

OARS Ps
OARS HS

PBS150
POLYFUNCTIONAL
BRANCHED SURFACTANT

Hydra-30 Plus



Turf Power

Application Best Practices

- 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.

- Ensure your soil temperatures at a 3-inch depth are above 55° before making your first application.
- Apply Turf Power at label rates to ensure microbial populations are achieved.
- Ideally, Turf Power 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. Turf Power is best applied at a tank mix pH of 5.5 - 7.0.
- Turf Power 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



AQUA-AID Solutions • 5484 S. Old Carriage Road, Rocky Mount, NC 27803 • 800.394.1551

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 of turfgrass managers. 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

We understand turf managers have choices in surfactants. In fact, there are over 195 different surfactants to choose from.

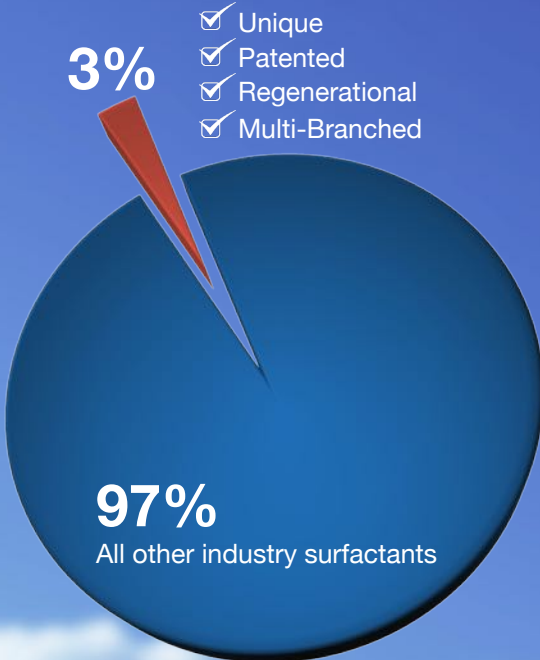
AQUA-AID Solutions’ PATENTED, multi-branched, regenerative chemistries represent a very small percentage of surfactants that will put the control of moisture management and plant health back in the hands of the turfgrass managers.

Multi-branched chemistry sustains a longer uniform soil moisture profile with the option of maintaining season long control. Consistent performance is achieved with both multi-branched penetrants and hydrators. Utilization of both surfactant types allow the turf manager to respond to all types of climactic conditions. Optimum plant health is dependent on maintaining uniform soil moisture in the rootzone.

Combining the university researched, field proven and patented **organic acid redistribution system (OARS)** with an **AQUA-AID Solutions’** multi-branched surfactant chemistry will provide the best solution in moisture management.

The patented **OARS** chemistries provide dual benefits for turfgrass managers. In addition to surfactants, the patented **OARS** removes the humic coatings from the hydrophobic soil particles thereby removing the cause of soil water repellency (LDS).

An application of an **AQUA-AID Solutions’** multi-branched surfactant with **OARS** technology is proven to redistribute as much as 27.5% of water repellent organic acids (LDS) after two applications.



Dr. Fidanza, Stan Kostka 2019

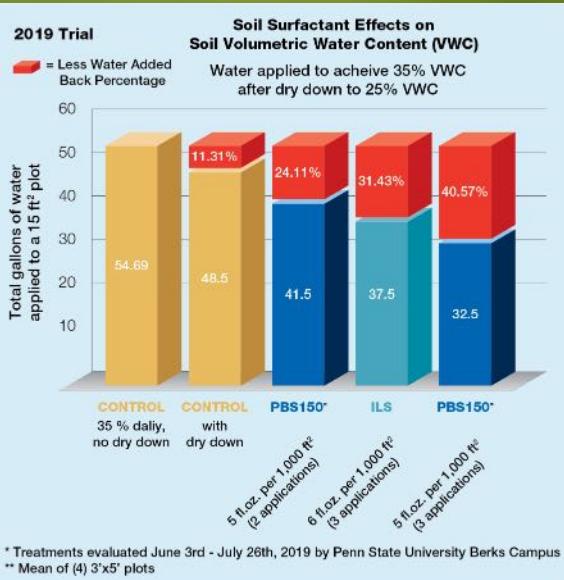
Evaluation Time Frame:
March 30, 2016 to August 8, 2016, 132 Days

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

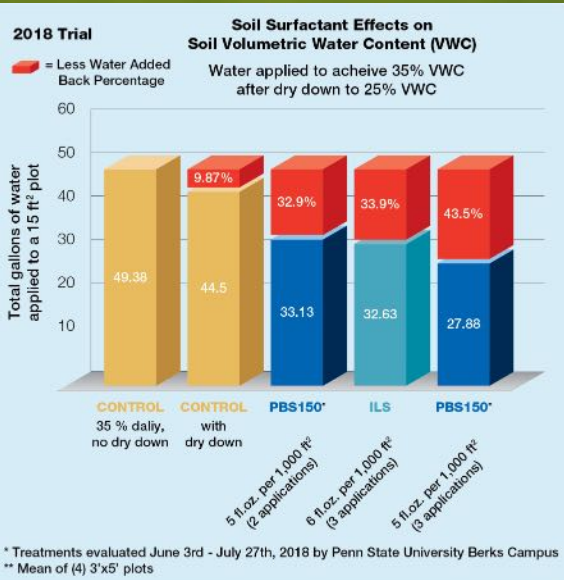
Treatments:
Trials were conducted on native soil fairways. Applications were made at label recommendations. Three applications of PBS150 regenerating multi-branched surfactant were made at 5 ounces per 1,000 square feet. Three applications of an industry leading modified/methyl-capped block copolymer 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.



* Treatments evaluated June 3rd - July 26th, 2019 by Penn State University Berks Campus
** Mean of (4) 3'x5' plots



* Treatments evaluated June 3rd - July 27th, 2018 by Penn State University Berks Campus
** Mean of (4) 3'x5' plots

AQUA-AID SOLUTIONS Programmed Approach to Soil Moisture Management

Greens Programs



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.



OARS HS, Soil Hydrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched hydrating chemistry.

Initial Application Rate (Per 1000 ft²)*	In-season Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
4 - 5 ounces	2 - 3 ounces 4 - 5 ounces	12 - 14 Days 30 Days	Irrigate with sufficient water to deliver OARS PS to the soil profile 1/8 inch or more recommended
4 - 5 ounces	2 - 3 ounces 4 - 5 ounces	12 - 14 Days 30 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile 1/8 inch or more recommended

* In-season apps begin 2 weeks after Initial Application

Enhanced Greens Program



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 **Turf Power**. The addition of **Turf Power** to your surfactant program has many plant health benefits including:

- Increased root growth, stress tolerance, and plant vigor
- Improved nutrient efficiency
- Improved drought tolerance



OARS HS, Soil Hydrating Surfactant, is a combination of the patented organic acid redistribution system (OARS) with a multi-branched hydrating chemistry.

Initial Application Rate (Per 1000 ft²)*	In-season Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
4 - 5 ounces OARS PS 16 ounces Turf Power	2 - 3 ounces 4 - 5 ounces 8 ounces 16 ounces	12 - 14 Days 30 Days 12 - 14 Days 30 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile 1/8 inch or more recommended Irrigate off the leaf blade immediately Water in with OARS PS at night
4 - 5 ounces OARS HS 16 ounces Turf Power	2 - 3 ounces 4 - 5 ounces 8 ounces 16 ounces	12 - 14 Days 30 Days 12 - 14 Days 30 Days	Irrigate with sufficient water to deliver OARS HS to the soil profile 1/8 inch or more recommended Irrigate off the leaf blade immediately Water in with OARS HS at night

* In-season apps begin 2 weeks after Initial Application

Fairways, Tees and Roughs Program



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.



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.

Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
100 Day Program (2) 5 ounce	150 Day Program (3) 5 ounce	15 days apart
Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
3 ounces	30 Days	Irrigate with sufficient water to deliver Hydra-30 Plus to the soil profile 1/8 inch or more recommended
Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations

Enhanced Tee and Fairways Programs



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 **Turf Power**. Biological inputs take time and need to be implemented as a programmed approach. The addition of **Turf Power** to your surfactant program has many plant health benefits including:

- Increased root growth, stress tolerance, and plant vigor
- Improved nutrient efficiency
- Improved drought tolerance



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 **Turf Power**. The addition of **Turf Power** to your surfactant program has many plant health benefits.

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 1/8 inch or more recommended
16 ounces Turf Power		30 Days	Irrigate off the leaf blade immediately Water in with PBS150 at night
Initial Application Rate (Per 1000 ft²)	Follow-up Application Rate (Per 1000 ft²)	Application Timing	Watering Recommendations
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 1/8 inch or more recommended
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