

Soil ph measurment



**ASSIGN
BUSTER**

M calcium chloride and with 0.01M calcium chloride for different soil types.

Note: The groups having the best data mentioned by the lecturer were chosen.

Discussion When comparing the average pH measurement for all of the given soil/water ratios for both with and without the addition of 0.01M calcium chloride among the different types of soils, table 1 shows that sand has the highest pH, which is then followed by organic matter, compost, next being 3:2 soil and finally sedentary soil having the lowest pH of them all. The pH of soil is affected by both acid and base-forming ions.

The acid forming cations are positively charged ions they commonly include hydrogen ions, aluminium ions, and iron(II and III ions).

Base forming cations commonly comprise of calcium ions, magnesium ions, sodium ions and potassium ions. It is also known that the CEC is positively correlated with soil pH. As the dilution of the soil solution increases, the pH is also seen to increase. The effect of adding water and occasional mixing during the 30 minute period is to allow the soil and the water to approach equilibrium conditions.

Water will begin to progressively leach off the exchangeable basic ions present in the soil such as Ca^{2+} , Mg^{2+} , K^{+} , and Na^{+} . As a result hydrogen ions that will be now higher in concentration will compete and exchange with the basic ions for the vacant exchange sites. The adsorption of more hydrogen ions will cause instability of aluminium resulting it to exit from the clay lattice (Foth, 1990). The released aluminium ion will undergo hydrolysis to form hydroxy-aluminium producing hydrogen ions.

Hydroxy-aluminium ions will further hydrolyse to form Al-hydroxide while producing additional hydrogen ions (Foth, 1990).

Therefore the hydrolysis of Al is an important contributing factor of soil acidity. $Al(OH)^+ + H_2O \rightleftharpoons Al(OH)_2^+ + H^+$ $Al(OH)_2^+ + H_2O \rightleftharpoons Al(OH)_3 + H^+$ Conclusion When comparing the average pH measurement for all of the given soil/water ratios for both with and without the addition of 0.01M calcium chloride among the different types of soils, table 1 shows that sand has the highest pH, which is then followed by organic matter, compost, next being 3:2 soil and finally sedentary soil having the lowest pH of them all.

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