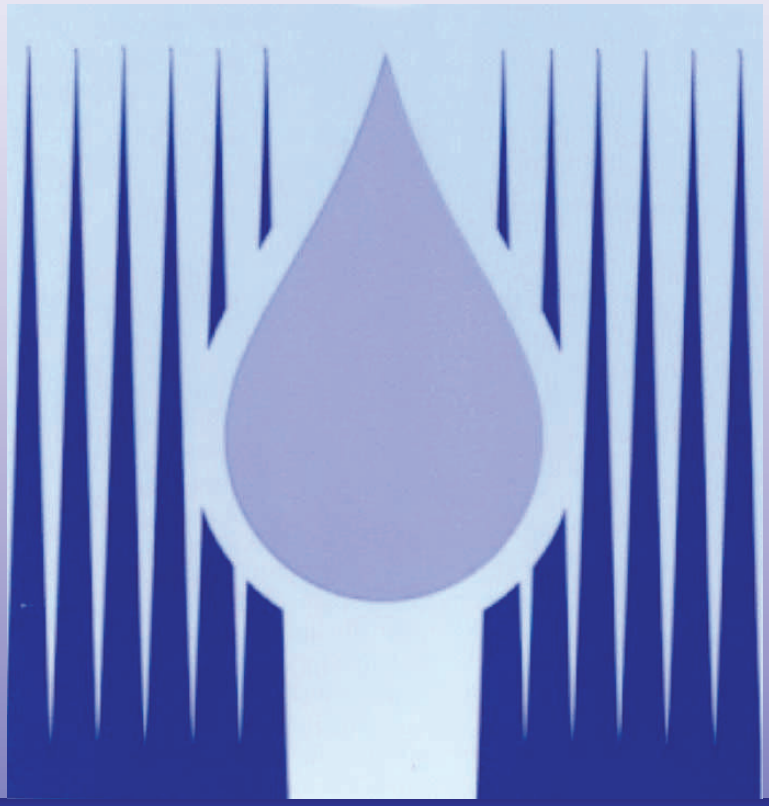
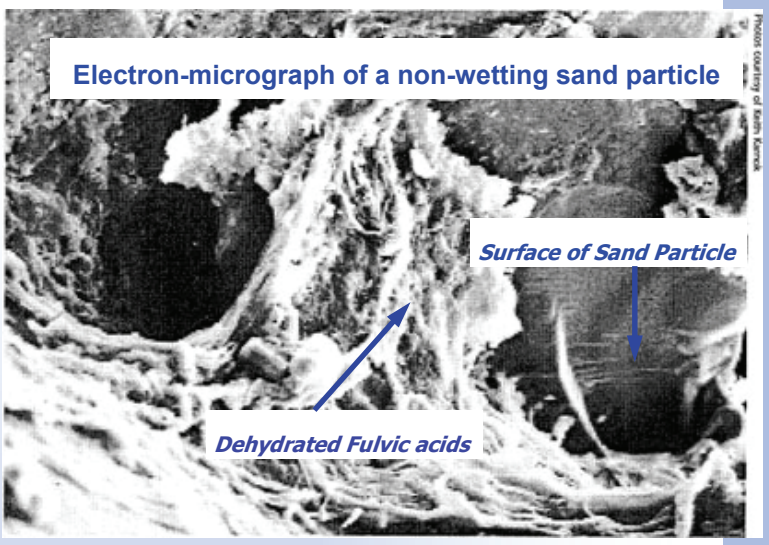
HydraSoil®



Soil Wetting Agent

What is the cause of "Dry Patch"?

"Dry Patch" is a physiological condition that shows up in turf as an area of dryness or turf discoloration during hot dry periods. It is directly associated with a shallow root system caused by factors such as compaction, layering, pests, diseases, or over-use of chemicals. However, the most common cause in turf is **an area of water repellency either in the thatch or within the sand profile.**



Water repellent soils are a result of non-wetting organic compounds coating soil particles over a period of time.

Sandy soils are very prone to water repellency due to three reasons:

1. The rough and very low specific surface area of sand particles, makes sand more easily coated by organic compounds as they leach through the profile;
2. Sandy soil favours the growth of fungi and fungal hyphae. Fungi feed on organic matter leaving behind waxes, lignins and organic acids like fulvic acid. Fulvic acids, one of the major by-products from microbial activity, are a major source of water repellency;
3. Remnant fungal hyphae from *Basidiomycetes* sp (Fairy ring) which are a major source of water repellent organic matter favour dry sandy soils;
4. Sandy soil dry out easily and once the sand particles are coated with organic acids and dry-out, the sand particles become non-wetting.

There are some cultural practices that can be used to reduce the on-set of non-wetting conditions. However in turf situations, it is inevitable that it will occur.

Cultural practices used to reduce "Dry Patch"

Preferential Flow caused by Non-wetting Sands at the Soil Surface

1. Use low volumes of organic amendments;

2. Reduce the build up of organic matter by managing your thatch level with regular grooming and dethatching;

3. Light coring of the surface to allow more uniform re-wetting of the profile;

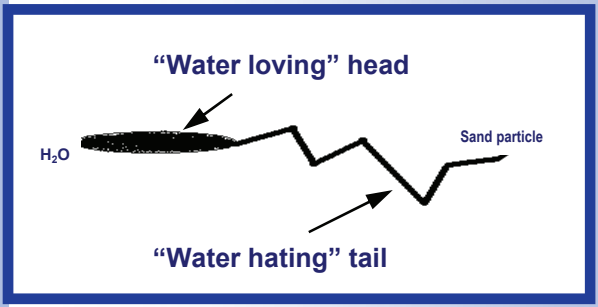
4. Irrigate over longer cycles to flush the profile and prevent shallow root development;

5. Dilute the level of non-wetting sand by top-dressing or dusting with new sand on a regular basis. This also slows down the accumulation of thatch;

AND

Regular application of a soil wetting agent like HydraSoil®

How Do Soil Wetting Agents work?

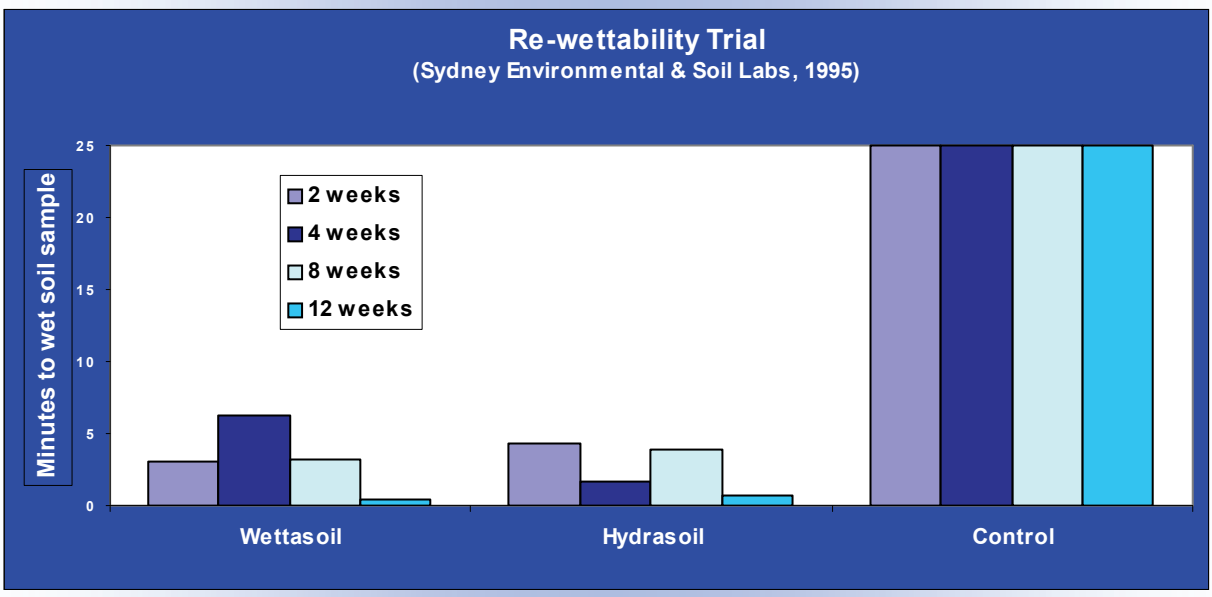


Surfactants reduce water repellency by changing the surface tension between the sand particle and the water droplet. The hydrophobic (water hating) end of the surfactant molecule binds with the water hating organic compound coating the sand particle. The water loving end of the surfactant sits on the outside surface of the sand particle, thus attracting water to it. This wets the surface of the sand particle allowing water to then flow around and through the soil.

Required attributes of a good soil wetter

- Provide good even initial wetting of the soil to minimise preferential flow
- Allow the soil to re-wet effectively
- Persist in the soil for the maximum time while being non toxic and breaking down into non toxic residues
- Will not cause leaching of nutrient and pesticides from the root zone
- Will not cause any "burning" to foliage

HydraSoil® was designed with all of the above attributes in mind



Not all wetting agents are good re-wetting agents. The ability to continue to re-wet the soil over a long period of time indicates the quality of the soil wetter. HydraSoil® will remain active in the soil for up to three months with continued re-wetting performance.

How Safe is HydraSoil to Plants?

HydraSoil® has been tested for its safety to plants and various grass species and found to be very safe. The table below demonstrates the safety of HydraSoil® to two grass species on a phytotoxicity rating scale of 0-100 (0-no damage)

1 Day after treatment	HydraSoil x 1 (500ml/100m2)	HydraSoil x 2 (1000ml/100m2)	HydraSoil x 5 (2500ml/100m2)
BROWNTOP BENT	0	0	0
WINTERGREEN COUCH	0	0	0
7 Days after treatment	**HydraSoil x 1 (500ml/100m2)**	**HydraSoil x 2 (1000 ml/100m2)**	**HydraSoil x 5 (2500ml/100m2)**
BROWNTOP BENT	0	0	0
WINTERGREEN COUCH	0	0	0

Directions for Use

HydraSoil® can be applied at any time of the year to improve watering uniformity and efficiency. Potting mix in particular benefits from HydraSoil due its natural water repellency characteristics.

Situation	Rate	Comments
Turf Lawns	400 ml /100m^2 every 8 weeks 200 ml /100m^2 every 4 weeks 500ml /100m^2	Apply in early to late spring and reapply every 6-8 weeks during the Summer months. Apply at 200 mL/ 100m^2 every 4 weeks for more uniform results and if applying with Hydretain.
Plants Potting Mix	2 ml/L 200 ml/m^3	Dilute and drench into the affected area every 4-6 weeks. Apply to potting mix dur-

Manufactured by:

Organic Crop Protectants Pty Ltd, 42 Halloran St, LILYFIELD 2040 A.C.N.003 149 719
Free Call: 1800 634 204
Tel: 612 98104566 Fax: 612 98104674

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