



TECHNICAL SHEET

Water Repellent Soils

what are water repellent soils?

With the increasingly dry climate and a reduction in the availability of irrigation water, soil water repellency is emerging as an issue facing gardeners. Recent studies have shown that water repellency in soils can be the rule rather than the exception in a lot of regions of Australia.

Water repellent (or hydrophobic) soils is often a more common problem in sandy soils and potting mixes. In weather conditions that are dry and windy, soil can dehydrate. Applied water will pool on the surface of the dry soil rather than wetting it - and will then either evaporate or run off. Once this occurs the soil can be difficult to rewet again.

what causes water repellency?

Water repellency is caused by organic acids being produced through the decomposition of organic matter. The organic acids form waxlike coatings on soil particles causing repellency. It is thought that sandy soils are more likely to have this condition as the particles have a relatively lower surface area than other soil materials.

When soil moisture reaches a critical level water repellency can be overcome. It should be noted though that critical levels are different for different soils and it takes longer for water to infiltrate soils that are hydrophobic.

consequences

- Localised dry spots resulting in plant stress.
- Waterflows develop preferential pathways - this can lead to greater infiltration through the profile, taking water away from the root zone.
- Runoff - This can cause loss of nutrients and soil erosion.

prevention

It is difficult to prevent water repellency as it is a natural condition of soils. Adding organic composts and mulching can assist as a preventative measure

treatment

- Apply a wetting agent - Liquid wetting agents break down surface tension, allowing water to infiltrate the soil. It is necessary to water well after application to maximise effectiveness.
- Watering practices - It is recommended that soils are watered slowly and deeply. Drip watering is more effective than hosing as it allows soil to be infiltrated slowly rather than having water pooling and consequential run off.
- Add organic matter to soil - This opens up soil, improving soil structure and assisting with water and nutrient retention.
- Keep soil surface open. When planting seeds dig furrows for water to sit in. With other plantings create basins around the root ball. Having an open soil surface creates a larger surface area in which water can absorb.
- Mulch - This can reduce evaporation by up to 50% and assists with retaining moisture.



for more information

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