



**HydraSmart**  
HIGH EFFICIENCY FOLIARS

# 2017 Research

- Creeping Bentgrass Putting Green Response to Foliar Fertilization, 2017
- HydraSmart VS Industry Competitive Program

# Steve McDonald– Turfgrass Disease Solutions, LLC

- Professor Rutgers University
- Industry consultant and research analyst for golf courses, chemical manufacturers and suppliers and fertilizer companies.
- **Research projects include, but not limited to:**
  - Summer Patch Control
  - Fairy Ring Control (2)
  - Impact of post irrigation on dollar spot control
  - Algae Control with phosphites and daconil
  - Brown Patch control
  - Fungicide impact on color
  - Management of color decline
  - Weed, Insect and many fertility projects as well.
- **Publications (Industry & Science) include, but not limited to:**
  - Curative Control of Yellow Tuft – Golf Course Management
  - Dollar Spot – United States Golf Association (USGA)
  - Influence of spray volume and application timing – Golf Course Management
  - First Report of Waitea – The American Phytopathological Society
  - Bentgrass Tolerance to Sodium tank mixed with iron & nitrogen – Plant Management Network
  - And much more.

# 2017 Research

- Conducted on a practice green at Spring Hollow Golf Course located in Spring City PA.
- Built similar to a “California” and seeded with PennCross Bentgrass more than 20 year ago.
- Mowed daily at 0.125 inches and received regular foot traffic during the trial period.
- Green considered to be extremely lean. No fertility since early autumn of 2016.
- Although, one of the goals was to put these treatments under stress,
- Summer of 2017 in southeastern Pennsylvania was marked with frequent rainfall and stress was only observed on the plots on one date.

# 2017 Research

- Plots were treated using a single nozzle equipped with a 8010 flat fan nozzle calibrated to deliver 88 gallons per acre.
- 7 Day treatments: Applied on 24 and 30 May, 4, 15, 22 and 28 June, and 5, 10 and 17 and 24 July.
- 14 Day treatments: Applied on 24 May, 4 and 22 June, 5 July and 17 July 2017.
- Treatments were designed to supply the same amount of nitrogen. Minors and other supplemental materials were different.

# 2017 Research

- Plots were rated for quality, color, and % stress.
- **Quality** was assessed on a 1-9 scale where 7= minimal acceptable level for putting green turf and 9= optimal quality and density (Table 1).
- **Color** was assessed on a 1-10 scale where 5= untreated color and any increase in color ratings indicated an increase in color (Table 2).
- **Root** samples were taken twice. Root samples were measured using a volume displacement method where the depth of the samples were all the same (i.e. 6 inches x  $\frac{3}{4}$  inch probe), and all of the soil was washed from the sample using a screen. Turf and thatch was left intact. This sample was then placed into a beaker with a known amount of water and the change in the volume was recorded.
- **% stress** was assessed on a plot area basis where 0= no visible stress and 100= entire plot area weak, wilting and thinning (Table 3). **No phytotoxicity** or other negative non-target effects were observed on any assessment. All data were subjected to ANOVA using ARM.



# 2017 Research – Soil Test Results

- CEC= 2.07
- Organic matter= 0.70
- pH=8.0
- Sulfur= 3 ppm
- M3 P2O5= 85 lbs/A
- Calcium= 671 lbs/A (81.21%)
- Magnesium= 52 lbs/A (10.49%)
- Potassium= 18 lbs/A (1.12%)
- Boron= 3.22 ppm
- Iron= 105 ppm
- Manganese= 8 ppm
- Copper= 0.34 ppm
- Zinc= 1.99 ppm
- Aluminum= 64 ppm
- Ammonium= 1 ppm
- Nitrate= 1 ppm

# 2017 Research – Maintenance Applications

Product	Rate	Application Date
Velista Allectus	0.5 oz. / M 1.5 oz. / M	4.24.17
Briskway Provaunt	0.725 oz. / M 12 oz / acre	5.22.17
Secure Acelepryn	0.5 oz. / M 12 oz. / acre	5.30.17
Scimitar Meridian Torque Daconil Ultrex	10 oz. / acre 17 oz. / acre 0.6 oz. / M 5 lb. / acre	6.6.17
Briskway Ference	0.5 oz. / M 12 oz. / acre	6.15.17
Briskway Daconil Ultrex	0.5 oz. / M 2.5 oz. / M	6.22.17
Chipco 26 GT Daconil Ultrex	3 oz. / M 2 oz. / M	7.5.17
Lexicon	0.47 oz. / M	7.17.17



# 2017 Research – HydraSmart Program

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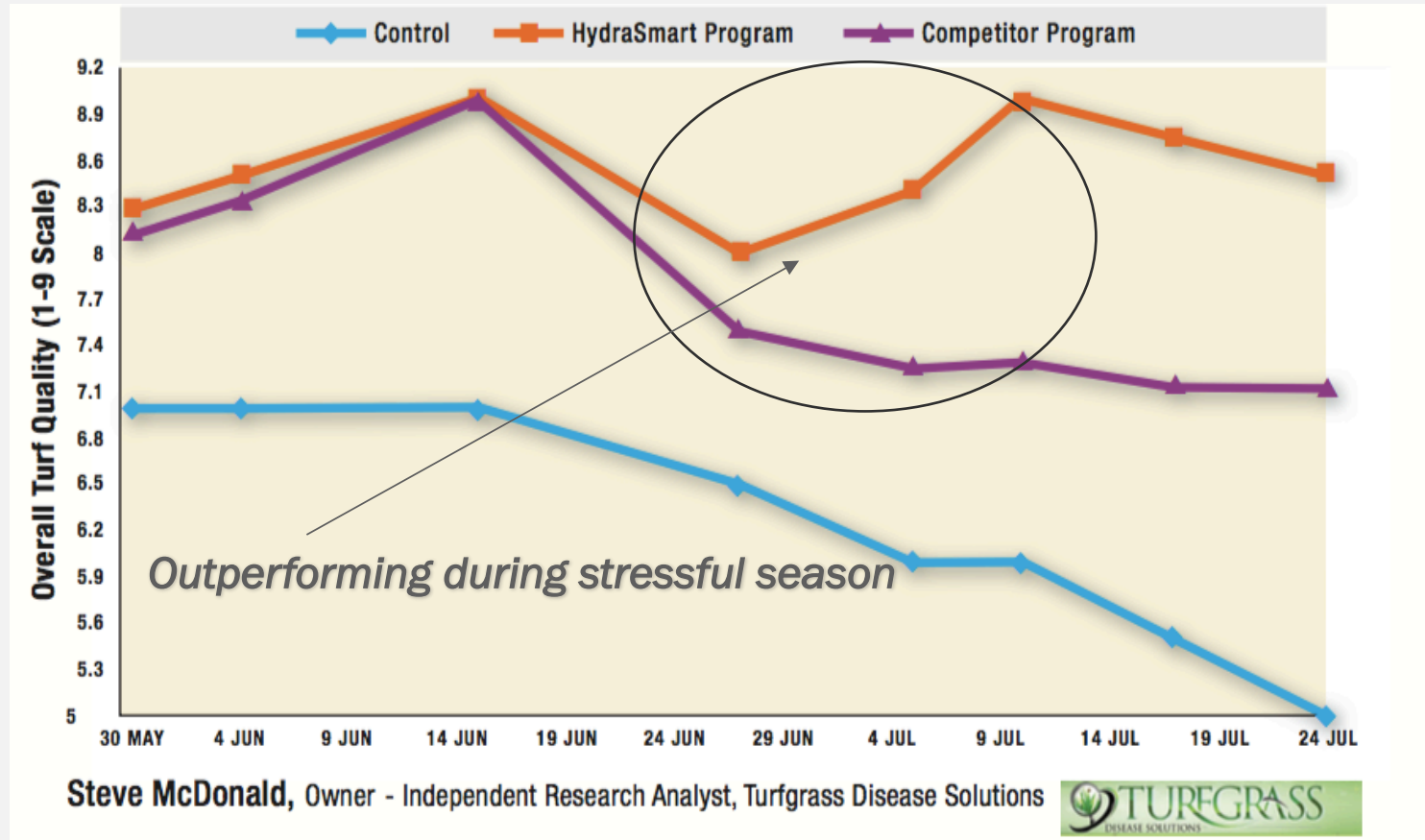
## 14 Day Intervals

Product	Rate / M	Nitrogen
Hydra-Fuse 18-0-6	5 oz.	.10 lb N (Total .5)
Hydra-Phite Plus	3 oz.	
Hydra-Fe 12-0-0	3 oz.	
Hydra-Fense	3 oz.	

## 7 Day Intervals

Product	Rate / M	Intervals
Hydra-Fuse 18-0-6	4 oz.	.05 lb. N (Total .5)
Hydra-Minors	5.5 oz.	
Hydra-Kace	2.5 oz.	
Hydra-Fense	2.0 oz.	
Hydra-Mn Combo	5 oz.	

# Overall Turfgrass Quality – 14 Day Program



# Overall Turfgrass Quality – 14 Day Program

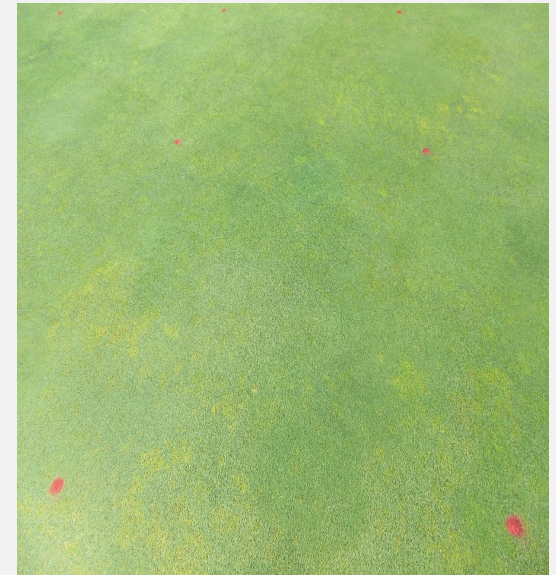
HydraSmart Program



Check - Untreated



Competitive Program



Pictures taken **June 28, 2017**

Application Dates: 24 May, 4 and 22 June, 5 July and 17 July 2017 (Total 0.5 lb N / M)

Research conducted by: Steve McDonald, Turfgrass Disease Solutions, LLC during summer of 2017



## Bentgrass putting green: Stress as impacted by HydraSmart fertilizer program

- Percent stress was assessed on a plot area basis where 0= no visible stress and 100= entire plot area weak, wilting and thinning . No phytotoxicity or other negative non-target effects were observed on any assessment. All data were subjected to ANOVA using ARM.
- 7 Day treatments were applied on May 24 and 30; June 4, 15, 22 , 28; July 5, 10, 17, 24 July. (0.5 lb. N per 1000 sq. ft. total applied during trial)
- 14 Day treatments were applied on May 24; June 4, 22; July 5, 17 (0.5 lb. N per 1000 sq. ft. total applied during trial)