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Bioproducts Handbook Of Plant
Breeding

Industrial Crops Breeding For Bioenergy And Bioproducts Handbook Of Plant

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Wild crop relatives are now playing a significant part in the elucidation and improvement of the genomes of their cultivated counterparts. This work includes comprehensive examinations of the status, origin,

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distribution, morphology, cytology, genetic diversity and available genetic and genomic resources of numerous wild crop relatives, as well as of their evolution and phylogenetic relationship. Further topics include their role as model plants, genetic erosion and conservation efforts, and

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their domestication for the purposes of bioenergy, phytomedicines, nutraceuticals and phytoremediation. Wild Crop Relatives: Genomic and Breeding Resources comprises 10 volumes on Cereals, Millets and Grasses, Oilseeds, Legume Crops and Forages, Vegetables, Temperate

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Fruits, Tropical and Subtropical Fruits,
Industrial Crops, Plantation and
Ornamental Crops, and Forest Trees.
It contains 125 chapters written by
nearly 400 well-known authors from
about 40 countries.

This book evaluates maize as a
bioenergy fuel source from two

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perspectives. It explores whether the input energy needed to generate fuel significantly exceeded by the energy harvested. In examining this issue, the chapters provide assessments of the social, economic, and political impact on fuel pricing, food costs, and the environmental challenge

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The search for alternative, renewable sources of fuel and energy from plants, algae, and waste materials has catalyzed in recent years. With the growing interest in bioenergy development and production there has been increasing demand for a broad ranging introductory text in the

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field. Bioenergy: Principles and Practices provides an invaluable introduction to the fundamentals of bioenergy feedstocks, processing, and industry. Bioenergy provides readers with an understanding of foundational information on 1st, 2nd, and 3rd generation biofuels.

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Coverage spans from feedstock production of key energy sources such as grasses, canes, and woody plants through chemical conversion processes and industrial application. Each chapter provides a thorough description of fundamental concepts, definitions of key terms, case studies

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Breeding and practical examples and
exercises. Bioenergy: Principles and
Practices will be an essential resource
for students, bioengineers, chemists,
and industry personnel tying key
concepts of bioenergy science to
valuable real world application.
Biosafety of Genetically Modified

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Organisms 3

Principles and Applications

Handbook of Bioenergy Crops

Tropical and Subtropical Fruits

Our Energy Future

**When humankind began to save
seed to plant for the next season,
they did so hoping to secure a food**

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**supply for the future. With that
came the inevitable question: Will it
be enough? Scientists today are
still asking that question. Our
dependence on domesticated
cultivated varieties has never been
greater, even as increasing
populations strain our resource**

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**base. This book provides a
fascinating snapshot-in-time
account of the productivity status
of all major U.S. field crops. Each
crop has a different story to tell.
Plant breeding, biotechnology, and
agronomy have shaped these
stories. It is imperative that we**

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learn from them to ensure continued productivity. The solution is long-term stewardship and the most effective use of our critical resources—water, soil, genetic resources, and human intellect.

Perennial Grasses for Bioenergy

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Breeding
and Bioproducts: Production, Uses,
Sustainability and Markets for
Giant Reed, Miscanthus,
Switchgrass, Reed Canary Grass
and Bamboo brings together a
team of international authors to
explore the current utilization,
sustainability and future**

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**perspectives of perennial grasses
in the bioeconomy. The book
begins by examining the role of
these crops as feedstock for
bioenergy, in particular advanced
biofuels and bioproducts. It then
offers five chapters, each covering
one perennial grass type, namely**

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**giant reed, miscanthus,
switchgrass, reed canary grass and
bamboo. The book covers their
breeding, cultivation, harvesting,
pre-treatment, economics and
characterization. The book goes on
to present the thermochemical
conversion pathways for different**

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**types of feedstock. The last chapter
explores issues concerning
sustainability of perennial grasses,
including their production in
marginal lands. This thorough
overview is a helpful reference for
engineering researchers and
professionals in the bioenergy**

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sector, whose understanding of feedstock characterization, sustainability and production is critical in the development of conversion technologies. Those in the industrial crops sector will benefit from discussion of various issues surrounding crop

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production, which can guide their
feedstock cultivation, harvesting
and pre-treatment for specific
conversion processes or end use.
The book is also a useful resource
for instructors and students in
Masters and PhD programs in the
area of biomass and energy crops.

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Policy makers and government agents involved in regulating the bioenergy and bioproducts sector will find comprehensive information to guide their decision making. Explores the whole value chain of grassy feedstock for advanced biofuels and

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**bioproducts, from cultivation to end
use, including biomass
characterization (physical
properties, chemical composition,
etc.) and conversion and
sustainability Examines the
sustainability and economic factors
related to perennial grasses and**

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**their conversion into biofuels and
bioproducts Includes a complete
list of grasses relevant for energy
uses, and tables with their current
and expected future uses and
markets**

**Forages: The Science of Grassland
Agriculture, 7th Edition, Volume II**

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will extensively evaluate the current
knowledge and information on
forage agriculture. Chapters written
by leading researchers and
authorities in grassland agriculture
are aggregated under section
themes, each one representing a
major topic within grassland

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science and agriculture. This 7th edition will include two new additional chapters covering all aspects of forage physiology in three separate chapters, instead of one in previous editions. Chapters will be updated throughout to include new information that has

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**developed since the last edition.
This new edition of the classic
reference serves as a
comprehensive supplement to An
Introduction to Grassland
Agriculture, Volume I.
Millets and Grasses
Volume 6**

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**Breeding for BioEnergy and
Bioproducts**

Biofuels

**Participatory Plant Breeding:
Concept and Applications**

***Sorghum is the most
important cereal crop grown***

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***in the semi-arid tropics
(SAT) of Africa, Asia,
Australia and Americas for
food, feed, fodder and fuel.
It is the fifth most important
cereal crop globally after
rice, wheat, maize and***

***barley, and plays a major
role in global food security.***

***Sorghum is consumed in
different forms for various
end-uses. Its grain is mostly
used directly for food
purposes. After the release***

of the proceedings of two international symposia in the form of books “Sorghum in Seventies” and “Sorghum in Eighties”, global sorghum research and development have not been documented

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***at one place. Of course, few
books on sorghum have been
released that focus on
specific issues/research
areas, but comprehensive
review of all aspects of
recent development in***

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***different areas of sorghum
science has not been
compiled in the form a
single book. This book is
intended to fill in a void to
bridge the gap by
documenting all aspects of***

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***recent research and
development in sorghum
encompassing all the
progress made, milestones
achieved across globe in
genetic diversity assessment,
crop improvement and***

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***production, strategies for
high yield, biotic and abiotic
stress resistance, grain and
stover quality aspects,
storage, nutrition, health
and industrial applications,
biotechnological***

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***applications to increase
production, including
regional and global policy
perspectives and
developmental needs. This
book will be an institutional
effort to compile all the***

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***latest information generated
in research and development
in sorghum across the globe
at one place.***

***Biomass is a widely available
resource, that can be
characterized by its high***

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production potential.

*Enabling the production of
different types of biofuels,
biomass can be used in both
spark-ignition and
compression-ignition
engines. There is extensive*

***knowledge of the biofuel
production process, and
technologies enabling the
production of biofuels with
high caloric value and better
physicochemical properties
are developed. The biggest***

***barrier in the development
of a biofuels market is not
the lack of know-how, but
economic and political
aspects. Biomass for
Biofuels presents
technological aspects of***

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***biomass conversion into
advanced biofuels. Also
discussed are the influence
of growing biofuels markets
on the natural environment
and social relations as well
as economic aspects of***

***acquisition of biomass and
its processing into biofuels.
In addition biomass
characteristics are
presented. A definition is
provided, and its chemical
composition and properties***

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***detailed. The focus is on
lignocellulosic biomass,
whose complex structure is a
limiting factor for biofuels
production via biological
processes. For that reason,
mechanical, chemical and***

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***physicochemical methods
that enable an increased
availability for the
microorganisms used for
biomass conversion to
biofuels are discussed.
The last few years have seen***

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***the concept of bioenergy and
biofuels come of age. Rising
oil prices have lead to more
food crops being grown for
energy as well as food. This
has created controversy by
adding to the upward***

pressure on crop commodity prices that was already being created by the increasing demand for food from an expanding population. More attention has, therefore, focussed on

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***meeting the rising demand
for bioenergy and biofuels in
more sustainable ways. A
wider range of crops is being
explored, including non-food
crops, as well as the use of
crop residues rather than***

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***grain or seed. Energy Crops
is a comprehensive
reference source which looks
at this topic from the plant
and agricultural science
perspective. It covers energy
crops that are already in use***

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***and those that are being
developed or researched.
Species that have been
cultivated by humankind for
millennia, and some that
have never been considered
as crops before, fall within***

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its coverage. The introductory chapter defines energy crops before reviewing the development and current state of the technology. It also gives an historical perspective and

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***introduces the ethical
issues. Each of the
subsequent chapters is
dedicated to a single crop
and describes the current
usage of that crop for
energy, its potential for***

future development, the economics of its use for energy production, and the research that is being undertaken to tailor it for use as an energy crop. Where appropriate, the

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***implications for food and
feed security are balanced
against the benefits in terms
of fuel security, the
impending oil supply 'peak',
the need to reduce CO2
emissions, and the***

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***implications for climate
change mitigation. Each
chapter is written by a
specialist author or authors
of international standing.
The chapters by
representatives of the plant***

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***breeding and biofuel
industries give an industrial
perspective on why energy
crops have 'come of age'.
They also describe how the
sector is expected to develop
with a wish list of crop***

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***improvements that industry
would like to see realized.***

***These include higher levels
of fermentable starch,
cellulose, fibres and oil
quality through to the
production of pure***

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***hydrocarbons. The book is
suitable for undergraduates,
postgraduates, academics,
and those working in
industry.***

***Perennial Grasses for
Bioenergy and Bioproducts***

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***Biofuel Crop Sustainability
Industrial Crops and Uses
Yield Gains in Major U.S.
Field Crops
Corn***

*The demand for plant-based
industrial raw materials has*

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increased as well as research into expanding the utility of plants for current and future uses. Plants are renewable, have limited or positive environmental impact and have the potential to yield a

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wide range of products in contrast to petroleum-based materials. Plants can be used in a variety of different industries and products including bioenergy, industrial oil and starch, fibre and dye,

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*rubber and related
compounds, insecticide and
land rehabilitation. This title
offers a comprehensive
coverage of each of these uses.
Chapters discuss.
The volume on Industrial Crop*

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Breeding will be part of the series, Handbook of Plant Breeding. This volume will focus on the emerging area of plant breeding for sustainable production of transportation fuels and bio based products

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*using the current advances in
the field. The book is
scheduled to consist of a total
number of 30 chapters divided
into four sections. The sections
will emphasize crops being
considered for different*

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*challenge areas including oil
crops for biodiesel; sugar,
starch and cellulosic crops for
biofuel; crops for bio products
and issues and future
prospects. A chapter
introducing the first three*

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sections will also be included.

*Outstanding scientists for each
crop species are proposed as
senior authors, who may invite
co-authors to contribute part
of a chapter to provide
additional expertise or*

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perspective. The proposed authors will represent various national and international institutions to get a more diverse view on the topic and somehow get a global view on the common issues that

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*researchers on industrial crops
are facing. The book will
comprise primarily of specific
issues, available germplasm,
breeding techniques, and
potential geographical areas of
production pertaining to*

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*individual crops being
considered for industrial uses.
We hope to encourage the
proposed authors of new crops
to provide an estimate of the
crop readiness for commercial
development and discuss the*

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*limitations. This book will be
will be of interest and
envisioned to serve as an
updated reference to
researchers in both academic
and industrial setting, to
students and teachers of plant*

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*breeding and to policy makers
who are looking for alternative
solutions to dependency on
imported petroleum products.
Plant breeding has played a
significant role in the
development of human*

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civilizations. Conventional plant breeding has significantly improved crop yield by genetically manipulating agronomically important traits. However, it has often been criticized for

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*ignoring indigenous
germplasm, failing to address
the needs of the marginal and
the poor farmers, and
emphasizing selection for
broad instead of local
adaptation. Participatory plant*

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*breeding (PPB) is the process
by which the producers and
other stakeholders are actively
involved in a plant-breeding
programme, with opportunities
to make decisions throughout.
The Working Group on*

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*Participatory Plant Breeding
(PPBwg) was established in
1996 under the framework of
the Consultative Group on
International Agricultural
Research (CGIAR). Research in
PPB can promote informed*

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*participation and trust in
research among consumers
and producers, and in recent
years, PPB has had a
significant impact on food
production by quickly and cost-
effectively producing improved*

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crop varieties. At the same time, there has been significant research in the area. PPB offers significant advantages that are particularly relevant to developing countries where

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large investments in plant breeding have not led to increased production, especially in the marginal environments. In addition to the economic benefits, participatory research has a

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*number of psychological,
moral, and ethical benefits,
which are the consequence of
a progressive empowerment of
the farming communities. PPB
can empower groups such as
women or less well-off farmers*

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*that are traditionally left out of
the development process. This
book explores the potential of
PPB in the coming decades.
The topic is more relevant
since international breeding
efforts for major crops are*

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*aimed at decentralizing local
breeding methods to better
incorporate the perspective of
end users into the varietal
development process. The first
book incorporating the
upcoming research on this*

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novel breeding approach, it reviews the important tools and applications of PPB in an easy-to-read, succinct format, with illustrations to clarify these complex topics. It provides readers with a basic

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idea of participatory plant breeding as well as advances in the field and insights into the future to facilitate the successful integration of farmers into breeding programmes. This book is a

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valuable reference resource

*for agriculturists, agricultural
advisers, policy makers, NGOs,
post-doctoral students and
scientists in agriculture,
horticulture, forestry and
botany.*

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Forages, Volume 2
Energy Crops
Advances in Plant Breeding
Strategies: Industrial and Food
Crops
Wild Crop Relatives: Genomic
and Breeding Resources

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Plants and BioEnergy

*Providing comprehensive coverage on
biofuel crop production and the
technological, environmental and
resource issues associated with a
sustainable biofuel industry, this book
is ideal for researchers and industry*

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personnel. Beginning with an introduction to biofuels and the challenges they face, the book then includes detailed coverage on crops of current importance or with high future prospects, including sections on algae, sugar crops and grass, oil

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and forestry species. The chapters focus on the genetics, breeding, cultivation, harvesting and handling of each crop.

A country's vision for developing renewable and sustainable energy resources is typically propelled by

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three important drivers – security, cost, and environmental impact. The U.S. currently accounts for a quarter of the world's total oil consumption, with domestic demands necessitating – at an ever growing cost – a net import of more than 50% of the oil used in

this country. At the same time, Brazil, because of its forward thinking on energy strategy, is today energy independent. As emerging economies around the world increase their petroleum use by large margins and as large fractions of that new

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*consumption are necessarily supplied
from unstable parts of the world, the
inevitable repercussions on petroleum-
driven economies will continue to
escalate. In addition, there is an
unequivocal imperative to take
immediate and aggressive measures to*

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*reduce net greenhouse gas emissions
by decreasing fossil fuel consumption
and increasing our use of carbon-
neutral or carbon-negative fuels as
well as improving efficiency of fuel
use. Economic growth and
development worldwide depend*

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*increasingly on secure supplies of
reliable, affordable, clean energy.*

*Together with its counterpart
societies, was convened the First Pan-
American Congress on Plants and
BioEnergy, which was held in June,
2008, in Mérida, Mexico. Sponsored*

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by the American Society of Plant Biologists, this congress was designed to initiate Pan-American research collaborations in energy biosciences. At that congress, the organizational committee committed themselves to continue the meeting biennially,

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*resulting in the 2nd Pan-American
Congress on Plants and BioEnergy to
be held with the endorsement of
ASPB, July 6-10, 2010, in São Paulo,
Brazil. Whereas the 1st congress
covered a broad range of topics that
bioenergy impacted, the second*

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*congress will focus more on the
advances in plant biology: the genetic
improvement of energy crop plants,
their fit into regional environments,
and the development of a sustainable
energy agriculture.*

BIOPROSPECTING OF PLANT

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BIODIVERSITY FOR INDUSTRIAL

***MOLECULES A comprehensive
collection of recent translational
research on bioresource utilization
and ecological sustainability***

***Bioprospecting of Plant Biodiversity
for Industrial Molecules provides an***

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*up-to-date overview of the ongoing
search for biodiverse organic
compounds for use in
pharmaceuticals, bioceuticals,
agriculture, and other commercial
applications. Bringing together work
from a panel of international*

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contributors, this comprehensive monograph covers natural compounds of plants, endophyte enzymes and their applications in industry, plant bioprospecting in cosmetics, marine bioprospecting of seaweeds, and more. Providing global

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*perspectives on bioprospecting of
plant biodiversity, the authors present
research on enzymes, mineral micro-
nutrients, biopesticides, algal biomass,
and other bioactive molecules. In-
depth chapters assess the health
impacts and ecological sustainability*

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of the various biomolecules and identify existing and possible applications ranging from ecological restoration to production of essential oils and cosmetics. Other topics include, bio-energy crops as alternative fuel resources, the role of

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*plants in phytoremediation of
industrial waste, and the industrial
applications of endophyte enzymes.
This comprehensive resource:
Includes a thorough introduction to
plant biodiversity and bioprospecting
Will further the knowledge of*

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*application of different plants and
improve research investigation
techniques. Summarizes novel
approaches for researchers in food
science, microbiology, biochemistry,
and biotechnology Bioprospecting of
Plant Biodiversity for Industrial*

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Molecules is an indispensable compendium of biological research for scientists, researchers, graduate and postgraduate students, and academics in the areas of microbiology, food biotechnology, industrial microbiology, plant

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*biotechnology, and microbial
biotechnology.*

*Compendium of Bioenergy Plants
Cereals*

*Agricultural Production, Bioenergy
and Ethanol*

Genetic Improvement of Bioenergy

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Crops
Plantation and Ornamental Crops

Biofuel Crop Sustainability brings together the basic principles of agricultural sustainability and special stipulations for biofuels, from the economic and ecological opportunities and challenges of sustainable biofuel crop production to the

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unique characteristics of particular crops which make them ideal for biofuel applications. This book will be a valuable resource for researchers and professionals involved in biofuels development and production as well as agriculture industry personnel. Chapters focus the broad principles of resource management for

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ecological, environmental and societal welfare, the sustainability issues pertaining to several broad categories of biofuel crops , as well as the economics and profitability of biofuels on both a local and international scale. Coverage includes topics such as utilizing waste water for field crop irrigation and algae production,

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reliability of feedstock supply, marginal lands, and identifying crops with traits of significance for survival and growth on low fertility soils. The development of production practices with low external inputs of fertilizer, irrigation, and pesticides is also covered. Biofuel Crop Sustainability will be a valuable, up-to-

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date reference for all those involved in the rapidly expanding biofuels industry and sustainable agriculture research fields.

Plant Breeding Reviews presents state-of-the-art reviews on plant genetics and the breeding of all types of crops by both traditional means and molecular methods.

Many of the crops widely grown today

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stem from a very narrow genetic base; understanding and preserving crop genetic resources is vital to the security of food systems worldwide. The emphasis of the series is on methodology, a fundamental understanding of crop genetics, and applications to major crops.

Hemp as a Modern U.S. Commodity Crop

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provides an overview of industrial hemp as an agronomic crop in western cropping systems. Emphasis is given to the long history of hemp, mostly in the United States, and to current production issues pertinent in the US as well as Europe and Canada. There are many questions still to be answered – starting with those to be

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addressed by the most basic classical plant breeding techniques and continuing to the most modern analytical techniques of plant tissues and genetics.

Sugarcane

Production, Physiology and Genetics

Bioenergy

Production, Uses, Sustainability and

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Markets for Giant Reed, Miscanthus,
Switchgrass, Reed Canary Grass and
Bamboo

Miscanthus for Bioenergy Production

***Ethanol as an alternative fuel
is receiving a lot of attention
because it addresses concerns***

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***related to dwindling oil
supplies, energy
independence, and climate
change. The majority of the
ethanol in the US is produced
from corn starch. With the US
Department of Energy's target***

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that 30% of the fuel in the US is produced from renewable resources by 2030, the anticipated demand for corn starch will quickly exceed the current production of corn. This, plus the concern that

less grain will become available for food and feed purposes, necessitates the use of other feedstocks for the production of ethanol. For the very same reasons, there is increasing research activity

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and growing interest in many other biomass crops. Genetic Improvement of Bio-Energy Crops focuses on the production of ethanol from lignocellulosic biomass, which includes corn stover, biomass

from dedicated annual and perennial energy crops, and trees as well as a number of important biomass crops. The biomass is typically pretreated through thermochemical processing to make it more

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***amenable to hydrolysis with
cellulolytic enzymes. The
enzymatic hydrolysis yields
monomeric sugars that can be
fermented to ethanol by micro-
organisms. While much
emphasis has been placed on***

the optimization of thermo-chemical pretreatment processes, production of more efficient hydrolytic enzymes, and the development of robust microbial strains, relatively little effort has been dedicated

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**to the improvement of the
biomass itself.**

**Wild crop plants play a
significant part in the
elucidation and improvement
of the genomes of their
cultivated counterparts. The**

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***10-volume Wild Crop
Relatives: Genomic and
Breeding Resources offers a
comprehensive examination of
wild crops as a gold mine for
breeding. It details the status,
origin, distribution,***

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***morphology, cytology, genetic
diversity and available genetic
and genomic resources of
numerous wild crop relatives,
as well as of their evolution
and phylogenetic relationship.
Further topics include their***

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***role as model plants, genetic
erosion and conservation
efforts, and their
domestication for the
purposes of bioenergy,
phytomedicines,
nutraceuticals and***

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**phytoremediation. Wild Crop
Relatives: Genomic and
Breeding Resources comprises
10 volumes on cereals, millets
and grasses, oilseeds, legume
crops and forages, vegetables,
temperate fruits, tropical and**

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**subtropical fruits, industrial
crops, plantation and
ornamental crops, and forest
trees. It contains 126 chapters
contributed by 380 authors
from 39 countries.
This completely revised**

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second edition includes new information on biomass in relation to climate change, new coverage of vital issues including the "food versus fuel" debate, and essential new information on "second

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**generation" fuels and
advances in conversion
techniques. The book begins
with a guide to biomass
accumulation, harvesting,
transportation and storage, as
well as conversion**

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***technologies for biofuels. This
is followed by an examination
of the environmental impact
and economic and social
dimensions, including
prospects for renewable
energy. The book then goes on***

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***to cover all the main potential
energy crops.***

Cash Crops

***Crop Production, Utilization
and Climate Change Mitigation
The Science of Grassland
Agriculture***

***Plant Breeding Reviews
Socioeconomic Implications
and Policy Options for Rural
America***

**Miscanthus has been
enthusiastically promoted as a
second generation biomass crop,**

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**and this book provides a
comprehensive review of this
knowledge. Miscanthus, also
known as elephant grass, is a high
yielding grass crop that grows
over three metres tall, resembles
bamboo and produces a crop**

every year without the need for replanting or fertiliser application . The rapid growth, low mineral content, and high biomass yield of Miscanthus increasingly make it a favourite choice as a biofuel, outperforming switchgrass and

**other alternatives. There is over
20 years of research evidence to
support its promotion as a second
generation biomass crop. The
author reviews many field
measurements of yields as well as
the physiology of the crop, and**

why it is so productive while at the same time requiring low inputs to grow it. It also shows how as a key biofuel crop it can contribute to mitigating climate change and how uptake of the adoption of Miscanthus production can be

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**promoted, particularly in Europe
and North America. The book will
be key reading for students taking
courses in the areas of
Environmental Science and
Engineering, Climate Change
Impacts, Renewable Energy and**

Energy Conservation. It will also be of interest to researchers of second generation biomass crops, and policy developers working in biofuel production and utilization. Rapid changes in energy production and consumption are

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having major socioeconomic implications for the communities of rural America. Technological developments in horizontal drilling, hydraulic fracturing (fracking) nuclear energy, biofuels, wind and solar energy

**have significantly increased
domestic energy production and
the production of energy from
renewable sources has encouraged
energy efficiency. Yet, severe
concerns persist and policy
decisions on energy issues will**

**have profound implications for all
Americans and rural communities
where consequences are
experienced most directly. Thus,
the time is appropriate for a
careful exploration of the
socioeconomic implications of our**

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**energy future. The purpose of this
book is to present timely and
scientifically sound information
on energy policy, socioeconomic
aspects of energy production and
consumption with a focus on rural
areas. The book presents the latest**

research by top scholars with the goal of clarifying options and providing the basis for informed policy decisions.

Discusses the role of endophytes in food security, forestry and health. It outlines their general

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**biology, spanning theory to
practice.**

Biofuel Crops

Vegetables

**Global Impact on Renewable
Energy, Production Agriculture,
and Technological Advancements**

Page 142/165

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Temperate Fruits

Endophytes for a Growing World

This book examines the development of innovative modern methodologies towards augmenting conventional plant breeding, in

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individual crops, for the production of new crop varieties under the increasingly limiting environmental and cultivation factors to achieve sustainable agricultural production,

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enhanced food security, in addition to providing raw materials for innovative industrial products and pharmaceuticals. This is Vol 6, subtitled Industrial and Food Crops, which consists of two parts. Included in

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Part I are 11 industrial plant species utilized as sources of raw materials for the production of industrial products including pulp and wood crops (acacia), fiber (cotton, jute and ramie), rubber (guayule and rubber

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tree), oil (jojoba and flax), biofuels and pharmaceutical (agave) and sugar source (sugarcane). Part II covers 7 food plants selected for their utilization in food industries for the

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production of chocolate
(cacao), cooking oil (oil
palm, safflower, sesame and
sunflower) and natural
flavors and aroma (saffron
and vanilla). This volume is
contributed by 60
internationally reputable

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scientists from 14 countries. Each chapter comprehensively reviews the modern literature on the subject and reflects the authors own experience. The demand for plant-based industrial raw materials has

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increased as well as
research into expanding the
utility of plants for
current and future uses.
Plants are renewable, have
limited or positive
environmental impact and
have the potential to yield

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a wide range of products in contrast to petroleum-based materials. Plants can be used in a variety of different industries and products including bioenergy, industrial oil and starch, fibre and dye,

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rubber and related
compounds, insecticide and
land rehabilitation. This
title offers a comprehensive
coverage of each of these
uses. Chapters discuss the
identification of plant
species with desired traits,

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their cultivation to obtain
the needed raw materials,
methods utilized in
producing different finished
products, current and future
research in crop production
and processing and the
present state and future

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prospects for the industry.
Providing the first
systematic review of
industrial crops and their
uses, this book will be an
important resource for
students and researchers of
crop science and

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agricultural policy makers.

Sugarcane: Agricultural
Production, Bioenergy and
Ethanol explores this vital
source for "green" biofuel
from the breeding and care
of the plant all the way
through to its effective and

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efficient transformation into bioenergy. The book explores sugarcane's 40 year history as a fuel for cars, along with its impressive leaps in production and productivity that have created a robust global

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market. In addition, new prospects for the future are discussed as promising applications in agroenergy, whether for biofuels or bioelectricity, or for bagasse pellets as an alternative to firewood for

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home heating purposes are explored. Experts from around the world address these topics in this timely book as global warming continues to represent a major concern for both crop and green energy production.

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Focuses on sugarcane
Breeding production and processing
for bioenergy Provides a
holistic approach to
sugarcane's potential - from
the successful growth and
harvest of the plant to the
end-use product Presents

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important information for
"green energy" options

Industrial Crops

Oilseeds

A Complete Reference to
Species, Development and
Applications

Bioprospecting of Plant

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Biodiversity for Industrial
Molecules

Sorghum in the 21st Century:
Food - Fodder - Feed - Fuel
for a Rapidly Changing World

***This comprehensive volume
developed under the guidance***

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***of guest editors Prakash
Lakshmanan and David
Songstad features broad
coverage of the topic of
biofuels and its significance to
the economy and to
agriculture. These chapters***

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***were first published by In Vitro
Cellular and Developmental
Biology In Vitro Plant in 2009
and consists of 15 chapters
from experts who are
recognized both for their
scientific accomplishments***

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***and global perspective in their
assigned topics.***

***Industrial Hemp as a Modern
Commodity Crop, 2019
Genetic Diversity, Erosion,
Conservation and Utilization
Legume Crops and Forages***

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***Biomass for Biofuels
Forest Trees***
Breeding