PBS150

POLYFUNCTIONAL BRANCHED SURFACTANT

PBS150 is a long-term surfactant utilizing a unique multi-branched molecular structure to address the source of performance loss – biodegradation of the surfactant molecule by soil microbes. **PBS150** sustains a longer uniform soil moisture profile.

A uniform supply of water within the soil profile is critical during heat and water stress periods to meet the transpirational demands of the plant. Equally important, is the need for a uniform supply of water to turfgrass roots during a period of recovery and repair. Without a sustained supply of water, the turfgrass plant will be unable to rebuild its root system and carbohydrate (sugar) reserves (needed to survive dormancy and for subsequent new growth requirements).

The ability of **PBS150** to improve the uniform soil moisture status of turfgrass offers the turfgrass manager a highly flexible surfactant system from which to address these two critical periods of successful turfgrass management -- Heat and Water Stress and Turfgrass Recovery.

- Reduces hydrophobic conditions on a sustainable basis up to 5 months or more
- Encourages a pattern of hydration and re-hydration that improves the amount of available water in the soil profile to meet the metabolic demands of the plant
- Restores the uniform movement of water into and through the soil matrix
- Improves stress tolerance
- Money back guarantee

LIQUID

Fairways, Tees, and Sports Turf

100 Day Moisture Management: Apply two applications 15 days apart at 160 ml in 8 L of water per 100 m^2 (5 ounces in 2 US gallons per 1,000 ft^2). Reapply 90 to 100 days after last treatment or as needed.

150 Day Moisture Management: Apply three applications 15 days apart at 160 ml in 8 L of water per 100 m^2 (5 ounces in 2 US gallons per 1,000 ft^2). Reapply 120 to 150 days after last treatment or as needed.

Bunker Faces, Collars, Roughs, and Lawns
Apply two applications 7 to 10 days apart at 250 ml in 8 L of water per 100 m^2 (8 ounces in 2 US gallons per 1,000 ft^2). Reapply after 120 to 150 days or as needed.

Irrigate with sufficient water to deliver **PBS150** to the soil profile - 1/8 inch (3 mm) or more recommended.

GRANULAR

Fairways, Tees, Bunker Faces, Collars, Roughs, Lawns, and Sports Turf

Single Application: (75 Day Moisture Management)
Apply 2 kg per 100 m^2 (4 pounds per 1,000 ft^2). Reapply after 60 to 75 days or as needed.

Split Application: (150 Day Moisture Management)
Apply two applications 7 to 10 days apart at 2 kg per 100 m^2 (4 pounds per 1,000 ft^2). Reapply a split application after 120 to 150 days or as needed.

Irrigation is necessary to release **PBS150** from the carrier. Irrigate before next mowing or leave baskets off.

RESEARCH

Evaluation of two commercially available wetting agents on soil moisture management

Evaluation Time Frame: March 30, 2016 to August 8, 2016, 132 Days

Location: Penn State University, Joseph E. Valentine Turfgrass Research Center

Treatments:
Trials were conducted on native soil fairways. Applications were made at label recommendations. Three applications of PBS150 regenerating multi-branched surfactant were made at 160 ml per 100 square meters. Three applications of an industry leading modified/methyl-capped block copolymer surfactant were made at 190 ml per 100 square meters.

Evaluation:
Evaluation of PBS 150 regenerating multi-branched surfactant and an industry leading modified/methyl-capped block copolymer surfactant on soil moisture management of an L-93 creeping bentgrass grown on a native soil fairway. Target moisture level was 35% Volumetric Water Content (VWC). Rewetting of the matrix occurred once 25% VWC was measured. Both measurements were completed using a Spectrum TDR 300 Moisture Meter. The dry down was initiated on June 8, 2016.
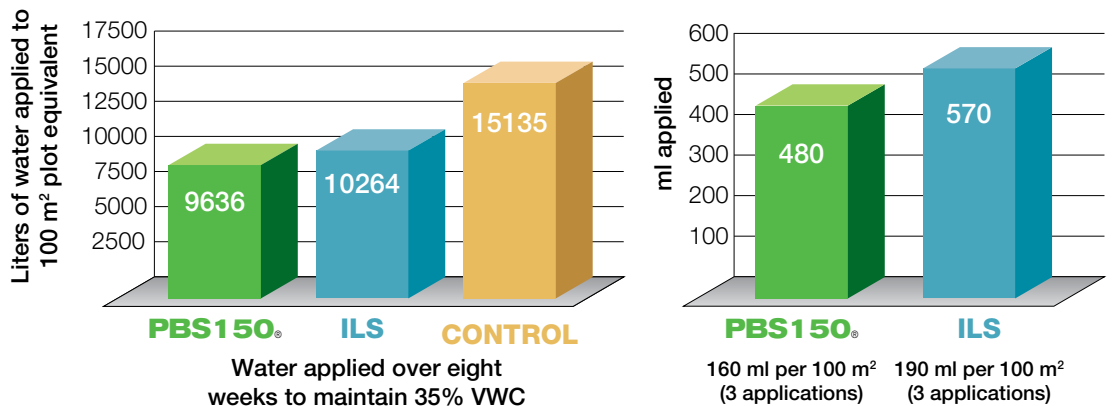
Conclusion:
PBS150 plots required 36% less water than the control plots maintained at 35% VWC. 36% less water is equivalent to 5,499,893 liters saved for 10 hectares of fairways in an 8 week period. PBS150 outperformed the industry leading surfactant by saving 6% more water and required less watering cycles than the control.

Effect of PBS150® on Soil Volumetric Water Content (VWC) versus an Industry Leading Surfactant (ILS)

6% Water Savings over ILS with 16% Less Applied Product

36% Water Savings over Control

Liters of water applied to 100 m² plot equivalent

PBS150®	ILS	CONTROL
9636	10264	15135

Water applied over eight weeks to maintain 35% VWC

ml applied

PBS150®	ILS
480	570
160 ml per 100 m² (3 applications)	190 ml per 100 m² (3 applications)

* Trials performed by Penn State University in 2016