

Application Best Practices

OARS PS
OARS HS

PBS150
POLYFUNCTIONAL
BRANCHED SURFACTANT

Hydra-30 Plus

- Apply all surfactants within label rates to ensure efficacy is achieved.
- Begin using surfactants early in the growing season before water repellency and LDS conditions are apparent.
- Best results are achieved when surfactants are used in a full season program and not when signs and symptoms of water repellency and turfgrass stress appear.
- When making a surfactant application with a sprayer, utilize a 2 gallons per 1000 ft² water carrier.
- When making a surfactant application on days with high temperatures and low humidity, be sure to water surfactant off the leaf blade immediately. Fully water in later that evening.
- OARS HS, OARS PS, PBS150 and Hydra-30 Plus each have a neutral pH allowing them to be easily tank mixed. It is still important to perform a jar test to confirm compatibility.


WORM POWER
TURF

- Ensure your soil temperatures at a 3-inch depth are above 55° before making your first application.
- Apply Worm Power® Turf at label rates to ensure microbial populations are achieved.
- Ideally, Worm Power Turf should be watered in immediately after application. If not possible, within 2 hours of application, rotate heads 1 - 2 times to wash off leaf to mitigate photo-degradation. Fully water in that night
- Compatible with most products but always jar test prior to mixing in sprayer. Worm Power Turf is best applied at a tank mix pH of 5.5 - 7.0.
- Worm Power Turf consists of microorganisms. Users should avoid mixing with fungicides that could adversely affect these types of organisms.



Legacy Moisture Management Solutions

Hydration

AQAAC™ **Aquifer®** **Conduit90®** **OARS®**

Penetrant

Aqua-Aid® **FWY-ISP™**

Root and Repair

Aqua-Root® **AQM Tougher Turf®** **Recover™**

Pellets

Aquifer®

Aquifer provides hydration for managing water repellency and the prevention of localized dry spot conditions. It provides uniform downward and lateral water movement in the top several inches of the root zone. MAXI-Pellets available.

Aqua-Aid®

Aqua-Aid is a penetrating wetting agent formulated to increase infiltration of water into the soil profile. MAXI-Pellets available.

OARS®

OARS is the corrective approach to remove the buildup of organic acids that coat the surface of sand particles which cause water repellency and localized dry spot conditions.

AQM Tougher Turf®

AQM Tougher Turf is a "balanced for performance" product that contains the proper ratios of cytokinins and auxins especially beneficial to root establishment, development, and growth when sprigging or sodding.

Aqua-Root®

Aqua-Root is the combination of Aqua-Aid penetrant and the most active humic and fulvic acids available in the market today which encourages deeper root growth and nutrient chelation.

INNOVATIVE TECHNOLOGIES
CUSTOMIZED SOLUTIONS



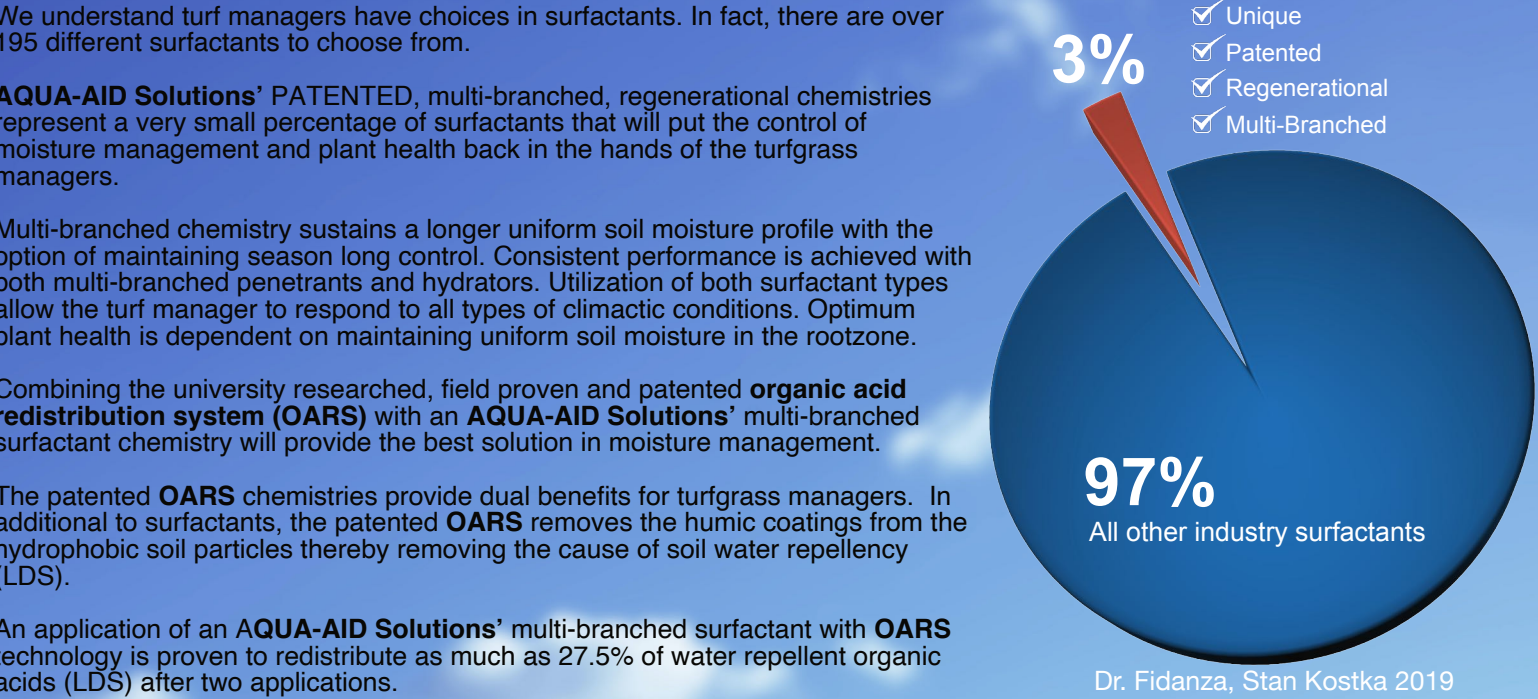
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Worm Power is a registered trademark of RT Solutions LLC.

Innovative Solutions for Maximizing Soil Moisture Hydration Through a Program Approach

Our unique, patented surfactant chemistries put the control of moisture management and plant health back in the hands turfgrass manager. Whether short-term or multi-branched long-term activity is desired, blending chemistries is available to keep the surface firm while adequately hydrating the soil profile.



PATENTED • MULTI-BRANCHED • REGENERATIONAL



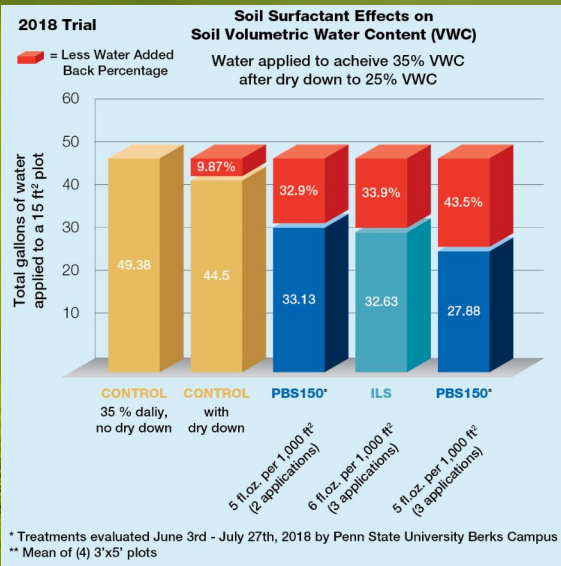
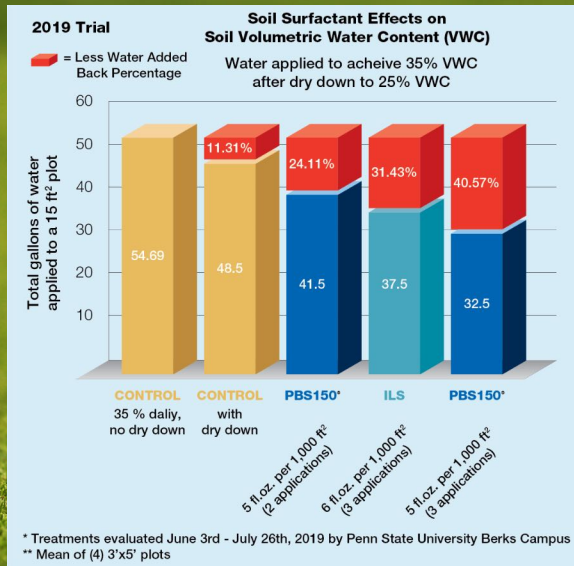
Evaluation Time Frame:
March 30, 2016 to August 8, 2016, 132 Days

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 5 ounces per 1,000 square feet. Three applications of an industry leading modified/methyl-capped block copolymer surfactant (ILS) were made at 6 ounces per 1,000 square feet.



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 1,470,150 gallons saved for 25 acres of fairways in an 8 week period. PBS150 outperformed the industry leading surfactant by saving 6% more water and requiring fewer watering cycles than the control.





AQUA-AID SOLUTIONS Programmed Approach to Soil Moisture Management

Greens Programs		Initial Application Rate (Per 1000 ft²)*	In-season Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations	
	OARS PS , Soil Penetrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched penetrant chemistry.	Dial-In™ Program The Dial-In™ program with OARS HS and OARS PS puts the control of moisture management in the turf manager's hand. Turf managers can customize their moisture management program by adjusting the ratios of OARS HS and OARS PS to meet the demands from weather, cultural practices, daily play and tournaments.	4 - 5 ounces	2 - 3 ounces	12 - 14 Days	Irrigate with sufficient water to deliver OARS PS to the soil profile
				4 - 5 ounces	30 Days	½ inch or more recommended
	OARS HS , Soil Hydrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched hydrating chemistry.		4 - 5 ounces	2 - 3 ounces	12 - 14 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile
				4 - 5 ounces	30 Days	½ inch or more recommended
* In-season apps begin 2 weeks after Initial Application						

Enhanced Greens Program		Initial Application Rate (Per 1000 ft²)*	In-season Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations	
 OARS PS TANK MIX WORM POWER TURF	OARS PS , Soil Penetrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched penetrant chemistry.	Multi-branched surfactant chemistry also creates great delivery tools for soil amendments. AQUA-AID Solutions continues to conduct field research on both surfactant chemistries and Worm Power® Turf . The addition of Worm Power Turf to your surfactant program has many plant health benefits including:		2 - 3 ounces	12 - 14 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile
			4 - 5 ounces OARS PS	4 - 5 ounces	30 Days	½ inch or more recommended
			16 ounces Worm Power Turf	8 ounces	12 - 14 Days	Irrigate off the leaf blade immediately
			16 ounces	30 Days	Water in with OARS PS at night	
 OARS HS TANK MIX WORM POWER TURF	OARS HS , Soil Hydrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched hydrating chemistry.	<ul style="list-style-type: none">• Increased root growth, stress tolerance, and plant vigor• Improved nutrient efficiency• Improved drought tolerance		2 - 3 ounces	12 - 14 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile
			4 - 5 ounces OARS HS	4 - 5 ounces	30 Days	½ inch or more recommended
			16 ounces Worm Power Turf	8 ounces	12 - 14 Days	Irrigate off the leaf blade immediately
			16 ounces	30 Days	Water in with OARS HS at night	
			* In-season apps begin 2 weeks after Initial Application			

Fairways, Tees and Roughs Program		Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
 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.	100 Day Program (2) 5 ounce	150 Day Program (3) 5 ounce	15 days apart Irrigate with sufficient water to deliver PBS150 to the soil profile ½ inch or more recommended
		Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
	Hydra-30 Plus is formulated to allow turf managers the ability to improve the overall moisture management within agronomic programs. Hydra-30 Plus improves overall root zone moisture by restoring uniform hydration throughout the root zone across a variety of soil types.	3 ounces	30 Days	Irrigate with sufficient water to deliver Hydra-30 Plus to the soil profile ½ inch or more recommended

Enhanced Tee and Fairways Programs		Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
 TANK MIX WORM POWER TURF	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.	100 Day Program (2) 5 ounces	150 Day Program (3) 5 ounces	15 days apart Irrigate with sufficient water to deliver PBS150 to the soil profile ½ inch or more recommended
		16 ounces Worm Power Turf	30 Days	Irrigate off the leaf blade immediately Water in with PBS150 at night
 TANK MIX WORM POWER TURF	Multi-branched surfactant chemistry also creates great delivery tools for soil amendments. AQUA-AID Solutions continues to conduct field research on both surfactant chemistries and Worm Power Turf . Biological inputs take time and need to be implemented as a programmed approach. The addition of Worm Power Turf to your surfactant program has many plant health benefits including: <ul style="list-style-type: none">Increased root growth, stress tolerance, and plant vigorImproved nutrient efficiencyImproved drought tolerance	5 ounces OARS HS	100 Day Program 5 ounces PBS150	15 days apart Irrigate with sufficient water to deliver OARS HS and PBS150 to the soil profile ½ inch or more recommended
	Utilizing OARS HS as your initial application will help correct and mitigate soil water repellency (LDS). Continuing the program with PBS150 provides a long-term surfactant utilizing a unique multi-branched molecular structure. Multi-branched surfactant chemistry also creates great delivery tools for soil amendments like Worm Power Turf . The addition of Worm Power Turf to your surfactant program has many plant health benefits.	5 ounces OARS HS	150 Day Program (2) 5 ounce PBS150	30 days apart Irrigate off the leaf blade immediately Water in with surfactant at night
		16 ounces Worm Power Turf	30 days apart	