

Cascade™

High Performance
Water Infiltration
Chemistry

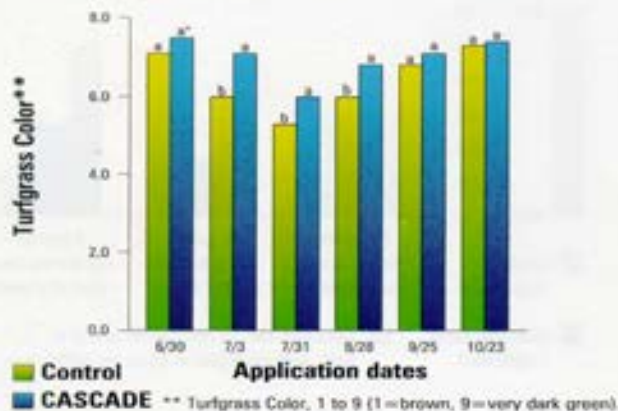
The Ultimate Wetting Agent that
treats the cause of Localized Dry Spot
(LDS) and promotes healthier turf and
improved root growth

LDS, or localized dry spot, can be caused by a variety of conditions including: thatch buildup, compaction and most commonly, Hydrophobic Soil. Soil hydrophobicity describes the buildup of water-repellent organic acids on soil particles that cause the vast majority of LDS. It's these hydrophobic conditions that limit water penetration into the soil profile and result in reduced root development and, consequently, significant declines in turf color and quality under stress conditions.

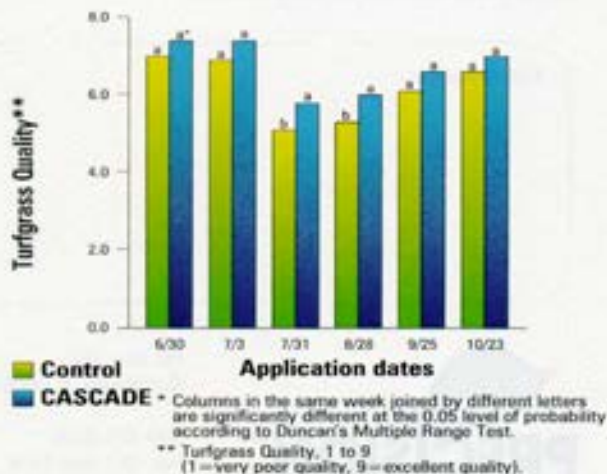
The results you want

Cascade moves water faster and deeper into the soil profile, it encourages greater root length and mass. The results are improved turfgrass color, quality and, as many Cascade users have reported, uniformity and faster greens.

'Penncross' Creeping Bentgrass color as affected by Cascade

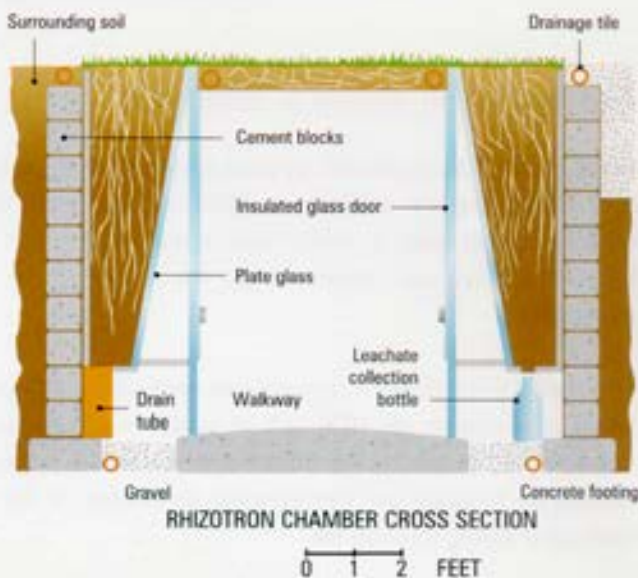


'Penncross' Creeping Bentgrass quality as affected by Cascade



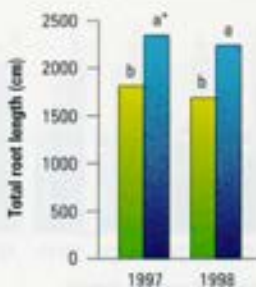
Measuring Root Development

A Rhizotron is an underground root observation laboratory which enables research to be carried out on turf and simultaneously view the turf root system through glass windows. This facility has been successfully used to evaluate the roots of turfgrass grown on hydrophobic soil treated with Cascade.



Cascade improves turfgrass root development

During the past two seasons, University of Georgia Rhizotron Studies showed Cascade-treated turfgrass grown on hydrophobic soil (LDS) produced greater root lengths which resulted in improvements in both color and quality during the peak stress months of summer.



* Columns in the same year joined by different letters are significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test.

Recent University
of Georgia Rhizotron
Studies have shown that
turfgrass treated with
CASCADE develops
greater root lengths in
hydrophobic soil during
the summer.

University of Georgia

The Ultimate Wetting Agent that treats the cause of Localized Dry Spot (LDS) and promotes healthier turf and improved root growth



Two application options to reduce LDS

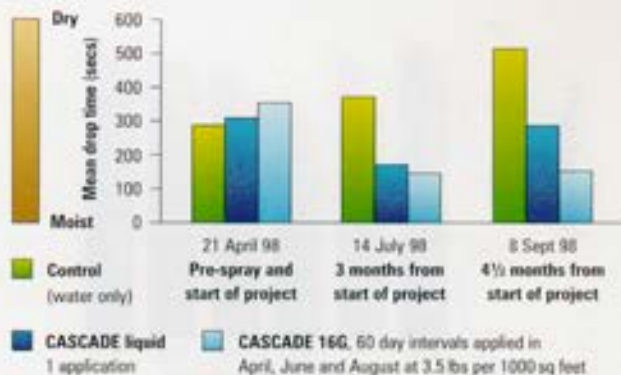
Localized Dry Spot caused by soil hydrophobicity can be measured using the well-known MED method (molarity of ethanol droplet test). In these trials, a moderately high soil hydrophobicity was observed at the initiation of the experiment.

The results indicate that either a single application of Cascade liquid, at 16 ounces per 1000 sq.ft. or split shot applications of Cascade 16G at 3.5 lbs per 1000 sq.ft. on 60-day intervals, sufficiently reduced the hydrophobic conditions of the soil from early spring through fall.

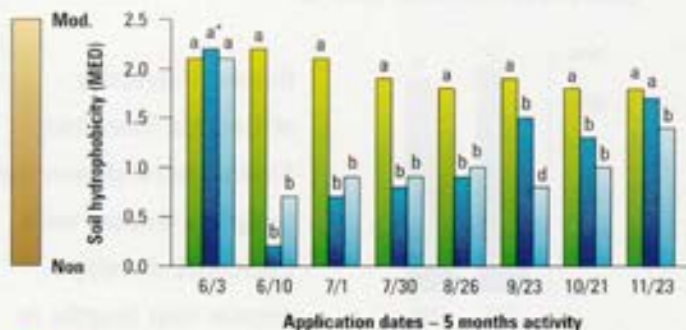
These application options allow the superintendent more flexibility in how he manages his turfgrass without burdening him with weekly or monthly applications.

Cascade improves water penetration speed

Using Cascade to reduce soil hydrophobicity allows water to penetrate the soil faster and, because of its unique residual activity, studies have also shown quicker recovery times for LDS-stressed turfgrass.



Water Droplet Test data taken from an STRI Field Trial at Royal Liverpool Golf Club, Hoylake, Wirral, UK. The values on the graph were obtained by calculating the average times for the 0-3 cm depths on the dates indicated.



Control
CASCADE liquid, 1 application at 16 ozs per 1000 sq feet
CASCADE 16G, 60-day intervals at 3.5 lbs per 1000 sq feet

Data: University of Georgia, Outdoor Study on Research Green, 1998

* Columns on the same date joined by different letters are significantly different at the 0.05 level of probability according to Duncan's Multiple Range Test.

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