SOIL MECHANICAL PROPERTIES AND THE BEHAVIOUR OF ROOTS IN STRUCTURED SOIL

Published works by

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INTRODUCTION

The published works presented here represent an attempt to integrate relevant aspects of soil strength, soil structure and root growth into a single branch of science with a rational structure. Also, the effects of environmental factors, such as rainfall and wetting and drying cycles; and soil management factors, such as tillage and compaction, have been included as fully as possible. The aim has been to be quantitative rather than descriptive and to produce the work in manageable parts which can then be combined into computer models which can enable predictions of the behaviour of whole systems to be made.

Traditionally, the separate aspects involved in this programme had been studied mainly by separate groups of scientists and engineers, and there had been only limited attempts at quantitative integration. Yet in agriculture, and in nature generally, all of these aspects interact to influence the behaviour of crops and plants.

Of course, there had been previous studies of some of these interactions, and most of these are cited in the publications presented in this thesis.

The rather ambitious programme, outlined above, is still far from complete. However, sufficient progress has been made for the work to be compiled and summarised in this thesis.