

# Wetting Agents

## The importance of a continuous program

Wetting agents are a type of soil surfactant geared towards better management of soil moisture. Soil moisture management may mean holding more moisture, moving more moisture, or striking the balance between both. The requirements can be very site specific and in golf there can be very different requirements within the same site between greens, tees and fairways.

We use these aids in golf because sand based profiles (e.g. USGA spec greens) often need assistance to retain moisture and a normal part of the decomposition of organic matter in any turf situation is the production of complex organic acids that tend to form waxy coatings over soil particles. The coatings directly interfere with the soil / moisture particle interaction making them repel each other. This will manifest itself in localized dry spots, or if ignored may extend into generally hydrophobic (water repelling) soils.



### The wetting agent families (based on electrical charge)

The wetting agents frequently used in turf tend to come from the non-ionic group of surfactants. Non-ionic meaning neutrally charged. These are different from cationic's (positively charged), anionic's which are negatively charged, and amphoteric's for which the charge can be pH dependent.

Water likes to attract water. It does this through cohesive forces. In the absence of something to counter these cohesive forces water will clump together, move away together, and at times be difficult to retain where we really want it. Surfactants act on these cohesive forces,

encouraging water molecules to behave more independently, and in doing so are able to encourage water to 'spread' over a greater surface area.



### Non-ionic surfactant sub group

The non-ionic group of surfactants have two further distinct sub groups – soil penetrants and soil moisture retainers. As the names suggest one tends to move water through a profile, the other tends to retain water within the profile. Whilst the two categories may be manufactured and used independently, it is equally quite normal for blends to be produced that try to gain a middle ground between the two. You will often see descriptors such as EO/PO block copolymers. The Ethylene Oxide (EO) terminal functional ends attract or disperse water more, while the Propylene Oxide (PO) terminal functional ends repel water more. The relative balance of these in a product may be represented by HLB values – the hydrophobic / lipophilic balance and the more balanced combinations tend to be those 'middle ground' type products.

Each are working on a principle of having a chemical structure (think of it like a short chain) whereby one end will bind to a sand/soil particle to anchor itself in place, but the opposing end will be acting on the moisture molecules in the soil pores. A bit like having two people who don't like to talk to each other but placing a common friend in the middle (the linking chain) so there can at least be a communication channel between them.

### How to use them properly

Soil applied wetting agents have three key planks that constitute effective use. The right rate, applied via an effective method, and regularity of re-application.

Adhering to the label rate is just good practice, but there is also a safety element. Whilst uncommon (especially in the non-ionic surfactants) there can be membrane permeability issues and phytotoxicity under certain conditions so reducing this risk is important. More is not better for these type of products. Lifting rates will not provide greater longevity or effectiveness so save your money and limit applications to those directed by the label.

If we accept soil wetting agents are only effective once in the soil environment then the nozzles used, the carrier volume, and post application activities will either enhance or limit the products ability to do its job. Ideally these types of products should be applied using 08 or floodjet types of nozzles (big heavy droplets) and the carrier volume should be high to get the initial placement at the soil surface. Post application there should be an additional watering in to get the surfactant in the soil around the root zone where it needs to function. Success comes from the combination of all three parts of the application process.

Most wetting agents will recommend a 2-4 week recurrent application cycle. Adhering to this regime is important as they are not generally long lived and break down in reasonably short periods of time. Regular applications minimise the fluctuation between peak performance and no performance – trying to get continuity of function so turf health remains stable as well.



## How Nuturf can help you

Nuturf stock a generous range of soil wetting agents so there is sure to be one, or a few, that will be suitable for your site. A diverse spectrum of products can be found

within the Stamina wetting agent family that tries to cater for the full spectrum of possible needs. If you have hydrophobic soils needing an initial 'wetting' to re-establish a more normal soil moisture environment we have a product for you.

If you manage sand based greens or your site is dominated by a sandy profile and you are particularly challenged to get any moisture retention whatsoever, we can assist.

If areas of your course tend to hold a little too much moisture and you need to move this through the profile to maintain adequate soil oxygen and minimize Pythium risk – we have a solution for you too.

We have straight surfactants, blends, and high load concentrates. We have granular options for those that lack equipment to apply liquids and importantly we offer products manufactured and developed in Australia for Australian conditions.



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