

Book review

M.A. Sprague & G.B. Triplett (Eds), 1986. No-tillage and surface-tillage agriculture: the tillage revolution. John Wiley & sons, New York. xxii+467 pp. Price \$ 45.65.

Agricultural methods have changed very fast in the last few decades. This has resulted in corresponding changes in agro-ecosystems, and in the relative occurrence and importance of diseases and pests. These changes in agricultural practices and their ecological consequences are therefore of great phytopathological interest. One of the 'revolutionary' changes in agriculture is the abandonment of the plough in certain areas. This so-called 'no tillage' agriculture accompanied by 'direct drilling' of the seed has become possible by the development of chemical weed control and notably by the advance of the 'desiccant' herbicides. It offers several advantages over conventional 'plough-tillage', such as less erosion in sensitive areas (conservation-tillage), and savings on tractor fuel, labour saving and better use of the available growing season. Between 'plough-tillage' and 'no tillage' there is a range of various forms of 'reduced tillage', which usually amounts to breaking, tearing, cutting or otherwise loosening the surface layers before sowing, hence the term 'surface tillage'.

This book deals with various aspects of forms of 'reduced tillage', though for the sake of contrast with 'plough-tillage' the accent is mostly on 'no tillage'. It consists of 15 chapters written by 22 authors and can be divided into four parts: (1) effect of 'no tillage' on soil properties (e.g. moisture, temperature, mineral distribution); (2) characteristics of major cropping systems in some geographic areas of the USA and (one chapter) the tropics; (3) pest and disease management; (4) economic and other kinds of evaluation. Except for Chapter 10 on 'no tillage' and 'surface tillage' in the tropics by Lal (Nigeria), the book is written by American authors and deals exclusively with North American examples and conditions. This makes the book, especially the second part, of little interest to readers elsewhere in the world. Why the chapter on integrated management systems for improvement of rangelands was included is obscure, as it bears little relation to the subject matter of the book.

Changing from 'plough-tillage' to 'no tillage' constitutes quite a fundamental change and involves consequences for the cultural methods used and creation of a completely different agro-ecosystem. For the phytopathologist, the first part of the book is therefore important as it constitutes the necessary background for the third part. It supplies us with a better knowledge of ecological conditions so far as they are known. It is unfortunate that the various authors often repeat each other, making dull reading. The last chapter on 'tillage management for a permanent agriculture' is largely another repetition of what has been said before. The chapter on 'no tillage' and 'surface tillage' in the tropics by Lal (58 pp.) is well written and gives a very good idea of the importance and consequences of reduced-tillage systems for the tropics. The part dealing with pests and diseases comprises 20% of the book (90 pp.). It consists of a chapter on weed control (Triplett and Worsham), on vertebrate and invertebrate pests (All and Musick) and on plant diseases (Boosalis, Doupnik and Watkins). Here also North American examples and conditions are dealt with. The chapter on plant diseases is rather short (619 pp.) and does not add much to the recent review of Sumner, Doupnik and Boosalis (*Annual Review of Phytopathology* 19 (1981): 167-187). The chapters on weeds and insects provide specific examples. Much is still unknown about the various effects of 'no tillage'. Moreover, to quote the editors: 'the most consistent theme of the book is the great diversity among tillage systems to best serve different crops in their interacting environments'. This makes it difficult to make general pronouncements about crop protection in these new agricultural systems. More skill is required of the farmer. The same undoubtedly applies to the crop-protection specialists, who must have a good knowledge of agricultural practices and their ecological consequences for plant pathogens and pests.

It is therefore a pity that this book is rather poorly edited and adds only little new information.

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