ARC • LNR
Excellence in Research and Development

agriculture, forestry & fisheries
Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Rural agricultural small-scale biogas production

ME Moeletsi[1], P Magama[2], KM Nape[1], M Ncokazi[2], M Tongwane[1], P Britz[2], MP Nakana[1], MI Motsepe[3], S Madikiza[3],F

[1]Agricultural Research Council - Institute for Soil, climate and water

[2]Agricultural Research Council - Institute for Agricultural Engineering

[3]Climate Change and Disaster Management - Department of Agriculture, Forestry and Fisheries

Biogas Conference
IDC conference centre
Sandton
06 March 2015

PRESENTATION OVERVIEW

PART 1:INTRODUCTION

PART 2: PROJECT BACKGROUND/APPROACH

PART 3: CHALLENGES AND OPPROTUNITIES

PART 4: OTHER PROJECTS

ARC • LNR
Excellence in Research and Development

Introduction

- Many rural households in SA are faced with the following challenges:
  1. **Energy poverty (firewood main source of energy for cooking)**
  2. **Food insecurity**
  3. **Inadequate sanitation facilities and organic waste disposal**
- Biogas digester technology has the potential to address the above mentioned rural challenges by converting organic matter into energy (biogas) and organic fertilizer (digester effluent)
- However the main challenge we are facing in SA is that of low adoption of biogas technology. Due to: **technical factors** , **low levels of biogas research**, lack of **skilled human resources** ; **cost of digester plants** and **poor promotion** of the technology.

Biogas stove

ARC • LNR
Excellence in Research and Development

PROJECT BACKGROUND

1.Climate change mitigation and adaptation: Multi-disciplinary approach through an integrated crop-livestock system

ARC • LNR
Excellence in Research and Development

PROJECT BACKGROUND

Integrated farming system

FOOD SECURITY

CLIMATE CHANGE MITIGATION

ENERGY SOURCE

Crop production

Crops

Organic fertilizer : field application

Live stock feed

Livestock

Live stock manure

Energy: Biogas

Digester Effluent

Organic fertilizer : digester effluent

Biogas Digester

PROJECTS APPROACH

Skills

1. Situational Analysis

2. Farmer training

3. biogas digester installation and Skills trasfer

4. Monitoring and performance evaluation

ARC • LNR
Excellence in Research and Development

CHALLENGES AND BENEFITS

Challenges:

- Low winter production volumes
- Blockages of inlet pipes
- More effluent produced than the farmers can use
- Inconsistency on amount fed and timing of feed
- Beneficiaries who do not stay permanently at farmstead

Benefits:

- Summer months savings on purchase of LPG
- Reduced firewood usage and time saved on wood collection or drying cow dung
- Utilization of bio-slurry for garden production(UNDER-UTILISED BENEFIT)
- Over 15 young people trained to install and maintain the biodigesters

ARC • LNR
Excellence in Research and Development

OTHER PROJECTS

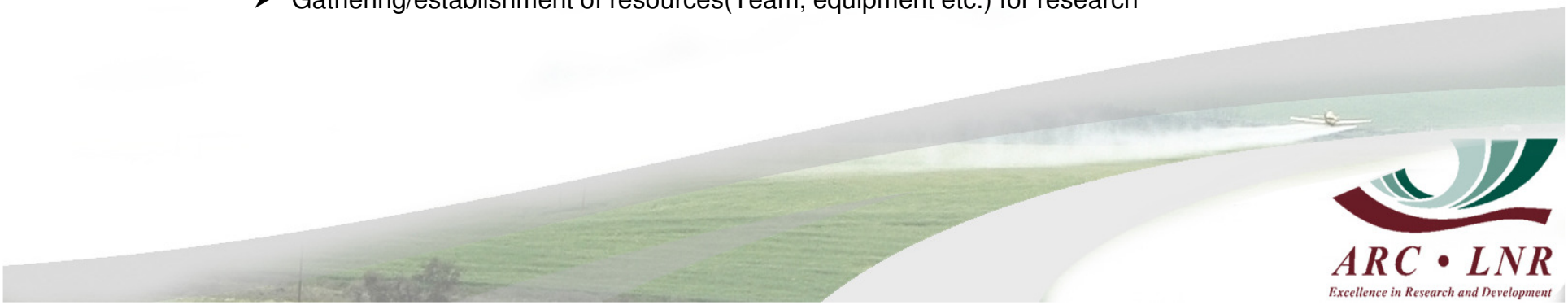
- Sustainable Biogas production in rural agricultural South African households

Main Objectives

1. Optimize biogas production from blends of food residues and livestock manure
2. Investigate cost-effective ways of improving biogas production in low temperature areas
3. To analyse the bio-slurry from different feed intake for crop production and Investigate the use of bio-slurry to enhance soil fertility and production

Project status

- Initial stage of implementation
  - Situational analysis
  - Gathering/establishment of resources(Team, equipment etc.) for research



ARC • LNR
Excellence in Research and Development

ACKNOWLEDGEMENTS

- 1st project FUNDING BY Department of Agriculture, Fisheries and Forestry

agriculture, forestry & fisheries
Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

- 2nd project FUNDING BY National Research Foundation

NRF National Research Foundation

ARC • LNR
Excellence in Research and Development

Thank You!