Crop Responses to Water at Different Stages of Growth

The authors' objectives are to make more generally known the results of a large number of experiments which demonstrate a water-sensitive period at certain stages of crop growth, and to discuss critically the possible explanations for this response. The practical importance of such a differential response to soil water conditions is the attainment of maximum efficiency of water use from timely irrigations.

The monograph is organized as follows: part 1, the introductory chapter; part 2, eight chapters on crops grown as annuals or biennials (P. J. Salter); part 3, eleven chapters on perennial crops (J. E. Goode); part 4, a good one-chapter discussion of the results; a one-page appendix suggesting problems worthy of further research; and last, an extensive bibliography of over 1,000 references covering much of the world's literature.

Several dozen crops are discussed individually. A differential response to water at various stages of growth was not found for all plants. However, the "sensitivity of the flower development processes to water conditions has emerged as a common phenomenon in both annual and perennial plants." Perhaps the most clearcut example is for the cereals, where there is overwhelming evidence of a marked sensitivity to water supply during the formation of the reproductive organs and during flowering. Pollen formation and fertilization were especially sensitive to a plant water deficit, leading to a serious reduction in the number of grains formed per head.

This well-written and amply documented review has succeeded in its objective, and is a worthwhile contribution to the literature on plant-water relations.—W. L. Ehlert, ARS, USDA Water Conservation Laboratory, Phoenix, Ariz.

Introduction to the Study of Soils in Tropical and Subtropical Regions

The author is Professor of Tropical Soil Science at the Agricultural University of Wageningen. The book is intended as an introduction to the study of tropical and subtropical soils for undergraduate students at the Agricultural University at Wageningen. The chapters are: (1) General Introduction. (2) Arid and Semi-arid Soils, (3) Halomorphic Soils, (4) Ferrallitic Soils, (5) Ferruginous Soils and Tropical Podzolic Soils, (6) Tropical Alluvial Soils, (7) Vertisols, (8) Andosols and other Volcanic Soils, (9) Some other Tropical and Subtropical Soils.

The author has tried to concentrate on basic facts and soils are described in a general way. His knowledge of the subject comes from personal investigations and experience in a number of tropical and subtropical countries. Further information was collected from colleagues and from the literature. The author has included references to the 7th Approximation system in his discussion of soil classification throughout the book. Five excellent color photos are included.

The author points out that the biggest scientific problems in tropical soil science are (i) tropical soils are studied by concepts, methods, etc., based on information from cool and temperate regions, and (ii) there is a shortage of capable soil scientists working on tropical soils. It is hoped that this book will generate some interest among the young scientists now considering the direction of their professional careers.—RCD.

Commercial Vegetable Growing

This handbook for the commercial grower of tropical vegetables provides information on cultivation methods, economics, and kinds and varieties of vegetables. A principal aim is to show how tropical crops are grown for financial profit. The emphasis is on modern techniques, especially those involving machinery used in soil preparation and crop irrigation. The book is divided into three parts, or areas of concentration: (i) economics, including cost, planning, and marketing considerations, (ii) practical applications, with sections on cultivation methods and the selection and preparation of sites for growing, and (iii) a detailed section on commercially grown tropical vegetables, including the characteristics of each vegetable and conditions required for successful growing.

Four appendices list information on insecticides, fungicides, plant diseases, and plant pests.—JDS.

Agricultural Research Council Radiobiological Laboratory Annual Report 1967

Reduced demands for radioactivity surveys made it possible for the laboratory to devote more research to soil-plant nutritional relationships in 1967. The decrease in food contamination by strontium-90 and cesium-137 continued. Among the experiments conducted with soil-plant root systems were investigations on (i) the growth and development of barley roots in water culture, (ii) the effects of microorganisms on phosphate adsorption by plants grown in water culture, (iii) the effect of added fertilizers on soil depths from which barley and kale absorb phosphate and calcium, and (iv) the effects of water supply and nitrogen placement on phosphate and calcium absorption by ryegrass.—JDS.

A Pedo-Geomorphological Classification and Map of the Holocene Sediments in the Coastal Plain of the Three Guianas, Soil Survey Papers no. 4

The senior author is a technical officer with the Soil Survey of FAO and the junior author is a soil scientist with the Soil Survey Institute of the Netherlands. Both had experience in the Guianas. The paper is an attempt to classify the sediments in the coastal plain of the three Guianas—French Guiana, Suriname, and Guiana. This is done on the basis of age, geomorphology, and pedological characteristics. A pedo-geomorphological sediment map is included.—RCD.