Improving crop production from shallow stony soil in the Northern Mallee

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Key Messages
This trial has resulted in some clear recommendations for farming shallow stony soils in the SA Mallee. These include:

- Where possible and practical, aim to sow stony ground earlier in the seeding program. Where a late season break causes seeding to be delayed into June, not sowing these areas should be considered, as a profitable crop will only be achievable with very good winter and spring rainfall.
- Shorter season wheat varieties present less risk on stony ground than longer season varieties. It is preferable to sow these varieties with higher seeding rates (15-20% higher than normal seeding rates), which is also advantageous in the years with good spring rainfall. Double sowing rates appear too risky and will prove costly in seasons with a dry finish.
- Wheat seed should be treated with an insecticide seed treatment for Aphids, as shallow stony soil appears to be highly vulnerable for Russian Wheat Aphid infestation.
- There is a strong concern about bare cropping patches appearing within stony paddocks, which appear to be associated with an accumulation of soil salinity at the surface. This may need further investigation to assess whether this is a growing land degradation issue across the district.

Why was the trial/project undertaken?
Shallow stony soils make up a large percentage of Mallee cropping soils and are characteristic for holding low levels of plant available water (PAW). This means that they are highly vulnerable to any periods of moisture stress throughout the growing season, which regularly occur in the low rainfall Mallee environments. This trial was run over the wet season of 2016, followed by the very dry 2017 season, with the aim to assess how farmers can best manipulate sowing time, wheat variety choice and seeding rates, to minimise heat and moisture stress on grain formation in spring, and achieve the best crop production in these high risk cropping soils.

How was the trial/project undertaken?
This was a paddock scale demonstration using farmer seeding and harvest equipment. There were 12 main treatments involving combinations of early and late season varieties, high and low seeding rates and early and late sowing times. There was also a double sown seed and fertiliser treatment strip run on the edge of the trial area. Crop establishment and tiller counts were conducted across treatments both early and late in the growing season, and final yields and grain quality assessed. While moisture stress in 2017 meant that no accurate yield data could be obtained from the later sown plots, this still provided valuable information for management recommendations.

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