THE purpose of this research was: (1) to determine the effects of some of the major crops and management practices on the percolation or transmission rate, volume weight, and volume of pores drained, by tests on natural soil cores representing the entire soil profiles; (2) to develop a suitable technique for quantitatively determining the rate at which different soils, as well as different horizons of the same soil, will transmit water. It has been a cooperative study between Research and Operations technicians of the Soil Conservation Service. The Service recognized that before soil and water conservation practices—including irrigation, drainage, flood control, erosion control, and water conservation—could be intelligently planned and a sound land use policy developed, more exact information on soil permeability was essential.

The beneficial effects of organic matter and covers, both living and dead, on soil structure, soil erosion, and crop growth have been studied and recognized (1, 2, 3, 4, 6, 7, 9, 11, 12). These studies have shown that runoff is markedly reduced for all soils and soil erosion is reduced to a minimum when the land is protected by a dense vegetative cover. The presence of a straw mulch (2, 11) has been shown to be highly effective in reducing both runoff and soil erosion.

Aggregation has been shown to change with season and management (3, 4, 7, 8, 9, 12). Most of these studies on aggregation, soil structure, and infiltration have been confined to the surface soil or that portion of the profile that is turned with the plow.

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