Soil Sample Analysis for Nutrient Determination:

Potassium (K+), Nitrate (NO3-), Ammonium (NH4+), Calcium (Ca2+), Magnesium (Mg2+), Sodium (Na+), Cloride (Cl-), and pH by analyzer IMACIMUS

Introduction

This procedure describes the methodology for the manual extraction of soil samples.

Soil ions are measured in an aqueous matrix such as water or dilute salt solution, so the result depends on the degree of dilution (soil- water added ratio).

Therefore, it is important to accurately control the amount of added water. The ion selective electrodes technique provides the quantification of free ionic species in solution. The elements that are not dissociated or chelated are not determined directly.

Procedure A

Suction probe (or lysimeter) extraction. The lysimeter should be used as porous material, which does not react with nutrients. Therefore, the soil solution must not be affected by the chemical composition of the ceramic top. Following this, a precise and reliable analysis can be obtained.

Steps to be followed:

1. Extract 10 ml of sample with the suction probe (or lysimeter)
2. Directly analysing liquid taken from the suction probe with the IMA-CIMUS analyzer

Procedure B

Dry soil sample extract. It is best that the sample does not show a high degree of humidity. If necessary, let dry. Materials needed: Deionized water and graduated container (volumetric material).

Steps to be followed:

1. Select a representative sample of soil, homogenize and dry it. Sample should not have moisture.
2. Weigh an exact quantity of the sample. E.g. 10g.
3. Take a known volume of deionized water with the help of volumetric material. E.g. 250 ml. (0.25 liters).
4. Mix soil sample with deionized water and shake vigorously.
5. Decant the liquid resulting from the extraction. (Separation of sample and soil).
6. Analyze sample with IMACIMUS.
7. The resulting measurement of mg/l corresponds to the concentration of the prepared extract. To relate the concentration obtained with the concentration of ions in the soil, the relationship between the weight and the volume of solution must be applied.
8. Multiply the value obtained on the screen by 0.25 and divide by 10, resulting in milligrams of nutrients divided by gram of soil. Repeat the calculation for each ion/nutrient available.