



HOW TO READ YOUR SOIL TEST RESULTS

pH (water)	Acidity of the soil sample after mixing with an equal volume of distilled water. This allows the hydrogen (H) attached to the soil to go into the water where it is measured with an electrode. pH in soils ranges mostly between 3 and 8. The lower the pH, the greater the acidity. pH is a logarithmic expression of the H content, so a pH 5 soil sample is 10 times as acid as a pH 6 sample, etc.
pH (buffer)	Same as above except soil is mixed with a buffer solution (mixture of aluminum chloride, barium chloride, acetic acid, triethanolamine, sodium glycerophosphate, stabilized at pH of 6). We read from the pH meter how much the pH of the solution is lowered below 6.6 by the free hydrogen present in the soil sample. From this we can estimate the LR.
LR	= Lime Requirement. The buffer pH tells us how many tons of standard ground limestone are needed to bring that sample to pH 6.6, the desirable pH at which plant nutrients are most available and fertilizer applications will likely pay off for most garden and field crops.
me/100 gr	The small quantities of soil mineral nutrients that are available to plants are held on the surface of clay and humus particles, expressed in milli-equivalents of element per 100 grams of soil (me/100gr.) See below under lb/A.
CEC	= Cation Exchange Capacity. Most essential plant nutrients have a positive electrical charge (such as K, Ca, Mg) and are called cations. The total amount or capacity of a soil sample to hold on to cations is called CEC, expressed as me/100grams of soil. Sand would have a CEC of zero, but soils high in clay and organic matter (humus) may have CEC values of 30 or more. West Virginia topsoils have from 10 to 30. Farmers and gardeners aim for 15 or more by crop rotation and erosion control since these practices preserve the soil's organic matter (humus).
BS	= Percent Base Saturation. Since H (hydrogen) is also a cation, some of the CEC is occupied by H. The part of the CEC <u>not</u> occupied by H (and aluminum in very acid soils) is called the percent base saturation. It varies between 0 and 100. The more acid the soil the lower BS, the more neutral the soil the higher BS. Farmers and gardeners should aim for 80 percent or higher by liming, fertilizing and manuring.
lb/acre (=lb/A)	Since 1 me/100gr is equal to 780 lb/acre (for K), 400 lb/acre (for Ca) and 240 lb/acre (for Mg), you can get the lb/acre values by multiplying me/100gr values by these figures.
P	= Phosphorus. It is not a cation, but an anion (negatively charged) and therefore listed separately. Since the soil has mostly a negative charge, it can hold on to very little exchangeable (available) P. The total amount of P in soils is usually much greater than the available amount. The closer pH is to 7, the more P is available to crops, but in very acid and alkaline soils P is fixed by soil minerals. Soils with high organic matter have more available P (and also nitrogen). At an extra charge we can analyze the organic matter content of soil, thus estimate the soil's ability to hold and release N and P.
K, Ca, Mg	= Potassium, Calcium, and Magnesium; the most common and most-needed cations. You need adequate amounts of available K, Ca and Mg, and a proper balance, preferably 80-85% Ca, 10-15% Mg, 2-3% K, and H 0%. This occurs by liming and fertilizing as recommended. Other essential plant food elements are S, Fe, Mn, Mo, Zn, Cu and B. Testing for these is usually not necessary since most soils tend to contain enough for crop needs.
REMEMBER	Soil test data and our recommendations <u>only</u> apply to the sample analyzed, and <u>only</u> to that area of land and depth of soil which the sample represents. The soil test results are no better than the sample you sent us!

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