Soil Science Society of America

2002 North American Proficiency Testing Program

4th Quarter Report December 18, 2002

Laboratory ID

Soil			Soil 2002-116			Soil 2002-117			Soil 2002-118			Soil 2002-119			Soil 2002-120		
Analysis	**Units**	***n***	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Salinity -SP																	
Sat. Paste Moisture	%	36	46.3	2.3		40.0	2.9		46.7	2.7		27.1	1.3		49.9	2.8	
pH - sp	Unit	41	5.58	0.12		6.50	0.12		7.50	0.10		6.40	0.10		4.90	0.14	
ECe - sp	dS/m	45	1.33	0.09		0.70	0.09		10.7	1.05		0.36	0.07		0.88	0.07	
HCO_3 - sp	mmolc/L	15	0.46	0.40		1.93	1.07		3.00	0.84		1.06	0.61		0.50	0.42	
Ca - sp	mmolc/L	39	7.1	0.72		3.10	0.59		66.4	4.86		1.44	0.27		3.71	0.51	
Mg - sp	mmolc/L	39	3.17	0.47		1.19	0.21		26.7	3.16		1.09	0.20		2.00	0.33	
Na - sp	mmolc/L	40	0.49	0.19		0.84	0.33		33.0	3.31		0.47	0.21		1.04	0.16	
SAR - sp	value	30	0.2	0.10		0.60	0.21		4.91	0.30		0.42	0.16		0.64	0.10	
Cl - sp	mmolc/L	25	0.34	0.16		1.66	0.21		76.9	12.15		0.46	0.24		4.26	0.47	
SO_4 - sp	mmolc/L	22	0.5	0.16		2.04	0.27		33.5	3.20		0.97	0.24		1.37	0.20	
NO_3 - sp	mmolc/L	10	10.26	0.89		0.18	0.16		10.1	1.15		0.27	0.17		1.89	0.19	
B - sp	mg/L	19	0.10	0.02		0.17	0.07		1.98	0.30		0.15	0.05		0.30	0.04	
Soil EC																	
Soil EC (1:1)	(dS/m)	28	0.64	0.06		0.37	0.05		3.87	0.66		0.14	0.04		0.27	0.08	
Soil EC (1:2)	(dS/m)	45	0.34	0.04		0.18	0.03		2.78	0.48		0.10	0.03		0.21	0.04	
Soil pH																	
pH (1:1)	Unit	91	5.74	0.06		6.78	0.08		7.70	0.10		6.40	0.10		5.10	0.08	
pH (1:2)	Unit	31	5.83	0.07		6.88	0.13		7.80	0.10		6.51	0.13		5.19	0.09	
pH (1:1) 0.01M $CaCl_2$	Unit	19	5.44	0.09		6.30	0.05		7.61	0.13		5.80	0.11		4.64	0.07	
pH (1:2) 0.01M $CaCl_2$	Unit	12	5.47	0.06		6.27	0.03		7.73	0.07		5.76	0.06		4.58	0.04	
Buffer pH																	
SMP Buffer pH	Unit	66	6.90	0.09		7.20	0.04		7.53	0.04		6.92	0.08		5.52	0.17	
Adams-Evans Buf pH	Unit	13	7.61	0.04		7.70	0.03		7.73	0.04		7.72	0.04		7.02	0.17	
Woodruff Buf. pH	Unit	16	6.73	0.08		6.90	0.08		7.12	0.05		6.78	0.08		5.65	0.15	
Mehlich Buf. pH	Unit	4	6.14	0.04		6.40	0.04		6.84	0.01		6.38	0.06		5.11	0.01	

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Analysis	**Units**	***n***	**Median**	***MAD***	**Lab[1]**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**	**Median**	***MAD***	**Lab**
Nitrate (NO_3-N)																	
Cd. Rd.	mg/kg	55	69.6	4.4		6.6	0.6		80.0	7.0		5.0	1.0		15.8	2.2	
ISE	mg/kg	26	63.3	7.5		6.7	1.0		72.4	7.5		5.2	1.2		12.5	2.9	
CTA	mg/kg	6	64.9	3.9		6.4	0.6		66.0	7.0		5.3	0.5		14.3	9.7	
Ion Chromatography	mg/kg	3	74.4	1.6		7.9	0.3		63.5	3.2		5.0	1.73		15.9	0.7	
Other	mg/kg	15	69.4	5.1		8.0	2.7		78.6	13.9		6.0	2.7		14.0	2.6	
NH_4 - N (KCl Extr.)	mg/kg	54	22.3	2.2		10.7	1.4		7.0	1.2		3.6	1.3		17.9	2.9	
Phosphorus & Sulfur																	
PO_4-P Bray P1 (1:10)	mg/kg	52	13.0	1.0		60.0	4.6		37.9	2.9		367	129		102	15.7	
PO_4-P Bray P1 (1:7)	mg/kg	12	12.0	2.5		51.0	4.3		31.0	3.0		217	9.0		69.0	11.5	
PO_4-P Olsen/Bicarb	mg/kg	62	7.5	1.5		28.2	2.8		18.5	2.2		68.7	8.7		41.8	7.8	
PO_4-P AB-DTPA	mg/kg	2	0.8	0.8		16.5	2.7		10.7	2.5		88.7	44.3		25.6	16.9	
PO_4-P M. Morgan	mg/kg	13	2.0	0.7		28.3	6.3		60.0	10.0		17.5	5.5		2.0	1.4	
PO_4-P M. Kewlona	mg/kg	4	7.2	3.50		42.8	5.1		30.5	5.7		262	5.5		44.7	2.7	
PO_4-P Strg Bray P-2	mg/kg	10	47	4.0		193.0	20.0		207	15.5		237	33.0		117	12.0	
PO_4-P Water Soluble	mg/kg	1	1.1	4.5		28.0	0.00		2.0	0.0		28.8	0.0		2.1	0.00	
SO_4 -S (PO_4 Extr.)	mg/kg	41	6.0	2.4		10.2	2.3		210.3	90.3		7.3	3.3		13.0	4.5	
Ammonium Ace. Bases																	
K	mg/kg	94	396	39		1101	79		729	61		121	15		180	32	
Ca	mg/kg	87	2450	213		2320	159		4870	424		400	68		1270	249	
Mg	mg/kg	88	491	43		376	25.0		808	70		75	15		166	33	
Na	mg/kg	69	19	7.2		27	6.1		640	60.0		16	7.2		32	6.0	
K - Bray (1:10)	mg/kg	3	264	28		562	45		423	62		132	5.0		130	5.0	
K- Bicarb.	mg/kg	8	328	20		840	81		558	60		122	5		217	10	
K Modified Morgan	mg/kg	10	276	27		1104	263		747	240		122	22		189	9	
Ca Modified Morgan	mg/kg	6	2872	378		2783	393		5932	724		439	62		1495	107	
Al KCL Extr.	mg/kg	7	1.00	0.73		0.63	0.58		0.54	0.48		0.57	1.10		24.4	7.2	

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Mehlich-1 Multi Element																	
Soil Scoop Mass	g	10	5.00	0.10		5.00	0.14		5.00	0.10		5.00	0.54		4.91	0.10	
P	mg/kg	11	44	6.9		182	27.7		136	13		148	38		25.0	4.9	
K	mg/kg	11	203	22.1		615	31		359	41		105	6.4		137	26	
Ca	mg/kg	10	1660	182		1960	172		4070	546		438	72		1420	187	
Mg	mg/kg	10	321	45		287	35		675	96		75	6		181	19.6	
Zn	mg/kg	11	0.80	0.14		0.78	0.16		30.5	6.19		5.55	0.50		3.64	0.39	
Mehlich-3 Mult-Element																	
Soil Scoop Mass	g	41	2.00	0.50		2.00	0.56		2.00	0.50		2.63	0.63		1.56	0.44	
Scoop Volume	mL	22	1.01	0.16		1.07	0.11		1.03	0.15		1.18	0.18		1.00	0.18	
P Colorimetric	mg/kg	22	14.1	1.7		91.0	12.8		58.0	3.5		440	77.6		78.0	6.0	
P ICP	mg/kg	38	16.1	1.9		93.0	7.0		60.0	4.8		451	48.7		103	11.5	
K	mg/kg	52	401	42		1111	87.0		740	76.5		151	16		167	22	
Ca	mg/kg	51	2430	212		2470	211		5400	452		563	87		1255	177	
Mg	mg/kg	51	500	34		424	28.0		980	76.0		107	14		170	19.0	
Na	mg/kg	31	20	6.8		29	6.0		671	72.8		18	9.0		33	7.0	
S	mg/kg	26	11.1	3.3		15.8	2.8		445	56		18.0	3.4		23.3	2.9	
Al	mg/kg	20	797	28		475	27		372	32		1339	169		1528	129	
Zn	mg/kg	39	1.34	0.24		1.39	0.18		57.7	4.36		8.90	1.00		4.20	0.53	
Mn	mg/kg	38	96	12		169	15.9		129	11		67	10.3		8.1	1.1	
Fe	mg/kg	35	114	14.8		58	7.8		119	17.6		226	30.5		123	9	
Cu	mg/kg	38	1.54	0.25		1.71	0.22		5.10	0.40		1.20	0.20		1.17	0.17	
B	mg/kg	33	0.60	0.15		1.00	0.20		9.00	1.04		0.52	0.26		0.50	0.11	

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Micronutrients																	
Zn - DTPA	mg/kg	74	**0.48**	*0.08*		**0.40**	*0.10*		**18.3**	*1.75*		**3.35**	*0.45*		**3.38**	*0.68*	
Mn - DTPA	mg/kg	68	**16.0**	*3.15*		**9.6**	*2.5*		**8.6**	*1.6*		**6.8**	*1.1*		**8.3**	*1.7*	
Fe - DTPA	mg/kg	72	**26.0**	*3.4*		**7.7**	*1.2*		**3.8**	*1.4*		**26.5**	*4.2*		**39.0**	*6.8*	
Cu - DTPA	mg/kg	69	**0.81**	*0.09*		**0.86**	*0.08*		**1.51**	*0.21*		**0.51**	*0.08*		**0.40**	*0.10*	
Zn - HCl	mg/kg	9	**1.70**	*0.57*		**1.79**	*0.32*		**54.0**	*2.00*		**7.2**	*1.5*		**4.93**	*1.15*	
Mn-H_3PO_4	mg/kg	9	**11.0**	*2.0*		**9.0**	*2.3*		**27.1**	*3.1*		**23.8**	*2.80*		**8.0**	*1.0*	
Cl - $Ca(NO_3)_2$ Extr.	mg/kg	23	**4.1**	*1.3*		**18.0**	*2.8*		**1200**	*273*		**3.9**	*2.0*		**61.2**	*9.3*	
B - Hot Water	mg/kg	52	**0.52**	*0.15*		**0.78**	*0.22*		**5.03**	*1.5*		**0.33**	*0.11*		**0.90**	*0.24*	
B - DTPA-Sorb	mg/kg	11	**0.21**	*0.11*		**0.44**	*0.13*		**5.65**	*0.68*		**0.32**	*0.13*		**0.35**	*0.15*	
Soil Organic Matter																	
Soil Kjeldahl N	%	23	**0.137**	*0.009*		**0.133**	*0.009*		**0.113**	*0.008*		**0.048**	*0.005*		**0.388**	*0.042*	
Soil TN (combustion)	%	34	**0.142**	*0.009*		**0.140**	*0.010*		**0.125**	*0.006*		**0.050**	*0.008*		**0.436**	*0.035*	
Soil TOC (combustion)	%	25	**1.29**	*0.03*		**1.34**	*0.04*		**1.14**	*0.06*		**0.58**	*0.03*		**9.37**	*0.31*	
SOM - Walkley-Black	%	53	**2.15**	*0.25*		**2.35**	*0.25*		**1.88**	*0.19*		**1.16**	*0.24*		**12.6**	*3.9*	
SOM - LOI (Raw Values)	%	63	**2.97**	*0.21*		**2.80**	*0.20*		**2.72**	*0.24*		**1.20**	*0.10*		**15.7**	*1.3*	
CaCO3 Content	%	14	**0.60**	*0.32*		**0.74**	*0.39*		**1.33**	*0.51*		**0.52**	*0.25*		**0.50**	*0.41*	
Soil CEC	cmol/kg	36	**21.0**	*2.7*		**19.4**	*2.6*		**26.3**	*3.78*		**4.3**	*1.0*		**25.2**	*7.70*	
Scoop Density	mg/cm^3	8	**1.22**	*0.11*		**1.31**	*0.07*		**1.22**	*0.05*		**1.61**	*0.02*		**0.86**	*0.05*	
Particle Size Analysis																	
Sand 2000 - 50 um	%	48	**17.5**	*2.5*		**36.7**	*3.3*		**33.4**	*3.4*		**88.0**	*2.8*		**54.0**	*4.0*	
Silt 50 - 2 um	%	48	**54.0**	*4.0*		**39.0**	*2.1*		**29.3**	*4.5*		**6.4**	*1.4*		**36.0**	*3.9*	
Clay 2 - 0 um	%	48	**29.6**	*2.1*		**25.0**	*2.8*		**38.4**	*5.1*		**4.0**	*1.4*		**8.4**	*3.8*	

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