TWO WHEEL TRACTOR NEWSLETTER APRIL/MAY 2017

Tracks for 2WT?

Can a 2WT be successfully converted to tracked operation to increase tractive ability and decrease ground pressure? In recent years, many 4WT have either partially or fully converted to rubber tracked operation, to overcome these challenges. Some examples of tracked 2WT are shown below. What do you think?

A recent reference from Showkat Rasool & Hifjur Raheman (Dept of Ag. & Food Kharagpur India) entitled : "Suitability of rubber track as traction device for power tillers" is soon to be released in a new issue of Journal of Terramechanics. This indicates that tractive ability can be increased two fold compared to the standard 6.00 x 12 rubber tyre. The research results have been compared with earlier research findings from other Indian workers a few years ago. A copy of the paper can be forward to those interested.

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Progress with Mechanisation of rice production with 2WT in Laos.

The Crawford Fund, one of Australia's foreign aid NGO's, trains young research workers, as well as carrying out various projects for the developing world. It is now mid way through a project in Laos to promote the use of 2WT for direct seeding of rice. The project also is encouraging local Lao manufacture of seed drills, based on earlier work done by past Asian projects. These ventures were largely sponsored by the Australian government- principally ACIAR.

Leigh Vial, an Aussie rice grower who has spent much of his professional career in South Asia on rice R. & D. is one of the 'movers and shakers' in the current development.

For further information click on the links below.

https://www.crawfordfund.org/news/news-leigh-vial-reports-on-lao-seeders-march-2017/

http://www.abc.net.au/news/rural/2017-04-10/rice-seeders-may-spark-agriculture-revolution-laos/8431490

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Small planter development in South Africa.

I have had some details re developments in South Africa supplied to me by Adriaan Jacobs, an Agriculturalist in South Africa who has enthusiasm for small planters, suitable for use in the developing world. Adriaan has sent me some pics. of his latest prototype planter, this comes in a single row model, suitable for animal traction, or a multi row model, suitable for small 4WT.


Animal traction planter (left) and tractor drawn planter (right)

A close up of the animal traction planter.

The design is similar to quite a few other animal traction planters available elsewhere. However I believe that this unit can relatively easily be converted to a 2WT model, by modifying the drawbar in front of the forward gauge wheel, to fit the hitch of a 2WT, and also fitting a pair of angled upright struts to attach the unit to the handlebars of a 2WT. The operator handlebars can then be removed.


The seed and fertiliser boxes (left) and the tine assembly with steel drive wheel (right)

Note that the planter has the latest Chinese 12 cell vertical seed meters and adjustable fluted roller fertiliser meters as described in recent 2WT newsletters. Full details available on request.

I have been chatting to Adriaan Jacobs and recommended the minor modifications described above to the design to allow easy fitting to a 2WT (either Dong Feng type or Siam Kubota type). Cost (ex works) $US870 (estimate only)

For further information please contact Adriaan at:
cell: 082 728 1213 email: info@eden-equip.co.za email: eden.equip@gmail.com
fax: 086 694 7465 web: www.eden-equip.co.za
P.O. Box 70125 Miederpark Potchefstroom 2527 South Africa

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Steering wheel for more effective manoeuvrability with 2WT implements?

I have fitted a hand operated steering wheel to the latest 2WT planter tail wheel in lieu of the foot operated steering system that is standard. I have found the foot operated steering very difficult to manage as there is insufficient strength in leg muscles for this method, compared to the use of arms. Also when doing tight turns one's ankles can be obstructed by the rear support bar for the seat. In extreme cases it can potentially break your leg. Tight turns with a steering wheel are a two handed operation, with one hand pulling on the steering clutch lever, whilst the other turns the wheel. Slight deviations in direction can be achieved by turning the wheel, without needing to use the steering clutch. Depending on the weight of the operator and the speed of the tractor, considerable effort is sometimes necessary to turn the steering mechanism. There is only 180 degrees of rotation on the steering from left lock to right lock on the tail wheel. Possibly a reduction gear can be incorporated into the system and this would assist to reduce effort. Alternatively the steering wheel can be changed to a horizontal tiller (such as on the rudder of a small boat) and movement could be controlled that way.
What do others think?

Progress with 2WT maize planters in Zimbabwe.

I have been informed that original trials with the 2WT maize planters developed in Zimbabwe have been successful, and two farm implement manufacturers have now moved into commercial fabrication, with an initial production run of 30 units being planned. The project has now moved from the R. & D. phase to the commercial promotion and marketing phase. It is encouraging to see this progress.

Alternative simple mechanical lift systems for 2WT implements.

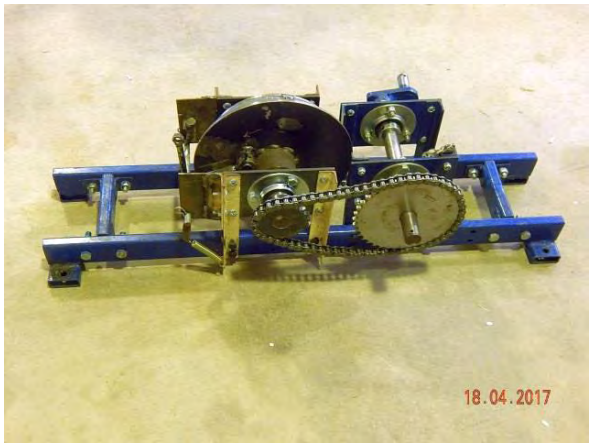
As previously mentioned in past newsletters, 2WT operators do not have the 'luxury' of a tractor operated three point linkage lift mechanism, or a hydraulic lift to raise and lower implements at the end of the row, and when moving from one field to another. The operator must raise and lower the rear of the rig by lifting the handlebars. In the case of some trailing implements, manual lift levers may be provided. In both cases the job of manually lifting the rear regularly during field operations is awkward, and very tiring.

For the last year or two, I have been working on a mechanical lift, driven from the drive wheel of the 2WT. Such lifts were used in the early 20th century on trailing farm implements, before the development of the three point linkage, and the adoption of hydraulic lift systems in the late 1940's and early 1950's.

I am grateful for the continued assistance and counsel of my friend and colleague, Paul Nash of the local Ag. Research Station. Paul has done a significant proportion of the fabrication of these lift systems, and always has innovative ideas.

A mechanical 'rope trip lift' from a 1930's Seed drill

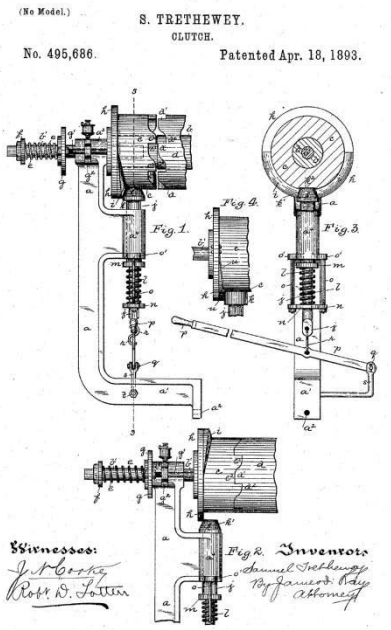
A modern version of the same lift fitted to a trailing 2WT two row planter



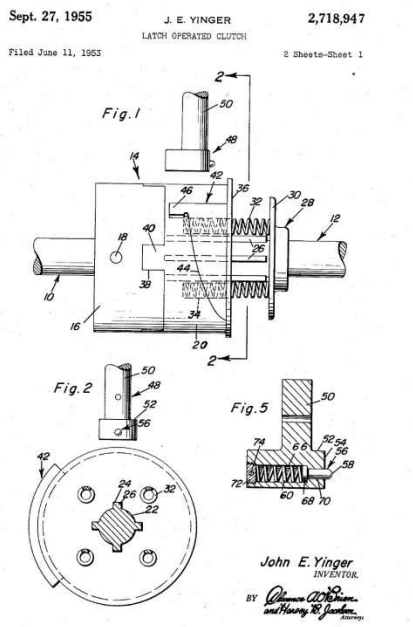
The latest lift when separated from the Planter

Another experimental lift operating on a single revolution ratchet clutch principle.

If one checks through the US Patent office website, there are many and various types of single revolution clutches which have been developed and patented over the last 100 years. Practically all of them were patented many years ago, and there is no problem copying some or all of the ideas in them, as the patent licenses have long since expired. Examples of two of them are shown on the next page.



Trethewey (1893)
US Patent 495,686



Yinger (1955)
US Patent 2,718,947

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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
Facebook 2WT discussions: (Mike Cottam UK)
https://www.facebook.com/groups/1609120186059164/

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R. J. Esdaile,
Agricultural Consultant,
22 Meadowbanks Drive,
TAMWORTH NSW 2340 Australia.
Email: rjesdaile@bigpond.com rjesdaile@gmail.com (alternate) E. & OE.