

Our capacity to maintain world food production depends heavily on the thin layer of soil covering the Earth's surface. The health of this soil determines whether crops can grow successfully, whether a farm business is profitable and whether an enterprise is sustainable in the long term. Farmers are generally aware of the physical and chemical factors that limit the productivity of their soils but often do not recognise that soil microbes and the soil fauna play a major role in achieving healthy soils and healthy crops. Soil Health, Soil Biology, Soilborne Diseases and Sustainable Agriculture provides readily understandable information about the bacteria, fungi, nematodes and other soil organisms that not only harm food crops but also help them take up water and nutrients and protect them from root diseases. Complete with illustrations and practical case studies, it provides growers and their consultants with holistic solutions for building an active and diverse soil biological community capable of improving soil structure, enhancing plant nutrient uptake and suppressing root pests and pathogens. The book is written by scientists with many years' experience developing sustainable crop production practices in the grains, vegetable, sugarcane, grazing and horticultural industries. This book will be useful for: growers, consultants, agronomists and soil chemists, extension personnel working in the grains, livestock, sugarcane and horticultural industries, professionals running courses in soil health/biological farming, and students taking university courses in soil science, ecology, microbiology, plant pathology and other biological sciences.

Controlled Release Fertilizers for Sustainable Agriculture

Precision Agriculture Basics

Integrated Farming Systems And Agricultural Sustainability

Fundamentals

Building a Stable Base for Agriculture

This textbook explains the various aspects of sustainable agricultures to undergraduate and graduate students. The book first quantifies the components of the crop energy balance, i.e. the partitioning of net radiation, and their effect on the thermal environment of the canopy. The soil water balance and the quantification of its main component (evapotranspiration) are studied to determine the availability of water to rain fed crops and to calculate crop water requirements. Then it sets the limitations of crop production in relation to crop phenology, radiation interception and resource availability (e.g. nutrients). With that in mind the different agricultural techniques (sowing, tillage, irrigation, fertilization, harvest, application of pesticides, etc.) are analyzed with special emphasis in quantifying the inputs (sowing rates, fertilizer amounts, irrigation schedules, tillage plans) required for a given target yield under specific environmental conditions (soil & climate). For all techniques strategies are provided for improving the ratio productivity/resource use while ensuring sustainability. The book comes with online practical focusing on the key aspects of management in a crop rotation (collecting weather data, calculating productivity, sowing rates, irrigation programs, fertilizers rates etc).

Controlled Release Fertilizers for Sustainable Agriculture provides a comprehensive examination of precision fertilizer applications using the 4-R approach—the right amount of fertilizer at the right time to the right plant at the correct stage of plant growth. This volume consolidates detailed information on each aspect of controlled release fertilizers, including up-to-date literature citations, the current market for controlled release fertilizers and patents. Presenting the tremendous advances in experimental and theoretical studies on sustainable agriculture and related areas, this book provides in-depth insight into state-of-the-art controlled release mechanisms of fertilizers, techniques, and their use in sustainable agriculture. Conventional release mechanisms have historically meant waste of fertilizers and the adverse effects of that waste on the environment. Controlled release delivery makes significant strides in enhancing fertilizer benefit to the target plant, while protecting the surrounding environment and increasing sustainability. Presents cutting-edge interdisciplinary insights specifically focused on the controlled release of fertilizers Explores the benefits and challenges of 4-R fertilizer use Includes expertise from leading researchers in the fields of agriculture, polymer science, and nanotechnology working in industry, academics, government, and private research institutions across the globe Presents the tremendous advances in experimental and theoretical studies on sustainable agriculture and related areas

The book entitled, "Integrated Farming System and Agricultural Sustainability" is an endeavor of the author to consider the sustainability in agriculture befitting with relevant chapters that the agricultural resilience would take place without affecting the social causes. The book is organized into sixteen chapters. A brief description of each of the chapters follows: Chapter 1 identifies the concept of importance and definition as basic requirement to know the challenges in the management of information security in the new millennium; Chapter 2 identifies the types of farming system and factors affecting farming system; Chapter 3 envisages sustainable agriculture, its problems and its impact in cropping system; Chapter 4 takes historical background of agriculture, its changing scenario and its resilience over the years. Chapter 5 delineated sustainable agriculture, its importance and its impact in cropping system; Chapter 6 describes the agro-climatic and agro-ecological zones that need for model of integrated farming system to be developed as a policy perspective to ensure the crop cultivation the highest level of protection against all sorts of threats. Chapter 7 takes history of agriculture, its changing scenario and its resilience over the years. Chapter 8 reviews the rejuvenation, modernization and mechanization of agriculture, its present bottlenecks on ethical elements of security such that trust could be promoted to outburst the explosive population; Chapter 9 reviews the information on soil resource in the context of problematic security threat; Chapter 10 reviews issues on external input based sustainable agriculture surrounding low land utilization as existing resource mobilization and utilization. Chapter 11 presents the importance of organic farming well as organic agriculture to get the best results in sustainable agriculture; Chapter 12 addresses the issue of water management and planning, with particular reference to irrigation management and judicious water application in crop cultivation. Chapter 13 presents gaps and problems in each of the current approaches in rainfed agriculture, rainwater harvesting as well as rainwater management in growing crops in best possible manner; Chapter 14 discusses management of lowland areas towards sustainable agriculture; Chapter 15 refers the land degradation and land treatments in the way of effective utilization of land resources through tillage, conservation tillage and other suitable measures; Chapter 16 concludes the present principle of

remedies, the economic equity, social security along the future task and presents pragmatic, formal, informal and technical principles necessary for managing food security in the new millennium.

Managing Soil Health for Sustainable Agriculture Volume 1

Soils for Plant Growth

Fundamentals of Soil Science

A Way to Sustainable Agriculture

Soil Science: Agricultural and Environmental Perspectives

Advances in Organic Farming