

The Gen Y Paddock Challenge – Comparing the Efficacy of Pre Seeding Deep Ripping and Early Post Emergent Deep Ripping

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Take Home Messages

- Seeding canola into deep ripped soil can severely reduce establishment.
- Deep ripping canola EPE (early post-emergent) could be a solution if plant injury can be managed.

Aim

1. To demonstrate and quantify the plant establishment penalty of seeding canola into deep ripped soil, the loss of plants by deep ripping EPE.
2. To check if delaying deep ripping until EPE still produces a yield boost compared to ripping in typical summer conditions.

Background

Farmers are very good at trialling best practice soil management in the isolation of their environment, however, do not always effectively capture and analyse trial information beyond visual or yield assessments. Furthermore, they may not have the confidence to share the information they are gathering publicly, limiting their opportunities to gain valuable feedback from peers. By building the capacity of farmers to actively trial, capture and share their on-farm trials, with strong scientific rigour and in a trusted environment, we aim to increase engagement and foster the adoption of best practice soil management methods.

The Hirsch family have always seen canola and deep ripping as a package, because of canola's ability to use subsoil moisture and produce a reliable yield response, and the tillage effect of stimulating weeds where they can be controlled with glyphosate or selective herbicides. However, it has been risky, with plant establishment sometimes compromised by poor depth control in softer sands. This plant establishment can undo the yield response of canola in this system. With some other farmers deep ripping canola after seeding it to manage this issue, the Hirsch's didn't want to purchase an extra tractor and labour to do this at a time when they were seeding other crops. After seeing the effects of early post-emergent (EPE) deep ripping trial strips on previous canola crops, Dylan decided to implement this trial to better assess the effects of EPE deep ripping. The soil was previously deep ripped in 2017 and is a yellow sandy loam, which is considered easy to rip when there is moisture in the soil.

Trial Details

Trial location	Main Trial Site, Hirsch Property, Latham
Plot size & replication	12m x 300m x 2 replications
Soil type	Medium sandplain
Paddock rotation	2019 Barley, 2018 Barley, 2017 Fallow
Sowing date	03/05/2020
Sowing rate	1.6 kg/ha 410XX Canola
Fertiliser	Nil at seeding, 50L UAN @ 2 leaf, 60L UAN @ stem elongation
Herbicides, Insecticides & Fungicides	1 kg/ha Propyzamide 500, 1.5L Paraquat, 1.3L Glyphosate, 1.3L Glyphosate, 1.3L Glyphosate, 300mL Alpha-cypermethrin.

Treatments

	Treatment
1	Summer ripped on the 24 th March to 550mm
2	EPE ripping to 550mm on the 5 th July when canola was at the 8 leaf stage
3	Control tramline
4	Control CTF

Results

Treatment	Final Establishment plants/m ²	Harvested Yield t/ha *
Summer Rip	1.8	0.30
EPE Rip	5.2	0.32
Control	7.0	0.38
Tramline	6.5	0.38

*The trial was impacted by severe hail prior to harvest, with damage assessed at 85%.

Comments

The summer deep ripping happened in ideal conditions after approximately 100mm of summer rainfall. 550mm depth was achieved easily with the Nufab Tilco ripper during ripping activities. The site was seeded to 410XX canola in dry conditions at a target depth of 15mm with a JD 1830 air hoe drill with split boots. This type of air seeder can be prone to depth issues in these conditions. The area then received 6-7mm of rain on 6th May which was enough to germinate some plants but was extremely patchy. A subsequent wind and rain event on 24th May did not germinate the remaining plants, which were presumed to have shot from the previous rainfall event, resulting in low establishment numbers across the site.

The establishment across unripped and EPE ripped trials averaged 7.0 plants/m² before EPE ripping on 5th July, which is satisfactory for the Hirsch's for XX canola (however some areas were thinner). The summer ripped plots only averaged 1.8 plants/m², which may have been due to poor depth control when seeding into ripped soil and the marginal opening rain.

The EPE plots were ripped 'interrow' on 5th July with the major visual effects on plants being from tractor wheel traffic. Conditions were not great for ripping due to the dry start of the winter which caused the topsoil to fracture, which may have exacerbated damage to plants. Some plants were impacted by tynes and establishment counts on 30th July on EPE were down to 5.2 plants/m², a reduction of 26%. Surviving plants were visibly stunted and were shorter than the control strips. However, as at 1st September, it appeared that the EPE ripped plots had caught back up.

NDVI imagery from 29th August indicated the normal summer ripping plots had visibly lower NDVI scores, whilst you could not differentiate between unripped and EPE ripped plots from NDVI imagery.

Other EPE ripping strips on different areas of the farm showed different responses, from virtually 0% plant count reduction to over 70%. This indicates that EPE ripping results may be strongly dependent on the season and soil type. The Hirsch's will continue to trial EPE ripping based on opportunistic conditions where plant establishment is already high (>15/m²) and the soil has sufficient moisture to minimise disturbance to root systems.

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Peer review

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Scan the QR code to view a video interview with Dylan.

