

		Sample Cost (\$) - - -	
Available Services	Instrument / Method	Canadian Academic	Non-Academic
General Services	(Contact Hongxiu Wang, Agric 5D18)		
Air drying & sieving to 2 mm	- - -	\$11.00	\$22.00
Coarse grinding	Wiley mill	\$5.00	\$10.00
Fine grinding	Ball mill	Request quote	
Sample weighing & encapsulation (IRMS analyses only)	Sartorius CPA2P balance	\$5.00	\$10.00
Microwave-assisted extraction	Ethos EX microwave extraction system	\$6.00	\$12.00
Microwave-assisted Acid digestion (9mL HNO3+3mL HCl)	Ethos EX microwave extraction system	\$17.00	\$34.00
Microwave-assisted Acid digestion (5mL HNO3+1mL H2O2)	Ethos EX microwave extraction system	\$15.90	\$31.80
Extraction for macronutrient analysis	2M KCl; modified Kelowna, Mehlich 3; Bray 1/2	\$5.50	\$11.00
Water extraction: 1:2, 1:5, 1:10 (w/v) soil:water	- - -	\$4.00	\$8.00
saturated paste	- - -	\$6.00	\$12.00
Heating block digestion for TP and TN	Heating block	\$9.00	\$18.00
POM and MAOM fractionation	sodium hexametaphosphate	Request quote	
Microbial biomass C and N extraction (fumigation and non-fumigation)		Request quote	
Freeze dryer (per day)		\$59.00	\$118.00
General Soil Analyses	(Contact Hongxiu Wang, Agric 5D18)		
pH or EC	- - -	\$4.00	\$8.00
pH & EC	- - -	\$4.75	\$9.50
Soil moisture content	Gravimetric with oven drying	\$2.50	\$5.00
Cation Exchange Capacity (CEC) & Exchangeable Cations			
Total CEC Prep	- - -	\$32.50	\$65.00
Total CEC (NH4OAc method)	Seal Analytical AA3 SFA	\$4.50	\$9.00
Effective CEC (sum of cations: Al ³⁺ , Ca ²⁺ , Mg ²⁺ , K ⁺ , Na ⁺)	Agilent 4100 MP-AES	\$30.00	\$60.00
Particle Size Distribution			
Soil texture: Pipette method	- - -	Request quote	
Sample prep: Oven-drying and sieving to 2 mm		Request quote	
Removal of CaCO3 using 1 M HCl		Request quote	
Removal of organic carbon using 30% H2O2		Request quote	
Analysis of metals, S and P	(Contact Hongxiu Wang, Agric 5D18)		
Individual elements: Na, K, Ca, Mg, Fe, Cu, Zn	Agilent 200 Series AAS	\$6.00	\$12.00
Na, K, Ca, Mg, Fe, B, Mn, Cu, Zn, S, P	Agilent 4100 MP-AES (high sensitivity)	\$6.00	\$12.00
Full Scan of available elements: Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Se, Si, Sr, Ti, Tl, V, Zn	ThermoFisher ICAP-RQ (contact Barry Goetz, Agric 2E83)	\$10.00	\$20.00
Total C and N	(Contact Hongxiu Wang, Agric 5D18)		
Soild samples¹			
Total carbon (TC)	Elementar soli TOC cube	\$15.50	\$31.00
Total carbon (TOC + TIC + ROC)		\$18.00	\$36.00
Total organic carbon (TOC)		\$15.50	\$31.00
Total N (TN)	Elementar rapid MAX N exceed	\$9.00	\$18.00
¹ requires fine-grinding of sample			
Liquid samples			
Total Dissolved C (TDC)	Shimadzu TOC-L	\$16.05	\$32.10
Dissolved Inorganic C (DIC)	Shimadzu TOC-L	\$16.05	\$32.10
Dissolved Organic C (DOC=TDC-DIC)	Shimadzu TOC-L	\$24.10	\$48.20
Non-purgeable Organic C (NPOC)	Shimadzu TOC-L	\$16.05	\$32.10
Total Dissolved N (TDN)	Shimadzu TNM-L	\$16.05	\$32.10
TDC+TDN or NPOC + TDN	(see above)	\$24.10	\$48.20
Nutrient Analysis (segmented flow analysis)	(Contact Hongxiu Wang, Agric 5D18)		
Single nutrient: NH ₄ ⁺ -N / NO ₃ ⁻ -N / PO ₄ ³⁻ -P / Cl ⁻	Seal Analytical AA3 SFA	\$4.50	\$9.00
2 nutrient combination	Seal Analytical AA3 SFA	\$6.50	\$13.00
3 nutrient combination	Seal Analytical AA500 SFA	\$8.50	\$17.00
Nitrite N (NO ₂ ⁻ -N)	Seal Analytical AA3 SFA	\$4.50	\$9.00
Total P (TP)	Seal Analytical AA3 SFA	\$5.00	\$10.00

Total Kjeldahl Nitrogen (TKN)	Seal Analytical AA3 SFA	\$5.00	\$10.00
TP + TKN	Seal Analytical AA500 SFA	\$8.00	\$16.00
Stable Isotope Analysis (IRMS-EA) ²		(contact Kim Janzen, Agric 5E80)	
Solid samples ³ : δ ¹³ C and or δ ¹⁵ N	Elementar Isoprime precisION IRMS paired with an Elementar Vario Pyro Cube EA (2 systems)		
δ ¹³ C & %C		\$20.00	\$40.00
δ ¹⁵ N & %N		\$20.00	\$40.00
δ ¹⁵ N + δ ¹³ C; %N + %C		\$20.00	\$40.00
¹⁵ N diffusion disks		\$20.00	\$40.00
δ2H & δ ¹⁸ O, Liquid water		\$48.00	\$96.00
		Request quote	
³ Requires finely ground & encapsulated samples			
Water samples: δ ² H + δ ¹⁸ O + δ ¹⁷ O	(contact Kim Janzen, Agric 5E80)		
water: δ ² H + δ ¹⁸ O	(Off-Axis Integrated-Cavity Output Spectroscopy)	\$30.00	\$40.00
water: δ ² H + δ ¹⁸ O + δ ¹⁷ O	Los Gatos Research	\$35.00	\$45.00
soil vapor: δ ² H + δ ¹⁸ O		\$30.00	\$40.00
soil vapor: δ ² H + δ ¹⁸ O + δ ¹⁷ O		\$35.00	\$45.00
Water extraction	(contact Kim Janzen, Agric 5E80)		
Soil (geochemistry & isotopes)	Centrifugation	\$20.00	\$25.00
Plant material	Centrifugation	\$25.00	\$30.00
Plant or soil (geochemistry & isotopes)	High-pressure mechanical squeezing	\$30.00	\$35.00
Plant or soil (isotopes only)	Cryogenic extraction	\$30.00	\$40.00
Compound-specific analyses	(contact Bobbi Helgason, Agric 5E22)	Request quote	
Separation, δ ¹³ C analysis, & quantification ⁴ of fatty acid methyl esters (methylated neutral and phospholipid fatty acids)	Agilent 8890B GC-FID with 5977B MSD paired to Elementar GC5 interface and precisION IRMS		
Separation, δ ¹³ C analysis, & quantification of amino sugars (and monosaccharides)	Agilent 1260 Infinity II bio-inert HPLC-RID paired to Elementar LiquiFace interface and Isoprime precisION IRMS	Request quote	
⁴ In development			
Greenhouse Gas Analysis		(contact Rich Farrell, Agric 5E18)	
Gas chromatography:			
GHG: (N ₂ O, CO ₂ , & CH ₄)	Bruker 450-GC or Scion 456-GC	\$4.00	12.00
GHG + SF ₆	(equipped with ECD / TCD / FID detectors)	\$6.00	18.00
high CH ₄ samples		\$7.00	21.00
high CO ₂ samples		\$7.00	21.00
Biogas		\$8.00	24.00
Isotopic GHG Analysis		(contact Rich Farrell, Agric 5E18)	
Cavity Ring-Down Spectroscopy ⁵			
¹⁵ N ₂ O (δ ¹⁵ N _{bulk} , δ ¹⁵ Nα & δ ¹⁵ Nβ)	Picarro G5131- <i>i</i> Isotope & gas concentration	\$16.50	\$33.00
¹³ CO ₂ (δ ¹³ C)	Picarro G2121- <i>i</i> Isotope & gas concentration	\$14.00	\$28.00
¹³ CO ₂ , ¹³ CH ₄ (δ ¹³ C)	Picarro G2201- <i>i</i> Isotopic analyzer	\$16.50	\$33.00
IRMS ⁵			
¹⁵ N ₂ O (δ ¹⁵ N _{bulk} , δ ¹⁵ Nα & δ ¹⁵ Nβ)	Elementar isoFLOW GHG analyzer paired with an Elementar Isoprime precisION IRMS	\$20.00	\$40.00
¹⁵ N ₂ (δ ¹⁵ N)		\$20.00	\$40.00
¹³ CO ₂ (δ ¹³ C)			
⁵ includes total gas concentration by GC			