Crop Livestock Systems In Northern Ghana Le Hub Rural

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NIXON CHURCH

Training Manual for Organic Agriculture Food & Agriculture Org.
This book is open access under a CC BY-NC-SA 3.0 IGO license. The book uses an economic lens to identify the main features of climate-smart agriculture (CSA), its likely impact, and the challenges associated with its implementation. Drawing upon theory and concepts from agricultural development, institutional, and resource economics, this book expands and formalizes the conceptual foundations of CSA. Focusing on the adaptation/resilience dimension of CSA, the text embraces a mixture of conceptual analyses, including theory, empirical and policy analysis, and case studies, to look at adaptation and resilience through three possible avenues: ex-ante reduction of vulnerability, increasing adaptive capacity, and ex-post risk coping. The book is divided into three sections. The first section provides conceptual framing, giving an overview of the CSA concept and grounding it in core economic principles. The second section is devoted to a set of case studies illustrating the economic basis of CSA in terms of reducing vulnerability, increasing adaptive capacity and ex-post risk coping. The final section addresses policy issues related to climate change. Providing information on this new and important field in an approachable way, this book helps make sense of CSA and fills intellectual and policy gaps by defining the concept and placing it within an economic decision-making framework. This book will be of interest to agricultural, environmental, and natural resource economists, development economists, and scholars of development studies, climate change, and agriculture. It will also appeal to policy-makers, development practitioners, and members of governmental and non-governmental organizations interested in agriculture, food security and climate change.
Cropping Intensity, Crop-livestock Interactions, and Food Self-sufficiency CABI
Climate change effects over the next 25 years will be mixed. Continued changes by mid-century and beyond, however, are expected to have generally detrimental effects on most crops and livestock. As temperatures increase, crop production areas may shift to follow the temperature range for optimal growth and yield, though production in any given location will be more influenced by available soil water during the growing season. Weed control costs total more than $11 billion a year in the U.S.; those costs are expected to rise with increasing temperatures and carbon dioxide concentrations. Changing climate will also influence livestock production. Heat stress for any specific type of livestock can damage performance, production, and fertility, limiting the production of meat, milk, or eggs. Changes in forage type and nutrient content will likely influence grazing management needs. Insect and disease prevalence are expected to increase under warmer and more humid conditions, diminishing animal health and productivity.
Sustainable Crop-livestock Systems for the Bolivian Highlands Scientific Publishers - UBP
Agro-Ecosystem Diversity: Impact on Food Security and Environmental Quality presents cutting-edge exploration of developing novel farming systems and introduces landscape ecology to agronomy. It encompasses the broad range of links between agricultural development and ecological impact and how to limit the potential negative results. Presented in seven sections, each focusing on a specific challenge to sustaining diversity, the book provides insights toward the argument that by re-introducing diversity, it should be possible to maintain a high level of productivity of agro-ecosystems while also maintaining and/or restoring a satisfactory level of environment quality and biodiversity. Demonstrates that diversified agro-ecosystems can be intensified with environmental quality preserved, restored and enhanced Includes analysis of economic constraints leading to specialization of farms and regions and the social locking forces resisting to diversification of agro-ecosystems Presents a global vision of world agriculture and the tradeoff between a necessary increase in food production and restoring environment quality
Global Livestock Production Systems Academic Press
Greenhouse gas emissions by the livestock sector could be cut by as much as 30 percent through the wider use of existing best practices and technologies. FAO conducted a detailed analysis of GHG emissions at multiple stages of various livestock supply chains, including the production and transport of animal feed, on-farm energy use, emissions from animal digestion and manure decay, as well as the post-slaughter transport, refrigeration and packaging of animal products. This report represents the most comprehensive estimate made to-date of livestocks contribution to global warming as well as the sectors potential to help tackle the problem. This publication is aimed at professionals in food and agriculture as well as policy makers.
Climate Change Impact and Adaptation in Agricultural Systems DIANE Publishing
Focusing on the different types of grassland farming and their impact on the environment, this book addresses issues facing environmental quality, namely soil, water and air quality and socioeconomic impacts. It also offers a commentary on how the different pastoral sectors influence environmental issues.
Mapping Poverty and Livestock in the Developing World Food & Agriculture Org
"The assessment builds on the work of the Livestock, Environment and Development (LEAD) Initiative"--Pref.
Farming Systems and Poverty Food & Agriculture Org.
Cover crops slow erosion, improve soil, smother weeds, enhance nutrient and moisture availability, help control many pests and

bring a host of other benefits to your farm. At the same time, they can reduce costs, increase profits and even create new sources of income. You¿ll reap dividends on your cover crop investments for years, since their benefits accumulate over the long term. This book will help you find which ones are right for you. Captures farmer and other research results from the past ten years. The authors verified the info. from the 2nd ed., added new results and updated farmer profiles and research data, and added 2 chap. Includes maps and charts, detailed narratives about individual cover crop species, and chap. about aspects of cover cropping.

Improvement of Livestock Production in Crop-animal Systems in Rainfed Agro-ecological Zones of South-East Asia ILRI (aka ILCA and ILRAD)

Since adoption is a dynamic process that involves learning about new technologies, static adoption models fail to adequately explore the effects of changes in farmers' perception and attitudes over time. This study analyzed the influences of farmers' learning and risk on the likelihood and intensity of adoption of improved tef and wheat technologies in Northern and Western Shewa zones of Ethiopia. The study employed Xtprobit and Xttobit and random effect models and panel data of the same farmers from 1997 to 2001. Separate samples were selected for wheat and tef and the study covers the same farmers from 1997-2001. Panel data are better suited to study dynamic changes and the random effect models control for unobserved variability and potential endogeniety. Comparison of the main features of tef and wheat farmers revealed that wheat farmers are slightly younger, more educated, have slightly higher family size and significantly higher family labour than tef farmers. While average farm size is similar for tef and wheat farmers, farmers cultivated 60% and 30% of their land to tef and wheat, respectively. However, tef farmers allocated only 20% of their tef area to improved varieties due to shortage of desirable varieties whereas wheat farmers allocated 90% of their land to improved varieties from 1997 to 2001. Only three improved varieties were demonstrated and limited quantities of improved seeds were distributed to tef farmers whereas six improved wheat varieties were demonstrated and relatively sufficient quantities of improved seeds were distributed to wheat farmers during the study. Besides, similar levels of fertilizers and herbicide were used on tef and wheat. Wheat and tef were mainly grown for own consumption as less than half of the produce (48% of all wheat and 46% of all tef) was sold in the market. The study provided evidence of the importance of learning in the adoption decision and area allocation to improved varieties. As farmer's gained more experience from growing the new varieties in previous years, they continued adoption and increased areas under these varieties. The study also revealed that adopters of wheat and tef technologies have increased their production by 20% and 39%, respectively, than non-adopters. Results of the analyses indicate that awareness, availability and profitability of the new improved tef and wheat varieties enhanced farmer's learning and farmer's experience had positive influence on the likelihood and intensity of improved seed adoption. Improved tef and wheat varieties were found more risky than the local varieties. The study further revealed that younger age of farmer, farmers' learning from previous experience, availability of family labour and credit are key determinants of the likelihood and intensity of adoption of improved seed. Policies and strategies that contribute to timely availability of improved inputs and provision of credit enhance farmers learning from their own experience on adoption. Policies and strategies that focus on farmers' education and provision of insurance for crop failure to reduce risk would help the new extension program (NEP) achieve its objectives which give emphasis to raising smallholders' production and productivity.

Soil Ecosystem Management in Sustainable Agriculture Farm Management in Mixed Crop-livestock Systems in the Northern Highlands of EthiopiaGrain Legume Fodders as Ruminant Feed in Mixed Crop-livestock Systems in Northern GhanaGrain legumes are important crops in the mixed crop-livestock (MCL) systems in Africa because they provide food and cash for humans, fodder for animals and they improve soil fertility through biological nitrogen fixation. The residues of grain legumes, also known as grain legume fodders (GLFs), have better nutritional quality than cereal residues, such as maize and rice straw. Besides their function as livestock feed, GLFs supply fuel, construction material and mulch for soil improvement. However, knowledge about factors that drive the diversity of use of GLFs in different farming systems is limited. Therefore, the objective of this thesis was to understand the roles of grain legume fodders in mixed crop-livestock systems and identify options to improve their quality and utilisation by smallholders in northern Ghana. To achieve this objective, we conducted four multi-disciplinary studies. First, we assessed and described the variation in the use of GLFs to understand their impacts on MCL systems. Second, we evaluated and compared the effects of rhizobium inoculation and phosphorus fertilization on grain and fodder yield and fodder quality of the major grain legumes in two agro-ecological zones. Third, we evaluated the effects of storage conditions and duration on dry matter loss and nutritional quality of GLFs and to risk of aflatoxin formation in stored fodder. Lastly, we assessed the nutritional quality of stored GLFs using different quality assessment methods. Results show there is variation in the use of GLFs in the study regions in northern Ghana. For example, in Upper East region, most of the GLFs (87%) was stall-fed, whereas in Upper West region GLFs were for a considerable extent (61%), left on the field and used for mulching. In Northern region, both stall-feeding and grazing of GLFs was important. In our agronomic studies we found that rhizobium inoculation of cowpea seed, for example, increased grain yield by 44%, P-fertilization increased grain yield by 102% while the combination of P and inoculation increased grain yield by 123% compared to the control treatment where no input was applied. In the storage experiment, we found that dry matter loss during storage for 120 days was on average 24% across all storage conditions, 35% for the worst condition (tied in bundles and stored on roofs or tree-forks) and 14% for the best condition (sacks and in rooms). During storage, the CP content and OMD decreased, and the content of cell wall components increased. Aflatoxins were not detected in stored GLFs. Finally, in fodder quality assessment studies, all the four methods used (farmers' perception, sheep preference, leaf-to-stem ratio and laboratory analyses) successfully discriminated GLF quality between crops. Only farmers and sheep could distinguish quality differences among storage conditions, whereas laboratory assessment methods could not. In general we concluded that with increasing importance of livestock in intensified MCL systems, GLFs become more important and more valuable for feeding, especially in the dry season. For this reason smallholder farmers can increased both grain and fodder yield of grain legumes concurrently through the use of rhizobium inoculation and P-fertilization. They can also reduce GLF nutritional quality and dry matter quantity loss by adopting appropriate fodder storage methods. The absence of aflatoxin in the groundnut fodder samples indicated that there is minimal risk of aflatoxin development when stored under dry conditions as in our study. Finally, farmers' experience and local knowledge in feeding GLFs to livestock is valuable in determining the quality of GLFs and preference of their animals.Climate Smart AgricultureBuilding Resilience to Climate Change

Why model? Agricultural system models enhance and extend field research...to synthesize and examine experiment data and advance our knowledge faster, to extend current research in time to predict best management systems, and to prepare for climate-change effects on agriculture. The relevance of such models depends on their implementation. Methods of Introducing System Models into Agricultural Research is the ultimate handbook for field scientists and other model users in the proper methods of model use. Readers will learn parameter estimation, calibration, validation, and extension of experimental results to other weather conditions, soils, and climates. The proper methods are the key to realizing the great potential benefits of modeling an agricultural system. Experts cover the major models, with the synthesis of knowledge that is the hallmark of the Advances in Agricultural Systems Modeling series.

Agroecosystem Diversity ILRI (aka ILCA and ILRAD)

While a good grasp of the many separate aspects of agriculture is important, it is equally essential for all those involved in agriculture to understand the functioning of the farming system as a whole and how it can be best managed. It is necessary to re-assess and understand rain-fed farming systems around the world and to find ways to improve the selection, design and operation of such systems for long term productivity, profitability and sustainability. The components of the system must operate together efficiently; yet many of the relationships and interactions are not clearly understood. Appreciation of these matters and how they are affected by external influences or inputs are important for decision making and for achieving desirable outcomes for the farm as a whole. This book analyses common rain-fed farming systems and defines the principles and practices important to their effective functioning and management.

ILRI 2015 financial statements IITA

This dissertation focuses on the scientific quantification of environmental impacts of agricultural management to understand the life cycle of a cradle-to-field-gate production system. Agricultural systems must include efficient land use, economic resources, and reduce environmental impacts to meet sustainable food production goals. Anthropogenic activity has a significant and on-going impact on agroecosystems. The growing global food demand, grain and meat yields, residue and land use, and resource limitations have a significant role in increasing ecosystem service impacts. The general hypothesis is that a business-as-usual (BAU) scenario is not a sustainable agricultural production system. The objective of this research is to understand environmental burdens in the agricultural sytem of the northern Great Plains (NGP) using life cycle assessment (LCA). Three phases of studies are included: 1) agronomy, 2) livestock, and 3) integrated crop livestock system (ICL) within no-till farm practices of NGP.

Climate Smart Agriculture ILRI (aka ILCA and ILRAD)

Recent changes in the Conservation Compliance Plans for farmers shows the need for improved information on the effective management of crop residues. Residue management requires an understanding of the crop, soil, and climate in which the farming system is located. In this volume, the strategies for effective residue management are described for each region of the country to provide a comparison of the regional differences. The chapters not only describe the knowledge in each region but also suggest some of the needed areas of research required to develop an improved understanding of the processes involved in effective residue management.

Intl Food Policy Res Inst

The production of this manual is a joint activity between the Climate, Energy and Tenure Division (NRC) and the Technologies and practices for smallholder farmers (TECA) Team from the Research and Extension Division (DDNR) of FAO Headquarters in Rome, Italy. The realization of this manual has been possible thanks to the hard review, compilation and edition work of Nadia Scialabba, Natural Resources officer (NRC) and Ilka Gomez and Lisa Thivant, members of the TECA Team. Special thanks are due to the International Federation of Organic Agriculture Movements (IFOAM), the Research Institute of Organic Agriculture (FiBL) and the International Institute for Rural Reconstruction (IIRR) for their valuable documents and publications on organic farming for smallholder farmers.

Environmental Impacts of Pasture-based Farming John Wiley & Sons

Farm Management in Mixed Crop-livestock Systems in the Northern Highlands of EthiopiaGrain Legume Fodders as Ruminant Feed in Mixed Crop-livestock Systems in Northern Ghana

Improving Farmers' Livelihoods in a Changing World Food & Agriculture Org.

The Ghana Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) Baseline Evaluation Survey (GARBES) survey was implemented from May to July 2014 as part of IFPRI's Monitoring and Evaluation (M&E) of Africa RISING. Africa RISING aims to create opportunities for smallholder farmers in Africa south of the Sahara (through action research and development partnerships) by sustainably intensifying their farming systems and improving food, nutrition, and income security. Initiated in 2012, the program is supported by the United States Agency for International Development (USAID) as part of the U.S. government's Feed the Future (FTF) initiative. The International Institute of Tropical Agriculture (IITA) leads a sustainable intensification effort focusing on the cereal-based farming systems in the Guinea Savannah Zone of West Africa (Ghana and Mali) and East and Southern Africa (Malawi, Tanzania, and Zambia) while the International Livestock Research Institute (ILRI) leads the research activities focusing on the crop-livestock systems of the Ethiopian highlands. The International Food Policy Research Institute (IFPRI) has been tasked with M&E of the three projects. Ghana Africa RISING is being implemented in Northern, Upper East, and Upper West regions of Ghana, within the FTF Zones of Influence. The research activities are led by IITA and Wageningen University (WUR). GARBES collected detailed household- and plot-crop level data addressing various topics: employment (agricultural and non-agricultural); health; agricultural land; crop inputs, harvest, storage, and sale; livestock ownership, feed, and water; agriculture-related challenges and coping strategies; credit and off-farm income sources; housing condition and ownership of various durable assets; subjective welfare and food security; household-level food consumption; non-food expenditure; agricultural shocks; and child and women anthropometry. The community survey collected data on access to basic services; extension services; social organizations, mobility, and village-level shocks; access to natural resources; metric conversion units; and prices of crops and food items. GARBES covered 1,284 households and 50 communities drawn from the three project regions. Data were collected using structured questionnaires in multiple local languages through Computer Assisted Personal Interviewing (using SurveyCTO).

Analysis of Mixed Crop-livestock Farming Systems Academic Press

Informed livestock sector policy development and priority setting is heavily dependent on a good understanding of livestock production systems. In a collaborative effort between the Food and Agriculture Organization and the International Livestock

Research Institute, stock has been taken of where we have come from in agricultural systems classification and mapping; the current state of the art; and the directions in which research and data collection efforts need to take in the future. The book also addresses issues relating to the intensity and scale of production, moving from what is done to how it is done. The intensification of production is an area of particular importance, for it is in the intensive systems that changes are occurring most rapidly and where most information is needed on the implications that intensification of production may have for livelihoods, poverty alleviation, animal diseases, public health and environmental outcomes. A series of case studies is provided, linking livestock production systems to rural livelihoods and poverty and examples of the application of livestock production system maps are drawn from livestock production, now and in the future; livestock's impact on the global environment; animal and public health; and livestock and livelihoods. This book provides a formal reference to Version 5 of the global livestock production systems map, and to revised estimates of the numbers of rural poor livestock keepers, by country and livestock production system.

Adoption of Improved Tef and Wheat Production Technologies in Crop-livestock Mixed Systems in Northern and Western Shewa Zones of Ethiopia Intl Food Policy Res Inst

This review describes a range of physical and socio-economic scientific methods and field activities that will be implemented in a proposed research project to develop a better understanding of the extent and patterns of flooding and the potential of flood-recession agriculture. These activities will allow the hydrological characteristics of the river to be matched to crop-livestock systems of flood recession agriculture that are well suited to the study communities and their organizational and institutional frameworks in order to support sustainable growth of such systems. This detailed study will provide recommendations on the technical, economic, institutional and policy measures needed to achieve sustainable intensification of flood recession agriculture in northern Ghana, while complementing efforts undertaken to promote other types of water management systems. Options for out-scaling of flood recession agriculture beyond the study area to other suitable areas will also be explored. The expectation is that the proposed project will improve food security by enhancing knowledge on effective flood recession practices, enhance rural incomes through expanded dry-season farming with new opportunities for rural employment, and improve adaptation to climate change by building more resilient farming communities. To achieve these expected outcomes, proactive policies that clearly identify flood recession agriculture as an alternative farming practice and provide institutional mandates to irrigation support services to promote it through training, demonstration, and outreach programs will be equally valuable.

CRC Press

Managing Healthy Livestock Production and Consumption is a highly interdisciplinary resource based on scientific and empirical evidence. It is illustrated with best practices of low-input livestock systems from different continents and offers predictive modelling alternatives for a more resilient future. By addressing gaps of knowledge and presenting scientific perspective studies of livestock’s impact on the environment and the global food supply up to 2050, this book is useful for those advocating for sustainable food systems. Existing evidence of the effects of livestock production on food quality and nutrition is reviewed. Livestock production and consumption is a highly diverse topic where current publications only include/focus a single aspect of the issues, for example, greenhouse gas emissions or health impacts, leading to unilateral decisions such as refraining from meat consumption. However, animals are necessary to soil fertility and ecosystems balance and a more realistic resource is necessary for researchers, scientists, and policy makers. This book clarifies perceptions by presenting sound scientific evidence across livestock landscapes for the scientific community to better appreciate the ecological web of life and the social web of community related to livestock production. An edited work written by globally diverse scientists and practitioners, including field workers, technicians, and policy makers, this is a valuable resource for researchers, teachers, and development agents working in the area of sustainable livestock production and consumption of animal source foods. National, international organizations, policy makers, and donors interested in sustainable development of the livestock sector will also find the information here practical and applicable. Describes the public-health impacts of sustainable diets and livestock products Presents the impacts of livestock production on the environment and food supply Explores future scenarios (up to 2050) of low input livestock systems Includes current case studies of low input livestock systems that offer potential for scaling-up and replication for sustainable livestock futures

Grassland: a global resource Springer

The concept of grasslands as a global resource is not new. Indeed many recognised authorities have been canvassing for a global approach to understanding, managing and exploiting this resource for many years. This is the first book that gathers together leading experts from around the world to outline our current understanding of this complex ecosystem, the ways in which it can be enhanced and utilised and where the research challenges are for the future. The following themes unite the book: - Efficient production from grassland; - Grassland and the environment; - Delivering the benefits from grassland. The reader is given an in depth understanding of the biology of the system and how grasslands are crucial for soil stabilisation and water quality. Secondly, much attention is given to how grasslands offer the possibility of increasing food supply and income generation, which is a hugely important but often ignored facet in today’s climate of extensification and biodiversity. Current advances in the grassland sciences have a proven potential to promote the economic development and environmental stability of regions, nations and peoples, particularly in some of the most resource-limited areas of the world. Approaches for achieving the most effective development and adoption of new technology are reviewed.

Flood recession agriculture for food security in Northern Ghana Springer Science & Business Media

A joint FAO and World Bank study which shows how the farming systems approach can be used to identify priorities for the reduction of hunger and poverty in the main farming systems of the six major developing regions of the world.