

MANAGEMENT OF WATER REPELLENCE

ASSESS

- **Check crops** for uneven establishment.
- **Check soil** for non-uniform wetting.
- **Determine zones** for testing.

TEST

- **When the soil is dry**, prior to sowing.
- **Scrape off the surface 2-3mm** of soil and organic matter.
- **Place 3 droplets of rain water** on the surface.
- **Record the time** it takes to infiltrate.

TREAT

- **Seeding options**
 - On row or edge row sowing
 - Wetting agents
 - Wide stable water harvesting furrows
- **Amelioration options**
 - Soil inversion or mixing to bury or dilute repellent layers
 - Apply clay for a permanent solution



USEFUL RESOURCE

GRDC fact sheet: *Diagnosing Sandy Soil Constraints Water Repellence and pH: South-West*
grdc.com.au/diagnosing-sandy-soil-constraints-waterrepellence-and-ph-south-west

MANAGEMENT OF HIGH SOIL STRENGTH

ASSESS

- **Check crops** for uneven growth.
- **Use a push rod** in wet soil to feel for tight layers.
- **Look for roots** that stop at hard or dense soil layers.
- **Determine zones** for testing.

TEST

- **When the soil is wet**, typically in winter.
- **Use a cone penetrometer** to measure the penetration resistance (PR).
- **Record the depth:**
 - where the PR = 1.5 MPa
 - where the PR = 2.5 MPa
- **Record the maximum PR**

TREAT

- **Deep tillage options**
 - Deep ripping to treat high soil strength; use inclusion plates to redistribute soil layers and to incorporate surface applied amendments.
 - Soil inversion (e.g. Plozza plow) to bury water repellent layers.
 - Soil mixing (eg. spading, ploughing) to dilute repellence and incorporate amendments e.g. lime to treat acidity.



USEFUL RESOURCE

GRDC fact sheet: *Diagnosing Sandy Soil Constraints: High Soil Strength (South-West) (2022)*
grdc.com.au/diagnosing-sandy-soil-constraints-high-soilstrength-south-west

MANAGEMENT OF NUTRITION

ASSESS

- **Check crops** for uneven growth or colour.
- **Check yield and protein maps or NDVI** imagery for crop differences.
- **Determine zones** for testing.

TEST

- **Prior to amelioration** to identify nutrients/ amendments to incorporate with deep tillage.
- **After amelioration**, prior to sowing.
- **Collect multiple 0-10 cm soil samples** in each diagnostic zone.
- **Send to an accredited laboratory** for analysis.

TREAT

- **Know your new yield target.**
- **Supply specific** nutrients to address deficiencies and close the yield gap.
- **Supply 40 kg N/ha (from soil and fertiliser) for each tonne** of target yield.



USEFUL RESOURCE

GRDC fact sheet: *Diagnosing Sandy Soil Constraints: Nutrition (South-West) (2022)*
grdc.com.au/diagnosing-sandy-soil-constraints-nutrition-south-west