



Primer Select puts an end to water related problems such as dry spots, wet spots and uneven wetting that affect the health, beauty and quality of turf on tees and greens.

Extensive field trials were conducted over a period of 2 years using Primer Select. The following information is indicative of the procedures used and results associated with trials conducted across the country.

A golf course with a history of water repellent soils in tees, greens and fairways was chosen as a typical candidate for a Primer Select trial. A total of 45 tees (five per hole) were used in this study. Beginning in June, monthly applications of Primer Select were made to three tees on each of nine holes. The two remaining tees served as untreated controls. All tees were rated monthly for visual quality and incidence of localized dry spots.

Untreated

At initiation of the study, turf quality in the untreated control tees (ladies and championship) was greater than in the remaining three tees due to lower user impact. By midsummer, wilt, localized dry spot (LDS) and turf decline were extensive in untreated controls. Soil cores from symptomatic areas (inset) were powder dry, even after irrigation or 1 inch of rainfall. Forty percent of cores (symptomatic and symptomless turf) from control tees contained dry soil.



Treated

After two applications of Primer Select, turf quality in treated tees was superior to that in the untreated controls. Even under conditions of severe summer stress when turf quality in controls was poor, afternoon wilt was negligible and no LDS was observed in turf on Primer Select treated tees. Soil in all cores removed from the treated tees (inset) was uniformly moist, indicating the establishment of matrix flow.



How Does Primer Select Work?

Primer Select is a proprietary blend of nonionic surfactants discovered through an extensive screening and field evaluation program. Primer Select acts through two mechanisms in treated soils.

Treatment with Primer Select via a program approach (monthly applications) reduces soil water repellency that commonly occurs in the thatch and upper 1-2 inches of the soil profile of highly managed turf, particularly greens (Figure 1). In addition, regular applications provide season-long management of soil hydrophobicity, thus enhancing penetration and infiltration of water into the rootzone.

Improved penetration and infiltration are only part of the equation. Primer Select also predisposes soils to be receptive to applied water (rainfall or irrigation). Untreated soils do not wet uniformly (Figure 2), but rather follow a path of least resistance referred to as preferential flow. Two common examples of preferential flow are macropore flow (worm holes, cracks, old roots) or fingered flow. Fingered flow is a significant problem in water repellent and/or homogeneous sandy soils (ie., sand-based greens or tees). Fingered flow (Figure 2) occurs when the wetting front becomes unstable as it infiltrates. The front breaks into “fingers” causing only a small portion of the soil mass to become wet, while the majority of the rootzone remains dry. These “fingers” act like funnels, directing and accelerating the flow of water and aqueous turf management chemicals below the rootzone. This results in a lack of uniform wetting of the rootzone, improper placement of turf management chemicals, and increased potential for leaching.

Under both laboratory (Figure 3) and field conditions, Primer Select was found to establish and maintain a uniform downward and lateral flow of water into the rootzone (MATRIX FLOW). The consequence of establishing MATRIX FLOW through the use of Primer Select in a program approach is increased receptivity to applied water, uniform rootzone moisture and distribution of turf management chemicals, and a dramatic reduction of fingered flow and its associated problems of dry spots, wet spots and uneven wetting.

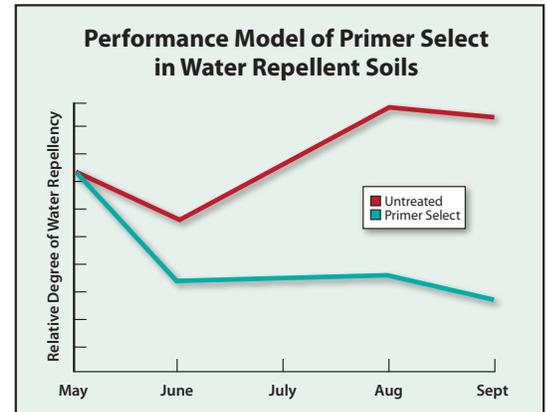


Figure 1.

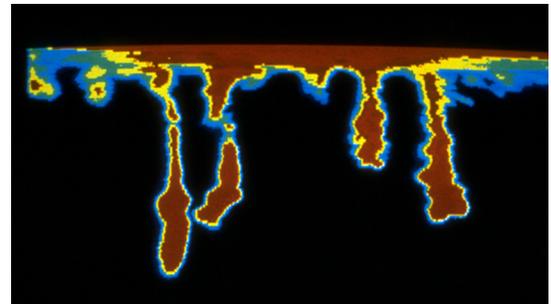


Figure 2. Computer enhanced photo showing “Fingered Flow” water movement through an untreated USGA sand green profile.

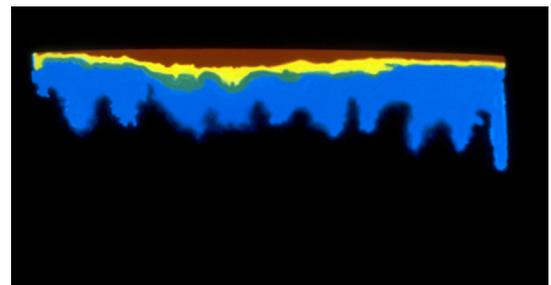


Figure 3. Computer enhanced photo showing “Matrix Flow” (uniform downward and lateral flow) water movement through a USGA sand green profile treated with Primer Select.