

Prospects And Challenges Of Agricultural Mechanization In

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National extension policy and state-level implementation: The case of Cross River State, Nigeria - Ogunniyi, Adebayo 2020-07-15
Agricultural extension plays a number of important roles in the growth and transformation of the agricultural sector, including improving agricultural productivity and food security and reducing hunger and malnutrition. Extension programs and interventions that will achieve significant impacts in terms of behavior and practice changes, as well as agricultural productivity increase, will succeed as a result of suitable policy formulation and an effective implementation process. Ultimately, agricultural extension reform requires policy vision and determination and a state-level strategy that can be implemented. This paper documents issues, challenges, constraints, and potential solutions and opportunities in implementing the national extension policy (NEP) at the state level in Nigeria, using Cross River State as a case study. We use both quantitative and qualitative methods, in the form of descriptive statistical analysis and an inclusive consultative process with a focus on the multistakeholder participatory model, respectively. The descriptive results show that, generally, there is low access to agricultural extension service across commodities and their respective value chains in Cross River State. We also document interesting insights from the

multistakeholder consultative process. We find that collaboration and partnership between private and public extension service providers is key to developing a sustainable extension, advisory, and support service in Cross River State. We also found that coordination and standardization of the activities of the extension service providers is a way to avoid pollution of the agricultural innovation system in the state. Funding of extension services is another important factor affecting the effective implementation of the NEP. We therefore suggest that agricultural extension services can be funded through decentralization, involvement of farmers' associations and nongovernmental organizations, contracting out of extension services, public-private partnerships, privatization, and embedding advisory services in other types of contracts. The results of this study further validate our approach of using multistakeholder engagement at the state level as an effective and insightful method of implementing the NEP at the state level.

OECD-FAO Agricultural Outlook 2018-2027 - OECD 2018-07-03
The fourteenth joint edition of the OECD-FAO Agricultural Outlook provides market projections for major agricultural commodities, biofuels and fish, as well as a special feature on the prospects and challenges of agriculture and fisheries in the Middle East and North Africa.

OECD-FAO Agricultural Outlook 2021-2030 - Food and Agriculture Organization of the United Nations 2021-07-05

The Agricultural Outlook 2021-2030 is a collaborative effort of the Organisation for Economic Co-operation and Development (OECD) and the Food and Agriculture Organization (FAO) of the United Nations. It brings together the commodity, policy and country expertise of both organisations as well as input from collaborating member countries to provide an annual assessment of the prospects for the coming decade of national, regional and global agricultural commodity markets. The publication consists of 11 Chapters; Chapter 1 covers agricultural and food markets; Chapter 2 provides regional outlooks and the remaining chapters are dedicated to individual commodities.

Effects of agricultural mechanization on economies of scope in crop production in Nigeria - Takeshima, Hiroyuki 2018-09-06

Agricultural mechanization has often been characterized by scale-effects and increased specialization. Such characterizations, however, fail to explain how mechanization may grow in Africa where production environments are more heterogeneous and diversification of production may help in mitigating risks from increasingly uncertain climatic conditions. Using panel data from farm households and crop-specific production costs in Nigeria, we estimate how the adoption of animal traction or tractors affects the economies of scope (EOS) between rice, non-rice grains, legume/seed crops, and other crops, which are the crop groups that are most widely grown with animal traction or tractors in Nigeria. The results indicate that the adoption of these mechanization technologies is associated with lower EOS between non-rice grains, legume/seed crops, and other crops, but greater EOS between rice and other crops. An increase in EOS for rice is indicated in both primal and dual analytical approaches. Mechanical technologies may raise EOS between crops that are grown in more heterogeneous environments, even though it may lower EOS between crops that are grown in relatively similar environments. To the best of our knowledge, this is the first paper that shows the effects of mechanical technologies on EOS in agriculture in developing countries.

Modernizing Agriculture - Ya'ityopyā śenaḥeywat balamuyāwoč māhbār. Annual Conference 2004

Workshop on Energy and Agriculture in Developing Countries - 1981

Handbook on the Human Impact of Agriculture - Harvey S. James, Jr. 2021-06-25

This timely Handbook synthesizes and analyzes key issues and concerns relating to the impact of agriculture on both farmers and non-farmers. With a unique focus on humans rather than animals or the environment, the book is interdisciplinary and international in scope, with contributions from sociologists, economists, anthropologists and geographers providing case studies and examples from all six populated continents.

Mechanization for Rural Development - Josef Kienzle 2013

This publication gives a wide-ranging perspective on the present state of mechanization in the developing world, and, as such, constitutes a solid platform on which to build strategies for a sustainable future. Farm mechanization forms an integral plank in the implementation of sustainable crop production intensification methodologies and sustainable intensification necessarily means that the protection of natural resources and the production of ecosystem services go hand-in-hand with intensified production practices. This requires specific mechanization measures to allow crops to be established with minimum soil disturbance, to allow the soil to be protected under organic cover for as long as possible, and to establish crop rotations and associations to feed the soil and to exploit crop nutrients from various soil horizons. This work is the starting point to help the reader understand the complexities and requirements of the task ahead.

Climate Resilient Agriculture - Arun Shanker 2018-03-14

The changing climatic scenario has affected crop production in the adverse ways, and the impact of it on agriculture is now emerging as a major priority among crop science researchers. Agriculture in this changing climatic scenario faces multiple diverse challenges due to a

wide array of demands. Climate-resilient agriculture is the need of the hour in many parts of the world. Understanding the adverse effects of climatic change on crop growth and development and developing strategies to counter these effects are of paramount importance for a sustainable climate-resilient agriculture. This multiauthored edited book brings out sound climate-resilient agriculture strategies that have a strong basic research foundation. We have attempted to bridge information from various diverse agricultural disciplines, such as soil science, agronomy, plant breeding, and plant protection, which can be used to evolve a need-based technology to combat the climatic change in agriculture.

Conservation Agriculture - Ram A. Jat 2013-12-13

The book covers the spread of conservation agriculture (CA) to regions including Brazil, Argentina, Canada, Australia, Europe and emerging CA destinations in Asia and Africa. Topics covered include the various components of CA, and how their individual and combined implementation influence productivity, soil health and environmental quality under diverse edaphic and climatic conditions. The book will be useful to teachers, researchers, extensionists, farmers, and students interested in environmental quality.

Chile: Doing Business in Chile for Everyone Guide: Practical Information and Contacts for Success - IBP, Inc. 2017-11-22

Chile: Doing Business in Chile for Everyone Guide: Practical Information and Contacts for Success

Sago Palm - Hiroshi Ehara 2018-01-15

This open access book addresses a wide variety of events and technologies concerning the sago palm, ranging from its botanical characteristics, culture and use to social conditions in the places where it is grown, in order to provide a record of research findings and to benefit society. It discusses various subjects, including the sago palm and related species; differentiation of species of starch-producing palm; habitat, morphological, physiological and growth characteristics; culture and management; productivity of carbon dioxide; starch extraction and manufacture; characteristics and utilization of starch; and cultural

anthropological and folkloristic aspects. Problems such as food shortages due to increasing populations, global warming and climate change, and decreasing reserves of oil and other underground resources, have become more pressing in recent years. In the context of these problems, the book examines the role of the sago palm in sustainable food production, in the manufacture of other foodstuffs, as a raw material for ethanol and in the manufacture of biodegradable plastics. In addition to academics, this book will be useful to researchers and government officials working for international agencies, national governments, municipalities, and other research organizations; technicians, researchers, managers, entrepreneurs, and others working in industries such as agriculture, plant production, food production, manufacturing, chemical engineering, energy production, and distribution.

An evolving paradigm of agricultural mechanization development: How much can Africa learn from Asia? - Diao, Xinshen, ed.

2020-12-07

Agricultural mechanization in Africa south of the Sahara — especially for small farms and businesses — requires a new paradigm to meet the needs of the continent's evolving farming systems. Can Asia, with its recent success in adopting mechanization, offer a model for Africa? An Evolving Paradigm of Agricultural Mechanization Development analyzes the experiences of eight Asian and five African countries. The authors explore crucial government roles in boosting and supporting mechanization, from import policies to promotion policies to public good policies. Potential approaches presented to facilitating mechanization in Africa include prioritizing market-led hiring services, eliminating distortions, and developing appropriate technologies for the African context. The role of agricultural mechanization within overall agricultural and rural transformation strategies in Africa is also discussed. The book's recommendations and insights should be useful to national policymakers and the development community, who can adapt this knowledge to local contexts and use it as a foundation for further research.

[Agricultural Transformation in Nepal](#) - Ganesh Thapa 2019-11-25

This book addresses some key strategic questions related to agriculture in the context of major contemporary developments and emerging challenges in Nepal such as the changing role of agriculture with economic growth, structural transformation in reducing poverty, improving nutritional outcomes, and addressing the challenges of climate change. The book also suggests policy measures to improve the delivery of critical inputs and services and ensure the participation of marginal and smallholders in high-value chains. Further, it discusses how the new federal system and governance structure will affect the delivery of agricultural technology and services. The book is divided into five parts. Part I discusses macro-issues in the agriculture sector, while Part II focuses on agricultural productivity growth and its main drivers. The third part explores diversification in the agricultural and non-agricultural sectors by farmers and other rural people for livelihood improvement, while the fourth part deals with agricultural trade and marketing issues, highlighting policy implications and recommendations in the areas of immediate focus and further research. Lastly, Part V addresses institutions and governance issues, which are vital for agricultural development. In the final chapter, the editors summarize and synthesize the book's main findings and develop a policy agenda for addressing the many challenges faced by the agriculture sector in Nepal, so as to make it more productive, competitive, sustainable, and inclusive. The book offers a rich source of analytical information on various aspects of agricultural development in Nepal and will be of immense value to policymakers, development partners, civil society, students, and those interested in the economic and agricultural development of not only Nepal, but also other developing countries.

Advances in Agricultural Machinery and Technologies - Guangnan Chen 2018-03-05

The agricultural industry is dealing with enormous challenges across the globe, including the limited availability of arable lands and fresh water, as well as the effect of climate change. Machinery plays a crucial role in agriculture and farming systems, in order to feed the world's growing population. In the last decade, we have witnessed major advances in

agricultural machinery and technologies, particularly as manufacturers and researchers develop and apply various novel ways of automation as well as the data and information gathering and analyzing capabilities of their machinery. This book presents the state-of-the-art information on the important innovations in the agricultural and horticultural industry. It reviews and presents different novel technologies and implementation of these technologies to optimize farming processes and food production. There are four sections, each addressing a specific area of development. Section I discusses the recent development of farm machinery and technology. Section II focuses on water and irrigation engineering. Section III covers harvesting and post-harvest technology. Section IV describes computer modelling and simulation. Each section highlights current industry trends and latest research progress. This book is ideal for those working in or are associated with the fields of agriculture, agri-food chain and technology development and promotion.

Engineering Principles of Agricultural Machines - Ajit K. Srivastava 2006

OECD-FAO Agricultural Outlook 2018-2027 - Food and Agriculture Organization of the United Nations 2018-11-23

The Agricultural Outlook 2018-2027 is a collaborative effort of the OECD and FAO prepared with input from the experts of their member governments and from specialist commodity organisations. It provides a consensus assessment of the medium term (ten year) prospects for agricultural and fish commodity markets at national, regional and global levels. This year's edition contains a special focus on the agriculture and fish sectors of the Middle East and North Africa (MENA) region.

Deep Learning for Sustainable Agriculture - Ramesh Chandra Poonia 2022-01-09

Deep Learning for Sustainable Agriculture reviews the fundamental concepts of gathering, processing and analyzing different deep learning models, along with a review of methods that can be used in this direction. The book also covers novel deep learning techniques for effective agriculture data management with standards laid by

international organizations in related fields. The book is centered around evolving novel intelligent/deep learning models to solve the mitigation of agriculture. There are several deep learning models known that are used for weather forecasting, plant disease detection, underground water detection, quality of soil, and many more issues in agriculture.

Introduces the novel deep learning models needed to address sustainable solutions for issues related to agriculture Provides reviews on the latest intelligent technologies and algorithms related to the state-of-the-art methodologies of monitoring and mitigation of sustainable agriculture Offers perspectives for the design, development and commissioning of intelligent applications

Farm Power and Mechanization for Small Farms in Sub-Saharan Africa - B. G. Sims 2006

Many previous publications on farm mechanization, draught animal power, hand tool technology, etc. have tended to be narrowly focused. The topic of farm power and mechanization also tended to be separated from the actual process of growing crops. This manual looks at putting the different sources of farm power, mechanization, machines, equipment and tools in a much broader context. Farm power requirements need to be viewed with reference to rural livelihoods and to farming systems as well as to the critical area of labour saving in HIV/AIDS-hit populations. No one particular type of technology is advocated.

Ghana's Economic and Agricultural Transformation - Xinshen Diao 2019
Using Ghana as a case study, this work integrates economic and political analysis to explore the challenges and opportunities of Africa's growth and transformation.

The Social Consequences And Challenges Of New Agricultural Technologies - Gigi M Berardi 2019-07-11

Although formal social impact assessment of changing technologies in U.S. agriculture is still in its infancy, scholars have been documenting the effects of new technology throughout the twentieth century. In this collection, Professors Berardi and Geisler bring together historically relevant research and a carefully chosen cross section of contemporary

work. Their review of the literature is followed by an evaluation of the effects of mechanization on labor and production, written in 1904, which provides a backdrop for papers from the 1940s and 1950s examining the mechanization of agriculture in the South, in the Midwest, and in rural areas in general. Subsequent chapters offer present-day insights on such topics as the socioeconomic consequences of automated vegetable and tobacco harvesting, center-pivot irrigation, and organic and no-till cultivation. The authors also look at compensation and adjustment programs for displaced labor, the relationship between technology and agribusiness growth, and the effectiveness of university programs that prepare students to perform social impact assessments in agriculture. The edited proceedings of a spirited roundtable discussion on new directions for the study of the social impacts of farm technology and the political economy of agriculture provide the thought-provoking conclusion to this overview of the field.

Addressing the Challenges Facing Agricultural Mechanization Input Supply and Farm Product Processing - B. G. Sims 2007

FAO is a global knowledge broker for the agri-food industry, including technologies for production and processing. In particular, the Agro-Industries Programme of FAO is increasingly tending to focus on appropriate input supply, innovation and value chain development. Improvements in these areas have the potential to sustain and improve livelihoods and well-being at whatever scale and in whatever region of the world. Within the World Congress on "Agricultural Engineering for a Better World," as a preparation for the challenges of the twenty-first century, FAO conducted two workshops. The first targeted the subject of "challenges for agricultural mechanization in sub-Saharan Africa," and the second focused on "using technology to add value and increase quality." This report contains the results of the Congress, and encourages both readers and decision-makers to consider the important role of engineering technologies for development and, indeed, for a better world. (Also available in French and Spanish)

Conservation Agriculture in Africa - Saidi Mkomwa 2022-01-11

Tillage agriculture has led to widespread soil and ecosystem degradation

globally, and more particularly in the developing regions. This is especially so in Africa where traditional agricultural practices have become unsustainable due to severe exploitation of natural resources with negative impacts on the environment and food system. In addition, agricultural land use in Africa today faces major challenges including increased costs, climate change and a need to transform to more sustainable production intensification systems. Conservation Agriculture has emerged as a major alternative sustainable climate smart agriculture approach in Africa and has spread to many African countries in the past decade as more development and research, including in sustainable mechanization, has enabled its extension and uptake. It is key to transforming Africa's agriculture and food system given its ability to restore soil health, biodiversity and productivity of millions of smallholder farms as well as larger-scale farms. This book is aimed at all agricultural stakeholders in the public, private and civil sectors in Africa engaged in supporting the transformation of conventional tillage agriculture to Conservation Agriculture. The book will be of interest to: researchers, academics, students, development stakeholders, public and private sector investors and policy makers as well as institutional libraries across the world.

Challenges and Prospects of Agricultural Production and Productivity - Urgessa Tilahun 2014-08-25

Seminar paper from the year 2013 in the subject Agrarian Studies, grade: A, Wollega University (Haro Sabu Agricultural Research Center), language: English, abstract: Agricultural production in Ethiopia is characterized by subsistence orientation, low productivity, low level of technology and inputs, lack of infrastructures and market institutions, and extremely vulnerable to rainfall variability. Productivity performance in the agriculture sector is critical to improvement in overall economic well-being in Ethiopia. Low availability of improved or hybrid seed, lack of seed multiplication capacity, low profitability and efficiency of fertilizer, lack of irrigation development, lack of transport infrastructure, inaccessibility of market and prevalence of land degradation, unfertile soil, overgrazing, deforestation and desertification are among the

constraints to agricultural productivity during last period. However, in 2011 the sector grew by 9% driven by cereal production which reached a record high of 19.10 million tons in Ethiopia.

Agriculture in the Middle East - Adel Salman 1990

Produced by the Professors World Peace Academy, this collection of essays by Middle Eastern scholars and experts examines the problems of a vast, largely arid region where the demand for food far outstrips the productive capacity of the land. The essays are grouped within five sections: water resources, agricultural production, the food production-consumption gap, problems confronting agricultural production, and prospects and potentials for agriculture and food production. Acidic paper. Annotation copyrighted by Book News, Inc., Portland, OR

Farm mechanization in India: Economic issues, perspective and opportunities - Ranjith Kumar P.S

Mechanization is a process of replacing biological sources of energy involving animal and human labour to mechanized sources of energy. Farm mechanization indicates the use of machines for conducting agricultural operations replacing the traditional methods which involve human and animal labour. In the period 2004-05 to 2011-12, robust growth in the secondary and tertiary sectors led to significant job creation in agriculture sector. Tractors and power tillers have been driving the farm mechanization in India. Tractor sales have grown at a CAGR of 9.0 % in Financial Year (FY) 05-15 to around 5.5 lakh tractors in FY15 (around 2.3 lakh in FY2005) whereas sales of power tillers have grown at a CAGR of 10.6% in FY2005 to 2015 to 48,000 power tillers in FY2015 (17,841 in FY2005). Farm mechanisation is a fuel to agriculture production now days. As several studies indicate the mechanisation not only reduced the drudgery of manual labour and it enables the efficient and judicious use of resources. The increased agricultural production and productivity over the decades is coupled with the farm power availability. High labour intensive crops have turned to low labour intensive crops by replacing the mechanical power, which also reduced the cost of production and improved quality of produce led to increased farmers income share.

Fundamentals of Tractor Design - Karl Theodor Renius 2019-10-28

This textbook offers a comprehensive review of tractor design fundamentals. Discussing more than hundred problems and including about six hundred international references, it offers a unique resource to advanced undergraduate and graduate students, researchers and also practical engineers, managers, test engineers, consultants and even old-timer fans. Tractors are the most important pieces of agricultural mechanization, hence a key factor of feeding the world. In order to address the educational needs of both less and more developed countries, the author included fundamentals of simple but proved designs for tractors with moderate technical levels, along with extensive information concerning modern, premium tractors. The broad technical content has been structured according to five technology levels, addressing all components. Relevant ISO standards are considered in all chapters. The book covers historical highlights, tractor project management (including cost management), traction mechanics, tires (including inflation control), belt ground drives, and ride dynamics. Further topics are: chassis design, diesel engines (with emission limits and installation instructions), all important types of transmissions, topics in machine element design, and human factors (health, safety, comfort). Moreover, the content covers tractor-implement management systems, in particular ISOBUS automation and hydraulic systems. Cumulative damage fundamentals and tractor load spectra are described and implemented for dimensioning and design verification. Fundamentals of energy efficiency are discussed for single tractor components and solutions to reduce the tractor CO₂ footprint are suggested.

Maize productivity in Ghana - Ragasa, Catherine 2014-09-08

Maize is an important food crop in Ghana, accounting for more than 50 percent of the country's total cereal production. The Ghana Grains Development Project (1979-1997) and the Food Crops Development Project (2000-2008) made major investments to improve maize yield. Despite these efforts, the average maize yield in Ghana remains one of the lowest in the world, much lower than the average for Africa south of the Sahara.

Principles of Farm Machinery - Roy Bainer 2010-11

XIV International Scientific Conference "INTERAGROMASH 2021" - Alexey Beskopylny 2021-12-01

This book contains original and fundamental research papers in the following areas: engineering technologies for precision agriculture, agricultural systems management and digitalization in agriculture, logistics in agriculture, and other topics. Selected materials of the largest regional scientific event—INTERAGROMASH 2021 conference—included in this book present the results of the latest research in the areas of precision agriculture and agricultural machinery industry. The book is aimed for professionals and practitioners, for researchers, scholars, and producers. The materials presented here are used in the educational process at specific agricultural universities or during vocational training at enterprises and become an indispensable helper to farm managers in making the best agronomic decisions. The book is also useful for representatives of regional authorities, as it gives an idea of existing high-tech solutions for agriculture.

Prospects for Agricultural Development in Sub-Saharan Africa - Montague Yudelman 1987

Sustainable Agricultural Mechanization: A Framework for Africa - Food and Agriculture Organization of the United Nations 2019-03-13

This framework presents ten interrelated principles/elements to guide Sustainable Agricultural Mechanization in Africa (SAMA). Further, it presents the technical issues to be considered under SAMA and the options to be analysed at the country and sub regional levels. The ten key elements required in a framework for SAMA are as follows: The analysis in the framework calls for a specific approach, involving learning from other parts of the world where significant transformation of the agricultural mechanization sector has already occurred within a three-to-four decade time frame, and developing policies and programmes to realize Africa's aspirations of Zero Hunger by 2025. This approach entails the identification and prioritization of relevant and interrelated

elements to help countries develop strategies and practical development plans that create synergies in line with their agricultural transformation plans. Given the unique characteristics of each country and the diverse needs of Africa due to the ecological heterogeneity and the wide range of farm sizes, the framework avoids being prescriptive.

Sensing, Data Managing, and Control Technologies for

Agricultural Systems - Shaochun Ma 2022-06-06

Agricultural automation is the emerging technologies which heavily rely on computer-integrated management and advanced control systems. The tedious farming tasks had been taken over by agricultural machines in last century, in new millennium, computer-aided systems, automation, and robotics has been applied to precisely manage agricultural production system. With agricultural automation technologies, sustainable agriculture is being developed based on efficient use of land, increased conservation of water, fertilizer and energy resources. The agricultural automation technologies refer to related areas in sensing & perception, reasoning & learning, data communication, and task planning & execution. Since the literature on this diverse subject is widely scattered, it is necessary to review current status and capture the future challenges through a comprehensive monograph. In this book we focus on agricultural automation and provide critical reviews of advanced control technologies, their merits and limitations, application areas and research opportunities for further development. This collection thus serves as an authoritative treatise that can help researchers, engineers, educators, and students in the field of sensing, control, and automation technologies for production agriculture.

Handbook of Research on Globalized Agricultural Trade and New Challenges for Food Security - Erokhin, Vasilii 2019-10-25

Free trade promotes economic growth through international competition and the efficient allocation of resources while also helping to stabilize food supplies between countries that have an overabundance of product and countries that have a shortage. However, sudden price surges can threaten the social cohesion of developing countries and may lead to malnutrition and stunted growth. Balancing trade liberalization and

protectionism is imperative for the provision of food security for all. The Handbook of Research on Globalized Agricultural Trade and New Challenges for Food Security is an essential publication that seeks to improve food security, food independence, and food sovereignty in the conditions of globalized agricultural trade and addresses the contemporary issues of agricultural trade including major commodities and food products traded between major countries, directions of trade, and trends. The book also examines the effects of tariff escalations, administrative restrictions, other forms of trade protectionism on food security, and the emerging trade tensions between major actors such as the US, China, the EU, and Russia. Featuring research on topics including plant fertility, dietary diversity, and protectionism, this book is ideally designed for government officials, policymakers, agribusiness managers, stakeholders, international tradesmen, researchers, industry professionals, academicians, and students.

Intercropping Systems in Sustainable Agriculture - Paulo Mazzafera 2021-03-30

Overview of the evolution of agricultural mechanization in Nigeria

- Takeshima, Hiroyuki 2018-08-17

Demand for mechanization in Nigeria is growing in a fairly consistent way predicted by economic theories. The farming system has intensified and the use of animal traction has grown at a substantial rate. Demand side factors considerably explain the low adoptions of tractors in Nigeria. Where demand is sufficient for tractors, the private sector has emerged over time as a more efficient provider of hiring services (particularly farmer-tofarmer services) than the public sector. Conditions are consistent with the hypotheses that, because of generally low support for the agricultural sector in Nigeria in the past few decades, agricultural mechanization (tractor use in particular) has remained low despite the declining share of the workforce engaged in the agricultural sector. Agricultural transformation in the form of a declining agricultural labor force has happened partly through the growth in the oil industry since the 1970s. Instead of inducing further exit from farming, tractor

adoptions in Nigeria might have helped those who have remained in farming to start expanding their production scale. A knowledge gap, however, still remains regarding the dominance of large tractors and the potential effects of tractor adoptions on smallholders who have yet to adopt them.

Conservation Agriculture - Somasundaram Jayaraman 2021

Feeding the increasing global population, which is projected to reach ~10 billion by 2050, there has been increasing demands for more improved/sustainable agricultural management practices that can be followed by farmers to improve productivity without jeopardizing the environment and ecosystem. Indeed, about 95% of our food directly or indirectly comes from soil. It is a precious resource, and sustainable soil management is a critical socio-economic and environmental issue. Maintaining the environmental sustainability while the world is facing resource degradation, increasing climate change and population explosion is the current challenge of every food production sectors. Thus, there is an urgent need to evolve a holistic approach such as conservation agriculture to sustain higher crop productivity in the country without deteriorating soil health. Conservation Agriculture (CA), is a sustainable approach to manage agro-ecosystems in order to improve productivity, increase farm profitability and food security and also enhance the resource base and environment. Worldwide, it has been reported various benefits and prospects in adopting CA technologies in different agro-climatic conditions. Yet, CA in arid and semi-arid regions of India and parts of south Asia raises uncertainties due to its extreme climates, large scale residue burning, soil erosion and other constraints such as low water holding capacity, high potential evapotranspiration, etc . Thus, the proposed book has 30 chapters addressing all issues relevant to conservation agriculture/no-till farming system. The book also gives further strengthening existing knowledge in relation to soil physical, chemical and biological processes and health within close proximity of CA as well as machinery requirements. Moreover, the information on carbon (C) sequestration, C credits, greenhouse gas (GHG) emission, mitigation of climate change effects and socio-economic

view on CA under diverse ecologies namely rainfed, irrigated and hill eco-region is also deliberated. For large scale adoption of CA practices in South Asian region especially in India and other countries need dissemination of best-bet CA technologies for dominant soil types/cropping systems through participatory mode, strong linkages and institutional mechanism and public-private-policy support. We hope this book gives a comprehensive and clear picture about conservation agriculture/no-till farming and its associated problem, challenges, prospects and benefits. This book shall be highly useful reference material to researchers, scientists, students, farmers and land managers for efficient and sustainable management of natural resources.

Energy Policies for Sustainable Development Strategies -

Nnaemeka Vincent Emodi 2016-05-18

In this book, a number of long-term energy scenarios are developed for Nigeria considering the impact of vital factors that may influence energy policies in the country's future energy system. The energy scenarios were developed through the Long-Range Energy Alternatives Planning System (LEAP) model. The model identified the future energy demand and supply pattern using a least-cost combination of technology options while limiting the emission of greenhouse gases. The book presents four scenarios, and key parameters considered include GDP, households, population, urbanization and the growth rates of energy-intensive sectors. Further, it highlights the findings of the cost-benefit analysis, which reveal the costs of implementing selected policies and strategies in Nigeria, including those focusing on energy efficiency and fuel/technology switching. The book also discusses the application of the LEAP-OSeMOSYS Model in order to identify lowest-cost power plants for electricity generation. Some sustainable strategies that can ensure a low carbon development in Nigeria are also explored on the basis of successful country cases in relation to the Nigerian LEAP model. As such, the book will help policy makers devise energy and sustainable strategies to achieve low carbon development in Nigeria.

Agricultural Mechanization in Sub-Saharan Africa - Karim Houmy 2013

The manual work carried out by farmers and their families is often both arduous and time consuming and in many countries this is a major constraint to increasing agricultural production. Such day-to-day drudgery is a major contributing factor in the migration of people, particularly the young, from the rural countryside to seek the prospect of a better life in the towns and cities. Farm production can be substantially increased through the use of mechanical technologies which both are labor-saving and directly increase yields and production. This document provides guidelines on the development and formulation of an agricultural mechanization strategy and forms part of FAO's approach on sustainable production intensification.

Transforming Coastal Zone for Sustainable Food and Income

Security - T.D. Lama 2022-08-09

Coastal areas are commonly defined as the interface or transition areas between land and sea, including large inland lakes. Overall, about 50-70 % of the global population live within 100 km of the coastline covering only about 4 % of earth's land, thereby drawing heavily on coastal and marine habitats for food, building sites, transportation, recreational areas, and waste disposal. The people of these zones depend mainly on low productive agriculture due to several constraints such as prolonged water logging and drainage congestion in predominantly low-lying areas with heavy soils during the wet season, preponderance of saline and acid sulphate soils, scarcity of good quality irrigation water, particularly in

the dry season, seawater intrusion into adjoining lands, and water pollution due to eutrophication, and others affecting the aquatic habitats, etc. Carbon sequestration in coastal areas, such as, marshes, lagoons, etc. has significant influence on soil quality, and the carbon pool in soils as well as their impacts on the environment. Over and above these, the coastal areas are prone to disasters due to climate change leading to colossal loss of lives and properties in many areas. Forestry and mangrove dynamics, in particular, because of their continuing diminishing nature, are also subjects of interest affecting the ecology of coastal zones requiring appropriate attention. The international symposium held in this context on ' Transforming Coastal Zones for Sustainable Food and Income Security ' in virtual mode in March, 2021 offered scope to present and discuss various thematic areas by eminent scientists from all over the world. The proceedings of selected papers presented reflect cross-sectoral views of the areas highlighting, wherever necessary, a fusion of technologies, with the ultimate target to suggest livelihood security and sustainable development for the sensitive coastal zones. The book intends to share the knowledge with researchers, academicians, and various other stakeholders to address the complex problems of coastal regions, production constraints, social, economic, technical and environmental issues to draw out strategies for resilient agricultural technologies and improving livelihood security in coastal agro-ecosystems.