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Understanding your nutrient report

pH (potential of hydrogen) is a scale of acidity from 0 to 14. It determines how acidic or alkaline a substance is. More acidic solutions have a lower pH while more alkaline solutions have a higher pH. Substances that aren't acidic or alkaline (neutral solutions) usually have a pH of 7.0. Those above 7.0 are basic or alkaline. A 1.0 change in pH represents a ten-fold difference in acidity or alkalinity. For example a pH of 5.2 is 10 times more acidic than a pH of 6.2.

Soluble Salts: are the sodium-based trace elements present in soil and other types of material that are able to dissolve in water. Soluble salts change their composition as they dissolve into a form more easily absorbed by plants.

Organic Matter: Is the component of soil, consisting of plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by soil organisms.

Nitrate, Phosphorus and Potassium are all macronutrients and usually required in larger amounts compared to micronutrients.
Nitrate (NO3) is a naturally occurring from of nitrogen in soil. This form of nitrogen is created when nitrification, the conversion of ammonium into nitrate, occurs. Nitrate is used a food by plants for vegetative growth and production.
Phosphorus (P) is an essential macro-element, required for plant nutrition. It participates in metabolic process such as photosynthesis, energy transfer and synthesis and breakdown of carbohydrates.
Potassium has many different roles in plants: In Photosynthesis, potassium regulates the opening and closing of stomata, and therefore regulates CO2 uptake. Potassium triggers activation of enzymes and is essential for productions of Adenosine Triphosphate (ATP).

Ammonium an ion NH_4^+ derived from ammonia which is converted by ammonium-oxidizing bacteria into ammonium. Ammonium exists in exchangeable and non-exchangeable forms. Ammonium plays a role in seed production.

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Sulfur is a chemical element with symbol S. Most soil sources of S are in the organic matter and are therefore concentrated in the topsoil or plow layer. Elemental S and other forms as found in soil organic matter and some fertilizers, are not available to crops. They must be converted to the sulfate (SO4) form to become available to the crop. This conversion is performed by soil microbes.

Calcium is a chemical element with symbol Ca. An alkaline earth metal, calcium is a reactive metal that forms a dark oxide-nitride layer when exposed to air. Calcium plays an important role in plant growth and nutrition as well as in cell wall deposition. It helps to maintain chemical balance in soil reduces salinity and improves water penetration.

Magnesium (Mg) is an essential plant nutrient. It plays an important role in the photosynthesis process as it is a building block of the Chlorophyll, which makes leaves appear green.

Sodium is a chemical element with the symbol (Na). There is a natural accumulation of sodium in soil from fertilizers, pesticides, run off from shallow salt-laden waters and the breakdown of minerals which release salt. Excess sodium in soil gets taken up by plant roots and can cause serious vitality problems in your garden.

Micronutrients: **Zinc** (Zn), **Copper** (Cu), **Manganese** (Mn), **Iron** (Fe) and **Boron** (B) are micronutrients. These are essential elements that are used by plants in small quantities. For most micronutrients, crop uptake is less than one pound per acre. In spite of this low requirement, critical plant functions are limited if micronutrients are unavailable.

Soil water holding capacity is the amount of water that a given soil can hold for crop use.

Ca:Mg ratio: Calcium to Magnesium ratio determines oxygen availability in the soil. The better a soil can take in oxygen and then release CO2 for photosynthesis (gas exchange), the better your production.

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Cation exchange capacity (**CEC**) is the total capacity of a **soil** to hold exchangeable cations. **CEC** is an inherent **soil** characteristic and is difficult to alter significantly. It influences the **soil's** ability to hold onto essential **nutrients** and provides a buffer against **soil** acidification. In simple terms the higher the clay content, the higher the CEC since clay particles have the greatest surface area per unit volume of soil and, therefore, can hold the most cations.

Percent Base Saturation: "Base saturation" refers to the percentage of the major cations in the soil (or bases) that are attached to the clay component of your soil.

Electrical conductivity (EC) of a soil is used to measure the potential risk of salt damage to plants. This measurement includes all soluble salts. Knowing the EC can be useful when diagnosing crop growth problems.