

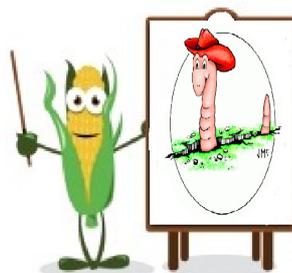
APPENDIX 1
PROGRESS REPORT
Farmer innovations in Conservation
Agriculture (CA) systems for sustainable
crop intensification in semi-arid, sandy soil
conditions, North West Province

For the period:
OCTOBER 2017 TO FEBRUARY 2018



Compiled by:
HJ Smith, AA Nel and G Trytsman

March 2018



Ottosdal No-till Club

TABLE OF CONTENT

1. COORDINATION AND MANAGEMENT	3
2. ASSESSMENT OF SOIL QUALITY	5
3. ASSESSMENT OF COVER CROP ADAPTABILITY AND SUITABILITY.....	7
3.1. WORK PACKAGE	7
3.2. DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY	8
3.3 SHORT DISCUSSION OF THE TRIALS	10
3.3.1. <i>Green fallow (Regenerative trial)</i>	10
3.3.3. <i>Grazing trial (Livestock integration)</i>	12
3.3.4. <i>Cover crops as standing hay</i>	13
3.3.5. <i>Cover crop screening trial</i>	14
3.3.6. <i>Small things with big implications</i>	14
4. AGRONOMIC FIELD TRIAL PLANNING AND ANALYSES.....	15
1.1. WORK PACKAGE	15
1.2. DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY	16
5. COORDINATION AND FACILITATION OF PROJECT ACTIVITIES	17
7. SUMMARY OF EXPENSES ON FEBRUARY 2018.....	20

1. Coordination and management

Work Package title	Coordination and management
Work Package period	October 2017 to February 2018
Lead partner	Ottosdal No-till Club (Mr Hannes Otto) and Grain SA (Dr Hendrik Smith)
Involved partners	All
Objectives	Coordinate activities among all partners Ensure timely reporting to Grain SA / The Maize Trust Promote synergy among project activities
Justification	Project size, complexity and level of integration/interdependency among different project actions require strict delivery and adherence to project timelines as essential. Partners must often work together to achieve specific project outputs.
Description of work	<p>Activity 1: Project inception workshop.</p> <p>Progress and Results achieved: A one-day project planning and inception workshop was held on 20 August 2013 (at the Ottosdal country club) at the beginning of the project to enable all project partners to define work packages and procedures to achieve the project outputs and objectives. These WP's are used for the financial control and payment of the project and for the monitoring of the agreed tasks and deliverables. Work package managers were identified at this meeting and will present/follow strategies and protocols which are frequently monitored by all partners.</p> <p>Activity 2: Frequent coordination meetings.</p> <p>The purpose of these monthly or bi-monthly meetings is to establish an Innovation platform for improved communication, integration and sharing. The essence or key action in these meetings will be social learning, characterised by feedback, reflection, planning and coordination between different work packages and stakeholders. A secondary activity is the creation of a wider network in support of communication, sharing, learning and scaling out.</p> <p>Progress and Results achieved: Frequent project meetings has taken place involving all the key partners (project team members) in the project. Those include farmers, researchers, input suppliers, Grain SA/MT and manufacturers. These meetings are instrumental in the running of the project, serving as a platform for collective and adaptive project management. Some of the key project events, such as the farmer-led trials and the conference, have been planned and coordinated from this platform.</p>

Activity 3: Annual Reference Group Meetings.

Formal reference group meetings will be organised each year with representation from each work package. In order to provide the project with independent monitoring, advice and support and to ensure communication with key stakeholders, a group of experts and end users (reference group) will be formed and invited to participate. Presentations from each work package leader will summarise achievements. Discussions about progress, potential deviations from the work plan and forward planning will be standing items at each meeting.

Progress and Results achieved: The annual reference meeting took place on **30 August 2017**.

Activity 4: Organise and Coordinate annual awareness event(s)

Progress and Results achieved: The annual Ottosdal CA conference was successfully held on 13 and 14 March 2018. Around 200 people attended the event.

Activity 5: Reporting.

All partners participate in the preparation of a six-monthly progress report. The lead applicant and work package managers' report on results and work progress, as well as actions taken to minimise the effects of delays on other project activities.

Progress and Results achieved: Reporting has been done according to the standards and format required by The Maize Trust.

Activity 6: Annual progress reports.

The annual report will be done according to The Maize Trust / CA-FIP guidelines. Work package managers are responsible for collating information and making a single work page report. The lead applicant is responsible for integrating these into a single full report. A similar approach will be used to prepare the final project report covering information from all project years.

Progress and Results achieved: The annual report will be completed in September 2018.

Deliverables	• Project actions and reporting delivered on time
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Risks	The project study area is experiencing a major drought period and trial results might be affected.
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2. Assessment of soil quality

Work Package title	Assessment of soil quality under Conservation Agriculture (CA) systems in the semi-arid cropping areas of the North-West Province
Work Package period	October 2017 to February 2018
Lead partner	SGS (Mr Adriaan Dreyer)
Involved partners	Ottosdal No-till Club, ARC-GCI, Grain SA,
Objectives	<ul style="list-style-type: none"> • To characterize the soil types and soil physical & chemical parameters, such as particle distribution, pH, Soil Organic Matter and macro-, micro-nutrients • To compare the effect of different CA treatments on soil quality • To establish relationships between different soil parameters, yield and atmospheric elements
Justification	A number of studies suggest that a soil and nutrient management strategy based on a broader range of ecosystems processes is worth further investigation. The approach shifts the emphasis of soil nutrient (fertility) management away from soluble, inorganic plant-available pools to organic and mineral reservoirs that can be accessed through microbial and plant mediated processes. However, a relatively poor understanding and capacity exist among the local research fraternity to investigate these crucially important subjects.
Description of work	Characterise the effects of different CA practices (treatments) on soil nutrient and physical dynamics as well as crop growth and yield, will involve regular field visits, sampling of soil on selected transects / sites and time intervals, laboratory analyses of the samples, data processing, statistical analyses and report writing.
Activities	<ol style="list-style-type: none"> 1. Monitoring and Sampling 2. Lab Analyses 3. Monthly meetings (project team) 4. Annual reference group meeting (advisory committee) 5. Annual report and admin (technical data) 6. Participate in Awareness events

Risks	<ul style="list-style-type: none"> • Being a dryland experiment, low and erratic rainfall may compromise crop yields; • Wild animals and birds may jeopardise crop performance and yields; • Instrumental failure can result in incomplete data results
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DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY

Activities	Deliverables	Progress and Results achieved
1. Monitoring and Sampling	Detailed sampling of each trial site. Measurements of some physical soil characteristics such as water infiltration rate.	Soil classification and analysis were done for every trial and selected farms. Annual sampling will continue from March to June 2018.
2. Lab Analyses	Organic C (%) Standard soil analysis: 4 basic cations, P, pH, ratios, micro-elements Texture (once-off, top- and subsoil)	Soil chemical sampling will be done for every trial and selected treatments in trials.
3. Project team meetings	Participate in project team meetings, discussing problems and possible solutions to that.	A reporting and planning meetings was held at Ottosdal on 26 September 2017. A planning meeting between Mr's Hannes Otto, Adriaan Dreyer and Dr Andre Nel was held on 8 February 2018.
4. Annual reference group meeting (advisory committee)	Report progress and findings to advisory committee; Discussion and evaluation of data. Learning from each other.	
5. Annual reports and admin (technical data)	Written technical report covering trial procedures, results and progress.	
6. Participate in Awareness events	Trial visits with stakeholders; participate in awareness events, such as information day and/or cross-visits	Soil profiles will be discussed during the 2018 conference.

3. Assessment of cover crop adaptability and suitability

3.1. WORK PACKAGE

Work Package title	Assessment of cover crop adaptability and suitability Crop and Livestock integration
Work Package period	October 2017 to February 2018
Lead partner	ARC-AP (Mr. Gerrie Trytsman)
Involved partners	Grain SA, Ottosdal no-till club, ARC-GCI
Objectives	<ul style="list-style-type: none"> • To establish and maintain an on-farm screening trials • Determining the biological production of different cover crops • Measuring the production of crop residues of each cover cropping system • Measure the adaptability of cover crops in different agro-ecological regions • Planting of cocktails that can be used as livestock feed or soil primers • Planting of cash crops on primed soil • Monitor and determine crop yield on mixtures • Established new cocktails from seed companies • Establish intercropping trial on sunflowers
Description of work	On-farm, farmer-led screening trials; crop livestock integration; double cropping with Sunflower; cooperation with seed company and the priming of tried soils. Building a sustainable farming system for the North West province
Activities	<ol style="list-style-type: none"> 1. Land preparation (finding a suitable location, sourcing materials) 2. Purchase Materials & Equipment 3. Establishing and planting of trials 4. Seasonal management and maintenance of trials 5. Monitoring and Sampling (including harvesting, biomass and yield determination, nutrient analysis) 6. Lab analyses 7. Monthly meetings (project team) & training 8. Annual reference group meeting (advisory committee) 9. Harvesting, biomass and yield determination, nutrient analysis 10. Annual report and admin (production & technical data) 11. Participate in Awareness events

Risks	<p>Finding a suitable site for a trial of this magnitude</p> <p>Getting the right equipment and seed to do the job well</p> <p>Acts of God (drought, hail, etc.)</p> <p>Labour (weed control, harvesting, etc.)</p>
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3.2. DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY

Activities	Deliverables	Progress and Results achieved
1. Land preparation (finding a suitable location, sourcing materials, action planning)	<p>Description of natural resources. This will include positive and negative factors that can impact on plant growth. Selection of suitable site(s).</p> <p>Drawing up a concept note for livestock integration.</p> <p>Action plan that will include acquisition of seed, inoculum, stickers, implements, chemical inputs, monitoring and evaluation of trial, harvesting, collecting and interpretation of data.</p> <p>The action plan should clarify the role of every party involved.</p>	<p>A plot of 42 ha mixed summer annuals were planted at George Steyn. The seed was sourced from Barenbrug seed company. This will be used to implement an integrated crop-livestock trial</p> <p>Summer annual seed was supplied to George to plant the screening trial. A new technical helper (farmer facilitator) was appointed and with his assistance the summer annuals were planted.</p> <p>The regenerative trial (green fallow) was planted again and maize, soybean and sunflowers were established on the previous year's cover crops (10ha).</p> <p>Summer annual cover crops were planted on the cash crops of 2017 again. Treatments then is rotation between cash crops and cover crops (green fallow; 10ha).</p> <p>Hannes Otto produced cowpea seed which were planted on his farm the previous year. A mixture of sorghum, babala and cowpea looks impressive. The cover crop will be grazed later August-October (standing hay). He is happy with the progress.</p>
2. Purchase Materials & Equipment	Acquisition of seed, inoculum, stickers, implements, chemical inputs.	Warm season crops seed was delivered to farmers after purchasing it from Barenbrug.

		Winter annual seed was delivered on 22 February for the screening trial. A new planter for planting small seed was delivered to Humanskraal by Ottosdal Landini.
3. Establishing and Planting of trials	Drawing up a field plan. Establish screening trial December. Established trial according to the field plan. Extended summer annuals area for soil priming and livestock integration was planted.	The screening trial was planted mid-December, summer annuals. Winter annuals end of February. December planting of cash crops in regenerative trial also took place The livestock integration and regenerative trial was planted on the 16/1/18.
4. Seasonal management and maintenance of trials	Regular visits to the trial site for inspection of weeds and insect damage and control if needed. Treatment of cover crop at appropriate time (usually before seed set) using appropriate equipment. Submission of technical report after each visit. Photos from trial during visits.	Discussed trials with farmers and deliver seed. 26/9/ had a meeting at Ottosdal and a decision was taken to carry on with screening trial.
5. Monitoring and Sampling	Completed data sheets for 1. Input cost 2. Germination 3. Cover % 4. Height of cover of each addition 5. Biological productivity t/ha 6. Root evaluation:	Took soil samples from the regenerative and integration trial. 22/23/01/2018 samples for nematodes and crown rot were taken. Photos was taken with every visit of the trials. Leave samples were taken to determine the nutrient content for P, K and Ca. The information of the previous 3 years is the ARC's statistical division. The data will be presented to farmers at the Mrt farmers' day.

6. Lab Analyses	C:N content of plant material.	Will be forthcoming.
7. Monthly meetings (project team) & Training	Partake in monthly forum meetings, discussing problems and possible solutions to that.	26/09/2018 Meeting at Ottosdal steering com. 9/11/2018 order summer annuals from Barenbrug 22/01/2018 nematodes and crown rot sampling
8. Annual reference group meeting (advisory committee)	Report progress and findings to advisory committee. Discussion and evaluation of trials. Learning from previous mistakes.	Scheduled in fourth quarter.
9. Annual report and admin (production & technical data)	Written technical report covering trial procedures, results and progress.	On-going process. Annual technical report completed by 3/18.
10. Participate in Awareness events	Trial visits with stakeholders; participate in awareness events, such as information day and/or cross-visits	Enquiries around cover crops are expanding. Article on the "Winter cover crops and potential benefits in a mixed farming system." Will be published in SA Grain magazine.

3.3 SHORT DISCUSSION OF THE TRIALS

Summer annual cover crops were planted in various trials on fairly large areas.

3.3.1. Green fallow (Regenerative trial)

A summer annual mixture was left to develop fully and will be left standing (vertical mulch) for the winter. These crops being summer annuals are killed by frost. A small amount of Radish (cool season annual) is mixed with the seed. This ensure the presence of living roots in the soil during the winter months. A core principle of conservation agriculture is adhered to by applying this strategy. The root exudes glycoproteins that can attract micro-organisms and soil life can use this sugary substance as food. The winter annual part of the trial was not established. The reason for this will be made clear by the next photo 3.1 below. The sunflower in the foreground was planted on cool season mixture while the sunflower at the back was planted on the summer mixture. Clear from the picture is the fact that the C3 plant (cool season crops) do not produce the mulch that the C4 (summer annuals) display. The mixture did contain a fair amount of radish, though.

On other parts of the farm the farmer had to establish sunflower for three times before he was satisfied with the stand. Where the mulch cover was adequate, in this case on the summer annuals the establishment of the sunflower was successful the first time. Also

clear is the fact that the development of the plants themselves at the back of the photo is faster and that the canopy cover relative to the soil is 40% higher. No implement was used in an attempt to break soil crust or to help the crop established in any way. The only problem was that the planter could not handle the amount of mulch that was created. This meant that crops were establish a bit later.



Photo 3.1: Sunflower (2018) on cool season and summer annual cover crops (2017)

If farmers in future want to go this route it can be a wise decision to buy a planter that can handle the mulch. Cash crops, maize and soya beans is also part of the trial.

Photo 2 is a photo of the cover crop of 2018 planted where the cash crops were the previous year.



Photo 3.2: Cover crops on cash crops of 2017

3.3.3. Grazing trial (Livestock integration)

A trial plot of 42 ha mixed annual summer cover crops were established with the intention to graze the sward with weaners. Due to the cost of buying weaners (R43/kg) this practise seemed a bit risky. Weaners that are held on planted pasture will weigh more than 250kg at marketing and above this weight, prices drop considerably. The farmer, Mr George Steyn of Humanskraal, then decided that it makes more sense to buy thin cows with calves. This will create opportunities for the cows to be fatten up and sold to butchers or at an auction. The calves' weight will then be in the range preferred by feedlots (200-250kg). Photos 3 and 4 is an indication of the cover crop and the animals that were bought for the trial.



Photo 3: Cover crop on 23/02/18

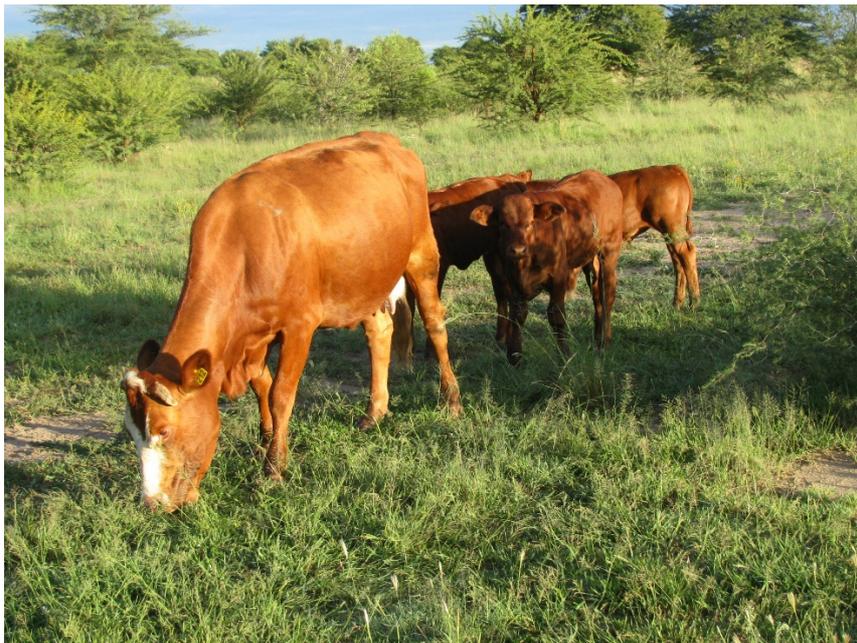


Photo 4: Cows with calves at foot

3.3.4. Cover crops as standing hay

Due to the practise of grazing his cash crop residues during winter, Mr. Hannes Otto feels he pays a yield penalty when planting the follow-up crop. The mulch cover of the soil is lower than what he feels it should be. This leads to losses of water from the soil surface due to evaporation and runoff, a situation that farmers in the North West Province can ill afford. He decided to change his approach to get through the tough times with his animals by investing in cover crops. The previous year he planted cowpeas that he harvested for seed, which were used as part of the planted mixture in an attempt to cut the establishment cost. This practise seems to fit his operation well and this year he also is trying his hand at producing some fodder sorghum seed. After digging a profile in the cover crops he also decided that with the amount of roots from the cover crops in the profile he will plant the follow up crop with a disk planter instead of tines. This practise will have much less soil disturbance and is in line with the practice of conservation agriculture. Photo 5 and 6 are illustrations of the cover crop at present and the amount of root development with in the soil profile.



Photo 5: Cover crop (estimated DM is 15t/ha)



Photo 6: Root development throughout the whole profile

Considering that only 40 kg/ha N were applied at planting this sward at 2% N hold about the equivalent of 300 N/ha. Nitrogen that could have been lost was captured by the cover crop and can be utilized by the grazing animals. Recycling 80% of nutrients back to the soil surface, grazing complete the cycle.

To conclude, three practices using cover crops (summer annuals), introduced by farmers, will most definitely go a long way in making their farming systems more sustainable. With prices of maize dropping and with more than 4 000 000 tons of maize in our silo's, livestock integration can play the same roll as sunflower during the 2015 season, keeping farmers afloat financially during this difficult period.

3.3.5. Cover crop screening trial

The screening trial is continuing and is still the best tool at events such as farmer's days for the creation of awareness. This trial was the best way to start the project at Ottosdal and it gives us all a feel for the different functional groups and what it brings in terms of biomass, soil cover and mulch production. The location is also perfect, which is very accessible, easy to reach and next to the road.

3.3.6. Small things with big implications

As a researcher you are always confronted by farmers and what makes them exited. Conventional famers will often show you their implements or a perfectly prepared seedbed. Conservation minded farmers are intrigued by what you might ask.

George Steyn could not wait to inform us that he had find an earthworm for the first in his fields.

Izak Dreyer was concerned about his farm not having dung beetles. After starting to use grazing systems that make use of the principles of high density short duration grazing, he was elated after discovering them in a pile of dung, as can be seen in photo 7.

Callie Meintjies pointing out to us that he had identified three new raptor species on his farm and that he can see their positive influence on the gerbil population.



Photo 7: Inspecting a pile of dung looking for nature's own plough, the dung beetle

A habit developed by these farmers is that they always carry a tool, it might be a little spade or an iron rod, in their hands. Probing the soil, looking for soil life returning, soil structure and various other indicators. For them the soil is a partner and the barer of good or bad news, the ultimate judge and juris of practices applied by the end user, the farmer himself. While nature is our ultimate guide, we should be careful how we treat her. She is made up by many elements, which are all connected. Like a house of cards, she breaks easy but with understanding and patience she can rebuild herself to former glory.

4. Agronomic field trial planning and analyses

1.1. WORK PACKAGE

Work Package title	Agronomic field trial planning and analyses
Work Package period	October 2017 to February 2018
Lead partner	Independent agronomist - Dr. A. A. Nel
Involved partners	Ottosdal No-till club members, Grain SA, SGS
Objectives	<ul style="list-style-type: none"> • To plan the various on-farm maize CA related field trials • To analyse and report the results of these trials
Justification	<p>Plant population density is one of relatively few variables that farmers can manage easily. Current recommendations for maize plant population were derived from trials under conventional tillage. Physically, the soil is very different in no-tillage than in tilled soil. This might require an adjustment in the plant population density of crops. Recommendations from elsewhere in the world is that plant population densities should be increased and row width should be decreased for no-till cropping.</p> <p>Crop rotation, another easily manageable variable, is one of the principles of conservation agriculture. No information on how crops respond to rotation in conservation agriculture systems in this semi-arid environment is available. Other unknown variables are what cultivars are the best adapted for CA, should the Argentinian guidelines on row width and plant population density be followed and should planters be fitted with coulters rather than tines?</p> <p>Crop responses to changes in management and the environment is usually liable to interactions resulting in variation of the results, which might lead to wrong conclusions and recommendations. In order to generate scientifically sound recommendations on these two agronomical variables, proper planning and analyses of the results is needed.</p>
Description of work	Planning of trials in collaboration with participating farmers. Analyses of farmer collected results and reporting of findings.
Activities	Planning of trials through the attendance of the frequent coordination meetings where aims and procedures will be discussed with farmers. Planning of trial layout and compiling of data sheets to be completed by participating farmers.

Statistical analyses, interpretation, discussion and drawing of conclusions from the collected data. Presentation and reporting of the results to participants and MT as required.	
Deliverables	<ul style="list-style-type: none"> • Annual trial plans report • Regular attendance of meetings • Reporting as required • Popular article once enough results have been acquired.
Risks	Adequate involvement and participation of farmers

1.2. DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY

Activities <i>(as specified in Work Package or project proposal)</i>	Deliverables or Milestones <i>(as specified in Work Package or project proposal)</i>	Progress and Results achieved; and/or Problems and Milestones <u>not</u> achieved <i>(in report period)</i>
<p>Planning of trials through the attendance of the frequent coordination meetings where aims and procedures are discussed with farmers.</p> <p>Planning of trial layout and compiling of data sheets to be completed by participating farmers.</p> <p>Collection of data during the season and from farmers after harvest of the trials.</p> <p>Statistical analyses, interpretation, discussion and drawing of conclusions from the results.</p> <p>Presentation and reporting of the results to participants and MT as required.</p>	<ul style="list-style-type: none"> • Regular attendance of meetings • Annual trial plans report • Reporting as required and popular article once enough results have been acquired. 	<p>A reporting and planning meetings was held at Ottosdal on 26 September 2017. Trial plans were adjusted as discussed and field books compiled and handed during a trial site visit to the local facilitator, who was also shown some measuring techniques on 8 November 2017.</p> <p>The rotation and cultivar trials were visited and planted on 11 December 2017 and soil cover measurements made. The demonstration trial was visited on 10 January with Senwes personnel for the installation of moisture tubes and soil cover measurements. Trials were visited on 8 February and water infiltratin rates measured. A meeting was held with mr Otto and Dreyer to discuss the upcoming conference and planning of soil sampling. A conference handout of trial results, was compiled.</p>

List of trial objectives for 2017/2018

Title	Objective
Plant population densities of crops in conservation agriculture	To find the optimum plant population densities of crops grown in conservation agriculture systems.
Crop rotation in conservation agriculture	To investigate the influence of six crops, when grown in rotation, on each other on a number of farms.
Cultivar evaluation in conservation agriculture	To get an indication of the best performing maize cultivars at 40 000 plants ha ⁻¹ in 50 cm row widths, and compare the margin above seed costs.
A comparison of conventional and conservation agriculture (CA) cropping systems	To compare the yield of crops in conventional and CA production systems with both 0.52 and 0.9 m spaced rows in the CA systems on a farm where conventional tillage practices are still applied.

5. Coordination and facilitation of project activities among farmer participants

Work Package title	Coordination and facilitation of project activities among farmer participants
Work Package period	October 2017 to February 2018
Lead partner	Local facilitator (Ottosdal No-till Club)
Involved partners	ARC-GCI, ARC-API, Grain SA
Objectives	<ul style="list-style-type: none"> • Coordinate on-farm experimentation activities among all participating farmers • Ensure timely and correct implementation of relevant activities and treatments • Assist with the use of specialised implements for trial purposes • Promote synergy among farmer participants • Monitor and report on project activities and progress related to farmer involvement.
Justification	On-farm experimentation involving farmers as ‘researchers’ are seen as central to research projects under the banner of the CA-Farmer Innovation Programme at Grain SA. This implies that trial treatments or replications are implemented on the farm by the respective farmer participants. A range of

support measures are needed to ensure the success and quality of these farmer-led actions, including the engagement of relevant research and technical team members around these farmers. A particular role and function identified by the project team is that of a local farmer facilitator, primarily assisting, guiding, calibrating and coordinating the participating farmers to implement the experimental designs (treatments) correctly. This person also has to manage and move specific specialised implements (e.g. a no-till planter) between the farmers, allowing timely and correct use of it. The person selected should be locally based and should have an intimate knowledge of the local natural resources and stakeholders, especially the farmers. Expected result of this function is the elimination of undesirable variables and the increased quality of the trials and data.

Description of work	Prepare farmers and implement on-farm trials. Manage, maintain and move specialised implements to be used by the various farmers involved in the trials. Making sure that farmers understand the treatments and what is expected from them. Calibrate or train farmers on specific implements / practices where necessary. Conduct regular field/farm visits, monitor and coordinate relevant activities, assist with sampling of soil where necessary. Attend regular project meetings and assist with report writing.
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Activities	<ol style="list-style-type: none"> 1. Land preparation 2. Planting 3. Seasonal management 4. Monitoring and Sampling 5. Lab Analyses 6. Monthly meetings (project team) 7. Annual reference group meeting (advisory committee) 8. Annual report and admin 9. Participate in Awareness events
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Risks	<ul style="list-style-type: none"> • Being a dryland experiment, low and erratic rainfall may compromise crop yields; • Wild animals and birds may jeopardise crop performance and yields; • Instrumental and logistical failure can result in incomplete activities and results
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DELIVERABLES, PROGRESS AND RESULTS ACHIEVED PER ACTIVITY (March 2016)

Activities	Deliverables	Progress and Results achieved
1. Land preparation (10 visits)	Assist farmers to lay out their trial plots Prepare (calibrate and train) farmers on the trial treatments Make sure land preparation (e.g.	On 30 October and 8 November 2017 planning meetings and field visits were held. It was decided that trials should be conducted at Humanskraal and

	weeding) is done according to specifications Make sure the correct type and quantity of production inputs are ready	Doornspruit. A trial for a MSc study with the aim of looking at the root and biomass growth of maize in various plant densities was discussed and planned.
2. Planting (10 visits)	Prepare planter for planting Move planter between farmers for timely planting Make sure farmers plant according to standard treatment specifications	The field trials planting started on 11 Desember 2017 and all inputs (herbicide application, fertilisation etc.) were made as planned.
3. Seasonal management (30 visits)	Assist farmers in weeding and pest/disease management	Labour were organised to control volunteer weeds.
4. Monitoring and Sampling (Done with activity 3 above)	Assist farmers to complete field forms Assist to collect soil samples Monitor the farmer-led actions	Trials were visited on a regularly to determine if crop emergence and weed control were satisfactory and determine if any pests and diseases are present.
5. Lab Analyses	Assist with soil sampling	NA
6. Monthly meetings (project team) & Training (9 meetings)	Participate in monthly forum meetings, discussing problems and possible solutions to that.	Participated in 2 meetings and various informal discussions.
7. Annual reference group meeting (advisory committee) (1 meeting)	Report progress and findings to advisory committee; Discussion and evaluation of data. Learning from each other.	Meeting was attended by Dr Andre Nel.
8. Annual report and admin (2 days)	Written report covering trial implementation, results and progress.	NA
9. Participate in Awareness events (2 days)	Trial visits with stakeholders; participate in awareness events, such as information day and/or cross-visits	Support was given on the preparation of the trials and organising of the CA conference in Ottosdal that was held on 12 and 13 March 2018.

Table 6.1: List of location and type of trials established in Ottosdal area, 2017/18 season

Trial Number:	1	2	3	4	5	6
Farmer co-worker:	Plant pop (own planter)	Crop Rotation	Local vs Argentina	Tine depth	Cultivars	CV vs 90cm vs 50cm
Hannes Otto	Sunflower		Maize			
George Steyn	Maize (student trial)	Six crops + Cover crops	Maize		Maize	
Dirk Laas						
Niel Rossouw						
Piet v Vuuren			Maize			Maize
Jaco Bamberger						
Koos Bezuidenhout						
Total Farmers	1	1	2	completed	1	1

7. Summary of expenses on February 2018

Description of Ottosdal CA project work packages	Total Actual YTD Feb 17	Total Budget YTD	Available to use
Soil	-	96 720	96 720
Cover crops	6 472	173 100	166 628
Agronomy	-	102 600	102 600
Grain SA	-	141 500	141 500
Farmer facilitator	-	107 040	107 040
Total	6 472	620 960	614 488

*** Expenses and invoices still expected which will affect the final amount until 30 March 2018.**