Climate Smart Agriculture Conference Report

Birchwood Conference Hotel
Johannesburg
South Africa

8 September 2016


CCARDESA
Innovative Research&
Development Through
Effective Partners
giz


CCARDESA
Innovative Research&
Development Through
Effective Partnerships
giz

Acknowledgements

The Regional Climate Smart Agriculture (CSA) conference was made possible through the collaborative efforts of the Centre for Coordination of Agricultural Research & Development of Southern Africa (CCARDESA) and the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN). The involvement of the National Agricultural Marketing Council (NAMC) was in its capacity as the Node Hosting Institution of FANRPAN in South Africa (with Dialogue convening powers). It needs to be stated that the conference was supported by German cooperation and received financial assistance from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Africa Capacity Building Foundation (ACBF).

ACRONYMS

ARC	Agricultural Research Counci
CA	Conservation Agriculture
CCARDESA	Centre for Coordination of Agricultural Research and Development for Southern Africa
CSA	Climate Smart Agriculture
DAFF	Department of Agriculture Forestry and Fisheries
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
GHG	Greenhouse Gas
ISP	Input Subsidy Programm
KT	Knowledge Translation
KZN	KwaZulu-Natal
NAMC	National Agricultural Marketing Council
RAP	Regional Agriculture Policy
SADC	South African Development Community

Conference Group Photo

Contents

1. Session 1: Opening and welcoming remarks

1.1 Introduction

The Regional Climate Smart Agriculture (CSA) Conference was convened by the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) and the Food and Agricultural Natural Resources Policy Analysis Network (FANRPAN), in close collaboration with the National Agricultural Marketing Council (NAMC) as the FANRPAN Node Hosting Institution in South Africa. The main aim of the Conference was to have a dialogue on matters relating to climate change as it affects agriculture in Southern Africa (to share the lessons and progress made). The first part of the conference dealt with presentations from a number of countries in Southern Africa on their experiences and coping mechanisms, and this was followed by a session primarily dedicated to South African experiences.

The first session was chaired by Dr Baitsi Podisi (CCARDESA) while the second session was chaired by Dr Simphiwe Ngqangweni (NAMC – FANRPAN Node Hosting Institution). The Chairperson (of the introductory part) welcomed all participants and asked attendees to introduce themselves before the dialogue was declared opened. Then the Chairperson explained the purpose of the gathering and urged all participants to freely give their input so as to improve CSA programmes and projects in the region. After this the Chairperson requested Mr B. Nyhodo (the FANRPAN Node Coordinator) to welcome the participants to the conference on behalf of the FANRPAN family in South Africa.

1.2 Welcoming remarks (NAMC and CCARDESA)

The welcoming remarks by Mr B. Nyhodo marked the official start of the conference. As an introduction to his welcome, he introduced the NAMC and the role that it plays in South Africa. He stated that the NAMC plays an advisory role on issues of markets of agricultural products to the Minister of Agriculture, Forestry and Fisheries (DAFF) and other industry stakeholders. Mr Nyhodo stated that the NAMC derives its mandate from legislation (the Marketing of Agricultural Products Act No. 47 of 1996). Then went on to outline the role

of the NAMC within the FANRPAN family by stating that the NAMC is the FANRPAN Country Node Host in South Africa and is responsible for convening the FANRPAN National Policy dialogue in South Africa. He then welcomed all the participants from outside South Africa to enjoy the hospitality of the country, welcomed delegates from other Provinces of South Africa to Gauteng and lastly welcomed all the delegates to Ekurhuleni, which is situated in Boksburg.

Then Dr Baitsi Podisi (CCARDESA) gave a welcome on behalf of CCARDESA. In his remarks he introduced CCARDESA as a regional Not for Profit Sub-Regional Research and Development Organisation (SRO). He stated that the organisation's headquarters are in Gaborone, Botswana. He further noted that the organisation currently coordinates the implementation of research and development projects and programmes within the twelve (12) Southern African Development Community (SADC) countries, which includes Climate Smart Agriculture, among other projects. He said that his organisation operates within the framework of the Comprehensive African Agriculture Development Programme (CAADP) for enhancing the capacity of African farmers. Furthermore, the organisation aimed to increase smallholder productivity and competitiveness through implementation of the four pillars of CAADP. He concluded his welcoming remarks by indicating that CCARDESA's role is also to coordinate regional and cross-country linkages (standard methodology, tools and monitoring), provide review mechanisms and share the protocols and results of research activities.
After thanking him for his opening remarks, the standing chair then handed the meeting over to Dr Podisi to move on with the programme.

2. Session 2: Thematic presentation for SADC countries

2.1 Adaptation to Climate Change in Agriculture in Southern Africa

The first presentation was by Ms Sarah Beerhalter, about the GIZ Accra programme on adaptation to climate change in Southern Africa's agriculture. Ms Beerhalter began by analysing the SADC situation in terms of the impact of the current drought on the agricultural sector, which is argued to have resulted in increasing food insecurity in the region. The impact of the drought includes, among other things, a cereal deficit of about 9.3 million tons, and 643 thousand cattle losses. Further, she highlighted the global situation likely to be faced by 2050, given the use of current agricultural practices and crop varieties. It is noted that alarming levels of land degradation and water scarcity are worldwide concerns. Agriculture is faced with enormous challenges, such as the need to double food production on the same amount of land (increasing yields is the biggest challenge), as well as ensuring that farmlands are more resistant to extreme weather, while massively reducing GHG emissions.

The resolution has been made to use CSA programmes to adapt to and mitigate climate change in agriculture. These programmes were introduced to overcome the new realities brought about by climate change. Climate smart agriculture is not just about new technologies; it combines traditional indigenous knowledge, common agricultural practices and appropriate new technological developments to increase sustainability and efficiency in agricultural production as well as to secure food security for future generations. In her concluding remarks, Ms Beerhalter outlined that, in a nutshell, SADC, CCARDESA and GIZ are currently supporting climate change adaptation through:

- Knowledge dissemination for implementation at farm level, and
- Climate proofing of priority agricultural value chains.

2.2 Climate Smart Agriculture – from the National Policy to Local Implementation in Malawi

Mr John Mussa of Malawi's Ministry of Agriculture, Irrigation and Water Development presented their experience on the subject in Malawi. He began by outlining the role the agricultural sector plays in the Malawian economy as well as challenges that affect agricultural production, thereby hampering food security. Mr Mussa indicated that the country reduced food insecurity through:

- Promoting farming practices that are adaptable to climate change
- Introducing crop varieties that are resilient to impact of climate change, and
- Sustainable farming practices.

The Malawi government has agreed with its partners to formulate Malawi's Agricultural Sector Wide Approach (ASWAP), aimed at improving agricultural productivity. Fundamental to the programme is to reduce food security, support commercial agriculture and agro-processing, and sustainable agricultural land and water management. ASWAP also provides support to facilitate the adoption of policies and strategies that include CSA policies. He explained how CSA practices capture the synergies between mitigation, adaptation and food security. The adaptation and mitigation programmes include conservation agriculture (national guidelines on conservation agriculture and radio/calendar programmes), manure (annual and manure extension manual), rainwater harvesting, and suitable crop varieties.

Mr Mussa concluded that the best CSA practices involve various farming practices; however, more research is required on appropriate CSA packages.

2.3 Opportunities for Climate Change Input Subsidy Programmes in Southern Africa

Ms L. Keam, who is Technical Coordinator of VUNA based in Lesotho, introduced the VUNA programme and the role it plays in helping farmers in East and Southern Africa to increase the uptake of climate smart agriculture. VUNA aims to improve the resilience of smallholder farmers to climate change. She explained that VUNA operates through three aspects:

- Providing evidence of the advantages of CSA, advising and influencing farmers regarding CSA practices
- Providing an enabling environment, and
- Agricultural development through direct support for pilot projects.

VUNA provides policy influence, education, information, finance and market smartness of CSA. This makes agricultural systems across the region conducive to improving the long-term sustainability of the livelihoods of smallholder farmers through different CSA programmes and an input subsidy programme. She expanded on the input subsidy programme, which is aimed at the provision of inputs and improving the use and application of inputs that are evident to increase the climate resilience of farmers. Furthermore, the programme assists in achieving the objectives of CSA such as enhancement of pre-event risk management, opportunities to mitigate climate risk and opportunities to recover from climate risk events. She concluded by indicating that VUNA is implementing a

pilot project in Zambia to improve the climate smartness of the e-voucher pilot scheme, which is being scaled up this season.

Discussion on the presentation

Who are you targeting and who benefits from the input subsidy programme (ISP)?

– The ISP assists smallholder households to re-engage in production by subsidising them with improved seed and inorganic fertilisers.

2.4 Closing the Gap between Research and Practical Application for CSA: Successful examples

Dr C. Lamanna, who is a Senior Scientist of CGIAR, began with a brief explanation of the challenges that the region is encountering for implementation of CSA programmes for productivity, adaptation and mitigation. She explained that there are many practices implemented among the farmers with no real effect because of adoption problems. CSA practices include the use of green manure, mulching, fertiliser, pruning, intercropping, crop residue and reduced tillage.

She indicated that there is evidence for CSA in Southern Africa, although the effects vary by outcome and location. A study conducted in Tanzania was used as an example to see the impact of CSA practices. The results reveal that CSA practices showed a positive impact on agricultural productivity. She then discussed the climate smart agriculture plan that requires engagement and capacity development within the region. The CSA plan involves the following:

- Situation analysis
- Targeting and prioritising
- Programming design, and
- Monitoring and evaluation.

These aspects are considered to ensure that CSA is implemented and monitored so that set objectives are met, and learning from experience is encouraged.

2.5 Moving from Conservation to Climate Smart Agriculture through Integrated Crop and Livestock Farming

Dr K. Munyinda, who is a Senior Lecturer in the Department of Plant Science at the University of Zambia, began by introducing the role of the agricultural sector in Zambia. He noted that agriculture is regarded as a major source of employment and is an important sector in the Zambian economy. In the same light he argued that agriculture plays an important role in improving food security and reducing poverty levels in Zambia. He also noted that Zambia is one of the major contributors of greenhouse gases which accelerate climate change.

He went on to explain the improvements since the introduction of conservation agriculture (CA) which has led to gains in crop and livestock productivity. He acknowledged that conservation agriculture adoption still remains very low at less than 5% and has been implemented by large commercial farmers. Currently, the National Agriculture Ministry has proposed to strengthen and move from CA to climate smart agriculture to improve productivity, food security and profit, while reducing GHG emissions.

This will be done by improving CSA components in addition to current CA practices through minimum tillage, precise application of fertiliser, use of green manure, crop rotation, timely planting and integrated weed control. A number of practices have been implemented, which include promotion and use of improved crop varieties and fertiliser, improved pasture, improved livestock breeds, and integrated pest and disease management. He also indicated

that to ensure the success of the implementation of the practices requires financial support, the establishment of MoUs with input suppliers and government, capacity building and the provision of research and development.

2.6 How Climate Smart is Conservation Agriculture? Examples from Malawi on Practices, Technologies and Constraints to Adoption

Dr A. Ngwira, from the Department of Agricultural Research Services in Malawi, began by pointing out why conservation agriculture matters to smallholder farmers. He then argued that conservation agriculture plays a major role in protection as a buffer to land degradation, by responding to climate variability. He explained how conservation agriculture addresses adaptation and mitigation for climate change with minimal effort while also increasing production.

To articulate his position, he noted that this is done through efficient water and nutrient use, and reduction of carbon dioxide and fossil fuels needed for land preparation. He said some studies report benefits and some did not, and that data on soil carbon sequestration are inconclusive.

He acknowledged that Malawi farmers find conservation agriculture more profitable. He explained the economic viability of the conservation agriculture system in Malawi, which requires less labour for land preparation, weeding and other agricultural practices; increased cost for herbicides are easily compensated and CA systems have been more profitable and have advantages in groundnut production. Other benefits are:

- CA improves infiltration and soil moisture
- The adaptation potential of CA is high
- Soil carbon increases depend more on organic input than tillage.

He acknowledged that crop rotation provides an opportunity for nutrient cycling and improves soil fertility, but said that farm size constrains farmers in adopting the system, the yield benefits are delayed in some systems and the unavailability of critical inputs also affects farmers in adopting the CA system.

2.7 Climate Smart Practices: Conservation Agriculture in Southern Africa. Examples of successful project implementation and lessons learnt

Mr Crispin Miyanda, a field facilitator, presented a successful project using conservation agriculture in the Western Province of Zambia. The project is supported by WWF Germany in collaboration with BENGO of Germany. He gave a summary of the project where the sample size was about 2 000 smallholder families (60% women) who are dependent on natural resources and threatened by climate change impacts. He stated that their implementation approach was to understand the biophysical and social circumstances of the farmers, and

training extension workers to be able to train targeted farmers.

The training is based on field schools and demonstrations of the use of basin ripping, crop rotation, intercropping, crop residues and organic green manures. Furthermore, the promotion and popularisation of conservation agriculture and crop diversification plays an important role in food security and climate change adaptation measures. It has been noted that there has been a positive increase in training of farmers, from 400 in 2010 to 2 100 in 2015/16. The adoption of CA has increased, as well as the knowledge level of farmers. The implementation of conservation agriculture in western Zambia has shown a positive impact through increased yields; there is greater productivity on CA fields, and the acquisition of seed has increased.

The project has been monitoring CA farmers using two systems, Event Book and Mobile App. In conclusion, Mr Miyanda said that educating, training and monitoring farmers is critical for increasing the output of farms so as to enhance food security for all.

Discussion emanating from the presentation

The project is able to reach about 2 100 farmers through Mobile and Event Book systems. Considering that farmers are illiterate, what can the lesson be for Namibia? – The extension services go to farmers to provide training. The Event Book was a lesson learnt from Namibia which was implemented in Zambia. CA is working but farmers are not convinced. CSA has good practices. The question is why farmers are not adopting them. The problem is dissemination of information and capacity development. Even if farmers are not able to understand it, it is important to have a tool for tracking their progress through monitoring and evaluation tools. Also ICT can offer a solution for farmers.

2.8 Climate Smart Agriculture: Development of a Smart Sprayer for Herbicides

Dr T. Yu, a Researcher from the Agricultural Research Council of South Africa (ARC), conducted a presentation on the development of a Smart Sprayer for Herbicides that would be effective as a practice in climate change. Smart sprayer development at commercial farming level detects weeds and computer control spraying. Dr Yu began by outlining the different methods used by small-scale farmers to control weeds, manual control and full surface spraying. He listed problems caused by manual or full surface spraying as follows:

- Drudgery for small-scale farmers
- Labour constraints in the farming sector
- Labour intensive and is mainly done by women
- High cost of chemical herbicide used (13–16% of total crop farming cost according to research by ARC), and
- Soil and water degradation.

Dr Yu introduced the smart sprayer development, and described the smart sprayer as a cost-effective small-scale spraying system based on modern technology. The smart sprayer is an electronic pump, weed detector, with one micro-chip controller shared by all spraying

units, precision solenoid and spraying nozzles, cost reduced to 10% and with a chemical saving of 80% maximum. However, the challenge is affordability, as it costs R 100 000 per spraying unit. The smart sprayer will be very useful as it will reduce herbicide and pesticide use for vegetable production and flower nurseries.

Discussion emanating from the presentation

Why is it expensive to use the smart sprayer?

– The smart sprayer is working with an electronic pump and weed detector, which are controlled by computerised electronics.

2.9 Supporting the Adoption of Climate Smart Agriculture by Enhancing Research Uptake through Knowledge Translation

Dr O.T. Thakadu, who is a Senior Research Scholar of the Okavango Research Institute of the University of Botswana, started his presentation with a brief explanation of knowledge translation (KT). The aim of the KT programme is to bridge a gap between "what is known" and "what is currently done" in practical settings through underutilised research evidence. The process involves linking the stakeholders who use research findings to make decisions for policy programmes, people and products. This includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve practical behaviour through adoption. He further stated that this is important is for the recognition of traditional approaches, to drive research findings and to provide the real and maximum benefits of policies.

Discussion emanating from his presentation

What is a role of knowledge translation in a top-down approach?

– Knowledge translation involves more than distribution of practical experience where it integrates the indigenous knowledge and scientific knowledge, and the sharing of indigenous practices, striving how to implement them.

3. Session 3: Thematic presentation on South Africa

3.1 Support Measures for Climate Smart Agriculture – Green Agri Portal

Ms L. Cloete-Beets presented the Green Agri Portal of the Western Cape Department of Agriculture. She mentioned that the main objective of the portal is to be a research hub for all farmers, researchers, and private as well as non-governmental agencies interested in smart agricultural practices, initiatives and research to get involved in the green economy space and share information. She explained the advantages of the portal and the stakeholders that already participate and use it. These advantages include:

- It is a platform for the industry to actively discuss green matters
- Allows users to network with green industry participants
- Allows greater understanding of green policies and activities undertaken by Western Cape Province.

She presented the progress of Green Agri since it was launched, and the challenges of having to verify any information that is to be published on the portal. The project was completed in March 2016 and developed a road map for actionable and prioritised initiatives that will take the agricultural sector towards greater resilience in the face of climate challenges. Of specific interest to the sector are the status quo report, fifteen other commodity briefs, as well as six case studies that were also published, and can be downloaded from the portal.

3.2 Innovation Driven Climate Change Adaptation

Ms V. Barends began her presentation by providing a general overview of South Africa on carbon emissions. In this she noted that South Africa is ranked amongst the top twenty global emitters of CO2 globally, with China and USA as the biggest. The 2017 Carbon Tax that South Africa committed to implement will directly affect the electricity, transport and metal industries and thus indirectly affect agriculture (hence the need for a carbon calculator).

The objective of developing the carbon calculator for farmers was based on the challenges faced by farmers that include, but are not limited to, ethical trade, fair trade, natural disasters insurance, inability to adapt to climate change and minimal knowledge about carbon footprint, carbon-offsetting and carbon tax. Therefore, the aim is to create awareness about climate change and carbon emissions, assist farmers

with factors that prohibit them by complying with "green" standards, and equip smallholders for the indirect and direct effects of phase 1 and phase 2.

In order to meet the objectives, currently a carbon calculator is being developed by Confronting Climate change and other various sources. The calculator considers all the activities undertaken by farmers for the production of particular crop. This project involves 3 phases; phase 1 is the developing phase; phase 2 is for piloting; and phase 3 is the live phase (the calculator is web-based). She acknowledged that this project is still in progress, Phase 1 is completed and Phases 2 & 3 still in progress. The carbon calculator is an Excel-based tool that is developed in close collaboration with the farmers on one-by-one cases.

Discussion emanating from the presentation

How often are farmers going to give information?
– The information is collected once a year, over a twelve-month period.

Carbon Tax: How is this going to work and how are you going to measure it?

– On a monthly basis, extension officers visit our farmers to collect data. More information is available from the Department of Agriculture, Western Cape.

3.3 The ARC drives Vermiculture Technology: Case Study of KwaZulu-Natal Province

Ms S. Modiselle explained that she was presenting work she was doing with Mr M. Sombalo on vermiculture technology. She explained vermiculture as a science of breeding earthworms under controlled conditions where the earthworms are cultured to decompose organic waste, turning it into a dark, nutrient-rich material which reduces the need for synthetic fertilisers. She pointed out that the Department of Science and Technology is currently funding this project.

The pilot project is based in KwaZulu-Natal and intends to verify the ability of vermiculture technology to perform on a larger scale. The specific objectives of the trial are to:

- Evaluate VT in terms of structure
- Evaluate vermicompost production and leachate in terms of quantity and quality
- Evaluate vermicompost and leachate in field plots, and
- Promote the registration, branding and marketing of VT and its products.

She explained that vermiculture is very effective under controlled environments and can work under uncontrolled environment although the results won't be optimal. VT impacts environment, institutions, increases production and creates employment and food security.

Discussion emanating from the presentation
Vermiculture: Will the technology thrive in an uncontrolled environment?
– Yes, the technology can work in uncontrolled environments but the results won't be optimal. Vermiculture: There is no information presented in your presentation. Why are the results not presented?

– This is an on-going process (planning stage), and the results are not yet available.

3.4 Support Measures for Climate Change Scoping Study: Case Study of South Africa

Dr C. Mutengwa began his presentation with a brief introduction of CSA as agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances the achievement of national food security and development goals. He indicated that his presentation was based on a study that was commissioned to establish CSA understanding and implementation in South Africa as well as the current CSA policy framework in South Africa. The project involved the consultation of farmers' organisations, private sector, development partners and civil society organisations, government departments and state owned entities.

He then discussed the key CSA programmes or projects implemented, aiming to raise awareness, policy development, development of sector mitigation and adaptation plans, and sustainable resource management and use. The University of Fort Hare has developed a number of holistic research-based knowledge and climate smart technologies that would contribute to sustainable food security and resilient food production systems in the light of climate change uncertainties. He also highlighted that there are a number of policies that effectively conflict with CSA that need appropriate coordination and implementation.

The challenges to the success of CSA programmes are landlessness and poverty among potential farmers, lack of coordination of CSA research, and that outreach activities need to be coordinated by the Network for CSA. He acknowledged that Bio-Watch is reported to have a very positive impact in terms of gender equity as it empowers women especially to be in control of their seed and livelihoods.

4. Session 3: Conclusion and way forward

Dr B. Podisi presented the closing remarks of the conference. He thanked all the presenters for great presentations, thanked all the conference delegates for attending and their valuable inputs during the proceedings. He then made a brief summary of the messages from all the sessions, as follows:

- Vermiculture technology was presented to provide for improved agricultural productivity (for food security) and creation of employment.
- The success stories of Climate Smart Agriculture in South Africa can be replicated in other parts of the regions (be adapted to suite the local conditions).
- Awareness of Climate Smart Agriculture practices as well as coordination of Climate Smart Agricultural research and outreach activities could be coordinated by the planned alliance/network for CSA.
- Input Subsidy Programmes were outlined to provide a means to encourage coordination and behaviour among farmers in order to achieve the objectives of improving resilience to climate variability and raising agricultural productivity.
- The implementation of conservation agriculture in Zambia is argued to have improved productivity (smallholder farmers); however, adoption of conservation agriculture practices still remained small irrespective of high production potential.
- Conservation agriculture in Southern Africa is an example of successful project implementation and lessons – the key important approach is to train senior agricultural officials who will transfer their knowledge to the ground users (farmers).

- There was a demonstration of the Green Agriculture Portal (South Africa) which is a reliable, relevant and friendly user research portal for green agricultural matters.
- It came out clearly during the deliberations that African farmers are unable to adapt fast to these unfavourable weather conditions and there is very limited information about carbon footprint, carbon-offsetting and carbon tax.
- The importance of knowledge transfer in CSA (to transfer presentable ideas to relevant people).
- The demonstration of a tool that can be used to calculate carbon emissions among smallholder farmers Western Cape South Africa is an innovation that is worth considering by other countries the region.
- The new technology to reduce herbicides and pesticides in our production through Smart Sprayer should be considered highly.

After making these closing remarks, Dr Podisi declared the conference officially ended and wished every delegate a safe trip to their respective homes.

5. Appendix A: Workshop Programme

Time	Topic	Presenter
7:30 – 8:30	Registration	
8:30 – 8:40	Welcoming remarks	National Agricultural Marketing Council Mr Bonani Nyhodo, FANRPAN node coordinator, South Africa
8:40 – 8:50	Welcoming remarks	CCARDESA Dr Baitsi Podisi, Programme Manager
8:50 – 9:10	Official Opening – Supporting climate change adaptation in agriculture through the SADC regional agriculture policy (RAP)	SADC Secretariat Food, Agricultural and Natural Resource Directorate
THEMATIC PRESENTATIONS		
9:10 – 9:30	Adaptation to climate change in agriculture in southern Africa	GIZ ACCRA/CCARDESA Ms Sarah Beerhalter, Programme Manager, GIZ Accra Programme
9:30 – 9:50	Climate smart agriculture – From national policy to local implementation in Malawi	Ministry of Agriculture, Irrigation and Water Development, Malawi Mr John Mussa, Land Resources Management
9:50 – 10:10	Opportunities to climate smart input subsidy programmes in southern Africa	VUNA Programme, Lesotho Ms Liesl Keam, Technical Coordinator
10:10 – 10:30	Q & A session	
10:30 – 11:00	Coffee Break	
11:00 – 11:20	“Closing the gap” between research and practical application for climate smart agriculture: successful examples	World Agroforestry Centre Dr Christine Lamanna, Senior Scientist, CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS)A
11:20 – 11:40	Moving from conservation to climate smart agriculture: Examples from Malawi on practices, technologies and constraints adoption	University of Zambia Dr Kalaluka Munyinda, Senior Lecturer, Department of Plant Science

11:40 – 12:00	**How Climate Smart is Conservation Agriculture: Examples from Malawi on practices, technologies and constraints to adoption**	**Department of Agricultural Research Services, Malawi** **Dr Amos Ngwira, Cropping Systems Agronomist**
12:00 – 12:20	Climate Smart Practices: Conservation agriculture in southern Africa, examples of successful project implementation and lessons learnt	WWF Zambia Mr Crispin Miyanda, Field Facilitator - Conservation Agriculture
12:20 – 12:40	Climate Smart Agriculture: Development of a smart sprayer for herbicides	Agricultural Research Council (ARC), South Africa Dr Tingmin Yu, Researcher
12:40 – 13:00	Q & A Session	
13:00 – 14:00	Lunch	
14:00 – 14:20	Supporting the adoption of CSA by enhancing research uptake through knowledge translation	Okavango Research Institute, University of Botswana Dr Olekae Tsompi Thakadu, Senior Research Scholar - Environmental Communication & Education Coordinator
14:20 – 14:40	Climate Smart Agriculture scoping study: Case study of South Africa	Fort Hare university, south Africa Dr Charles Mutengwa
14:40 – 15:00 15:00 – 15:20	Innovation driven climate change adaptation	Department of Agriculture, Western Cape Province, South Africa Ms Vanessa Barends, Agricultural Economist (Macro & Resource Economics Unit)
15:20 – 15:40	Q & A Session	
15:40 – 16:00	The Agricultural Research Council drives vermiculture technology: The case of Kwa-Zulu-Natal Province	Agricultural Research Council, South Africa Ms Salome Modiselle, Agricultural Economist (Economic Analysis Unit) and Mr Lulama Sombalo, soil scientist (Institute of Soil Climate and Water, Soil Division)
16:00 – 16:20	Support measures for climate smart agriculture – Green Agri Portal	Department of Agriculture, Western Cape Province, South Africa Ms Leann Cloete-Beets, Senior Agricultural Economist (Macro & Resource Economics Unit)
16:20 – 16:40	Q & A Session	
16:40 – 17:00	Wrap up/closure	

List of Participants

Title	Name	Organisation	Physical address	Country	Email	Phone office
Mr	Abel Musumali	Eastern and Southern Africa Youth Climate Change Alliance ACLYP/Enviro-Watch	Plot 163/30, Makeni Los Angeles Road	Zambia	musumaliabel@gmail.com	+260966415233
Mrs	Alexandria Angala	Ministry of Agriculture, Water and Forestry		Namibia	angalaa@maef.gov.na; shoopalaa@gmail.com	+264813869660
Dr	Alfredo Nhantumbo	Faculty of Agronomy and Forest Engineering - Eduardo Mondlane University	Av Julius Nyerere, 3453 Maputo	Mozambique	abnhantumbop@yahoo.com; anhantumbo@uem.mz	
Dr	Allan Chilimba	Department of Agricultural Research Services	Department of agricultural research services	Malawi	achilimba@gmail.com	+2651707378
Mr	Alphonse Owuor	FAO - Somalia	Ngecha Road Campus, Lower Kabete, Nairobi	Kenya	alphonse.owuor@fao.org	+254204000000
	André Jooste	Potatoes SA				
	Ayanda Mokoetla	SARB			ayanda.mokoetla@resbank.co.za	
Dr	Baitsi Podisi	CCARDESA	CCARDESA Secretariat, Station Exit Road, Plot 4701, Gaborone	Botswana	bpodisi@ccardesa.org	+267 3914997

Title	Name	Organisation	Physical address	Country	Email	Phone office
Dr	Benoit Nzaji Lupelekese	Ministère de l'Agriculture, Pêche et Elevage/Service National de Vulgarisation	N°56 Av: Panzi C/Ngiri-Ngiri	DRC	nzajib1@yahoo.fr; benoitlupelekese@gmail.com	+243999203168
Mr	Bernard Mache	Ministry of Agriculture, Mechanisation and Irrigation Development	39 Fourth Street, Marondera	Zimbabwe	bernard.mache@yahoo.com	+2634794383
	Bhekiwe Fakudze	FANRPAN			BFakudze@fanrpan.org	
Mr	Botha Kruger	SARUA	Room 110, Marang Block, Wits Education Campus, Parktown, Johannesburg 2050	South Africa	botha@futurelead.co.za	+27117173952
	Charles Mutengwa	UFH			CMutengwa@ufh.ac.za	
Dr	Chikakula Miti	GIZ/CCARDESA	ACCRA-GIZ Programme Office at CCARDESA Secretariat, Station Exit Road, Plot 4701, Red Brick Building, Ground Floor, Gaborone	Botswana	chikakula.miti@giz.de	+267 3914997
Mr	Chipo N'gandu	CCARDESA	CCARDESA Secretariat, Station Exit Road, Plot 4701, Gaborone	Botswana	cngandu@ccardesa.org	+267 3914997
Mr	Chipo N'gandu	CCARDESA	CCARDESA Secretariat, Station Exit Road, Plot 4701, Gaborone	Botswana	cngandu@ccardesa.org	+254207224064
Mr	Crispin Miyanda	WWF Zambia	Plot 4978 Los Angele Boulevard Longacres, Lusaka	Zambia	cmiyanda@wwfzam.org	260217481160
Mr	Danie Jordaan	UP			danie.jordaan@up.ac.za	
Mr	Douglas Magunda	FAO			Douglas.Magunda@fao.org	
Dr	Elke Stumpf	GIZ ZIM	1 Orange Drive Grove, Harare	Zimbabwe	elke.stumpf@giz.de	+2632061484

Title	Name	Organisation	Physical address	Country	Email	Phone office
Mr	Emmanuel N. Mbingo	Ministry of Agriculture	Plot 327 Mbabane	Swaziland	enathimbingo@gmail.com	+26824042731
Mr	Fhulufhelo Ramukhithi	Agricultural Research Council (ARC), Germplasm Conservation & Reproductive Biotechnologies (GCRB)	Old Olifantsfontein Road, Irene	South Africa	RamukhithiF@arc.agric.za	+27126729379
Mr	Frank Tembo	Concern Worldwide	Plot No. 227, Area 3, Mtunthama Drive	Malawi	frank.tembo@concern.net	+2651751437/8/9
Mr	Galeitsiwe Taelo Ramokapane	Ministry of Agriculture	4701, Station Road, Gaborone	Botswana	gramokapane@gov.bw ; okedisang@gov.bw	+2673689092
	George Chirima	ARC			ChirimaJ@arc.agric.za	
Ms	Gertrude Chelopo	ARC	Old Olifantsfontein Road, Irene	South Africa	chelopog@arc.agric.za	+27126729224
Mr	Gilbert Port Louis	Seychelles Agricultural Agency	La Batie, Mahe	Seychelles	portlouisgilbert@yahoo.com	+2484378491
	Godfrey Muneri	DEA			Nyakulalini@environment.gov.za	
	Heidi Phahlane	DAFF			HeidiP@daff.gov.za	
	Herbert Moses Lubinga	NAMC			hlubinga@namc.co.za	
Mr	Higino Marrule	VUNA	1st Floor, Block G, Hatfield Gardens, 333 Grosvenor Street, Hatfield, Pretoria, 0083		zawene@gmail.com	+27123423919
	Ikalafeng Kgakatsi	DAFF			Ikalafengk@daff.gov.za	
Dr	Ilse Trautmann	Western Cape Department of Agriculture	R44, Paarl		ilset@elsenburg.com	+27218085012

Title	Name	Organisation	Physical address	Country	Email	Phone office
Dr	Isaiah Nyagumbo	CIMMYT	12.5km peg Mazoe Road, Harare	Zimbabwe	i.nyamgumbo@cgiar.org	+263772238284
	Ishmael Tshi-ame	GFADA			ishmael@gfada.co.za	
	Ishmael Sunga	SACAU				
Dr	Jerome Chim'gonda-Nk-homa	Ministry of Agriculture, Irrigation and Water Development	Off Paul Kagame, Road Area 4, Agriculture Communication Branch building	Malawi	jeronkhoma@yahoo.co.uk	+2651750384
Mr	John Mussa	Ministry of Agriculture, Irrigation and Water Development	Plot 336, Mandala Street, Area 4, Liliongwe City	Malawi	mussajj@gmail.com	+2651755352
Mr	Joseph Mzinga	Eastern and Southern Africa Small Scale Farm-ers Forum (ESAFF)	Morogoro Postal Build-ing, Morogoro	Tanzania	mzinga@esaff.org; jmzinga@outlook.com	+255232613880
Dr	Kalaluka Muny-inda	University of Zambia		Zambia	kalalukamunyinda@yahoo.com	
Ms	Keitumetse Mphofu	ARC	Old Olifantsfontein Road, Irene	South Africa	ktsheboeng@gov.bw	+27126729304
Mrs	Kelebonye Tshe-boeng	Ministry of Agriculture	Plot 295 Lenganeng, Tlokweng	Botswana	ktsheboeng@gov.bw	+2673689705/6
Mr	Kwame Ababio	NEPAD Agency	230, 15th Road, Ranj-despark, Midrand	South Africa	kwamea@nepad.org	+27112563595
	Leann Cloete-Beets	WDOA			LeannCB@elsenburg.com	

Title	Name	Organisation	Physical address	Country	Email	Phone office
Dr	Leocadia Zhou	University of Fort Hare	University of Fort Hare, P. Bag X1314, Alice, 5700	South Africa	lzhou@ufh.ac.za	+27406022733
Mr	Lereko Masopha	Ministry of Agriculture and Food Security	PO Box 210, Maseru	Lesotho	la.masopha@gmail.com	+26622312330
Mr	Lerotholi Qhobela	SADC Plant Genetic Resources Centre	Plot No. 6300, Great East Road, Chalimbana, Lusaka	Zambia	lqhobela@spgrc.org.zm	+260211233391/2
Ms	Liesl Keam	VUNA	1st Floor, Block G, Hatfield Gardens, 333 Grosvenor Street, Hatfield, Pretoria, 0083	South Africa	liesl.keam@vuna-africa.com	+27123423819
	Lindikaya Myeki	NAMC			lindikaya@namc.co.za	
	Lindiwe Sibanda	FANRPAN			LSibanda@fanrpan.org	
Mr	Lloyd Sondayi	Department of Research, Ministry of Agriculture	Department of research, fifth Street Extension, Causeway, Harare	Zimbabwe	lloydsondayi@yahoo.com	+2634250105
	Lucius Phaleng	NAMC			LPhaleng@namc.co.za	
	Lufingo Mwamakamba	FANRPAN			LMwamakamba@fanrpan.org	
Mr	Lulama Sombalo	ARC			Lulama@arc.agric.za	

Title	Name	Organisation	Physical address	Country	Email	Phone office
	Madimetja Leputu	DST			Madimetja.Leputu@dst.gov.za	
Mrs	Margaret Nyirenda	SADC FANR				
	Mashudu Siobo	NAMC			mashudu@namc.co.za	
Mr	Masindi Mphaphathi	ARC	Old Olifantsfontein Road, Irene	South Africa	masindim@arc.agric.za	+27126729337
Ms	Mildred Kambinda	Ministry of Agriculture, Water and Forestry	GOP Luther Street	Namibia	kambindaMN@mawf.gov.na; katjindeev@mawrd.gov.na	+264612087
Mrs	Modina Marunga	Freelance	56 Sunnyway, Kelvin, Johannesburg	South Africa	modina.m@gmail.com	+27116569473
Mr	Morton Mwanza	Ministry of Agriculture and Food Security	Mulungushi House, Independence Avenue, Lusaka	Zambia	mortonmwanza@yahoo.com	+260977321932
Ms	Motshabi Mokolobate	ARC	Old Olifantsfontein Road, Irene	South Africa	mokolobatem@arc.agric.za	+27126729259
H.E.	Mpendulo Absalom Dlamini	Economic Development Commission for Southern Africa	2nd Floor, Impala Building, Mbabane	Swaziland	dlaminimpendul@gmail.com	+26825188036
	Nkulumo Zinyengere	UCT			nkulumoz@gmail.ccom	

Title	Name	Organisation	Physical address	Country	Email	Phone office
Mrs	Noroseheno Ralisoa	FIFAMANOR	Cite FIFAMANOR Andanomanelatra Antsirabe II	Madagascar	ralisoo@yahoo.fr	+261204499139
Dr	Olekae Tsompi Thakadu	Okavango Research Institute, University of Botswana	Plot 43, Boseja, Maun	Botswana	othakadu@ari.ub.bw	+2676817230
Mr	Pacsu Simwaka	University of Pretoria / Department of Agricultural Services in Malawi	Arcadia Street, 1328, Hatfield, Pretoria	Malawi/ South Africa	pacsusimwaka@yahoo.com	
Mr	Peter Manda	VUNA	24 Kudu Road, Kabulonga, Lusaka	Zambia	peterjmanda@hotmail.com	+27123423819
	Pusho Angoma	Trade Afrika Investments				
Mrs	Putso Nyathi	Canadian Food Grains Bank/MCC	32 Umgazi Street, 12 Fleur de Lys Menlo Park, Pretoria	South Africa	putsinyathi@mcc.org	+27124600684
Mrs	Razafimanantsoa Vola Lalao	Ministry to Presidency of Agriculture and Livestock	Lot III M5 bis oust Ambohijanahary, Antananarivo	Madagascar	putsinyathi@mcc.org	+261348023522
Ms	Remmie Hilukwa	National Plant Genetic Resource Centre	8 Orban Street, Windhoek	Namibia	HilukwaR@mawf.gov.na	+264612022036

Title	Name	Organisation	Physical address	Country	Email	Phone office
					sepo.hachigonta@nrf.ac.za	
Prof.	Sikhalazo Dube	International Livestock Research Institute (ILRI)	c/o CIMMYT Southern Africa Regional Office, 12.5km peg Mazowe Road, Mt Pleasant, Harare	Zimbabwe	s.dube@cgiar.org	+263772469211/2
	Sithembile Mwamakamba	FANRPAN			SNdema@fanrpan.org	
	Sizwile Nyamande	Arizona State University			sizwilek@yahoo.com	
Mr	Stephen Monamodi	NAMC			majara@namc.co.za	
Mr	Sydney Zharare	VUNA	1a Kent Road, Chisipote, Harare	Zimbabwe	sydney.zharare@vuna-africa.com	+263771512831
	Thabang Bambo	DST			Thabang.Bambo@dst.gov.za	
	Thapelo Kepa-disa	DST			Thapelo.Kepadisa@dst.gov.za	
Ms	Thato Supang	AgriBusiness Forum Botswana	Plot 104, Unit 16B, Commerce Park, Gaborone	Botswana	thatosupang@agribotswana.com	+2673182614
Dr	Tingmin Yu	ARC	141 Cresswell Road, Weavindpark, Pretoria	South Africa	yut@arc.agric.za	+27128424090
Mr	Tladi Jeffrey	AFGRI			Jeffrey.Tladi@afgri.co.za	
Ms	Vanessa Ber-ends	WDOA			Jeffrey.Tladi@afgri.co.za	
Mr	Vimbai Chasi	VUNA	1st Floor, Block G, Hatfield Gardens, 333 Grosvenor Street, Hatfield, Pretoria, 0083	South Africa	vimbai.chasi@vuna-africa.com	+27123423819
Mr	Wandile Sihlobo	Agbiz			wandile@agbiz.co.za	

Title	Name	Organisation	Physical address	Country	Email	Phone office
Dr	Wiebke Foerch	GIZ/CCARDESA	ACCRA-GIZ Programme Office at CCARDESA Secretariat, Station Exit Road, Plot 4701, Red Brick Building, Ground Floor, Gaborone	Botswana	wiebke.foerch@giz.de	+267 3914997
Ms	Yolanda Potelwa	NAMC			yPotelwa@namc.co.za	
Mr	Zama Xalisa	NAMC			zama@namc.co.za	

Annexure B
Climate Smart Agriculture Conference
11th August 2016, Johannesburg, South Africa

On 11th August 2016, the Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) with support of the Gesellschaft für Internationale Zusammenarbeit (GIZ), and in collaboration with the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and the National Agricultural Marketing Council (NAMC) of South Africa convened a regional Climate Smart Agriculture Conference at the Birchwood Hotel in Johannesburg, South Africa. Nearly one hundred participants from the SADC region and beyond attended the conference, coming from Botswana, DRC, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe, as well as from Kenya and Somalia. Participants included senior officials from national ministries and extension services, researchers and development partners.

Participants were asked to give their feedback to assist in improving future events to come. This was carried out by the use of a feedback form (see annex). Questions were given, together with a field allowing the participants to rate the event, from excellent, good, satisfactory, fair and poor. A total of 60 participants filled in the feedback form.

The following are a number the questions that were asked:

- The conference program was well paced within the allocated time? – 23.7% (Fair)
- The moderation was good and promoted exchange of ideas and experiences? – 37.3% (Excellent)

The majority of participants found that most of the topics that were covered were useful and important, with 73% giving a rating of 'good' or 'excellent'. The presentations given during the conference helped enhance most participants' understanding of climate smart agriculture, with 71% of respondents giving a rating of 'good' or 'excellent'. New aspects of climate change adaptation in agriculture and CSA was considered 'good' or 'excellent' by the majority of the participants (with 67% of respondents). 68% of respondents felt that what they learnt during the event was useful for their work and rated it excellent or good. The majority of respondents (75%) are interested in attending more in-depth workshops on the same topic. The respondents, overall, were also very happy with the moderation and timing of conference contributions – recognising that a 1-day event comes with severe time restrictions.

When asked about which presentation participants liked most, most positive feedback was received for the following presentations:

- "Closing the gap" Research and Practical Application for CSA: Successful examples; by Dr. Christine Lamanna, Senior Scientist, CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS), World Agroforestry Centre.
- Supporting the Adoption of Climate Smart

Agriculture by Enhancing Research Uptake through Knowledge Translation; by Dr. Olekae Tsompi Thakadu, Senior Research Scholar, Environmental Communication & Education Coordinator, Okavango Research Institute, University of Botswana.

- Adaptation to Climate Smart Agriculture in Southern Africa; by Ms Sarah Beerhalter, Programme Manager, Adaptation to Climate Change in Rural Areas (ACCRA) Programme, GIZ.

The conference introduced the participants to the topics of climate change adaptation in agriculture and climate smart agriculture, while bringing together an interesting mix of speakers from the SADC region and beyond. Respondents have expressed their gratitude for the importance of the topic and all expressed the need for more events on the topic in order to help provide additional knowledge, information sharing and discussion fora. The top rated presentations showed the need for the packaging of information for broader audiences, i.e. going beyond the science to show practical application in decision making at different levels.

The written feedback provided by respondents highlighted the following topics as key for future events:

- Scaling up approaches for and farmer adoption of CSA
- Gender and CSA
- Promising CSA practices on the ground – success stories of actual implementation by farmers
- Integrated crop-livestock farming and CSA – avoid the crop-livestock separation
- Tools for knowledge translation and knowledge transfer – how to do good products for specific audiences
- Farmer's preferences for specific technologies
- Social dimensions of CSA
- Mechanisation impact of CSA
- Role of indigenous knowledge in CSA
- Climate modelling and climate impacts at different localities
- Strengthening extension services to better support farmer adoption
- Role of policy development for CSA and a conducive enabling environment

For future meetings, respondents suggested:

- Plan for at least two days to also allow for networking
- Include group work on specific topics
- Allocate more time for discussion
- Include farmers and other practitioners – e.g. actual adopters of CSA
- Include more private sector participants and breeders

In sum, the conference was considered a success. More events of this format are needed, as the gap between science, practice and policy needs to be bridged.

Annexure B : Conference Participant Feedback Form

Dear Participant! Your opinion is important to us! Your feedback will enable us to improve on the delivery of better events in future. Thank you for taking the time to fill this feedback form.

					
The conference covered topics I consider were important		☐	☐	☐	☐
The conference presentations helped enhance my understanding of climate smart agriculture	☐	☐	☐	☐	☐
I learned new aspects of climate change adaptation in agriculture and climate smart agriculture	☐	☐	☐	☐	☐
What I learned today is useful for my work	☐	☐	☐	☐	☐
I would be interested in attending follow up, more in-depth workshops on the same topic	☐	☐	☐	☐	☐
The conference program was well paced within the allotted time	☐	☐	☐	☐	☐
The moderation was good and promoted exchange of ideas and experiences	☐	☐	☐	☐	☐

The following topics were particularly helpful and added to my knowledge:

What topics should be given more time or were missing?

I would be able to do my work better if I knew more about:

Which of the following **best** describes your current position?

☐ a. Extension services ☐ b. NGO
☐ c. Scientist ☐ d. Student (☐ Undergrad ☐ Graduate ☐ Post-grad)
☐ e. Manager or Administrator ☐ f. Other: _____

General comments/Recommendations

Thank you for your feedback

Note: .....