich	-0.0201507	0.0000000	NA
CN.litterfall	~~	CURV_PR	-0.0147584	0.0000000	NA
CN.litterfall	~~	TSP.SRL	-0.0594828	0.0000000	NA
CN.litterfall	~~	FDis.SRL	-0.0380842	0.0000000	NA
CN.litterfall	~~	SRL	-0.0363731	0.0000000	NA
CN.litterfall	~~	TSP.FRic.RD	-0.0178646	0.0000000	NA
CN.litterfall	~~	AM.ECM	-0.0608569	0.0000000	NA
TSP.RD	~~	TSP.RD	0.2483766	0.0000000	NA
TSP.RD	~~	RD	0.1472590	0.0000000	NA
TSP.RD	~~	SLOPE	0.0013656	0.0000000	NA
TSP.RD	~~	Sp.rich	0.0031850	0.0000000	NA
TSP.RD	~~	CURV_PR	0.0277585	0.0000000	NA
TSP.RD	~~	TSP.SRL	-0.1526118	0.0000000	NA
TSP.RD	~~	FDis.SRL	0.0417814	0.0000000	NA
TSP.RD	~~	SRL	-0.0784069	0.0000000	NA
TSP.RD	~~	TSP.FRic.RD	0.1007104	0.0000000	NA
TSP.RD	~~	AM.ECM	0.0438371	0.0000000	NA
RD	~~	RD	0.2483766	0.0000000	NA
RD	~~	SLOPE	0.0009270	0.0000000	NA
RD	~~	Sp.rich	0.0146583	0.0000000	NA
RD	~~	CURV_PR	0.0575185	0.0000000	NA
RD	~~	TSP.SRL	-0.0763342	0.0000000	NA
RD	~~	FDis.SRL	0.0557553	0.0000000	NA
RD	~~	SRL	-0.1397787	0.0000000	NA
RD	~~	TSP.FRic.RD	0.0324377	0.0000000	NA
RD	~~	AM.ECM	0.0800884	0.0000000	NA
SLOPE	~~	SLOPE	0.2483766	0.0000000	NA
SLOPE	~~	Sp.rich	-0.0167863	0.0000000	NA
SLOPE	~~	CURV_PR	0.1002248	0.0000000	NA
SLOPE	~~	TSP.SRL	0.0101562	0.0000000	NA
SLOPE	~~	FDis.SRL	-0.0000568	0.0000000	NA
SLOPE	~~	SRL	0.0014794	0.0000000	NA
SLOPE	~~	TSP.FRic.RD	-0.0252828	0.0000000	NA
SLOPE	~~	AM.ECM	-0.0436689	0.0000000	NA
Sp.rich	~~	Sp.rich	0.2483766	0.0000000	NA
Sp.rich	~~	CURV_PR	-0.0686821	0.0000000	NA
Sp.rich	~~	TSP.SRL	0.0098234	0.0000000	NA
Sp.rich	~~	FDis.SRL	0.0794879	0.0000000	NA

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Response	Operator	Explanatory	Estimate	SE	p-value
Sp.rich	~~	SRL	0.0135911	0.0000000	NA
Sp.rich	~~	TSP.FRic.RD	0.0419447	0.0000000	NA
Sp.rich	~~	AM.ECM	0.0171725	0.0000000	NA
CURV_PR	~~	CURV_PR	0.2483766	0.0000000	NA
CURV_PR	~~	TSP.SRL	-0.0123199	0.0000000	NA
CURV_PR	~~	FDis.SRL	-0.0095466	0.0000000	NA
CURV_PR	~~	SRL	-0.0384493	0.0000000	NA
CURV_PR	~~	TSP.FRic.RD	-0.0060808	0.0000000	NA
CURV_PR	~~	AM.ECM	-0.0153894	0.0000000	NA
TSP.SRL	~~	TSP.SRL	0.2483766	0.0000000	NA
TSP.SRL	~~	FDis.SRL	0.0212875	0.0000000	NA
TSP.SRL	~~	SRL	0.1250474	0.0000000	NA
TSP.SRL	~~	TSP.FRic.RD	-0.0318750	0.0000000	NA
TSP.SRL	~~	AM.ECM	-0.0632655	0.0000000	NA
FDis.SRL	~~	FDis.SRL	0.2483766	0.0000000	NA
FDis.SRL	~~	SRL	0.0442603	0.0000000	NA
FDis.SRL	~~	TSP.FRic.RD	0.0825569	0.0000000	NA
FDis.SRL	~~	AM.ECM	-0.0094878	0.0000000	NA
SRL	~~	SRL	0.2483766	0.0000000	NA
SRL	~~	TSP.FRic.RD	0.0121057	0.0000000	NA
SRL	~~	AM.ECM	-0.0982008	0.0000000	NA
TSP.FRic.RD	~~	TSP.FRic.RD	0.2483766	0.0000000	NA
TSP.FRic.RD	~~	AM.ECM	0.0024365	0.0000000	NA
AM.ECM	~~	AM.ECM	0.2483766	0.0000000	NA