

Supplementary Table 1. Site data and soil properties for all soils (Experiments 1, 2, and 3)

Experiment	Collection date	Control Incubation Laboratory*	Latitude	Longitude	Site Name	Land cover	ID	Incubation replicates	Soil order	Sieved	Depth		Field		Organic C	Total N	Particle size distribution			Reference**	
											Top	Bottom	Moisture	Incubation Moisture			Sand	Silt	Clay		
														percent water							holding capacity
year									WRB name	< 2mm	cm	gravimetric	gravimetric		g kg-1	g kg-1	g kg-1	g kg-1	g kg-1		
1	2011	MPI-BGC	53.09	13.63	Schorfheide-Chorin (Germany)	forest	SEW11	2	Cambisol	Yes	0	10	0.26	0.26	60	31.3	1.3	884	85	31	Solly et al. 2014
1	2011	MPI-BGC	52.9	13.85	Schorfheide-Chorin (Germany)	forest	SEW34	2	Albeluvisol	Yes	0	10	0.24	0.24	60	16.4	0.7	889	69	42	Solly et al. 2014
1	2011	MPI-BGC	52.9	13.93	Schorfheide-Chorin (Germany)	forest	SEW43	2	Cambisol	Yes	0	10	0.3	0.3	60	18.4	1.1	810	121	69	Solly et al. 2014
1	2011	MPI-BGC	53.12	13.68	Schorfheide-Chorin (Germany)	grassland	SEG38	2	Cambisol	Yes	0	10	0.25	0.27	60	22.8	2.2	838	72	89	Solly et al. 2014
1	2011	MPI-BGC	53.12	13.84	Schorfheide-Chorin (Germany)	grassland	SEG40	2	Luvisol	Yes	0	10	0.26	0.27	60	21.3	2	710	192	98	Solly et al. 2014
1	2011	MPI-BGC	52.98	13.83	Schorfheide-Chorin (Germany)	grassland	SEG46	2	Cambisol	Yes	0	10	0.31	0.34	60	24.3	2.3	644	210	146	Solly et al. 2014
1, 2	2011	MPI-BGC	51.34	10.36	Hainich-Dün (Germany)	forest	HEW22	2	Luvisol	Yes	0	10	0.38	0.37	60	23.3	1.7	68	747	184	Solly et al. 2014
1, 2	2011	MPI-BGC	51.11	10.45	Hainich-Dün (Germany)	forest	HEW41	2	Luvisol	Yes	0	10	0.4	0.42	60	23.4	1.9	34	754	210	Solly et al. 2014
1, 2	2011	MPI-BGC	51.1	10.46	Hainich-Dün (Germany)	forest	HEW42	2	Stagnosol	Yes	0	10	0.34	0.36	60	24.3	1.7	60	760	184	Solly et al. 2014
1, 2	2011	MPI-BGC	51.28	10.45	Hainich-Dün (Germany)	grassland	HEG10	2	Vertisol	Yes	0	10	0.47	0.61	60	43.7	4	30	532	436	Solly et al. 2014
1, 2	2011	MPI-BGC	51.08	10.57	Hainich-Dün (Germany)	grassland	HEG32	2	Cambisol	Yes	0	10	0.52	0.54	60	40	3.8	17	640	340	Solly et al. 2014
1, 2	2011	MPI-BGC	51.29	10.38	Hainich-Dün (Germany)	grassland	HEG48	2	Cambisol	Yes	0	10	0.55	0.56	60	41.6	4	50	488	465	Solly et al. 2014
1, 2	2019	MPI-BGC	51.34	10.36	Hainich-Dün (Germany)	forest	HEW22	2	Luvisol	Yes	0	10	0.38	0.37	60	23.3	1.7	68	747	184	Solly et al. 2014
1, 2	2019	MPI-BGC	51.11	10.45	Hainich-Dün (Germany)	forest	HEW41	2	Luvisol	Yes	0	10	0.4	0.42	60	23.4	1.9	34	754	210	Solly et al. 2014
1, 2	2019	MPI-BGC	51.1	10.46	Hainich-Dün (Germany)	forest	HEW42	2	Stagnosol	Yes	0	10	0.34	0.36	60	24.3	1.7	60	760	184	Solly et al. 2014
3	2009	UCI	37.03	-119.27	Musick (Sierra Nevada, CA)	forest	MA	3	Ultic Haploxeralf	Yes	5	20	0.07	0.33	50	27.4	1	600	270	150	Koarashi et al. 2012
3	2009	UCI	37.03	-119.27	Musick (Sierra Nevada, CA)	forest	MB	3	Ultic Haploxeralf	Yes	55	70	0.08	0.21	50	1.1	0	670	180	170	Koarashi et al. 2012
3	2009	UCI	37.03	-119.19	Shaver (Sierra Nevada, CA)	forest	SA	3	Pachic Xerumbrept	Yes	5	20	0.07	0.31	50	29.4	1.2	800	150	50	Koarashi et al. 2012
3	2009	UCI	37.03	-119.19	Shaver (Sierra Nevada, CA)	forest	SB	3	Pachic Xerumbrept	Yes	40	60	0.06	0.22	50	0.4	0	790	170	40	Koarashi et al. 2012
3	2008	UCI	35.98	-79.09	Duke, NC	forest	120	1	Ultic Alfisol	Yes	5	15	0.95	0.04		16.6	0.8				Hopkins et al. 2012
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 6E C	1	Inceptisol	No	0	5	0.28	0.2		24.9	1.2				Cisneros-Dozal et al. 2005
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 2B C	1	Inceptisol	No	0	5	0.3	0.2		24.9	1.2				Cisneros-Dozal et al. 2005
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 3B C	1	Inceptisol	No	0	5	0.49	0.2		24.9	1.2				Cisneros-Dozal et al. 2005
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 5B C	1	Inceptisol	No	0	5	0.26	0.2		24.9	1.2				Cisneros-Dozal et al. 2005
3	2004	UCI	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB 4B C	1	Ultisol	No	0	5	0.34	0.2		24.9	1				Cisneros-Dozal et al. 2005
3	2004	UCI	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB 5B C	1	Ultisol	No	0	5	0.25	0.2		24.9	1				Cisneros-Dozal et al. 2005
3	2004	UCI	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB 8B C	1	Ultisol	No	0	5	0.34	0.2		24.9	1				Cisneros-Dozal et al. 2005
3	2004	UCI	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB 3E C	1	Ultisol	No	0	5	0.36	0.2		24.9	1				Cisneros-Dozal et al. 2005
3	2004	UCI	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB 7E C	1	Ultisol	No	0	5	0.18	0.2		24.9	1				Cisneros-Dozal et al. 2005
3	2011	MPI-BGC	51.34	10.51	Hainich-Dün (Germany)	forest	HEW26	2	Luvisol	Yes	0	10	0.34	0.36	60	24.4	1.6	54	796	150	Solly et al. 2014
3	2011	MPI-BGC	51.18	10.38	Hainich-Dün (Germany)	forest	HEW47	2	Stagnosol	Yes	0	10	0.43	0.45	60	32.5	2.4	46	632	323	Solly et al. 2014
3	2011	MPI-BGC	51.22	10.37	Hainich-Dün (Germany)	grassland	HEG20	3	Stagnosol	Yes	0	10	0.47	0.45	60	27.2	2.3	102	661	239	Solly et al. 2014
3	2011	MPI-BGC	51.11	10.43	Hainich-Dün (Germany)	grassland	HEG33	3	Cambisol	Yes	0	10	0.47	0.47	60	40.1	3.8	29	618	353	Solly et al. 2014
3	2011	MPI-BGC	51.21	10.39	Hainich-Dün (Germany)	grassland	HEG6	3	Stagnosol	Yes	0	10	0.41	0.45	60	20.8	2	45	698	257	Solly et al. 2014
3	1999	UCI	42.54	-72.18	Harvard, MA	forest	WN-1 Ap (ba)	1	Inceptisol	Yes	0	16			60						Gaudinski et al. 2001
3	1999	UCI	42.54	-72.18	Harvard, MA	forest	WN-1 Ap #2	1	Inceptisol	Yes	0	16			60						Gaudinski et al. 2001
3	1999	UCI	42.54	-72.18	Harvard, MA	forest	WN-2 Ap #3	1	Inceptisol	Yes	0	16			60						Gaudinski et al. 2001
3	1999	UCI	42.54	-72.18	Harvard, MA	forest	WN-1 Ap #4	1	Inceptisol	Yes	0	16			60						Gaudinski et al. 2001
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 4E	1	Inceptisol	No	0	5			24.9	1.2					Cisneros-Dozal et al. 2005
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 6E	1	Inceptisol	No	0	5			24.9	1.2					Cisneros-Dozal et al. 2005
3	2004	UCI	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA 8E	1	Inceptisol	No	0	5			24.9	1.2					Cisneros-Dozal et al. 2005
3	2004	USGS Menlo Park	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA2B-C_IT2	1	Inceptisol	No	0	5			24.9	1.2					Cisneros-Dozal et al. 2005
3	2004	USGS Menlo Park	35.94	-84.33	Tennessee Valley Authority (Oak Ridge, TN)	forest	TVA3-C_IT1	1	Inceptisol	No	0	5			24.9	1.2					Cisneros-Dozal et al. 2005
3	2004	USGS Menlo Park	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB4B-C_IT2	1	Ultisol	No	0	5			24.9	1					Cisneros-Dozal et al. 2005
3	2004	USGS Menlo Park	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB5-C_IT2	1	Ultisol	No	0	5			24.9	1					Cisneros-Dozal et al. 2005
3	2004	USGS Menlo Park	35.97	-84.27	Walker Branch (Oak Ridge, TN)	forest	WB8-C_IT2	1	Ultisol	No	0	5			24.9	1					Cisneros-Dozal et al. 2005

* Not all data were available (e.g. moisture content, texture) for control samples incubated at UCI and USGS Menlo Park

** See references section in main text for full citations