



Machinery Modification Case Study

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Community
FarmLink
pathways to rural and urban coexistence



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Getting into No-Till at Minimal cost - Machinery Modification

Patrick Redden, Rural Directions Pty Ltd

A focus of the *Community FarmlinkX* Project is to identify ways that growers can take on no-till with minimal capital expenditure. Modification of existing seeding equipment was one strategy identified. As a consequence three growers who have modified seeding equipment were interviewed and the following case studies developed.

Converted Combine – Stuart Roennfeldt, Greenock

Farm consultant, Stuart Roennfeldt runs his family farm at Greenock in the Barossa Valley in between providing consultancy services to broadacre farming clients throughout the mid and lower north. The property combines vineyards and cropping, with approximately 300 hectares cropped to wheat, barley, canola, peas, and beans.

Stuart was keen to adopt no-till on his farm having seen the benefits through his consulting work, but could not justify a high capital outlay on a specialised seeder for his small cropping program.

“We don’t need a big machine for the area we crop, so it didn’t make sense to have large capital tied up in seeding equipment. So we went for a modified combine that could no-till without costing a lot,” Stuart said.

Stuart was able to find a combine which had been converted for no-till by Steve Wicks, a farmer from Yacka.

“It is basically a Napier Grasslands 423 trash seeder which has had the seed box raised, and been fitted with 12mm maxi-point knife points and press wheels”, Stuart said.

“The row spacing has been widened to 8¼ inches, and points are fitted with round trash guards to improve stubble flow”.

“Some straw is baled for use in the vineyard which assists with trash management” Stuart added.



Walking press wheels are bolted onto the back of the combine frame

“There are also walking press wheels fitted on the back of the combine - These provide even seed depth, and help with moisture harvesting from the furrow”, Stuart said.

“The frame of the combine handles the extra weight without any troubles,” he added.

The property has a range of soil types, with some hilly country that can be subject to erosion. Stuart is confident that maintaining stubble and using no-till has helped to mitigate this risk.

“Tine breakout is not a problem”, according to Stuart.

“Even on some of our rocky slopes we seem to have high enough breakout to handle it without too many problems.”

Stuart has no plans to change his seeding equipment in the near future, and is happy with how the system is working.

“Having a modified seeder for no-till fits in well with our business - it has allowed us to gain the benefits of no-till farming without overcapitalising on machinery for our relatively small cropping program.”



The seed box has been raised for clearance

Build it Yourself – Chris White, Manoora

As a former engineer, it is no surprise Manoora farmer, Chris White decided to build himself an air-seeder. After returning to the family farm, Chris decided it was time to upgrade tillage practices and the seeding system.

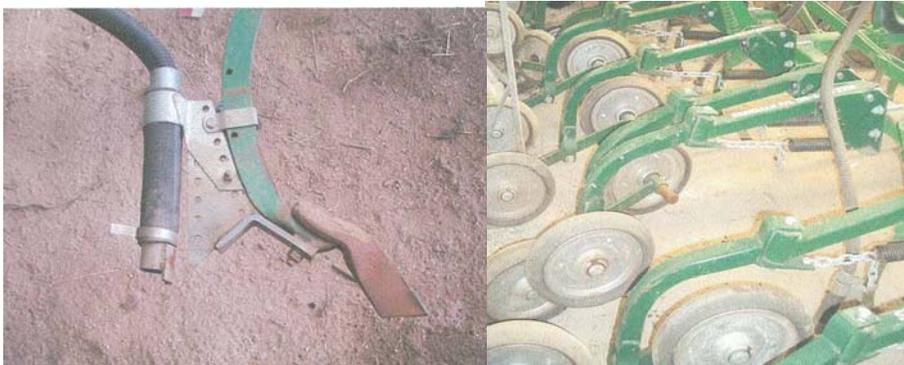
“We have some pretty heavy black soils which can be hard to get on when wet, so no-till seemed the logical way to go for trafficability,” Chris said.

Rather than buying an expensive machine, Chris opted to modify a cultivator bar.

“I had an old cultivator bar which was no longer required, so I mounted high breakout tines, and Agpoint sowing boots and knife points”, according to Chris.

“The tine layout was reworked to 9 inch row spacing, and semi-pneumatic press wheels were fitted in gangs to the back of the seeder,” he added

Some changes were also made to the air cart, with secondary heads and the venturi upgraded to increase seed and fertiliser throughput.



Chris has knife points and walking press wheels fitted to his seeder bar

After some trial runs prior to seeding, the new no-till setup was used for the 2005 season with good results, according to Chris.

“Like any new equipment it took a little while to get it setup right, but since then we have had excellent germination”, Chris said.

“The time saved from not working up has been well worth the \$20,000 or so it took to build the seeder.”



The farm runs merino sheep, with around 330 hectares cropped each year. Chris said there have also been benefits for the livestock enterprise from no-till.

“Not working our paddocks means we have extra grazing out of stubbles prior to seeding.”

As for modifying versus buying machinery, in Chris’ opinion “The size of our cropping program did not justify massive outlays on machinery”.

“By building it myself we were able to access the benefits of no-till without breaking the bank!”

Making the Change – Phillip Winchester, Sheoak Log

Going no-till has been on the agenda for some time now at LXL Pty Ltd, a farm cropping nearly 900 hectares at Sheoak Log.

According to farm manager Phillip Winchester “We have been minimum tilling for some time now with good results, but this year wanted to go a step further and direct drill the whole farm”.

“Beans have always been direct drilled”, Phil said, “so why not do the cereals as well?”

When the property purchased a new bar, Phil made sure that there was flexibility to adapt the machine for no-till.

“We bought a Case 4300 bar with 350lb breakout Flexicoil tines 3 years ago”.

“One of the reasons we went for this machine was that we could widen row spacing and convert to no-till” said Phil.

The bar was originally setup on 6 ¾ inch row spacing, but this season was converted to 9 inch, reducing the number of tines from 67 to 49. The hopper system was all ready setup for double shooting, and with fertiliser going safely below the seed there was no need to pre-drill any nitrogen.



12mm knife points are used on flexicoil tines

The wider row spacing meant that all pre-emergent herbicides could be incorporated by sowing, and high rates of trifluralin could be used without compromising crop safety. This also meant less time in the tractor, as there was no need for prickle chaining to incorporate soil applied herbicides.

Last year’s dry season meant that moisture was at a premium for growing crops. This, together with rising fuel and labour costs, prompted the move to direct drilling.

“We saved more than 55% in tractor diesel compared with doing one working last year.” Phil said

“There was also one less labour unit required at sowing, which saved more costs,” Phil noted.

Phil costed out buying a new machine, versus converting the existing one with or without press wheels. He decided to convert the existing bar, but not to fit it with press wheels in the interim, as this was the most cost effective. According to Phil it took two men three days to convert the bar.

“The time saved from the reduced labour requirements during seeding easily made up for the time spent on converting the machine,” Phil said.

A regular attendee at SANTFA conferences, Phil was happy he decided against buying a new bar.

“Modifying the equipment has been a good way to get into no-till without breaking the bank’, Phil said.

“We will keep refining the system over the next few seasons - I would like to work deeper still below the seed to help with root disease, and we will look at press wheels and other closing devices,” He added.



Widening the row spacing on his existing bar enabled Phil Winchester to direct drill