SADC Regional Workshop on Climate Change Adaptation in Agriculture

Ongoing Research, Projects and Gaps in Lesotho

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Mokoena France ***(mokoenaf@gmail.com)***

&

Mosuoe Letuma ***(emletuma35@gmail.com)***

Lesotho Meteorological Services

Ministry of Energy, Meteorology and Water Affairs

Outline

Introduction

- Agriculture in Lesotho
- Lesotho climate change programs

Researches and projects in agriculture adaptation to climate change impacts

Identified gaps

Introduction – Lesotho Agric

- **Contribution of Agric to GDP**
  - **7.5%** (2011) but primary **source of income for >50%** of rural population
  - Agric contribution has been declining – climate variability and change

- Lesotho grows both livestock (cattle, sheep, goats, Poultry) and crops (maize, sorghum, wheat, legumes)

- **Cropping seasons**
  - Summer cropping season (Oct-Apri)
  - Winter cropping (May-Sept)
  - Lesotho Agriculture is rainfed

- **Agric research institutions**
  - MAFS - Research, Planning and Policy Analysis
  - Agricultural College
  - NUL
  - LMS
  - FAO and other agencies
  - DMA (LVAC)

Introduction – Climate Change

- Party to UNFCCC
- Published FNC in April 2000
- Developed TNA
- Published NAPA in 2007 – 11 priority areas and 1st two are on agric

Table 5: Key to the List of Prioritised Options used in Table 4

Option	Title
Option 1	Improve Resilience of Livestock Production Systems Under Extreme Climatic Conditions in Various Livelihood Zones in Lesotho
Option 2	Promoting Sustainable Crop Based Livelihood Systems in Foothills, Lowlands and Senqu River Valley
Option 3	Capacity Building and Policy Reform to Integrate Climate Change in Sectoral Development Plans
Option 4	Improvement of an Early Warning System Against Climate Induced Disasters and Hazards
Option 5	Securing Village Water Supply for Communities in the Southern Lowlands
Option 6	Management and Reclamation of Degraded and Eroded Land in the Flood Prone Areas (Pilot Project for Western Lowlands)
Option 7	Conservation and Rehabilitation of Degraded Wetlands in the Mountain Areas of Lesotho
Option 8	Improvement of Community Food Security Through the Promotion of Food Processing and Preservation Technologies
Option 9	Strengthening and stabilizing eco-tourism based rural livelihoods
Option 10	Promote Wind, Solar and Biogas Energy Use as a Supplement to Hydropower Energy
Option 11	Stabilizing Community Livelihoods which are Adversely Affected by Climate Change Through Improvement of Small Scale Industries

Ongoing research and/or Projects

1. Modeling the impact of climate change on maize production in Maseru, Lesotho.

Objectives:

To understand how climate change may impact crop production and what option exist for adaptation especially for local smallholder farmers.

Scope

Maseru district

Expected Outputs

- Projected change in Maize yield
- Adaptation options

Status

- Final touch ups

Researchers:

1) Mokoena France, Meteorologist at LMS mokoenaf@gmail.com
2) Nkulumo Zinyengere PhD student at UCT

Ongoing research and/or Projects

2. Southern Africa Agricultural Model Intercomparison and Improvement Project

Objectives:

- To evaluate the impacts of projected climate change scenarios on the production and prices of staple/nutritionally-important crops (maize, sorghum, sugarcane, wheat and sweet potatoes) in the Southern African region (South Africa, Lesotho, Swaziland, Botswana and Namibia) using climate, crop and economic simulation models;
- To build human and institutional capacity to explore and evaluate the impacts of climate change – and associated field management adaptation strategies – on food prices and on production

Scope:

National, Crops (maize , Sorghum and wheat), 2070-2099

Expected Outputs

- Validated crop models for the important crops
- Model inter-comparison results
- Economic impacts
- Field-level adaptation strategies

Status

- Climate scenarios are done
- working on maize

Researchers - Lesotho:

1) Patric Gwimbi, NUL
   pgwimbi@yahoo.com

Ongoing research and/or Projects

3. Climate Smart Agriculture Policies in Lesotho

Objectives:

To reviewing all documented Climate Smart Agricultural policies and programmes in Lesotho noting the gaps. Institutional capacities and capacity building needs are also being reviewed.

Scope:

National

Expected Outputs

- Comprehensive report of the level of CSA in policies and implementation. Gaps and recommendations will also be included

Status

- Draft report is ready and will be presented to stakeholders in Dec.
- The study ends in Jan 2014

Researchers - Lesotho:

1) Patric Gwimbi, NUL
pgwimbi@yahoo.com

Ongoing research and/or Projects

4. Climate Resilient Wool and Mohair Programme (CRWAMP)

Objectives:

To reduce rural poverty and food insecurity of poor rural dwellers in the mountain areas of Lesotho through increase of incomes of rural farmers and entrepreneurs on a sustainable basis

Scope:

National

Expected Outputs

- Improved Rangelands
- Improved Production and Management
- Markets, infrastructure and business services

Status

- At design phase

Researchers /Implementers- Lesotho:

MAFS

Ongoing research and/or Projects

5. Developing Conservation Agriculture Systems for Smallholder Farmers in Lesotho

Objectives

1. Integrating cover crops into conservation agriculture systems
2. Determine agronomic and economic fertilizer rates for maize under conservation agriculture
3. Characterize the composition and contribution of N & C from legume/ grass cover crops.
4. Compare CO_2 flux between till and non-till systems.
5. Examine the environmental conditions contributing to CO_2 emissions from agricultural soils

Scope: National Level

Expected Outputs

- Good practice of conservation
- Paper on CO_2 flux from till & non-till soils
- Paper on CO_2 emissions from agricultural soils

Status: On-going research, papers on objectives 4 & 5 on press

Funder: USAID, SANREM & CRSP

Researchers-4: Deb O'Dell, Thomas J. Sauer, Bruce B. Hicks, Dayton M. Lambert, David R. Smith, Wendy Bruns, August Basson, Makoala V. Marake, Forbes Walker, Michael D. Wilcox, Jr., Neal Samuel Esha

Researchers-5: Jones, Wendy. M.S.

Contacts: M.V. Marake, N.S. Eash & F. Walker
C/O: mv.marake@gmail.com
+266 58772958

Ongoing research and/or Projects

6. Reducing vulnerability from climate change in the Foothills, Lowlands and the Lower Senqu River Basin

Objectives

•To mainstream climate risk considerations in the Land Rehabilitation Programme of Lesotho for improved ecosystem resilience and reduced vulnerability to climate change through engagement of youth

•To promote sustainable Crop Based Livelihood Systems (Priority 2 of NAPA)

Agriculture related outputs

•Communities empowered to manage and reduce vulnerability of natural resources, increasing their resilience

•Demonstrated climate-smart land rehabilitation programme over 50 000 ha

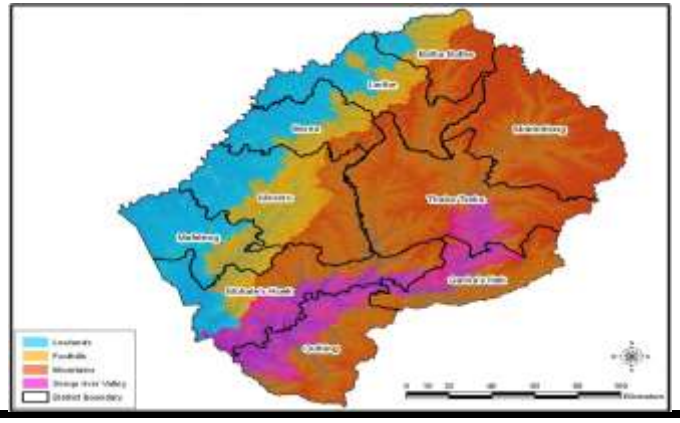
•Sustainable crop based livelihoods in project areas

Scope: Foothills, Lowlands & Senqu River Valley

Status: PIF approved, at the process of engaging consultants for developing project document

Funder: GEF/LDCF

Implementing Agencies: Ministry of Forestry & Land Reclamation, UNDP & LMS



Ongoing research and/or Projects

7. Improvement of Early Warning System to Reduce Impacts of Climate Change and Capacity Building to Integrate Climate Change into Development Plans: Component 3.

Objectives:
To development participatory action-research programme on the development of resilient livestock and new food crops that could become productive under climate change scenarios

Scope:
3 Districts

Expected outputs:
•Best practices for resilient rural development demonstrated and adopted

- •The use of more resilient livestock breeds
- •New food crop species that are productive under climate change scenarios
- •Conservation agriculture

Status:
Just started, samples of new crops for research planted in pilot areas

Funder:
GEF/LDCF & GoL

Implementing Agency:
LMS

Research Institutions: DAR-MAFS & FA-NUL

GAPS

- Climate modeling
  - GCM
  - Downscaling
- Lack skills in running impacts models (snc,2013)
  - Crop models, livestock, hydro
- Lack of data
  - Meteorological
  - Agricultural
- Lack of expertise in agrometeorology

Thank you for your attention!!!