
Selection Of Irrigation Methods For Agriculture

Irrigation and Drainage Engineering

Irrigation

Planning and Evaluation of Irrigation Projects

Micro Irrigation Scheduling and Practices

Selected Irrigation Return Flow Quality Abstracts

Irrigation: System and pump selection

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Selected Irrigation Return Flow Quality Abstracts, 1975

Selected Irrigation Return Flow Quality Abstracts, 1977

Handbook of Irrigation System Selection for Semi-Arid Regions

Design and Operation of Farm Irrigation Systems

Irrigation and Agricultural Development

Planning for an Irrigation System

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Pioneer Irrigation

Irrigation Manual

Selection of Irrigation Methods for Agriculture

Sprinkle Irrigation of Row and Field Crops

Irrigation System Selection in an Energy-short Economy

Deficit Irrigation Practices

Management of Water Use in Agriculture

Guideline for Salinity Assessment, Mitigation and Adaptation Using Nuclear and Related Techniques

Fundamentals of Irrigation and On-farm Water Management: Volume 1

Landscape Irrigation

Management of Drip/Trickle or Micro Irrigation
Sprinkle and Trickle Irrigation
Selected Irrigation Return Flow Quality Abstracts, 1978
Sprinkle and Trickle Irrigation
Selected Irrigation Return Flow Quality Abstracts, 1974
Selected Irrigation Return Flow Quality Abstracts 1972-1973
Drip And Sprinkler Irrigation
Principles of Farm Irrigation System Design
Management Strategies for Water Use Efficiency and Micro Irrigated Crops
Selected Irrigation Return Flow Quality Abstracts 1970-1971
Sprinkler Irrigation Systems
Irrigation Systems
Selection Criteria for Irrigation Systems
Irrigation Fundamentals

*Selection Of Irrigation
Methods For Agriculture*

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ARCHER COOK

Irrigation and Drainage Engineering CRC
Press

This manual (most of whose modules were originally published 2001-2002) aims at strengthening various aspects of irrigation development, mainly emphasizing the engineering, agronomic and economic aspects of smallholder irrigation, in view of the limited practical references available in this area. It also introduces the

irrigation practitioner to the social, health and environmental aspects, providing a bridge between the various disciplines involved in irrigation development.--
Publisher's description.

Irrigation NSW Agriculture

In the context of improving water productivity, there is a growing interest in deficit irrigation, an irrigation practice whereby water supply is reduced below maximum levels and mild stress is allowed with minimal effects on yield. Under conditions of scarce water supply and drought, deficit irrigation can lead to

greater economic gains than maximizing yields per unit of water for a given crop; farmers are more inclined to use water more efficiently, and more water-efficient cash crop selection helps optimize returns. However, this approach requires precise knowledge of crop response to water as drought tolerance varies considerably by species, cultivar and stage of growth. The studies present the latest research concepts and involve various practices for deficit irrigation. Both annual and perennial crops were exposed to different levels of water stress, either during a

particular growth phase, throughout the whole growing season or in a combination of growth stages. The overall finding, based on the synthesis of the different contributions, is that deficit or regulated-deficit irrigation can be beneficial where appropriately applied. Substantial savings of water can be achieved with little impact on the quality and quantity of the harvested yield. However, to be successful, an intimate knowledge of crop behavior is required, as crop response to water stress varies considerably.

Planning and Evaluation of Irrigation Projects CRC Press

Planning and Evaluation of Irrigation Projects: Methods and Implementation presents the considerations, options and factors necessary for effective implementation of irrigation strategies, going further to provide methods for evaluating the efficiency of systems-in-place for remedial correction as needed. As the first book to take this lifecycle approach to agricultural irrigation, it includes real-world examples not only on natural resource availability concerns, but also on financial impacts and measurements. With 21 chapters divided

into two sections, this book is a valuable resource for agricultural and hydrology engineers, conservation scientists and anyone seeking to implement and maintain irrigation systems. Uses real-world examples to present practical insights Incorporates both planning and evaluation for full-scope understanding and application Illustrates both potential benefits and limitations of irrigation solutions Provides potential means to increase crop productivity that can result in improved farm income

Micro Irrigation Scheduling and Practices John Wiley & Sons

The book Drip and Sprinkler Irrigation is intended as a text book of micro irrigation design and practices for the students of the agricultural sciences and the professionals and workers in the field of micro irrigation. The book discusses the type and components, hydraulics and design, installation and maintenance of micro irrigation system. It contains good number of numerical as example and task to get the students familiar to the requirements, complications, and possible remedies in actual working condition. In addition to conventional broad and short

questions in every of the book there are multiple choice questions to assist the students in preparing the competitive examinations.

Selected Irrigation Return Flow Quality Abstracts CABI

As the world population increases, there is increasing competition for water quantity as well as quality. Provided here is an up-to-date perspective on Available Water Resources (Part I), Water Conservation and Technology in Agricultural Systems (Part II), Problem Water Uses and Treatment (Part III), and Management and Policy Evaluation (Part IV). The book is an invaluable source of information for water resource planners, managers and policy makers, researchers and students, and irrigationists.

Irrigation: System and pump selection Food & Agriculture Org

Many countries around the world are struggling with the challenges of water scarcity, including water for crops. Micro irrigation methods are an effective means to make the most efficient use of available water. This volume, Micro Irrigation Scheduling and Practices, continues the efforts of the book series Innovations and

Challenges in Micro Irrigation to provide informative and comprehensive knowledge on micro irrigation methods and practices. This new book presents some of the latest information and research on micro irrigation and covers the area of performance, practices, and design, focusing particularly on the performance of vegetable, fruit and row crops in conjunction with different scheduling and practices. Irrigation scheduling is an important water management strategy, and this book addresses scheduling methods and issues. Design aspects of micro irrigation systems have also been discussed in the book. The authors present their research and studies on scheduling practices and design micro irrigation systems with a variety of fruits and vegetables, including peppers, chili, watermelon, oranges, banana, litchi, rice, sugarcane, sorghum, and marigolds. Micro Irrigation Scheduling and Practices will serve as a valuable reference for researchers, water resources professionals, agricultural extension agencies, farmers, and faculty and students.

Handbook on Pressurized Irrigation

Techniques University of California, Agriculture and Natural Resources
Increasing the efficiency of water use and enhancing agricultural water productivity at all levels of the production chains are becoming priorities in a growing number of countries. In particular, shifting to modern on-farm irrigation practices can contribute to a substantial increase in both water use efficiency and water productivity. The objective of this handbook is to provide a practical guide on the use of pressurized irrigation techniques to farmers, irrigation technicians, and extension workers in the field. In this second edition, the handbook has been considerably revised, including new chapters on low-cost drip irrigation and pipe distribution systems for smallholders.--Publisher's description.

Farm Irrigation System Evaluation

New India Publishing Agency
This book, first published in 1990 and reprinted here, is a comprehensive, state-of-the-art reference on the design principles and management techniques of two primary agricultural irrigation methods. The book presents a systematic approach to the optimal design,

management and operation of these two systems. Focusing on the synthesis of the entire design process, the authors present the chapters in the sequence used to design systems with the analytical material presented and demonstrated in a concise manner. For the first time in any book, Sprinkle and Trickle Irrigation offers complete design strategies and presentations for all of the major types of sprinkle and trickle systems: - Periodic-move - Center-pivot - Traveling sprinkler - Linear-moving - Set sprinkler - Drip, spray and line-source Sequential sample calculations that involve the steps in the design of typical irrigation systems are used extensively. As the book progresses, these calculations become more comprehensive and are linked together to form complete design packages for the various types of pressurized systems. The book also presents a section on selecting pressurized irrigation systems, a review of soil-plant-water relationships, unique insight into pipeline hydraulics and economics, design specifications for fertilization and frost control, a glossary and an annotated bibliography of ASAE Standards for Pressurized Irrigation

Systems. Sprinkle and Trickle Irrigation is an important practical reference for agricultural engineers, irrigation system designers and agricultural managers, as well as a vital text for professors and researchers in agricultural engineering. "Sprinkle and Trickle Irrigation presents beginning-to-end coverage of the processes and computations needed in the planning and design of sprinkle and trickle irrigation systems. The textbook is created for the thinking person who desires more than cookie-cutter recipes or simple, routine "rule-of-thumb" designs. Rather, the authors of Sprinkle and Trickle Irrigation present concise rationale and philosophy behind each computation formula, figure and table. They decouple "recommended" design parameters into underlying components that can be recoupled at the time of the design to apply to specific cases and situations. In the process, the reader gains visualization skills that allow him/her to peer "inside" an irrigation system, both hydraulically, economically, and operationally. Sprinkle and Trickle Irrigation is a classic design text and reference that should be on every practitioner's desk. The chapters on

center-pivot, linear-move and travelling sprinklers go well beyond other current texts. Solid and encompassing economics are infused into all design topics, including application, distribution, and pumping systems. I have lectured out of Sprinkle and Trickle Irrigation for twelve years at the university-senior level. I am confident that all students who completed this design course know not only how to design efficient and effective pressurized irrigation systems, but also know why they use the procedures that they use." Dr. Richard G. Allen, Professor, University of Idaho
Contour-levee Irrigation Food & Agriculture Org.

Readers will find that there is no universally "best" irrigation method, and that the proper method selection will depend upon the crop, climate, economics, water quality, support infrastructure, energy availability, and numerous other factors. As such, this report will remain a valuable resource each time a new irrigation need arises."--
 BOOK JACKET.

Selected Irrigation Return Flow Quality Abstracts, 1975 Water Resources

Publication

Agriculture is one of the few industries that has been creating resources continuously from nature. Sustainability of this industry is a crucial issue at now-a-days. Agricultural technologies are important to feed the growing world population. Agricultural engineering has been applying scientific principles for the optimal use of natural resources in agricultural production for the benefit of humankind. The role of agricultural engineering is increasing in the coming days at the forthcoming challenges of producing more food with less water coupled with climate uncertainty. I am happy to know that a book entitled "Fundamentals of Irrigation and On-farm Water Management", written by Engr. Dr. M. H. Ali, is going to be published by Springer. The book is designed to cover the major fields of agricultural and environmental engineering such as weather, plant, soil, water, and basics of on-farm water management. The book will be quite useful for the students of agricultural engineering. Students of other related branches of engineering sciences, and engineers working in the field and at research institutes will also be benefited.

The book may serve as a text book for the students and as a practical hand-book for the practitioners and researchers in the field of irrigation and on-farm water management. Utilization of the recent literature in the area and citation of relevant journals / reports have added a special value to this book. Considering the topics covered, engineers, scientists, practitioners, and educators will find this book as a valuable resource.

Selected Irrigation Return Flow Quality Abstracts, 1977 CRC Press

This important book—the only complete, one-stop manual on microirrigation worldwide—offers knowledge and techniques necessary to develop and manage a drip/trickle or micro irrigation system. The simplicity of the contents facilitates a technician to develop an effective micro irrigation system. Management of Drip/Trickle or Micro Irrigation includes the basic considerations relating to soil-water-plant interactions, with topics such as methods for soil moisture measurement; evapotranspiration; irrigation systems; tensiometer use and installation; principles of drip/ micro/ trickle irrigation;

filtration systems; automation; chloration; service and maintenance; design of drip irrigation and lateral lines; the evaluation of uniformity of application; and an economical analysis for selecting irrigation technology.

Handbook of Irrigation System Selection for Semi-Arid Regions Legare Street Press

This manual gives a practical, in-depth look at sprinkle irrigation in California as used on vegetable crops. This manual provides practical information on the design, management, and maintenance of the sprinkle irrigation methods commonly used in California for irrigating field and row crops, with a focus on hand-move, wheel line, and portable solid-set systems. Other systems, not commonly used in California are also discussed. Inside you'll find discussion of management considerations such as when to irrigate, how much water to apply, and how to monitor soil moisture. You'll also find an overview of uniformity and efficiency, sprinkle lateral design considerations, calculating pressure losses along laterals, factors affecting uniformity, effect of pressure spacing, and wind on catch can uniformity, as well as evaluating and

improving sprinkle irrigation systems. A chapter on energy considerations covers pump selection, factors that affect pumping plant performance, pump performance tests, variable speed drives for pumping plants, and measures to consider to reduce energy use. Handy tables clearly illustrate key concepts to help you with decision making and trouble-shooting. Contains 46 illustrations and 28 tables, as well as 8 appendices of selected cover-crop coefficient relationships.

Design and Operation of Farm Irrigation Systems Springer

This textbook focuses specifically on the combined topics of irrigation and drainage engineering. It emphasizes both basic concepts and practical applications of the latest technologies available. The design of irrigation, pumping, and drainage systems using Excel and Visual Basic for Applications programs are explained for both graduate and undergraduate students and practicing engineers. The book emphasizes environmental protection, economics, and engineering design processes. It includes detailed chapters on irrigation economics, soils,

reference evapotranspiration, crop evapotranspiration, pipe flow, pumps, open-channel flow, groundwater, center pivots, turf and landscape, drip, orchards, wheel lines, hand lines, surfaces, greenhouse hydroponics, soil water movement, drainage systems design, drainage and wetlands contaminant fate and transport. It contains summaries, homework problems, and color photos. The book draws from the fields of fluid mechanics, soil physics, hydrology, soil chemistry, economics, and plant sciences to present a broad interdisciplinary view of the fundamental concepts in irrigation and drainage systems design.

Irrigation and Agricultural Development
Food & Agriculture Org.

IRRIGATION FUNDAMENTALS is a comprehensive text on the basic principles and practices of applied agricultural irrigation. Written over a period of more than 10 years, it is based on the authors' extensive experience in farming, consulting, research, teaching, and other related agricultural activities. The book is for use by teachers of introductory courses in irrigation, farmers who have some basic technical knowledge, and for

administrators who need a general understanding of irrigation as an aid for policy decisions in water resource development and planning. Various factors that influence crop yield and production including climate, fertility, water, drainage, and agronomic practices are addressed. The various irrigation methods such as border, basin, contour, furrow, sub, sprinkle, and drip or trickle are described; and conditions are given for selection of the appropriate method to use. Recent developments and new technology are included herein when they have obvious practical applications, but for the most part the material presented in this book is based on well established principles and practices. Much of the content is very practical and much is essentially nontechnical. Nevertheless, some of the material covered in this book goes beyond the basic concepts in an attempt to better describe the relationships and techniques employed by irrigation scientists and irrigation engineers. From the Preface: The future of the world depends very much on how we manage natural resources. Since the year 1900 there has been a ninefold increase in global carbon emissions from

burning fossil fuels, and the world population has increased about 3.7 times in this century. Vast areas of forests have been destroyed, and irrigated lands now produce 40% of the food supply. Due to depletion of groundwater reserves and an increase in population, irrigated area per capita is declining. Consequently, the irrigation of additional alluvial lands is a strategic necessity for all of humankind. Much of the alluvial lands cannot be made productive without prior development of water resources through flood control, drainage, and irrigation. The production of electricity through hydropower and the production of alcohol fuel from irrigated crops, as has been practiced for many years in Brazil, can slow the increase in carbon emissions. Such diverse developments are typically not separable; rather, they must be considered as integral parts of a comprehensive development plan. The conservation of natural resources and increasing productivity of irrigated lands are also strategic necessities. Much of the current technology is highly transferable and crop yields can be significantly increased on lands already under irrigation. The authors

have worked in many countries in connection with resource inventories, teaching, and the planning, development and use of irrigation as a tool for increasing production and providing employment. They have written extensively and have been honored for their achievements. They have considerable experience with everything from primitive low-technology irrigation developments to highly developed irrigation in the USA and in dozens of countries around the world. Both of the authors have dedicated their careers to teaching, research, and consulting in agricultural irrigation and water resources development and planning. It is their hope and expectation that this book will provide incentives for investigating and documenting land and water resources, improving development, increasing crop yields, conserving resources, and improving the environment. From the Table of Contents: Chapt. 1 - INTRODUCTION: Irrigation Fundamentals: - A Definition of Irrigation - - Statistical Perspectives of Agricultural Irrigation Chapt. 2 - FACTORS INFLUENCING CROP PRODUCTION: - - Introduction - -

Temperature, Radiation, and Evaporative Potential - - Climate Change - - Soil Fertility and Fertilizers - - Water Availability and Distribution - - Soil Aeration and Drainage - - Plant Density, Spacing and Leaf Area Index - - Crop Variety Chapt. 3 - AGRICULTURAL SOILS: - - Introduction - - Soil Texture and Structure - - Soil Classification and Evaluation - - Bureau of Reclamation Land Classification - - Soil Age and Topography - - Soil Chemistry - - Infiltration Rates - - Soil-Water Relationships - - Equations for Soil Water Content - - Soil Water Potential - - Measuring Soil Water Content Chapt. 4 - EVALUATING IRRIGATION RESOURCES: - - Introduction - - Climate - - Hydrology - - Human and Other Factors - - Integrated Development Chapt. 5 - IRRIGATION METHODS: - - Introduction - - Graded Border Irrigation - - Basin Irrigation - - Contour Levees - - Furrow Irrigation - - Sub-Irrigation - - Sprinkle Irrigation - - Drip or Trickle Irrigation - - Selecting an Irrigation Method - - Land Grading and Leveling - - Laser-Leveling Equipment and Practices - - Computing Diagonal Slopes - - Irrigation System Evaluation Chapt. 6 - CROP WATER REQUIREMENTS: - -

Introduction - - Direct Methods - - Indirect Methods - - Potential Evaporation - - Reference Evapotranspiration - - Extraterrestrial Solar Radiation - - Irrigation Requirements - - Crop Coefficients Chapt. 7 - IRRIGATION SCHEDULING: - - Introduction - - Allowable Water Depletion - - Monitoring Soil Water - - Scheduling Irrigations - - Rice Irrigation
Planning for an Irrigation System
 Elsevier
 This book has two parts. Part 1 will help you choose the irrigation system that is right for you, and Part 2 will help you select, operate and maintain your pumping equipment. Part 1 If you are installing or upgrading an irrigation system you will probably be seeking to increase production, decrease the amount of water used or reduce labour required. Part one of this book is about selecting the irrigation system that is best for your enterprise. It is an overview of: · the most widely used irrigation methods in NSW · the capabilities and limitations of the most widely used irrigation methods in NSW · the major issues to consider when selecting an irrigation system · the basic financial analysis you can use to

determine the viability of a system you are considering. Part 2 You can save money by increasing productivity and efficiency of your irrigation system if you can improve the performance of the pump. This section about the features of common irrigation pumps helps you to select, operate and maintain your pumping equipment. It contains information on pump types, duty, curves and selection. It contains an explanation of:

- the common types of pumps for irrigation systems
- pumping head components: static head; suction head; velocity head; friction loss
- manufacturers' pump curves
- maintenance and troubleshooting procedures for pumps.

This publication was produced by Education Delivery, Tocal College. It supports the following competencies from National Training Package AHC10 Agriculture, Horticulture, Conservation and Land Management:

- AHCIRG306A - Troubleshoot irrigation systems,
- AHCIRG402A - Determine hydraulic parameters for an irrigation system,
- AHCIRG410A - Select and manage pumping systems for irrigation

Selected Irrigation Return Flow Quality Abstracts, 1976 Springer Science &

Business Media

Of all the confrontations man has engineered with nature, irrigation systems have had the most widespread and far-reaching impact on the natural environment. Over a quarter of a billion hectares of the planet are irrigated and entire countries depend on irrigation for their survival and existence. Considering the importance of irrigation schemes, it is unfortunate that until recently the technology and principles of design applied to their construction has hardly changed in 4,000 years. Modern thinking on irrigation engineering has benefited from a cross-fertilization of ideas from many other fields including social sciences, control theory, political economics and agriculture. However, these influences have been largely ignored by irrigation engineers. Drawing on almost 40 years of experience of irrigation in the developing world, Laycock introduces new ideas on the design of irrigation systems and combines important issues from the disciplines of social conflict, management, and political thinking.

Pioneer Irrigation Academic Press
 "This edition provides the latest

technology in the design of surface, sprinkler, and microirrigation systems along with basic information about soils and current information on estimating crop water requirements. New chapters have been added on planning systems, environmental issues, efficiency and uniformity, chemigation, and use of wastewater for irrigation."--Preface *Irrigation Manual* American Society of Agricultural & Biological Engineers

The design text, *Sprinkle and Trickle Irrigation*, opens up a new and clear window through which to view the physics, economics, design, and management of pressurized irrigation systems. A broad array of system types and applications have been covered in detail to provide for complete understanding of systems design. Topics include soil-water-plant relations, general planning concepts, hydraulics, economics, sizing, operation, maintenance, and special uses.

Pressurized irrigation system types covered include hand-line, wheel-line, solid set, traveler, center-pivot, linear-moving and big-gun-sprinkler systems, pumping systems, and a broad array of trickle system components. The work in

this text culminates earlier major works by Jack Keller on the W. R. Ames Company Irrigation Handbook (1967), Rain Bird Sprinkler Manufacturing Corp.'s Trickle Irrigation Design (1975), and the USDA-Soil Conservation Service's National Engineering Handbook, Section 15: Irrigation Chapter 11: Sprinkle Irrigation (1983) and Chapter 15: Trickle Irrigation (1984). These earlier works form the foundation upon which the majority of currently used design texts are based. The years of design and troubleshooting experiences of the authors and wide ranges of environments and design applications in which they have worked have resulted in the substance and robustness of this text in stated relationships and procedures.

Selection of Irrigation Methods for Agriculture Springer

Irrigation methods and components
Drawing techniques and presentation
Sprinkler and drip irrigation methods and

hardware Pipe characteristics and hydraulics Control systems CSI irrigation specifications

Sprinkle Irrigation of Row and Field Crops
Springer Science & Business Media

This open access book is an outcome of the collaboration between the Soil and Water Management & Crop Nutrition Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, Department of Nuclear Sciences and Applications, International Atomic Energy Agency (IAEA), Vienna, Austria, and Dr. Shabbir A Shahid, Senior Salinity Management Expert, Freelancer based in United Arab Emirates. The objective of this book is to develop protocols for salinity and sodicity assessment and develop mitigation and adaptation measures to use saline and sodic soils sustainably. The focus is on important issues related to salinity and sodicity and to describe these in an easy and user friendly way. The

information has been compiled from the latest published literature and from the authors' publications specific to the subject matter. The book consists of six chapters. Chapter 1 introduces the terms salinity and sodicity and describes various salinity classification systems commonly used around the world. Chapter 2 reviews global distribution of salinization and socioeconomic aspects related to salinity and crop production. Chapter 3 covers comprehensively salinity and sodicity adaptation and mitigation options including physical, chemical, hydrological and biological methods. Chapter 4 discusses the efforts that have been made to demonstrate the development of soil salinity zones under different irrigation systems. Chapter 5 discusses the quality of irrigation water, boron toxicity and relative tolerance to boron, the effects of chlorides on crops. Chapter 6 introduces the role of nuclear techniques in saline agriculture.