2012 North American Proficiency Testing Program
4th Quarter Report - January 22, 2013

Laboratory ID
General

Soil			Soil 2012-116			Soil 2012-117			Soil 2012-118			Soil 2012-119			Soil 2012-210		
Analysis	**Units**	***n***	**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	%	25	**43.4**	*3.05*		**32.0**	*2.40*		**44.1**	*2.30*		**21.0**	*2.00*		**41.5**	*2.70*	
pH - sp	Unit	34	**6.85**	*0.145*		**6.19**	*0.230*		**5.45**	*0.150*		**6.61**	*0.140*		**5.34**	*0.100*	
ECe - sp	dS/m	31	**0.790**	*0.080*		**0.197**	*0.023*		**1.18**	*0.104*		**0.850**	*0.072*		**1.60**	*0.130*	
HCO3 - sp	mmolc/L	10	**4.24**	*1.03*		**0.900**	*0.152*		**0.400**	*0.025*		**0.900**	*0.086*		**0.510**	*0.054*	
Ca - sp	mmolc/L	26	**7.01**	*0.850*		**0.723**	*0.121*		**5.42**	*0.460*		**3.39**	*0.425*		**5.26**	*0.570*	
Mg - sp	mmolc/L	26	**0.90**	*0.086*		**0.415**	*0.080*		**4.74**	*0.400*		**2.86**	*0.339*		**3.24**	*0.309*	
Na - sp	mmolc/L	26	**0.425**	*0.042*		**0.505**	*0.115*		**0.240**	*0.029*		**0.305**	*0.035*		**3.28**	*0.210*	
SAR - sp	value	24	**0.200**	*0.020*		**0.600**	*0.095*		**0.100**	*0.007*		**0.165**	*0.024*		**1.53**	*0.100*	
Cl - sp	mmolc/L	16	**0.452**	*0.076*		**0.383**	*0.083*		**0.250**	*0.034*		**0.230**	*0.045*		**0.555**	*0.054*	
SO4 - sp	mmolc/L	18	**0.755**	*0.125*		**0.205**	*0.030*		**0.775**	*0.072*		**0.518**	*0.068*		**0.557**	*0.058*	
NO_3 - sp	mmolc/L	12	**2.52**	*0.336*		**0.405**	*0.050*		**9.81**	*0.745*		**6.03**	*1.08*		**11.8**	*1.72*	
B - sp	mg/L	9	**0.040**	*0.008*		**0.040**	*0.009*		**0.060**	*0.007*		**0.050**	*0.012*		**0.110**	*0.020*	
Soil pH & EC																	
Soil EC (1:1)	(dS/m)	30	**0.310**	*0.050*		**0.100**	*0.020*		**0.437**	*0.052*		**0.180**	*0.040*		**0.515**	*0.045*	
Soil EC (1:2)	(dS/m)	46	**0.213**	*0.023*		**0.047**	*0.010*		**0.300**	*0.033*		**0.120**	*0.013*		**0.340**	*0.047*	
pH (1:1) Water	Unit	78	**6.98**	*0.080*		**6.48**	*0.120*		**5.60**	*0.060*		**6.90**	*0.070*		**5.57**	*0.060*	
pH (1:2) Water	Unit	29	**7.03**	*0.130*		**6.59**	*0.110*		**5.75**	*0.050*		**6.93**	*0.130*		**5.70**	*0.100*	
pH (1:1) 0.01M CaCl2	Unit	25	**6.62**	*0.080*		**5.70**	*0.050*		**5.28**	*0.065*		**6.43**	*0.085*		**5.20**	*0.065*	
pH (1:2) 0.01M CaCl2	Unit	11	**6.61**	*0.090*		**5.69**	*0.090*		**5.27**	*0.070*		**6.36**	*0.050*		**5.19**	*0.015*	
Buffer pH, Lime Req.																	
SMP Buffer pH	Unit	29	**7.20**	*0.080*		**7.02**	*0.085*		**6.55**	*0.110*		**7.35**	*0.050*		**6.72**	*0.080*	
Adams-Evans Buf pH	Unit	8	**7.80**	*0.035*		**7.68**	*0.065*		**7.51**	*0.070*		**7.92**	*0.020*		**7.61**	*0.075*	
Woodruff Buf. pH	Unit	22	**6.99**	*0.020*		**6.80**	*0.045*		**6.53**	*0.040*		**6.99**	*0.050*		**6.60**	*0.015*	
Mehlich Buffer pH	Unit	6	**6.55**	*0.030*		**6.23**	*0.020*		**6.00**	*0.035*		**6.53**	*0.060*		**6.07**	*0.050*	
Sikora Buffer pH	Unit	23	**7.25**	*0.050*		**6.92**	*0.070*		**6.60**	*0.060*		**7.40**	*0.050*		**6.70**	*0.050*	
Titratable Acidity	cmol/kg																

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Inorganic Nitrogen (NO3-N & NH4-N)														
NO3-N Cd. Rd.	mg/kg	56	**17.1**	*0.940*	**1.99**	*0.400*	**61.9**	*4.15*	**20.8**	*2.09*	**71.5**	*3.70*		
NO3-N ISE	mg/kg	18	**17.3**	*1.32*	**2.74**	*0.329*	**62.0**	*6.01*	**24.8**	*4.39*	**73.3**	*6.00*		
NO3-N CTA	mg/kg	3	**16.6**	*0.500*	**1.93**	*0.018*	**58.0**	*7.70*	**20.8**	*2.50*	**60.0**	*3.51*		
NO3-N Ion Chr.	mg/kg													
NO3-N Other _____	mg/kg	8	**18.1**	*1.45*	**2.18**	*0.290*	**64.7**	*4.79*	**22.2**	*1.77*	**73.8**	*4.09*		
NH4 - N (KCl Extr.)	mg/kg	50	**21.0**	*1.75*	**3.20**	*0.700*	**3.09**	*0.595*	**1.40**	*0.160*	**4.32**	*0.720*		
Phosphorus and Sulfur														
PO4-P Bray P (1:10)	mg/kg	44	**19.0**	*1.80*	**14.1**	*1.30*	**51.2**	*3.81*	**91.0**	*10.0*	**72.0**	*4.25*		
PO4-P Bray P1 (1:7)	mg/kg	6	**14.3**	*1.20*	**11.6**	*1.47*	**43.2**	*4.10*	**72.1**	*8.36*	**66.7**	*5.90*		
PO4-P Olsen/Bicarb	mg/kg	49	**14.2**	*1.03*	**12.0**	*1.00*	**26.1**	*1.70*	**24.4**	*3.35*	**42.0**	*2.37*		
PO4-P AB-DTPA	mg/kg	2	**6.18**	*0.375*	**4.34**	*0.060*	**9.20**	*2.10*	**15.5**	*1.13*	**17.9**	*0.04*		
PO4-P Modified Morgan	mg/kg	6	**3.15**	*0.510*	**2.00**	*0.465*	**6.82**	*0.415*	**10.2**	*1.43*	**9.41**	*1.21*		
PO4-P True Morgan	mg/kg	6	**3.58**	*0.950*	**2.10**	*0.110*	**7.85**	*0.395*	**12.9**	*1.10*	**12.0**	*0.600*		
PO4-P Mod. Kewlona	mg/kg	4	**10.3**	*1.05*	**9.30**	*0.650*	**37.5**	*3.75*	**55.5**	*2.75*	**52.0**	*4.30*		
PO4-P Stong Bray (1:10)	mg/kg	8	**45.3**	*5.25*	**171**	*19.2*	**63.7**	*3.76*	**107**	*6.50*	**177**	*12.1*		
PO4-P Water Soluble	mg/kg	1	**8.38**	*0.00*	**0.435**	*0.165*	**2.27**	*0.520*	**7.47**	*3.61*	**5.38**	*1.48*		
SO4 - S (PO4 Extr.)	mg/kg	35	**8.00**	*1.00*	**3.00**	*0.521*	**8.05**	*1.675*	**3.00**	*0.325*	**6.60**	*1.60*		
Bases														
K Ammonium Acetate	mg/kg	69	**84.9**	*6.94*	**128**	*7.34*	**226**	*17.0*	**135**	*17.9*	**694**	*40.3*		
Ca Ammonium Acetate	mg/kg	64	**1820**	*128*	**2050**	*146*	**1680**	*78.4*	**492**	*76.0*	**1510**	*87.0*		
Mg Ammonium Acetate	mg/kg	64	**86.5**	*6.50*	**471**	*33.6*	**482**	*31.0*	**125**	*16.5*	**356**	*23.0*		
Na Ammonium Acetate	mg/kg	51	**14.6**	*3.22*	**58.7**	*5.25*	**12.2**	*1.89*	**9.2**	*1.60*	**81.8**	*7.58*		
Bray Extractable K	mg/kg	4	**70.0**	*3.51*	**86.3**	*4.50*	**174**	*6.17*	**144**	*11.6*	**505**	*44.0*		
K- Olsen/Bicarb.	mg/kg	6	**72.4**	*8.50*	**108**	*7.15*	**185**	*3.50*	**111**	*12.7*	**595**	*17.5*		
K Modified Morgan	mg/kg	4	**77.6**	*6.50*	**112**	*14.5*	**235**	*2.06*	**102**	*13.2*	**652**	*79.5*		
K True Morgan	mg/kg	5	**65.0**	*4.40*	**90.0**	*0.600*	**158**	*3.00*	**111**	*2.00*	**500**	*16.0*		
Ca Modified Morgan	mg/kg	4	**1990**	*220*	**1720**	*227*	**1690**	*67.6*	**375**	*45.0*	**1480**	*68.0*		
Aluminum KCL Extr.	mg/kg	3	**5.00**	*0.220*	**2.00**	*1.50*	**1.64**	*0.960*	**2.00**	*0.040*	**1.00**	*0.550*		

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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*	
P	mg/kg	5	**14.4**	*1.30*		**127**	*19.8*		**27.9**	*4.03*		**50.3**	*5.69*	
K	mg/kg	5	**58.6**	*3.16*		**72.4**	*4.89*		**131**	*7.30*		**111**	*5.99*	
Ca	mg/kg	5	**2110**	*164*		**1780**	*93.3*		**1630**	*41.2*		**471**	*34.1*	
Mg	mg/kg	5	**93.6**	*6.91*		**361**	*3.59*		**443**	*6.60*		**121**	*7.95*	
Mn	mg/kg	4	**190**	*24.8*		**14.9**	*1.39*		**29.0**	*1.52*		**20.7**	*2.84*	
Zn	mg/kg	4	**1.32**	*0.065*		**1.41**	*0.122*		**2.37**	*0.120*		**2.10**	*0.108*	
Mehlich-3 Mult-Element (scoop)														
Scoop Soil Mass	g	23	**2.13**	*0.130*		**2.23**	*0.230*		**2.00**	*0.120*		**2.75**	*0.280*	
Assumed Density	g/cm3	11	**1.18**	*0.020*		**1.18**	*0.050*		**1.08**	*0.084*		**1.38**	*0.200*	
Volume of Scoop	cm3	19	**2.00**	*0.000*		**2.00**	*0.000*		**2.00**	*0.000*		**2.00**	*0.000*	
Extractrant Volume mL	mL	21	**20.0**	*0.000*		**20.0**	*0.000*		**20.0**	*0.000*		**20.0**	*0.000*	
P Colorimetric	mg/kg	19	**27.5**	*1.60*		**18.2**	*0.900*		**51.4**	*2.40*		**88.7**	*12.1*	
P ICP-AES	mg/kg	39	**30.2**	*1.96*		**18.5**	*1.53*		**73.9**	*4.86*		**100.5**	*8.90*	
K	mg/kg	44	**89.0**	*5.07*		**128**	*8.00*		**226**	*9.75*		**155**	*16.8*	
Ca	mg/kg	40	**2050**	*106*		**2070**	*128*		**1820**	*80.8*		**555**	*84.6*	
Mg	mg/kg	40	**105**	*6.50*		**501**	*39.5*		**516**	*29.0*		**153**	*15.3*	
Na	mg/kg	30	**15.8**	*2.10*		**55.4**	*6.49*		**12.4**	*2.02*		**10.2**	*1.91*	
S	mg/kg	32	**12.6**	*1.52*		**4.87**	*0.643*		**16.0**	*1.42*		**7.50**	*1.59*	
Al	mg/kg	25	**731**	*48.2*		**770**	*82.0*		**876**	*63.4*		**560**	*82.5*	
Zn	mg/kg	36	**1.84**	*0.250*		**2.10**	*0.195*		**3.40**	*0.330*		**3.20**	*0.430*	
Mn	mg/kg	36	**327**	*22.7*		**19.4**	*2.51*		**68.2**	*6.66*		**126**	*13.9*	
Fe	mg/kg	34	**255**	*19.4*		**250**	*28.9*		**176**	*19.5*		**150**	*22.3*	
Cu	mg/kg	36	**1.44**	*0.230*		**2.20**	*0.210*		**1.50**	*0.150*		**1.57**	*0.275*	
B	mg/kg	29	**0.500**	*0.065*		**0.285**	*0.067*		**0.470**	*0.065*		**0.300**	*0.059*	

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Micronutrients												
Zn - DTPA	mg/kg	63	**0.840**	*0.078*	**1.19**	*0.110*	**2.10**	*0.150*	**0.915**	*0.135*	**1.20**	*0.100*
Mn - DTPA	mg/kg	45	**89.8**	*8.60*	**9.25**	*1.07*	**29.8**	*4.06*	**6.15**	*0.950*	**47.8**	*5.06*
Fe - DTPA	mg/kg	49	**90.0**	*12.0*	**43.8**	*6.53*	**59.4**	*9.49*	**11.7**	*2.70*	**50.1**	*6.70*
Cu - DTPA	mg/kg	51	**0.800**	*0.100*	**1.48**	*0.133*	**0.775**	*0.105*	**0.490**	*0.090*	**1.42**	*0.130*
Zn - HCl	mg/kg	2	**2.21**	*0.51*	**2.82**	*0.145*	**3.38**	*0.195*	**2.49**	*0.015*	**2.23**	*0.395*
Mn-H3PO4	mg/kg	10	**146**	*4.57*	**9.80**	*0.420*	**25.8**	*0.900*	**21.6**	*2.84*	**41.6**	*1.50*
Cl - Ca(NO3)2 Extr.	mg/kg	18	**6.00**	*1.26*	**3.80**	*0.900*	**2.38**	*0.329*	**2.48**	*0.409*	**7.50**	*1.50*
B - Hot Wat.	mg/kg	37	**0.240**	*0.060*	**0.150**	*0.018*	**0.475**	*0.091*	**0.150**	*0.026*	**0.400**	*0.056*
B-DTPA/Sorbitol	mg/kg	16	**0.180**	*0.030*	**0.100**	*0.015*	**0.215**	*0.040*	**0.098**	*0.014*	**0.190**	*0.040*
Soil Organic Matter												
Soil Kjeldahl N	%	14	**0.116**	*0.007*	**0.041**	*0.004*	**0.184**	*0.011*	**0.040**	*0.004*	**0.094**	*0.006*
Soil TN (combustion)	%	34	**0.125**	*0.012*	**0.050**	*0.011*	**0.194**	*0.017*	**0.050**	*0.010*	**0.107**	*0.012*
Soil TOC (Combustion)	%	7	**1.08**	*0.053*	**0.380**	*0.013*	**1.99**	*0.074*	**0.410**	*0.030*	**1.08**	*0.040*
Soil Total C (Combustion)	%	23	**1.14**	*0.040*	**0.418**	*0.025*	**2.02**	*0.058*	**0.435**	*0.020*	**1.07**	*0.030*
SOM - Walkley-Black	%	28	**1.88**	*0.120*	**0.697**	*0.097*	**3.24**	*0.245*	**0.743**	*0.110*	**1.83**	*0.130*
SOM - LOI (% Wt loss)	%	67	**2.60**	*0.170*	**1.73**	*0.250*	**4.00**	*0.280*	**0.810**	*0.080*	**2.58**	*0.200*
Other												
CaCO3 Content	%	11	**0.700**	*0.150*	**0.700**	*0.163*	**0.765**	*0.163*	**0.450**	*0.101*	**0.690**	*0.160*
CEC - Cation Displacement	cmol/kg	19	**10.2**	*1.09*	**16.2**	*1.80*	**17.3**	*2.30*	**3.63**	*0.850*	**15.1**	*2.03*
CEC - Estimation	cmol/kg	13	**10.1**	*0.490*	**14.3**	*1.33*	**16.0**	*2.04*	**4.10**	*0.250*	**14.6**	*0.920*
Soil Density (Scoop)	g/cc	14	**1.21**	*0.025*	**1.28**	*0.025*	**1.12**	*0.030*	**1.58**	*0.025*	**1.14**	*0.040*
Particle Size Analysis-Hydrometer												
Sand 2000 - 50 um	%	36	**17.5**	*4.20*	**72.1**	*2.00*	**13.1**	*2.54*	**88.7**	*1.55*	**24.6**	*3.50*
Silt 50 - 2 um	%	36	**64.5**	*3.50*	**18.0**	*1.80*	**63.8**	*4.40*	**6.40**	*1.55*	**59.0**	*4.05*
Clay 2 - 0 um	%	36	**18.3**	*1.98*	**10.1**	*2.06*	**22.7**	*3.27*	**4.62**	*1.15*	**17.1**	*1.90*
Particle Size Analysis- Pipette												
Sand 2000 - 50 um	%	2	**15.0**	*3.47*	**73.8**	*3.55*	**8.16**	*4.04*	**89.2**	*0.305*	**21.9**	*1.20*
Silt 50 - 2 um	%	2	**69.8**	*1.02*	**18.0**	*1.95*	**72.0**	*2.01*	**7.32**	*0.385*	**64.5**	*2.04*
Clay 2 - 0 um	%	2	**15.2**	*2.45*	**8.28**	*1.64*	**19.8**	*2.04*	**3.39**	*0.690*	**13.3**	*0.950*

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