Insect Diets Science And Technology

Regulation: Digestion, Nutrition, ExcretionEdible InsectsInsect Bioecology and Nutrition for Integrated Pest ManagementMetabolic EcologyEncyclopedia of science & technologyInsects As Food and FeedInsect Colonization and Mass ProductionInsect PathologyMcGraw-Hill Encyclopedia of Science & TechnologyEncyclopedia of InsectsThe Insect CookbookEdible Insects and Human EvolutionInsects as Sustainable Food IngredientsBuzz, Sting, BiteEgg Parasitoids in Agroecosystems with Emphasis on TrichogrammaEdible InsectsAmerican EntomologistInsect DietsFundamentals of 3D Food Printing and ApplicationsFuture FoodsRegulating Safety of Traditional and Ethnic FoodsEncyclopedia of Food Security and SustainabilityInsect Physiology and EcologyAmerican Book Publishing RecordMcGraw-Hill Concise Encyclopedia of Science & TechnologySterile Insect TechniqueSustainable Protein SourcesThe Omnivorous MindFood AnalysisFruit FliesAdvances in Food and Nutrition ResearchEncyclopedia of Food Science and NutritionMcGraw-Hill Encyclopedia of Science and TechnologyDesign, Operation, and Control of Insect Rearing SystemsAgricultural ResearchEncyclopedia of Science and TechnologyCall of NatureInsect DietsA Philosophy of the InsectMass Production of Beneficial Organisms

Regulation: Digestion, Nutrition, Excretion

Edible Insects

Insect Bioecology and Nutrition for Integrated Pest Management

The field of insect nutritional ecology has been defined by how insects deal with nutritional and non-nutritional compounds, and how these compounds influence their biology in evolutionary time. In contrast, Insect Bioecology and Nutrition for Integrated Pest Management presents these entomological concepts within the framework of integrated pest m

Metabolic Ecology

Journey through the digestive systems of humans, farm and wild animals, and meet some of nature’s ultimate recyclers as they eat, breed in and compete for dung. The fall of bodily waste onto the ground is the start of a race against the clock as a multitude of dung-feeders and scavengers consume this rich food source. From the enigmatic dung-rolling beetles to bat guano and giant elephant droppings, dung creates a miniature ecosystem to be explored by the aspiring dung watcher. The

author completes the book with an identification guide to dung itself, so that you can identify the animal that left it behind. Pellets or pats? Scats, spraints, frass, guano, spoor – learn your way around different species' droppings. There's also a dung-feeder's identification guide that includes the species you're most likely to encounter on an exploration of the dung heap.

Encyclopedia of science & technology

This book provides information on the techniques needed to analyze foods in laboratory experiments. All topics covered include information on the basic principles, procedures, advantages, limitations, and applications. This book is ideal for undergraduate courses in food analysis and is also an invaluable reference to professionals in the food industry. General information is provided on regulations, standards, labeling, sampling and data handling as background for chapters on specific methods to determine the chemical composition and characteristics of foods. Large, expanded sections on spectroscopy and chromatography are also included. Other methods and instrumentation such as thermal analysis, selective electrodes, enzymes, and immunoassays are covered from the perspective of their use in the chemical analysis of foods. A helpful Instructor's Manual is available to adopting professors.

Insects As Food and Feed

Many of the advances in entomology during the past century can be attributed to the ability to rear insects successfully on artificial diets. Reliance upon these diets dictates that we understand how and why diets work and why they fail. Insect Diets: Science and Technology explains the intricacies and dynamics of this complex and misunderstood asp

Insect Colonization and Mass Production

Advances in Food and Nutrition Research, Volume 81 provides updated knowledge on nutrients in foods and how to avoid deficiencies, paying special attention to the essential nutrients that should be present in the diet to reduce disease risk and optimize health. The series provides the latest advances on the identification and characterization of emerging bioactive compounds with putative health benefits, as well as up-to-date information on food science, including raw materials, production, processing, distribution, and consumption. Contains contributions that have been carefully selected based on their vast experience and expertise on the subject Includes updated, in-depth, and critical discussions of available information, giving the reader a unique opportunity to learn Encompasses a broad view of the topics at hand

Insect Pathology

Fundamentals of 3D Food Printing and Applications provides an update on this emerging technology that can not only create complex edible shapes, but also enable the alteration of food texture and nutritional content required by specific diets. This book discusses 3D food printing technologies and their working mechanisms within a broad spectrum of application areas, including, but not limited to, the development of soft foods and confectionary designs. It provides a unique and contemporary guide to help correlate supply materials (edible inks) and the technologies (e.g., extrusion and laser based) used during the construction of computer-aided 3D shapes. Users will find a great reference that will help food engineers and research leaders in food science understand the characteristics of 3D food printing technologies and edible inks. Details existing 3D food printing techniques, with an in-depth discussion on the mechanisms of formation of self-supporting layers Includes the effects of flow behaviour and viscoelastic properties of printing materials Presents strategies to enhance printability, such as the incorporation of hydrocolloids and lubricant enhancers 3D printing features of a range of food materials, including cereal based, insect enriched, fruits and vegetables, chocolate and dairy ingredients Business development for chocolate printing and the prospects of 3D food printing at home for domestic applications Prosumer-driven 3D food printing Safety and labelling of 3D printed food

McGraw-Hill Encyclopedia of Science & Technology

Features more than seven thousand entries covering topics, terms, and concepts in math, science, and technology.

Encyclopedia of Insects

Association between insects and nonpathogenic mocroorganisms. Amicrobial and microbial agents. Bacterial infections. Bacillaceae. Other bacterial infections. DNA-viral infections. Baculoviridae. Other DNA-viralinfections. RNA-viral infections: Reoviridae. Other RNA-viral infections. Fungal infections. Protozoan infections: zoomastigina, rhizopoda, and ciliophora. Protozoan infectiosn: apicomplexa, microspora. Nematodes, nematomorphs, and plantyhelminthes. Host resistance. Microbial control. Epizootiology.

The Insect Cookbook

Awarded Best Reference by the New York Public Library (2004), Outstanding Academic Title by CHOICE (2003), and AAP/PSP 2003 Best Single Volume Reference/Sciences by Association of American Publishers' Professional Scholarly Publishing Division, the first edition of Encyclopedia of Insects was acclaimed as the most comprehensive work devoted to insects. Covering all aspects of insect anatomy, physiology, evolution, behavior, reproduction, ecology, and disease, as well as issues of exploitation, conservation, and management, this book sets the standard in entomology. The second edition of

this reference will continue the tradition by providing the most comprehensive, useful, and up-to-date resource for professionals. Expanded sections in forensic entomology, biotechnology and Drosphila, reflect the full update of over 300 topics. Articles contributed by over 260 high profile and internationally recognized entomologists provide definitive facts regarding all insects from ants, beetles, and butterflies to yellow jackets, zoraptera, and zygentoma. * 66% NEW and revised content by over 200 international experts * New chapters on Bedbugs, Ekbom Syndrome, Human History, Genomics, Vinegaroons * Expanded sections on insect-human interactions, genomics, biotechnology, and ecology * Each of the 273 articles updated to reflect the advances which have taken place in entomology research since the previous edition * Features 1,000 full-color photographs, figures and tables * A full glossary, 1,700 cross-references, 3,000 bibliographic entries, and online access save research time * Updated with online access

Edible Insects and Human Evolution

Edible insects have always been a part of human diets, but in some societies there remains a degree of disdain and disgust for their consumption. Insects offer a significant opportunity to merge traditional knowledge and modern science to improve human food security worldwide. This publication describes the contribution of insects to food security and examines future prospects for raising insects at a commercial scale to improve food and feed production, diversify diets, and support livelihoods in both developing and developed countries. Edible insects are a promising alternative to the conventional production of meat, either for direct human consumption or for indirect use as feedstock. This publication will boost awareness of the many valuable roles that insects play in sustaining nature and human life, and it will stimulate debate on the expansion of the use of insects as food and feed.

Insects as Sustainable Food Ingredients

Buzz, Sting, Bite

Mass Production of Beneficial Organisms: Invertebrates and Entomopathogens is an essential reference and teaching tool for researchers in developed and developing countries working to produce "natural enemies" in biological control and integrated pest management programs. As we become aware of the negative impact of pesticides in human health and on the environment, interest is rapidly increasing in developing biological pest control alternatives. Tremendous advances have been made in beneficial organism technology, such as insect predators and parasitoids, mite predators, entomopathogenic nematodes, fungi, bacteria, and viruses. However, developing techniques to mass produce these biological control agents is not enough if the cost of commercialization is prohibitive. Advancing mass production to the

level of economic feasibility is critical, so these new technologies can compete in the open market. This book educates academic and industry researchers, and enables further development of mass production so new technologies can compete in the open market. It is also an excellent resource for those researching beneficial arthropod mass production and technologies for other uses, including for study and application in biotechnology and biomedical research. Focuses on techniques for mass production of beneficial organisms and methods of evaluation and quality assessment Organizes and presents the most advanced and current knowledge on methods to mass produce beneficial organisms in response to the increased global demand for alternatives to chemical pesticides for biological control producers Includes a team of highly respected editors and authors with broad expertise in these areas

Egg Parasitoids in Agroecosystems with Emphasis on Trichogramma

In this gustatory tour of human history, Allen suggests that the everyday activity of eating offers deep insights into our cultural and biological heritage. Beginning with the diets of our earliest ancestors, he explores eating’s role in our evolving brain before considering our contemporary dinner plates and the preoccupations of foodies.

Edible Insects

The Encyclopedia of Food Sciences and Nutrition, Second Edition is an extensively revised, expanded and updated version of the successful eight-volume Encyclopedia of Food Science, Food Technology and Nutrition (1993). Comprising ten volumes, this new edition provides a comprehensive coverage of the fields of food science, food technology, and nutrition. Every article is thorough in its coverage, the writing is succinct and straightforward, and the work presents the reader with the best available summary and conclusions on each topic. Easy to use, meticulously organized, and written from a truly international perspective, the Encyclopedia is an invaluable reference tool. An essential item on the bookshelf for every scientist or writer working in the fields of food and nutrition. * Contains over 1,000 articles covering all areas of food science and nutrition * Edited and written by a distinguished international group of editors and contributors * Includes 'Further Reading' lists at the end of each article * A complete subject index contained in one volume * Extensive cross-referencing * Many figures and tables illustrate the text, with a color plate section in each volume

American Entomologist

An enthusiastic, witty, and informative introduction to the world of insects and why we—and the planet we inhabit—could not survive without them. Insects comprise roughly half of the animal kingdom. They live everywhere—deep inside caves, 18,000 feet high in the Himalayas, inside computers, in Yellowstone’s hot springs, and in the ears and nostrils of much

larger creatures. There are insects that have ears on their knees, eyes on their penises, and tongues under their feet. Most of us think life would be better without bugs. In fact, life would be impossible without them. Most of us know that we would not have honey without honeybees, but without the pinhead-sized chocolate midge, cocoa flowers would not pollinate. No cocoa, no chocolate. The ink that was used to write the Declaration of Independence was derived from galls on oak trees, which are induced by a small wasp. The fruit fly was essential to medical and biological research experiments that resulted in six Nobel prizes. Blowfly larva can clean difficult wounds; flour beetle larva can digest plastic; several species of insects have been essential to the development of antibiotics. Insects turn dead plants and animals into soil. They pollinate flowers, including crops that we depend on. They provide food for other animals, such as birds and bats. They control organisms that are harmful to humans. Life as we know it depends on these small creatures. With ecologist Anne Sverdrup-Thygeson as our capable, entertaining guide into the insect world, we'll learn that there is more variety among insects than we can even imagine and the more you learn about insects, the more fascinating they become. Buzz, Sting, Bite is an essential introduction to the little creatures that make the world go round.

Insect Diets

Introduction / E.F. Knipling -- Body lice / M.M. Cole -- Parasitic mites / J. Ralph Audy and M.M.J. Lavoipierre -- Ticks / J.D. Gregson -- Rat fleas / B.S. Krishnamurthy -- Anopheles quadrimaculatus Say / James B. Gahan -- Culex pipiens fatigans Wied. / Botha de Meillon and Vijayamma Thomas -- Culicoides biting midges / Robert Henry Jones -- Black flies / R.C. Muirhead-Thomson -- Stable flies / Calvin M. Jones -- Tsetse flies / W.H.R. Lumsden and D.S. Saunders -- Bed bugs / G.S. Burden -- Reduviid bugs / Raymond E. Ryckman and Albert E. Ryckman -- House flies / D. Spiller -- Cockroaches / Burrell J. Smittle -- Coleoptera infesting stored products / Phillip K. Harein and Edwin L. Soderstrom -- Lepidoptera infesting stored products / H.P. Boles and F.O. Marzke -- Defined diets for phytophagous insects / Erma S. Vanderzant -- Southern pine beetles / Edgar W. Clark and Eben A. Osgood, Jr. -- Grasshoppers / Frank T. Cowan -- European corn borer / Earle S. Raun -- Codling moths / D.W. Hamilton and D.O. Hathaway -- Pink bollworms / Dial F. Martin -- Corn rootworms / W.L. Howe and B.W. George -- False wireworms / John W. Matteson -- Aegeriidae, with special reference to the peach tree borer / Edward H. Smith -- Boll weevils / R.T. Gast and T.B. Davich -- Wheat stem sawflies / Lew E. Wallace -- Lygus bugs / G.T. Bottger -- Aphids / F.H. Harries -- Phytophagous mites / Stanley W. Jacklin and Floyd F. Smith -- Coneworms / Edward P. Merkel and Carl W. Fatzinger -- Cabbage loopers / T.J. Henneberry and A.N. Kishaba -- Tobacco hornworms / J. David Hoffman, F.R. Lawson and Robert Yamamoto -- Insect parasites and predators / F.J. Simmonds -- Insect viruses / Carlo M. Ignoffo. Screw-worms / Alfred H. Baumhover, Chester N. Husman and Andrew J. Graham -- Tephritid fruit flies / Loren F. Steiner and Shizuko Mitchell -- Yellow fever mosquitoes / Harvey B. Morlan.

Fundamentals of 3D Food Printing and Applications

The Encyclopedia of Food Security and Sustainability covers the hottest topics in the science of food sustainability, providing a synopsis of the path society is on to secure food for a growing population. It investigates the focal issue of sustainable food production in relation to the effects of global change on food resources, biodiversity and global food security. This collection of methodological approaches and knowledge derived from expert authors around the world offers the research community, food industry, scientists and students with the knowledge to relate to, and report on, the novel challenges of food production and sustainability. This comprehensive encyclopedia will act as a platform to show how an interdisciplinary approach and closer collaboration between the scientific and industrial communities is necessary to strengthen our existing capacity to generate and share research data. Offers readers a ‘one-stop’ resource on the topic of food security and sustainability Contains articles split into sections based on the various dimensions of Food Security and Food Sustainability Written by academics and practitioners from various fields and regions with a “farm to fork understanding Includes concise and accessible chapters, providing an authoritative introduction for non-specialists and readers from undergraduate level upwards, as well as up-to-date foundational content for those familiar with the field

Future Foods

Design and Operation of Insect Rearing Systems: Science, Technology, and Infrastructure explains the fundamental components of insect rearing: 1) the rearing systems per se 2) personnel 3) education of rearing personnel 4) communication of procedures 5) an in-depth look at silkworm rearing 5) facilities where rearing is conducted, and 6) funding for all these components. Insect rearing serves a wide array of purposes including research, pest control by sterile insect technique and biological control, production of insects for food for other animals, conservation, education, and even far-reaching technology where insects are used to produce products such as pharmaceutical materials and strong, multipurpose textiles. This book surveys and analyzes insect rearing from a scientific and technology-based approach. At its foundation, this approach assumes that rearing systems are complex interactions of components that can be understood and controlled by using a mechanistic approach. Author Allen Cohen explains the infrastructure of rearing systems, their current status and character, and what kind of changes can be made to improve the field of insect rearing. Two Appendices republish out-of-print monographs that provide fascinating historical context to the development of the insect rearing systems we have today.

Regulating Safety of Traditional and Ethnic Foods

The world of insects is at once beneath our feet and unfathomably alien. Small and innumerable, insects surround and disrupt us even as we scarcely pay them any mind. Insects confront us with the limits of what is imaginable, while at the same time being essential to the everyday functioning of all terrestrial ecosystems. In this book, the philosopher and

historian of science Jean-Marc Drouin contends that insects pose a fundamental challenge to philosophy. Exploring the questions of what insects are and what scientific, aesthetic, ethical, and historical relationships they have with humanity, he argues that they force us to reconsider our ideas of the animal and the social. He traces the role that insects have played in language, mythology, literature, entomology, sociobiology, and taxonomy over the centuries. Drouin emphasizes the links between humanistic and scientific approaches—how we have projected human roles onto insects and seen ourselves in insect form. Caught between the animal and plant kingdoms, insects force us to confront and reevaluate our notions of gender, family, society, struggle, the division of labor, social organization, and individual and collective intelligence. A remarkably original and thought-provoking work, A Philosophy of the Insect is an important book for animal studies, environmental ethics, and the history and philosophy of science.

Encyclopedia of Food Security and Sustainability

A comprehensive, 20-volume reference encyclopedia on science and technology.

Insect Physiology and Ecology

One of the first textbooks in this emerging important field of ecology. Most of ecology is about metabolism: the ways that organisms use energy and materials. The energy requirements of individuals – their metabolic rates – vary predictably with their body size and temperature. Ecological interactions are exchanges of energy and materials between organisms and their environments. So metabolic rate affects ecological processes at all levels: individuals, populations, communities and ecosystems. Each chapter focuses on a different process, level of organization, or kind of organism. It lays a conceptual foundation and presents empirical examples. Together, the chapters provide an integrated framework that holds the promise for a unified theory of ecology. The book is intended to be accessible to upper-level undergraduate, and graduate students, but also of interest to senior scientists. Its easy-to-read chapters and clear illustrations can be used in lecture and seminar courses. Together they make for an authoritative treatment that will inspire future generations to study metabolic ecology.

American Book Publishing Record

McGraw-Hill Concise Encyclopedia of Science & Technology

Protein plays a critical role in human nutrition. Although animal-derived proteins constitute the majority of the protein we

consume, plant-derived proteins can satisfy the same requirement with less environmental impact. Sustainable Protein Sources allows readers to understand how alternative proteins such as plant, fungal, algal, and insect protein can take the place of more costly and less efficient animal-based sources. Sustainable Protein Sources presents the various benefits of plant and alternative protein consumption, including those that benefit the environment, population, and consumer trends. The book presents chapter-by-chapter coverage of protein from various sources, including cereals and legumes, oilseeds, pseudocereals, fungi, algae, and insects. It assesses the nutrition, uses, functions, benefits, and challenges of each of these proteins. The book also explores opportunities to improve utilization and addresses everything from ways in which to increase consumer acceptability, to methods of improving the taste of products containing these proteins, to the ways in which policies can affect the use of plant-derived proteins. In addition, the book delves into food security and political issues which affect the type of crops that are cultivated and the sources of food proteins. The book concludes with required consumer choices such as dietary changes and future research ideas that necessitate vigorous debate for a sustainable planet. Introduces the need to shift current animal-derived protein sources to those that are more plant-based Presents a valuable compendium on plant and alternate protein sources covering land, water, and energy uses for each type of protein source Discusses nutritive values of each protein source and compares each alternate protein to more complete proteins Provides an overview of production, including processing, protein isolation, use cases, and functionality Presents solutions to challenges, along with taste modulation Focuses on non-animal derived proteins Identifies paths and choices that require consumer and policymaker debate and action

Sterile Insect Technique

Fruit flies are enormously important economic pests, as California has learned over the past few years (remember the Mediterranean Fruit Fly?). The problem is expected to get worse, and issues of both basic research and control measures are very important for this pest. This book is the edited, camera-ready proceedings of a recent international symposium on fruit flies of economic importance. It covers current knowledge of fruit fly physiology, genetics, morphology and behavior. It discusses action programs for controlling and using fruit flies in agronomy, as well as the problem of fruit flies in the fruit growing industry.

Sustainable Protein Sources

It is anticipated that by 2050 we will have nine billion people to feed-how can we manage? As scarcities of agricultural land, water, forest, fishery and biodiversity resources, as well as nutrients and nonrenewable energy are foreseen, insect rearing is one solution for food and feed security in the future. In this book, we have nine chapters ranging from mushroom, insect, and earthworm farming to smart packaging and 3D printing of future foods. However, because of their biological

composition, several issues should be considered, such as microbial safety, toxicity, palatability, and the presence of inorganic compounds. Specific health implications ought to be kept in mind especially if mushrooms, earthworms, or insects are reared on waste products. Allergies induced through insects' ingestion also deserve attention. A possible HACCP plan has been described considering pre-requirements in insect production and transformation.

The Omnivorous Mind

Egg Parasitoids in Agroecosystems with emphasis on Trichogramma was conceived to help in the promotion of biological control through egg parasitoids by providing both basic and applied information. The book has a series of chapters dedicated to the understanding of egg parasitoid taxonomy, development, nutrition and reproduction, host recognition and utilization, and their distribution and host associations. There are also several chapters focusing on the mass production and commercialization of egg parasitoids for biological control, addressing important issues such as parasitoid quality control, the risk assessment of egg parasitoids to non-target species, the use of egg parasitoids in integrated pest management programs and the impact of GMO on these natural enemies. Chapters provide an in depth analysis of the literature available, are richly illustrated, and propose future trends.

Food Analysis

Insects will be appearing on our store shelves, menus, and plates within the decade. In The Insect Cookbook, two entomologists and a chef make the case for insects as a sustainable source of protein for humans and a necessary part of our future diet. They provide consumers and chefs with the essential facts about insects for culinary use, with recipes simple enough to make at home yet boasting the international flair of the world’s most chic dishes. Insects are delicious and healthy. A large proportion of the world’s population eats them as a delicacy. In Mexico, roasted ants are considered a treat, and the Japanese adore wasps. Insects not only are a tasty and versatile ingredient in the kitchen, but also are full of protein. Furthermore, insect farming is much more sustainable than meat production. The Insect Cookbook contains delicious recipes; interviews with top chefs, insect farmers, political figures, and nutrition experts (including chef René Redzepi, whose establishment was elected three times as “best restaurant of the world”; Kofi Annan, former secretary-general of the United Nations; and Daniella Martin of Girl Meets Bug); and all you want to know about cooking with insects, teaching twenty-first-century consumers where to buy insects, which ones are edible, and how to store and prepare them at home and in commercial spaces.

Fruit Flies

Edible Insects and Human Evolution investigates insects in the human diet from an evolutionary perspective. This book argues that insects were just as important as meat in the past and that today they offer a sustainable alternative to meat.

Advances in Food and Nutrition Research

Encyclopedia of Food Science and Nutrition

Dr. Allen Carson Cohen’s new edition of Insect Diets: Science and Technology continues to provide a current, integrated review of the field of insect diets. It reaffirms and expands upon the belief that the science of diet development and the technology of diet application in rearing programs require formal foundations and guidelines. Cohen argues for a data-driven approach as well as a focus on humane treatment in insect rearing programs. He also calls for academics and industries to make a new push toward statistical process control (SPC) in their approaches to rearing in general, using his own work with insects as a paradigm. This approach yields the benefits of careful scientific analysis by addressing issues of quality and efficiency in academic research and industrial practices and applications. See What’s New in the Second Edition: This edition expands upon the role of food science in the use of artificial diets in rearing programs, especially texture analysis with rheological techniques. It includes an entirely new chapter focused solely on the subject of food quality in insect diets. The book also revisits microbial relationships to insect diets as a powerful influence on their feeding processes and emphasizes a new, better understanding and utilization of the relationship between insects and microbes in artificial diets. Cohen also expands his vision of the future of insect rearing, including the use of insects themselves as a potential food source for a rapidly expanding global human population. To that end, this book gives you guidelines to develop, use, and evaluate artificial diets in order to improve their cost and scientific efficiency in the rearing of insects, because as the author urges, it is important to "know your insect." This understanding will serve the multifaceted goals of using insect rearing for research and teaching, pest management strategies and biocontrol agents, as food for other organisms, and for many other purposes.

McGraw-Hill Encyclopedia of Science and Technology

Regulating Safety of Traditional and Ethnic Foods, a compilation from a team of experts in food safety, nutrition, and regulatory affairs, examines a variety of traditional foods from around the world, their risks and benefits, and how regulatory steps may assist in establishing safe parameters for these foods without reducing their cultural or nutritive value. Many traditional foods provide excellent nutrition from sustainable resources, with some containing nutraceutical properties that make them not only a source of cultural and traditional value, but also valuable options for addressing the

growing need for food resources. This book discusses these ideas and concepts in a comprehensive and scientific manner. Addresses the need for balance in safety regulation and retaining traditional food options Includes case studies from around the world to provide practical insight and guidance Presents suggestions for developing appropriate global safety standards

Design, Operation, and Control of Insect Rearing Systems

Agricultural Research

Alternative protein sources are urgently required as the available land area is not sufficient to satisfy the growing demand for meat. Insects have a high potential of becoming a new sector in the food and feed industry, mainly because of the many environmental benefits when compared to meat production. This will be outlined in the book, as well as the whole process from rearing to marketing. The rearing involves large scale and small scale production, facility design, the management of diseases, and how to assure that the insects will be of high quality (genetics). The nutrient content of insects will be discussed and how this is influenced by life stage, diet, the environment and processing. Technological processing requires decontamination, preservation, and ensuring microbial safety. The prevention of health risks (e.g. allergies) will be discussed as well as labelling, certification and legislative frameworks. Additional issues are: insect welfare, the creation of an enabling environment, how to deal with consumers, gastronomy and marketing strategies. Examples of production systems will be given both from the tropics (palm weevils, grasshoppers, crickets) and from temperate zones (black soldier flies and house flies as feed and mealworms and crickets as food).

Encyclopedia of Science and Technology

This book discusses recent contributions focusing on insect physiology and ecology written by experts in their respective fields. Four chapters in this book are dedicated to evaluating the morphological and ecological importance and distribution of water beetles, dung beetles, weevils, and tabanids, while two others investigate the symbiotic relationships between various insects and their associations with bacteria, fungi, or mites. Two other chapters consider insecticide detoxification, as well as insect defense mechanisms against infections. The last two chapters concentrate on insects as sustainable food. This book targets a wide audience of general biologists, as well as entomologists, ecologists, zoologists, virologists, and epidemiologists, including both teachers and students in gaining a better appreciation of this rapidly growing field.

Call of Nature

In this volume, seven of the chapters deal with feeding and diet, which is reasonable since insects consume an estimated l5-20% of all the world's planted crops. Many insects even have a specialized larval feeding stage that usually occupies a different ecological niche to the adult and so does not compete for the adult's food stock. Other chapters describe the means by which insects maintain their water balance, nitrogen balance and temperature balance under a range of conditions. These involve regulation by hormonal and behavioural systems that are also described here. The l4 chapters are all extensively illustrated and referenced and therefore provide excellent summaries of current knowledge. They will be of great value to entomologists, zoologists and biologists in general.

Insect Diets

Insects as Sustainable Food Ingredients: Production, Processing and Food Applications describes how insects can be mass produced and incorporated into our food supply at an industrial and cost-effective scale, providing valuable guidance on how to build the insect-based agriculture and the food and biomaterial industry. Editor Aaron Dossey, a pioneer in the processing of insects for human consumption, brings together a team of international experts who effectively summarize the current state-of-the-art, providing helpful recommendations on which readers can build companies, products, and research programs. Researchers, entrepreneurs, farmers, policymakers, and anyone interested in insect mass production and the industrial use of insects will benefit from the content in this comprehensive reference. The book contains all the information a basic practitioner in the field needs, making this a useful resource for those writing a grant, a research or review article, a press article, or news clip, or for those deciding how to enter the world of insect based food ingredients. Details the current state and future direction of insects as a sustainable source of protein, food, feed, medicine, and other useful biomaterials Provides valuable guidance that is useful to anyone interested in utilizing insects as food ingredients Presents insects as an alternative protein/nutrient source that is ideal for food companies, nutritionists, entomologists, food entrepreneurs, and athletes, etc. Summarizes the current state-of-the-art, providing helpful recommendations on building companies, products, and research programs Ideal reference for researchers, entrepreneurs, farmers, policymakers, and anyone interested in insect mass production and the industrial use of insects Outlines the challenges and opportunities within this emerging industry

A Philosophy of the Insect

The sterile insect technique (SIT) is an environment-friendly pest control method that fits into area-wide integrated pest management (AW-IPM) programmes. This book describes the principles and practice of SIT, frankly evaluating its strengths and weaknesses, successes and failures. SIT is useful against pests that have considerable impact on plant, animal and human health, and criteria are provided to guide in the selection of pests appropriate for SIT.

Mass Production of Beneficial Organisms