

TWO WHEEL TRACTOR NEWSLETTER AUGUST 2016

Results of Feedback Survey.

There was only a limited response to the feedback survey as appeared in the June-July issue of the newsletter. However the result has been interesting.

1. Respondents based in Asia generally recommended more emphasis on mounted/semi-mounted implements for 2WT.
2. Respondents based in Africa recommended importance of trailed implements.
3. Others (mainly R. & D. workers who operate in several continents) indicated that both types of implement should be equally considered.

I guess that is a predictable result, with Asian fields being small and often banded, whilst Africa has more space and room around the fields.

This survey was prompted by my experiences with Fitarelli 2 row planter in Africa. At every field demo. it was the one that the delegates made a bee line to try it out.

It had a seat, and was easy to operate (except for the manual lift and the turning circle). However once the price tag was mentioned, you could tell the enthusiasm dropped away.

The Fitarelli has horizontal plate seed metering, plus a very basic fertiliser metering system. Both are in my opinion below average, and can be improved quite a bit with the alternative metering units around.



K. Abdul Mottaleb, Tim Krupnik and Olaf Erenstein (CIMMYT Bangladesh) have sent me the link to a recent article entitled:

'Factors associated with small-scale agricultural machinery adoption in Bangladesh: Census findings'

In this paper they reviewed the most recent Bangladesh census data from over 814,000 farm households to identify variables associated with the adoption of the most common smallholder agricultural machinery – irrigation pumps, threshers, and power tillers (mainly driven by two-wheel tractors). Detailed analysis of the results showed that machinery ownership is positively associated with household assets, credit availability, electrification, and road density.

Donors and policy makers should focus not only on short-term projects to boost machinery adoption. Rather, sustained emphasis on improving physical and civil infrastructure and services, as well as assuring credit availability are also necessary to create an enabling environment in which the adoption of scale-appropriate farm machinery is most likely.

The link can be found at:

<http://www.sciencedirect.com/science/article/pii/S0743016716300985>

Affordable small finger pick-up seed meters now available from Chinese suppliers.

In recent years there has been considerable discussion by various subscribers on the pros and cons of currently available cheap seed metering systems to fit to 2WT planters. Most are looking for an affordable unit, which will meter single maize seeds of varying size with a high degree of accuracy. Various 2WT planters have used horizontal plate meters, inclined plate meters, vertical plate meters, fluted roller units and variations of these. Some have been average in performance, some reasonable, and others have received the 'thumbs down'.

I have now been advised that some Chinese manufacturers are now producing small finger pick-up meters, similar to the units that have been used in N. America for many years. These meters have never been seriously considered elsewhere, as they have been too expensive to fit to low cost planters for use in the developing world.



The Chinese meters are similar in dimensions to the Chinese made 18 cell vertical seed meters, which various 2WT research workers have been evaluating for the last year or two. These finger pick-up meters retail at \$US70 each (ex-factory) compared to \$US180 for N. American made units. Finger pick-up maize meters are still widely used in other parts of the world.

They are quite accurate in singulation of uneven size maize seeds. A clear plastic seed box to suit the Chinese units is also available. They are available in right and left hand styles and they have a 6 speed gearbox on the side - similar to 18 spoon meter.

Publications are available showing the accuracy of these meters.

Link to two publications are shown below.

[http://pami.ca/pdfs/reports_research_updates/\(9e\)%20Precision%20Seeders/357.PDF](http://pami.ca/pdfs/reports_research_updates/(9e)%20Precision%20Seeders/357.PDF)

http://www.channel.com/agronomics/documents/agronomiccontentpdf/plantabilityandgerminationofcornseed_channel_advice.pdf

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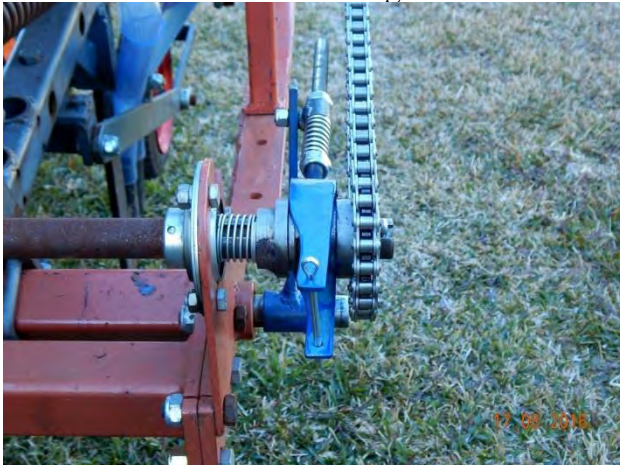
Progress with Gongli Africa 3 row crop planter for 2WT



Overall view of the planter



View from the seat showing seed & fertiliser boxes (left). The rope trip lift (right)



Seed and fertiliser drive clutch (left) The Pitman arm crank to turn the tool bar (right)



Spring loaded tines with adjustable tension clips (left) Adjustable depth tines (right)

The planter is practically complete, although quite a few small faults have yet to be rectified. It is a real challenge to incorporate all of the desirable features into the space available.

Some of the features are:

It is a two bar , two row unit , with total width of 1200 mm. Row width adjustable from 600mm to 1000mm.

Tines are fitted to a rotating tool bar, with 15 degrees of raising and 15 degrees of lowering. There is a mechanical 'rope trip lift' fitted to the side which operates the lift system. (for further details see April/May 2WT newsletter) This is chain driven from the main drive wheels. Drive is from both sides, to operate the lift both in right hand and left hand turns.

A series of small free wheeling/sprag type bearings are fitted, to prevent the drives rotating backwards when reversing, and to prevent the tines from accidentally shifting position when in work, or travelling.

A seat is provided for the operator, with steerable tail wheel.

The tines are spring loaded, and have contour following ability for uneven soils. Press wheels are fitted for seed firming and overall depth control, and planting depth is adjusted by vertically adjustable 50 x 12 high tensile tines.

A pair of 12 cell vertical type maize seed meters has been fitted, each with gearbox assemblies to allow a wide range of planting rates to be used.

Two fluted roller fertiliser delivery assemblies are fitted which are also adjustable.

A seed and fertiliser drive clutch is fitted. This automatically disconnects seed and fertiliser meter drives when the tines are raised.

The proposed trailing two row row-crop planter, will be basically designed along the same lines. However it will be fitted with an adjustable drawbar, and also a pair of side support wheels similar to the Fitarelli unit. It will also incorporate a mechanical system to raise and lower the soil engaging tools

For those who are interested, I will be compiling a more comprehensive description of this rig, with more photographs and detailed explanation of the workings of the various segments, along with some measurements. Please contact me for further details.

I am indebted to Mr. Paul Nash, Senior Technical Officer of NSW Dept. of Primary Industries, Tamworth NSW for helpful advice and assistance with this project. Paul also fabricated various parts of the rig, and has proved invaluable as a constructive critic in many aspects of the overall design.

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Some unusual two wheel (or two and a half wheel) tractors.

An English colleague, Mike Cottam has sent me a video of an older style British made 2WT walk behind tractor operating a small reaper and sheaf binder.



This is based on an early post-war 'Allen Scythe'. These sickle bar self-propelled 2WT mowers were popular at that time. I used one to cut forage and pasture research plots many years ago. This one has been further modified with the provision of a seat for the operator.

The video can be viewed at:

<https://www.facebook.com/1630413817234146/videos/1745978462344347/>



This is an Indian made 2WT (3WT?) using some components from a small motor cycle. It is made by Decora Enterprises of Gujarat, It has rear implement mounting system and a variety of tools can be used behind it. The website indicates that it has a 7.5HP or 10.5HP diesel motor and an automotive gearbox.

Further details can be found at:

<http://www.indiamart.com/decoraenterprise/mini-tractor.html>

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>

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.

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