

METHOD STATEMENT



Determinand:

Determination of Extractable Potassium and Extractable Magnesium

Matrix:

Sample Type: soil samples.

Principle of Method:

Potassium and Magnesium are extracted from the soil with molar ammonium nitrate. The concentrations in the extract are determined by ICP-OES.

Sampling and Sample Preparation:

Ground soils are stored at room temperature; wet soils are refrigerated at $3 \pm 2^\circ\text{C}$.

Soil samples are dried and ground according to method WSC15 prior to analysis.

Provided the samples are dried and ground within 7 days of sampling, the dried soil has 1 month to be extracted within stability (BS ISO 18512:2007). The extracted portion is stable for 8 weeks (Wakefield In-House Data).

Interferences

The choice of appropriate analytical wavelengths minimises any spectral interferences.

Performance of Method:

Range of Application:

0 - 100 mg/l for K and 0 - 150mg/l for Mg without dilution

The analytical range may be extended by sample dilution with 1M ammonium nitrate

Limit of Detection and Calibration Bias:

	LOD mg/l	LOD mg/kg	MRV mg/kg
K	0.5	2.5	7.5
Mg	0.33	1.65	13.9

Recoveries of Compounds:

	Clay Soil		Sandy Soil		Loam	
	K	Mg	K	Mg	K	Mg
Concentration mg/l	33.4	50.3	14.2	8.13	36.0	31.1
Concentration mg/kg	167	251	70.9	40.6	180	155
Recovery %	96.98	95.55	99.36	95.02	97.27	96.45
RSD %	7.64	5.69	6.81	5.18	6.33	4.88

References:

The Analysis of Agricultural Materials, Reference Book 427, 3rd edition. Ministry of Agriculture, Fisheries and Food. HMSO. ISBN 0 11 242762 6. Methods 40 and 63.

Fertiliser Recommendations, Reference Book 209. Ministry of Agriculture, Fisheries and Food. HMSO. ISBN 0 11 242813 4. Appendix 1.