

UNDISTURBED CORES FOR HYDRAULIC CONDUCTIVITY ANALYSIS

Robert A. Patterson
University of New England. Armidale NSW

Abstract of paper presented at
National Soils Conference
Canberra
9th - 12th May 1988
Australian Society of Soil Science Inc.

Note: Only abstracts printed by organisers for this conference

Reference: Patterson, R.A.(1988) Undisturbed Cores for Hydraulic Conductivity Analysis. National Soils Conference, Canberra.9th - 12th May 1988.Australian Society of Soil Science Inc. p 226

UNDISTURBED CORES FOR HYDRAULIC CONDUCTIVITY ANALYSIS

R.A. Patterson
University of New England, Armidale

Hydraulic conductivity analysis is often required on undisturbed soil cores. The problem becomes one of supporting the undisturbed core while ensuring the water percolates through the core rather than preferentially between the core and the container.

Undisturbed cores were obtained using a hydraulic soil sampler and 51 mm sampling tube (44 mm diameter core sample). Samples of suitable length, approximately 70 mm, were cut from the core as required for testing.

The cut ends of the sample were roughly squared and a filter paper (Whatman 41) pad placed at either end. The core was then placed within a 170 mm long sleeve of heat shrinkable plastic so that 50 mm of sleeve extended top and bottom. A 25 mm diameter rod was placed in the bottom overlap and a 50 mm diameter rod placed in the top. Both rods abutted the undisturbed core.

Hot air (130°C) was directed onto the plastic sleeve. The sleeve shrank tightly to the soil sample while forming a funnel around the rods at the bottom and a reservoir at the top. The rods were subsequently removed.

Samples are able to be prepared and stored at low temperatures and high humidities for long periods of time prior to use. When used for hydraulic conductivities the samples were supported in cradles with the reservoirs and funnels integral to the core. No water passed between the film and the soil because of the tight contact. Support by the HEATSHRINK plastic prevented slumping while the filter papers prevented the removal or disturbance of soil. The method is both effective and economic.