WATER RESEARCH COMMISSION

PROJECT: K5/2719/4

COLLABORATIVE KNOWLEDGE CREATION AND MEDIATION STRATEGIES FOR THE DISSEMINATION OF WATER AND SOIL CONSERVATION PRACTICES AND CLIMATE SMART AGRICULTURE IN SMALLHOLDER FARMING SYSTEMS

Progress

May 2018

mahlathini development foundation

PROJECT TEAM

Mahlathini Development Foundation (MDF)

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RESEARCH QUESTIONS

What are people thinking
and how does this affect
their adaptation and mitigation strategies
to climate change?

Which practises do
smallholder farmers implement,
how and why,
in order to cope with or mitigate
the effects of climate change?

Interactions within and between environmental, social, economic and political factors in coping with climate change are to be embedded in the process.

OUTPUTS

- A **choice of appropriate, tested practices and technologies** for implementation at homestead and field level across a range of bioclimatic regions
- A **locally relevant decision support system** (DSS) for implementing CSA and SWC practices in smallholder farming systems in South Africa
- **Baskets of options** for use at **community level** for introduction of concepts, awareness raising and implementation, across a range of bioclimatic regions
- **Recommendations for appropriate knowledge mediation, learning and dissemination strategies** for CSA in smallholder farming systems
- **A model for community based monitoring of CSA indicators**.

DELIVERABLES

NO	Deliverable	Description	Target date
FINANCIAL YEAR 2017/2018			
1	Report: Desktop review of CSA and WSC	Desktop review of current science, indigenous and traditional knowledge, and best practice in relation to CSA and WSC in the South African context	1 June 2017 COMPLETE
2	Report on stakeholder engagement and case study development and site identification	Identifying and engaging with projects and stakeholders implementing CSA and WSC processes and capturing case studies applicable to prioritized bioclimatic regions Identification of pilot research sites	1 September 2017 COMPLETE
3	Decision support system for CSA in smallholder farming developed (Report)	Decision support system for prioritization of best bet CSA options in a particular locality; initial database and models. Review existing models, in conjunction with stakeholder discussions for initial criteria	15 January 2018 COMPLETE
FINANCIAL YEAR: 2018/2019			
4	CoPs and demonstration sites established (report)	Establish communities of practice (CoP)s including stakeholders and smallholder farmers in each bioclimatic region. With each CoP, identify and select demonstration sites in each bioclimatic region and pilot chosen collaborative strategies for introduction of a range of CSA and SWC strategies in homestead farming systems (gardens and fields)	1 May 2018 COMPLETE

COMMUNITIES OF PRACTICE; COMMUNITY LEVEL

Province	Site/Area; villages	Demonstration sites	CoPs	Collaborative strategies
KZN	Tabamhlophe	- 1st CC workshop - Collaborative strategies: -2nd CC workshop	-Farmers w NGO support (Lima RDF)	- Tunnels and drip kits - Individual experimentation with basket of options
	Ezibomvini/ Thamela, Eqeleni	- 1st CC workshop -Collaborative strategies -2nd CC workshop	-CA open days, cross visits (LandCare, DARD, ARC, GrainSA), LM Agric forums, ….	- Tunnels (Quantitative measurements - CA farmer experimentation (Quantitative measurements) – case studies -Individual experimentation with basket of options
Limpopo	Mametja (Sedawa, Turkey,	- 1st CC workshop - 3rd DICLAD workshop - Collaborative strategies:	-Agroecology network (AWARD/MDF)	- Tunnels (Quantitative measurements - CA farmer experimentation (Quantitative measurements) – case studies - Individual experimentation with basket of options
	Tzaneen (Sekororo - Lourene)	- 1st CC workshop - Collaborative strategies		-Tunnels and drip kits
EC	Alice (Middeldrift)	- 1st CC workshop -2nd CC workshop	-ERLC, Fort Cox, Farmers, NGO	-Individual experimentation with basket of options

COMMUNITIES OF PRACTICE; STAKEHOLDER LEVEL

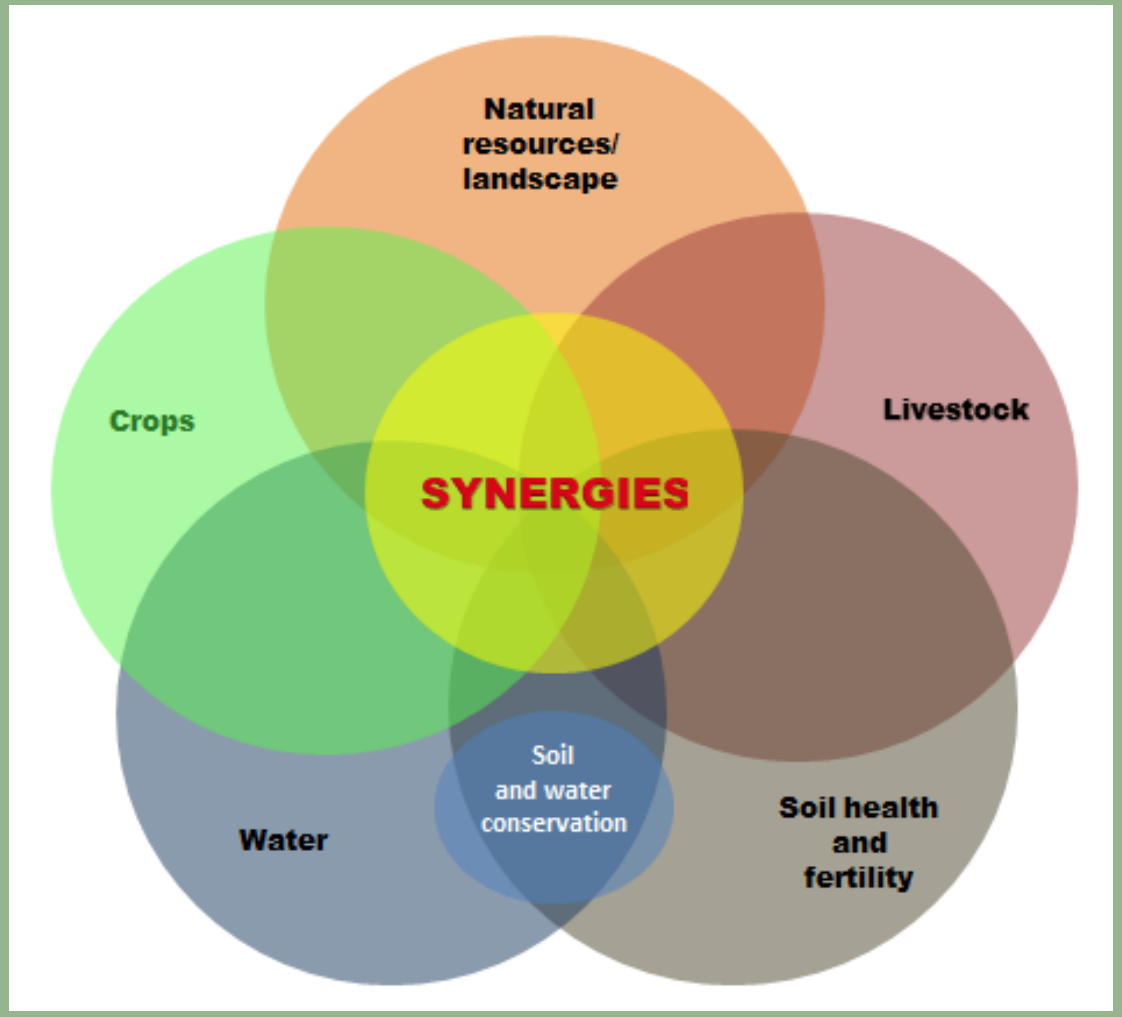
Province	Site/Area; villages	Demonstration sites	CoPs	Collaborative strategies
KZN	Madzikane (Creighton)	Stakeholder Forum	KwaNalu, Landcare, KZN DARD, LM, GrainSA, StratAct, MDF, LimaRDF, farmers	-Sharing and learning from different programmes -Collaborative strategies for support organisations -Joint learning events; CA, maize value chain, agribusiness development
Limpopo	Hoedspruit	Agroecology network	AWARD, MDF and 15 collaborating and interested organisations in the field of CCA	-Sharing experiences for learning and collaboration -Exploration of best practise options in community level climate change adaptation -Exploration of the role of agroecology in these interventions
EC	Alice	Umvotho Buboni Learning Network	A4F, Fort Cox, ERLC (Rhodes), MDF, farmers groups	-Sharing and learning platform for smallholder farmers to introduce new ideas and concepts into farming systems, discuss and explore options and implement new ideas

DSS GUIDING PRINCIPLES

- Build on **community-based criteria**, indicators and priorities
- Generate **transitional strategies**
- Assess **costs and benefits**
- Link national and local **planning mechanisms**
- Strengthen **local networks**
- Promote **values other than financial** values
- Prioritize **locally appropriate** actions

- Encourage **crop diversity** and **continuity**
- Ensure **healthy soil**
- Protect **natural resource base** and **ecosystem services**
- Reduce external inputs
- Make the **most effective use** of water and land for all purposes
- Enhance understanding and skills in storage, value adding, and marketing – go beyond immediate markets

FARMING SYSTEMS



DSS OUTLINE:

START WITH DESKTOP INFORMATION RE CC INFORMATION FOR THE LOCALITY AND GENERAL FARMING INFORMATION, THEN GO ON TO FOCUS GROUP DISCUSSIONS AND INDIVIDUAL INTERVIEWS

Focus group and individual interviews, walkabouts

- Size
- Resources: physical, environmental
- Resources: socio-economic
- Social/institutional
- Management capacity/technology

Farmer Typology: A,B,C

Attendance registers,

Aspiration

- Gardening
- Field cropping
- Livestock
- Trees, incl fruit

Link to practices flow chart

- Water management
- Soil health management
- Crop management
- Livestock management
- Natural resource management

Farming system

1 page descriptions-PP

Practices

- Water flow management
- Infiltration
- greywater management
- RWH
- Irrigation
- Soil erosion control
- Irrigation
- increased organic matter
- microclimate management
- crop diversification (including varieties, calendars
- improved tillage
- agroforestry
- fodder/feed management
- .....

Focus group discussions, individual prioritization

- Labour
- Cost
- Ease- technical
- Productivity
- Soil health
- Water use efficiency
- Knowledge

Prioritization - criteria

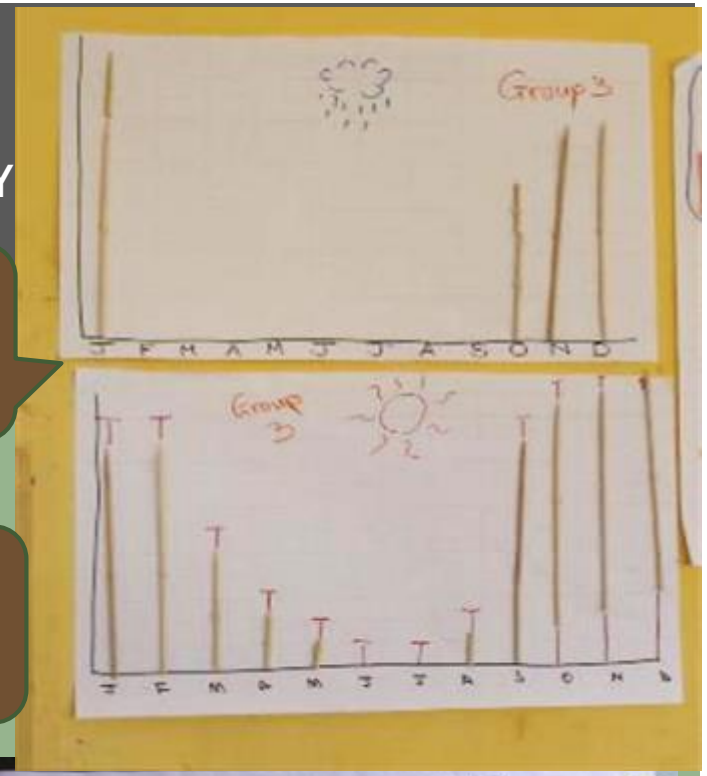
FOCUS GROUP DISCUSSIONS:

CC DIALOGUES – EFFECTS (PAST, PRESENT, FUTURE), SEASONALITY IMPACTS, PRACTICES, PRIORITIZATION CRITERIA

WORKSHOP OUTLINE

1. What we are seeing around us, what has been happening (natur economy, society, village, livelihoods, farming) *(list main issues (biophysical, social, economic) – with ranking of vulnerability, organisational mapping, financial flows and services mapping*,
2. Past, present, future of farming activities and livelihoods *(timelines and trends*)
3. Climate vs weather *(role play)*
4. Scientific understanding of climate change (*Power point input)*
5. Seasonality diagrams of temperature and rainfall – generally what it is, what is changing (*seasonality diagrams)*
6. Reality maps (choose temp, or rainfall): draw up mind maps of impacts *(mind mapping)*
7. Turn impacts in to priority goals (positive statements) and think through adaptive measures that we know of or think could work
8. Introduce a range of practices (facilitation team) related to these goals to broaden potential adaptive measures *(A4 picture summaries and power point presentations)*
9. Walkabouts and individual interviews (*transect walks, key informant interviews, mapping of local innovations/adaptations)*
10. Prioritization of practices – matrix using farmer level criteria for assessment *(matrix ranking and scoring)*
11. Planning of farmer experimentation, learning sessions and implementation of practices (*Individual experimentation outlines, lists)*

Seasonality diagrams; rainfall, heat



Impacts; reality map

Climate change impacts on livelihoods and farming			
	KZN	EC	Limpopo
Water	Less water in the landscape; streams and springs dry up, borehole run dry, soils dry out quickly after rain	Less water in the landscape; streams and springs dry up, borehole run dry, soils dry out quickly after rain	Less water in the landscape; streams and springs dry up, borehole run dry, soils dry out quickly after rain
	Dams dry up	Dams dry up	Dams dry up
	Municipal water supply becoming more unreliable	Municipal water supply becoming more unreliable	Municipal water supply becoming more unreliable;
			Need to buy water for household use – now sometimes for more than 6 months of the year
			RWH storage only enough for household use.
Soil	More erosion	More erosion	More erosion
	Soils becoming more compacted and infertile	Soils becoming more compacted and infertile	Soils becoming more compacted and infertile
			Soils too hot to sustain plant growth
Cropping	Timing for planting has changed- later	Timing for planting has changed- later	Can no longer plant dryland maize
			All cropping now requires irrigation – even crops such as sweet potato
			Drought tolerant crops such as sorghum and millet grow=- but severe bird damage
	Heat damage to crops	Heat damage to crops	Heat damage to crops
	Reduced germination and growth	Reduced germination and growth	Reduced germination and growth
	Seeding of legumes becoming unreliable	Seeding of legumes becoming unreliable	Seeding of legumes becoming unreliable
	Lower yields	Lower yields	Lower yields
			Winter vegetables don't do well - stress induced bolting and lack of growth
	More pests and diseases	More pests and diseases	More pests and diseases
	Loss of indigenous seed stocks		Loss of indigenous seed stocks
Livestock	Less grazing; not enough to see cattle through winter	Less grazing; not enough to see cattle through winter	Less grazing; not enough to see cattle through winter
	More disease in cattle and heat stress symptoms	More disease in cattle and heat stress symptoms	More disease in cattle and heat stress symptoms
	Fewer calves	Fewer calves	Fewer calves
	More deaths	More deaths	More deaths

CLIMATE CHANGE IMPACTS AS DISCUSSED BY SMALLHOLDERS

CLIMATE CHANGE IMPACTS AS DISCUSSED BY SMALLHOLDERS – CONTINUED.

Natural resources	Fewer trees; too much cutting for firewood	Fewer trees; too much cutting for firewood	Fewer trees; too much cutting for firewood
	Decrease in wild animals and indigenous plants	Decrease in wild animals and indigenous plants	Decrease in wild animals and indigenous plants
	Increased crop damage from wild animals such as birds and monkeys	Increased crop damage from wild animals such as birds and monkeys	Increased crop damage from wild animals such as birds and monkeys
	Availability of indigenous vegetables has decreased		No longer able to harvest any resources due to scarcity
			Increased population puts pressure on resources
Social	More diseases	More diseases	More diseases
	Increased poverty and hunger	Increased poverty and hunger	Increased poverty and hunger
	Increased crime and reduced job opportunities	Increased crime and reduced job opportunities	Increased crime and reduced job opportunities
			Increased food prices
			Increased conflict
			Inability to survive

We are being punished by God for not living correctly

Climate change is a reality and we will need to find different ways to do thing to survive

It feels as if the end of the world is coming

FOCUS GROUP DISCUSSIONS:

SOME COMMENTS BY FARMERS

We are seeing the importance of protecting our natural resources so that we can continue to live and grow crops in the future

All the strategies we talked about here are not enough to solve all the problems, but will improve our situation and the impact will be reduced.

The issue begins with climate then leads to social problems. We need to keep on trying different solutions

POTENTIAL ADAPTIVE MEASURES:

- In all 7 villages farmers had some ideas, or many, of potential practices for CCA

Area	Village	Natl resources/ landscape	Water (manage and increase available water)	Soil health and fertility (incl Manage soil movement)	Crops	Livestock	Other
Bergville	**Thamela**		RWH		Mulching		Savings groups
No previous exposure to improved practices					Manure and fertilizer		bulk buying
Bergville	**Ezibomvini**		Spring protection	Compost	Natural P&D control	Plant fodder	
CA learning groups; 3-4yrs (MDF)			RWH storage tanks; Jo-Jo tanks	Furrows	Tunnels		
			Infield rainwater harvesting	Contours	Mulching		
			Dripkits	Diversion ditches			
			Greywater; tower gardens	Line levels			
			Infiltration pits/ banana circles	Stone bunds			
			Small dams				

Suggestions for Natural resource management lag behind for most groups

EXAMPLE 1:

TABAMHLOPHE – KZN (DEC 2017) CRITERIA PARTICIPANTS DECIDED UPON FOR ASSESSMENT/PRIORITISATION OF CSA PRACTICES

Practices	Criteria: Scale: 1-bad 2-meduim 3-very good								
	Increase water availability	Increase water storage/ access	Increase soil fertility	Costs	Increase crop quality	Labour	Time	Total	Rank
RWH jojo tanks	3	3	1	2	2	1	2	14	
RWH underground tanks	3	3	1	1	3	1	1	13	
Tunnel	2	2	3	1	3	1	1	13	
Diversion furrows	3	2	1	2	3	2	2	15	
Mulching	2	2	3	3	3	3	3	19	1
CA/No till	3	2	3	3	3	2	2	18	2
Furrows/ridges	2	2	2	3	3	2	2	16	4
Tower garden	2	3	3	3	3	2	2	18	2
Key hole garden	2	3	3	3	2	2	2	17	3

EXAMPLE 2:

OAKS, LEPELLE, FINALE – LIMPOPO – CRITERIA USED TO ASSESS IMPACT OF IMPLEMENTATION OF DIFFERENT PRACTICES

Oaks, Finale, Lepelle: Impact of CSA practices								
SCALE: 1=low; 2 = medium, 3= high (agreement between participants)								
CRITERIA PRACTICES	Easy to do	More food	Better growth	Good water man	Better soil fertility	Score	Rank	COMMENTS
Trench beds	1	3	3	3	3	13	5	Very good for growth, soil health and water management. The best practice- but difficult to dig
Mulching	3	3	3	3	3	15	2	Less irrigation providing more food
Furrows	2	2	3	3	3	13	4	more moisture, better growth, carries some fertility in the water
Rock bunds	2	3	3	3	3	14	3	deep irrigation, catches more fertile soil
Adding organic matter to the soil	3	3	3	3	3	15	1	easier than trench beds
Crop varieties	1	1	1	1	1	5	7	we do not have the knowledge-but will be easy once we know
Planting times	2	1	1	1	1	6	6	would be nice to have a calendar to remember.

INDIVIDUAL INTERVIEWS AND WALKABOUTS

Ezimbovini (KZN) walkabout; Jan 2018 – shows heat and moisture stress in sweet potatoes, garden crops such as cabbages and CA intercropping trial with maize and beans

Date		Area		
Village		GPS		
Surname		First name		
Cell no				
ID number				
Gender	♀	♂	Household head (Y/N)	
Education				
Members of Social organisation/s (describe) e.g. savings group, learning group…)				
No of Adults in hh				
No of children				
Income sources (grants, employment, remittances, other – specify)		Level of income – (monthly hh)		
Type of grant (s) -add in no	Child Support	Old Age	Foster care	
Scale of operation	0,1-1ha	1-2 ha	>2ha	
Farming activities	Garden (size)	Fields (size)	Livestock (No) Cattle Goats Chickens Other:	Nat resources-specify Trees Indigenous plants
Resources and infrastructure	Water (list - tick and describe) -tap -standpipe -RWH -Other	HH infrastructure -dwellings - electricity -fencing -other	Farming infrastructure and tools (list	Other
Other livelihood activities (list)				
Market access (describe)				
Training and advice (Name sources of support)				

INDIVIDUAL INTERVIEWS; CCA BASELINE – Indicators for vulnerability

- 6 interviews/province (Limpopo,KZN, EC) – pilot
- OUTCOMES
  - Average age 49years most with high school level education
  - Higher dependency ratio than national ave
  - Ave household income- R3 992/ month
  - Access to services- 89% electricity, water ~50% only
  - Access to fencing and agricultural tools – 89%
  - 80% belong to social organisations such as learning groups VSLAs, gardening groups and co-ops
  - 67% of participants have household gardens only and 55% of participants also have access to large fields (0,1-.2ha). 61% of participants keep livestock. Only 16% own cattle
  - 16% of households have direct access to traction(animal and mechanical)

Average monthly income per household	
Male headed (39%)	R7 071
Female and male headed (33%)	R 2 068
Female headed (28%)	R 940

This sub-group of rural dwellers are more organised and committed and better resourced for production and adaptation than the average rural person

Household gardens are most common (67%), followed by dryland cropping (38%), and cattle ownership (16%)

FARMER TYPOLOGY

TYPOLOGY A: (2,5million); Female, farm for food only, very low incomes – mostly unemployed, access to small plots, no hh level access to water, lower education levels and no access to formal markets
Belong to VSLAs, engage in other livelihood activities

TYPOLOGY B: (250 000) Male and female, farm for food and sell surplus, slightly higher incomes, some access to hh level water, somewhat higher education levels and no access to formal markets
Belong to VSLAs

TYPOLOGY C: (10 000) Male, farm mainly for income, much higher incomes from employment in hh, good access to water, higher education levels and access to formal markets.
Belong to cooperatives or farm individually

FARMER TYPOLOGY		A (44%), (72%)	B (18%), (23%)	C (39%), (5%)
Basic socio-economic and household information	Gender	100% Female farmers	80% Female farmers	5-15% female farmers
	Age range	33-66yrs	27-48yrs	31-78yrs
	Household head	Female	Female/male	Male
	Dependency ratio	0,7	1	0,5
Livelihood activities	Employment	Unemployed	Unemployed/ employed	Employed
	Small businesses	80%(Selling in schools, sewing etc)	0%	0%
	Grants	1-3	1-3	1-3
	Farming activities	Gardens, fields, livestock	Gardens, fields, livestock	Fields, livestock
	0,1- 1ha	100%	100%	
	1-2ha			50%
	>2ha			50%
Levels of income (per hh/month)	R0-R1999	R940		
	R2000- R4999		R2 100	
	>R5000			R7 000
Access to services and infrastructure	Electricity	80%	80%	100%
	Water -taps (hh)	0%	50%	100%
	Standpipes (100-400m)	80%		
	RWH	30%	67%	67%
	Farming infrastructure	Hand tools	Hand tools	Tractors, planters
Social organisation	Groups (for learning, school gardening etc)	80%	80%	80%
	Saving clubs	100%	60%	
	Cooperatives			100%
Learning and access to information	Level of education	Grade 4-Grade 12	Grade 7-grade 12	Grade 11- Diploma
Market access	Informal	15%	15%	67%
	Formal	0%	0%	83%
Farming income	Food only	100%	40%	
	Food plus income		60%	
	Mainly income			100%

CC WORKSHOP 2

- Prioritization of practices
- Planning for experimentation with CSA practices
- Learning and mentoring sessions in CSA practices
- Collaborative activities
- Individual experimentation

COLLABORATIVE ACTIVITIES: SHADE CLOTH TUNNELS

- 16 tunnels, with 3 small drip kits each (8 in KNZ, 8 in Limpopo)
- Experimentation: trench beds, mixed cropping and mulching inside and outside the tunnel
- Qualitative and quantitative monitoring (3ind/province)

INDIVIDUAL EXPERIMENTATION: CONSERVATION AGRICULTURE

- 3 Quantitative measurement plots in KZN and Limpopo respectively
- Many more farmer level trials – qualitative measurement in KZN – linked to GrainSA
- Soil fertility, soil health water balance indicators

KZN – Good growth and results

Limpopo – complete crop failure

CSA PRACTICES -1 PAGERS

Work in progress:

- 34 practices so far
- Also some general supporting practices such as contours, line levels, visual soil assessments etc
- Examples below

Bucket Drip kits

- Gardens
- <0,1ha,
- Medium cost, medium skills, including learning and mentoring
- Medium maintenance – drippers need to be checked and cleaned regularly ; medium labour intensive to set up, maintenance easy.

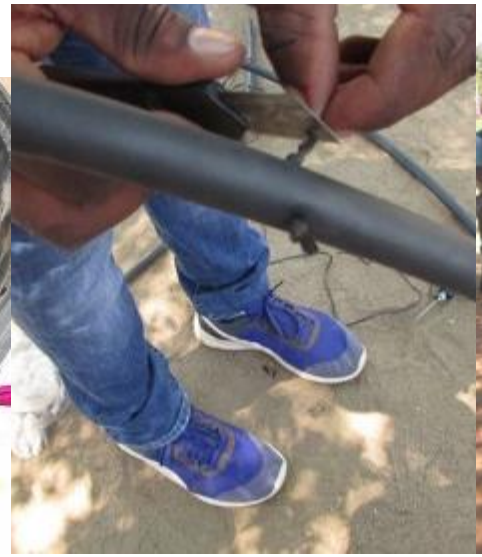
DESCRIPTION

- Stones and sand are placed in a bucket (20L) for filtration of greywater to be used in dripping system
- The drip kit is assembled on site making your own string drippers and choosing width of lines and spacing of drippers.
- 2 lines 30cm apart and 5 m long is good for a trench bed and provides 4mm of irrigation.
- Watering is done on a daily basis

A well functioning string dripper that makes a wetted circle around the dripper

Bucket with stones; a cloth bad of sand is added on top to complete the filter

Making the string drippers



Attaching the dripper lines to the feeder pipe from the bucket

A 210l drum drip irrigation system used in a tunnel

Mulching the beds adds to efficient water management

A bucket drip kit irrigating a 1mx 3m trench bed with mixed crops

Stone bunds

- Rainfall: >150mm/year
- Temperature: >5°C
- Topography: 0,5%-5%
- Soil: all types – where stones and rocks are easily available

- Gardens, fields
- <0,1ha, 0,1-1ha, >2ha
- Low cost, local resources,
- Labour intensive

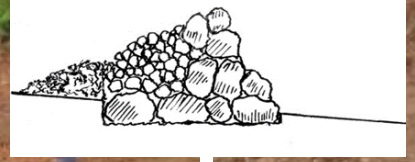
DESCRIPTION

-Pack stone lines on contours to control water movement

- The stones are keyed into a shallow ditch and larger stones are packed downslope from the smaller stones to avoid stone lines form breaking and allow slow movement of water though the stone lines

-Planting can be done below the stone line as more water accumulates there, or just above the stone line in the accumulated silt and soil

Stone lines are constructed on contour and can be done at any scale.



A view showing the stones keyed into a ditch with larger stones downslope of the smaller stones.

Small stone lines are used to control run-off form a road and channel water into the gardens

Brinjals planted in accumulated silt above a garden level stone line

Bananas planted below a substantial stone line

Conservation Agriculture

- Rainfall: >350mm/year
- Temperature: >5°C
- Topography: 1,5&-15%
- Soil: all types –

- Gardens, fields
- <0,1ha, 0,1-1ha, >2ha
- Medium cost (Seed, fertilizer, agrochemicals), planters, local resources
- Labour intensive

DESCRIPTION

- Minimal soil disturbance- no ploughing
- Soil cover – through stover, mulches and cropping cycles
- Diversification; intercropping, relay cropping, cover crops (legume- brassicas and grain mixtures)

Different planters; Haraka (Wheel), Matracca (jab) and animal drawn planters, (Knapik-insert)

Planting furrows and basins by hand using hand hoes and MBLI planters – without ploughing

A maize and bean intercropped plot- using tramlines (double rows) and close spacing

A small mixed plot – peanuts, pumpkins and maize

Winter cover crops; saia/black oats, forage sorghum and fodder radish

Summer cover crops; sunflower, millet and sunn hemp

WORK PLAN 2018-2019

FINANCIAL YEAR: 2018/2019		
CoPs and demonstration sites established (report)	Establish communities of practice (CoP)s including stakeholders and smallholder farmers in each bioclimatic region.5. With each CoP, identify and select demonstration sites in each bioclimatic region and pilot chosen collaborative strategies for introduction of a range of CSA and WSC strategies in homestead farming systems (gardens and fields)	1 May 2018 COMPLETE
Interim report: Refined decision support system for CSA in smallholder farming (report)	Refinement of criteria and practices, introduction of new ideas and innovations, updating of decision support system	1 October 2018
Interim report: Results of pilots, season 1	Pilot chosen collaborative strategies for introduction of a range of CSA and WSC strategies, working with the CoPs in each site and the decisions support system. Create knowledge mediation productions, manuals, handouts and other resources necessary for learning and implementation.	31 January 2019
FINANCIAL YEAR 2019/2020		
Report: Appropriate quantitative measurement procedures for verification of the visual indicators.	Set up farmer and researcher level experimentation	1 May 2019

WORK PLAN 2018-2019; CONTINUED

Theme	Activities
Practices	Inclusion of more practices in the 1pagers
	Initial web design and online survey for the DSS
	Exploration of potential practices(more expertise and refinement required); spring protection, furrow irrigation, fodder production, crop calendars, seed saving, drought and bird resistant varieties
Process	Ongoing facilitation (learning, mentoring and monitoring) process to be conducted with the 7 established learning groups across three provinces
	Strengthening of stakeholder CoPs. Set up of learning and sharing events
Monitoring and Evaluation	Participatory video for analysis of farmer perceptions, learning and implementation Write up of first season monitoring results 9Quantitative and qualitative); summer (CA and winter (gardening) First assessment of appropriate visual indicators

PUBLICATIONS AND NETWORKING

- Publications:
  - Adaptation network newsletter; 2 articles – CA SFIP and CSA impact
- Cross visits:
  - DARD and MDF: Lesotho – cross visit _CA
  - GrainSA FDP and ARC- SGI_CA and implementation methodology
  - USAID, Ukuvuna _Community based CCA
- Attendance:
  - Rangeland management _UCPP_Matatiele
  - Regenerative Agriculture_ GrainSA_Reitz
- Presentations:
  - CA learning groups and farmer centres presentation – Ubuhlebezwe LM Agricultural task team, DRDLR (KZN), Umgungundlovu DM, GrainSA farmers days(x5)
  - Madzikane Stakeholder Forum, Agroecology Network, Unmovtho Buboni Learning Network,

CAPACITY BUILDING

- **Finalisation of theses**
  - Sanelise Tafa: Agric Economic Masters- University of Fort Hare; July 2017. *Farm level cost-benefit analysis of conservation agriculture for maize smallholder farmers in Okhahlamba Municipality in Kwa-Zulu Natal Province, South Africa.*
    - Paper: Farm Level Cost-Benefit Analysis: *The evaluation of economics of conservation agriculture in Bergville Town in Kwa-Zulu Natal Province of South Africa* (Invitation to present: Centre for Integrated Agricultural Systems (CIAS) at the University of Wisconsin- "The Agroecology of Development: Community Solutions in Post-Apartheid South Africa" event on November 9th, 2017)
  - Khethiwe Mthethwa: BAgric Honours – Univeristy of KwaZulu Natal. November 2017. *Investigating the sustainability of adoption of conservation agriculture by small-scale farmers in Bergville*

- **Progress with theses: Final proposals and research methodology**
  - Palesa Motaung: M Agric -University of Pretoria. *Evaluating the restorative effect of conservation agriculture on the degraded soils of the upper Drakensburg area of Bergville, KwaZulu-Natal using qualitative versus quantitative soil health indicators*
  - Mazwi Dlamini: MPhil - UWC_PLAAS. *Factors influencing the adoption and non-adoption of Conservation Agriculture in smallholder farming systems, and the implications of these for livelihoods and food security in Bergville, Kwazulu-Natal*

- **Progress: Initial proposals and research methodology**
  - Khethiwe Mthethwa: M Agric – University of KwaZulu Natal; January 2018. *The contribution of Climate Smart Agriculture (CSA) practices in adapting to climate change: The case of smallholder farmers in KwaZulu Natal.*