Preface

Water is the scarcest resource. Importance of judicious use of water in agricultural sector for sustaining agricultural growth and to retard environmental degradation needs no elaboration. Judicious use of water for crop production requires knowledge of weather, soil, crop, water quality, and drainage situation. Increasing efficiency in conveyance and pumping systems also are of great concerns. Irrigation management strategy practiced in normal soils may not appropriate in problematic soils such as saline soils and drought prone areas. It is also utmost important to pay attention to the economics in production system and all aspects of supply & demand management of water. This book covers all of the above aspects. In addition, the book covers some recent dimensions such as pollution from agricultural fields, modeling in irrigation & water management, and application of geographical information system (GIS) in irrigation & water management.

Sufficient workout problems are provided to explain the application of theory/methodology in practice. Data sheets (with sample data) are provided for different methods to understand the procedure easily.

This comprehensive and compact presentation of the book will serve as a textbook for undergraduate students in Agricultural Engineering, Biological Systems Engineering, Bio-Science Engineering, Water Resource Engineering, and Civil & Environmental Engineering. It will also be helpful for the students of relevant fields such as Agronomy, Biological Sciences, Meteorology, Ecology and Hydrology. Although the target audience of the book is undergraduate students, post-graduate students will also be benefited from the book. It will also serve as a reference manual for field engineers, researchers and extension workers working in the above mentioned fields.

It was tried to keep the language simple as possible to make understandable to all category of readers having different language origins. Throughout the book, the emphasis has been given on general description and principle of each topic, and tried to cover experimental and technical details. However, the comprehensive journal references in each area (at the end of each chapter) should enable the reader to pursue further study of special interest. In fact, the book covers broad interdisciplinary subjects. The subject matter has been splitted into
25 chapters in two volumes to clearly specify different topics so as to make more understandable to the readers. This volume (volume 1) covers fundamental aspects, and the second volume covers application aspects of irrigation and water management.

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