Supplementary material III-S9

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
'
```

Results

Explained variance

Variable	R-squared (%)
Soil.C.2018	18.9
Soil.C.2010	10.8
ENL	34.5

Grouped summary

Relation	Effect size
Neighbors aboveground productivity & traits ~ Topography	0.5162866
Neighbors aboveground productivity & traits ~ Tree species richness	0.2479653
Neighbors aboveground productivity & traits ~~ Neighbors aboveground productivity & traits	0.1626817
Soil C 2010 ~ Topography	0.5325655
Soil C 2010 ~~ Soil C 2010	0.2215195
Soil C 2018 ~ Neighbors aboveground productivity & traits	0.4486591
Soil C 2018 ~ Neighbors root traits	0.2840925
Soil C 2018 ~ Soil C 2010	0.2632744
Soil C 2018 ~~ Soil C 2018	0.2063895

Full summary

Response	Operator	Explanatory	Estimate	SE	p-value
Soil.C.2018	~	Soil.C.2010	0.2632744	0.0767597	0.0006039
Soil.C.2018	~	CURV_PL	0.1635409	0.0873078	0.0610472
Soil.C.2018	~	CN.litterfall	-0.1999060	0.0771914	0.0096047
Soil.C.2018	~	ENL	0.2487531	0.0835579	0.0029107
Soil.C.2018	~	TSP.RD	0.1402681	0.0916951	0.1260854
Soil.C.2018	~	RD	-0.2840925	0.0949800	0.0027800
Soil.C.2010	~	SLOPE	0.1753615	0.0830657	0.0347621
Soil.C.2010	~	CURV_PL	0.3572040	0.0830657	0.0000171
ENL	~	Sp.rich	0.2479653	0.0687963	0.0003129
ENL	~	SLOPE	0.2151081	0.0723778	0.0029585
ENL	~	CURV_PL	-0.1897751	0.0971164	0.0506896
ENL	~	CURV_PR	0.3011785	0.1008265	0.0028164
Soil.C.2018	~~	Soil.C.2018	0.2063895	0.0235203	0.0000000
Soil.C.2010	~~	Soil.C.2010	0.2215195	0.0252445	0.0000000
ENL	~~	ENL	0.1626817	0.0185393	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
CURV_PL	~~	CURV_PR	-0.1797195	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
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
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
SLOPE	~~	SLOPE	0.2483766	0.0000000	NA
SLOPE	~~	Sp.rich	-0.0167863	0.0000000	NA
SLOPE	~~	CURV_PR	0.1002248	0.0000000	NA
Sp.rich	~~	Sp.rich	0.2483766	0.0000000	NA
Sp.rich	~~	CURV_PR	-0.0686821	0.0000000	NA
CURV_PR	~~	CURV_PR	0.2483766	0.0000000	NA