

## TWO WHEEL TRACTOR NEWSLETTER JUNE/JULY 2015

### Recent discussions and publications regarding small farm mechanisation, with reference to the role of two wheel tractors.

In the last few weeks, there have been several interesting publications and discussions on the topic of small farm mechanisation in the developing world. There is quite a bit of discussion about the role of two wheel tractors and small farm implements to suit them. All of these contributions are worth reading.



The first publication is by in the farm Journal **Rural 21- the International Journal for Rural Development** and is entitled '*Rural mechanisation – where are we now and where should we be going*' The Authors are Brian Sims and Joseph Kienzie who are both members of this forum. It can be found at : <http://www.rural21.com/english/current-issue/detail/article/rural-mechanisation-where-are-we-now-and-where-should-we-be-going-00001503/>

The second is from the same journal and is entitled '*A round tour of mechanisation*' and takes the form of an interview with Jelle van Loon, Frederic Baudron, and Tim Krupnik. These three are all part of the CIMMYT team working on small farm mechanisation with particular reference to conservation agriculture. It can be found at:

<http://www.rural21.com/english/current-issue/detail/article/a-round-tour-of-mechanisation-00001502/>

Both these publications can be downloaded as pdf. files by following the instructions at the bottom of the article web page.

There are other articles in this same journal which may be of interest. The main website of the Rural 21 journal is at: <http://www.rural21.com/english/home/>

The third publication is now being published in the journal **Food Security Volume 7, No 3, June 2015**. It is entitled : '*Re-examining appropriate mechanization in Eastern and Southern Africa: two-wheel tractors, conservation agriculture, and private sector involvement*' Authors are: Frédéric Baudron, Brian Sims, Scott Justice, David G. Kahan, Richard Rose, Saidi Mkomwa, Pascal Kaumbutho, John Sariah, et al.

This research paper can be found at : <http://link.springer.com/article/10.1007/s12571-015-0476-3>

This paper has an in-depth analysis of the current position with small farm mechanisation in Southern and Eastern Africa. It also discusses various scenarios which might be adopted to promote small farm mechanisation, and some of the challenges associated with them.

"The final publication is available at link.springer.com".

Unfortunately, Springer publications have a 'paywall', which may prove difficult with some readers. Contact the authors or myself for assistance if necessary.

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**Thai made single row and two row planter for two wheel tractor.**

John Muir, an Aussie ex-pat working for an NGO in Cambodia has forwarded to me a brochure from a Thai farm implement manufacturer. This shows both a single row and two row planter for 2WT.



No specific details are available at this time for these planters. However I note that they are disc units, and in my opinion will need extra weight for proper penetration in all but very soft soils.

My guess is that they are fitted with inclined plate seed meters.

I can forward a copy of the brochure to anyone who is interested. The Thai manufacturer also makes larger planters of similar design for 4WT.

Another Aussie colleague, Clive Murray of Syngenta Foundation travels regularly to Thailand and has offered to find out more details on these planters.



### Did you know that two wheel tractors are successful in drag racing?

This is a picture extracted from a Youtube video showing a modified two wheel tractor set up for drag racing in Thailand. It has quite good performance, and can keep up with a 4WD pickup truck. It has a terminal speed of 88 mph (140 kph) at the end of the run.



The full video (lasting 2 minutes, 20 seconds) is available at the link below.

<https://www.youtube.com/watch?v=GmcEDeouN4g>

### Progress with sawtooth disc openers.

In 2013, an Ag. Eng. student at University of Southern Queensland, Mr. Sant Kumar Pratap, carried out a project on the suitability of using saw tooth disc openers as an alternative to the traditional plain discs. Previous research from Brazil has shown that using saw tooth discs as coulters, and also as disc openers can result in greatly decreased draft requirement, and also increased residue cutting ability. The original article is *Biosystems Engineering* Volume 96, Issue 2, February 2007, Pages 193–200 and is entitled ‘*Simulated and Experimental Analyses of a Toothed Rolling Coulter for Cutting Crop Residues*’ P.S.G. Magalhães<sup>1</sup>, A. Bianchini<sup>2</sup>, O.A Braunbeck

The reference is at: <http://www.sciencedirect.com/science/article/pii/S1537511006003448>

Sant reviewed this work, and also other similar research in the agricultural literature. He also provided the calculation methodology for the optimum configuration of saw teeth on discs, for optimum operation. Following Sant’s thesis, a colleague from NSW Dept. Primary industries, Paul Nash (who has assisted in other 2WT R. & D.) drew up a CAD drawing of the disc, which was cut out from an existing disc on a laser cutter in a local engineering workshop.



The laser cut discs (left) and the discs set up for operation as angled single disc openers for the Gongli Africa 2 seed drill (right).

The discs have yet to be sharpened to the correct bevel, and the seed tubes are also yet to be fitted. Another USQ student may be undertaking a project in 2016 on the draft requirements of these disc openers, along with the overall field performance.

Vale Dr. Graeme Quick.



On 19 May, one of the champions of small farm mechanisation, Dr. Graeme Quick, an Australian born Ag. Engineer and colleague passed away.

Graeme spent a professional lifetime being involved in farm mechanisation, principally in the area of grain harvesting. He was one of the pioneer partners in development of axial flow harvesting technology. During his professional career he spent seven years working for International Rice Research Institute (IRRI) on mechanisation for small area rice farmers. He also was for an extended period the team leader in farm mechanisation at Iowa State University.

He had been living in semi-retirement in Southern Queensland, Australia. In recent years he had taken an interest in 2WT and their implements, and I found him to be a great sounding board in the development of CA seed drills, and some of the R. & D. challenges that are being experienced. Some of us regularly had extended spirited email exchanges with Graeme discussing the fine points of small area farmer needs and objectives with mechanisation. He will be greatly missed.

A further tribute can be found in the Australian Rural Press at:

<http://www.theland.com.au/news/agriculture/machinery/general-news/a-quick-mind-leaves-tech-legacy/2735096.aspx>

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If you have any comment on this newsletter, please let me know.

Back issues of the 2WT Newsletter can be found at

[:http://conservationagriculture.mannlib.cornell.edu/pages/resources/twowheel.html](http://conservationagriculture.mannlib.cornell.edu/pages/resources/twowheel.html)

*Note: This newsletter has been sent in a low resolution pdf. format for those on slow internet connections. If you require the newsletter or parts of it in higher resolution please let me know.*

R. J. Esdaile,  
Agricultural Consultant,  
22 Meadowbanks Drive,  
TAMWORTH NSW 2340 Australia.

Email: [rjesdaile@bigpond.com](mailto:rjesdaile@bigpond.com)

[rjesdaile@gmail.com](mailto:rjesdaile@gmail.com) (alternate)

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