Soil Science Society of America

2000 North American Proficiency Testing Program

1st Quarter Report May 8, 2000

Laboratory ID

Soil			Soil 00-101			Soil 00-102			Soil 00-103			Soil 00-104			Soil 00-105		
Analysis	**Units**	**N**	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Salinity																	
Sat. Paste Moisture	%	39	**43.7**	*1.7*		**23.0**	*1.9*		**63.3**	*4.7*		**26.5**	*1.6*		**37.4**	*2.2*	
pH - sp	Unit	44	**6.40**	*0.15*		**5.40**	*0.16*		**7.60**	*0.11*		**7.36**	*0.14*		**7.69**	*0.12*	
ECe - sp	dS/m	49	**0.49**	*0.09*		**0.51**	*0.08*		**4.40**	*0.48*		**0.79**	*0.07*		**1.33**	*0.14*	
HCO_3 - sp	mmolc/L	17	**2.3**	*0.61*		**0.72**	*0.28*		**3.1**	*0.60*		**2.9**	*0.42*		**5.2**	*0.90*	
Ca - sp	mmolc/L	42	**3.0**	*0.50*		**1.4**	*0.26*		**26.9**	*2.60*		**4.3**	*0.42*		**6.5**	*0.65*	
Mg - sp	mmolc/L	42	**1.4**	*0.25*		**0.74**	*0.16*		**14.0**	*1.20*		**1.8**	*0.15*		**3.86**	*0.41*	
Na - sp	mmolc/L	42	**0.36**	*0.20*		**0.44**	*0.18*		**19.3**	*3.03*		**0.77**	*0.18*		**2.07**	*0.21*	
SAR - sp	value	36	**0.26**	*0.12*		**0.40**	*0.20*		**4.26**	*0.35*		**0.43**	*0.13*		**0.90**	*0.10*	
Cl - sp	mmolc/L	28	**0.47**	*0.18*		**0.82**	*0.12*		**7.4**	*1.2*		**0.91**	*0.14*		**2.37**	*0.38*	
SO_4 - sp	mmolc/L	23	**1.10**	*0.10*		**0.60**	*0.10*		**49.7**	*3.3*		**1.0**	*0.11*		**1.96**	*0.12*	
B - sp	mg/L	25	**0.08**	*0.03*		**0.13**	*0.03*		**0.42**	*0.08*		**0.07**	*0.02*		**0.23**	*0.03*	
Soil EC																	
Soil EC (1:1)	(dS/m)	32	**0.23**	*0.03*		**0.13**	*0.03*		**2.61**	*0.36*		**0.24**	*0.05*		**0.51**	*0.09*	
Soil EC (1:2)	(dS/m)	46	**0.15**	*0.03*		**0.10**	*0.02*		**2.16**	*0.37*		**0.17**	*0.04*		**0.36**	*0.06*	
Soil pH																	
pH (1:1)	Unit	90	**6.50**	*0.10*		**5.70**	*0.10*		**7.86**	*0.07*		**7.60**	*0.10*		**8.00**	*0.10*	
pH (1:2)	Unit	31	**6.60**	*0.10*		**5.88**	*0.12*		**7.90**	*0.10*		**7.68**	*0.12*		**8.12**	*0.15*	
pH (1:1) 0.01M $CaCl_2$	Unit	17	**6.00**	*0.10*		**5.07**	*0.10*		**7.66**	*0.07*		**7.10**	*0.18*		**7.60**	*0.10*	
pH (1:2) 0.01M $CaCl_2$	Unit	6	**6.02**	*0.04*		**5.05**	*0.05*		**7.80**	*0.20*		**7.01**	*0.03*		**7.58**	*0.16*	
Buffer pH																	
SMP Buffer pH	Unit	58	**7.00**	*0.07*		**7.19**	*0.09*		**7.50**	*0.05*		**7.50**	*0.06*		**7.50**	*0.04*	
Adams-Evans Buf pH	Unit	9	**7.64**	*0.05*		**7.84**	*0.04*		**7.77**	*0.03*		**7.93**	*0.05*		**7.85**	*0.06*	
Woodruff Buf. pH	Unit	14	**6.80**	*0.05*		**6.80**	*0.06*		**7.15**	*0.05*		**7.00**	*0.01*		**7.10**	*0.03*	

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Analysis	**Units**		**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Nitrate (NO_3-N)																	
Cd. Rd.	mg/kg	57	12.0	*1.0*		9.5	*1.4*		23.0	*1.3*		13.5	*1.1*		30.8	*1.7*	
ISE	mg/kg	36	11.7	*2.2*		9.8	*2.1*		24.0	*5.0*		13.6	*2.6*		32.8	*6.8*	
CTA	mg/kg	6	12.6	*0.6*		9.0	*0.4*		25.0	*1.1*		14.0	*0.10*		32.5	*1.5*	
Ion Chromatography	mg/kg	3	12.6	*0.3*		10.0	*1.7*		28.1	*3.4*		12.6	*0.5*		32.7	*3.0*	
Other	mg/kg	11	12.2	*1.2*		9.2	*1.2*		23.0	*1.5*		14.0	*1.0*		31.7	*3.9*	
NH_4 - N (KCl Extr.)	mg/kg	45	28.9	*3.6*		5.0	*0.8*		6.1	*0.9*		6.0	*0.5*		3.1	*0.9*	
Phosphorus & Sulfur																	
PO_4-P Bray P1 (1:10)	mg/kg	51	25.2	*2.8*		35.0	*3.0*		2.0	*1.0*		41.0	*5.0*		10.0	*3.0*	
PO_4-P Bray P1 (1:7)	mg/kg	11	20.0	*3.1*		30.0	*7.0*		3.3	*1.5*		34.0	*7.0*		18.2	*7.3*	
PO_4-P Olsen/Bicarb	mg/kg	70	17.0	*1.4*		14.8	*2.0*		9.0	*1.0*		17.0	*2.0*		32.0	*2.3*	
PO_4-P AB-DTPA	mg/kg	2	14.2	*7.6*		11.1	*3.4*		3.6	*1.9*		15.4	*3.7*		29.0	*5.5*	
PO_4-P M. Morgan	mg/kg	9	4.1	*0.5*		6.0	*1.2*		12.5	*4.5*		26.0	*4*		54.5	*12.7*	
PO_4-P M. Kewlona	mg/kg	5	16.0	*0.2*		20.3	*0.5*		14.6	*1.8*		26.0	*1.5*		33.0	*12.0*	
SO_4 -S (PO_4 Extr.)	mg/kg	54	8.8	*2.8*		4.8	*1.8*		312	*138*		9.0	*3.2*		15.0	*5.0*	
Ammonium Ace. Bases																	
K	mg/kg	100	117	*8*		284	*32*		433	*29*		200	*16*		752	*47*	
Ca	mg/kg	89	1506	*88*		370	*63*		6505	*480*		793	*126*		3659	*469*	
Mg	mg/kg	89	280	*16*		91	*15*		1151	*80*		142	*20*		461	*34*	
Na	mg/kg	75	16	*6*		14	*7*		621	*70*		21	*8.1*		51	*12*	
K- Bicarb.	mg/kg	9	109	*9*		271	*15*		289	*30*		205	*24*		606	*39*	
K Modified Morgan	mg/kg	7	120	*7*		257	*33.3*		348	*121*		180	*29*		692	*129*	
Ca Modified Morgan	mg/kg	6	1655	*99*		385	*58*		14114	*7464*		948	*176*		18048	*2416*	
Al KCL Extr.	mg/kg	7	0.61	*0.40*		1.7	*0.50*		0.76	*0.21*		1.5	*1.1*		0.68	*0.21*	

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Mehlich-1 Multi Element																	
Soil Scoop Mass	g		**5.0**	*0.2*		**5.0**	*1.3*		**5.0**	*0.1*		**5.0**	*1.1*		**5.0**	*0.2*	
P	mg/kg	7	**13**	*1.1*		**39**	*2.3*		**2.8**	*0.8*		**61.3**	*2.3*		**37.9**	*5.7*	
K	mg/kg	7	**83**	*2.1*		**196**	*10.0*		**113**	*8.3*		**148**	*8.4*		**353**	*13.0*	
Ca	mg/kg	7	**1331**	*39*		**302**	*31*		**4850**	*278*		**653**	*60*		**4940**	*280*	
Mg	mg/kg	7	**237**	*10*		**67**	*10*		**672**	*43*		**126**	*11*		**405**	*12*	
Zn	mg/kg	7	**1.96**	*0.05*		**0.74**	*0.14*		**0.01**	*0.02*		**2.47**	*0.32*		**0.04**	*0.05*	
Mehlich-3 Mult-Element																	
Soil Scoop Mass	g	22	**2.00**	*0.06*		**2.46**	*0.46*		**2.00**	*0.10*		**2.37**	*0.37*		**2.07**	*0.10*	
Scoop Volume	mL	10	**1.16**	*0.09*		**1.16**	*0.09*		**1.17**	*0.09*		**1.17**	*0.09*		**1.17**	*0.09*	
P	mg/kg	35	**32.0**	*3.9*		**33.0**	*5.0*		**34.0**	*3.0*		**57.6**	*7.9*		**87.5**	*7.5*	
K	mg/kg	43	**124**	*9*		**318**	*38*		**432**	*27.1*		**228**	*19*		**810**	*53*	
Ca	mg/kg	41	**1591**	*89*		**405**	*44*		**9900**	*727*		**981**	*65*		**5582**	*244*	
Mg	mg/kg	39	**293**	*16*		**105**	*9*		**1380**	*120*		**184**	*15*		**604**	*39*	
Na	mg/kg	37	**12**	*3.0*		**8.3**	*3.3*		**666**	*53.5*		**17.0**	*4.0*		**55.0**	*4.2*	
Al	mg/kg	25	**581**	*79*		**332**	*45*		**148**	*33*		**249**	*29*		**204**	*25*	
Zn	mg/kg	15	**2.59**	*0.2*		**1.51**	*0.33*		**2.58**	*0.20*		**3.80**	*0.65*		**3.09**	*0.31*	
Mn	mg/kg	30	**334**	*20*		**69**	*11*		**79**	*6.5*		**49**	*6.2*		**191**	*18*	
Fe	mg/kg	26	**302**	*38*		**76**	*13*		**123**	*10*		**42**	*8.0*		**54**	*6.0*	
Cu	mg/kg	27	**1.80**	*0.36*		**0.76**	*0.23*		**4.30**	*0.53*		**1.15**	*0.35*		**3.15**	*0.50*	
B	mg/kg	27	**0.75**	*0.18*		**0.23**	*0.13*		**3.60**	*0.40*		**0.40**	*0.08*		**2.39**	*0.29*	

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Micronutrients																	
Zn - DTPA	mg/kg	90	1.32	*0.10*		0.92	*0.13*		0.90	*0.10*		1.60	*0.20*		1.08	*0.08*	
Mn - DTPA	mg/kg	75	229	*31.0*		26.8	*3.7*		7.4	*1.0*		9.0	*1.2*		11.7	*2.3*	
Fe - DTPA	mg/kg	80	98	*13.8*		21.3	*3.2*		20.0	*2.0*		4.4	*0.7*		7	*0.8*	
Cu - DTPA	mg/kg	81	1.10	*0.10*		0.60	*0.10*		2.20	*0.15*		0.48	*0.08*		1.20	*0.10*	
Zn - HCl	mg/kg	8	2.90	*0.40*		1.80	*0.65*		0.10	*0.00*		3.75	*0.86*		0.61	*0.16*	
Mn-H_3PO_4	mg/kg	8	203	*11.5*		22.8	*2.9*		6.3	*1.5*		14.3	*0.80*		9.2	*1.7*	
Cl - $Ca(NO_3)_2$ Extr.	mg/kg	19	5.8	*1.7*		7.0	*1.9*		159	*17*		8.9	*2.9*		29.8	*3.8*	
B - Hot Water	mg/kg	56	0.50	*0.17*		0.25	*0.10*		1.61	*0.45*		0.35	*0.08*		1.15	*0.19*	
B - DTPA-Sorb	mg/kg	11	0.34	*0.13*		0.20	*0.07*		2.72	*0.27*		0.29	*0.09*		1.36	*0.17*	
Soil Organic Matter																	
Soil Kjeldahl N	%	28	0.139	*0.011*		0.030	*0.003*		0.090	*0.007*		0.030	*0.006*		0.110	*0.010*	
Soil TN (combustion)	%	27	0.140	*0.013*		0.030	*0.010*		0.097	*0.013*		0.030	*0.010*		0.110	*0.012*	
Soil TOC (combustion)	%	20	1.33	*0.03*		0.26	*0.03*		1.79	*0.96*		0.26	*0.03*		1.59	*0.29*	
SOM - Walkley-Black	%	61	2.28	*0.22*		0.60	*0.13*		1.40	*0.20*		0.50	*0.10*		1.83	*0.17*	
SOM - LOI (Raw Values)	%	67	2.59	*0.21*		0.60	*0.10*		2.20	*0.32*		0.60	*0.10*		1.96	*0.23*	
$CaCO_3$ Content	%	14	0.15	*0.09*		0.08	*0.12*		16.1	*1.2*		0.25	*0.18*		6.3	*0.80*	
Soil CEC	cmol/kg	31	12.7	*1.8*		3.5	*0.60*		28.7	*5.1*		4.8	*1.0*		13.3	*1.4*	
Particle Size Analysis																	
Sand 2000 - 50 um	%	57	22.0	*4.0*		85.0	*2.0*		6.7	*4.3*		90.0	*2.5*		45.0	*3.2*	
Silt 50 - 2 um	%	57	61.0	*5.0*		8.0	*2.0*		38.0	*6.9*		4.0	*1.2*		38.0	*4.0*	
Clay 2 - 0 um	%	57	18.0	*3.1*		6.8	*1.9*		53.1	*5.6*		6.0	*2.0*		17.0	*3.0*	

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