Land Treatment of Wastewater—by Herman Bouwer and R. L. Chaney. This chapter deals with three major segments of the land treatment of wastewater with emphasis primarily on wastewater from municipal sewage treatment plants. The most comprehensive consideration is given (in part II) to the fate of wastewater constituents in the soil. The sections on organic carbon and oxygen demand and on bacteria and viruses are particularly well done. The section on nitrogen is fairly comprehensive but cutition of the Penn State work was poorly done in selecting wheat uptake of nitrogen as an example since this crop was only grown once and had essentially made all its extensive list of references was initiated in 1963. Extensive nitrate data could have been cited from later Penn State publications. This section, and others, tend to be biased in the direction of arid southwest conditions and high-rate systems, and understanding so in light of the text appears to constitute the phosphorus section it is erroneously stated that reed canarygrass removed more phosphorus than was added in the wastewater. Removal of phosphorus did exceed additions in the wastewater only on the corn area which was irrigated only during the growing season. In the barley section to Sopper and Kardos should read Kardos and Sopper. Both listings in the references cited. The section on dissolved salts could have indicated that where rainfall exceeds evapotranspiration the salt component of the charged water was removed in the applied water. This is the case in all of the humid east.

In part III, Crop Response, the authors inferred from a statement in Sopper and Kardos (1973) that decreased rooting depth because of irrigation caused total withdrawal of a red pine stand. Since the stand was an established 24-year-old stand, 40 feet high before irrigation started in 1963 it is doubtful that the supporting root system would have been altered by the irrigation. Simultaneous five growing seasons prior to the damaging snow and wind storm in Nov. 1968. The trigger which started the process was breaking of the canopy from the snow load and impingement of the broken tree top in a domino effect on the trees downhill. The more continuous root system may have resulted in a diminished soil strength and hence less root support.

In the section on uptake of pollutants and location in plant, the authors statement “The impact of land application of wastewater on soil and plant levels of pesticides has remained essentially unassessed” cogently summarizes the situation but the authors have placed undue emphasis in the question in the absence of definitive data on the pesticide content of wastewater. Part IV, Selection and Design of Systems, gives a valuable key of references appended. Figure 5 and table 6 from the literature are used frequently and tentative and integrated approaches are applicable to a consideration of more complex natural ecosystems. The book is more “physiological” than “ecological” because interrelationships with organisms other than higher plants are not considered.

The discussion includes the effects of the environment, water relations, and mineral nutrition on plant growth, transpiration, germination and growth, and flowering and fruiting, and hence on productivity. Unfortunately, size of the volume has prevented the authors to expand in many concepts where it would have been instructive to have done so. In this connection the authors regard the work edited by L. T. Evans, Crop Physiology—Some Case Histories, as a desirable complementary volume since it discusses how principles covered in their book have been applied in specific situations which deal with the physiology of specific crops. Although Milthorpe and Mooby have necessarily treated certain aspects of the whole plant-environment system briefly, the reader will be able to trace the wider literature through the valuable key of references appended.

Although the book is written as an introductory text, students using it should already have taken an introductory course in plant physiology and be reasonably familiar with the general features of the functioning of a plant. While some basic physiology has been provided, some background in whole-plant physiology, as well as in soil science and micrometeorology, would be useful to the reader in understanding the integrated and analytical approaches used.

This is one of the first general texts to attempt such a quantitative and integrated approach and includes much material presently found only in research papers and detailed monographs. Figures and tables from the literature are used frequently and with good effect. The volume is broad in scope and authoritative in treatment. All those concerned with understanding how plants grow in the complex environment of the field will profit from reading this book.

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