

## Ripping results in the mallee

Yield increases of up to 43 per cent have occurred when sand hills in the mallee have been ripped to overcome soil compaction.

The CSIRO's Dr Victor Sadras said some soils were naturally prone to compaction but it could also result from activities such as tillage, machinery traffic and trampling by animals, creating a hostile environment for roots and reduced water and nutrient uptake by plants.

Dr Sadras said Mallee farmers Robin Schaefer of Loxton and Dean and Jeanette Wormald of Caliph, concerned at underperforming crops in sand hills, initiated trials to see if soil compaction might be the cause. The team also included researchers David Roget and Garry O'Leary.

"Trials involving ripped and un-ripped strips in large paddocks were set up," Dr Sadras said.

"Ripping treatments were established about two months before sowing using three-tine rippers with tine spacing of 45 cm and depths of 45 to 60 cm.

"Yitpi wheat was sown in late May in 2003 on the trial areas."

Dr Sadras said that last year at Caliph on sand hills, ripping produced an average 43 per cent more grain than un-ripped areas and 20 per cent more on slopes.

At Loxton in 2003 the difference was 21 per cent in favour of the ripping treatment while areas ripped in 2001 and 2002 produced yield increases of 13 per and 25 per cent respectively over the non-ripped controls.

Dr Sadras, whose work is supported by the GRDC, said as well as yield increases, ripping could also increase grain protein levels, particularly in sand hills.

He said CSIRO measurements had shown that compaction on coarse-textured Mallee soils did not stop the downward flow of water, however compacted soil layers did impede root penetration and water uptake from deep soil sections.

Consequently compacted soils would accumulate water below the compacted zone adding to deep drainage issues. Modelling studies indicated important reductions in drainage after deep tillage.

"Deep tillage to relieve soil compaction could therefore provide a tool to improve and stabilise yield, as more water is accessible to the crop, and to reduce the risk of deep drainage," Dr Sadras said.

“In the more responsive soils in the trials, the increased yield more than paid the cost of ripping in a single season, whereas the benefits lasted two to three seasons.”

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