

Organic amendments and lentil growth on Mallee soils

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Abstract

Lentil production in the Victorian Mallee has increased from 1.2 to 13.4% of the total cropped area in the low rainfall zone from 2006 to 2017 (Moodie, 2017). This has been due to improved adaptation of lentil cultivars to dry environments and the rotational and financial benefits this crop provides. Dune swale systems cover a large portion of cropping area in the region, where lighter textured (sandy) soils can be infertile and can lead to a decrease in yield. Increased organic carbon can improve soil fertility and can be enhanced through the addition of organic amendments such as poultry or pig litter or potentially almond hulls. This glasshouse study assessed the response of lentils to poultry litter, almond hulls and standard fertiliser across three soil types from the Victorian Mallee environment. The soils were source from a cropping paddock near Ouyen () in the Victorian Mallee and represented the three key soil types (sand dune, mid slope and swale) of the landscape. Results showed that poultry litter provided the greatest yield increase and stability across the three soil types compared to fertiliser, where increases were 6, 29 and 24% for swale, mid slope and dune soils respectively. Where almond hull was applied, yield was consistently lower than for fertiliser across respective soil types. Importantly these results highlight the value of poultry litter increasing the productivity of sand dune type soils to the equivalent productivity of the heavier swale soil type. Further work is required to assess the long-term benefits and the practicality of using such amendments in a large-scale farming context. This research in conjunction with other improved agronomic practices such as new lentil varieties, improved stubble management and better herbicide strategies could lead to even greater yield stability on sand dunes in the Victorian Mallee region.