

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	1.100	0.560	0.507	0.080	20.89		0.084
		std dev	0.068	0.020	0.026	0.027	0.854		0.004
Lab 2 n=6	40	mean	1.151	0.463	0.553		9.96	0.182	0.015
		std dev	0.070	0.032	0.068		0.51	0.009	0.001
Lab 3		mean	0.920	0.525	0.497	0.056	9.64	0.448	0.037
		std dev	0.107	0.051	0.046	0.012	2.10	0.122	0.008
Lab 6		mean	1.068	0.388					
Lab 7 n=11		mean	1.015	0.549	0.541	0.055	4.83		
		std dev	0.044	0.016	0.021	0.007	0.17		
Lab 8 n=3		mean	0.939	0.510	0.474	0.046	10.74	0.292	0.018
Mean of all labs			1.03	0.50	0.51		11.21		
Standard deviation			0.09	0.06	0.03		5.89		
Confidence Interval			0.07	0.05	0.03		5.16		

Lab 1 NH₄-acetate (pH 4.8, 1.25 M acetate) with mechanical vacuum extraction

Lab 2 NH₄Cl (1 M batch, 2 h shaking)

Lab 3 1 M NH₄Cl with mechanical vacuum extraction (10:1) Lab 6 NH₄Cl

Lab 7 0.1 M NH₄Cl with mechanical vacuum extraction

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		mean	0.143	0.069	0.034	0.014	5.127	0.121	0.005

Lab 1 NH4-acetate (pH 4.8, 1.25 M acetate) with mechanical vacuum extraction

Lab 2 NH4Cl (1 M batch, 2 h shaking)

Lab 3 1 M NH4Cl with mechanical vacuum extraction (2.5:1)

Lab 6 NH4Cl

Lab 7 0.1 M NH4Cl with mechanical vacuum extraction

% C, N and LOI

	Oa %C	Oa %N	Bs %C	Bs %N		Oa LOI	Bs LOI
Lab 1 n=6						53.89 0.739	7.33 0.13
Lab 3	27.12	1.69	3.64	0.23		52.71	7.40
Lab 5 n=3	30.60	1.73	3.96	0.18		52.90	7.80
Lab 6	21.02	1.3	3.63	0.19			
Lab 7 n=25	30.34 2.47	1.78 0.14	3.88 0.50	0.19 0.02	n=1	54.83	6.98
Lab 8 n=3	31.56	1.68	3.48	0.15		54.40	
Lab 9 n=3	29.41 0.74	1.73 1.66	3.40 1.19	0.17 1.74	n=9		

Lab 1 LOI in muffle furnace

Lab 3 LOI 375 C for 16 h

pH

	Oa pH _{Ca}	Oa pH _w	Bs pH _{Ca}	Bs pH _w
Lab 1 n=7	3.45 0.067		3.61 0.04	
Lab 3	3.59	4.49	3.63	4.08
Lab 4	3.47	4.53	3.58	4.10
Lab 5 n=3	3.49	3.84	3.73	3.93
Lab 6	3.55	4.22	3.50	4.04
Lab 7 n=3-5	3.45	4.21	3.48	3.96
Lab 8 n=3	3.50	4.30	3.77	4.13
Overall mean	3.50	4.27	3.61	4.04

Lab 1	Ca = 0.01M; mineral 2:1, organic 4:1
Lab 3	pH _{Ca} 2:1, pH _w 1:1
Lab 4	CaCl ₂ = 0.01 M
Lab 5	CaCl ₂ = 0.01 M; pH _{Ca} 2:1, pH _w 1:1
Lab 6	Ca = 0.01M; mineral 2:1, organic 5:1
Lab 7	Ca = 0.01M
Lab 8	Salt pH is in NH ₄ Cl

'Total' analyses on the Oa

		Al mg/kg	Ca mg/kg	Fe mg/kg	K mg/kg	Mg mg/kg	Mn mg/kg	Na mg/kg	P mg/kg	Si mg/kg	Sr mg/kg	Ti mg/kg	Zr mg/kg
Lab 1	mean	39,246	1,385	16,755	4,540	1,755	228	5,414	1,294	151,416	44	3,226	222
n=8	STDEV	1,488	26	517	1,010	49	13	363	70	11,015	1	77	6
Lab 5	mean	9,598	290	8,282	1,168	568	42	172	1,293		4	123	2
n=3													

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

Lab 5 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.