

APPENDIX II – Analytical Methods.

All estimations were carried out on the air-dried fine earth, i.e., material passing a 2 mm round hole sieve. For nitrogen and organic carbon analyses, the fine earth was further reduced to pass through a 0.5 mm sieve. All results except pH and gravel are reported on an oven-dry basis. Gravel is reported as a percentage of the air-dried field sample.

The methods used are given below and except where indicated otherwise are essentially as described by Piper (1950).

Particle Size Distribution.-Silt and clay were determined either by the Robinson pipette method or with a plummet balance.

Electrical Conductivity.-A 1:5 soil-water suspension was shaken for one hour in an end-over-end shaker and the electrical conductivity (E.C.) determined at 20°C.

pH. -After determination of electrical conductivity, the same suspension was used for the determination of pH by the glass electrode.

15 Atmosphere Percentage.-This is the moisture retained, as a percentage of the oven-dry soil after 48 hours at 15 atmospheres pressure in the pressure membrane chamber.

Chlorides.-These were determined by the electrometric titration method of Best.

Nitrogen.-The Kjeldahl method was used.

Organic Carbon.-The wet combustion method of Walkley and Black was used. Results have been multiplied by an empirical recovery factor of 1.25.

Exchangeable Cations.-The soil was first leached with 60 per cent ethanol to remove soluble salts. It was then leached with 1N ammonium acetate solution adjusted to pH 7.0.

In the leachate, calcium and magnesium were determined by EDTA titration, and sodium and potassium by using an EEL flame photometer. The individual metal cations have been expressed as milligram equivalents per 100g of soil and as percentages of the total exchange capacity.

Exchangeable Hydrogen.-This was determined by Mehlich's barium chloride-triethanolamine method (reference point pH 8.0), using the modification of Peech et. al. (1962).

Cation Exchange Capacity.-This is the sum of exchangeable calcium, magnesium, potassium, sodium and hydrogen.