Determination of the Concentration of Multiple Ions in Plant Tissue

Required Apparatus:
CleanGrow's Multi-ion probe
CleanGrow's handheld portable meter
Weighing scales
Volume measuring vessel *e.g.* graduated cylinder
Bowl for stirring
Spoon for stirring
Funnel
Filter paper / muslin
Conical flask / vessel

Required chemicals:
CleanGrow's multi-ion conditioning solution
CleanGrow's PLANT TISSUE multi-ion calibration solutions
Deionised water

Sample Preparation:
Remove any soil from the sample but do not wash the plant tissue as doing so may reduce the concentration of ions in the sample. Weigh this sample and record (say 100 g). Macerate the lettuce in a blender and add a known amount of hot (approximately 90°C) deionised water to the sample to extract the nutrients. For example, dilute the sample two-fold (200 mL) or three-fold (300 mL). Ensure all the lettuce is covered with water and leave to sit for approximately 30 min with some stirring. The sample then needs to be filtered.

Set up a funnel with folded filter paper in a conical flask or any suitable vessel. Pour the mixture into the funnel and allow to filter. Collect the filtrate.

Alternatively subsequent to stirring, allow the plant tissue sample to settle so that a clearer aqueous layer is obtained. Decant this layer and proceed as follows.

Calibration:
Before use the multi-ion probe must be conditioned in CleanGrow's multi-ion conditioning solution. Ensure the correct calibration solutions for a three-point calibration are set up on the handheld meter. Follow the instructions for calibration and proceed to take a sample reading when the calibration data is 'very good' or 'good' for all ions.

Sample Reading:
Place the probe in the lettuce filtrate and 'Take a Sample' reading. The concentrations for each ion will be displayed in ppm or mmol / L.
Remember to multiply these concentrations by the dilution factor.

CleanGrow Ltd., Unit 4, Euro Business Park, Little Island, Co. Cork, Ireland
Tel: +353-21-4232000 E-mail: info@cleangrow.com