

Principles And Methods Of Plant Breeding

Principles of Soil and Plant Water Relations, 2e describes the principles of water relations within soils, followed by the uptake of water and its subsequent movement throughout and from the plant body. This is presented as a progressive series of physical and biological interrelations, even though each topic is treated in detail on its own. The book also describes equipment used to measure water in the soil-plant-atmosphere system. At the end of each chapter is a biography of a scientist whose principles

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are discussed in the chapter. In addition to new information on the concept of celestial time, this new edition also includes new chapters on methods to determine sap flow in plants dual-probe heat-pulse technique to monitor water in the root zone. Provides the necessary understanding to address advancing problems in water availability for meeting ecological requirements at local, regional and global scales

Covers plant anatomy: an essential component to understanding soil and plant water relations

A Textbook of Plant Pathology provides comprehensive coverage of the fundamentals of plant pathology. It offers an introduction to plant pathology for those new to the field. The text covers

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approximately 50 diseases in crop plants, providing details of symptoms, disease cycle and control measures. The book is divided into two parts, covering the principles of plant pathology and important plant diseases in crops. The section on principles of plant pathology includes a history of plant pathology, symptoms of plant diseases, epidemiology and forecasting of plant diseases, host-parasite inter-relationships and their interactions, the effect of climatic conditions on plant diseases, physiologic specialization, defence mechanisms, methods of studying plant diseases, and principles of plant disease control. Every disease discussed consists of causal organism, symptoms, disease cycle,

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breeding, disease-resistant varieties and chemical control methods. The book also includes a list of periodicals on plant pathology.

Historical development of plant pathology; Concepts of plant disease; terminology; diagnosis; classification of plant diseases; Non-parasitic agents of plant diseases; Parasitic agents of plant diseases; Variability in plant pathogens; Disease cycles; Inoculum, inoculum survival and inoculation; Pathogen's entry into plants; Colonization of the susceptible; Mechanisms of pathogenicity and host response; Mechanisms of defense; Epidemiology of plant diseases; Forecasting of plant diseases; Assessment of disease incidence and crop loss;

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Principles and methods of plant disease control. The book provides wide range of information on seed storage. In the beginning the biology of seeds and factors which influence seed viability and storage is explained. How the seed storage can be made more effective from the initial selection and drying of seeds to protective measures, packaging and transportation is explained. All type of illustrations are provided in respect of machinery and facilities commonly used in the treatment and storage of seeds. Among many other, short accounts are given of varietal variation in viability of seeds variation in tolerance of mechanical injury sustained during handling, and cytological changes which take place during storage, including

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the spontaneous appearance of mutations and occurrence of chromosomal abnormalities. A Well produced and thorough book likely to be valued by all PG, researchers, seed societies botanist and Agriculturists and all those who are interested about seed storage.

Plant Nanotechnology

Biotechnological and Conventional Approaches

Testing Methods for Seed-transmitted Viruses

Plant Biotechnology, Volume 2

Principles, methods, and general applications

Principles and Plant Breeding Methods of Field Crops in India

Taxonomy of the fungi forming

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endomycorrhizae; Morphology and histology of vesicular-arbuscular mycorrhizae; Methods for the recovery and quantitative estimation of propagules from soil; Quantification of vesicular-arbuscular mycorrhizae in plant roots; Production of endomycorrhizal inoculum; Procedures for inoculation of plants with vesicular-arbuscular mycorrhizae in the laboratory, greenhouse and field; Evaluation of plant response to colonization by vesicular-arbuscular mycorrhizal fungi; Spore germination and axenic culture of

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endomycorrhizae; Taxonomy of ecto- and ectendomycorrhizal fungi; Morphology and development of ecto- and ectendomycorrhizae; Isolation, maintenance, and pure culture manipulation of ectomycorrhizal fungi; Production of ectomycorrhizal fungus inoculum; Ectomycorrhizal inoculation procedures for greenhouse and nursery studies; Quantitative measurement of ectomycorrhizae on plant roots; Evaluation of plant response to inoculation; Radiotracer methods for

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mycorrhizal research; Electron microscopy of mycorrhizae; Mycorrhizae in interactions with other microorganisms.

"This book attempts to provide to provide concise, critical, synthetic and up-to-date coverage of different aspects of plant disease management. The first eleven chapters are devoted to principles and related aspects and the remaining seven to management practices based on them. The book attempts to capture some of the images of such rapidly expanding fields as host-parasite recognition and

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biotechnology even at the risk of making the subject a bit conceptual. This book is intended to serve as a text for advanced undergraduate and graduate students of plant pathology and related disciplines and as a reference source for teachers, researchers, students, and technologists."--Provided by publisher.

Alternate approaches for the exploitation of heterosis and population improvement have been elaborated with the help of schematic diagrams.

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Designed to inform and inspire the next generation of plant biotechnologists *Plant Biotechnology and Genetics* explores contemporary techniques and applications of plant biotechnology, illustrating the tremendous potential this technology has to change our world by improving the food supply. As an introductory text, its focus is on basic science and processes. It guides students from plant biology and genetics to breeding to principles and applications of plant biotechnology. Next, the text examines

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the critical issues of patents and intellectual property and then tackles the many controversies and consumer concerns over transgenic plants. The final chapter of the book provides an expert forecast of the future of plant biotechnology. Each chapter has been written by one or more leading practitioners in the field and then carefully edited to ensure thoroughness and consistency. The chapters are organized so that each one progressively builds upon the previous chapters. Questions set forth in each

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chapter help students deepen their understanding and facilitate classroom discussions. Inspirational autobiographical essays, written by pioneers and eminent scientists in the field today, are interspersed throughout the text. Authors explain how they became involved in the field and offer a personal perspective on their contributions and the future of the field. The text's accompanying CD-ROM offers full-color figures that can be used in classroom presentations with other teaching aids

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available online. This text is recommended for junior- and senior-level courses in plant biotechnology or plant genetics and for courses devoted to special topics at both the undergraduate and graduate levels. It is also an ideal reference for practitioners.

Principles, Techniques and Applications

DNA Fingerprinting in Plants

Additional principles and methods of analysis

Plant Disease Management

Marker-Assisted Plant Breeding: Principles and Practices

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Methods and Principles of Mycorrhizal Research

Focused on basics and processes, this textbook teaches plant biology and agriculture applications with summary and discussion questions in each chapter. Updates each chapter to reflect advances / changes since the first edition, for example: new biotechnology tools and advances, genomics and systems biology, intellectual property issues on DNA and patents, discussion of synthetic biology tools Features autobiographical essays from eminent scientists, providing insight into plant biotechnology and careers Has a companion website

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with color images from the book and PowerPoint slides
Links with author's own website that contains teaching slides and graphics for professors and students:

<http://bit.ly/2Cl3mjp>

Kaplan's Principles of Plant Morphology defines the field of plant morphology, providing resources, examples, and theoretical constructs that illuminate the foundations of plant morphology and clearly outline the importance of integrating a fundamental understanding of plant morphology into modern research in plant genetics, development, and physiology. As research on developmental genetics and plant evolution emerges, an understanding of plant morphology is essential to

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interpret developmental and morphological data. The principles of plant morphology are being brought into studies of crop development, biodiversity, and evolution during climate change, and increasingly such researchers are turning to old texts to uncover information about historic research on plant morphology. Hence, there is great need for a modern reference and textbook that highlights past studies and provides the synthesis of data necessary to drive our future research in plant morphological and developmental evolution. Key Features Numerous illustrations demonstrating the principles of plant morphology Historical context for interpretations of more recent genetic data Firmly rooted

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in the principles of studying plant form and function
Provides evolutionary framework without relying on
evolutionary interpretations for plant form Only synthetic
treatment of plant morphology on the market Related
Titles Les, D. H. Aquatic Dicotyledons of North America:
Ecology, Life History, and Systematics (ISBN
978-1-4822-2502-0) Les, D. H. Aquatic Monotyledons of
North America: Ecology, Life History, and Systematics
(ISBN 978-1-1380-5493-6) Bowes, B. G. Colour Atlas of
Woody Plants and Trees (ISBN 978-0-3674-7398-3)
Bahadur, B. et al., eds. Asymmetry in Plants: Biology of
Handedness (ISBN 978-1-1385-8794-6)
Principles and Methods of Plant Breeding Principles of

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Plant Genetics and Breeding John Wiley & Sons

Marker-assisted plant breeding involves the application of molecular marker techniques and statistical and bioinformatics tools to achieve plant breeding objectives in a cost-effective and time-efficient manner. This book is intended for beginners in the field who have little or no prior exposure to molecular markers and their applications, but who do have a basic knowledge of genetics and plant breeding, and some exposure to molecular biology. An attempt has been made to provide sufficient basic information in an easy-to-follow format, and also to discuss current issues and developments so as to offer comprehensive coverage of the subject

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matter. The book will also be useful for breeders and research workers, as it offers a broad range of up-to-the-year information, including aspects like the development of different molecular markers and their various applications. In the first chapter, the field of marker-assisted plant breeding is introduced and placed in the proper perspective in relation to plant breeding. The next three chapters describe the various molecular marker systems, while mapping populations and mapping procedures including high-throughput genotyping are discussed in the subsequent five chapters. Four chapters are devoted to various applications of markers, e.g. marker-assisted selection, genomic selection, diversity

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analysis, finger printing and positional cloning. In closing, the last two chapters provide information on relevant bioinformatics tools and the rapidly evolving field of phenomics.

Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives

Principles and Procedures of Plant Breeding

Principles, Methods, and General Applications

Principles, Techniques, and Applications

Principles, Methods, and Applications, Second Edition

Principles of Cultivar Development: Theory and technique

Plant Pathology comprises art of treating a sick plant as well as

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science of understanding the nature of the diseased plant. Primarily aimed to cater to the needs of undergraduate students, this book provides comprehensive treatment of fundamental facts, terminology and general aspects of Plant Pathology. it provides an introduction to the subject for beginners in this field. it can also serve as a laboratory manual.

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FOREST PATHOLOGY AND PEST CONTROL - A. M. Diner,
and D. F. Karnosky 1. INTRODUCTION 2. HOST AND
PATHOGEN: CULTURE AND CHALLENGE 2. 1.*

This book, published by Springer since 1979, presents state-of-the-art discussions in modern genetics and genetic engineering. This focus affirms a commitment to publish important reviews of the broadest interest to geneticists and their colleagues in affiliated disciplines. Recent volumes have covered gene therapy research, genetic mapping, plant science and technology, transport protein biochemistry, and viral vectors in gene therapy,

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among other topics.

Given the explosive development of new molecular marker techniques over the last decade, newcomers and experts alike in the field of DNA fingerprinting will find an easy-to-follow guide to the multitude of techniques available in DNA

Fingerprinting in Plants: Principles, Methods, and Applications, Second Edition. Along with step-by-step annotated p

The Study of Plant Structure

Principles and Protocols

Principles of Tzeltal Plant Classification

Principles of Plant and Animal Pest Control

Principles and Methods for Determining Ecological Criteria on Hydrobiocenoses

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Plant Biotechnology and Genetics

As ancient as agriculture itself, plant breeding is one of civilization's oldest activities. Today, world food production is more dependent than ever on the successful cultivation of only a handful of major crops, while continuing advances in agriculture rely on successfully breeding new varieties that are well-adapted to their human-influenced ecological circumstances. Plant breeding involves elements of both natural and cultural selection—a process which operates on individual plants and on plant populations. This book offers the most recent detailed knowledge of plant reproduction and their environmental interaction, which can help guide new breeding programs and help insure continuing progress in providing more food for growing populations produced with

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better care of the environment.

This book is intended to provide a substantive treatment of plant disease management for graduate and undergraduate students in which theoretical and practical elements are combined. Reference is made to specific diseases and control practices to illustrate basic principles or strategies.

The section on epidemiology includes a chapter in which arthropod vectors (aphids, leafhoppers, whiteflies, Coleoptera and mites) are briefly discussed, and the section on control includes references to the use of crop varieties with resistance to such vectors, and also contains information on mechanical, cultural, biological and chemical measures that contribute to vector control. The technology of disease management is presented according to epidemiological

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principles. Sections on diagnosis, epidemiology, environmental factors, disease forecasting, disease control (exclusion, physical, chemical and biological), plant resistance, cultural modifications to suppress epidemics, effects of chemicals and their major groups and uses, and examples of disease management in practice are included. A bibliography and index are appended.

This practical guide covers the commonly used detection methods for seed-transmitted viruses and viroids that affect both tropical and temperate crops. It contains 25 complete step-by-step procedures for biological, serological and molecular techniques to detect and identify such viruses. Combining helpful practical notes with more detailed explanations of the principles behind the techniques, the book

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describes the general characteristics of seed-transmitted viral diseases and discusses outlines for the organization and interpretation of seed health assays. The techniques reviewed are also applicable to non-seed-transmitted viral agents.

Principles and Methods for Determining Ecological Criteria on Hydrobiocenoses is a collection of papers presented at the 1975 European Scientific Colloquium on Principles and Methods for Determining Ecological Criteria on Hydrobiocenoses, held in Luxembourg. This Colloquium aims to define a scientific basis for assessing the results of pollution on aquatic fauna and flora, as well as the biological methods to be used in assessing the extent of such pollution. This book is organized into four parts encompassing 29

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chapters. After a brief overview of a series of parameters for the specific uses of different water classifications and regional evaluation of water pollution, this book goes on examining the ecological consequences of water pollution establishment of criteria and the ecological variable and their effect on aquatic fauna. These topics are followed by a discussion of the value of aquatic plants in water quality characterization, as well as the principles of the methods used. The succeeding parts highlight the concepts and practical methods used in the biological monitoring of surface waters. These parts particularly consider the benefits of using bioindicators and laboratory bioassays. The concluding discusses a comparative study of biological-ecological water assessment methods of water quality. This book will be of value to

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environmental scientists, engineers, and researchers.

Principles of Soil Physics

Principles of Diagnostic Techniques in Plant Pathology

Principles and Practices of Seed Storage

Cell and Tissue Culture in Forestry

Kaplan's Principles of Plant Morphology

This book highlights the implications of nanotechnology in plant sciences, particularly its potential to improve food and agricultural systems, through innovative, eco-friendly approaches, and as a result to increase plant productivity.

Topics include various aspects of nanomaterials: biophysical and biochemical properties; methods of treatment, detection and quantification; methods of

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quantifying the uptake of nanomaterials and their translocation and accumulation in plants. In addition, the effects on plant growth and development, the role of nanoparticles in changes in gene and protein expression, and delivery of genetic materials for genetic improvement are discussed. It also explores how nanotechnology can improve plant protection and plant nutrition, and addresses concerns about using nanoparticles and their compliances. This book provides a comprehensive overview of the application potential of nanoparticles in plant science and serves as a valuable resource for students, teachers, researchers and professionals working on nanotechnology. General aspects of propagation. Propagating structures, media, fertilizers, soil mixtures, and containers. Sexual

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propagation. The development of fruits, seeds, and spores. Production of genetically pure seed. Techniques of seed production and handling. Principles of propagation by seeds. Techniques of propagation by seeds. Asexual propagation. General aspects of asexual propagation. Anatomical and physiological basis of propagation by cuttings. Techniques of propagation by cuttings. Theoretical aspects of grafting and budding. Techniques of grafting. Techniques of budding. Layering. Propagation by specialized stems and roots. Special methods of propagation. Propagation of selected plants. Written by a renowned professional with more than 30 years of experience in environmental sampling and analysis, this reference describes in unparalleled detail all

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the essential elements for the development and execution of a successful sampling plan at both contaminated and uncontaminated sites. The book covers presampling planning and decision-making, specific sampling situations, and correct sample labeling, and presents the framework and background for the sampling of any contaminated site. Presenting a wide variety of models, quality control procedures, and valuable troubleshooting methods, Field Sampling contains an abundance of topics never before covered in any other source.

This volume is the second of the new two-volume Plant Biotechnology set. This volume covers many recent advances in the development of transgenic plants that have revolutionized our concepts of sustainable food production,

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cost-effective alternative energy strategies, microbial biofertilizers and biopesticides, and disease diagnostics through plant biotechnology. With the advancements in plant biotechnology, many of the customary approaches are out of date, and an understanding of new updated approaches is needed. This volume presents information related to recent methods of genetic transformation, gene silencing, development of transgenic crops, biosafety issues, microbial biotechnology, oxidative stress, and plant disease diagnostics and management. Key features:

- Provides an in-depth knowledge of various techniques of genetic transformation of plants, chloroplast, and fungus*
- Describes advances in gene silencing in plants*
- Discusses transgenic plants for various traits and their application in*

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crop improvement Looks at genetically modified foods and biodiesel production Describes biotechnological approaches in horticultural and ornamental plants Explores the biosafety aspect associated with transgenic crops Considers the role of microbes in sustainable agriculture Principles and Practices

Learning the Principles of Plant Pathology

PRINCIPLES of PLANT PATHOLOGY (Pathogen and Plant Disease)

A Textbook of Plant Pathology

Analytical Methods for Pesticides and Plant Growth Regulators

Principles of Plant Infection

To respond to the increasing need to feed

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the world's population as well as an ever greater demand for a balanced and healthy diet there is a continuing need to produce improved new cultivars or varieties of plants, particularly crop plants. The strategies used to produce these are increasingly based on our knowledge of relevant science, particularly genetics, but involves a multidisciplinary understanding that optimizes the approaches taken. Principles of Plant Genetics and Breeding, 2nd Edition introduces both classical and molecular tools for plant breeding. Topics

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such as biotechnology in plant breeding, intellectual property, risks, emerging concepts (decentralized breeding, organic breeding), and more are addressed in the new, updated edition of this text. Industry highlight boxes are included throughout the text to contextualize the information given through the professional experiences of plant breeders. The final chapters provide a useful reference on breeding the largest and most common crops. Up-to-date edition of this bestselling book incorporating the most recent technologies in the field Combines

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both theory and practice in modern plant breeding Updated industry highlights help to illustrate the concepts outlined in the text Self assessment questions at the end of each chapter aid student learning Accompanying website with artwork from the book available to instructors

Analytical Methods for Pesticides, Plant Growth Regulators, and Food Additives, Volume 1: Principles, Methods, and General Applications provides information on analytical techniques useful for the determination of pesticides, plant growth

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regulators, and food additives. The book discusses the potential hazard of minute residues to human and animal health; the principles of formulation and residue analyses; and the principles of food additive analysis. The text also describes the extraction and clean-up procedures; and the principles of toxicological testing methods. The methods for pesticide analysis in meat products; and the formulation and residue analysis in government laboratories are also considered. The book further tackles other methods, such as spectrophotometric

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methods, chromatography, isotope methods, enzymatic methods; and bioassay.

Agricultural toxicologists and people studying pesticides and food additives will find the text invaluable.

Principles of Soil and Plant Water Relations combines biology and physics to show how water moves through the soil-plant-atmosphere continuum. This text explores the instrumentation and the methods used to measure the status of water in soil and plants. Principles are clearly presented with the aid of diagrams, anatomical figures, and

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images of instrumentation. The methods on instrumentation can be used by researchers, consultants, and the military to monitor soil degradation, including measurements of soil compaction, repellency, oxygen diffusion rate, and unsaturated hydraulic conductivity. Intended for graduate students in plant and soil science programs, this book also serves as a useful reference for agronomists, plant ecologists, and agricultural engineers. * Principles are presented in an easy-to-understand style * Heavily illustrated with more than 200

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figures; diagrams are professionally drawn * Anatomical figures show root, stem, leaf, and stomata * Figures of instruments show how they work * Book is carefully referenced, giving sources for all information * Struggles and accomplishments of scientists who developed the theories are given in short biographies.

Principles of Tzeltal Plant Classification: An Introduction to the Botanical Ethnography of a Mayan-Speaking People of Highland Chiapas covers the underlying classificatory

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principles used by the Tzeltal to order the vast array of organisms of the plant world. The book describes the setting of the research, both from a botanical and ethnographic view; the general outline of Tzeltal plant classification and nomenclature; and the methods used to collect data. The text also discusses the rich ethnolinguistic terminology used by the Tzeltal in describing and discussing the structure of plants, referred to as ethnophytography; and the cultural significance of plants to the Tzeltal in

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agriculture, food types, house building, and other areas of material culture where plants and plant products are of major importance. The individual description of all known Tzeltal plant classes is also encompassed in detail. Botanists and ethnobotanists will find the book invaluable.

Transgenics, Stress Management, and Biosafety Issues

Principles and Practices in Environmental Analysis

***Principles of Plant Genetics and Breeding
An Introduction to the Botanical***

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Ethnography of a Mayan-Speaking, People of Highland, Chiapas

Genetic Engineering: Principles and Methods 28

Volume 2 Specific Principles and Methods: Growth and Developments

The correct diagnosis of a plant disease is an essential prerequisite of its successful control. Diagnostic methods today include a number of traditional techniques such as direct observation or microscopy, as well as more recently developed procedures such as those based on immunological or nucleic acid analysis. This book provides a text reviewing the principles of all these techniques that will be suitable for

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advanced students of plant pathology who already have some basic background in the subject. The theories behind the methods are described and illustrated with numerous examples of plant diseases caused by fungi, bacteria and viruses, and the strengths and limitations of different techniques are compared. The book includes a number of color photographs and will provide a very useful overview of this rapidly developing subject.

Principles of Plant Infection investigates interactions among pathogens, host plants, the environment, time and space, and their role in plant infection. It describes the principles of infection, particularly of the root, stem, or leaf, as they apply to fungi, bacteria, or viruses. It also highlights the dual nature of resistance and suggests theories of host resistance.

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Organized into seven chapters, this volume begins with an overview of the relation between the amount of inoculum and the amount of disease it causes. It then turns to a discussion of the disease/inoculum relations of tobacco mosaic virus; how obligate synergism restricts the transmission of pathogens; disease/inoculum relations in root disease; the independent action of spores as inoculum; variable factors other than the amount of inoculum that affect plant disease; and time as a determining factor of the degree of plant infection. The reader is also introduced to endemic disease of plants, the implications of endemicity for plant resistance to disease, the spread of disease via migration of pathogens, and the genetics of host-pathogen interactions. Plant pathologists and plant breeders will gain valuable information

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from this book.

Principles of Soil Physics examines the impact of the physical, mechanical, and hydrological properties and processes of soil on agricultural production, the environment, and sustainable use of natural resources. The text incorporates valuable assessment methods, graphs, problem sets, and tables from recent studies performed around the globe and offers an abundance of tables, photographs, and easy-to-follow equations in every chapter. The book discusses the consequences of soil degradation, such as erosion, inhibited root development, and poor aeration. It begins by defining soil physics, soil mechanics, textural properties, and packing arrangements . The text continues to discuss the theoretical and practical aspects of soil structure

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and explain the significance and measurement of bulk density, porosity, and compaction. The authors proceed to clarify soil hydrology topics including hydrologic cycle, water movement, infiltration, modeling, soil evaporation, and solute transport processes. They address the impact of soil temperature on crop growth, soil aeration, and the processes that lead to the emission of greenhouse gases. The final chapters examine the physical properties of gravelly soils and water movement in frozen, saline, and water-repellant soils. Reader-friendly and up-to-date, Principles of Soil Physics provides unparalleled coverage of issues related to soil physics, structure, hydrology, aeration, temperature, and analysis and presents practical techniques for maintaining soil quality to ultimately preserve its sustainability.

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Plant Propagation

Principles of Soil and Plant Water Relations

Field Sampling

Genetic Engineering: Principles and Methods

Principles of Plant Disease Management

Principles of Plant Breeding