



Sample Amount Reference Guide

Use the guidelines below to determine the amount of sample appropriate for the test(s) being requested. If only submitting the minimum amount of sample, please note there will be no duplicates analyzed. Submitting the minimum amount is risky if an issue arises with instrument or quality measures, the lab will not be able to provide any data, but you will still incur charges for work performed.

- **Discounted groups and panels are displayed in bold.**
- Analyses grouped together outside of a discounted panel in bold use the same subsample.
 - Example: Total Nitrogen and Carbon under plants are on a single line. The required sample amount is the same regardless of whether Total Nitrogen, Total Carbon, or both are requested.

PLANT – GENERALLY REQUEST THE EQUIVALENT OF 10 GRAMS OF DRIED AND GROUND SAMPLE MATERIAL FOR MOST PANELS

ANALYSIS	METHOD SOP(S)	MINIMUM AMT	PREFERRED AMT
Dry Matter	505	1g	10g
Total Moisture Group (Total Moisture, Dry Matter, Partial Dry Matter, Partial Moisture)			
Nutrient Panel A (Total Nitrogen, Phosphorus, Potassium)	522, 590	0.4g	5g
Nutrient Panel B (Sulfur, Boron, Calcium, Magnesium)	590	0.4g	5g
Nutrient Panel C (Zinc, Manganese, Iron, Copper)	590	0.4g	5g
Nutrient Panel D (Panels A, B and C)	522, 590	0.4g	5g
Nutrient Panel E (Panels B and C, Nitrate, Phosphate-Phosphorus, Potassium)	512, 540, 550, 590	0.5g	5g
Total Nitrogen and Carbon	522	0.1g	3g
Total Kjeldahl Nitrogen (TKN)	515	0.1g	3g
Nitrate and Ammonium	510	0.05g	3g
Extractable NPK Group 1 (Nitrate, Ammonium, Phosphate-Phosphorus, Potassium)	510, 540, 550	0.5g	3g
Extractable NPK Group 2 (Nitrate, Phosphate-Phosphorus, Potassium)	510, 540, 550	0.5g	3g
Total Acid Digestible Elements: Aluminum, Barium, Boron, Cadmium, Calcium, Chromium, Chromium Oxide, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Sodium, Sulfur, Vanadium, Zinc	590	0.4g	5g
Arsenic	596	0.25g	3g
Selenium	594	0.25g	3g
Silicon	585	0.4g	3g
Extractable IC Anions: Boron, Chloride, Fluoride, Nitrite, Nitrate	561	0.05g	3g
Phosphate-Phosphorous	540	0.05g	3g
Extractable Potassium	550	0.05g	3g
Extractable Sulfate-Sulfur	530	0.15g	5g
Manure EC, pH (water 1:5)	705, 715	15g or 30mL	30g or 100mL



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FEED – GENERALLY REQUEST THE EQUIVALENT OF 15 GRAMS OF DRIED AND GROUND SAMPLE MATERIAL FOR MOST PANELS

ANALYSIS		METHOD SOP(S)	MINIMUM AMT	PREFERRED AMT
Feed Group 1 (Dry Matter, Crude Protein, Acid Detergent Fiber, Total Digestible Nutrients)		505, 625, 640	2.5g	10g
Feed Group 2 (Dry Matter, Crude Protein, Acid Detergent Fiber, Total Digestible Nutrients, Ash Content, Fat)		505, 615, 625, 640, 670	5g	15g
Acid Detergent Fiber, Total Digestible Nutrients*	Acid Detergent Insoluble Nitrogen	640	1g	5g
	Acid Detergent Fiber – Ash Free		1g	5g
	Lignin, Lig-AF, Cellulose	640	1g	5g
Neutral Detergent Fiber†	Neutral Detergent Fiber – Ash Free		1g	5g
	Hemicellulose	650	1g	5g
Ash Content		670	1g	5g
Crude Fiber		635	2g	10g
Crude Protein		625	0.01g	3g
Fat		615	2g	15g
Fat by Acid Hydrolysis		617	10g	50g
Fat with Rinse		615	2g	15g
Total Phenols		696	0.25g	5g
Soluble Carbohydrates Group 1 (Fructose, Glucose, Sucrose)		680	0.05g	2g
Soluble Carbohydrates Group 2 (Fructose, Glucose, Sucrose, Sorbitol)		680	0.05g	0.25g
Carbohydrate Panel (Total Nonstructural Carbohydrates, Starch, Fructose, Glucose, Sucrose, Total Glucose)		680, 690	0.1g	2g
Fructose, Starch, Glucose, Sorbitol, Sucrose		680	0.05g	2g
Total Nonstructural Carbohydrates (TNC)		690	0.05g	3g
Total Glucose		690	0.05g	3g

* ADIN, ADF-AF, and Lignin require separate ADF runs. If all 3 are requested, the minimum required is 3g.

† NDF-AF and Hemicellulose require separate NDF runs. If both are requested, the minimum required is 2g.

SOIL – GENERALLY REQUEST THE EQUIVALENT OF 300-500 GRAMS OF DRIED AND GROUND SAMPLE MATERIAL FOR MOST PANELS

ANALYSIS		METHOD SOP(S)	MINIMUM AMT	PREFERRED AMT
Dry Matter		405	10g/30g	30g/50g
Total Nitrogen and Carbon		320	0.5g	2g
Fertility Group 1 (Nitrate, Olsen-P, Exchangeable Potassium)		312, 340, 360	8g	25g
Fertility Group 2 (Nitrate; Olsen-P, Exchangeable Potassium, Sodium, Calcium, and Magnesium; Estimated Cation Exchange Capacity; Organic Matter – Loss on Ignition; pH		312, 340, 360, 415, 205	50g	200g
Nitrate and Ammonium (dry soil)		312	4g	10g



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ANALYSIS	METHOD SOP(S)	MINIMUM AMT	PREFERRED AMT
Nitrate and Ammonium (wet soil)	312	6g	20g
Exchangeable Potassium, Calcium, Magnesium, Sodium, Estimated Cation Exchange Capacity	360	2g	10g
DTPA Extractable Micronutrients: Copper, Iron, Manganese, Zinc, Cadmium, Chromium, Nickel, Lead	380	10g	50g
KCl Extractable Aluminum	392	4g	10g
TIC Group (Calcium Carbonate, Total Inorganic Carbon)	440		
Total Organic Carbon Group (Calcium Carbonate, Total Carbon, Total Inorganic Carbon, Total Organic Carbon)	322	6g	30g
Total Kjeldahl Nitrogen (TKN)	315	0.5g	3g
Phosphate – Bray Extraction (Bray-P)	335	2g	10g
Phosphate – Olsen Extraction (Olsen-P)	340	1g	5g
Sulfate-Sulfur (SO ₄ -S) – Calcium Phosphate Extract	330	4g	15g
Aluminum, Iron, Silicon – Oxalate Extraction	386	0.25g	2g
Aluminum, Iron, Silicon – Pyrophosphate Extraction	385	0.5g	10g
Salinity Group 1 (Salinity Group 2, Bicarbonate, Carbonate)	200, 205, 215, 220, 235	250g	300g
Salinity Group 2 (Saturation Percentage, pH, Electrical Conductivity/Estimated Soluble Salts, Calcium, Magnesium, Sodium, Chloride, Boron)	200, 205, 215, 235	250g	300g
Saturated Paste [‡] : Saturation Percentage, pH [§] , Electrical Conductivity/Estimated Soluble Salts, Calcium, Boron, Magnesium, Sodium, Chloride, Sodium Adsorption Ratio (SAR), Exchangeable Sodium Percentage (ESP), Potassium, Sulfate-Sulfur, Bicarbonate, Carbonate	200, 205, 215, 220, 227, 235, 240	100g	200g
pH 1:2 H ₂ O	207	6g	20g
Cation Exchange Capacity	430	4g	15g
Organic Matter – Loss on Ignition, Organic Carbon Calculated from OM-LOI	415	10g	50g
Organic Matter – Walkley-Black, Organic Carbon Calculated from OM-WB	410	2g	10g
Calcium Carbonate Equivalent	440	5g	15g
Bulk Density	480	Core sample of known volume	
Moisture Retention (0.33 ATM, 1 ATM, 5 ATM, 10 ATM, 15 ATM)	460	25g per point	50g per point
Particle Size Analysis, Very Fine Sand	470	25g	200g
Acid Digestible Micronutrients: Aluminum, Copper, Iron, Manganese, Phosphorus, Zinc	390	0.5g	10g
Cadmium	390	5g	30g
Arsenic	396	0.5g	2g
Selenium	394	0.5g	2g

[‡]Sample amount required for saturated paste analyses can vary based on soil type.

[§]Saturated pH alone can be run with less sample material.



WATER – GENERALLY REQUEST 250 ML FOR MOST PANELS

ANALYSIS	METHOD SOP(S)	MINIMUM AMT	PREFERRED AMT
Suitability Group 1[†] (Suitability Group 2, Bicarbonate, Carbonate)	805, 815, 820, 830, 835, 840	85mL	170mL
Suitability Group 2[#] (pH, Electrical Conductivity, Sodium Adsorption Ratio, Calcium, Magnesium, Sodium, Chloride, Boron)	805, 815, 830, 835, 840	60mL	120mL
Alkalinity, Bicarbonate, Carbonate	820	25mL	50mL
Anion Panel[◆] (Chloride, Sulfate- soluble Sulfur, Nitrate, Bicarbonate)	820, 830, 835, 847		
Ion Chromatography Panel[♥] (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)	880		
Nitrate, Ammonium	847	10mL	50mL
Ion Chromatography Anions: Bromide, Chloride, Fluoride, Nitrite, Nitrate	880	2mL	5mL
Total Carbon	822	10mL	50mL
Total Organic Carbon (TOC)	822	10mL	50mL
Dissolved Organic Carbon (DOC)	822	10mL	50mL
Dissolved Organic Carbon (DOC) (unfiltered)	822	10mL	60mL
Chloride by FIA	830	5mL	20mL
Electrical Conductivity, pH	805, 815	10mL	25mL
Soluble Elements: Salts (Potassium, Calcium, Magnesium, Sodium, Sodium Adsorption Ratio (SAR), Exchangeable Sodium Percentage (ESP)); Micronutrients (Zinc, Manganese, Iron, Copper); Heavy Metals (Cadmium, Chromium, Lead, Nickel); Others (Aluminum, Boron, Silicon)	835, 840	5mL	20mL
Hardness	875	5mL	20mL
Nitrate-Nitrogen by FIA	847		
Total Nitrogen	855	10mL	50mL
Total Kjeldahl Nitrogen (TKN)	850	20mL	100mL
Phosphate-Phosphorus by FIA	865	2mL	10mL
Phosphorus by ICP	835	5mL	20mL
Sulfate-Sulfur	835	5mL	20mL
Total Dissolved Solids, Total Suspended Solids, Volatile Suspended Solids	870	100mL	500mL
Total Solids	870	100mL	500mL
Turbidity	810	60mL	130mL
Acid Digestible Elements: Salts (Potassium, Calcium, Magnesium, Sodium); Micronutrients (Zinc, Manganese, Iron, Copper); Heavy Metals (Cadmium, Chromium, Lead, Nickel); Others (Aluminum, Boron, Molybdenum, Phosphorus, Sulfur)	890	5mL	20mL
Arsenic	896	15mL	25mL
Selenium	894	15mL	25mL
Extracts: 5mL per element			

[†]Suitability Group 1: Ca, Mg, Na and B analyzed by ICP-AES. Cl analyzed by FIA.

[#]Suitability Group 2: Ca, Mg, Na and B analyzed by ICP-AES. Cl analyzed by FIA.

[◆]Anion Panel: Cl and NO₃ analyzed by FIA. S-SO₄ analyzed by ICP-AES.

[♥]Ion Chromatography Panel: All anions analyzed by IC