

Soil profile near sample collection area in Underhill State Park, VT



Extractable Cations, Oa horizon

	Sol:soil ratio		Ca cmolc/kg	Mg cmolc/kg	K cmolc/kg	Na cmolc/kg	Al cmolc/kg	Fe cmolc/kg	Mn cmolc/kg
Lab 1 n=15	120	mean	1.10	0.56	0.51	0.08	20.89		0.08
		std dev	0.07	0.02	0.03	0.03	0.85		0.00
Lab 2 n=6	40	mean	1.15	0.46	0.55		9.96	0.18	0.02
		std dev	0.07	0.03	0.07		0.51	0.01	0.00
Lab 3		mean	0.92	0.53	0.50	0.06	9.64	0.45	0.04
		std dev	0.11	0.05	0.05	0.01	2.10	0.12	0.01
Lab 6		mean	1.07	0.39					
Lab 7 n=11		mean	1.02	0.55	0.54	0.06	4.83		
		std dev	0.04	0.02	0.02	0.01	0.17		
Lab 8 n=3	20	mean	0.94	0.51	0.47	0.05	10.74	0.29	0.02
Lab 10		mean	0.87	0.44	0.41	0.04	10.72		
		std dev	0.28	0.17	0.13	0.05	1.92		
Grand mean			1.01	0.49	0.50	0.06	11.13		
<i>n</i>			7	7	6	5	6		
Std Dev			0.10	0.06	0.05	0.02	5.27		
95% confidence int.			0.08	0.05	0.04	0.01	4.22		

Extractable Cations, Bs horizon

	Sol:soil ratio		Ca cmolc/kg	Mg cmolc/kg	K cmolc/kg	Na cmolc/kg	Al cmolc/kg	Fe cmol/kg	Mn cmol/kg
Lab 1 n=12	24	mean	0.156	0.074	0.041	0.022	11.29		0.023
		std dev	0.004	0.003	0.003	0.007	1.145		0.002
Lab 2 n=23	10	mean	0.168	0.069	0.037	0.012	4.90	0.202	0.008
		std dev	0.025	0.005	0.007	0.002	0.31	0.010	0.001
Lab 3 n=3		mean	0.212	0.097	0.045	0.020	6.70	0.199	0.013
		std dev	0.019	0.008	0.005	0.002	0.24	0.023	0.002
Lab 6		mean	0.181	0.207					
Lab 7 n=5		mean	0.149	0.066	0.037	0.015	12.64		
		std dev	0.012	0.004	0.001	0.002	0.80		
Lab 8 n=3	10.00	mean	0.143	0.069	0.034	0.014	5.13	0.121	0.005
Lab 10 n = 5		mean	0.143	0.061	0.024	0.015	6.81		
		std dev	0.013	0.006	0.002	0.019	0.660		
Lab 11 n = 3		mean	0.096	0.065	0.140	0.057	4.64	0.063	0.005
		std dev							
Grand mean			0.156	0.088	0.051	0.022	7.45		
n			8	8	7	7	7		
Std Dev			0.034	0.049	0.040	0.016	3.23		
95% confidence int.			0.023	0.034	0.030	0.012	2.39		

% C, N and LOI

	Oa %C	Oa %N	Oa LOI	Bs %C	Bs %N	Bs LOI
Lab 1	29.27	1.65	53.89	3.41	0.18	7.33
std dev			0.74			0.13
<i>n</i>			6			6
Lab 3	27.12	1.69	52.71	3.64	0.23	7.40
std dev						
<i>n</i>						
Lab 5	30.60	1.73	52.90	3.96	0.18	7.80
std dev						
<i>n</i>	3	3	3	3	3	3
Lab 6	21.02	1.30		3.63	0.19	
Lab 7	30.34	1.78	54.83	3.88	0.19	6.98
std dev	2.47	0.14		0.50	0.02	
<i>n</i>	25	25		25	25	
Lab 8	31.56	1.68	54.40	3.48	0.15	
std dev	3	3		3	3	
<i>n</i>						
Lab 9	29.41	1.73		3.40	0.17	
std dev	0.74	1.66		1.19	1.74	
<i>n</i>	3			9	9	
Lab 10	26.68	1.49	60.36	3.06	0.18	9.23
std dev	0.92	0.05	2.52	0.13	0.00	0.65
<i>n</i>	4	4	4	4	4	4
Lab 11	28.42	1.68		3.11	0.15	
std dev						
<i>n</i>	3	3		4	4	
Grand mean	28.14	1.63	55.04	3.52	0.18	7.85
<i>n</i>	9	9	6	9	9	5
Std Dev	3.34	0.16	3.11	0.33	0.02	0.98
confidence int.	2.18	0.10	2.49	0.21	0.02	0.86

pH

	Oa pH _{Ca}	Oa pH _w	Bs pH _{Ca}	Bs pH _w
Lab 1	3.45		3.61	
std dev	0.067		0.04	
<i>n</i>	7		7	
Lab 3	3.59	4.49	3.63	4.08
std dev				
<i>n</i>				
Lab 4	3.47	4.53	3.58	4.10
std dev				
<i>n</i>				
Lab 5	3.49	3.84	3.73	3.93
std dev				
<i>n</i>	3	3	3	3
Lab 6	3.55	4.22	3.50	4.04
std dev				
<i>n</i>				
Lab 7	3.45	4.21	3.48	3.96
n=3-5				
Lab 8	3.50	4.30	3.77	4.13
std dev				
<i>n</i>	3	3	3	3
Lab 11			3.73	4.10
std dev				
<i>n</i>			1	1
Grand mean	3.51	4.22	3.63	4.04
<i>n</i>	7	6	8	7
Std Dev	0.05	0.25	0.12	0.08
i% confidence int.	0.04	0.20	0.08	0.06

'Total' analyses on the Oa

Li-borate vs. HF vs. HNO₃

Oa		Al	Ca	Fe	K	Mg	Mn	Na	P	Si	Sr	Ti	Zr
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Lab 1 n=11	mean	38,641	1,390	16,682	4,653	1,757	225	5,473	1,297	155,778	44	3,228	220
	stddev	1,640	26	453	1,007	42	12	331	59	11,978	1	77	8
Lab 3 n=2	mean	31,026	1,166	14,136	8,976	1,547	188	5,797	1,151		37		
		311	10	137	112	1	4	149	4		1		
Lab 5 n=3	mean	9,598	290	8,282	1,168	568	42	172	1,293		4	123	2

Lab 1 Li-borate Samples were melted with a Li-borate fluxer. The resulting glass bead was dissolved in acid, diluted and analyzed on ICP

Lab 3 HF 0.3 g soil digested with 5 mL HNO₃ and 1 mL HF at 180°C for 10 min in a CEM Mars Xpress microwave.

Lab 5 ashing 2 g dried overnight at 105 C; ashed at 475 C for 8 hrs; 10 mL 1:1 nitric acid on a hot plate for 30 min.