

Deep Ripping + Inclusion Plates Demonstration

NATIONAL LANDCARE PROGRAM SMART FARMS SMALL GRANTS - AN AUSTRALIAN GOVERNMENT INITIATIVE

BACKGROUND

A paddock at Sherlock was deep ripped in 2022 to overcome high soil strength and dilute severe water repellence at the surface. A 6m wide Agrowplow SLTAP91 deep ripper with inclusion plates fitted was used to funnel the topsoil into the subsoil behind the shank, with the aim of de-compacting the profile to >50cm.



Image 1. Agrowplow Deep Ripper with inclusion plates fitted on the outside shanks.

TREATMENTS

- 1) No-tillage Control
- 2) Deep Rip + Inclusion Plates

Two seeding configurations were tested: direct seeding; and direct seeding + additional seed broadcast to achieve zero row spacing.

RESULTS

Soil strength was measured using a digital penetrometer. Penetration resistance (PR) exceeded the critical threshold of 2,500 kPa at 17cm in the Control (Figure 1); deep ripping reduced the PR below this threshold to a depth of 45cm.

Deep ripping increased barley grain yield by 0.16 t/ha above the Control (1.46 t/ha, Figure 2), and was further improved with zero row spacing (+ 0.32 t/ha).

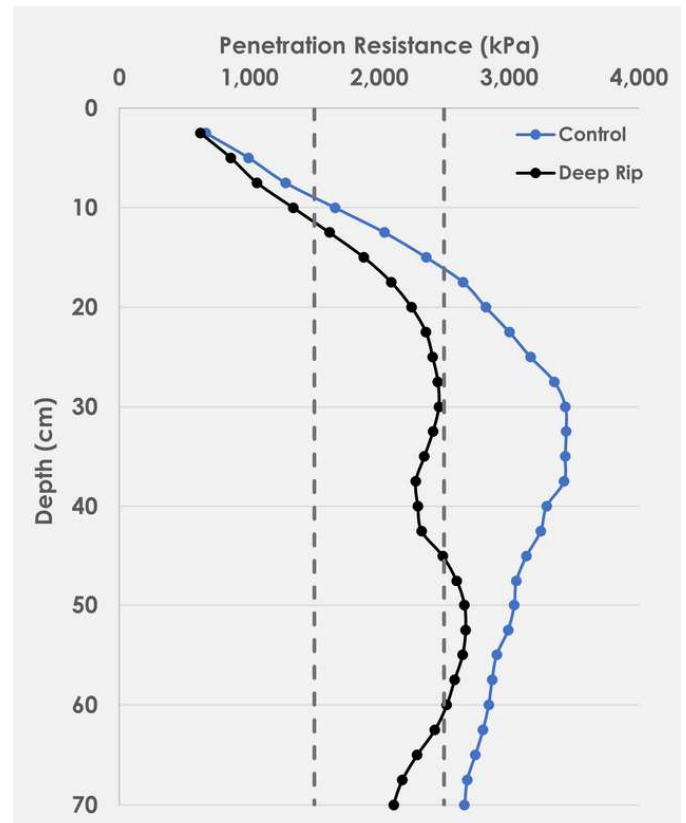


Figure 1. Soil penetration resistance (kPa), showing deep ripping causes a substantial reduction in soil strength.

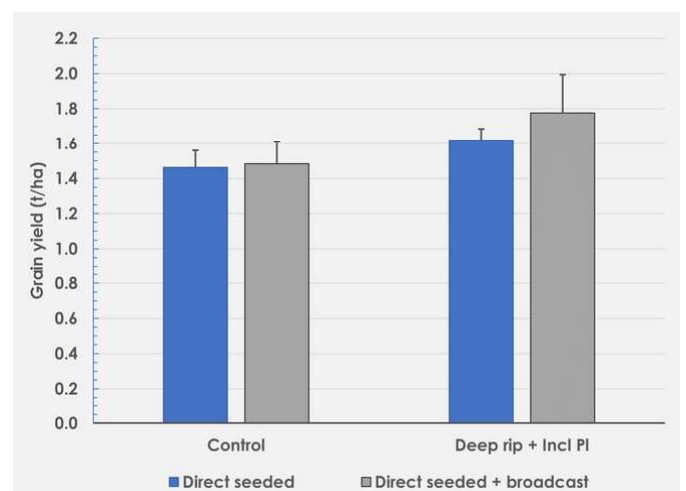


Figure 2. Barley grain yield results in 2022 in response to deep ripping with direct sowing +/- additional broadcast seed to achieve zero-row spacing.

Many thanks to David Peter for hosting this demonstration at Sherlock, SA.