



Disc vs Tyne Seeder Demonstration 2011

2011 Demonstration Site



Project Partners

AWL
Hillside



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Project collaborators

Illabo site - FarmLink Research, Tony Lehmann Hillside, Moloney Family, Grassroots Agronomy.

Preamble

The Illabo site has just completed its fourth year in succession. The paddock is split equally between the two treatments. Each year the treatments have been re-sown using the same seeder. In 2011 a Flexicoil seeder was used to plant the Tyne area. In previous years the site was generously sown by the Moloney family.

Adjusted yield results for 2011 were significantly different between the seeding systems. Under Canola in 2010 there was no variation recorded between the two seeders. This lack of variation will encourage growers considering adopting the disc seeder technology but care should be taken to evaluate both systems in regards to the whole crop production system.

A collaborative GRDC trial, looking at herbicide efficacy and crop safety managed by Greg Condon of Grassroots Agronomy highlighted the potential for crop damage with disc seeding systems, for more information see *FarmLink Research 2010 Research Report*. Selection of herbicides, rates, soil type and manufacturer differences should be carefully considered.

No-till seeding is only a part of a crop production system that includes stubble management, summer fallowing, timely sowing, canopy management, and weed/disease control.

Aim

To assess the differences between disc and tyne seeding systems in commercial practice.

Method

A paddock scale area was sown at Illabo with areas split between disc and tyne seeders.

Areas were sown by the same seeders in 2008-2011. Measurements have been collected on establishment, NDVI, tillers, heads, grain yield, grain quality and weed densities.

Illabo site

John Deere single disc opener on 305mm spacing. Disc is fitted with depth wheels, press wheels and Aricks wheels to minimise hair pinning and improve herbicide incorporation.

Flexi-Coil bar and tynes on 225mm spacing fitted with knife points and press wheels.



Photo 1: Disc demonstration, Illabo.



Photo 2: Tyne demonstration, Illabo.



Photo 2: Tyne demonstration, Illabo.

Table 1: Site details Illabo Disc vs Tyne, 2011.

Paddock preparation	
Pre-sowing	1/5/11 – 500mls Diuron, 100ml Sencor
Sowing	15/7/11 – 750mls MCPA Lve, 5gms Ally, 50mls Brodal, 200mls Lontrel
Post sowing	15/7/11 – 750 mls MCPA Lve, 5 g Ally, 50mls Brodal, 200 mls Lontrel
Top Dressing	6/8/11 - 60kg/ha Urea, 5/9/11 - 70kg/ha Urea
Harvest	17/12/2011
Rainfall	212 mm GSR

Table 2. Site results Illabo Disc vs Tyne, 2011.

Sowing system	Disc	Tyne
Emergence	85 plants/m ²	92 plants/m ²
Tiller Counts	532 tillers/m ²	521 tillers/m ²
Head Counts	420 heads/m ²	379 heads/m ²
Yield*	5.45 t/ha	5.16 t/ha
Weeds	Hairy Panic 8.3 plants/m ²	Hairy Panic 13.7 plants/m ²
WUE	9.07 kg/mm	8.93 kg/mm

* Adjusted yield wheel tracks for spray rig results.

** GSR + 30% summer and autumn rainfall = 577.7mm

Graph 1: Disc vs Tyne Illabo yields 2008 -2011.

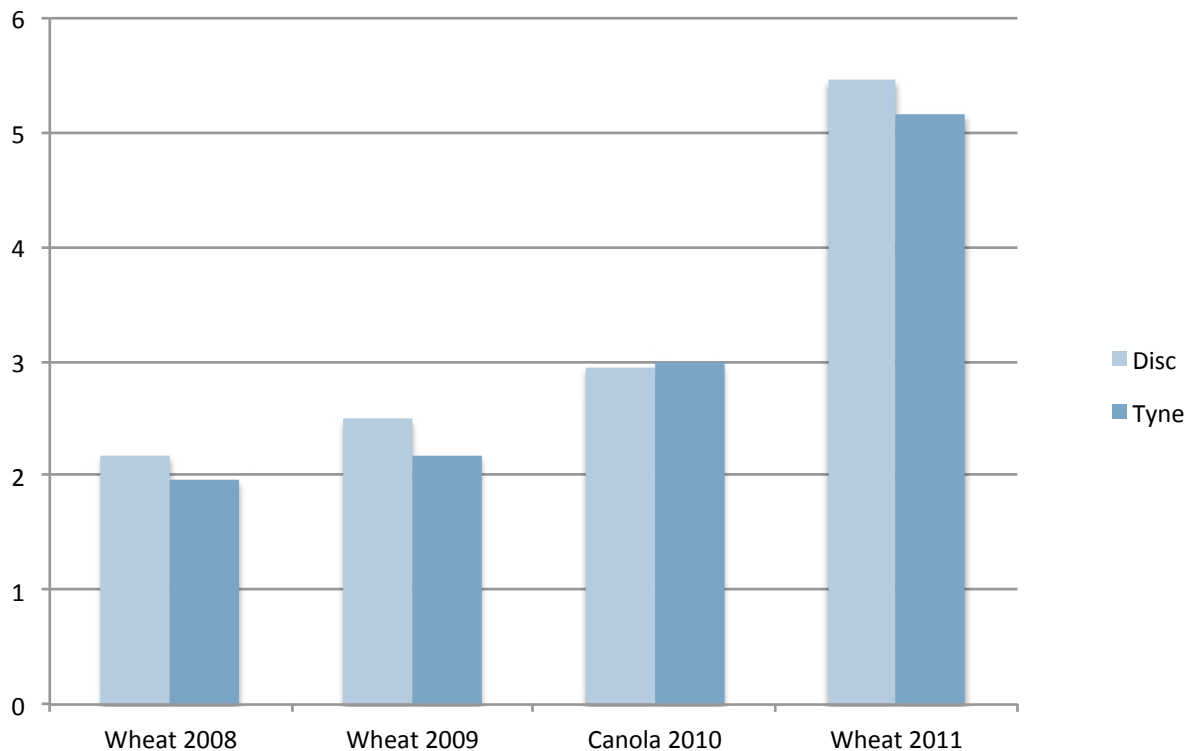
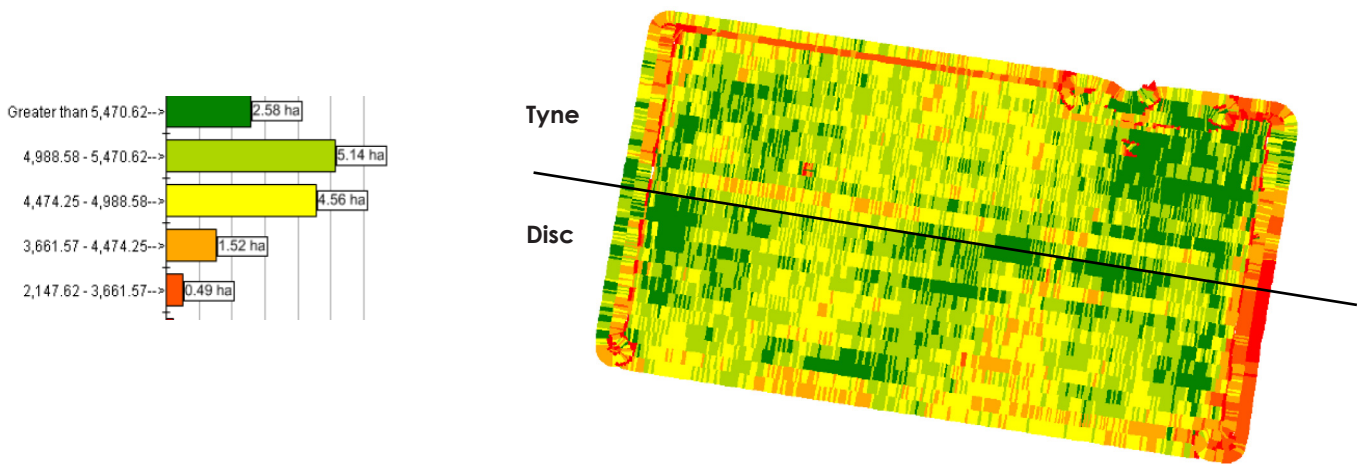


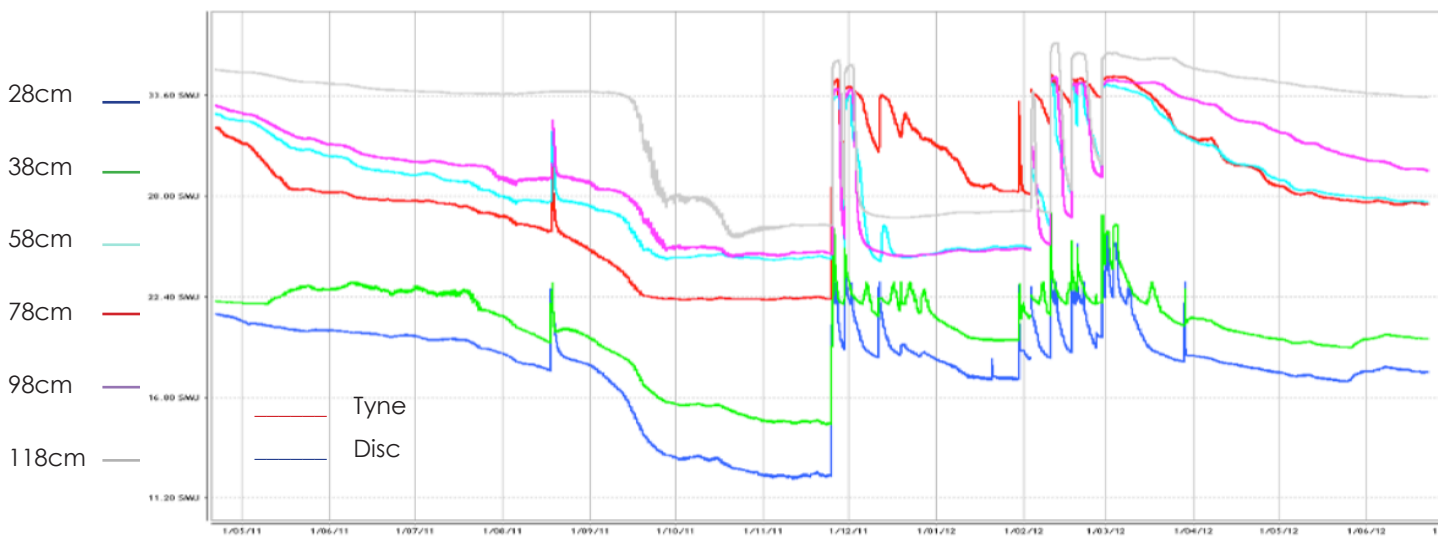
Figure 1: Illlabo yield map, Disc vs Tyne, 2011, (raw data only). Red represents minimum yield through to green maximum yield.

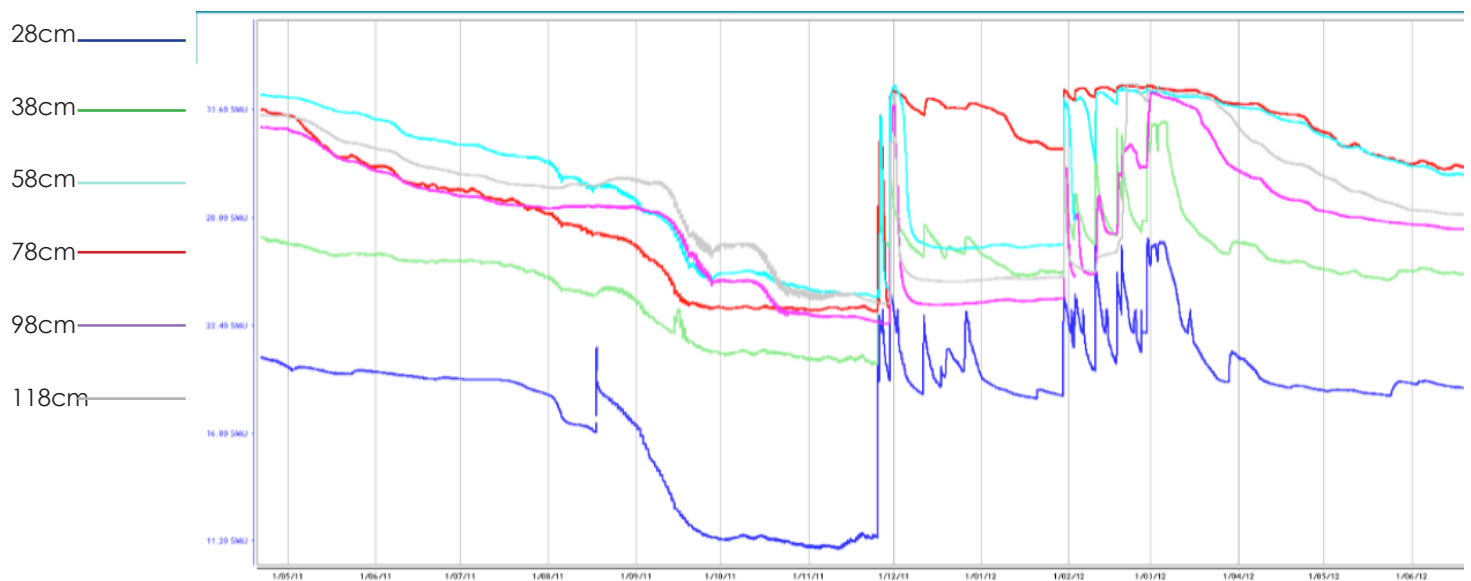


Graph 2: Moisture sum graph of Disc vs Tyne, 2011.



Graph 3: Disc individual moisture sensor data for May 2011 - June 2012.



Graph 4: Tyne individual moisture sensor data for May 2011 - June 2012.

Discussion

2011 wheat yields were similar with both systems recording over 5t/ha. To collect yield information each seeder area was split into two separate blocks of 0.5ha and 1ha. These blocks were harvested and weighed individually. The smaller 0.5ha disc block contained spray rig wheel tracks and this would have had a detrimental impact on the yield of this block.

Wheel tracks were 90cm wide of a total area of 11m or equivalent to a percentage of 8.18% of the total area. If this is factored in, the overall yield averages were disc at 5.45t/ha compared to tyne at 5.16t/ha. This figure is consistent with the differences between the second blocks individually harvested in 2011 and yields from previous years 2008 and 2009 (drier than average years).

A paired set of moisture probes were installed at the Illabo Disc vs Tyne site to measure soil moisture levels during the 2011 growing season. Measurements were recorded at 28cm, 38cm, 58cm, 78cm, 98cm and 118cm depths. It is hoped that this additional information will provide further insight into the drivers behind yield variation.

Graphs 2 and 3 give a pictorial representation of individual capacitance moisture probes at the disc and tyne sites. Graph 2 shows extra moisture in the sensors at the tyne treatment paddock. Graph 3 shows the 118cm sensor at the disc site showing a clear advantage over the 118cm sensor on the tyne site.

It must be remembered that the probe sensors represent a micro area and may not be representative of the whole paddock.

Acknowledgements

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