

Dry sowing dangers “emerge” in stubble

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The Grains Research and Development Corporation (GRDC) have initiated and funded a research project focusing on maintaining profitable farming systems with retained stubbles in Victoria and Tasmania.

As part of this project, Southern Farming Systems (SFS) are running a Disc versus Tine Seeder trial that was sown on the 12th of April this year.

The replicated trial site was sown into dry conditions with the disc seeder sowing into 30cm high stubble from a 2015 wheat crop.

The 2015 crop was sown using 30cm row spaces while this year a machine with 25cm row spaces was used, which proved challenging.

The tine seeder was sown using 30cm spaces in both years with 2016 Canola direct drilled, inter-row, into 15cm high stubble.

Many thanks to Streatham branch chairman Myles Read, Charles Geddes who brought along his JD 1890 disc and Andy Medlyn from Harbergers Ag Donald who supplied the Equalizer tine seeder.

Initial germinations have highlighted potential dangers of dry sowing with disc seeders.

Table 1: *Canola establishment, means of all plots for JD disc & Equalizer tine in burnt and retained stubble.*

Seeder	Canola emergence
JD Disc burnt	3 plant/m ²
Equalizer tine burnt	36 plants/m ²
JD disc 30cm stubble	1 plants/m ²
Equalizer tine 15cm stubble	16 plants/m ²

There were far less plants on average in the disc sown plots. Germination and establishment was also higher in the burnt areas than in the stubble retained. There may be more viable seeds in the soil that will germinate once it rains but the establishment in the tine sown plots has been reasonable in the dry sowing conditions. Our target population was 35 plants/m². So it appears the disc has not established because of fertilizer toxicity or lower soil to seed contact than the tine. The canola was sown with 80kg/ha MAP.

We also applied, with sowing, 60kg/ha Urea in half of the plots for each seeder and this has had a detrimental impact on emergence as evidenced by differences in treated and untreated plots where stubble was burnt. The Equalizer uses a twin tube setup which separates seed & fertilizer and this failed to prevent seed damage. Strangely where stubble was retained there was no difference in the plus or minus Urea at sowing treatments.

Table 2: Canola establishment, means of all plots for JD disc & Equalizer tine in burnt and retained stubble, +/- Urea at sowing.

Seeder	Trt Av plants/m ²
JD Disc burnt no urea	5.6
JD Disc burnt plus 60kg/ha Urea	0.9
Equalizer tine burnt no urea	47
Equalizer tine burnt plus 60kg/ha Urea	26
JD disc 30cm stubble no urea	0.9
JD disc 30cm stubble plus 60kg/ha Urea	1.2
Equalizer tine 15cm stubble no urea	17
Equalizer tine 15cm stubble plus 60kg/ha Urea	15

This data is not yet analysed but the means indicate that it will be a statistically significant difference between some treatments. We will monitor the emergence after decent rain to see if any more seeds germinate. Past experience has led to the belief that the disc is more reliable at establishing crops in low moisture seed beds but the data from this trial shows otherwise. Its commonly known that fertiliser toxicity can be a problem in dry seed beds with disc seeders, especially with canola. The data certainly supports that and the currently very low plant numbers in both burn and stubble retained treatments for the disc may require re-sowing.

We also measured soil moisture in the seed furrow for all treatments. (see table 3)

Table 3: Moisture % in seed furrow for disc & tine without and without burning 16 days after sowing. 2ml of rain fell between sowing & measurement.

Seeder	In furrow moisture % 16 DAT
JD Disc burnt no urea	9.5
JD Disc burnt plus 60kg/ha Urea	10.2
Equalizer tine burnt no urea	6.9
Equalizer tine burnt plus 60kg/ha Urea	8.8
JD disc 30cm stubble no urea	10
JD disc 30cm stubble plus 60kg/ha Urea	11
Equalizer tine 15cm stubble no urea	8
Equalizer tine 15cm stubble plus 60kg/ha Urea	9.5

A common perception is that tine seeders dry out the furrow more than the disc. This is supported by the data but there was no subsequent increase in germination. This is thought to be due to increased fertilizer toxicity in the disc furrow.

You can follow the trials progress in coming updates in 2016.





Disc burnt



Tine + stubble



Tine burnt