



NAPT Program  
North American Proficiency Testing

# 2005 North American Proficiency Testing Program

## 3<sup>rd</sup> Quarter Report October 28, 2005



Soil Systems  
Society of America

Laboratory ID

Soil Analysis	Units	n	Soil 2005-111		Soil 2005-112		Soil 2005-113		Soil 2005-114		Soil 2005-115	
			Median	MAD	Lab <sup>1</sup>	Median	MAD	Lab	Median	MAD	Lab	Median
<b>Salinity -SP</b>												
Sat. Paste Moisture	%	38	30.8	1.4	42.3	2.8	42.2	2.8	28.0	2.0	41.4	2.8
pH - sp	Unit	47	7.50	0.10	6.17	0.16	7.12	0.13	6.80	0.10	4.84	0.16
ECE - sp	ds/m	51	1.29	0.12	1.41	0.18	1.23	0.18	2.27	0.27	1.04	0.12
HCO <sub>3</sub> - sp	mmol/L	17	3.46	0.91	0.85	0.18	4.46	1.69	2.23	0.65	0.36	0.12
Ca - sp	mmol/L	41	9.68	0.79	9.2	1.6	7.8	0.98	7.15	1.13	4.85	0.61
Mg - sp	mmol/L	41	1.66	0.19	2.4	0.3	3.29	0.69	4.98	0.66	3.21	0.29
Na - sp	mmol/L	42	1.40	0.20	0.48	0.22	0.96	0.21	2.24	0.28	0.91	0.19
SAR - sp	value	36	0.6	0.05	0.2	0.10	0.4	0.10	0.9	0.07	0.5	0.10
Cl - sp	mmol/L	27	2.12	0.21	0.37	0.14	0.52	0.15	0.65	0.17	2.94	0.34
SO <sub>4</sub> - sp	mmol/L	26	1.73	0.24	0.42	0.11	1.21	0.27	2.42	0.28	2.91	0.33
NO <sub>3</sub> - sp	mmol/L	17	3.98	0.81	10.6	1.5	5.52	2.08	14.4	3.0	3.53	0.64
B - sp	mg/L	19	0.15	0.030	0.08	0.017	0.19	0.048	0.22	0.028	0.23	0.030
<b>Soil EC</b>												
Soil EC (1:1)	(ds/m)	35	0.40	0.06	0.62	0.05	0.45	0.09	0.65	0.095	0.33	0.05
Soil EC (1:2)	(ds/m)	51	0.28	0.03	0.36	0.03	0.31	0.04	0.46	0.08	0.25	0.03
<b>Soil pH</b>												
pH (1:1)	Unit	100	7.80	0.10	6.30	0.10	7.30	0.13	7.09	0.08	5.05	0.06
pH (1:2)	Unit	40	7.90	0.10	6.40	0.11	7.44	0.22	7.20	0.10	5.11	0.15
pH (1:1) 0.01M CaCl <sub>2</sub>	Unit	24	7.41	0.11	6.02	0.11	6.98	0.22	6.70	0.11	4.66	0.07
pH (1:2) 0.01M CaCl <sub>2</sub>	Unit	15	7.40	0.10	6.07	0.13	6.90	0.13	6.71	0.06	4.64	0.07
<b>Buffer pH</b>												
SMP Buffer pH	Unit	67	7.50	0.03	7.10	0.07	7.40	0.07	7.20	0.08	6.30	0.10
Adams-Evans Buf pH	Unit	13	7.85	0.05	7.65	0.06	7.85	0.06	7.74	0.06	7.41	0.09
Woodruff Buf. pH	Unit	21	7.10	0.05	6.82	0.08	7.07	0.07	7.00	0.04	6.30	0.09
Mehlich Buf. pH	Unit	5	6.68	0.03	6.34	0.03	6.55	0.03	6.48	0.05	5.89	0.11
Titratable Acidity	cmol/kg	1	0.2	-	2.9	-	1.3	-	2.8	-	14.2	-

1 - Values flagged exceed Warning Limits " \* " 2.5 x MAD (Median Absolute Deviation) and Control Limits " \* \* " 4 x MAD. "<" and "ND" values not recorded.

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			Median	MAD	Lab <sup>1</sup>	Median	MAD	Lab	Median	MAD	Lab	Median
<b>Nitrate (NO<sub>3</sub>-N)</b>												
Cd. Rd.	mg/kg	75	29.1	2.1	67.0	4.3	48.4	11.0	70.4	8.6	23.1	2.3
ISE	mg/kg	28	28.8	5.3	62.0	10.1	44.7	11.8	76.5	15.0	19.5	4.9
CTA	mg/kg	7	28.8	2.0	67.5	2.5	55.0	5.3	71.5	4.8	27.6	2.6
Ion Chromatography	mg/kg	3	27.0	2.3	73.9	1.1	52.9	0.7	77.1	0.02	25.3	0.7
Other	mg/kg	7	29.3	2.8	63.2	6.3	52.9	7.0	71.0	8.2	23.7	4.5
NH <sub>4</sub> -N (KCl Extr.)	mg/kg	56	4.1	1.2	8.2	1.3	10.2	3.1	18.0	2.1	21.0	3.09
<b>Phosphorus &amp; Sulfur</b>												
PO <sub>4</sub> -P Bray P1 (1:10)	mg/kg	58	85.0	11.0	22.0	2.0	110	22	130	16	55.0	5.3
PO <sub>4</sub> -P Bray P1 (1:7)	mg/kg	7	65.9	17.9	16.7	5.3	63.0	25.0	89.1	15.9	49.0	8.0
PO <sub>4</sub> -P Olsen/Bicarb	mg/kg	72	50.0	3.8	11.7	1.4	49.2	7.5	69.0	9.1	24.0	2.5
PO <sub>4</sub> -P AB-DTPA	mg/kg	2	45.9	9.4	5.4	1.8	57.8	18.5	49.7	13.6	18.6	13.0
PO <sub>4</sub> -P M. Morgan	mg/kg	7	62.0	6.2	4.8	0.2	113	11	52.8	10.3	2.9	0.3
PO <sub>4</sub> -P M. Kewlona	mg/kg	4	72.7	2.0	17	0.6	74	16	96.1	2.0	35.5	1.6
PO <sub>4</sub> -P Strg Bray P-2	mg/kg	11	247	29	64.0	5.0	317	48	220	25	81.0	6.0
PO <sub>4</sub> -P Water Soluble	mg/kg	6	12.3	3.3	1.4	0.40	13.5	3.8	20.3	4.2	0.90	0.40
SO <sub>4</sub> -S (PO <sub>4</sub> Extr.)	mg/kg	49	12.8	2.4	5.0	1.2	9.8	2.2	13.0	3.1	29.5	6.6
<b>Ammonium Ace. Bases</b>												
K	mg/kg	97	284	20	415	27	405	43	1675	149	218	36
Ca	mg/kg	92	3406	366	2799	149	2200	262	1671	125	1024	124
Mg	mg/kg	93	160	15	338	23.0	291	33	396	39	279	41
Na	mg/kg	72	31.0	5.0	14.2	3.8	24.5	5.5	48.0	7.7	24.1	6.7
K - Bray (1:10)	mg/kg	6	241	9	309	10	339	17	1291	67	151	2
K - Bicarb.	mg/kg	10	240	16	339	26	336	15	1320	46.4	208	17
K - Modified Morgan	mg/kg	6	199	16	265	16	305	16	1172	100	195	43
Ca Modified Morgan	mg/kg	3	5190	373	2722	40	2664	14	1621	84	1048	6
Al KCL Extr.	mg/kg	4	0.25	0.10	0.57	0.19	0.65	0.37	0.84	0.16	32.9	15.4

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**NAPIT Program**  
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Analysis	Units	$n$	Median	MAD	Lab <sup>1</sup>	Median	MAD	Lab	Median	MAD	Lab
<b>Mehlich-1 Multi Element</b>											
Soil Scoop Mass	g	10	5.00	0.16		5.00	0.04		4.99	0.01	
P	mg/kg	10	131	13.5		47.0	8.7		127	11.6	
K	mg/kg	10	200	12.9		249	18.1		291	30	
Ca	mg/kg	10	4611	508		2005	248		4015	908	
Mg	mg/kg	10	180	15		233	12		199	80.1	
Mn	mg/kg	9	22.5	1.2		7.1	0.63		3.9	2.24	
Zn	mg/kg	8	3.86	0.22		0.67	0.09		7.45	7.41	
<b>Mehlich-3 Multi-Element</b>											
Soil Scoop Mass	g	33	2.25	0.25		2.00	0.23		2.00	0.31	
Scoop Volume	mL	16	1.18	0.17		1.18	0.05		1.18	0.12	
P Colorimetric	mg/kg	27	99	9.6		22.0	1.6		169	37	
P ICP	mg/kg	44	106	7.4		26.0	2.2		181	16	
K	mg/kg	54	309	19		433	24		421	32	
Ca	mg/kg	52	4551	413		2830	180		2622	180	
Mg	mg/kg	52	209	16		358	21		336	23.4	
Na	mg/kg	33	32.5	9.2		17.0	8.4		27.0	6.7	
S	mg/kg	35	22.0	4.3		12.0	4.1		20.0	4.1	
Al	mg/kg	23	328	43		625	75		317	35	
Zn	mg/kg	43	5.93	0.57		1.02	0.15		20.7	3.20	
Mn	mg/kg	41	72.0	6.0		26.3	4.7		85	8.3	
Fe	mg/kg	39	80.8	10.8		62.0	10.0		130	38	
Cu	mg/kg	42	2.29	0.27		1.25	0.15		3.32	0.33	
B	mg/kg	35	0.93	0.15		0.61	0.09		1.50	0.27	

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			Lab <sup>1</sup>	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab
<b>Micronutrients</b>												
Zn - DTPA	mg/kg	79	1.80	0.19	0.46	0.06	7.96	0.96	1.00	0.15	1.90	0.25
Mn - DTPA	mg/kg	68	5.40	1.10	4.49	1.08	4.00	1.31	123	19	77.3	10.2
Fe - DTPA	mg/kg	72	6.2	1.17	12.2	1.4	11.6	2.9	16.7	3.0	135	25
Cu - DTPA	mg/kg	71	0.84	0.10	0.69	0.10	0.88	0.17	0.72	0.12	0.44	0.09
Zn - HCl	mg/kg	7	6.30	0.80	1.20	0.14	22.9	5.3	3.10	0.33	2.62	0.28
Mn-H <sub>3</sub> PO <sub>4</sub>	mg/kg	11	17.6	3.4	5.0	0.9	16.4	2.4	126	21	60	10
Cl - Ca(NO <sub>3</sub> ) <sub>2</sub> Extr.	mg/kg	23	23.0	2.0	5.9	1.8	6.1	1.3	6.0	2.1	34.7	4.9
B - Hot Water	mg/kg	53	0.53	0.16	0.55	0.17	0.75	0.25	0.85	0.25	0.60	0.15
B - DTPA-Sorb	mg/kg	11	0.41	0.07	0.20	0.03	0.47	0.10	0.50	0.06	0.25	0.05
<b>Soil Organic Matter</b>												
Soil Kjeldahl N	%	25	0.062	0.008	0.150	0.010	0.210	0.023	0.140	0.010	0.212	0.012
Soil TN (combustion)	%	41	0.067	0.008	0.150	0.012	0.220	0.016	0.140	0.010	0.214	0.012
Soil TOC (combustion)	%	35	0.65	0.027	1.50	0.06	2.42	0.12	1.33	0.05	2.23	0.07
SOM - Walkley-Black	%	46	1.10	0.10	2.61	0.23	3.97	0.56	2.41	0.21	3.34	0.57
SOM - LOL (Raw Values)	%	82	1.39	0.14	3.16	0.26	4.35	0.30	2.79	0.25	4.41	0.27
CaCO <sub>3</sub> Content	%	17	1.29	0.29	0.50	0.17	1.00	0.50	0.56	0.23	0.34	0.11
CEC - Displacement	cmol/kg	27	10.7	0.6	20.5	1.5	14.1	1.0	16.5	1.4	16.8	1.9
- Estimation	cmol/kg	12	21.4	1.4	19.0	0.8	15.7	1.4	16.4	1.5	13.2	4.2
Scoop Density	mg/cm <sup>3</sup>	15	1.32	0.07	1.21	0.06	1.10	0.10	1.39	0.07	0.85	0.06
<b>Particle Size Analysis</b>												
Sand 2000 - 50 um	%	52	65.0	2.3	36.6	3.4	70.0	3.8	70.0	2.0	21.8	3.6
Silt 50 - 2 um	%	52	26.0	2.0	40.0	3.1	23.0	2.5	16.3	2.3	60.0	4.2
Clay 2 - 0 um	%	52	9.0	1.6	23.0	3.0	7.0	2.0	14.0	2.0	19.1	3.3

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