



2025 North American Proficiency Testing Program
Quarter 4 Report - 1/22/2026

Laboratory ID

PAP certification requirements: All 20 soil and/or 12 plant samples have to have data submitted with an average score >60% for each method to be certified, as well as an overall of all methods >80%.

Overall PAP Score for this Year

#DIV/0!

Soil	Soil 2025-116			Soil 2025-117			Soil 2025-118			Soil 2025-119			Soil 2025-120			Current		
Analysis - Modus Code	Units	n	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result	PAP Score
Saturated Paste																		
Moisture - sp	%	15	24.0	2.25		47.0	3.92		41.2	3.70		55.8	4.11		57.2	3.44		
pH - sp	Unit	24	6.80	0.14		7.80	0.16		7.40	0.17		6.81	0.14		5.94	0.12		
ECe - sp	dS/m	21	1.01	0.15		0.93	0.084		2.12	0.24		3.93	0.40		0.85	0.050		
HCO3 - sp	mmolc/L	10	3.04	1.04		5.00	1.09		2.66	0.79		5.80	1.05		0.67	0.37		
Ca - sp	mmolc/L	20	4.99	0.61		5.91	0.40		14.6	1.61		27.1	3.08		4.22	0.49		
Mg - sp	mmolc/L	20	2.50	0.40		2.64	0.32		4.09	0.53		11.1	1.45		2.08	0.25		
Na - sp	mmolc/L	18	0.70	0.14		1.23	0.20		1.23	0.15		8.01	0.72		0.50	0.040		
SAR - sp	value	16	0.38	0.035		0.56	0.070		0.38	0.056		1.79	0.15		0.30	0.020		
Cl - sp	mmolc/L	12	0.50	0.15		0.63	0.11		0.57	0.14		14.3	1.27		1.38	0.25		
SO4 - sp	mmolc/L	13	2.96	0.38		1.70	0.38		1.50	0.12		16.4	3.00		1.01	0.11		
NO3 - sp	mmolc/L	7	4.01	0.72		0.94	0.88		16.0	2.18		3.17	2.84		4.88	0.60		
B - sp	mg/L	14	0.29	0.082		0.32	0.10		0.14	0.045		0.10	0.041		0.054	0.035		
pH & EC (1:1 or 1:2)																		
EC (1:1)	(dS/m)	29	0.28	0.037		0.59	0.030		0.80	0.052		1.69	0.093		0.33	0.040		
EC (1:2)	(dS/m)	40	0.21	0.020		0.35	0.040		0.55	0.077		1.34	0.18		0.25	0.059		
pH (1:1) Water	Unit	75	7.01	0.14		8.00	0.16		7.63	0.15		6.94	0.14		6.04	0.12		
pH (1:2) Water	Unit	15	7.10	0.14		8.05	0.16		7.75	0.16		7.10	0.14		6.10	0.17		
pH (1:1) 0.01M CaCl2	Unit	24	6.52	0.13		7.62	0.15		7.36	0.15		6.78	0.14		5.64	0.11		
pH (1:2) 0.01M CaCl2	Unit	11	6.62	0.13		7.64	0.15		7.42	0.15		6.95	0.14		5.68	0.11		
Lime Req.																		
SMP Buffer pH	Unit	13	7.29	0.15		7.48	0.15		7.41	0.15		7.07	0.14		6.71	0.13		
Adams-Evans Buf pH	Unit	6	7.86	0.16		7.78	0.16		7.82	0.16		7.57	0.15		7.60	0.15		
Woodruff Buf. pH	Unit	19	6.95	0.14		7.18	0.14		7.08	0.14		6.94	0.14		6.70	0.13		
Mehlich Buffer pH	Unit	5	6.51	0.13		6.86	N/A		6.78	N/A		6.60	0.13		6.17	0.12		
Sikora Buffer pH	Unit	33	7.36	0.15		7.54	0.15		7.49	0.15		7.12	0.14		6.88	0.14		
Titrateable Acidity	cmol/kg																	
Inorganic Nitrogen (NO3-N & NH4-N)																		
NO3-N Cd. Rd.	mg/kg	64	16.4	1.46		31.5	1.54		92.1	7.52		59.7	2.53		44.7	6.18		
NO3-N ISE	mg/kg	5	16.0	N/A		41.8	N/A		93.7	N/A		69.6	N/A		51.5	N/A		
NO3-N CTA	mg/kg	1	12.3	N/A		25.0	N/A		89.8	N/A		53.7	N/A		39.9	N/A		
NO3-N Ion Chr.	mg/kg	1	16.6	N/A		33.6	N/A		103.0	N/A		63.4	N/A		51.6	N/A		
NO3-N Other	mg/kg	10	16.3	1.39		32.7	1.17		93.1	8.94		59.1	1.98		44.2	6.84		
NH4 - N (KCl Extr.)	mg/kg	42	43.7	4.20		11.4	0.66		31.0	3.45		21.3	1.00		42.0	10.5		
Phosphorus and Sulfur																		
PO4-P Bray P (1:10)	mg/kg	35	105.0	4.66		29.4	12.5		63.9	5.75		21.7	6.97		33.8	2.10		
PO4-P Bray P1 (1:7)	mg/kg	5	71.9	7.78		28.5	2.10		56.8	N/A		20.0	9.48		22.5	4.48		
PO4-P Olsen/Bicarb	mg/kg	51	43.0	3.56		31.2	1.95		37.0	4.10		32.9	1.96		21.2	3.05		
PO4-P AB-DTPA	mg/kg	1	39.9	N/A		18.6	N/A		21.3	N/A		21.3	N/A		18.6	N/A		
PO4-P Modified Morgan	mg/kg	5	24.9	N/A		73.0	N/A		25.7	N/A		12.1	N/A		2.28	N/A		
PO4-P True Morgan	mg/kg	5	28.0	5.50		78.0	N/A		28.7	N/A		10.7	N/A		1.80	0.49		
PO4-P Mod. Kelowna	mg/kg																	
PO4-P Stong Bray (1:10)	mg/kg	11	159.0	10.7		251.0	7.21		264.0	21.0		90.0	4.30		69.1	3.62		
PO4-P Water Soluble	mg/kg																	
SO4 - S (PO4 Extr.)	mg/kg	21	14.4	1.76		15.2	1.06		9.84	1.60		110.0	29.3		16.8	6.27		
Bases																		

K NH4OAc	mg/kg	64	246.0	19.0	671.0	20.4	696.0	73.5	362.0	15.2	148.0	38.0
Ca NH4OAc	mg/kg	58	841.0	66.0	5030.0	456.0	3790.0	469.0	6230.0	472.0	851.0	184.0
Mg NH4OAc	mg/kg	59	143.0	11.2	657.0	25.0	322.0	29.0	748.0	38.6	125.0	28.8
Na NH4OAc	mg/kg	50	14.9	2.71	45.2	3.00	28.6	4.15	238.0	11.2	16.8	3.82
Bray Extractable K	mg/kg	4	232.0	N/A	441.0	N/A	480.0	N/A	216.0	N/A	106.0	N/A
K- Bicarb.	mg/kg	2	224.0	N/A	505.0	N/A	558.0	N/A	282.0	N/A	166.0	N/A
K - Modified Morgan	mg/kg	5	206.0	N/A	616.0	N/A	760.0	N/A	315.0	N/A	176.0	N/A
K - True Morgan	mg/kg	4	188.0	N/A	379.0	N/A	440.0	N/A	200.0	N/A	144.0	N/A
Ca Modified Morgan	mg/kg	4	753.0	N/A	14500.0	N/A	5290.0	N/A	24700.0	N/A	1270.0	N/A
Aluminum KCL Extr.	mg/kg	1	0.60	N/A	0.10	N/A	0.30	N/A	0.75	N/A	1.00	N/A

Mehlich-1 Multi Element

Scoop Soil Mass	g	3	5.00	N/A	5.00	N/A	5.00	N/A	5.00	N/A	5.00	N/A
P	mg/kg	8	73.4	3.25	53.0	7.20	128.0	16.8	4.54	0.97	16.0	0.47
K	mg/kg	9	187.0	5.55	239.0	14.3	362.0	23.9	111.0	2.89	78.2	2.59
Ca	mg/kg	9	907.0	28.0	4820.0	539.0	3970.0	353.0	5050.0	629.0	697.0	43.0
Mg	mg/kg	8	142.0	5.65	502.0	31.2	306.0	21.4	524.0	28.4	102.0	5.00
Mn	mg/kg	8	139.0	5.98	6.70	1.13	102.0	4.89	6.24	0.43	75.5	3.34
Zn	mg/kg	7	28.5	2.00	0.16	0.11	2.10	0.29	0.10	N/A	1.40	0.043

Mehlich-3 Multi-Element

Scoop Soil Mass	g	26	2.40	0.11	2.05	0.060	1.71	0.14	2.00	0.040	1.22	0.12
Assumed Density	g/cm3	16	1.18	0.025	1.04	0.050	0.81	0.047	1.00	0.043	0.59	0.046
Volume of Scoop	cm3	0	2.00	N/A		N/A	2.00	N/A	2.00	N/A	2.00	N/A
Extractant Volume mL	mL	0	20.0	N/A	20.0	N/A	20.0	N/A	20.0	N/A	20.0	N/A
P Colorimetric	mg/kg	9	108.0	3.03	101.0	3.49	73.5	2.73	60.5	1.98	38.6	2.35
P ICP-AES	mg/kg	52	120.0	7.08	113.0	4.00	82.3	4.66	70.8	4.36	45.0	2.35
K	mg/kg	50	275.0	11.4	704.0	23.4	693.0	36.7	358.0	19.7	117.0	6.77
Ca	mg/kg	47	1050.0	62.0	6620.0	340.0	4380.0	276.0	10300.0	418.0	856.0	115.0
Mg	mg/kg	49	176.0	6.72	812.0	36.0	364.0	19.2	887.0	34.3	126.0	7.10
Na	mg/kg	45	17.1	1.27	50.7	3.09	29.4	2.60	252.0	9.38	16.2	1.87
S	mg/kg	42	22.6	1.44	37.1	1.63	17.7	1.74	192.0	14.7	24.5	2.24
Al	mg/kg	33	321.0	22.2	242.0	21.8	548.0	26.2	461.0	14.0	1110.0	69.5
Zn	mg/kg	45	36.7	2.30	5.12	0.28	3.54	0.17	5.12	0.28	2.00	0.13
Mn	mg/kg	46	164.0	11.2	121.0	2.71	237.0	14.3	86.9	6.13	146.0	12.7
Fe	mg/kg	44	376.0	28.5	44.6	1.86	207.0	10.3	69.4	5.20	339.0	28.7
Cu	mg/kg	45	10.5	0.73	3.10	0.20	3.16	0.23	2.74	0.16	2.16	0.16
B	mg/kg	36	0.79	0.085	3.64	0.24	1.20	0.090	2.21	0.18	0.37	0.090

Micronutrients

Zn - DTPA	mg/kg	58	18.2	1.67	1.91	0.11	1.50	0.11	2.77	0.14	0.90	0.19
Mn - DTPA	mg/kg	50	98.4	7.95	23.4	1.70	62.9	5.15	32.5	2.86	66.2	20.8
Fe - DTPA	mg/kg	53	64.0	8.82	4.60	0.52	34.3	3.67	34.0	2.91	82.8	11.7
Cu - DTPA	mg/kg	50	6.94	0.65	1.35	0.14	1.79	0.12	1.84	0.14	1.14	0.22
Zn - HCl	mg/kg											
Mn-H3PO4	mg/kg	8	103.0	6.35	11.7	1.38	93.0	4.77	9.20	0.92	99.3	9.03
Cl - Ca(NO3)2 Extr.	mg/kg	10	7.10	2.07	10.1	2.28	8.25	0.90	289.0	16.3	20.8	3.82
B - Hot Wat.	mg/kg	9	0.52	0.095	1.84	0.49	0.76	0.020	1.01	0.35	0.27	0.051
B - DTPA/Sorbitol	mg/kg	17	0.37	0.020	2.10	0.11	0.69	0.051	1.11	0.063	0.16	0.040

N & C

Total N - Kjeldahl	%	5	0.12	N/A	0.28	N/A	0.18	N/A	0.30	N/A	0.15	N/A
Total N - combustion	%	31	0.074	0.020	0.19	0.020	0.15	0.020	0.32	0.020	0.14	0.020
TOC - combustion	%	22	0.57	0.028	1.58	0.12	1.31	0.064	3.45	0.38	1.73	0.061
Total C - combustion	%	39	0.60	0.020	2.21	0.062	1.42	0.042	6.40	0.20	1.76	0.038
OM - Walkley-Black	%	18	1.13	0.14	2.77	0.17	2.38	0.14	5.13	0.36	3.02	0.17
OM - LOI (% Wt loss)	%	63	1.22	0.051	3.15	0.10	2.67	0.13	6.15	0.19	5.98	0.19

Miscellaneous

CaCO3 Content	%	12	0.18	0.14	5.40	0.12	1.10	0.36	23.4	3.45	0.25	0.20
CEC - Cation Displacement	cmol/kg	5	6.25	0.50	23.4	3.58	16.5	N/A	34.3	8.26	10.8	N/A
CEC - Estimation	cmol/kg	11	6.70	1.00	33.1	0.67	26.2	1.30	40.3	2.50	7.50	0.75
Soil Density (Scoop)	g/cc	16	1.46	0.035	1.21	0.030	1.09	0.11	1.17	0.023	0.76	0.022
Particle Size Analysis - Hydrometer												
Sand 2000 - 50 um	%	28	58.3	2.70	34.8	2.67	23.0	5.80	39.8	3.64	17.2	4.64
Silt 50 - 2 um	%	26	27.5	1.35	30.9	3.28	55.3	2.70	32.0	2.85	51.2	2.75
Clay 2 - 0 um	%	29	12.2	2.04	34.0	4.95	20.0	3.10	27.2	3.63	29.5	3.35
Particle Size Analysis - Pipette												
Sand 2000 - 50 um	%	5	65.0	N/A	38.0	N/A	24.9	N/A	39.8	N/A	28.5	N/A
Silt 50 - 2 um	%	5	23.6	N/A	27.8	N/A	52.3	N/A	30.4	N/A	41.5	N/A
Clay 2 - 0 um	%	5	11.0	N/A	36.4	N/A	22.3	N/A	31.4	N/A	32.0	N/A
Soil Health												
Autoclave-Citrate Extractable (ACE) protein	mg/g	2	3.76	N/A	3.64	N/A	3.74	N/A	5.00	N/A	4.84	N/A
Microbial CO2 respiration (1 day incubation-ST)	mg/g	6	0.027	0.020	0.081	0.036	0.061	0.022	0.28	N/A	0.061	0.020
Microbial CO2 respiration (4 day incubation-ST)	mg/g	1	0.19	N/A	0.29	N/A	0.17	N/A	0.70	N/A	0.020	N/A
Microbial enzyme activity - As	mg PNP/kg soil h											
Microbial enzyme activity - Beta Glucosidase (E)	mg PNP/kg soil h											
Microbial enzyme activity - NAG	mg PNP/kg soil h											
Microbial enzyme activity - Pase	mg PNP/kg soil h											
PMN 7 day anaerobic	mg/kg											
Reactive carbon - permanganate oxidizable (PC)	mg/kg	6	220.0	59.8	500.0	N/A	586.0	56.7	660.0	67.9	510.0	59.0

Water Analysis - Modus Code	Water 2025-310			Water 2025-311			Water 2025-312				
	Units	n	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result
pH & EC											
pH		28	7.87	0.16		8.00	0.19		7.64	0.15	
EC	dS/m	25	0.87	0.020		0.70	0.021		0.89	0.020	
Cations											
Ca	mmol/L	29	3.04	0.15		3.53	0.16		3.42	0.15	
Mg	mmol/L	28	1.76	0.070		1.44	0.040		1.26	0.046	
Na	mmol/L	27	3.25	0.095		0.53	0.020		3.60	0.12	
K	mmol/L	27	1.05	0.042		0.040	0.020		1.05	0.032	
NH4-N	mmol/L	5	0.005	N/A		1.33	0.22		0.008	N/A	
Sum Cations	mmol/L	13	9.04	0.27		6.74	0.61		9.15	0.24	
SAR	---	10	2.10	0.042		0.33	0.020		2.26	0.055	
Adj-SAR	---	4	3.44	N/A		0.55	N/A		3.80	N/A	
Anions											
HCO3	mmol/L	15	4.60	0.092		3.26	0.100		4.62	0.095	
CO3	mmol/L	5	0.00	N/A		0.26	N/A		0.00	N/A	
Cl	mmol/L	23	0.25	0.030		1.92	0.051		0.31	0.030	
NO3	mmol/L	15	3.02	0.17		0.78	0.100		3.09	0.15	
SO4	mmol/L	24	4.84	0.79		0.73	0.030		4.88	0.84	
Sum Anions	mmol/L	12	11.3	1.94		6.76	0.22		11.4	1.97	
Cation-Anion Difference	---	4	0.35	N/A		0.30	N/A		0.090	N/A	
Miscellaneous											
Boron	mg/L	14	0.066	0.020		0.036	0.020		0.071	0.020	
PO4-P Phosphorus - Spec	mg/L	4	0.17	N/A		0.011	N/A		0.35	N/A	
Phosphorus - ICP (Total)	mg/L	9	0.21	0.023		0.018	0.020		0.29	0.020	
TKN	mg/L	1	231.0	N/A		115.0	N/A		231.0	N/A	
Nitrogen Combustion (Total)	mg/L										
Total Organic Carbon	mg/L	2	171.0	N/A		1.44	N/A		165.0	N/A	

Environmental	Soil 2025-116			Soil 2025-117			Soil 2025-118			Soil 2025-119			Soil 2025-120				
Soil Analyses - Modus Code	Units	n	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result	Median	MAD	Lab Result
Metals																	
Ag	mg/kg																
Al	mg/kg	8	7260.0	836.0		13200.0	1620.0		13700.0	762.0		20100.0	1730.0		42100.0	2200.0	
As	mg/kg	6	5.23	0.31		6.19	0.30		4.53	0.19		8.01	0.47		3.79	0.29	
Ba	mg/kg	3	51.0	N/A		114.0	N/A		134.0	N/A		80.6	N/A		117.0	N/A	
Be	mg/kg																
Bi	mg/kg																
B	mg/kg	4	5.88	3.10		14.1	N/A		9.56	N/A		6.66	N/A		5.75	N/A	
Ca	mg/kg	8	1500.0	62.9		24000.0	498.0		8230.0	165.0		83400.0	5330.0		1780.0	91.1	
Cd	mg/kg	7	0.20	N/A		0.60	0.020		0.58	0.031		0.90	0.052		0.45	N/A	
Co	mg/kg	8	5.15	0.71		5.43	0.63		6.31	0.78		7.78	0.52		11.9	1.72	
Cr	mg/kg	8	16.3	2.60		16.3	2.71		21.7	2.78		45.0	3.60		44.4	4.78	
Cu	mg/kg	7	22.2	0.50		16.8	1.00		14.3	0.78		17.8	1.34		18.2	4.46	
Fe	mg/kg	8	14100.0	680.0		15300.0	948.0		15600.0	480.0		18500.0	1090.0		36600.0	1240.0	
K	mg/kg	8	2160.0	73.4		4110.0	337.0		4070.0	128.0		1540.0	82.5		2380.0	81.7	
Li	mg/kg																
Mg	mg/kg	7	2070.0	69.8		8270.0	513.0		4670.0	181.0		18400.0	372.0		3630.0	72.5	
Mn	mg/kg	7	308.0	6.16		337.0	15.7		572.0	25.0		636.0	41.5		752.0	15.1	
Mo	mg/kg	5	0.37	N/A		1.10	N/A		0.57	N/A		1.53	N/A		0.92	N/A	
Na	mg/kg	8	102.0	6.73		151.0	24.0		182.0	37.0		523.0	66.1		70.0	24.3	
Ni	mg/kg	8	8.44	0.83		15.2	0.83		16.1	0.81		22.1	2.75		12.0	N/A	
P	mg/kg	8	353.0	25.5		918.0	34.1		817.0	16.3		847.0	55.0		858.0	45.9	
Pb	mg/kg	9	8.43	1.06		14.1	2.85		13.0	2.23		14.1	2.36		26.2	4.97	
S	mg/kg	8	107.0	2.14		372.0	7.43		193.0	7.78		668.0	22.4		281.0	5.61	
Sb	mg/kg	1				6.47	N/A		6.69	N/A		21.0	N/A		21.8	N/A	
Se	mg/kg	3	0.68	N/A		2.57	N/A		2.19	N/A		2.40	N/A		4.69	N/A	
Sn	mg/kg																
Sr	mg/kg	1	15.7	N/A		110.0	N/A		31.2	N/A		69.3	N/A		7.72	N/A	
V	mg/kg	1	23.0	N/A		16.3	N/A		14.7	N/A		52.4	N/A		71.3	N/A	
Zn	mg/kg	8	76.4	1.52		67.8	3.68		59.4	3.60		43.6	4.60		71.9	1.44	
Hg (US-EPA 7470 or 7471)	mg/kg	1	0.014	N/A		0.014	N/A		0.015	N/A		0.86	N/A		0.12	N/A	

n = Number of labs submitting results

MAD = Median Average Deviation

N/A = Not applicable as there are too few labs submitting data for this test to run statistics

H = High - Outside 2.5* +/- MAD VH = Very High - Outside 4* +/- MAD

L = Low - Outside 2.5* +/- MAD VL = Very Low - Outside 4* +/- MAD

✓ = Passing