



Information sheet for sample specific methods

1. Soil Samples and Fertilizers

Note: Fresh soil samples need to be dried, sieved and finely ground before analysis (additional costs for sample preparation apply).
Dried samples may need to be fine milled if necessary (additional costs for sample preparation may apply).
Please store fresh soil samples frozen after sample collection until delivery.

General Composition	Analyte(s)	Method
	Water content/Dry Matter	Gravimetry & Drying
	Crude ash (Loss of ignition)	Gravimetry & Combustion
	Total Nitrogen (N), Total Carbon (C)	Elemental Analysis (Dumas)
	Organic Carbon (C _{Org})	
Specific Composition	Analyte(s)	Method
	Micro- and Macronutrients, Heavy Metals, Trace Elements	Digestion & Element Analysis (ICP-OES or ICP-MS)
	Soluble/Plant-Available Magnesium	CaCl ₂ -Extraction & Elemental Analysis
	Soluble/Plant-Available Phosphorus (P ₂ O ₅) and Potassium (K ₂ O)	CAL-Extraction & Elemental Analysis
	Major and trace nutrients (B, Cu, Fe, K, Mg, Mn, Na, Zn)	CAT-Extraction & Elemental Analysis
	Soluble Nitrogen (N _{min} → NH ₄ -N & NO ₃ -N)	Continuous Flow Analysis
	Soluble Sulfur (S _{min})	
	Salt Content	Conductivity
	pH-value	pH-value in CaCl ₂



2. Samples from plants (stems, hulls, leaves)

Note: Dried samples may need to be homogenized and fine milled if necessary (additional costs for sample preparation may apply).

General Composition	Analyte(s)	Method
	Water content/Dry Matter	Gravimetry & Drying
	Crude ash	Gravimetry & Combustion
	Total Nitrogen (N), Total Carbon (C)	Elemental Analysis (Dumas)
	Organic Carbon (C _{Org})	
	Crude protein	Digestion & Distillation (Kjeldahl)
	Crude fat	Gravimetry & Extraction
	Crude fiber	Gravimetry & Extraction
	Van Soest (aNDF, ADF, ADL)	Gravimetry & Extraction
Specific Composition	Analyte(s)	Method
	Micro- and Macronutrients	Digestion & Element Analysis (ICP-OES or ICP-MS)
	Heavy Metals, Trace Elements	
	Carotenoids, Chlorophylls, Cannabinoids	Extraction & Liquid chromatography (UHPLC)
	Free amino acids	Extraction & Ion Exchange chromatography (ASA)
	Amino acids (total)	Digestion & Ion Exchange chromatography (ASA)
	Anions (e.g. chloride, phosphate, nitrate, sulphate)	Extraction & Liquid chromatography (IC)
	Short chain carboxylic acids	Extraction & Gas chromatography (GC)
	Small molecules	Extraction & Gas chromatography (GC-MS/MS)
	¹³ C, ¹⁵ N, ¹⁸ O	Stable Isotope Analysis (IRMS)



3. Fertilizers

Note: Fresh samples (e.g. manure) may need to be homogenized and dried before analysis (additional costs for sample preparation apply).
Dried samples may need to be fine milled if necessary (additional costs for sample preparation may apply).

General Composition	Analyte(s)	Method
	Water content/Dry Matter	Gravimetry & Drying
	Crude ash (Loss of ignition)	Gravimetry & Combustion
	Total Nitrogen (N), Total Carbon (C), Organic Carbon (C _{Org})	Elemental Analysis (Dumas)
Specific Composition	Analyte(s)	Method
	Micro- and Macronutrients	Digestion & Element Analysis (ICP-OES or ICP-MS)
	Heavy Metals, Trace Elements	
	Soluble/Plant-Available Magnesium	CaCl ₂ -Extraction & Elemental Analysis
	Soluble/Plant-Available Phosphorus (P ₂ O ₅) and Potassium (K ₂ O)	CAL-Extraction & Elemental Analysis
	Major and trace nutrients (B, Cu, Fe, K, Mg, Mn, Na, Zn)	CAT-Extraction & Elemental Analysis
	Soluble Nitrogen (N _{min} → NH ₄ -N & NO ₃ -N), Soluble Sulfur (S _{min})	HCl-Extraction & Continuous Flow Analysis
	Salt Content	Conductivity
	pH-value	pH-value in CaCl ₂
	Density	Gravimetry

4. Feed-based samples

Note: Dried samples may need to be homogenized and fine milled if necessary (additional costs for sample preparation may apply).

General Composition	Analyte(s)	Method
	Water content/Dry Matter	Gravimetry & Drying
	Crude ash	Gravimetry & Combustion
	Total Nitrogen (N), Total Carbon (C), Organic Carbon (C _{Org})	Elemental Analysis (Dumas)
	Crude protein	Digestion & distillation (Kjeldahl)
	Crude fat	Gravimetry & Extraction
	Crude fiber	Gravimetry & Extraction
	Van Soest (aNDF, ADF, ADL)	Gravimetry & Extraction
	Starch	Enzymatic
Specific Composition	Analyte(s)	Method
	Micro- and Macronutrients, Heavy Metals, Trace Elements	Digestion & Element Analysis (ICP-OES or ICP-MS)
	Carotenoids, Chlorophylls, Cannabinoids	Extraction & Liquid chromatography (UHPLC)
	Free amino acids	Extraction & Ion Exchange chromatography (ASA)
	Amino acids (total)	Digestion & Ion Exchange chromatography (ASA)
	Anions (e.g. chloride, phosphate, nitrate, sulphate)	Extraction & Liquid chromatography (IC)
	Short chain carboxylic acids	Extraction & Gas chromatography (GC)
	Sugars (monosaccharides, disaccharides), sugar alcohols	Extraction & Liquid chromatography (HPAEC-PAD)
	Water soluble Vitamins (e.g. C, B1, B2, B6)	Extraction & Liquid chromatography (UHPLC)
	Small molecules	Extraction & Gas chromatography (GC-MS/MS)
	¹³ C, ¹⁵ N, ¹⁸ O	Stable Isotope Analysis (IRMS)

5. Food-based samples

Note: Dried samples may need to be homogenized and fine milled if necessary (additional costs for sample preparation may apply).

General Composition	Analyte(s)	Method
	Water content/Dry Matter	Gravimetry & Drying
	Crude ash	Gravimetry & Combustion
	Total Nitrogen (N), Total Carbon (C)	Elemental Analysis (Dumas)
	Organic Carbon (C _{Org})	
	Crude protein	Digestion & distillation (Kjeldahl)
	Crude fat	Gravimetry & Extraction
	Starch	Enzymatic
Specific Composition	Analyte(s)	Method
	Micro- and Macronutrients, Heavy Metals, Trace Elements	Digestion & Element Analysis (ICP-OES or ICP-MS)
	Carotenoids	Extraction & Liquid chromatography (UHPLC)
	Free amino acids	Extraction & Ion Exchange chromatography (ASA)
	Amino acids (total)	Digestion & Ion Exchange chromatography (ASA)
	Anions (e.g. chloride, phosphate, nitrate, sulphate)	Extraction & Liquid chromatography (IC)
	Short chain carboxylic acids	Extraction & Gas chromatography (GC)
	Sugars (monosaccharides, disaccharides), sugar alcohols	Extraction & Liquid chromatography (HPAEC-PAD)
	Water soluble Vitamins (e.g. C, B1, B2, B6)	Extraction & Liquid chromatography (UHPLC)
	Small molecules	Extraction & Gas chromatography (GC-MS/MS)
	¹³ C, ¹⁵ N, ¹⁸ O	Stable Isotope Analysis (IRMS)
	Gluten	ELISA