

PROTOCOLS AND HEAVY METALS REFERENCE FOR SOIL, WATER, PLANTS & COMPOST.

NOTE THAT THE PROTOCOLS AND TESTS SHOWN MAY INCLUDE ANALYSES AND OTHER FEATURES NOT MENTIONED.

Heavy Metal Micronutrients – Even though this list consists of Heavy Metals, they are classified as Micronutrients as they are essential to plant health and development. However, any significant buildup of any of these can be toxic ☠ to humans, animals and plants.

☠ **Undesirable Heavy Metals** – Significant amounts of these can be toxic to plants or extremely hazardous to health.

⊙ **Sodium** – Although a Secondary Micronutrient, a significant buildup (as NaCl) is highly toxic to plants due to reverse osmosis.

■ **Sulfur** – While a Micronutrient, Sulfur is perhaps more significant as an acidifier in alkaline soils, acting to release water insoluble nutrient compounds into water soluble forms readily available for plant root absorption.

YOU ARE NOT RESTRICTED TO THE PROTOCOLS – ORDER ANY SINGLE OR COMBINATION OF INDIVIDUAL ELEMENTS DESIRED.

Standard Analytical Protocols (● = Total Content strong acid extraction) –

M3 – (SOIL) Standard Mehlich III Extraction (Total Content) – includes pH & N.

M3F – (SOIL) Full-Screen Mehlich III – Standard Mehlich III Extraction plus Water Soluble Extraction (+W).

FICAP – Full-screen Inductively Coupled Argon Plasma (ICAP) instrument analysis.

NPDES – National Pollutant Discharge Elimination System.

RCRA – Resource Conservation and Recovery Act.

QICAP – Quantitative ICAP screen.

TAL – Target Analyte List metals.

PP – Priority Pollutant metals.

COMP – (SOIL) TPSL Comprehensive CO₂ Extraction Method Soil Test – INCLUDES pH, N and MANY OTHER FEATURES.

STD – (SOIL) TPSL Standard CO₂ Extraction Method Soil Test – INCLUDES pH, N and MANY OTHER FEATURES.

BASIC – (SOIL) Basic Fertilizer Guide (Soil Nutrients Test) – specially-modified extraction.

MINI – Screen for most common Heavy Metals concerns.

CA – CANADA and CALIFORNIA Registrations.

WA – WASHINGTON State registration.

NR – Non-Registration screen.

① Primary Nutrient. ② Major Micronutrient. ③ Secondary Micronutrient. ④ Trace Element ■ CO₂ Extraction
+W = and Water Soluble Extraction. ⊗ Neutral Extraction (NH₄AOc). ○ Calculated Micronutrient.

ELEMENT	M3	M3F	FICAP	NPDES	RCRA	QICAP	TAL	PP	COMP	STD	BASIC	MINI	CA	WA	NR
Aluminum	③		●			●	●								
Antimony	④		●				●	●							
Arsenic	☠		●		●	●	●	●				●	●	●	●
Barium	☠		●		●	●	●								
Beryllium	☠		●				●	●							
Bismuth	☠		●												
Boron	②		●			●									
Cadmium	☠		●	●	●	●	●	●				●	●	●	●
Calcium	①	●	●+W	●		●			■+W	■+W	⊗				
Chromium	☠		●	●	●	●	●	●					●		●
Cobalt	④		●			●	●						●	●	
Copper	②		●	●		●	●	●	●				●	●	
Gold			●												
Iron	②		●			●	●		●		○				
Lead	☠		●	●	●	●	●	●				●	●	●	●
Magnesium	①	●	●+W	●		●	●		■+W	■+W					
Manganese	②		●			●	●		●		○				
Mercury	☠		●		●		●	●					●	●	
Molybdenum	④		●			●							●	●	
Nickel	④		●	●		●	●	●					●	●	
Phosphorus	①	●	●	●		●			■	■	⊗				
Potassium	①	●	●	●		●	●		■+W	■+W	⊗				
Selenium	④		●		●	●	●	●					●	●	
Silicon	③		●												
Silver	☠		●		●	●	●	●							
Sodium	⊙ ④	●	●+W	●		●	●		■+W	■+W					
Strontium	④		●												
Sulfur	■ ③		●			●									
Thallium	☠ ④		●				●	●							
Titanium	④		●												
Vanadium	④		●				●								
Zinc	②		●	●		●	●	●	●		○		●	●	