

# **GRAIN SA**

**Annual Progress Report on:**

## **CONSERVATION AGRICULTURE FACILITATOR**

*To:*  
**Maize Trust**

*By:*  
**Hendrik Smith**

**JULY 2013 TO JUNE 2014**



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## LIST OF ATTACHMENTS

### ATTACHMENT 1: PROGRESS REPORT

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

### ATTACHMENT 2: PROGRESS REPORT

Farmer Centred Innovation in Conservation Agriculture in upper catchment areas of the Drakensberg, KwaZulu-Natal and Eastern Cape Provinces

## 1. BACKGROUND

Applicable production research and innovation is of critical importance to achieve sustainable production through improved production efficiency in the grain industry. The development of new and improved technology and production systems through the means of on-going research and development is one of the corner stones of sustainable production. The introduction of Conservation Agriculture (CA) by Grain SA is seen as one of the key strategic thrusts in this regard. The development and widespread adoption of integrated, diversity-rich options for sustainable agriculture and food security will require a holistic, interdisciplinary, ecosystem and biologically-based approach that takes account of the social, economic and cultural aspects of agriculture (MAE, 2005; IAASTD, 2008; FAO, 2010). Research and innovation on improved CA and/or crop production systems, *improved soil health*, integrated pest management, integrated soil nutrient management, integrated weed management and the integration of livestock, are some of the areas of vital importance.

In the light of the above-mentioned change in focus by Grain SA, it was decided to create a post within the structures of Grain SA, with the primary purpose to facilitate the promotion of CA among grain producers in South Africa. It was decided to fund the salary of this post through the Maize Trust, while operational (running) costs are funded by The Winter Cereal Trust (WCT). Dr Hendrik Smith was appointed in this position in January 2013 as CA Facilitator and one of his first major tasks was to develop a comprehensive strategy that will serve as a framework for accessing, managing and coordinating funding (and projects) for CA over the short, medium and long term. This report will cover the period of business by the CA Facilitator from July 2013 to June 2014.

## 2. MAJOR OBJECTIVES, ACTIVITIES AND MILESTONES

### 2.1. Development of Conservation Agriculture (CA) Farmer Innovation Programme (FIP)

The objective was to investigate all relevant approaches, models and mechanisms in order to develop the best possible strategy for the management and coordination of projects and initiatives that will assist in the promotion of CA among grain producers in South Africa. The bulk of this investigation took place during January and February 2013, however specific aspects are still continuing to evolve as more information and experience is gained. The major milestones are briefly discussed below.

#### 2.1.1. CA programme conceptualisation

The current understanding has been confirmed that crop (maize) production research and development (R&D) to improve natural resource management (through CA) does not follow a linear process. An innovation systems (IS) perspective to R&D reveals that the actual change and innovation processes are much more complex and diverse. IS extends beyond the creation of knowledge to encompass the factors affecting demand for and use of knowledge in novel and useful ways.

The above-mentioned implies that it is unlikely that complex, multi-component technologies such as CA can be successfully scaled out (mainstreamed) through traditional linear models of R&D. Instead they require the development of IS to adapt technologies to local conditions. Accordingly, and at the very least, the emphasis has to be on various aspects of the system, of which on-farm research and the inescapable experiential and social learning that this generates are key elements; both of which critically place the farmer in the central role.

Following the above statement, the new CA programme at Grain SA has been designed and described under the paradigm of IS and was named the CA Farmer Innovation Programme (FIP). The main purpose of the CA FIP is the mainstreaming of CA by and through grain farmers to ensure sustainable use and management of natural resources while enhancing national and household food security and income.

The FIP will be designed to provide direct, fairly simple competitive access to funds for key and interested stakeholders (including farmers) who wish to adapt, develop, or adopt innovations on practices, topics and issues focused on CA. Access to such funding allows a wide range of innovations to be tackled, and under proper conditions may expand enthusiasm and innovation capacity among farmers, other rural stakeholders, and those who support them, ultimately facilitating the mainstreaming of CA within the maize and grain industry.

The CA FIP facilitator has been given the mandate by Grain SA to list the following Key Strategic Objectives (KSO's) for the foreseeable future. These KSO's and themes will be reviewed and or improved every three to five years:

- a) Diagnosis and documentation of CA systems
- b) Awareness, Marketing and Access to Information
- c) Farmer-centred Innovation Systems Research
- d) Incentive and Market Based Mechanisms (IMBMs)
- e) Education and Training
- f) Innovation Platforms, Networks, Social learning, Brokering and Facilitation

Although the CA FIP would not be fully operational in 2014/15 season, it is envisaged that in future (i.e. within a year or two), the Grain SA's FIP portfolio will allocate funds to these KSA's in the following categories:

- a. Solicited research
- b. Non-solicited research
- c. *Ad hoc* services (solicited or non-solicited)
- d. Small Innovation Grants

The Grain SA FIP investment in CA innovation will mainly be through projects and programmes in the solicited and non-solicited categories. Proposals will be invited on

an annual basis in these two categories as well as the small grants category, in accordance with the FIP annual funding cycle.

The annual ratio of solicited to non-solicited innovation funds may differ between KSO and also themes within each KSO according to the changing strategic needs of the KSO and the FIP overall.

*Ad hoc* services are usually initiated from within the Grain SA FIP and at this stage it mainly focuses on awareness raising events, such as farmers days and conferences. There is no formal call for proposals in this category.

### 2.1.2. Proposals

A total amount of R6 million per year is available from the Maize Trust and the surplus amount of R1,593,564 has been approved to fund new CA projects for 2013/14 as specified in a proposal which was submitted to the Maize Trust. This (surplus) budget has been allocated to the various categories i.e. the Ad hoc services and Solicited research categories, for a more flexible management of the funds.

The funding from the WCT is used to support the running costs of Dr Smith. For 2013 an amount of R 130,240 was allocated and for 2014 an amount of R189,090 was allocated to the CA FIP.

### 2.1.3. Stakeholder communication and involvement

A range of stakeholders have been engaged with as part of a national and international stakeholder network. One of the major initiatives is the development of a Grain SA CA committee, primarily comprising CA farmers (see **Photo 1**). Recently, Grain SA has decided to initiate a working group on CA, which will most probably integrate the responsibilities of the CA committee. This working group will aim to support the CA FIP in various manners, which will have to be decided at the inaugural meeting later this year.



**Photo 1.** CA committee at Grain SA during the first meeting on 31 May 2013.

Grain SA also forms part of the National CA Task Force (NCATF), which is aiming to advance the promotion of CA in South Africa through various mechanisms and projects, involving various interested and key stakeholders in CA. At the moment the Directorate Land

Use and Soil Management (LUSM) at DAFF serve as the secretariat for this forum, with Dr Smith from Grain SA as co-chair.

## 2.2. Description of CA systems in various Agro-ecological Regions

The main expected outcome of this process, is a clear and 'pure' description of the CA farming systems (or CA agro-ecosystems) practiced in specific areas or agro-ecological zones (AEZ). It is envisaged that this information (structure and content) could form the basis of any further documentation and updating of information in future, which could also serve as a source document or 'living manual' for farmers interested to start CA in any specific area or AEZ. In this respect an informal agreement has been made with popular magazines, such as SA Grain/Graan, Landbouweekblad and Farmers Weekly, to document and publish as many of these successful 'case studies' as possible. A number of pioneer CA farmers have already been visited and a number of articles (between 20 and 30) have been published already. The first series of articles on CA in SA Grain is already available from the Grain SA website.

## 2.3. Raising awareness on CA

General awareness (or sensitisation) has been experienced as particularly important to stimulate farmers getting involved with further learning activities, such as experimentation. The whole CA farmer innovation process usually needs an 'impulse' or an injection of energy (knowledge) to start or to speed-up the momentum and mostly it is a specific awareness event or sensitisation that achieves that. In this period a number of CA information (farmers') days have been supported through presentations, such as:

- 18 March: Argentina no-till system, Manjoh Ranch, Nigel,
- 25 March: Small holder CA innovation systems, Bergville, KwaZulu-Natal
- 27 March: Small holder CA innovation systems, Matatiele, Eastern Cape
- 9 April: Sustainable crop production for the sandy soils, Kroonstad, Free State

A number of study groups were also engaged through presentations and discussions, such as:

- Vaalharts CA study group (Vaalharts)
- Polokwane study group in Limpopo
- Riemland study group in Reitz, Free State
- Ascent study group in Vrede, Free State

From 12 to 13 March 2014 the CA-FIP supported and coordinated the first CA Conference in the dryer, sandy, western grain producing area of South Africa at Ottosdal, North West Province, which was a major milestone and success to promote CA in these areas. The conference has been organized in collaboration with the Ottosdal No-till club, with which a Maize Trust funded on-farm research project is being done. An interesting range of topics and speakers were covered, while field visits showcased the wide range



of on-farm trials being conducted in the project. **Photos 2 and 3** show some of the activities held during the event.



, Ottosdal

**Photo 3.** Around three-hundred participants attended the two-day CA conference at the Ottosdal show-grounds on 12-13 March 2014

Grain SA / The Maize Trust was an official sponsor of the Annual No-Till Conference for 2013, which was organized by the KwaZulu-Natal No-till Club and took place at Drakensville Holiday Resort from 3-5 September. By all accounts it was once again successful in making farmers, agricultural advisors and the general farming community aware of the benefits of Conservation Agriculture on the environment, soil health, profitability, sustainable agriculture and food security.

#### **2.4. Participation in Grain SA Specialist Working Groups**

Dr Smith has attended all the specialist working group meetings during the 2013/14 to present the purpose and philosophy of the CA FIP at Grain SA. At the moment the launch of a Grain SA CA working group is being planned for later in 2014.

Dr Smith also attended the Farmer Development Working Group meeting on 4 March 2014 to explore options to integrate CA into their approaches and technologies. A lengthy discussion followed and the following initiatives were identified, requiring the assistance of Dr Smith:

- a) Publications, such as articles in PulaMvula

- b) Training materials. Dr Smith to provide all Farmer Development coordinators with a range of presentations and documents.
- c) Awareness events, such as conferences, farmers days and cross-visits (see **Photos 4 and 5** below)



**Photo 4.** A special effort was made to expose developing farmers during the two-day CA conference at the Ottosdal show-grounds on 12-13 March 2014



**Photo 5.** Grain SA Farmer Development coordinator, Mr Jurie Mentz, and a number of his developing farmers, participated during the Farmers' Day on 25 March in Bergville, KwaZulu-Natal



## 2.5. Participation in Grain SA Regional and Executive Management Meetings

Dr Smith has attended all the Executive Management Meetings as well as two regional meetings (Vaalharts and Winterton) during this period to present the purpose and philosophy of the CA FIP at Grain SA.

## 2.6. Grain SA and Argentinian collaboration

Four official demonstration trials in various agro-ecological regions of South Africa have formed the basis of this project, aiming to demonstrate the Argentinian CA technology to farmers. Results from the 2012/13 growing season have shown significant yield increases in most CA treatments compared to conventional systems. From 14 to 19 October 2013, a joint South African and Argentinian delegation assessed the project strategy for further improvements, including trial sites, trial designs, activities, roles and responsibilities. Three official sites have been identified to continue in the 2013/2014 season, namely at Nigel, Odendaalsrus and Settlers, while technical and institutional protocols have been redefined. A successful farmers' day was held at Manjoh Ranch, Nigel on 18 March 2014 to showcase these results and technologies, involving many key stakeholders from South Africa and Argentina (see **Photo 6** below). At this moment a new arrangement to continue the Cooperation Agreement with Argentina are being developed by both parties.



**Photo 6.** The farmer co-worker, Tony da Costa, explains the demonstration trials during the farmers' day on 18 March 2014, Manjoh Ranch, Nigel

## 2.7. Participation in national CA initiatives

As mentioned above, Dr Smith has been part of the National CA Task Force (NCATF) from its inception in 2007. The purpose of this forum is to advance the promotion of CA in South Africa through various mechanisms and projects, involving various interested and key stakeholders in CA. At the moment the Directorate Land Use and Soil Management (LUSM) at DAFF serve as the secretariat for this forum, while Dr Smith serves as co-chair. The first meeting was hosted at Grain SA on 9 April 2013, which was attended by twenty (20) participants. Since then a number of meetings were held to advance various activities and milestones. Lately, a couple of important CA issues are being dealt with in this forum, such as CA Policy Development, CA Curriculum Development and the implementation of a FAO/COMESA project in various provinces.

## 2.8. CA Research

The Maize Trust is currently funding a number of CA research projects for the 2013/14 season and has requested Grain SA to assist with the evaluation and re-alignment of these projects under the CA-FIP philosophy. A number of sessions have been held, e.g. with ARC-GCI researchers, to communicate the new approach and criteria, and evaluating existing projects.

Two Maize Trust funded research projects, which is hosted under the banner of the CA-FIP at Grain SA, is currently launching various activities in the different study areas. These CA-FIP projects advocate the Grain SA / Maize Trust's new strategy on CA and strictly follows an on-farm, farmer-led approach, whereby an *innovation platform* are created where farmers conduct their own experiments, which are properly designed and well supported by researchers, input suppliers and manufacturers. The prime objectives of these projects are to empower farmers and to scale out CA to as many other interested farmers as possible.

In the North West Province, a project investigates commercial CA practices under semi-arid, sandy soil conditions and have established a range of on-farm research trials in collaboration with the Ottosdal No-till Club (see **Photo 7**). During the creation of the innovation platform, the following work packages were identified through a participatory process, together with the identification of an institution being responsible for their implementation:

- Coordination and management (Hannes Otto, Ottosdal No-till Club)
- Assessment of soil quality (Adriaan Dreyer, SGS / NViro Crop)
- Assessment of cover crop adaptability and suitability (Gerrie Trytsman, ARC-API)
- Weed survey of field trials: planning and analyses (Elbe Hugo, ARC-GCI)
- Agronomic field trial planning and analyses (Andre Nel, ARC-GCI)
- Coordination and facilitation of project activities among farmer participants (Coert Coetzee, Ottosdal No-till Club)



**Photo 7.** A number of farmers from the Ottosdal No-till Club and invited researchers from the ARC and SGS took part in the participatory project planning event to launch the CA project in North West

The other two projects, i.e. in the KwaZulu-Natal and Eastern Cape Provinces, focus on challenges facing small holder farmers in the adoption of CA. These Smallholder Farmer Innovation (SFIP) CA projects are collaboration between four organizations: The SaveAct Trust, Mahlathini Organics, The Maize Trust and Grain SA. The two pilot study sites are in Matatiele (Eastern Cape) and Bergville (KwaZulu-Natal) and are aiming to assist smallholder farmers in growing maize and legumes, particularly cowpeas and dry beans, as important staple crops using CA practices and equipment (see **Photo 8 and 9**).

The SFIP process consists of farmer volunteers within savings- and enterprise interest groups undertaking to do CA trials alongside their normal production practices. The rest of the groups join in an ongoing learning process throughout the season using these farmer-led trials as 'field laboratories'. Different no-till hand planters were also tested by the farmers, of which most are women. The Farmer Field School (FFS) training workshops were very interactive and the groups were more than eager to try out different planters; most participants highly valued the Matracca (jab) and MBLI planters as they deposited seed and fertilizer at the same time, reducing labour during the planting process. At least twenty five (25) trials were established in each study area during the 2013/2014 season. **Separate progress reports for these two projects are in ATTACHMENT 1 and 2.**



**Photo 8.** A farmer-led CA trial with a maize-cowpea intercropping system, Emmaus farming community, Bergville, KwaZulu-Natal



**Photo 9.** Erna Kruger and Nicolas Madondo, project team members, inspect the trial of a participating farmer in Stulwane, Bergville, KwaZulu-Natal

### 3. CONCLUSIONS AND WAY FORWARD

The following conclusions and recommendations for the way forward are made:

- After the CA-FIP proposal submitted to the Maize Trust has been approved, mechanisms (e.g. contracts) have been created to release resources for the implementation of the various proposed projects.
- The approved programme and projects were presented and discussed at the Grain SA specialist working group meetings.
- Description and publication of best CA management practices (of producers) in various regions seem to be highly relevant and will continue. Other relevant stakeholders, such as popular magazines (e.g. Landbouweekblad and Farmers Weekly), were engaged to accelerate this process to provide free and open access to such information.
- Awareness on CA should be accelerated. Any relevant event of quality, such as the annual KZN no-till conference and farmers' days, are opportunities to promote CA, including the role of Maize Trust / Grain SA / Winter Cereal Trust in its promotion. The CA Conference in Ottosdal (12-13 March 2014) has been a major success and milestone in this regard. Dr Smith and three farmers will attend the 6th World Congress on Conservation Agriculture (WCCA) in June 2014, which is kindly funded by the Winter Cereal Trust.
- The Argentinian collaboration has been an important project for Grain SA and proper consultation and communication with all key stakeholders is envisaged to assist where necessary. An Argentinian delegation visited South Africa in August and a senior researcher (Dr Danie Beukes) has been appointed to improve the technical outputs of the project. Three sites have been selected to continue with demonstration trials, i.e. at Nigel, Settlers and Odendaalsrus. At this moment a new arrangement to continue the Cooperation Agreement with Argentina are being developed by both parties.
- Participation in national CA forums is seen as an important objective to continuously improve the enabling environment for CA to flourish. A number of key issues and initiatives are being addressed by this forum.
- The implementation of new on-farm, farmer-led research projects among commercial and small holder farmers, are also seen as major milestones in the implementation and out-scaling of the CA-FIP. These projects follow the Innovation Systems approach, having farmers in the centre of the innovation process or - platform. At this stage these projects have shown remarkable progress and impact.

#### 4. SUMMARY OF EXPENSES FROM JULY 2013 TO MAY 2014

<b>PROJECTS</b>	<b>YTD TOT</b>	<b>BUDGET</b>	<b>VARIANCE</b>
Support KZN No till Congress	26 000	33 564	7 564
Support Regional CA Info Days	49 919	50 000	81
Support National Innovation Platform	33 283	60 000	26 717
Grain SA CA Committee Meetings	23 808	50 000	26 192
<b>Sub-total ( R )</b>	<b>133 010</b>	<b>193 564</b>	<b>60 554</b>
Commercial Farming CA project in NW (Ototosdal) *	447 909	700 000	252 091
Smallholders CA project - KZN & EC (Bergville and Matatiele) **	595 758	700 000	104 242
<b>Total ( R )</b>	<b>1 176 677</b>	<b>1 593 564</b>	<b>416 887</b>

\* Outstanding work and invoices still expected which will affect the final amount.

\*\* Please see ATTACHMENT 2: Progress Report, page 6. The amount differs because the contractor reported financials until end of May 2014. Final expenses and invoices still expected in June.

#### 5. ACKNOWLEDGEMENTS

The Grain SA CA-FIP would hereby acknowledge the following institutions and persons:

- The Maize Trust for their vision and commitment to fund the salary of the CA Facilitator, as well as dedicated (solicited) funding towards CA awareness and on-farm research projects
- The Winter Cereal Trust for their vision and commitment to fund the operational cost of the CA Facilitator, plus funding for Dr Smith and three farmers to attend the 6<sup>th</sup> World Congress on Conservation Agriculture (WCCA) in June 2014
- All participating farmers (smallholder and commercial) who have made various in-kind contributions (land, labour, equipment, inputs, etc.) ensuring the successful implementation of on-farm CA research activities
- A number of input suppliers and equipment manufacturers committed to collaborate on the development of appropriate and sustainable CA systems.
- Other key partners from the Civil Society and Public Service who play a crucial role in key CA initiatives on various levels.