

Treating Water Repellent Sand with Organic Matter and Cultivation

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Water repellent, infertile sandy soils are common in the dryland areas of South Australia. Adding clay to the sand is one method to treat this, but not all areas have suitable clays available for economic use. Work in Western Australia has looked at a one-off spading or inverting the soil with a mouldboard plough to bury water repellent sand and bring wettable sand to the surface. However, the infertile A2e horizon present in the Coomandook area means that without adding extra nutrition, other problems are likely to affect the crop if the water repellent layer is spaded or inverted. Adding organic matter or additional fertiliser is a possible method of overcoming this.

A trial to improve the productivity of deep sandy water repellent soil in the Coomandook area (an area without suitable clay available) was set up in May 2013. Treatments included a single mouldboard ploughing, a single spading, controls, and various locally available organic matter and fertiliser treatments. Yield was measured, soil water repellence tested, and profit/loss calculated.

Results showed that the spader had the best effect of the soil modification treatments. As well as reducing water repellence, crop root growth was improved by the deep incorporation of organic matter. Mouldboard ploughing reduced water repellence in the soil, but did not improve productivity as much as spading. The impact of changes in water repellence varied with different crop types - lupins were more responsive to lower water repellence than cereals. Of the organic matter treatments, TPR grape marc and Composted Pig Manure had the highest yield benefits, but the costs of transport and the product meant that the most profitable treatment at this site was not the most productive treatment.