

APPENDIX 2: INTERIM PROGRESS REPORT

CA Farmer Innovation Programme (CA-FIP) for smallholders in Bergville, Grain SA June 2014 to March 2015 (Year 2)

**Farmer Centred Innovation in Conservation Agriculture in upper
catchment areas of the Drakensberg in the Bergville region of
KwaZulu-Natal**



Mahlathini Organics:

Promoting collaborative, pro-poor agricultural innovation.

Contact: Erna Kruger (Founder and Coordinator)

Address: 72 Tatham Road, Prestbury, Pietermaritzburg, 3201, KZN

Email: erna@mahlathiniorganics.co.za, info@mahlathiniorganics.co.za

Cell: 0828732289

Time of operation: 2003-2013

Legal status: Sole proprietor (SP)

BEE status: - 4. –Certificate available.

Identification of the project

Description and selection of study areas

Work in the Bergville (KZN) site continued with a scaling out (horizontal expansion) process put in place, to include more villages around central nodes and more farmers within each village. In this way villages included expanded from 3 to 9 and the numbers of farmer participants in farmer level trials have increased to 86, from 26 in the 2013-2014 season. The overall area for trials has increased from 2.6ha to 4.3ha.

Approach and Methodology

The farmer centred innovation systems research process underpinning the programme, which is based on working intensively with farmer learning groups and local facilitators in each of the villages has been continued and strengthened.

Within the learning groups farmer innovators volunteer to set up and manage farmer managed adaptive trials as the 'learning venues' for the whole learning group. Farmer field school methodologies are used within the group to focus the learning on the actual growth and development of the crops throughout the season. New ideas are tested against the 'normal' practise in the area as the controls. Farmers observe, analyse and assess what is happening in the trials and discuss appropriate decisions and management practices. Small information provision and training sessions are included in these workshops/ processes. These are based also on the seasonality of the crop and the specific requests and questions from farmer learning group participants.

Local facilitators are chosen from within and by members of the learning group to be a person who has the required experience and knowledge and a willingness to support the other farmer innovators in their implementation. Local facilitators receive a stipend for a maximum of 10 working days per month, for their support to the farmer innovators. They fill in detailed timesheets outlining their activities against which they claim a monthly stipend.

In this instance the CIG Commodity Interest Group members agree to a season long learning process and put forward the farmer innovators to run the trials. Each prospective innovator was interviewed and visited and signed an agreement with the Grain-SA team regarding their contribution to the process. They undertook to plant and manage the CA trials according to the processes introduced as well as a control plot of the same size. For the latter, farmers would provide their own inputs.

The adaptive trials are also used as a focus point for the broader community to engage through local learning events and farmers days. Stakeholders and the broader economic, agricultural and environmental communities are drawn into these processes and events. Through these processes so-called *Innovation Platforms (IPs)* are developed for cooperation, synergy between programmes and development of appropriate and farmer led processes for economic inclusion. These IPs also provide a good opportunity to focus scientific and academic research on the 'needs' of the process.

In this season (2014-2015) we have added further elements to the model, namely: a) Support to farmers who are in their 2nd season, b) include and support another 5 farmers each to start CA, c) initiate nodes for farmer centres that can offer tools, input packs and advice and d) test a VSA (Visual Soil Assessment) monitoring process for farmers.

Key activities: August 2014- June 2015

The table below outlines the key activities and deliverables planned for the period. The last column summarises actual expenses.

TABLE 1: KEY ACTIVITIES, OUTPUTS AND DELIVERABLE FOR JULY 2014-JUNE 2015; PLANNED AND ACTUAL.

Farmer experimentation Bergville: Milestones/ Outputs			
Key activities	Expected Outcomes/ Deliverables	Budgets	Expenditure: 1st 6 months
Reporting, documentation, administration, sundries	Meeting and monthly reports	Administration and sundries (R8 850/ month) R 105 080,00	R 45 099,86
Farmer level experimentation (1st and 2nd level)	List of participants, interviews and contracts, awareness and training	Farmer led experimentation (R24 000/ month) R 240 000,00	R 139 962,25
Set up experimentation	Commodity interest group MoU's, inputs, materials, farmer centres	Farmer led experimentation R 103 248,00	R 130 967,35
Monitoring and evaluation, market based mechanisms, students and interns	Quarterly reports, monitoring reports, baselines presentations	Reporting and Administration R 20 748,00	R 15 232,77
Innovation platforms and awareness		Innovation platforms R 9 396,00	R 10 012,28
Totals			R 341 274,51

The budget set aside for the 1st six months, according to the overall work plan is R290 250.00. Actual expenditure has been somewhat higher at around R341 275.00. There has been a slight over expenditure on inputs and materials as well as support for innovation platforms and awareness. This has been largely due to the dramatic increase in interest from farmers to participate and bringing people from another four villages on board.

The overall programme is on track and the budget is deemed sufficient for completion on target in June 2015. **Table 1b** indicate the actual spending (Year to Date) until January 2015 and the remaining budget according to the Grain SA financial system; the difference between the tables is due to outstanding transactions still to be processed in the Grain SA system.

Table 1b: Interim financial report for the period 1 July 2014 - 31 January 2015 of the Bergville project

Project	YTD Total	Total Budget	Remaining
Small Scale Farming (Matatiele, Eastern Cape)	198,990	500,000	301,010

Problems encountered, milestones not achieved and reasons for that

Presently all milestones have been achieved and the programme is not experiencing any problems.

Results achieved to date

Baseline surveys

Baseline surveys have been conducted in the form of livelihoods assessments for a sample of SCG (Saving and Credit Group) and CIG (Commodity Interest Group) members in conjunction with the SaveAct Trust. For this assessment post graduate students at UKZN were employed as interns between July-September 2014 to conduct an e-questionnaire of around 70 questions related to livelihoods, savings and credit enterprise activities and the like. Forty (40) participants were interviewed from the Emmaus and Stulwane villages. A summary of the livelihoods assessment outcomes is provided in **Attachment 4**.

Mobilisation of learning groups

For the 2014-2015 season the learning groups and experimentation were continued and expanded in Emmaus and Stulwane, but discontinued in Potshini due to marginal interest and lack of commitment there. Three new areas were included, also working basically through existing saving and credit groups; Ezibomvini, Magangangozi and Okhombe. Due to large interest generated from the farmers' day in 2014, the experimentation was expanded further into Mlhwazini, Vimbukhalo and Moyeni. Limited inputs were supplied to these participants.

The savings and credit groups (SCGs) brought together to form Commodity Interest Groups (CIGs) around maize, under the auspices of SaveAct, were the anchoring point for the process in Bergville. This process has worked well and participants have been cooperating well. It has provided a good entry point for further organisation such as starting bulk buying processes, working together in groups to ease labour constraints, starting small group ventures together and discussing logistical matters such as joint storage, local milling, transport of grain to Bergville and the like.



Right; One of the cooperative labour groups takes a welcome break to share a meal on one of the trial planting days in Stulwane, Bergville.

The framework for scaling out (implementation) included: (See Attachment 2 for details)

- Continuation with existing farmer experimentation. Each of these farmers can become volunteers and select a further 5 farmers each to support
- 2-3 New areas are to be included, based on their interest in CA, and their participation in SCGs. These areas are to expand out from nodes where the programme is already active .
- Farmer Centres are to be set up in these nodes i.e. Emmaus, Stulwane and Okhombe.
- Processes for learning workshops, bulk buying and ordering of materials set up
- Planning for distribution of materials and provision of further tools (Hand and animal drawn planters, knapsack sprayers)

TABLE 2: SUMMARY OF FARMER INNOVATION NUMBER AND AREAS PLANTED PER VILLAGE AND REGION IN THIS CA PROCESS; BERGVILLE

Area	Village	Farmers*	Local facilitators	Comments; incl planters used.
Bergville, KZN	Stulwane	18 (3)	Mr K Dladla , Mr Msele and Ms N Zondi	Group worked well together and helped each other plant. Animal drawn planter used extensively, as were MBLI planters and hand hoes

	Emmaus	17 (4)	Mrs S Hlatshwayo, Mrs H Hlongwane, Ms MB Mvelase	Group worked well together and helped each other plant. Animal drawn planter used extensively, as were MBLI planters and hand hoes. A group of 5 women planted an extra area of ~1ha using no-till (bean and maize mono-crops)
	Okhomb e	10		Oxen drawn planter was used by some participants. Others used hand hoes and MBLI planters. Here, members of two youth groups were included as participants. Planting was at a homestead as well as field cropping level.
	Ezibomvini	9	Cindy Zikode	Hand planters and hand hoes only. People there have not used animal drawn planters before. Local facilitator attended Farming for the Future training course in CA
	Maganga ngozi	10	Mrs Mbhele	2 people used the oxen drawn planter. Also plots done with hand hoes and MBLI planters. Local facilitator attended Farming for the Future training course in CA
	Mhlwazi ni	(9)	Participants from these areas wanted to be part of the process, but are not formal trial participants. They have contributed much of their own seed and fertilizer	Oxen drawn planter was brought from Emmaus to be used (people hired transport for this)- Most of the 9 participants used this planter. Participants bought their own seed.
	Vimbukhalo	(6)		Planted with hand hoes – seed and fertilizer bought by individuals
	Emoyeni	(6)		Planted using hand hoes. Follow up on weeding was not on time.
	Potshini	1		
TOTAL	9	86 (27)		

*NOTE: Numbers in brackets indicate spontaneous adoption from participants who were not formal trial participants.

Ordering and delivery of materials and inputs worked smoothly. In this season, suppliers in Winterton were used in preference to the Bergville suppliers as the latter again were slow in providing quotes and reluctant to commit to earlier delivery of materials. One of the reasons for this is that Bergville is the major supplier for commercial farmers in the area, who due to the size of their orders are given preference. It means that even if the small holders put in their orders on time they are likely still to start their season late due to late delivery. For this season, 2014-2015 delivery was done by the Grain SA field workers from Winterton; as these suppliers do not as yet have delivery arrangements into smallholder areas in place.

Participant farmers were provided with their 'pack' of inputs. Mostly this did not include the agrochemicals (herbicide and pesticide), as these were seen to be too dangerous and local facilitators and 'spraying volunteers' took charge of these.



Right: One of participant workshops detailing inputs for the season, their usage and provision of input packs; Emmaus, November 2014

Learning and monitoring processes.

Using the Farmer Field School Methodology as an overall learning approach, a learning group was set up in each of the villages, including the trial participants and other interested farmers and SCG members. Each learning group followed a schedule of workshops with implementation and practical learning sessions including:

- Input requirements, bulk buying, saving and ordering (July-August 2014)
- Plot layout, CA principles and inputs- including delivery (September-October 2014)
- Herbicide spraying, use of knapsack sprayers, types of herbicides (October-November 2014)
- Conservation agriculture; planting and layout, including a focus on soil and doing visual soil assessments (November- December 2014)
- Top dressing and integrated pest management (January- February 2015)
- Varieties of crops, seed saving, harvesting (including measurement of yields) and storage options and considerations (March-May 2015)

Below are a few examples selected from Herbicide spraying workshops held.



Above Left: The fieldworker, Njabulo Butehelezi initially demonstrates the protective clothing for spraying and Above right: talks through the use and dilution of the different chemicals at spraying; Gramoxone a wetting agent and Decis Forte- before participants try out spraying by themselves in E(November 2014)



Above Left: the Spraying workshop held in Okhombe, November 2014. Centre; Mr Thabani Madondo assists a spraying volunteers with how to hold the knapsack sprayer and equipment and Right: Works with another volunteer to get the calibration, walking and spraying speed correct.

A visual soil assessment (VSA) process was initiated. Here the field workers and farmer participants together worked out a number of different soil characteristics for their fields to provide a score of overall soil health and condition for each person. This score will be checked every year to visually assess improvements. This process has been designed

in anticipation of initiating a PES (Payment for Ecosystem Services) incentive process with the Conservation Agriculture process and is being tested for its usefulness.

Below is the scorecard that is used. It is used in conjunction with a manual designed for the purpose, with colour plates and descriptions of the various characteristics and assessment methods.

VSA: SCORE CARD – CA, 2014-2015

SOIL INDICATORS

Land Use:

Location/Field Name:

Date:

Soil Type: Sandy Loamy Clayey Silty

Soil structure: Granular Blocky Columnar Platy Single grained Massive

Crust (Y/N):

Moisture content Dry Slightly moist Moist Wet

Seasonal Weather Conditions: Month.....

Dry Wet Cold Warm Average

Visual indicator of Soil Quality	Visual Score (VS) 0 = Poor conditions 1 = Moderate conditions 2 = Good conditions	Weighing	VS Ranking
Soil Structure		X3	
Soil porosity		× 2	
Soil colour		× 2	
Number and colour of soil mottles		× 1	
Earthworm counts		× 2	
Soil cover		× 3	
Soil depth		× 2	
Run-off		×?	
Ranking Score (sum of VS rankings)			

Soil Quality Assessment	Ranking score
Poor	< 10
Moderate	10 - 25
Good	> 25

Planting and growth monitoring forms were provided to the field workers to complete for each trial participant. Planting forms are to be filled in at planting and the growth monitoring forms 6-8 weeks later at topdressing stage and once the first weeding has been done. Summaries of these provide the detailed information for each trial

participant. See **Attachment 1** for an example of a partial sheet (Grain SA Farmer Experimentation. Bergville 2014-2015 season).

CA practice

As the core process is one of farmer experimentation and adaptation, the process involved reviewing the farmer experimenters' experience from the previous season and providing space this year for them to adapt their experiments accordingly.

Farmer level trials; variations from farmers

For the most part farmers wanted to repeat the same process as for 2013-2104 (Close spacing, intercropping of maize and legumes, with herbicide and pesticide applications as needed). Variations included were:

- **Minimum tillage planters.** For this season farmers were asked to use their planting method of choice rather than to include the planting method as a variable in their experiment. As a result the Matracca or jab planter was all but discontinued due to its inability to function well in the high clay soils around Bergville. Hand hoes and MBLI planters were used in combination by most farmers. And the animal drawn no till planters were used extensively. Nine (9) farmers in Stulwane opted for using animal drawn planters this year as did four (4) farmers in Emmaus. This has coincided with people planting larger areas this season as well as using the no till operations in their control plots.



Above left: A Matracca planter that was used at the beginning of the planting process and discarded because of clogging up with mud leading to an unreliable operation. Above right: A planting working group in Stulwane busy with hand hoes and MBLI planters



Above: An animal drawn not till planter in operation at Stulwane – Mr Dlezakhe Hlongwane

The Haraka planters have not been used this year as they have not been available. Such a type of wheel planter that can speed up the process would be of great benefit and other options are to be explored here.

- **Selection of seed types:** Farmer participants chose different varieties of both maize and legume seed for planting. This was included in the experimental design for comparison.

The table below outlines the seed choices offered and made by the participants in different areas. Many participants opted for growing both white and yellow maize as well as hybrids as well as open pollinated varieties.

For the legumes participants were generally not too keen to continue planting cowpeas, notwithstanding the obvious and visual positive effect on maize growth. People no longer eat cowpeas and many do not know the crop anymore. Similarly some of the older women enjoyed planting the Dolichos – liking the runner bean quality of the plants.

TABLE 3 : FARMER EXPERIMENTATION PARTICIPANTS BERGVILLE; SEED CHOICES

Area/village	1st level Exp (400m ²)	Maize	Maize	Maize	Maize OPV YELLOW Colorado	Beans	Beans	Cowpeas Mixed brown	Runner	2nd level Exp (1 000m ²)	total m ²
		Hybrid WHITE PAN 6479	hybrid yellow PAN 53	OPV WHITE Border King		hybrid	OPV Ukulinga		beans Dolichos_R ongai		
Stulwane	7	17	11	1	8	16	13	12	9	11	13 800
Emmaus	3	7	17	17	4	17	17	6	3	14	15 200
Ezibomvini	9	5	5			4	6				2600
Magangangozi	10	5	5			5	5				4000
Okhombe		5	5			4	6			1	1000
Mhlwazini	9				9		9				3600
Vimbukhalo	6										2400
	44									26	42 600
1st level participants need to choose 1 type of white and 1 type of yellow maize to plant											
1st level participants need to choose 1 type of bean to plant and also plant cowpeas											
2nd level participants need to choose 2 types of maize - 1 hybrid, 1 OPV or 2 OPVs											
2nd level participants can choose 2 types beans - they should plant the dolichos as well											

- **Control plots:** A number of participants, especially in Emmaus (5/17) and Stulwane (7/18) that are going into their second year of experimentation, used no-till for their control plots as well as their trials. This gives an indication of farmers already adapting their own practice to conservation agriculture. The inputs were bought by the farmers themselves. In Emmaus a maize bulk buying group was established combining members from 2 SCGs (saving and credit groups). Members saved between R100-R400/month for their inputs. These were bought together from TWK Agri in Bergville and delivered to the area.

Technical considerations

Farmer level trials were kept basically similar to the 2013-2104 season. The idea is to make these trials as simple as possible for entrant farmers with only 1 or 2 chemicals and fertilizers so that people can become acclimatized and get used to these. Following the concept of Low External Input Sustainable Agriculture (LEISA), it is also the intention to minimise the use of external inputs and replace agrochemicals with good crop husbandry practices as much as possible.

The basic process for planting thus includes: Close spacing of tramlines (2 rows) of maize (50cmx50cm) and legumes (20cmx10cm) intercropped, use of a variety of OPV and hybrid seed, weed control through a combination of pre planting spraying with herbicide and manual weeding during the planting season and pest control using Decis Forte, sprayed once at planting and once at top dressing stage.

Layout of plots

The plot design for the trials was kept the same as last year using the close spacing and intercropping tramlines as the basis of the design. The following logistical arrangements were put in place:

- Local facilitators supported the process actively in Stulwane and Emmaus
- Support of volunteer farmers who recruited around 5 new farmers each and assisted them with planting. They also supported farmers who 'spontaneously adopted' CA but were not yet formally part of the trials.

- c. Participants worked together in groups (of 5 – 15 people) to do the spraying and planting of the trial plots.
- d. Planting groups used measuring wheels, pegs and lines, initially with the help of the field officers and as the process continued, on their own. This process went a lot more smoothly this season.



Above left; Knocking in the small pegs that designate row width for the plot layout. Above Right: The photograph shows the men on the right stringing the lines across the plot for layout of the tramlines and the women following behind digging the basins and rows and then a third small team starting on the applications of fertilizer and lime.

Use of no till planters

One difference has been that in this season trial participants used the planting method of their choice and did not compare different planting methods. So for example they chose to do their whole trial using one of the following methods

- Hand hoes
- Hand planters (MBLI).
- Animal drawn minimum till planters

A few more hand planters (30 MBLI) and animal drawn (2) minimum till planters were bought for the Bergville area to accommodate the expansion (scaling out) of the programme. People are now being given the option to purchase the tools for themselves or to rent tools from the budding farmer centres

Use of Agro-chemicals

Fertilizers used included MAP (at planting) and LAN (for topdressing). Lime was added to the plots. Soil samples were taken for all participants and a generic recommendation used for participants where they did not specifically want to work according to their sample results. All farmers opted for the generic fertilizer recommendation.

- a. *Fertilizer recommendation:* Soil samples were taken for farmer participants. These were averaged and a generic fertilizer and lime recommendation given for each village. Primarily this was done as farmers struggle to understand the complicated version of the soil analysis results and fertilizer recommendations. They have a habit of buying one type of fertilizer and mostly cannot see their way clear to buying two to three types and mixing them in various quantities. Given the promising results and high yields achieved in the 2013-2014 season with a generic recommendations, this process was followed again. Farmers were given the choice of using the generic recommendation or one designed specifically for them and all chose the former option.

The table below indicates the average nutrient applications used as a generic recommendation across the board in Bergville.

TABLE 4: AVERAGE QUANTITIES OF FERTILIZER RECOMMENDATIONS BASED ON SOIL SAMPLE RESULTS

Amount of nutrient required	No of bags recommended (50kg bags/ha); fertilizer name	Ave recommendation from 10 soil samples (50kg bags/ha)
N (Maize): 60kg-150kg/ha (4-7t/ha)	LAN: 4 bags (200kg)	LAN: 2-8 bags
N(Beans): 20kg-60kg/ha (1-3t/ha)	LAN: -topdressing not required	LAN: 0-2 bags
P: 55kg-70kg/ha	MAP: 5 bags (250kgs)	MAP: 5 bags
Lime: 1ton/ha	LIME: 200 bags (1ton)	LIME: 200 bags

Locally the field workers and participants again adapted the amounts to easy local measures using caps, and matchboxes. The amount required for each basin and or metre row was worked out



Above left: Using bottle caps and matchboxes to apply fertilizer to planting basins and Above Right: using a similar process to apply fertilizer to a metre row – the stick on the ground is 1 metre long and shows where the fertilizer should go.

Below is an example of the soil sample results for the 10 participants from Magangangozi (a new /expansion area)

TABLE 5: SOIL SAMPLE RESULTS AND NUTRIENT AND LIME RECOMMENDATIONS FOR 10 FARMER PARTICIPANTS FROM MAGANGANGOZI, BERGVILLE SEPTEMBER 2014.

NUTRIENT AND LIME RECOMMENDATIONS

Maize grain: dryland														
Sample ID	Lab Num	NITROGEN		PHOSPHORUS			POTASSIUM			LIME				Zinc fert. reqd.?
		Yield target t/ha	Req. N kg/ha	Sample soil test mg/L	Target soil test mg/L	Req. P kg/ha	Sample soil test mg/L	Target soil test mg/L	Req. K kg/ha	Sample acid sat. %	PAS %	Req. Lime t/ha	Lime type	
D Hiatswayo	F8077	4.0	40	6	12	60	77	120	110	69	20	9.5	Dol/Calc	Yes
		7.0	120	6	12	60	77	120	110	69	20	9.5	Dol/Calc	Yes
		10.0	160	6	12	60	77	120	110	69	20	9.5	Dol/Calc	Yes
Q Mitya	F8078	4.0	40	3	12	60	105	120	40	11	20	0	-	No
		7.0	120	3	12	60	105	120	40	11	20	0	-	No
		10.0	160	3	12	60	105	120	40	11	20	0	-	No
Z Zondl	F8079	4.0	50	11	14	30	169	120	0	71	20	9.5	Dol	No
		7.0	140	11	14	30	169	120	0	71	20	9.5	Dol	No
		10.0	180	11	14	30	169	120	0	71	20	9.5	Dol	No
TO Mdiul	F8080	4.0	40	22	12	20	144	120	0	26	20	1.0	Dol/Calc	No
		7.0	120	22	12	20	144	120	0	26	20	1.0	Dol/Calc	No
		10.0	160	22	12	20	144	120	0	26	20	1.0	Dol/Calc	No
S Mbhele	F8081	4.0	50	9	15	50	296	120	0	19	20	0	-	No
		7.0	140	9	15	50	296	120	0	19	20	0	-	No
		10.0	180	9	15	50	296	120	0	19	20	0	-	No
T Zondo	F8082	4.0	40	7	12	55	305	120	0	26	20	1.0	Dol/Calc	No
		7.0	120	7	12	55	305	120	0	26	20	1.0	Dol/Calc	No
		10.0	160	7	12	55	305	120	0	26	20	1.0	Dol/Calc	No
T Hlongwane	F8083	4.0	50	7	14	60	165	120	0	45	20	4.0	Dol/Calc	No
		7.0	140	7	14	60	165	120	0	45	20	4.0	Dol/Calc	No
		10.0	180	7	14	60	165	120	0	45	20	4.0	Dol/Calc	No
M Mazibuko	F8084	4.0	50	44	15	20	400	120	0	14	20	0	-	No
		7.0	140	44	15	20	400	120	0	14	20	0	-	No
		10.0	180	44	15	20	400	120	0	14	20	0	-	No
T Mbhele	F8085	4.0	50	10	12	20	226	120	0	11	20	0	-	Yes
		7.0	140	10	12	20	226	120	0	11	20	0	-	Yes
		10.0	180	10	12	20	226	120	0	11	20	0	-	Yes
S Mabaso	F8086	4.0	50	18	14	20	308	120	0	35	20	3.5	Dol/Calc	No
		7.0	140	18	14	20	308	120	0	35	20	3.5	Dol/Calc	No
		10.0	180	18	14	20	308	120	0	35	20	3.5	Dol/Calc	No

b. *Herbicide application:* Spraying workshops were held in each area and spraying for this season was conducted by local participants. The pre planting spraying of Round-up (Glyphosate) 7-10 days before planting was done. Depending on coverage and efficacy a further at planting spraying of Gramoxone (paraquat). This year the spraying of pre-emergence herbicides was not included as part of the practice.

c. *Pesticide application:* Decis Forte was applied at planting. For Bergville a 2nd application was done around 6-8 weeks later for stalk borer and beetles. This season, especially for the farmers that planted early in the season (late October- 1st week of November stalk borer incidence has been high. Spraying of Decis Forte was not all that successful and stalk borer granules were subsequently also introduced to those farmers with a lot of damage.

Right: Mr Dlezakhe Hlongwane from Stulwane adds an application of stalk borer granules after spraying with Decis Forte was not very successful. Far Right: Stalk borer damage on older maize – infection mid-season.



Interim observations for the farmer trials

Some of trends already noticed are the following:

1. *Different varieties of maize grow differently;* the PAN 6479 has the shortest season and thus has started tasseling before the other varieties. PAN 53 seems to provide the best overall growth across plots and the Border king and Colorado have produced stands of reasonably variable size plants (given that OPVs have not been bred for uniformity).



Above left: An experimental plot with PAN53 on the left hand side and Border King (OPV) on the right hand side. The latter is obviously more variable in stand, but also growing well. Above right: An experimental plot of PAN 6479 tasseling in the foreground.

2. *Bean varieties grow differently;* the PAN 148 variety makes tidy ‘bushes’ and provides quick ground cover between the maize rows, Ukulinga has a more spreading growth habit and thus provides for faster and better cover and the Dolichos as a runner bean has the best cover. Dolichos also did not compete in growth with maize Ukulinga was slightly more prone to leaf diseases including rust than the PAN 148.



Above Left to Right: PAN 148 , Ukulinga and Dolichos respectively intercropped with maize.

3. *Variable herbicide effects*; Participants for the most part started to do their own spraying this season. This led to some variability in coverage and effect of the herbicide. Additionally, a cheaper glyphosate mixture than 'Round Up' – called 'Clear Out' was bought and people initially got the dilution wrong as it is a much weaker mix than Round-Up. Lastly, the pre-emergence herbicide 'Dual Gold' was not used this year. This led to some competition with grasses if people did not manage to do their weeding early enough.

Mostly if people sprayed reasonably well and weeded 2-3 weeks after planting they managed to get crop cover within 6 weeks and did not need to do any weeding thereafter. This appears to be a good integrated weed management system if the early weeding can be adhered to. Late weeding leads to competition with the crops, lack of crop cover and the need for continued weeding thereafter.



Above: A dramatic example of a control plot not sprayed with herbicide and not weeded on time compared to the trial plot on the right with pre-spraying of herbicide and one early weeding.

Considerations for future cycles

1. Consider using a pre-emergence herbicide for a period of 2-3 years to reduce the grass seed load in the fields- specifically couch grass and nut grass as these are still causing quite serious problems.
2. Find an insecticide or pesticide or pest control regime that can work better against the stalk borer than Decis Forte- especially for early plantings where stalk borer 'load' becomes high.
3. Work in the FFS workshops with seed saving and how to keep strains/varieties or characteristics of the plants that farmers want. There is an incredible mix of varieties – traditional, OPV, hybrid and GM all being grown alongside each other. The results are unpredictable with the potential of losing traditional strains and characteristics that are favoured.

4. Explore a farmer segmentation approach to contextualise and provide a planning framework for implementation support, monitoring and future support. See **Attachment 3** for an initial outline of this approach.

Estimated duration to completion

The annual cycle of the project is to be completed on schedule in June 2015. Between March and June, learning and evaluation workshops, farmers' days, harvesting and yield measurements, storage and milling options and practices and planning processes will be conducted.

ATTACHMENT 1: Bergville

2014-2015

TRIAL PLOT

VSA

Name and Surname	Area	Size of trial plot	soil test	Measured size of trial plot	Nr of years under CA	Date of planting	Fertilizer on trial	Type top dressing	Soil structure and type	Soil Porosity	Soil colour	No and colour of mottles	Presence of tillage pan	Soil cover at planting	Run-off	Moisture content at planting
Khulekani Dladla	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-14	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red/brown	none	10-15cm No pan (2)	50% residue, weeds and grass	none (2)	Slightly moist
Mtholeni Dlamini	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-19	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red	none	7cm-12cm No pan 2	30% residue, weeds and grass	none (2)	Dry
Dlezakhe Hlongwane	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-13	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular clayey	good (2)	Dark colour	none	10-15cm No pan (2)	35% residue, weeds and grass	none (2)	Dry
Bangeni Dlamini	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-25	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	moderate (1)	brown	none	6-10cm (1)	40% residue, weeds and grass	none	Dry
Phasazile Sithebe	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-29	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	moderate (1)	red	none	8-12cm (1)	35% residue, weeds and grass	none	Dry
Makhethi Dladla	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-15	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red/brown	none	10-15cm No pan (2)	50% weeds and grass, 10% residue	none (2)	Moist
Landile Nsele	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-23	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular clayey	Poor condition	Dark colour	none	5-9cm	20% residue, 30% weeds and grass	none	moist
Thulisiwe Hlongwane	Stulwane	1000m ²	Yes	1000m ²	two	2014-11-08	MAP: 1xbottle cap/basin	LIME: 2xbottle cap/basin &	Granular Loamy	good (2)	brown	none	12-15cm	20% kraal manure, 10% residue	none (2)	Slightly moist

							& 1xmatch box/M row	2xmatch box/M row						and 5%weeds		
Zamani Dladla	Stulwane	1000m ²	Yes	1000m ²	two	2014- 11-11	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	brown	none	10-15cm No pan (2)	20% residue, 30% weeds and grass	none (2)	Slightly moist
Chazile Zimba	Stulwane	1000m ²	Yes	1000m ²	two	2014- 11-06	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Clay	good (2)	Red/brown	none	10-15cm No pan (2)	40% residue, weeds and grass	none (2)	Slightly moist- wet
Cuphile Buthelezi	Stulwane	1000m ²	Yes	1000m ²	two	2014- 11-21	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red/brown	none	9-13cm No pan (2)	40% residue, 10%weeds	none (2)	Moist
Nokwaliwa Hlongwane	Stulwane	400m ²	Yes	400m ²	one	2014- 11-17	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	brown/dark	none	8-13cm No pan (2)	40% residue, 30% weeda and grass	none (2)	Slightly moist
Thandiwe Mazibuko	Stulwane	400m ²	Yes	400m ²	one	2014- 11-30	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red	none	7-13cm No pan (2)	30% residue, 20% weeds ans grass	none (2)	Moist
Khethabahl e Miya	Stulwane	400m ²	Yes	400m ²	one	2014- 11-30	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Sandy	moderat e (1)	Dark colour	none	5-9cm No pan (1)	40% residue, 30% weeda and grass	none (1)	Slightly moist to wet
Khombisile Msele	Stulwane	400m ²	Yes	400m ²	one	2014- 11-24	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Granular Loamy	good (2)	Red/brown	none	9-14cm No pan (2)	45%residue, 20% weeds and grass	none (2)	Moist
Xabanisile Mabaso	Stulwane	400m ²	Yes	400m ²	one	2014- 11-26	MAP: 1xbottle cap/basin & 1xmatch box/M row	LIME: 2xbottle cap/basin & 2xmatch box/M row	Blocky Clayey	good (2)	brown/dark	none	5-11cm No pan (2)	50% grass	none (2)	Moist

ATTACHMENT 2: Framework for CIG implementation 2014; Bergville

Date; 2014/06/13

Present: Erna, Mazwi, Njabulo, Madondo, Bafana, Lungile (SaveAct)

CIG and CA expansion process is to be combined, keeping the following issues in mind.

- Older groups are not in contact with SaveAct and we may not even know when they meet. – A specific process to draw them in is required.
- It does not work well to rely on one or two people only to try and arrange for meetings and for people to come.
- Lists will be compiled of all SCGs (old and new in focus areas). These will be contacted in clusters for setting up meetings to introduce CIGs and CA. This is a matter of urgency now.
- CIG processes to include a number of different commodities for the area. Start with a process of prioritizing the commodities using participatory value chain workshop.
- Link to Isiqalo, bulk buying and other mentoring and support processes available around e.g. poultry, sheep, and potatoes

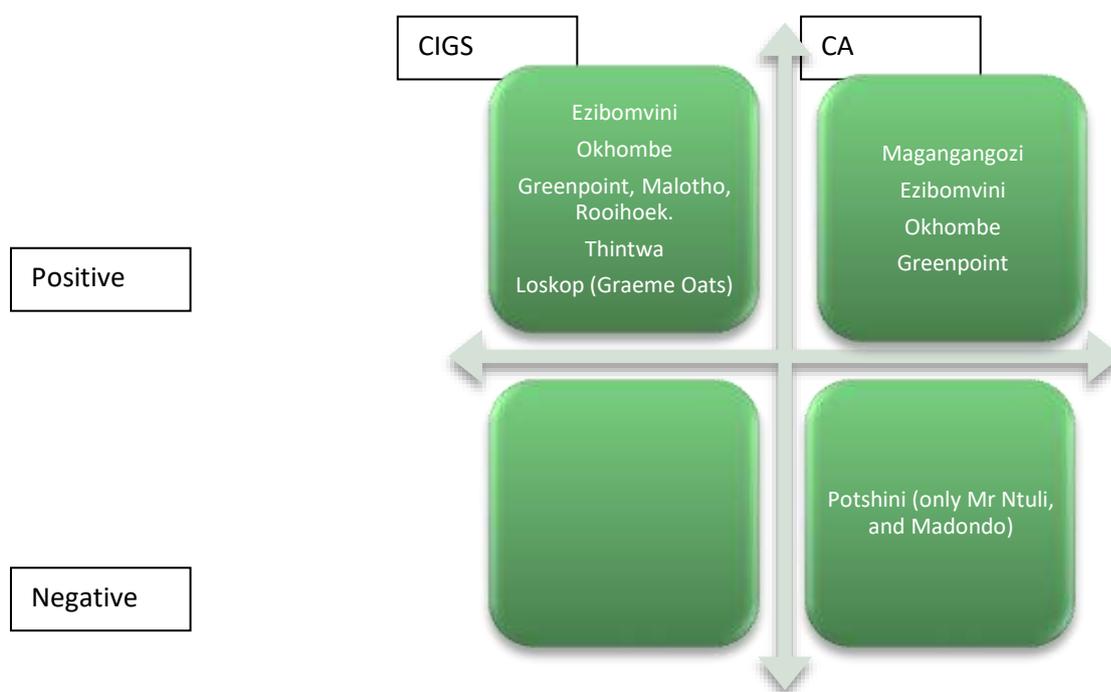


Figure 1: Groups to prioritise for CIGs and CA

CIGS : Commodity Interest Groups

- Linked to formal membership. Each person joins the CIG . Will be linked to certain services and processes in the future – including cell phone info systems,
- Set up in each localised area or village,
- Linked to a slightly larger area through one farmer centre
- Each CIG will host a number of commodity interest areas including CA learning groups where appropriate
- CIGs will incorporate new and old SCGs – between 2-8 SCGs per CIG
- Members of a CIG can form another SCG specifically aimed at agricultural enterprise savings and credit
- Organise bulk buying or cooperative buying and input supply processes, learning and mentoring around production and joint marketing processes

Farmer Centre

Initially a centre for support to the CA process in the area. Later it can provide a focus for other services and inputs. Set up as a functional small business activity for 2-3 members of the CIG to do the following:

- Provide access to CA tools and equipment (Hand planters, knapsack sprayers) to the broader community on a rental basis
- Provide access to small quantities of inputs for CA which could include seed, fertilizer, agrochemicals... as required by the individual. Larger quantities re-packaged and sold
- Provide a 'show-and-tell service' to individuals who want to try out CA. Both planters and knapsack sprayers need some level of skill to operate and thus a basic level of training which should be offered by the centre as a service.
- Will include members of CIGs from all the villages in a focus area, so needs to be quite central and accessible.

CA expansion (scaling out) process

- The CIG becomes the home for the CA process and also becomes the CA learning group for the area. People in the learning group can be part of the process through learning workshops, access to bulk buying opportunities for field cropping inputs and access to the farmer centre.
- The **trial participants** who did farmer based trials in 2013, continue with a secondary level experimentation process – where they choose the design of their experimentation process. They have the option to become **farmer mentors** and bring on board with them **5 farmer volunteers** each. They will be responsible for assisting these farmer volunteers in setting up and running their own primary level CA experiments/trials
- Five new farmer based trials will be set up in an area adjacent to, or linked into the focus area e.g. working in Magangangozi, which is next to Emmaus and where a few people from this village were in the 2013 process or showed interest in taking the CA process on.
- Two new focus areas are to be chosen, given their readiness both for CIG formation and interest in maize production and 5 new farmer based trials set up there linked to a CA learning group
- Maize **budgeting and bulk buying** input/workshop for each CIG: Talk through what people spend and what conventional vs CA costs per area, the need to plan for this spending, and then discuss how they can do it – savings, small loans, share outs??? Get each SCG to agree to discuss, people can decide to order, fill in an order form and get it to the CBP and or FO

Storage of harvests

Present system wasteful and not well organised:

1. OPTION 1: Storages in Bergville; Afgri will do moisture check and grade – store and mill and or sell. Sometimes they say that they are 'full' and then smallholders cannot access this service. Generally it is a good service and some farmers from Potshini already do this.
2. OPTION 2: Village level storage facility. Would need to be sorted, graded and stored separately for each person – also checking of moisture content. Would need to include milling as an incentive- otherwise too much effort to bring to a central place.
3. OPTION 3: Better home storage: Drying, sorting, grading, placing good quality in metal drums (2nd hand 200l drums cost around R150 at hardware stores in Bergville)

ACTION ITEMS: CIG process June-September 2014

ACTION	PERSON	DATE
1. CIG framework	Erna	17 June
Maize bulk buying order form and files with all information for Office and field staff, CIG membership forms	Erna	Tues 17 June
Lists with new and old SCGs (DONE)	Lungile	12 June
Interviews with all new participants in Emmaus, Stulwane, Ezibomvini, Okhombe, Magangangozi (include estimates of field sizes, CA, trial, Control)	Njabulo, Madondo	By end July
Soil samples for new areas:	Madondo, Njabulo	By 2 nd week July
Budgeting, bulk buying and ordering workshop: Emmaus	Njabulo, Madondo	By 2 nd wk of July
Budgeting, bulk buying and ordering workshop: Stulwane	Njabulo, Madondo	By 2 nd week July
Review new business plans for Emmaus., do CIG and ISiqalo interviews	Njabulo, intern	July- end August
Set up CIGs, register members; Emmaus, Stulwane, Okhombe, Ezibomvini,	Njabulo, Madondo	By end July
Magangangozi; Consolidate group into CIG and choose trial participants.(Send list through to Erna). Do interviews for new participants - Order planter attachment for hand tractor to try out	Madondo	By 1 st week in July
Finalise lists of CIG membership and participants and forward to Erna	Njabulo, Madondo	By end July
Have broken Knapsack sprayers fixed, get the right nozzles and fittings	Madondo	By end July
Order planters and knapsack sprayers and measuring wheelsx2, scale x1, rain gauges – Emmaus, Stulwane x2, (Okhombe?)	Erna	By end July
Install rain gauges in Emmaus, Stulwane	Njabulo	By end August
Explore small milling and storage facility for maize... costings options (mill, crusher, electricity, storage options, a venue.) Small cross visit to Dukuza	Erna, Lungile,	By end July Njabulo, Madondo

BY END JUNE

INTRODUCE CIGs and CA PROCESS AND GAUGE INTEREST

SET UP A CIG IN EACH AREA; CIG membership forms, commodity focus areas, roles and responsibilities for CIG members; input- production support and marketing, A form of committee or group of contact people and how they will inform others needs to be agreed on.

CHOOSE THE FARMER MENTORS, FARMER VOLUNTEERS AND PEOPLE FOR 5 NEW TRIALS; interview forms are to be filled in for ea participant and a home visit done to assess the state of the proposed field.

BY END JULY

RUN A MAIZE BUDGETING and BULK BUYING WORKSHOP IN EACH NEW CIG ; compare prices for conventional and CA processes as well as different levels of inputs (e.g. fertilizer vs kraal manure or a combination of both) etc, Introduce bulk buying concepts and assess interest for bulk buying from each individual in the group. Ensure that a process of discussion of bulk buying includes how each member will pay –e.g. using loans, or share outs or other savings, or setting up another SCG to save specifically or changing share out date for example....SET UP A BULK BUYING ORDERING AND PAYMENT PROCESS.

BY END AUGUST

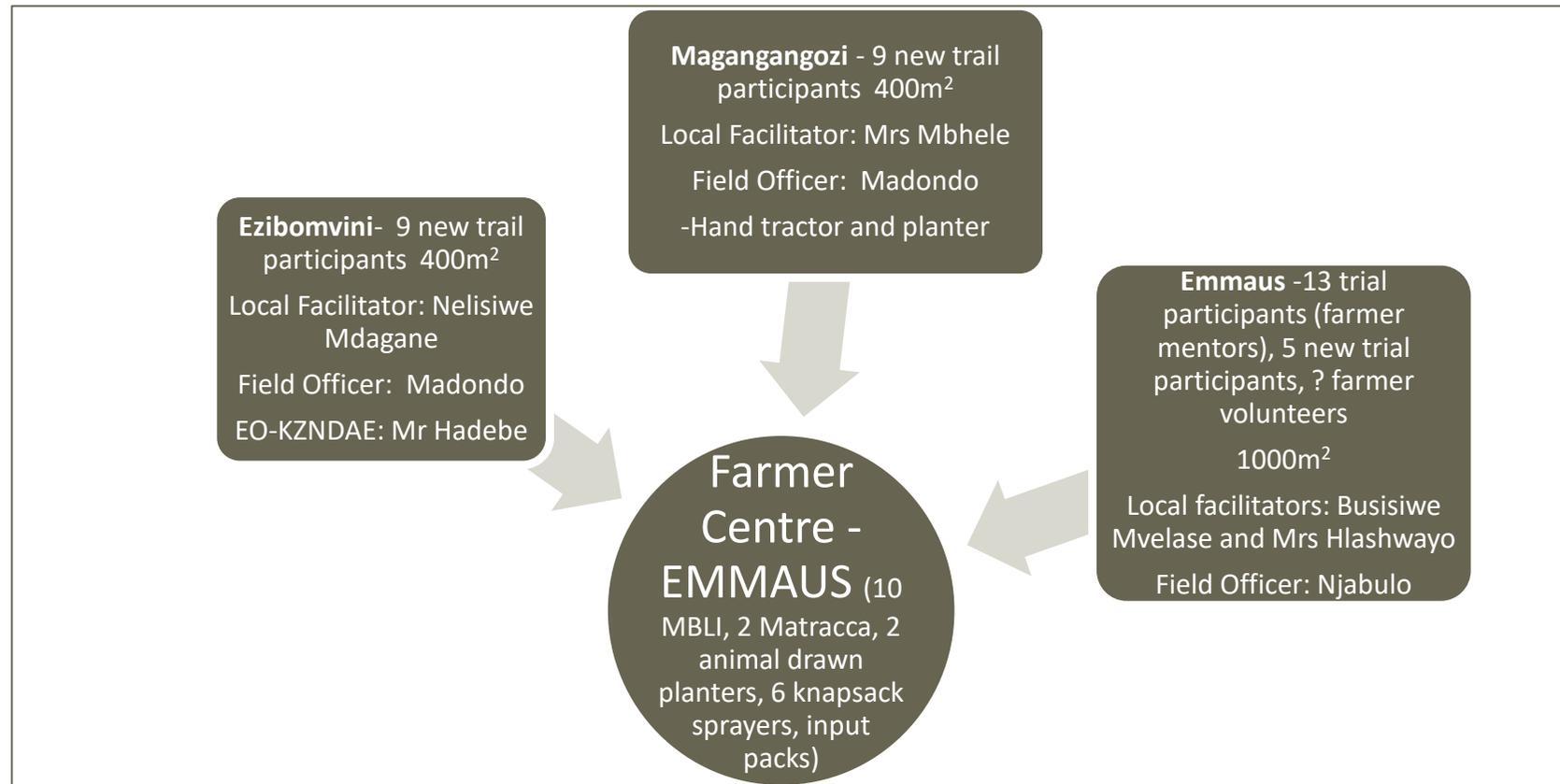
FINALISE PRIMARY AND SECONDARY LEVEL EXPERIMENTS, CONTRACTS, AND FARMER CENTRE PROCUREMENT INITIATION, STORAGE OPTIONS

BY END SEPTEMBER

DELIVERY AND PLANTING DEMONSTRATIONS AND WORKSHOPS

EMMAUS

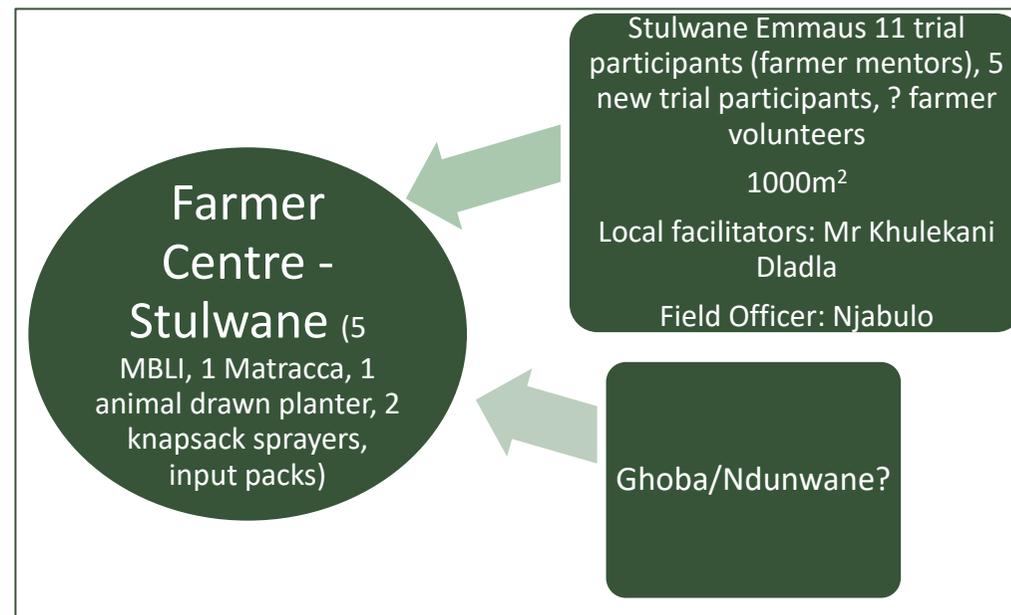
- CIGs (Emmaus – 1 SCG, Magangangozi - no SCGs, Ezibomvini -1SCG)
- 1 farmer centre in Emmaus
- 13 farmer mentors (with 13 secondary level farmer based trials). Incl OPVs/Hybrids, short season maize climbing beans, Lab-lab, different planters, fertilizer according to soil sample results, different herbicide regimes, using manure and fertilizer, early planting.
- ? farmer volunteers linked to the farmer mentors (2013 trial participants)
- Emmaus: 5 new (primary level) trial participants; Magangangozi: 9 new trial participants. Ezibomvini : 9 new trial participants.



STULWANE

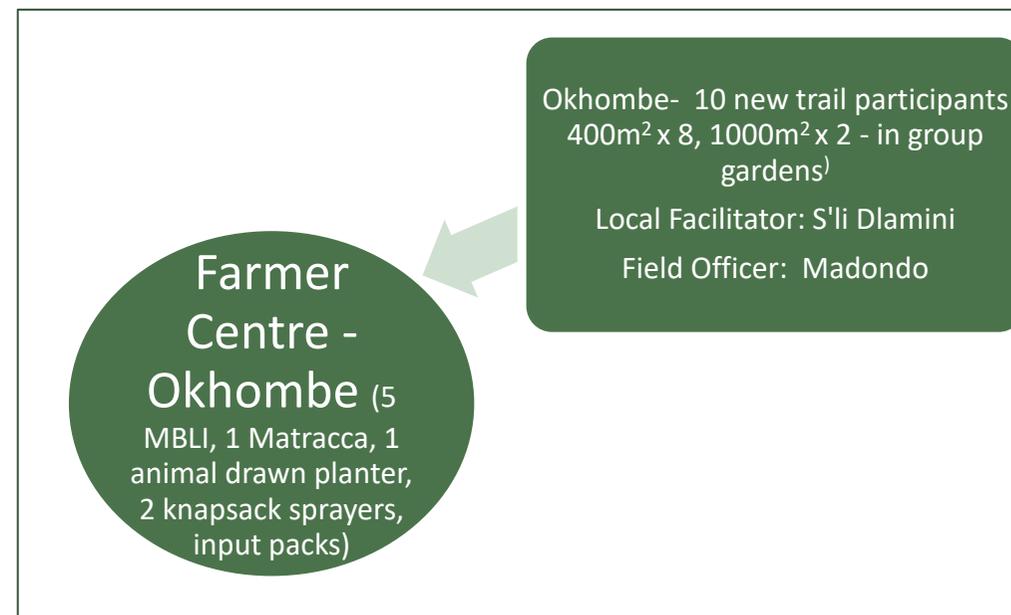
- CIG (1 SCG)
- 1 farmer centre
- 11 farmer mentors (11 trial participants with secondary level farmer based trials). Incl OPVs/Hybrids, short seasons maize climbing beans, Lab-lab, different planters, fertilizer according to soil sample results, different herbicide regimes, using manure and fertilizer, early planting
- ? farmer volunteers linked to the farmer mentors
- 5 new trial participants

Stakeholder meeting at KZNDAE (ZV Nkosi, Mr Msimanga (EO) – Stulwane Magangangozi, Ghoba, Mhlwazini)



OKHOMBE

- CIG (2-3 SCGs; Mahlabathini area)
- 1 farmer centre
- 10 new trail participants; 2 reps from each youth group and then 6 other community members. 1 rep to oversee planting in the communal garden and 1 rep to plant in their own field. 1 group working in fenced communal garden (Mr Xaba). Link with FSG youth agribusiness project



ATTACHMENT 3: Issues of scale – a farmer segmentation approach

It is becoming clearer that smallholder farmers themselves fall within different categories of resource availability, capabilities and aims for their farming. The concepts of subsistence and emerging commercial farmers have not been particularly useful in providing appropriate models of support to assist individuals to produce at scale or to include the myriad of important factors into the thinking process. These would be, for example, including the imperative to food and good nutrition and the imperative to resource conservation and sustainable interventions.

Smallholder farmer segmentation approaches have become more popular of late. Intentionally, CGAP (Consultative Group to Assist the Poor) has worked on a segmentation approach. Nationally Abalimi Bezekhaya¹ and PLAAS have also developed similar models.

ABLIMI BEZEKAHAYA: The Sustainable Development Chain.

ABLIMI BEZEKAHAYA: The Sustainable Development Chain.

This development continuum and sustainability index framework was developed by Rob Small for Abalimi Bezekhaya. This model has been developed over 28 years of involvement in micro farming and vegetable production on the Cape Flats outside Cape Town. The chain or continuum proceeds through four phases; survival, subsistence livelihood and commercial.

Survival: Produce is grown seasonally for own consumption with very little sold. Low external input systems are used with a minimum of bought inputs. Land sizes vary but are usually small ~50m². People start to save money as skills and gardens develop and are able to move out of this phase

Subsistence: Produce is grown seasonally for own consumption and sale, but production is intensified. Selling becomes more significant and supplements household income. Minimum land sizes increase to ~100-500m². Here people begin to dream of their futures again and may well have the courage to move off the land into other activities.

Livelihood (semi-commercial): Here a balance is aimed for and is the culmination of effort for the previous two phases. People aim for 50% home consumption and 50% sale. Production is continuous and selling of produce becomes a primary economic activity. Reinvestment occurs and profit earning begins. Other social income earning activities are commonly started at this phase to augment the primary production.

Commercial: In this phase almost all produce is sold for cash and formal profit making can grow rapidly depending on discipline, skills and dedication. Here the focus on helping neighbours and providing social benefit to the community seems to shrink.

Farmers at all phases must receive modest, ongoing, permanent, structural and development support. This includes smallholders at the commercial phase who absolutely cannot do without free or cheap water, electricity, loans etc.

CGAP (Consultative group to Assist the Poor) – a global partnership of 34 organisations, housed at the World bank. CGAP develops innovative solutions through practical research and active engagement with financial service providers, policy makers, and funders to enable approaches at scale. CGAP combines a pragmatic approach to

¹ Abalimi Bezekhaya.2010 Newsletter. April 2008-September 2009. No 36. The Sustainable Development Chain. www.abalimi.org.za/news-adn-info/

responsible market development with an evidence-based advocacy platform to increase access to the financial services the poor need to improve their lives.

Their segmentation approach² relates to the challenge of providing financial services that support the multiple goals of rural households, including those related to their more universal, general household needs and those linked to their agricultural activities. They have proposed three broad segments —(i) non commercial smallholders (<1ha, mostly for household consumption, limited and informal marketing and financial services), (ii) commercial smallholders in loose value chains and (1-2ha, some for consumption some for sale, limited and informal marketing and financial services) (iii) commercial smallholders in tight value chains (>2ha, cash crops, formal marketing and financial services)—are differentiated by what they grow, how they engage with markets as buyers and/or sellers, and how those markets are organized. These segments are not meant to be fixed, iron-clad divisions, but rather categories based on common traits that can begin to illuminate the financial mechanisms that might best fit the given financial goals and cash flows. Their criteria include gender, size of land holding, crop mixes, engagement with markets, access to improved agricultural technologies and access to financial services.

For the purposes of the Grain SA SFIP (Smallholder Farmer Innovation Programme), a combination of the above two farmer segmentation processes is being developed, to provide the concepts for a development continuum in this context and the needed sustainability criteria to design a specific sustainability index for this application.

Below the initial outline of the Grain SA development chain is provided. Information has also been drawn from a Livelihoods assessment conducted by SaveAct (a partner in this process)³.

TABLE 1: FARMER SEGMENTATION IN CONSERVATION AGRICULTURE:

CATEGORY	Non commercial smallholders	Semi commercial smallholders	Commercial smallholders in loose value chains	Commercial smallholders in tight value chains
% of people in each category	72	23	5	-
Farmer priorities	Most production consumed by the household and additional food is bought in	Production is intensified. Selling becomes more significant and supplements household income.	Consumption and sale in various percentage mixes but moving to more sales.	Primarily for sale-working within existing well defined commodity value chains
Gender	Mostly women (89%)	Mostly women (96%)	Women, men (60%♂)	Mostly men
Resources	Low external input systems are used with a minimum of bought inputs	Mixed (low and external) input systems are used with a minimum of bought inputs	Mixed (low and external) input systems are used with greater reliance bought inputs	Mostly high external input systems
Traction	Hand cultivation	Hand cultivation, animal traction	Animal traction, tractors	Tractors
Land size	> 0.1ha	0.1-1ha.	1-2.5ha	>2ha
Farm productivity, including labour access	Extremely low	Low to high	Low to high	Low to high
Access to improved agricultural tech and information	Very limited	Limited	Limited	Good
Access to	Very limited if at all	Very limited if at all	Very limited	Informal and some

² Robert Peck, Christen and Jamie Anderson. April 2013. CGAP Focus Note No 85. Segmentation of Smallholder Households: Meeting the Range of Financial Needs in Agricultural Families

³ E Kruger, E Lewis. December 2014. Matatiele Livelihoods Assessment. Emerging Data. Internal Report.

financial services				formal through buyers
Local organisation	Almost non existent	Almost non existent	Informal farmers groups	Farmers associations and cooperatives
Agribusiness support	Very limited.	Very limited.	Informal but growing	Reasonable
Engagements with markets	Very little; entirely informal	Limited and still informal for the most part	Both informal and formal	Can be good due to value chain farming bundles
Environmental performance	Generally not considered	Generally not considered, some adoption of conservation and sustainable practices	Generally not considered, some adoption of conservation and sustainable practices	Some adoption of conservation and sustainable practices
Crop mix	Staple crops Crop livestock mixes focussing on 4-5 commodities	Staple crops, some cash crops, crop livestock mixes – focussing on 3-4 commodities	Staple crops, some cash crops, crop livestock mixes – focussing on 2-3 commodities	Mostly cash crops – focusing on 1, maybe 2 commodities
Livelihood (FS, Income, assets, poverty likelihood, perceived well being)	FS: low Income:R0-R2000 Assets: minimal Poverty Likelihood; High	FS: low- medium Income:R2001-R4000 Assets: minimal- starting to build Poverty Likelihood: medium	FS: medium-high Income:>R4000 Assets: reasonable Poverty Likelihood: low	FS: high Income: Assets Poverty Likelihood

It is considered that for each different category of smallholders, within the development and sustainability categories defined, different types and sets of interventions would be or are required to provide for the greatest impact at a local farm level. Below is a summary of interventions seen to be most appropriate and required for non-commercial and semi commercial smallholders.

TABLE 2: APPROPRIATE INTERVENTIONS FOR NON COMMERCIAL AND SEMI-COMMERCIAL SMALLHOLDERS.

CATEGORY	Semi and non-commercial smallholders	Appropriate interventions	Gaps
% of people in each category	95	For all semi and non-commercial smallholders	
Farmer priorities	Household consumption and sales	-Focus on household consumption first – household storage and value adding at household level (<i>small mechanical mills, drums, tablets for weevil control, rat bait</i>)	-Harvesting efficiency for non-mechanised systems
Gender	Mostly women (92%)	- technology and systems appropriate for women (<i>hand tools that women can use easily, SCGs, working support groups,</i>)	
Resources	Mixed (low and external) input systems with a min of bought inputs	Focus on localised, natural systems as much as possible (<i>reduced herbicide, Only pre spray of herbicide) and fertilizer usage (micro-dosing)– increase cover crops, inter-cropping, mulch</i>)	- rainwater harvesting in minimum tillage systems
Traction	Hand cultivation, animal traction	Provision of hand planters, animal drawn planters, two row planters for CA to try out, rent and purchase	Access to ploughing and tractors...(Joint acquisition or reliance on KZNDAE.....) Formalise farmer centres
Land size	> 0.1ha- 1ha	<i>Expansion of activities to incorporate more unused land. Longer term allocation of certain plots to CA.</i>	
Farm	low	Minimise labour (<i>farmer experimentation, working groups, use of pre plant herbicides, close</i>	

productivity, including labour access		<i>spacing inter cropping, soil cover)</i> Maximise soil fertility (<i>CA and cover crops, legumes</i>)	
Access to improved agricultural tech and information	limited	-Partnerships with service providers, NGOs, Government and Agribusiness for provision of information, skills development and appropriate technical support (<i>Working partnership with GrainSA, Mahlathini Organics, external funders , KZNDAE?</i>)	Appropriate technology for hand cultivation, animal traction and small implements for tractors. Farmer centres in different localities to supply and support PES services incentive scheme for alternative and ongoing funding for scaling out and up.
Access to financial services	Very limited if at all	- <i>Saving and credit groups linked to group account at local bank (partnership with ABSA)</i>	- Suite of services available in formal system – e.g mobile and cell phone banking, branchless banking, savings, insurance and loan products for smallholders
Local organisation	Almost non-existent	- Focus on local organisation (<i>saving and credit groups for debt management consumption smoothing and input supply</i>) - Organise across villages and areas (<i>digital systems for communication ordering, payment etc to organise large groups of smallholder efficiently – being developed</i>)	-Group organisation for local storage and processing (milling) -Strengthen input buying groups - Software and service providers for digital systems, internet and cell phone reception and access for smallholders
Agribusiness support	Very limited.	- Focus on local organisation for numbers and efficiency (<i>Commodity interest groups, farmer platforms for bulk buying, negotiation of 'deals' with businesses and suppliers in the area</i>)	- Agribusiness systems to support smaller quantities, 'packages', cash on delivery, pre-ordering, paying off over time,
Engagements with markets	Limited and still informal for the most part	-Arrangements with milling companies in Bergville. - (<i>Local marketing of maize and beans – market is readily available. Sale of beans to shops in Bergville.</i>)	- More formal arrangements to be made where possible
Environmental performance	Generally not considered, some adoption of conservation and sustainable practices	-(<i>farmer field school sessions to underpin activities in CA into environment and environmental concerns. Focus on run-off control, water infiltration soil life</i>) - <i>VSA- Visual soil assessment methodology piloted for local monitoring</i>	-Link in environmental stakeholders and potential long term funders of incentive schemes.
Crop mix	Staple crops Crop livestock mixes focussing on 4-5 commodities	- <i>Focus on inclusion of legumes for nutrition, environmental and economic benefit.</i> - <i>Cover crop mixes are fodder crops for livestock</i>	
Livelihood (FS, Income, assets, poverty likelihood, perceived well being)	FS: low-medium Income:R0-R4000 Assets: minimal, starting to build assets Poverty Likelihood; Medium to high	- <i>increased food security and access to nutritious food.</i> - <i>Increased sales to augment household income</i>	- Assess quantitatively the impact....and economically the real potential of such small systems. - Local seed stores, local mills, local sales, local fodder mixes and production

For Commercial smallholder in loose value chains it is considered that the above criteria and interventions are still relevant but focus should be provided on the aspects outlined in the table below. There are many more gaps for the commercial farmers as support systems within communal tenure areas for such smallholders are extremely low. The management and organisational capacity of farmers at this level needs to be increased considerably.

CATEGORY	Commercial smallholders in loose value chains	Appropriate interventions	Gaps
% of people in category	5		
Farmer priorities	Consumption and sale in various percentage mixes but moving to more sales.	-Focus on sales and community level infrastructure	-Harvesting, storage, transport, local organisation.
Gender	Women, men (60%♂)	- Technology and systems appropriate for women and men – mechanisation - Milling, storage, grading, packaging.	
Resources	Mixed (low and external) input systems are used with greater reliance bought inputs	Focus on localised, natural systems as much as possible Augment with efficient system of input supply <i>(Bulk buying and organisation through local Commodity Interest Groups, linked across villages to specific agribusiness concerns)</i>	- Rainwater harvesting in minimum tillage systems
Traction	Animal traction, tractors	Animal drawn planters, two row planters for CA to try out, rent and purchase Focus on animal traction per se	- Access to ploughing and tractors...(Joint acquisition or reliance on KZNDAE.....) - Formalise farmer centres - Training and management of teams of oxen. - Local arrangements for buying and maintaining tractors
Land size	1-2.5ha	Expansion of activities to incorporate more unused land. Longer term allocation of certain plots to CA.	- Local lease agreements nad involvement of Traditional authorities. - Fencing and arrangements' for livestock control that incorporates needs of crop farmers
Farm productivity, including labour access	Low to high	Minimise labour - employment of labour Maximise soil fertility (include fertilizers)	- Management and monitoring systems for farm productivity at a local level. -Using soil samples for soil fertility management decision making at a farm level).
Access to improved agricultural tech and information	Good	-Partnerships with service providers, NGOs, Government and Agribusiness for provision of information, skills development and appropriate technical support <i>(Working partnership with Grain SA, Mahlathini Organics, external funders , KZNDAE?)</i>	Appropriate technology for animal traction and small implements for tractors. Farmer centres in different localities to supply and support PES services incentive scheme for alternative and ongoing funding for scaling out and up.
Access to financial services	Informal and some formal through buyers	-A range of financial services options appropriate for this scale- formal savings and investment options, cheap and accessible credit and loans, insurance packages, bulk buying systems, accounts with agribusiness suppliers Business management support <i>(Small business training and mentoring, business plan development and monitoring)</i>	- Suite of services available in formal system – e.g mobile and cell phone banking, branchless banking, savings, insurance and loan products for smallholders
Local organisation	Farmers associations and cooperatives	- Focus on local organisation ; development of Commodity interest groups into more formalised associations and structures	-Group organisation for local storage and processing (milling) -Strengthen input buying groups

		- Organise across villages and areas (<i>digital systems for communication ordering, payment etc to organise large groups of smallholder efficiently – being developed</i>)	- Software and service providers for digital systems, internet and cell phone reception and access for smallholders
Agribusiness support	Reasonable	- Focus on local organisation for numbers and efficiency (<i>Commodity interest groups, farmer platforms for bulk buying, negotiation of 'deals' with businesses and suppliers in the area</i>)	- Agribusiness systems to support smaller quantities, 'packages', cash on delivery, pre-ordering, paying off over time,
Engagements with markets	Can be good due to value chain farming bundles	-Arrangements with milling companies in Bergville.	- More formal arrangements to be made where possible -Brokering of contracts and agreements with buyers -Setting up semi formal sales arrangements in the community – supply of required items- maize meal, animal fodder mixes etc.

ATTACHMENT 4: Summary of livelihoods information for Bergville; Draft 3. September 2014

OUTCOMES

SCGs are central in assisting the rural poor and specifically women to engage actively in productive activities such as agricultural enterprises. The commodity interest group focus for agricultural enterprises assists substantially in improving yields, access to inputs and increasing incomes from these enterprises. Setting up of SCGs specifically for cooperative and bulk buying activities has a significant positive effect on people's ability of finance their enterprises.

SUMMARY

1. 49 People were interviewed: Emmaus 22, Stulwane 17, Potshini 10.
2. 84% of respondents are female. The average age of the respondents is 49 years.
3. Incomes are extremely low; 50% earn between R1-R1 000/month; another 42% earn between R1 001-R2 000/month and 8% earn >R2 000/month.
4. Of the 49 respondents 40 mentioned being involved in agricultural enterprises. Of these 20 were Commodity Interest Group (CIG) members and 20 were not. Commodities include maize, beans, vegetables, poultry, livestock and potatoes. Most CIG members in Bergville are involved in between 1 and 2 commodities.
5. 70% of respondents take small loans of R300-R1 000 for their agricultural enterprises from their SCGs; 19% take small loans of R1 001-R2 000 and 11% take small loans of > R2 000.
6. The percentage of people relying entirely on their SCGs to finance their agricultural enterprises (AE) drops from 78% to around half that, at 43%, as their incomes double. People take out roughly the same size loans even if their incomes are higher. There is a structural limit to the size of the loans each person can take in a cycle and the overall income of the individuals.
7. Other financial resources (day labour, other small enterprises, intermittent remittances etc) are used more often in the middle and higher income groups for AE.. For the low income group 76% of participants use only their SCG loans and share outs for their agricultural enterprises. This reduces to around 38% for the next income group.
8. Overall around 60% of respondents do not use other financial resources, around 20% use between R1-R2 2000 and around 10% use >R2 000 of other finances for their agricultural enterprises
9. The total amounts spent on agricultural enterprises for each of the income groups increases proportionally from R1 200 to R1 500 to R2 100 for the income groups of R1-R12 000, R12 001-R24 000 and >R24 000 respectively. This means that people actually all spend the same proportion of their overall incomes on their agricultural enterprises and will spend a bit more on them if they have a bit more.
10. People spend between 15-18% of their overall incomes on their agricultural enterprises.
11. People do not use their share outs that much for their agricultural enterprises (AE). The amount of share outs spent on AE for this respondent group was around R27 750 for 2013. The overall share out amount for the same period was around R153 480. Only 18% of the overall amount was thus used for AEs and this was on average for around 37,5% of the respondents.
12. 60% of those that used share out monies for their agricultural enterprises belong to the CIGs.
13. Improvements in participants' enterprises that are seen to be due to involvement in CIGs are the following:
 - a. 50% no improvement,
 - b. 21% improved income,
 - c. 9% access to cheaper inputs,
 - d. 4% easier access to inputs and
 - e. 4% no longer sell on credit.
14. Present issues or problems with enterprises include:

- a. Access to inputs (financial) – 22%
 - b. Production factors (e.g soil problems, water, small lands) – 17%
 - c. Access to credit – 13%
 - d. Not having a business – 9%
 - e. Adverse weather conditions- 9%
 - f. Lack of infrastructure and equipment – 4%
15. Financial access to inputs appears to become more of an issue the more respondents focus on their agricultural enterprises and many respondents requested assistance in this regard. People struggle to afford to buy inputs and the assistance from SCGs can only help up to a point.
16. Further support requested for enterprises:
- a. 36%- financial assistance for inputs (fertilizer, seedlings, etc) and infrastructure (tractors, water tanks...)
 - b. 28% - none (not that interested in small businesses or not involved)
 - c. 24% training in enterprise development
 - d. 6% - water for production
 - e. 4%- new enterprises

Requests for further interventions are primarily for financial assistance (36%), and further training in agricultural enterprise development (24%)

17. The Isiqalo, business start up training was conducted in Emmaus. 90% of respondents (N=21) received the training, filled in AND implemented their business plans. The theme of the training was maize and bean production. 81% of participants kept maize and beans for household consumption only, 14% also realised incomes of R501-R1500 and 5% also realised incomes of R40001-R6000.
18. SCG membership plays a significant role in participation in agricultural enterprise, in this case, maize production. Incomes that have been realised are linked to SCG membership and more specifically to SCGs set up for the sole purpose of saving for inputs and bulk buying.
19. The average monthly income of CIG members is higher than those not involved in CIGs. This indicates both that being involved in the CIGs support income generation from agricultural activities and that involvement in these activities requires a slightly higher average monthly income.
20. 85% of CIG members are active in more than one agricultural enterprise, while only 15% of non CIG members are active in more than one enterprise. This indicates the importance of involvement in more than one agricultural enterprise to diversify and support livelihoods.
21. 87,5% of respondents are involved in maize production, with 73% considering this their primary agricultural enterprise. This indicates the strong focus on maize in the area and people's desire to be able to also make an income from maize production, over and above their food production needs.
22. While the per hectare yield of maize is comparable to commercial yields (for the CA participants)at 4-8tons/ha, actual maize yields are small due to small plots of land being cultivated under rain fed conditions and mostly by hand. Their average total plot size planted is around 0,25ha and the actual yield average is around 233,3kg of grain (Range: 86kg-879kg).
23. The average rand replacement value of this amount of grain is around R1 600,00 (Min R688 – Max R7033). This would be enough maize meal for a family of around 5 people for 4 months and counts as a significant improvement in household food security.
24. 20% of respondents were involved in bean production as an enterprise. Of those involved 50% managed to produce both for home consumption and make an income of between R500-R3000. Beans have a much higher income potential at this scale than maize. There is a good local market for beans and this activity is worth promoting for both income and nutrition stability and diversification.
25. 10% of respondents were involved in vegetable production as an enterprise. Income potential for vegetables is lower than for beans and is likely also to relate to the lack of water and fencing for vegetable gardens in the area.