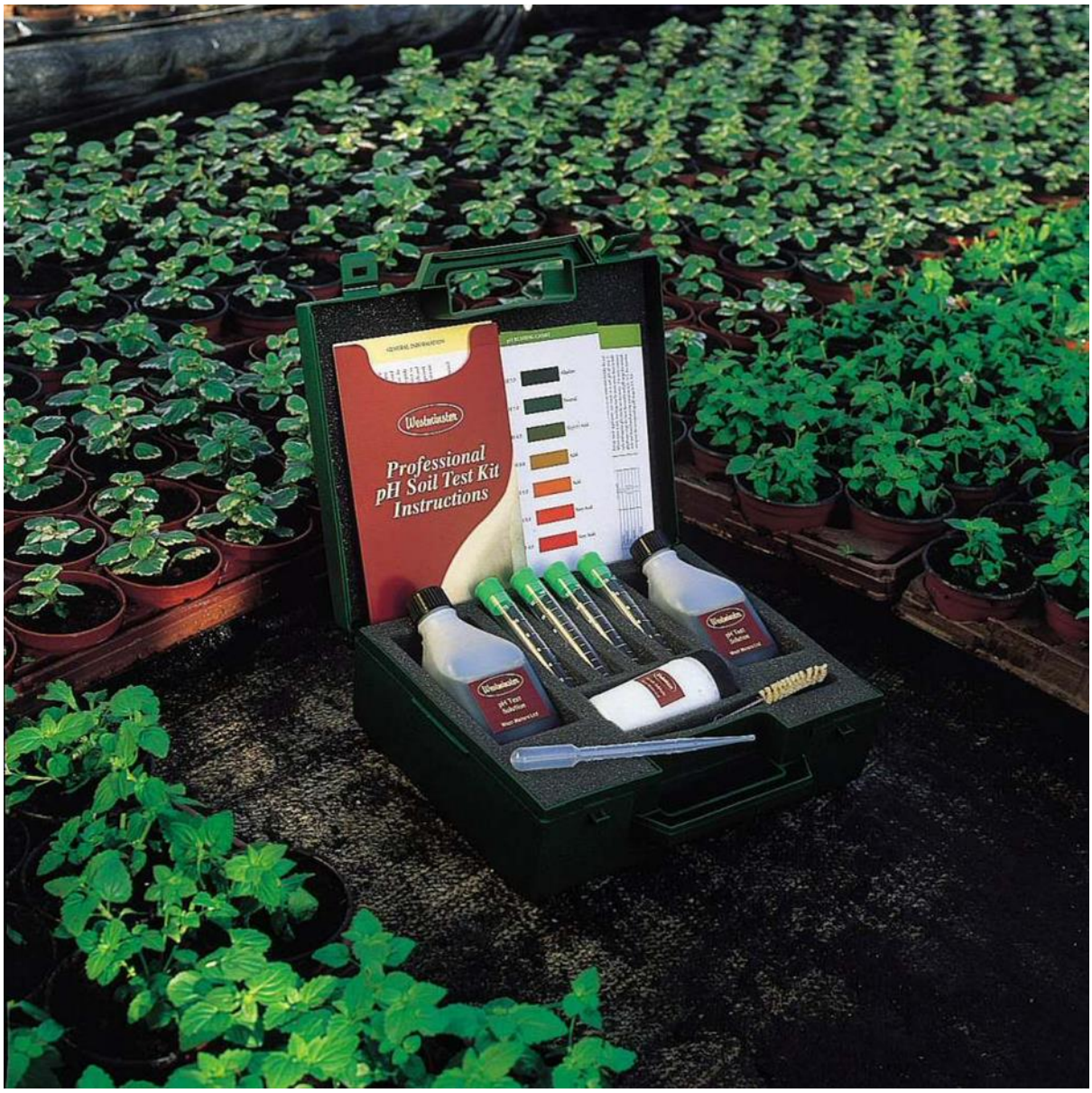
E R G O F I T O I N A C T I O N

Give Nature What Nature Wants

Soil Testing



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SOIL:

Soil is the mixture of minerals, organic matter, gases, liquids, and the myriad of organisms that together support plant life.

It is a natural body that exists as part of the pedosphere and which performs four important functions: it is a medium for plant growth; it is a means of water storage, supply and purification; it is a modifier of the atmosphere; and it is a habitat for organisms that take part in decomposition of organic matter and the creation of a habitat for new organisms.

Soil is considered to be the "skin of the earth" with interfaces between the lithosphere, hydrosphere, atmosphere, and biosphere.

Soil consists of a solid phase (minerals and organic matter) as well as a porous phase that holds gases and water. Accordingly, soils are often treated as a three-state system.

SOIL TESTING:

In agriculture, a soil test is the analysis of a soil sample to determine nutrient and contaminated content, composition, and other characteristics such as the acidity or pH level.

A soil test can determine fertility, or the expected growth potential of the soil that indicates nutrient deficiencies, potential toxicities from excessive fertility and inhibitions from the presence of non-essential trace minerals.

The test is used to mimic the function of roots to assimilate minerals. The expected rate of growth is modeled by the Law of the Maximum.

Element	Nitrogen (N-NO3)	Phosphorus (P)		Potassium (K)		
Extraction Method	2N KCl	Bray	Olsen	Ammonium Acetate		Ammonium Bicarbonate - DTPA
Rating/Units	ppm	ppm	ppm	meq/100g	ppm	ppm
Low	<20	<20	<10	<0.45	<175	<60
Adequate	20-41	20-40	10-15	0.45-0.7	175-280	61-120
High	41-75	40-100	15-40	0.7-2.0	280-800	121-180
Excessive	>75	>100	>40	>2.0	>800	>180

Element	Iron (Fe)	Manganese (Mn)	Zinc (Zn)	Copper (Cu)	Boron (B)
Extraction Method	DTPA	DTPA	DTPA	DTPA	Hot Water
Rating/Units	ppm	ppm	ppm	ppm	ppm
Low	<2.5	<0.6	<1.0	<0.6	<0.5
Adequate	2.5-5.0	>2.0	>1.5	>2.0	0.5-2.0
High	>5.0				>2.0

Element	Calcium (Ca)		Magnesium (Mg)		Sulfur (S-SO4)
Extraction Method	Ammonium Acetate		Ammonium Acetate		KCL 40
Rating/Units	meq/100g	ppm	meq/100g	ppm	ppm
Low	<5	<1000	<0.5	<60	<5
Adequate	5-10	1000-2000	0.5-1.5	60-180	5-10
High	>10	>2000	>1.5	>180	10-20
Excessive					>20

Interpretation of Soil Electrical Conductivity		
Rating	**1:1 Extract EC (mmhos/cm)**	**Saturated Paste ECe (mmhos/cm)**
Low (Non-saline)	0.01-0.45	0.0-2.0
Low (Slightly saline)	0.45-1.5	2.1-4.0
Medium (Moderately saline)	1.51-2.9	4.01-8.0
High (Strongly saline)	2.91-8.5	8.01-16.0
Very high (Very strongly saline)	>8.5	>16.0

Desirable range of exchangeable cations	
Cation	**Range**
Calcium	65%-80%
Magnesium	10%-20%
Potassium	3%-8%
Sodium	<6%
Aluminium	<1%

It is imperative to have soil tested prior to fertilization or remediation.

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