



# How does Revolution Perform in a Cool, Wet Season?

## A Cool, Wet Summer

During the summer of 2013, Dr. Xi Xiong of the University of Missouri conducted a field evaluation of Aquatrols' Revolution soil surfactant to determine its effects on turfgrass under diverse climactic conditions. The evaluation was conducted on a USGA specification green with a history of problems related to Localized Dry Spot

(LDS). The summer of 2013 was much cooler than normal in Missouri, with more rainfall recorded than in years past. Dr. Xiong's research ultimately showed that Revolution improved turf quality, increased root length, and produced significantly more consistent rootzone moisture compared to the untreated control.

## Improve Turf Quality

During the field evaluation, plots were randomized and irrigated to either 75% or 50% daily evapotranspiration (ET) replacement, according to two separate irrigation regimes.

Researchers rated visual turf quality on a scale from 1 to 9 each week, with a minimum rating of 6 deemed as "acceptable." Throughout the duration of the study, Revolution-treated plots consistently produced higher quality turf than the untreated control at both 75% ET replacement (Figure 1) and 50% ET replacement (Figure 2). The average rating for Revolution-treated plots did not fall below the acceptable range at any point in the evaluation.

The photograph below shows Revolution-treated plots outlined in white. While the other plots show widespread symptoms of localized dry spot, those treated with Revolution have produced highly consistent turf cover and quality. Researchers noted this reduction in LDS throughout the study.

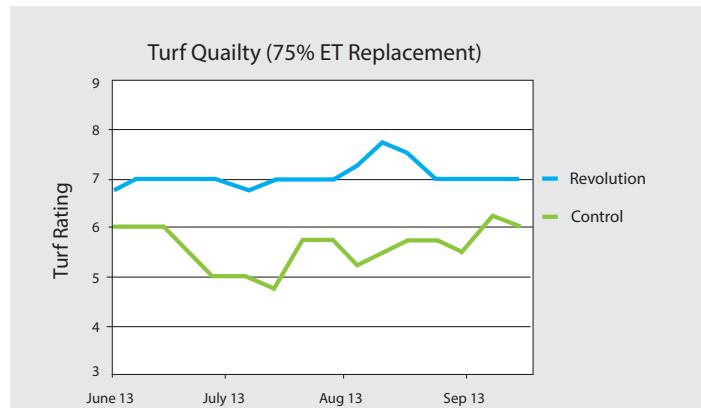


Figure 1. Revolution produced consistently higher rated turf over the untreated control at 75% ET replacement (University of Missouri, 2013)

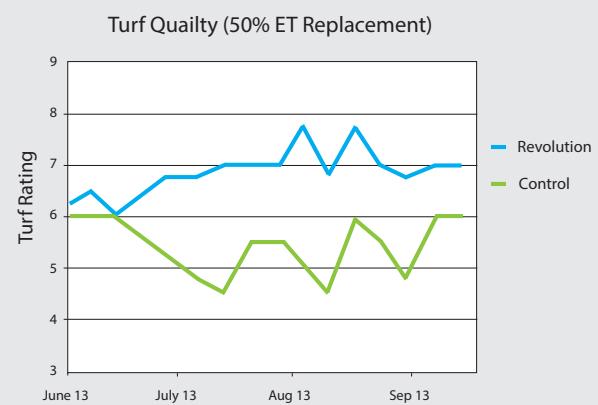
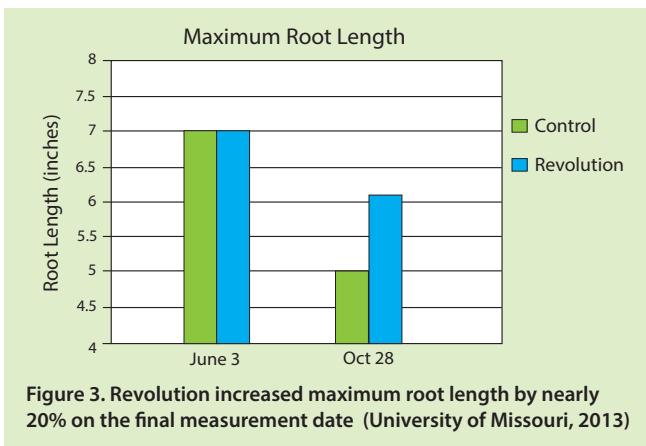
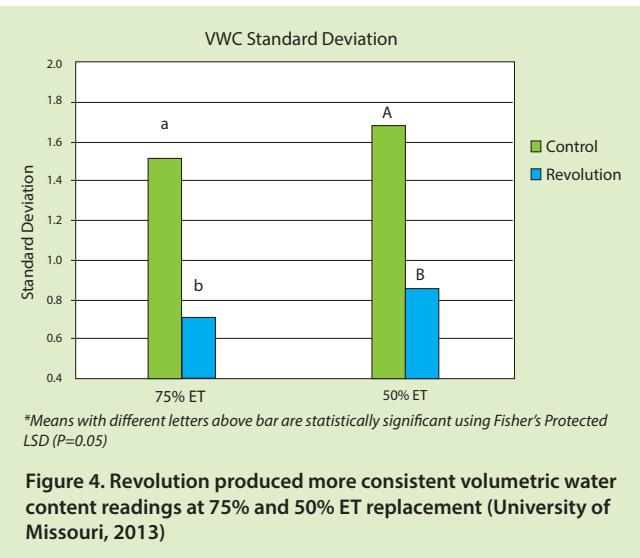


Figure 2. Revolution produced consistently higher rated turf over the untreated control at 50% ET replacement (University of Missouri, 2013)

## A Model of Consistency

There were no dramatic differences between individual volumetric water content readings throughout the study. However, researchers did note a significant difference in the *consistency* of rootzone moisture between the Revolution-treated plots and the untreated control.

Standard deviation is a measure of variation from the average for a given set of data points. In short, a lower standard deviation means less variability within the data set. Dr. Xiong's data showed that Revolution-treated plots produced a much lower standard deviation for volumetric water content than the untreated control. This was true at both levels of irrigation (Figure 4). Put simply, Revolution produced volumetric water contents that were significantly *more consistent* than the control.



## Healthy Turf, Rain or Shine

When it comes to growing healthy turf, consistency is key. Unfortunately for turf managers, weather is often unpredictable. Changes in the amount of precipitation from day to day and season to season can greatly affect the health, appearance, and playability of your turf.

## Increase Root Length

Maximum root lengths were measured at the beginning and end of the field evaluation. Though root lengths were identical before treatments were applied, the maximum root length for Revolution-treated plots measured nearly 20% higher than the untreated control on the final measurement date (Figure 3).

Too much or too little moisture in the rootzone can restrict root formation. By providing an optimal balance of air and water in the rootzone, Revolution encourages root growth and a strong foundation for healthy turfgrass.

By optimizing the amount of moisture available in the rootzone, Revolution provides a more consistent growing environment and a strong basis for growing healthy turf, rain or shine.