

Two Wheel Tractor Newsletter February 2017.

Progress with 2WT planters in Zimbabwe.



Others have sent me these pics of the latest ‘Zimplow’ 2WT planter now being manufactured in Zimbabwe. It is a joint venture between Zimplow (which manufactures the ‘Mealie’ brand farm implements) and the University of Zimbabwe in Harare. Two modified animal traction planters have been mounted on a tool bar, to operate behind a 2WT. Chinese seed meters, suitable for maize have been fitted.

News report on mechanisation in Cambodia (*taken from a recent issue of Phnom Penh Post*)

A Ministry of Agriculture report released recently shows the use of mechanised agricultural equipment in Cambodia has doubled in the past five years and over 90 percent of farming land preparation is now done by machinery instead of draft animals. “The use of agricultural machinery is increasing and most farming has transformed from manual labour or cattle-driven equipment to machinery,” said a ministry spokesman. “Mechanisation in Cambodia plays an important role in furthering the productivity of farming.”

According to a ministry report, the number of tractors operating in Cambodia has risen nearly threefold in the past five years to 18,317. The figures also a marked increase in the usage of harvesters, with the number deployed rising over 320 percent in five years to 6,605. Milling machinery use increased 13 percent to 54,965 during the period, while threshing machines – which remove seeds from cereal grains – dipped 10 percent to 13,765.

Mechanisation is increasingly trickling down to small-scale farming operations. Power tillers, the two-wheeled “walking tractors” favoured by smallholder farmers, are now ubiquitous, with a total of 343,764 nationwide – a four-fold increase since 2011.

“Almost every household has a two-wheeled tractor for their daily activities in the field,” the spokesman said. “This saves them time and labour, especially as our youth have emigrated in search of work.” For larger jobs, member farmers can hire the cooperative’s single tractor for use.

(I read another report that the 4WT and 2WT numbers may be ‘optimistic’. Despite these reservations, it appears that small farm mechanisation is moving ahead – Ed.)

Can ATV style trailed planters assist us in 2WT planter design and fabrication?

In recent times, a group of small planters to suit compact tractors, large ride-on mowers, and ATV have been manufactured in North America.

They have been produced for small lifestyle farmers, and individuals who wish to plant a 'wildlife food plot' on unused rangeland near rural residential blocks. Some examples are shown below.



The Field tuff Hobby seed planter



The Dew Drop planter



The Brute Buster ATV planter



Arctic Cat two row planter.



Firminator two row planter

Generally, the manufacturers recommend that these small planters be only used in tilled fields, as some are not particularly robust in construction. Some do not have fertiliser attachments, whilst others have very basic seed metering systems. Capital cost may also be a factor with some of them. Readers who are interested should contact the manufacturers direct.

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Progress with 2WT two row trailed planter.

Below are some pics of the trailing 2 row planter prototype, which is nearing completion.



This planter has the following features:

- Two row unit, with optional row (line) spacing from 600mm to 1000mm.
- Contour following soil engaging tools for constant adjustable depth in uneven fields.
- Finger pick-up seed meters (18 speeds) and fluted roller fertiliser meters (rate adjustable)
- Near vertical seed drop from seed meter to seeding boot.
- Mechanical lift system driven from ground wheel
- Operator seat.
- Optional two piece drawbar for tighter turning and increased manoeuvrability.
- Suitable for 2WT, small 4WT, ATV, 4 wheel motor cycle, or animal traction.
- No hydraulic lift or 3PL required.



Mechanical lift under seat (left)



Operator seat also showing spring assembly for openers (right)



Automatic disengaging clutch (left)

Optional soil engaging tools (right)

Ongoing challenges:

We are still having issues with the mechanical lift not operating properly. The lift is based on US designs from the 1930's, when farm implements were raised and lowered by a ratchet and/or trip system, driven by the ground wheel. We wish to keep it as simple as possible, so that repairs can be carried out in basic workshops of the developing world, without the need for high technical expertise or complicated parts.

The soil engaging assemblies are raised and lowered by means of a swivelling tool bar (similar to the disc openers on a JD750 series seed drill) The rotating drum lift assembly is connected to an intermittent crank and lever which rotates the tool bar as required. The whole assembly is operated by a rope trip.

We realise that protective chain covers and shields for moving parts will have to be fitted on production models.



An alternative drawbar arrangement (shown on the left) has been designed for 2WT use. The front of the drawbar is rigidly mounted to the 2WT (no swivelling) through two bolts, and also attached to the handlebars by two struts. This section is then inflexible and cannot move. It is supported at the end by a rotatable tail wheel, followed by a universal joint and attachment to the planter. Foot pegs for the operator are also provided.

A steering wheel for hand steering is provided, rather than the standard foot steering system. Minor changes in direction can be done by this wheel. Rapid

turns can be completed using the wheel and relevant hand clutch. This drawbar allows flexibility of operation in undulating fields; hopefully this system will allow tighter turns with 2WT than the standard long set drawbar (shown on the ground). It has not yet been field tested

Although the planter is nearly complete, we realise that this is very much a 'work in progress' and further design changes will undoubtedly be necessary to produce a reliable farmer friendly product.. I have attempted to fabricate a planter which will 'tick all the boxes' for the small area farmer of the developing world, as well as the lifestyle or hobby farmer of the West.

I gratefully acknowledge the counsel, advice and fabrication ability of my Aussie colleague, Paul Nash. Paul is a Senior Tech. officer with Dept. of Primary Industries Research Station in Tamworth. He has been in this business for decades and has extensive knowledge of small farm machinery, having fabricated much of the field plot equipment used in NW NSW.

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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)

Facebook 2WT discussions: (Mike Cottam UK)

<https://www.facebook.com/groups/1609120186059164/>

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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