
Book Reviews

Libbert, E.: Lehrbuch der Pflanzenphysiologie. 3.ed.

Jena: G. Fischer 1979. 480 pp., 329 figs. Hard bound DM 42,-.

Textbooks of plant physiology can be conceived in different ways. In several modern books, the authors try to present an integrated picture of the whole plant by discussing as many phenomena as possible in relation to each other. Another recent development is the attention that is given to the rapidly expanding fields of ecophysiology and production ecology. Both features reflect the progress of science as well as our changing attitude toward the way the plant should be looked at.

Such modern trends can certainly not be found in the 'Lehrbuch der Pflanzenphysiologie' by E. Libbert. Although the author states that the dialectic materialism offers a bridge between vitalism and mechanism, his treatment of plant physiology is heavily biased with mechanism. Roughly half of the book is devoted to plant biochemistry and molecular biology. In part of the other half, growth and development are also treated mostly from the biochemical point of view. As a matter of fact the author is justified in making this choice but he should be clear about this intentions rather than conceal them in the introductory chapter on the philosophy of science.

Libbert's book certainly has its merits. It is reasonably up-to-date and, in a classical sense, complete. SI-units are used throughout. It is therefore disappointing that the author has been uncritical in quite a number of places. The Emerson effect indicates that 2 photosystems co-operate in photosynthesis. It does not prove that 2 light quanta are required for transporting one electron (p. 101). Although fig 48 clearly shows that the principle of limiting factors in photosynthesis is only applicable in the situation where all factors except one are optimal, this restriction is not mentioned in the text (p. 77-78). The 2-point attachment theory no longer provides an explanation for the effect of supra-optimal auxin concentrations (p. 271). More examples are at hand.

The most serious drawback, however, is the way in which our knowledge of plant physiology is presented. In the introductory chapter something is stated about the scientific method, so that the reader would expect this method to be applied in the exploration of plant physiology. In contrast, all results of scientific research are just plainly stated in the ensuing chapters. The crucial experiments, if discussed at all, are described in small print after the conclusion has been stated. In my opinion, this makes the text unattractive as there is nothing left to be curious about.

The book is well-illustrated with a large number of drawings. Some graphs are inaccurate, as in fig. 49 where the absorption peak of chlorophyll a in the red is too broad, and in fig. 53, where the same peak is tilted. In the legends to many graphs no reference to the source of the figure is given.

Because of its shortcomings this book can not be recommended

to students who wish to be fascinated by the beauty of plant physiology.
A.F. Croes, Nijmegen

Nair, P.K.R.: Intensive Multiple Cropping with Coconuts in India. Fortschritte im Acker- und Pflanzenbau, Vol. 6.

Berlin, Hamburg: Parey 1979. 148 pp., 43 figs., 40 tabs. Soft bound DM 48,-.

This is a welcome collection of clearly printed information. Each chapter begins with a useful brief summary of theoretical concepts. The author demonstrates many examples of annidation in multiple cropping with coconuts, however, having done some field research on the subject himself, he does not allow the advantages to mask the problems of managing several crops on one piece of land. The usual objection to mixed cropping – pest and disease control – is shown to be negligible.

For practical agriculturalists, proven successful under-crops for coconuts are listed, notably tubers, rhizome spices, cocoa and black pepper: bananas and pineapples are also advocated, although yield results are still awaited. The rooting areas occupied by the different inter-crops (pp. 26, 43) might be optimistically over-simplified, but the proof of the pudding is in the eating. Systems analysis of nutrient cycling is used interestingly and suggests an increase in soil fertility with mixed cropping, but this only occurs in the example because nutrients were added. It should be pointed out that mixed cropping can fail if the extra needs for nutrients or water are not met.

Although mixed cropping with coconuts has long been practised in various countries, mainly for economic and agronomic advantages, other factors are outlined: soil microorganisms (particularly in the rhizosphere) become more numerous, leading to greater N fixation and P solubilization: depth of penetration of the canopy affects the ratio of photosynthetically active to near-infrared radiation which in turn influences adaptability of crops. Of course, crop choice will be ultimately decided by economics, and the importance of markets is stressed.

Needs for further research in this neglected field are mentioned, notably breeding specifically for inter-cropping and the study of interactions between root systems of intercrops.

In India, under rainfed conditions, the gross value of produce per cost of cultivation is shown to be more for coconuts than other crops but intercropping is desirable because surplus labour is available. However if replanting of coconuts is done by under-planting, and coconuts being as light-hungry as they are, they may not survive the intercrop competition. Successful multiple cropping with coconuts in India may well lead to elimination of coconut palms.
D.H. Romney, Kingston