

Coordination of Conservation Agriculture Projects (Maize Trust)

Dr John Tolmay

Highest Qualification: PhD. (Agric) Agronomy. University of Stellenbosch, 2008.

Business and Contact details:

Business address: 24 Muller Street
Bethlehem
9700

Postal address: PO Box 1062
Bethlehem
9700

Telephone (work): 058 303 1077

Telephone (cell): 082 562 7987

E-Mail: john@livinglaboratories.co.za

Website: www.livinglaboratories.co.za

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Brief summary of my experience in Conservation Agriculture

After my BSc (Agric) studies at the University of Pretoria, I started my career as a Research Technician at the Department of Agriculture research facility in Bethlehem (Small Grain Centre). One of the first tasks assigned to me was to oversee a long-term tillage experiment and wheat demonstration trials, which compared conventional against conservation tillage systems (reduced and no-till). While enrolled for my honours studies, I started planning and executing experiments on tillage systems in the Eastern Free State. This culminated in an MSc-thesis with the title "*The influence of tillage methods on the utilization of soil water by three winter wheat cultivars (Triticum aestivum L.) in the Eastern Free State*" which was completed in 1995. The outcome of this study indicated that reduced and no-tillage was not feasible for wheat-on-wheat production systems, which was the preferred practice at that time.

After 1995, I got involved with a new programme with the aim to improve technology transfer to resource poor, small grain producers. I lead this programme until 2001. Of relevance, is six months training I received in the Netherlands in 2000. Although this training programme by ICRA (International Centre for Research in Agriculture in Wageningen) focused on directing research and

development options in developing countries, the methodology and many of the principles taught, are just as applicable in determining research priorities for commercial agriculture.

I re-joined mainstream research at ARC-SGI in 2002 after being assigned as Senior Researcher in the conservation tillage programme, which was partially funded by the Winter Cereal Trust. At the time, conservation agriculture was at the beginning of rapid adoption in the Western Cape, due to new planter technology becoming available. Producers had many questions regarding the agronomy of conservation tillage systems. From the onset it was decided not to test conservation tillage (CT) against conventional systems, but to work within CT to find the answers producers needed. During the period 2002 to 2010, forty experiments at ten localities were executed by me as principal researcher. Aspects such as row width, seeding density and fertiliser placement, -sources and optimum N levels were investigated. The bulk of this work was discussed in my PhD thesis with the title "*Morphological and physiological responses of spring wheat (Triticum aestivum L.) to spatial arrangements*", which was submitted in 2008. In 2009 and 2010 research focussed on the value of biological approaches such as seed treatments and organic fertilisers to further enhance conservation tillage.

I visited Australia on a study tour with Dr Mark Hardy to investigate cropping and conservation tillage systems in NSW, Victoria and Western Australia during 2004. During this visit, I not only gained practical knowledge of issues regarding conservation tillage in Australia, but also obtained insight on how research projects are administrated and funded by the CSIRO, the main agricultural research funding body.

Although my main focus was on agronomy in the Western Cape, similar work was also conducted in the Cooler- and Warmer irrigation areas and under dryland conditions in the Eastern Free State. Since 2007, the long-term tillage trial at ARC-Small Grain Institute was again entrusted to me and I managed to retain funding for this project, which is now providing useful long-term results and will be yielding two MSc studies, by students of the University of the Free State, within the next year. As part of my duties at ARC-Small Grain Institute, I was also responsible for the management of a conservation tillage demonstration trial since 2002, in which wheat was rotated with maize in three year cycles. Over a nine year period, this project indicated that maize yields are more stable under conservation tillage than conventional, with the average maize yield about 0.5 ton/ha higher.

In 2009, I initiated a project at ARC-Small Grain Institute in which the effect of different crop sequences on a target crop (in this case wheat), can be assessed in only three seasons, replacing the need for expensive long-term crop-rotation experiments. Unfortunately I left the Institute before the final season, but excellent results from these trials are expected. Recommendations on the best crop sequence to follow before wheat in CT systems can be drafted by the end of the current season.

I did not have the opportunity visit South-America where the adoption rate of CT is extremely high (80-90%), but I did have a lot of interaction with visiting scientists from the region, giving me a fairly good understanding of their conservation tillage practices with maize, soybean and wheat as the major crops.

Personally, I believe that implementation of sustainable conservation tillage systems for summer crops are not only viable, but can be highly productive in the Summer Rainfall Region under appropriate management. As in the Western Cape, successful adoption of CT in the Northern regions will have to be supported by well-targeted agronomic research.

My approach to the role of a coordinator for conservation tillage research

In my view, the role of a research coordinator is to simply coordinate research efforts on behalf of a funding body, in this case the Maize Trust. Successful coordination will mean that all projects funded by the organisation, will be supportive of a common goal, as developed through a transparent process by the industry and stakeholders but approved by the Trust.

Although there are many ways to go about it, I personally believe that a tried and tested methodology to achieve this, will deliver the best results. The ARD procedure (as seen below) was developed and has been successfully promoted by ICRA for more than two decades and provides a suitable framework (methodology) that can be used universally to determine and prioritise research objectives and strategies.

- The first step is for the coordinator to develop a Terms of Reference (TOR) on behalf of the Trust, by which the process to be followed, is outlined.
- Upon approval of the TOR by the Trust, an interdisciplinary and interinstitutional team is compiled. The team will consist of specialists and its function is to clarify the development context (bigger picture) and identify the various stakeholders which are involved.
- The team then interact with stakeholders to collect information on research and development needs. This information is analysed by the team and suitable development options identified and screened, a process which may further involve stakeholders. These options will consist of research needs, but may also include other important developmental needs which fall outside the sphere of influence of research. These development needs may include aspects like policy development, carbon credits etc. and is separated from research issues.
- Research options are then prioritized to determine the relative importance and possible impact of each option.
- From the prioritised research options, an overall research strategy, business plan and specific research objectives can be developed.
- Researchers are then guided by these objectives to develop suitable research proposals and protocols.

If such a structured process is followed and the outcome is a clear, overall research strategy with clearly defined objectives, duplication of research will be almost impossible and easily identified. It will encourage researchers and institutions to co-operate, rather than compete, as each project will contribute to the greater goal and projects will be supplementary, rather than conflicting.

Projected Cost

The projected costs are based on an estimation of hours needed to complete specific tasks and my current fee of R450.00 per hour. I am totally open for negotiation regarding this estimation and the hourly rate. Estimates include travel time, but not kilometres travelled, which is charged at R2.50/km.

Task	Projected Time (h)	Total amount	Due date
Define and develop a proper strategy and business plan Develop TOR, follow methodology, prioritize research needs	120	54 000	15 Aug 2011
Administer funding applications Develop invitation document, compile peer review panel, distribute invitations	24	10 800	31 Aug 2011
Evaluate research proposals Lead peer review panel in evaluation	24	10 800	15 Sept 2011
Present recommendations To Technical Advisory Committee and Maize Forum Steering Committee). Review applications in liaison with applicants	64	28 800	Oct - Nov 2011
Monitor performance and visit projects Trial visits, prompt bi-annual reports	64	28 800	Dec 2011 – Jan 2012
Monitor performance and visit projects Trial visits, evaluate bi-annual reports	64	28 800	Feb – Mar 2012
Monitor performance and visit projects Trial visits, report back to the Trust	64	28 800	Apr – May 2012
Submission of future funding Review funding objectives. Prepare to receive new applications	64	28 000	Jun-Jul 2011
Final reporting (2011/2012 season) Ensure project reports are submitted by due date. Evaluate final reports. Report to the Trust	120	54 000	August 2012
Total		272 800	

ARD - Procedure

