



‘Essential Soil Physics’
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Book review

Essential Soil Physics – An introduction to soil processes, functions, structure and mechanics was edited by Robert Horton, Rainer Horn, Jörg Bachmann, and Stephan Peth, and published by Schweizerbart Science Publishers in 2016. The book within 391 pages contains Preface, Introduction, 13 Chapters, References, as well as tables of Commonly used units and conversion Factors and a Meaning of Abbreviations record.

Comprehensive knowledge of the texture of soil and its physical, chemical and biological properties is essential in planning its proper use for human needs in the context of sustainable development. Such knowledge is also vital for the rational use of production space of plants, their regionalization, developing business plans, stacking crop rotation and tillage setting. Soil is a distributor of water, takes precipitation, partly serves as water storage reservoirs, partly passes it into the deeper layers to turn it into underground water supplies, and partly evapotranspires water back to the atmosphere. Knowledge about soil characteristics is also indispensable when it comes to description, interpretation and forecasting the course of analysing and modelling its physical, chemical and biological processes.

The book presents very complex approach to description of soil as an integral part of the environment. In the first two chapters of the book, the authors present the texture and structure of soil from the perspective of its basic physical properties, whereas mechanical and hydraulic forces in soils are described in Chapter 3. This part of the book is the basis for further considerations of other phenomena occurring in soil system. Next three chapters describe the physics of soil water. The authors devote a lot of attention to interactions between water and soil, and also water movement within the soil in both saturated and unsaturated zones. In Chapter 7, 8 and 9 the reader can find a very detailed presentation of the phenomena of gas exchange in soil, its thermal properties, as well as the balance and common transport of water, heat and gas within soil. The following chapter is the description of soil as the habitat of plant growth and development. In Chapter 11 and 12, the authors describe the phenomena of erosion in soil and solute transport and filtration within it.

Each of the 12 chapters ends with at least one practical problem concerning the presented material, which facilitates the better understanding of the presented theory. The final chapter offers a list of potential solutions to the discussed problems and the authors thoughts on the further development of the physics of the soil. The book contains many helpful figures and tables which highly raise its educational value. Overall, the book definitely leaves the reader satisfied with the examined matter and makes a significant contribution to knowledge of the scientific community.

Information of this title: <http://www.schweizerbart.de/publications/detail/isbn/9783510652884>

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