



**2012 North American Proficiency Testing Program
1st Quarter Report - April 9, 2012**

**Laboratory ID
General**

Soil Analysis	Units	n	Soil 2012-101			Soil 2012-102			Soil 2012-103			Soil 2012-104			Soil 2012-105		
			Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}	Median	MAD	Lab ^{1,2}
Salinity																	
Sat. Paste Moisture	%	29	55.8	5.10		23.9	0.960		33.1	2.28		41.7	1.94		41.0	2.50	
pH - sp	Unit	37	7.45	0.080		5.37	0.130		7.40	0.130		5.34	0.060		5.40	0.090	
ECe - sp	dS/m	36	0.970	0.084		0.217	0.030		0.660	0.060		1.56	0.155		0.879	0.089	
HCO ₃ - sp	mmolc/L	13	4.22	0.960		0.630	0.147		2.12	0.318		0.377	0.070		1.00	0.154	
Ca - sp	mmolc/L	30	7.04	0.670		1.11	0.189		5.47	0.580		5.49	0.511		3.91	0.460	
Mg - sp	mmolc/L	30	1.62	0.125		0.517	0.073		0.499	0.081		3.32	0.310		2.57	0.279	
Na - sp	mmolc/L	28	0.290	0.077		0.240	0.028		0.170	0.027		3.18	0.185		0.320	0.030	
SAR - sp	value	28	0.140	0.040		0.260	0.029		0.108	0.015		1.54	0.095		0.190	0.019	
Cl - sp	mmolc/L	22	0.697	0.082		0.283	0.052		0.140	0.318		0.520	0.050		0.440	0.050	
SO ₄ - sp	mmolc/L	23	0.770	0.130		0.320	0.044		0.530	0.076		0.561	0.081		0.766	0.109	
NO ₃ - sp	mmolc/L	15	2.52	0.494		0.470	0.074		1.84	0.366		11.4	2.21		4.99	1.02	
B - sp	mg/L	12	0.075	0.020		0.077	0.008		0.060	0.010		0.120	0.020		0.090	0.010	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	35	0.580	0.050		0.090	0.020		0.270	0.030		0.530	0.060		0.370	0.040	
Soil EC (1:2)	(dS/m)	54	0.332	0.050		0.052	0.008		0.174	0.026		0.357	0.050		0.220	0.030	
pH (1:1) Water	Unit	87	7.74	0.110		5.54	0.066		7.70	0.100		5.55	0.050		5.62	0.070	
pH (1:2) Water	Unit	36	7.90	0.140		5.63	0.170		7.82	0.125		5.68	0.080		5.75	0.080	
pH (1:1) 0.01M CaCl ₂	Unit	25	7.40	0.100		4.90	0.100		7.30	0.100		5.20	0.070		5.25	0.050	
pH (1:2) 0.01M CaCl ₂	Unit	13	7.42	0.080		4.83	0.070		7.15	0.120		5.18	0.040		5.20	0.020	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	37	7.46	0.040		6.64	0.100		7.50	0.060		6.71	0.085		6.85	0.085	
Adams-Evans Buf pH	Unit	7	7.74	0.030		7.55	0.050		7.88	0.050		7.52	0.080		7.55	0.060	
Woodruff Buf. pH	Unit	24	7.13	0.025		6.53	0.090		7.09	0.040		6.60	0.080		6.68	0.040	
Mehlich Buffer pH	Unit	3	6.70	0.020		6.09	0.055		6.62	0.020		6.10	0.025		6.16	0.045	
Sikora Buffer pH	Unit	23	7.44	0.040		6.70	0.050		7.50	0.040		6.70	0.100		6.86	0.040	
Titrateable Acidity	cmol/kg	1	1.77	0.000		2.63	0.000		1.40	0.000		1.30	0.000		1.57	0.000	

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Inorganic Nitrogen (NO3-N & NH4-N)

NO3-N Cd. Rd.	mg/kg	63	41.3	3.70	4.28	0.557	20.3	1.20	72.9	4.48	33.8	1.30
NO3-N ISE	mg/kg	17	39.6	7.30	4.40	0.479	20.8	1.90	71.5	6.50	33.0	2.90
NO3-N CTA	mg/kg	2	39.4	5.55	4.38	1.02	17.2	3.12	59.0	3.54	30.7	5.53
NO3-N Ion Chr.	mg/kg	1	0.617	0.000	7.07	7.07	0.106	0.000	126	52.5	43.4	2.25
NO3-N Other _____	mg/kg	10	41.6	4.00	4.65	0.375	21.1	1.55	74.5	3.38	33.7	3.33
NH4 - N (KCl Extr.)	mg/kg	56	19.0	2.05	3.30	0.600	2.05	0.400	3.80	0.510	12.7	0.920

Phosphorus and Sulfur

PO4-P Bray P (1:10)	mg/kg	46	59.0	14.3	118	8.05	44.8	3.70	73.0	4.10	28.2	2.18
PO4-P Bray P1 (1:7)	mg/kg	8	65.3	21.0	94.5	3.93	36.6	4.50	65.1	3.81	26.4	2.46
PO4-P Olsen/Bicarb	mg/kg	57	46.0	6.00	44.0	4.01	12.0	1.94	43.9	3.73	13.0	1.60
PO4-P AB-DTPA	mg/kg	3	24.5	8.50	13.0	7.00	7.40	2.00	18.4	5.60	3.20	2.52
PO4-P Modified Morgan	mg/kg	6	91.6	8.19	5.70	1.50	34.3	7.80	8.95	1.00	2.75	0.715
PO4-P True Morgan	mg/kg	6	80.7	4.45	6.00	0.585	41.6	5.24	10.9	0.970	3.10	0.330
PO4-P Mod. Kewlona	mg/kg	4	73.1	19.4	58.9	3.55	18.3	4.00	47.0	2.65	19.6	1.35
PO4-P Stong Bray (1:10)	mg/kg	9	808	246	187	22.3	159	18.5	171	10.0	51.5	3.50
PO4-P Water Soluble	mg/kg	2	18.2	9.47	4.14	1.31	2.31	0.025	6.52	2.28	1.40	0.295
SO4 - S (PO4 Extr.)	mg/kg	41	9.00	2.80	4.16	0.608	5.00	0.587	6.15	0.79	7.00	1.53

Bases

K Ammonium Acetate	mg/kg	78	481	47.1	113	12.2	205	13.9	705	45.0	486	23.8
Ca Ammonium Acetate	mg/kg	73	5390	511	642	83.5	2290	213	1510	98.2	1380	86.8
Mg Ammonium Acetate	mg/kg	74	370	33.4	121	11.9	65.8	7.17	358	22.2	406	21.0
Na Ammonium Acetate	mg/kg	62	18.4	4.15	12.0	1.76	10.5	1.60	84.9	8.94	15.6	1.87
Bray Extractable K	mg/kg	4	321	9.13	108	3.50	198	6.30	549	8.21	368	20.7
K- Olsen/Bicarb.	mg/kg	5	391	18.0	98.5	4.70	178	3.64	577	25.4	352	18.2
K Modified Morgan	mg/kg	4	530	21.5	87.4	9.00	184	8.40	686	39.8	381	59.0
K True Morgan	mg/kg	5	311	3.0	77.0	1.00	143	7.00	524	27.0	256	15.0
Ca Modified Morgan	mg/kg	4	19500	8130	544	70.5	5370	629	1500	133	1280	124
Aluminum KCL Extr.	mg/kg	3	1.00	0.000	11.2	0.220	1.00	1.00	1.00	1.00	1.00	0.000

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Mehlich-1 Multi Element (scoop)												
Scoop Soil Mass	g	4	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000	5.00	0.000
P	mg/kg	5	539	120	57.9	3.82	81.2	21.3	136	8.58	35.6	2.82
K	mg/kg	5	188	15.3	85.3	1.84	130	5.51	437	5.24	292	28.7
Ca	mg/kg	5	5050	229	709	45.8	4560	401	1560	75.0	1130	63.0
Mg	mg/kg	5	263	49.6	126	5.23	93.9	9.10	308	4.24	317	18.1
Mn	mg/kg	5	1.53	0.380	9.16	0.977	17.3	3.14	31.3	2.14	140	24.9
Zn	mg/kg	5	0.100	0.007	2.04	0.357	1.19	0.160	1.14	0.105	0.640	0.100
Mehlich-3 Multi-Element (scoop)												
Scoop Soil Mass	g	28	1.93	0.166	2.50	0.315	2.43	0.316	2.01	0.073	2.12	0.121
Assumed Density	g/cm ³	15	1.03	0.150	1.18	0.020	1.18	0.020	1.18	0.000	1.18	0.020
Volume of Scoop	cm ³	25	2.00	0.050	2.00	0.050	2.00	0.050	2.00	0.050	2.00	0.050
Extractant Volume mL	mL	28	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000	20.0	0.000
P Colorimetric	mg/kg	20	275	21.5	135	9.00	57.5	3.75	74.9	2.90	27.0	1.20
P ICP-AES	mg/kg	45	289	23.9	142	11.0	61.7	5.91	80.0	5.00	36.2	2.63
K	mg/kg	51	494	39.4	126	14.2	230	21.8	713	48.0	491	28.0
Ca	mg/kg	48	8840	780	729	119	3590	400	1630	144	1440	101
Mg	mg/kg	48	450	31.4	143	17.0	92.8	8.50	389	20.0	431	24.8
Na	mg/kg	35	18.7	3.05	12.0	2.20	11.1	2.57	82.8	9.53	13.9	1.71
S	mg/kg	37	18.9	2.90	12.0	2.00	10.4	2.33	7.90	1.48	13.8	2.14
Al	mg/kg	25	108	12.0	1010	87.9	227	19.5	767	43.3	570	57.0
Zn	mg/kg	40	9.28	0.730	3.32	0.415	3.00	0.210	1.81	0.135	1.18	0.170
Mn	mg/kg	41	52.6	6.37	10.2	1.48	74.0	6.70	74.1	5.70	213	14.5
Fe	mg/kg	38	31.2	3.72	290	19.6	67.0	7.26	182	15.6	97.2	9.20
Cu	mg/kg	40	9.76	0.845	1.96	0.185	2.19	0.230	2.41	0.295	1.50	0.210
B	mg/kg	30	1.76	0.245	0.431	0.085	0.610	0.130	0.415	0.074	0.420	0.068

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Micronutrients												
Zn - DTPA	mg/kg	71	2.72	0.430	1.70	0.210	1.13	0.120	1.07	0.120	0.700	0.100
Mn - DTPA	mg/kg	55	4.37	0.900	4.70	0.600	5.70	1.25	30.9	5.11	159	16.8
Fe - DTPA	mg/kg	58	4.11	0.640	65.9	8.05	7.46	1.17	51.3	10.7	30.4	4.45
Cu - DTPA	mg/kg	60	3.43	0.490	1.44	0.193	1.00	0.100	1.51	0.210	1.28	0.150
Zn - HCl	mg/kg	2	3.45	1.75	3.34	0.195	4.18	1.11	1.90	0.110	0.780	0.412
Mn-H3PO4	mg/kg	10	2.34	0.390	7.15	0.490	16.8	3.07	25.9	2.30	117	4.91
Cl - Ca(NO3)2 Extr.	mg/kg	17	12.7	0.959	3.20	1.20	2.50	0.531	8.50	1.53	6.69	1.29
B - Hot Wat.	mg/kg	44	0.655	0.088	0.210	0.050	0.279	0.042	0.390	0.077	0.445	0.075
B-DTPA/Sorbitol	mg/kg	17	0.720	0.120	0.120	0.040	0.200	0.020	0.200	0.050	0.180	0.048
Soil Organic Matter												
Soil Kjeldahl N	%	18	0.238	0.022	0.060	0.003	0.064	0.005	0.093	0.011	0.108	0.010
Soil TN (combustion)	%	44	0.330	0.020	0.061	0.009	0.070	0.010	0.103	0.013	0.110	0.010
Soil TOC (Combustion)	%	11	3.10	0.640	0.650	0.052	0.640	0.082	1.10	0.055	1.06	0.060
Soil Total C (Combustion)	%	31	4.06	0.120	0.649	0.023	0.800	0.041	1.08	0.020	1.05	0.045
SOM - Walkley-Black	%	36	4.03	0.448	1.04	0.130	1.13	0.080	1.76	0.155	1.74	0.130
SOM - LOI (% Wt loss)	%	72	4.87	0.315	1.81	0.115	1.25	0.120	2.52	0.215	2.17	0.155
Other												
CaCO3 Content	%	19	12.1	0.910	0.500	0.102	1.70	0.310	0.500	0.075	0.470	0.087
CEC - Cation Displacement	cmol/kg	24	26.9	4.20	8.24	1.46	8.31	1.01	17.2	1.80	15.0	2.00
CEC - Estimation	cmol/kg	12	32.5	5.45	9.00	2.25	13.2	1.35	15.5	1.60	13.7	1.20
Soil Density (Scoop)	g/cc	15	1.03	0.020	1.46	0.040	1.38	0.035	1.16	0.040	1.21	0.030
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	43	17.0	1.77	64.8	2.40	62.5	3.70	24.9	4.88	25.5	4.52
Silt 50 - 2 um	%	43	30.0	3.00	21.0	2.00	29.6	3.60	60.0	3.00	54.0	3.25
Clay 2 - 0 um	%	43	51.4	3.01	14.0	2.00	8.00	1.06	16.0	2.40	21.0	2.00
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	5	12.5	2.66	65.9	0.420	72.0	0.370	24.8	6.58	25.1	3.80
Silt 50 - 2 um	%	5	37.3	1.71	21.9	0.440	20.1	0.200	61.9	4.09	53.9	5.50
Clay 2 - 0 um	%	5	50.2	3.43	12.0	0.610	7.73	0.270	15.8	0.410	21.1	0.825

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