



## ELEMENTS ESSENTIAL FOR PLANT GROWTH

ELEMENT	SYMBOL	FORM	FUNCTION IN PLANT GROWTH
Carbon	C	Carbon Dioxide	Combines with hydrogen to form simple sugars, the first building blocks of all organic material, the means of storage of sun energy for latter use by plants and animal(s).
Hydrogen	H	H <sub>2</sub> O(water)	Combines with carbon and oxygen to form simple sugars.
Oxygen	O	Carbon Dioxide in the air	Combines with carbon and hydrogen to form simple sugars in the photosynthesis process.
Nitrogen*	N	N <sub>2</sub> Nitrate NH <sub>4</sub> Ammonium	In all protein tissue.
Phosphorus*	P	PO <sub>4</sub> Phosphate	Necessary for cell division (growth)
Potassium*	K	K <sub>2</sub> O Potash	Catalyst to sugar formation and energy release
Calcium	Ca		Used by plants to build cell walls, cellulose.
Magnesium	Mg		The nucleus of the chlorophyll molecule, necessary to the manufacture of plant food using sunlight.
Sulfur+	S		A component of protein

Iron+	Fe	A component of chlorophyll
Manganese+	Mn	Active in enzyme reactions within the plant
Copper+	Cu	Active in enzyme reactions within the plant
Zinc+	Zn	Necessary for the formation of chlorophyll
Boron+	B	Necessary in very small amounts
Molybdenum	Mo	Necessary in very small amounts

ATS, recommends that if you think you have a soils deficiency, have moved into a new property or will be adding a garden or establishing turf you should get a soils test. A soils test can be done by a private service, your local Ag extension school, you can purchase a test kit at your local hardware store or online. If you have a large property and you believe the soil is different from one location to the next, go ahead and do a soils sample test twice or potentially more.

A soils test may take 5-25 days to get back showing professional results/readings. Having this information can potentially save you a bundle of time, energy and money. Why sow seed in poor grade soil, plant shrubs, perennials and annuals in soil lacking minerals and fuel for proper plant growth. Your soil is the foundation to your plants health.

ATS recommends the soils test takes place in the winter months allowing you to plan your soils amendments if needed. These can be installed at the first break in soils free of frost... Keeping you on schedule for that garden of abundance, producing fresh herbs, flowers, vegetables, and o the healthy trees and shrubs to enjoy in the years to come...or the new lush grass for the kids play area!!

A winter test keeps my mind in the game as a avid gardner...ATS-Denver

\*Basic elements in fertilizer you add to your yard.

+ Additives to customize your fertilizer mix, micro-nutrients