Greater Sekhukhune District Agricultural Science Paper Grade12 24 March 2014

The objective of this paper is to determine the ability of farmers in Africa to detect climate change, and to ascertain how they have adapted to whatever climate change they believe has occurred. The paper also asks farmers whether they perceive any barriers to adaptation and attempts to determine the characteristics of those farmers who, despite claiming to have witnessed climate change, have not yet responded to it. The study is based on a large-scale survey of agriculturalists in 11 African countries. The survey reveals that significant numbers of farmers believe that temperatures have already increased and that precipitation has declined. Those with the greatest experience of farming are more likely to notice climate change. Further, neighboring farmers tell a consistent story. There are important differences in the propensity of farmers living in different locations to adapt and there may be institutional impediments to adaptation in some countries. Although large numbers of farmers perceive no barriers to adaptation, those that do perceive them tend to cite their poverty and inability to borrow. Few if any farmers mentioned lack of appropriate seed, security of tenure, or market accessibility as problems. Those farmers who perceive climate change but fail to respond may require particular incentives or assistance to do what is ultimately in their own best interests. Although experienced farmers are more likely to perceive climate change, it is educated farmers who are more likely to respond by making at least one adaptation.

The book is a collection of chapters that deal with agroforestry systems on small farms. It compiles a variety of suitable agroforestry systems that can both sequester carbon and mitigate climate change while also providing socio-economic benefits. The book also discusses the ways in which small landholders can use agroforestry to combat land degradation.

Mainstream views of water resource development focus on conventional concepts of supply and demand and often conceive of river basin development as a linear and rational process of harnessing nature and developing water for human use. However, human-environment interactions are more complex and the way societies respond to water challenges is shaped by a number of cultural, environmental, economic and political factors. Using river basin case studies in a variety of contexts, this book provides an overview of how societies have gradually developed their water resources and furthers our understanding of how such resources can be managed successfully or unsuccessfully. Discussing how and why particular options are selected, and why a particular course of events eventually prevails, the book stresses the importance of context and a multidisciplinary approach in moving towards sustainable and equitable development.

The book that inspired the major new motion picture Mandela: Long Walk to Freedom. Nelson Mandela is one of the great moral and political leaders of our time: an international hero whose lifelong dedication to the fight against racial oppression in South Africa won him the Nobel Peace Prize and the presidency of his country. Since his triumphant release in 1990 from more than a quarter-century of imprisonment, Mandela has been at the center of the most compelling and inspiring political drama in the world. As president of the African National Congress and head of South Africa's antiapartheid movement, he was instrumental in moving the nation toward multiracial government and majority rule. He is revered everywhere as a vital force in the fight for human rights and racial equality. LONG WALK TO FREEDOM is his moving and exhilarating autobiography, destined to take its place among the finest memoirs of history's greatest figures. Here for the first time, Nelson Rolihlahla Mandela tells the extraordinary story of his life--an epic of struggle, setback, renewed hope, and ultimate triumph.

The Youth Book

Making Development Cooperation More Effective

Understanding Water Security at Local Government Level in South Africa

River Basin Trajectories

Meeting the Needs of Southern Africa

Handbook of Climate Change Adaptation

This report summarizes the findings of a collaborative effort to map and assess irrigated areas in the Limpopo Province, South Africa. The study was conducted by the International Water Management Institute (IWMI) in collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF) and the Limpopo Department of Agriculture and Rural Development (LDARD), as part of the DAFF-supported 'Revitalization of irrigation in South Africa' project. Based on a combination of Landsat and Moderate Resolution Imaging Spectroradiometer (MODIS) satellite data, previous irrigated area mapping exercises carried out by DAFF and three-field ground truthing (GT) surveys, a total of 1.6 million hectares (Mha) of cropland were identified, with 262,000 ha actually irrigated in the 2015 winter season. The study also found that only 29% of all land equipped with center pivots was actually irrigated.

This book provides the most recent understanding about climate change and its effects on agriculture in India. Further in-depth research is showcased regarding important allied sectors such as horticulture and fisheries, and examines the effect of climate change on different cereal crops. The individual chapters discuss the different mitigation strategies for climate change impacts and detail abiotic and biotic stresses in relation to climate change. The book provides an insight into environmentally safe and modern technologies approaches such as nanotechnology and utilization of underutilized crops under a changing climate. This book provides a solid foundation for the discussion of climate resilience in agricultural systems and the requirements to keep improving agricultural production. This book is an excellent resource for researchers, instructors, students in agriculture, horticulture and environmental science.

This book highlights methodological approaches for the economics of sustainable development and brings together recent empirical work done in India, especially by Dr. Surender Kumar and Dr. Shunsuke Managi. Various chapters in this book use Indian data to show the very wide applicability of methodologies in the theory of production for dealing with many empirical issues of environmentally sustainable development in a developing country. I congratulate the authors for the time and effort devoted to compiling this very useful reference on the subject and the publishers for publishing this volume. The methodologies of cost functions, distance functions, and production fu- tions have been used in many recent studies and in the studies reported in this book for environmental valuation. Environmental valuation is required for designing policy instruments like pollution taxes for sustainable development and for meas- ing green GDP. The UN methodology of integrated environmental and economic accounting provides ways of measuring the cost of maintaining environmental resources at sustainable levels or the maintenance cost for estimating green GDP. Some of the chapters in this book show that the methodology of distance functions could be used for estimating the cost of environmentally sustainable development.

Due to many challenges (i.e. climate change, energy, water and land shortage, high demands on food, land

grabbing, etc.), agriculture production potential is expected to be seriously affected; thus, increasing food insecurity and hunger in many already affected regions (especially in Africa). In this context, sustainable agriculture is highly recommended as an eco-system approach where soil, water, plants, environment and living organisms live in harmony. Innovative technologies and research should be developed to ensure sustainable agriculture and productivity using modern irrigation systems, improved varieties, improved soil quality, etc. In the meantime, the preservation of natural environment should be based on resource conservation technologies and best management practices. Sustainable Agricultural Development, not only raises the serious ethical and social issues underlying these huge environmental problems, but also aims at presenting successful experiences from all over the world in relation with sustainable farming, sustainable management of water and land resources, and innovative processes in livestock production. It also aims at providing inputs to decision making processes and encouraging the transfer of relevant know-how, technologies and expertise to different countries where similar agro-climatic conditions may exist; thus saving precious resources and promoting sustainable agricultural development as a relevant approach to tackle the food security challenge. Finally, this book focuses on the paradigmatic and policy dimensions and call for an innovative approach by analyzing the key themes in a complex and interrelated manner.
The Perception of and Adaptation to Climate Change in Africa

From concept to implementation
Agroforestry
The Autobiography of Nelson Mandela
South African Journal of Science

Authorative and comprehensive, this book makes clear that there are links between global scale processes and local experiences of disaster, but underlies the difficulty of attributing blame for individual disasters on specific global pressures.

Climate change impacts upon the world's poorest most heavily. It is therefore essential that international development initiatives focus on improving the ability of developing countries to adapt to the effects of climate change. This book, a product of research by the JICA-RI (Research Institute of the Japan International Cooperation Agency), examines climate change adaptation from the perspective of development cooperation in order to provide useful lessons for those engaged in research, policy and practice in this vital area. In this book the editors have brought together a wide range of case studies from across Africa and Asia, covering urban and rural areas and different sectors including water, agriculture and disaster management, in order to examine the following: o high-resolution climate change projection in Asia and how this can be used in planning appropriate adaptation responses o in-depth case studies of climate change projections, social, economic and environmental impact and vulnerability assessment and adaptation in rural Thailand and urban Philippines o cases across Africa for which climate data is less readily available and alternative approaches need to be adopted o the current situation amongst international donors o emerging issues caused by climate change In the introductory section, the editors draw together the full implications from the case studies to discuss how international communities can support adaptation in developing countries and to give an assessment of bilateral projects. They reflect on the lessons learned and offer recommendations for future research and international development cooperation.

What kind of science do we need today and tomorrow? In a game that knows no boundaries, a game that contaminates science, democracy and the market economy, how can we distinguish true needs from simple of fashion? How can we distinguish between necessity and fancy? whims How can we differentiate conviction from opinion? What is the meaning of this all? Where is the civilizing project? Where is the universal outlook of the minds that might be capable of counteracting the global reach of the market? Where is the common ground that links each of us to the other? We need the kind of science that can live up to this need for univer sality, the kind of science that can answer these questions. We need a new kind of knowledge, a new awareness that can bring about the creative destruction of certainties. Old ideas, dogmas, and out-dated paradigms must be destroyed in order to build new knowledge of a type that is more socially robust, more scientifically reliable, stable and above all better able to express our needs, values and dreams. What is more, this new kind of knowledge, which will be challenged in turn by ideas yet to come, will prove its true worth by demonstrating its capacity to dialogue with these ideas and grow with them.

This survey was conducted by the Human Sciences Research Council at the request of the Department of Development Aid. Its main aim was to provide planning and development staff within the Lebowa Development Corporation and the Department of Economic Affairs and Technology of the Lebowa Government with baseline data on income and expenditure patterns across Lebowa, and supplementary data on demographic characteristics and levels of employment. The basic unit of analysis was the household, with the head of the household or the acting head as the respondent. Over 3000 questionnaires were administered to a sample drawn using a multistage stratified cluster sampling technique. Sixteen strata were identified, namely the eleven districts of Lebowa (Thabamoopo, Sekhukhune, Mokerong, Seshego, Mapulaneng, Nebo, Bolobedu, Naphuno, Sekgosese, Bochum and Namakgale) and five of the larger towns (Lebowa-Kgomo, Mahwelereng, Seshego, Ga-Kgapane and Namakgale). Data was gathered and processed by the HSRC staff, and every effort was made to minimise survey errors associated with studies of this nature.

Poultry for Profit and Pleasure
Understanding Farmers' Perceptions and Adaptations to Climate Change and Variability: The Case of the Limpopo Basin, South Africa
Sustainable Agricultural Development
An Investigation into the Origins of the Modern World
Mapping irrigated areas in the Limpopo Province, South Africa
Organic Food Systems

Iraq, Afghanistan, Darfur. All resonate loudly on the international stage, exposing and illustrating the intractable links between global security, war and conflict, the control over natural resources – be they oil, water, timber or 'conflict diamonds' –

Climate change poses many challenges that affect society and the natural world. With these challenges, however, come opportunities to respond. By taking steps to adapt to and mitigate climate change, the risks to society and the impacts of continued climate change can be lessened. The National Climate Assessment, coordinated by the U.S. Global Change Research Program, is a mandated report intended to inform response decisions. Required to be developed every four years, these reports provide the most comprehensive and up-to-date evaluation of climate change impacts available for the United States, making them a unique and important climate change document. The draft Fourth National Climate Assessment (NCA4) report reviewed here addresses a wide range of topics of high importance to the United States and society more broadly, extending from human health and community well-being, to the built environment, to businesses and economies, to ecosystems and natural resources. This report evaluates the draft NCA4 to determine if it meets the requirements of the federal mandate, whether it provides accurate information grounded in the scientific literature, and whether it effectively communicates climate science, impacts, and responses for general audiences including the public, decision makers, and other stakeholders.

Climate change is expected to have serious environmental, economic, and social impacts on South Africa. In particular, rural farmers, whose livelihoods depend on the use of natural resources, are likely to bear the brunt of adverse impacts. The extent to which these impacts are felt depends in large part on the extent of adaptation in response to climate change. This research uses a "bottom-up" approach, which seeks to gain insights from the farmers themselves based on a farm household survey. Farm-level data were collected from 794 households in the Limpopo River Basin of South Africa for the farming season 2004-2005. The study examines how farmer perceptions correspond with climate data recorded at meteorological stations in the Limpopo River Basin and analyzes farmers' adaptation responses to climate change and variability. A Heckman probit model and a multinomial logit (MNL) model are used to examine the determinants of adaptation to climate change and variability. The statistical analysis of the climate data shows that temperature has increased over the years. Rainfall is characterized by large interannual variability, with the previous three years being very dry. Indeed, the analysis shows that farmers' perceptions of climate change are in line with the climatic data records. However, only approximately half of the farmers have adjusted their farming practices to account for the impacts of climate change. Lack of access to credit was cited by respondents as the main factor inhibiting adaptation. The results of the multinomial logit and Heckman probit models highlighted that household size, farming experience, wealth, access to credit, access to water, tenure rights, off-farm activities, and access to extension are the main factors that enhance adaptive capacity. Thus, the government should design policies aimed at improving these factors.

Vols. for 1964-67 contain papers of the Beef Cattle Science School; 1968-74 papers of the Stockmen's School; 1975-77 papers of the International Stockmen's School.

Societies, Environments and Development

Toward Environmentally Sustainable Development in Sub-Saharan Africa

Beef Cattle Science Handbook

The South African Development Directory

Climate Change & Food Security

Recent Approaches in Resources Management and Environmentally-Balanced Production Enhancement

Organic agriculture world-wide allows farmers to produce healthy food with low levels of external inputs, and often shortens the value chains, giving farmers a higher share of the consumer dollar. This book reports on long-term comparative organic farming systems research trials carried out over the last four years in South Africa's Southern Cape, as well as research on the organic sector and the technical tools it requires in South Africa, Zambia, Uganda and Tanzania. The trials show how the yield gap between organic and conventional crops was closed over 3 years. Water use efficiency was also greater in the organic farming system, and pests and diseases were effectively controlled using biological products. Farmer training approaches, soil carbon analysis, participatory guarantee systems, the Zambian organic farming sector (agronomy) and Ugandan organic farmer training support, and a sector plan for southern African organic farming are examined.

This open access book discusses the current role of smallholders in connection with food security and poverty reduction in developing countries. It addresses the opportunities they enjoy, and the constraints they face, by analysing the availability, access to and utilization of production factors. Due to the relevance of smallholder farms, enhancing their production capacities and economic and social resilience could produce positive impacts on food security and nutrition at a number of levels. In addition to the role of small farmers as food suppliers, the book considers their role as consumers and their level of nutrition security. It investigates the link between agriculture and nutrition in order to better understand how agriculture affects human health and dietary patterns. Given the importance of smallholdings, strategies to increase their productivity are essential to improving food and nutrition security, as well as food

diversity.

Integrating Science and PolicyVulnerability and Resilience in Global Environmental ChangeRoutledge

A survey of 76 public smallholder irrigation schemes in the Limpopo Province was jointly conducted by the International Water Management Institute (IWMI), Department of Agriculture, Forestry and Fisheries (DAFF), South Africa, and the Limpopo Department of Agriculture and Rural Development (LDARD), as part of the 'Revitalization of Smallholder Irrigation in South Africa' project. About one-third of those schemes was fully utilized; one-third partially utilized; and one-third not utilized in the winter of 2015; however, no single socioeconomic, physical, agronomic and marketing variable could explain these differences in utilization. Sale, mostly for informal markets, appeared the most important goal. Dilapidated infrastructure was the most important constraint cited by the farmers. The study recommends ways to overcome the build-neglect-rebuild syndrome, and to learn lessons from informal irrigation, which covers an area three to four times as large as public irrigation schemes in the province.

Sustainable Rural Livelihoods

A World Bank Agenda

Rural Development Abstracts

Natural Disasters and Development in a Globalizing World

Catastrophe

The Fourth Industrial Revolution

The object of this publication is to provide youth, as well as people and organizations involved and interested in youth-related issues, with a comprehensive source of information on South African young organizations and related relevant issues.

This book provides unique insights into the complex issue of water security in South Africa. Based on qualitative research conducted through face-to-face structured interviews and focus group discussions with individuals, traditional leaders, municipal officials, researchers, businesspeople and farmers in the two local governments – the Sekhukhune District and eThekwini Metropolitan Municipalities – it focuses on the peoples' understanding of the concept of water security and whether they believe that the municipalities have achieved water security for all. The research is supported by water security-related statistics, particularly those pertaining to water quality and quantity, and an extensive literature review for the concept of water security. In addition to assessing the state of water security in both municipalities, the book presents a new water security definition and typology, and offers valuable recommendations for future research.

It was a catastrophe without precedent in recorded history: for months on end, starting in A.D. 535, a strange, dusky haze robbed much of the earth of normal sunlight. Crops failed in Asia and the Middle East as global weather patterns radically altered. Bubonic plague, exploding out of Africa, wiped out entire populations in Europe. Flood and drought brought ancient cultures to the brink of collapse. In a matter of decades, the old order died and a new world—essentially the modern world as we know it today—began to emerge. In this fascinating, groundbreaking, totally accessible book, archaeological journalist David Keys dramatically reconstructs the global chain of revolutions that began in the catastrophe of A.D. 535, then offers a definitive explanation of how and why this cataclysm occurred on that momentous day centuries ago. The Roman Empire, the greatest power in Europe and the Middle East for centuries, lost half its territory in the century following the catastrophe. During the exact same period, the ancient southern Chinese state, weakened by economic turmoil, succumbed to invaders from the north, and a single unified China was born. Meanwhile, as restless tribes swept down from the central Asian steppes, a new religion known as Islam spread through the Middle East. As Keys demonstrates with compelling originality and authoritative research, these were not isolated upheavals but linked events arising from the same cause and rippling around the world like an enormous tidal wave. Keys's narrative circles the globe as he identifies the eerie fallout from the months of darkness: unprecedented drought in Central America, a strange yellow dust drifting like snow over eastern Asia, prolonged famine, and the hideous pandemic of the bubonic plague. With a superb command of ancient literatures and historical records, Keys makes hitherto unrecognized connections between the "wasteland" that overspread the British countryside and the fall of the great pyramid-building Teotihuacan civilization in Mexico, between a little-known "Jewish empire" in Eastern Europe and the rise of the Japanese nation-state, between storms in France and pestilence in Ireland. In the book's final chapters, Keys delves into the mystery at the heart of this global catastrophe: Why did it happen? The answer, at once surprising and definitive, holds chilling implications for our own precarious geopolitical future. Wide-ranging in its scholarship, written with flair and passion, filled with original insights, Catastrophe is a superb synthesis of history, science, and cultural interpretation.

This publication is part of a series which seeks to raise awareness amongst policymakers and agricultural support services in low and middle income countries about sustainable income generation opportunities for small-scale farmers and local communities. It contains guidance on the keeping of poultry, and topics discussed include: the history of domestic poultry production, its contribution to sustainable rural livelihoods, key components of rural poultry production, diversification and intensification issues, utilisation of poultry products. It includes examples of case studies of poultry production schemes in Bangladesh, South Africa, Guatemala, Cambodia and the Philippines.

The Role of Smallholder Farms in Food and Nutrition Security

An Effective Way for Managing Complexity

Information for Development Planning in Lebowa
Integrating Science and Policy
Sustainable Development Goals for Society Vol. 2
Smallholder irrigation schemes in the Limpopo Province, South Africa

As progress towards a greater knowledge in sustainability science continues, the question of how better to integrate scientific progress with actual decisions made by practitioners remains paramount. This book aims to help close the gap between science and practice. Based on a two year collaborative project between Harvard and Clark Universities, the book takes as its focus the vulnerability and resilience of people around the world to the effects of environmental change, a mature area of research in which one might expect the gap between science and policy/practice to have been extensively bridged. Integrating Science and Policy presents analysis of past studies, interviews conducted with the producers and users of scientific knowledge, and case studies performed by leading scholars across a spectrum of international settings and political systems. Crucially, the authors identify new directions and tools for closing the gap between science and policy across a range of situations and societies. The result is an illuminating collection of studies and analyses that suggest to researchers, students, practitioners, and policy-makers alike how best to ensure that high quality environmental research informs good environmental policy and practice. Includes statistics.

Between the 18th and 19th centuries, Britain experienced massive leaps in technological, scientific, and economical advancement

Bachelor Thesis from the year 2018 in the subject Geography / Earth Science - Physical Geography, Geomorphology, Environmental Studies, grade: 5.0, Midlands State University, course: Geography and Environmental Studies, language: English, abstract: This study highlights the extent to which urban agriculture (UA) enhances food security and income generation in Ward 21 of Bulawayo in Zimbabwe against the challenges faced by the local residents where very little researches have been conducted and the data is still scarce. The expectation of this research is to benefit every stakeholder concerned about reducing food insecurity through the implementation of various urban agricultural activities. This is due to the fact that the study sought to give detailed information about the several agricultural activities in urban areas and how they help in improving the food security status and income generation to urban dwellers. Therefore all the stakeholders initiating programs mainly to reduce vulnerability of urban residence for instance NGO's require the information in determining the types of projects to execute in those areas. UA has increasingly become a popular practice and is widely perceived to be the panacea to urban livelihood challenges. Urban households have been affected by high costs of basic food staffs and high levels of unemployment in Zimbabwe. The closure of industries and the economic meltdown from year 2000 to date has left many people jobless and with less disposable incomes in most parts of Zimbabwe. The residents of Ward 21 in Bulawayo have not been spared from these challenges of unemployment and food insecurity. According to World Bank (2015), most of the workers in Zimbabwe have salaries which fall below the poverty datum line and this has severe impacts to the workers in achieving food security. Poverty has impoverished most households in ward 21 which has left some households only having one meal a days. More so, the situation is further exacerbated by the retrenchment of workers by major companies in Bulawayo such as, Delta Beverages, Monarch and NRZ. These challenges have been further aggravated by the massive exodus of people from rural areas into urban areas .Hence given the above, achieving food security has become a problematic issue for the people residing in Ward 21.

Long Walk to Freedom
Climate Change Adaptation and International Development
Small Landholder's Tool for Climate Change Resiliency and Mitigation
The Economics of Sustainable Development
A Framework for Analysis
Integrated Pest Management

The book includes seventeen excellent researched and documented papers that reflect the diversity of thought, ideas and experiences related to IWRM. They draw from an extensive, inclusive and geographically representative range of theoretical propositions and practical examples. These include the implementation status of the IWRM concept at local, basin, regional and national levels; its appropriateness for the twenty-first century; main implementation gaps from the institutional, legal, policy, governance, management and technical viewpoints; the likelihood that IWRM's entrenchment in laws, regulations and policies has led to smoother implementation and the reasons why that has been the case; reflexions on whether the attention given to IWRM is pushing other alternatives to the policy periphery; and the new conceptual constructions that can be put forward for discussion in the international arena. For the development and water communities it is imperative to debate and reach towards more illustrative conclusions regarding whether the promotion of the IWRM concept and its actual implementation status have been beneficial for development and how the notion could evolve to achieve this end. In-depth objective and constructive discussions, arguments, proposals and ideas are put forward for analysis by all interested parties. The book has the objective of fostering scholarly exchange, encouraging intellectual debate and promoting the advancement of knowledge and understanding of IWRM as a concept, as a goal per se and as a strategy towards development goals. This book was published as a special issue of the International Journal of Water Resources Development.

This book profiles various cases that are emerging in addressing global challenges in the context of SDGs for society in the era of climate change and covers case studies of projects being undertaken to tackle biodiversity, food security, climate change, energy and water security. The book is written by 37 authors, and will appeal to various stakeholders including academics working within the identified thematic areas, policy planners, development agencies, governments and United Nations agencies. The adoption of the Sustainable Development Goals (SDGs) in 2015 ushered a new era in the global development agenda as the world transitioned from the Millennium Development Goals (MDGs). The new era of SDGs that are all-inclusive, unlike the MDGs with the focus now being on ensuring human success that is predicated on environmental protection. The year 2020 marked five years post the adoption of the SDGs with increased calls for stock-taking of progress made amid strong calls for a decade of action to accelerate the delivery of the SDGs by 2030. These calls have been louder now given the impact of the COVID-19

pandemic, which reset the global economy and increased intensity of extreme weather events across the world. Since climate change has emerged as one of the biggest threats to the achievement of the SDGs, there has been growing concerns on its impact on biodiversity loss and the extinction of some species. There are also concerns regarding increased food insecurity at the household level in some parts of the world, particularly in Asia and Africa. With the demand for climate change action on the increase, there have also been growing calls for the big carbon emitters to drastically cut their emissions and invest in clean energy to save the planet by following development pathways making emissions stay under the 1.5°C increase in temperature.

Contributed articles presented at the National Symposium on Agrometeorological Advisory Service to Ensure Food Security in North East India on 7th February 2006 at ICAR Research Complex for NEH Region, Tripura Centre.

Food security, energy, climate action and biodiversity

A Directory of South African Youth Organisations, Service Providers and Resource Material

The contribution of urban agriculture in boosting food security and income generation

The Case of India

Agricultural Extension

Climate Change and Agriculture in India: Impact and Adaptation