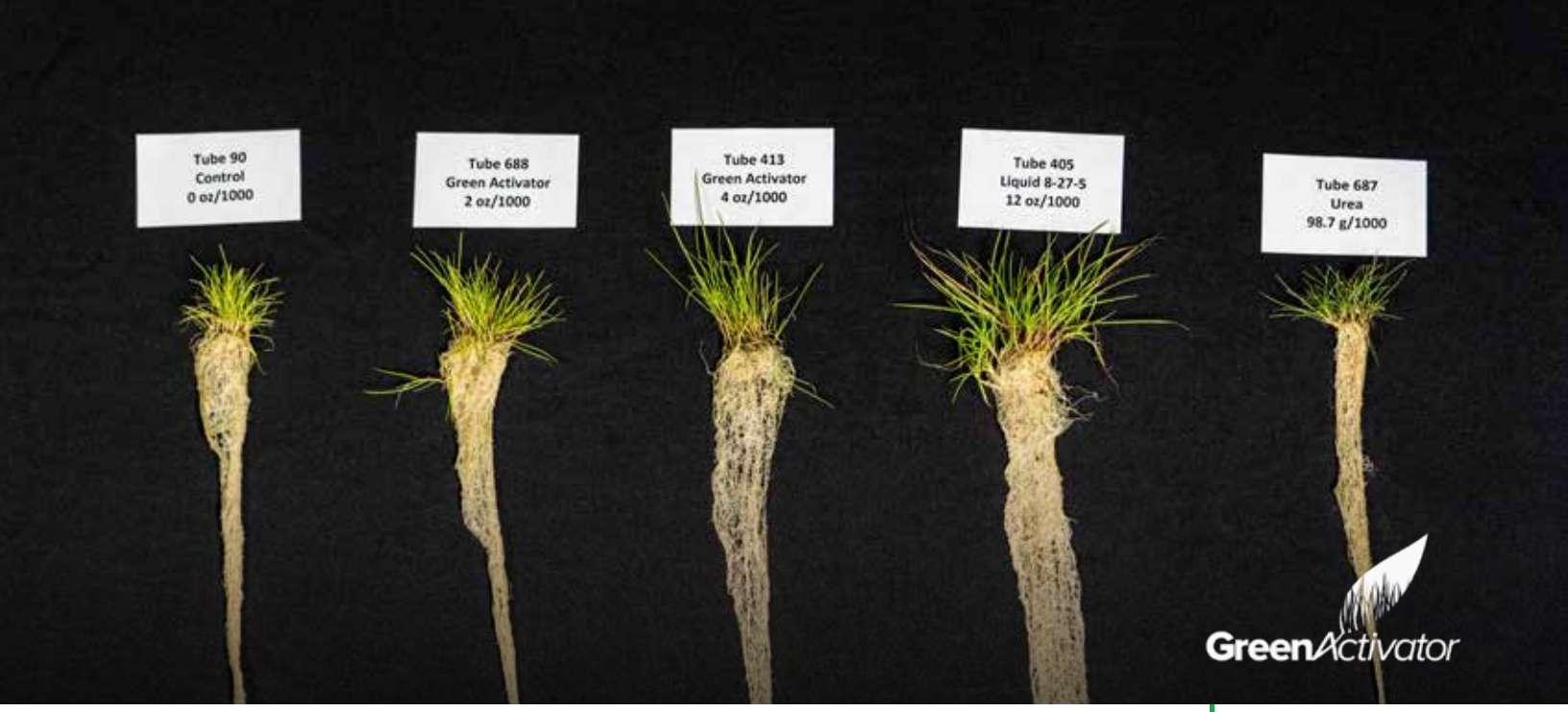


# University Research Root Study

**Date:** Fall 2020 - 2022

**Location:** Ames, Iowa

## Objective

Recognizing the need for unbiased research in this area, ISU was approached in the spring of 2020 to conduct a third-party trial with GreenActivator™. **The study's objective was to determine how GreenActivator™ compares to other commercially available fertilizers for turfgrass root branching and mass, among other factors.**

## Research

The research was conducted by Dr. Adam Thoms, an associate professor within the Department of Horticulture, and his team. The study consisted of multiple phases, including field evaluations and controlled greenhouse trials spanning four months.

The researchers compared the effects of different rates of the GreenActivator™ treatment, including rates above the label recommendation. The treatments were compared against an industry-standard competitor's product and an inexpensive, urea-based control.

## Rates & Application Method: All rates are in ounces per square foot

| | TREATMENT | RATE |
|---|---|---|
| 1 | Control | N/A |
| 2 | GreenActivator™ | 2 oz/1,000 sq ft |
| 3 | GreenActivator™ | 4 oz/1,000 sq ft |
| 4 | Liquid 8-27-5 Fertilizer | 12 oz/1,000 sq ft |
| 5 | Urea 46-0-0 Liquid | 98.7 g/1,000 sq ft |

The research team used rooting tubes to assess root growth. Turfgrass samples were grown in these tubes, treatments were applied, and then the roots were carefully washed, scanned, and analyzed for root mass and branching patterns. Researchers measured **total root length, root area, above-ground dry biomass, volume, and tallest shoot of the harvested turfgrass.**

In addition to root measurements, measurements related to turfgrass color, quality, and cover were taken to assess the effects of different treatments.

## Key Findings

Overall, the study found that **GreenActivator™ enhanced turfgrass quality and cover, and at the four ounces per 1,000 square foot rate, promoted longer root development** compared to the unfertilized control and other fertilizers.

GreenActivator™ at two and four ounces per 1,000 square feet provided 20% greater root length, over 400% more root volume, and exponentially greater root biomass and dry root weight compared to the unfertilized control. It also performed similarly to a competitive 8-27-5 fertilizer on all of the variables tested. Improved results in every category were observed as soon as two weeks after GreenActivator™ application, with optimum measurements ten weeks post-application. In many of the performance areas, GreenActivator™ at both rates and the liquid 8-27-5 performed better than Urea.

There were minimal differences in results between the rates of GreenActivator™, and the researchers concluded that the lower dosage label recommendation of two ounces per 1,000 square feet is the correct application rate for the GreenActivator™ product.

## Industry Implications

The research provided valuable insights for the turfgrass industry. It demonstrated that treatment with GreenActivator™, when used at the recommended rate, effectively promoted deeper root growth in creeping bentgrass. **The findings also challenged the notion that exceeding label rates would lead to better results, suggesting that accurate application is key.**

## Future Research

The study's success has led to broader collaborations involving multiple universities and research sites. The current multi-site study aims to evaluate the effects of GreenActivator™ treatment on different grass species, both cool-season and warm-season, with a focus on golf course-specific factors like ball roll and surface permanence on putting greens. The research team is also working to gain a better understanding of the physiological pathways affected by GreenActivator™.

## Conclusion

Through a well-structured and controlled third-party research approach, Dr. Thoms and his team of turfgrass experts have **proven the superior performance of GreenActivator™ on creeping bentgrass rooting systems.**

The study's findings clearly show that GreenActivator™, applied in the recommended dosage of two ounces per 1,000 square feet, outperforms commonly used commercial fertilizers in all five root measurement categories studied.

The study's findings also emphasize the importance of proper application rates and challenge the notion that more product is always better. Finally, this case study demonstrates the significance of third-party research in providing unbiased and scientifically sound information for the horticultural sector.