

Table S1. Multivariate community structure comparisons of fungal community structure in the chronosequence experiment. MRPP (Multi-response permutation procedure) determines effect size, and is considered significant if the A-value > 0.3. PermDISP determines whether dispersion (heterogeneity of data) within groups is responsible for the significant permANOVA results, with a non-significant permDISP value confirming differences are due to community structure. All p-values were corrected for multiple pair-wise comparisons using FDR (false-discovery rate), with pair-wise corrected significant values denoted in bold.

pairwise compare	MRPP				permANOVA			t-value
	t-value	A-value	p-value	t-value	p-value (perm)	p-value (Monte-Carlo)		
reference 2003	-5.470	0.449	0.002	3.458	0.008	0.001	2.634	
reference 2005	-5.374	0.407	0.002	2.979	0.010	0.001	0.384	
reference 2008	-5.541	0.453	0.002	3.197	0.013	0.002	2.004	
reference 2011	-5.406	0.393	0.002	2.265	0.005	0.005	1.582	
reference 2015	-5.402	0.402	0.002	2.316	0.015	0.003	1.214	
2003 2005	-4.172	0.258	0.003	2.654	0.009	0.002	1.980	
2003 2008	-4.684	0.391	0.002	3.328	0.008	0.001	1.044	
2003 2011	-5.152	0.385	0.002	2.770	0.006	0.001	8.844	
2003 2015	-5.630	0.455	0.002	4.319	0.006	0.001	1.041	
2005 2008	-4.786	0.355	0.002	3.095	0.009	0.001	1.410	
2005 2011	-4.271	0.275	0.003	2.357	0.009	0.002	1.988	
2005 2015	-5.317	0.391	0.002	3.347	0.009	0.001	0.785	
2008 2011	-5.412	0.436	0.002	2.748	0.006	0.001	6.663	
2008 2015	-5.528	0.451	0.002	3.686	0.008	0.003	0.458	
2011 2015	-4.712	0.211	0.002	2.123	0.008	0.004	3.227	

Table S2. Multivariate community structure comparisons of fungal community structure. MRPP (Multi-response permutation procedure) determines effect size, and is considered significant if the A-value > 0.3. PermDISP determines whether dispersion (heterogeneity of data) within groups is responsible for the significant permANOVA results, with a non-significant permDISP value confirming differences are due to community structure. All p-values were corrected for multiple pair-wise comparisons using FDR (false-discovery rate), with pair-wise corrected significant values denoted in bold.

Comparison	MRPP				permANOVA p-value	
		t-value	A-value	p-value	t-value	(perm)
reference topsoil	vs. 2015 standard	-5.139	0.349	0.002	2.361	0.010
reference topsoil	vs. 2015 overburden	-5.256	0.444	0.002	2.412	0.005
reference topsoil	vs. 2011 standard	-4.536	0.316	0.002	2.032	0.008
reference topsoil	vs. 2011 overburden	-5.322	0.398	0.002	2.271	0.007
reference overburden	vs. 2015 standard	-5.439	0.342	0.002	2.637	0.009
reference overburden	vs. 2015 overburden	-5.493	0.404	0.002	2.608	0.008
reference overburden	vs. 2011 standard	-5.521	0.384	0.002	2.399	0.010
reference overburden	vs. 2011 overburden	-5.302	0.378	0.002	2.516	0.015
reference topsoil	vs. reference overburden	-3.448	0.153	0.006	1.591	0.015
2015 standard	vs. 2015 overburden	-2.608	0.149	0.009	1.563	0.013
2015 standard	vs. 2011 standard	-4.712	0.211	0.002	2.123	0.012
2015 standard	vs. 2011 overburden	-3.466	0.149	0.006	1.745	0.008
2015 overburden	vs. 2011 standard	-3.897	0.200	0.002	1.888	0.009
2015 overburden	vs. 2011 overburden	-3.857	0.224	0.003	1.634	0.009
2011 standard	vs. 2011 overburden	-3.233	0.151	0.007	1.463	0.004

Table S3. Numbers of phylotypes and indicator species detected in the chronosequence experiment, as well as the number and percentage of phylotypes shared is with the reference soil.

	Indicator phylotypes
Reference soil	44
2003	15
2005	37
2008	13
2011	30
2015	100

Table S4: Summary of number of phylotypes and indicator species determined for the overburden addition experiment through Illumina sequencing of soil fungi. Indicator phylotypes are those that occur almost exclusively in one soil type to the exclusion of other soils.

	Indicator phylotypes
Reference topsoil	10
Reference overburden	9
2015 standard	53
2015 overburden	47
2011 standard	28
2011 overburden	27