

“Deep Ripping Trials”

Frances, 2010

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Introduction

In order to quantify the effects of deep ripping, gypsum application, and a new cultivation implement known as a Spader, the MFMG established two trial sites in the South East in 2008. Deep ripping has been shown to increase root zone area, break up hard pans, and increase infiltration. Gypsum can improve soil structural problems caused by sodicity thereby increasing root penetration and water infiltration. The Spader mixes the soil profile to a depth of around 30cm and may increase root penetration and water infiltration, thereby improving conditions for plant growth.

Method

Two sites were selected in 2008, one at Cadgee and the other at Frances. The Frances site is a shallow loam over brown clay whereas the Cadgee site is a bleached loamy sand over brown clay. Treatments were applied to the trial plots prior to sowing canola. Treatments included:

- Control Deep ripped
- Deep ripped after Gypsum application at 2.5 t/ha
- Deep ripped after Gypsum application at 5 t/ha plus Spader
- Deep ripped before Gypsum application at 2.5 t/ha
- Deep ripped after Gypsum application at 5 t/ha

After sowing, the trial plots were managed in the same manner as the rest of the paddock. The Cadgee site was sown to pasture in 2010. The Frances site was sown to barley.

Results

Table 1: Frances site harvest data summary

| Treatment | 2010 (barley) | | Mean of 3 years | |
|---|---------------|-------------|-----------------|--------------|
| | kg/ha | % site mean | kg/ha | % site mean3 |
| Nil | 2517 | 91 | 2424 | 91 |
| Ripped | 2483 | 90 | 2575 | 95 |
| Ripped after Gypsum at 2.5 t/ha | 2372 | 86 | 2627 | 97 |
| Ripped after Gypsum at 5 t/ha plus Spader | 3333 | 120 | 2968 | 110 |
| Ripped before Gypsum at 2.5 t/ha | 3142 | 113 | 2880 | 107 |
| Site mean | 2769 | | | |
| CV% | 11.59 | | | |
| Isd(0.05) | 584.5 | | | |

The Ripping and gypsum treatments at the Frances site showed greater yield increases compared to the nil treatment (Table 1). The Frances site was also non-sodic and Gypsum has had little effect indicating that soil structure is unlikely to have been improved and sulphur is not deficient at this site. The Spader treatment showed a yield increase which indicates that the mixing of the soil profile has allowed for increased root growth. The Ripped after gypsum at 2.5 t/ha treatment had one poor, waterlogged plot in replicate 1 and this has reduced the mean yield of that treatment.

Conclusion

Ripping has done very little to increase grain yields at the Frances site. The application of gypsum has generally increased grain yield by 15-20% over the untreated control treatment.

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