

Objective: The objective of this communication is to outline the key benefits of using Ecological Laboratory's (ELI) Quantum-Total soil and plant inoculant for Professional Lawn and Landscape Maintenance.

Product Set: Quantum Growth is the name of the product series with Quantum-Total and Quantum Organic-Total being the primary products for Lawn and Landscape Maintenance. Quantum-Total and Organic-Total are liquid products that consist of a consortium of naturally-occurring beneficial bacteria that aid in plant establishment and growth. The products have the capability to reduce fertilizer and pesticide requirements.

BENEFITS

1. Fertilizer Reduction

- a. **N-Fixation** – the bacterial consortium contains nine species that fix nitrogen from the atmosphere.
- b. **Mineral Solubilization** – the bacterial consortium is capable of solubilizing the following elements when bound in the soil profile: P, K, Ca, Fe, Zn, Mg, Mn & Mo.
- c. **Nitrogen and Other Mineral Retention** – the bacterial consortium forms polymer attachments in the soil immediately around the root system of a plant. These attachments have similar physical properties to a spider web in that they capture and retain nutrients in areas adjacent to the root system.
- d. **Organic Degradation** – several of the consortium bacteria can produce the necessary enzymes to break down lignin (critical for C cycling) and cellulose (critical for N, P & S cycling).



2. Green Technology

- a. **Environmentally Friendly/Responsible** – Quantum Growth products are composed of naturally-occurring nonpathogenic bacteria that support plant establishment and growth while reducing dependence on synthetic fertilizers and pesticides. There are no re-entry restrictions after application and minimal PPE required for handling and application (e.g. eye protection and gloves).
- b. **Sustainable Product** – The Quantum Growth products are grown through a process that minimizes energy consumption (LED lighting vs. metal halide bulbs), waste production (recyclable end user containers) and does not deplete any nonrenewable resources.

3. Company Credibility

- a. **Laboratory Staff** – PhD Microbiologist and 5 BS majors (to include chemistry, biology and biomedical sciences) with a combined 65+ years of ELI experience
- b. **Laboratory Analytical Capabilities** – nutrient, chloride and COD analysis, product stability & compatibility analysis, bacterial isolation and identification via 16S genetic sequencing and quantitative PCR
- c. **Ecological Laboratories** - producing bacterial-based products for 48 years in 10 different markets in over 35 countries (18 years in Agriculture, Horticulture and Turf in 29 countries).

4. Peninsular Pest Experience (Appendix A)

- a. N-Reduction – reduced 1 lb per 1,000 ft² = 18-ton reduction in 2022
- b. Callback reduction/Increased customer satisfaction
- c. Increased plant health that decreased pesticide needs (= \$ savings)

5. Compatibility with Conventional Spray Programs – Tested and Good to Go!

- a. Transom & Quantum-Growth
- b. Pillar SC & Quantum-Growth
- c. Bifen, Arena, Imidacloprid & Quantum-Growth



Common Lawn Service Company Philosophy, Purpose and Mission Statements':

- Building relationships • Protecting people • Providing excellent service
- Environmentally responsible • All-natural • Innovative, science-based solutions

Ecological Laboratories offers Quantum Growth products, available in Natural and Organic formulations, that align with many of these traits and goals. The Quantum Growth technology is incorporated into novel products that use naturally-occurring, beneficial bacteria to promote plant establishment and health while enabling reduced fertilizer and pesticide applications for less impact on the environment. Quantum Growth treated lawns and landscapes result in higher customer satisfaction and retention while reducing customer callbacks.

Lawn Care Customer Testimonial



Mr Aaron Sane
Ecological Labs

July 11, 2022

Aaron,

As we discussed in our previous meetings, we have been using Inoculaid/Quantum Growth since 2008. The use of Quantum Growth in our lawn programs has improved the overall health of the turf in the 7,000+ lawns that we treat each year. In addition this year we have changed our lawn treatment program to an all liquid program eliminating the use of granular fertilizer.

By using Quantum Growth we are able to reduce our total nitrogen use by 1 lb per 1,000 sq feet. This will result in approximately 18 tons – 36,000 lbs less nitrogen being applied. If you should have any need for a reference regarding the use of Quantum Growth I will be happy to provide you with one.

George Richardson
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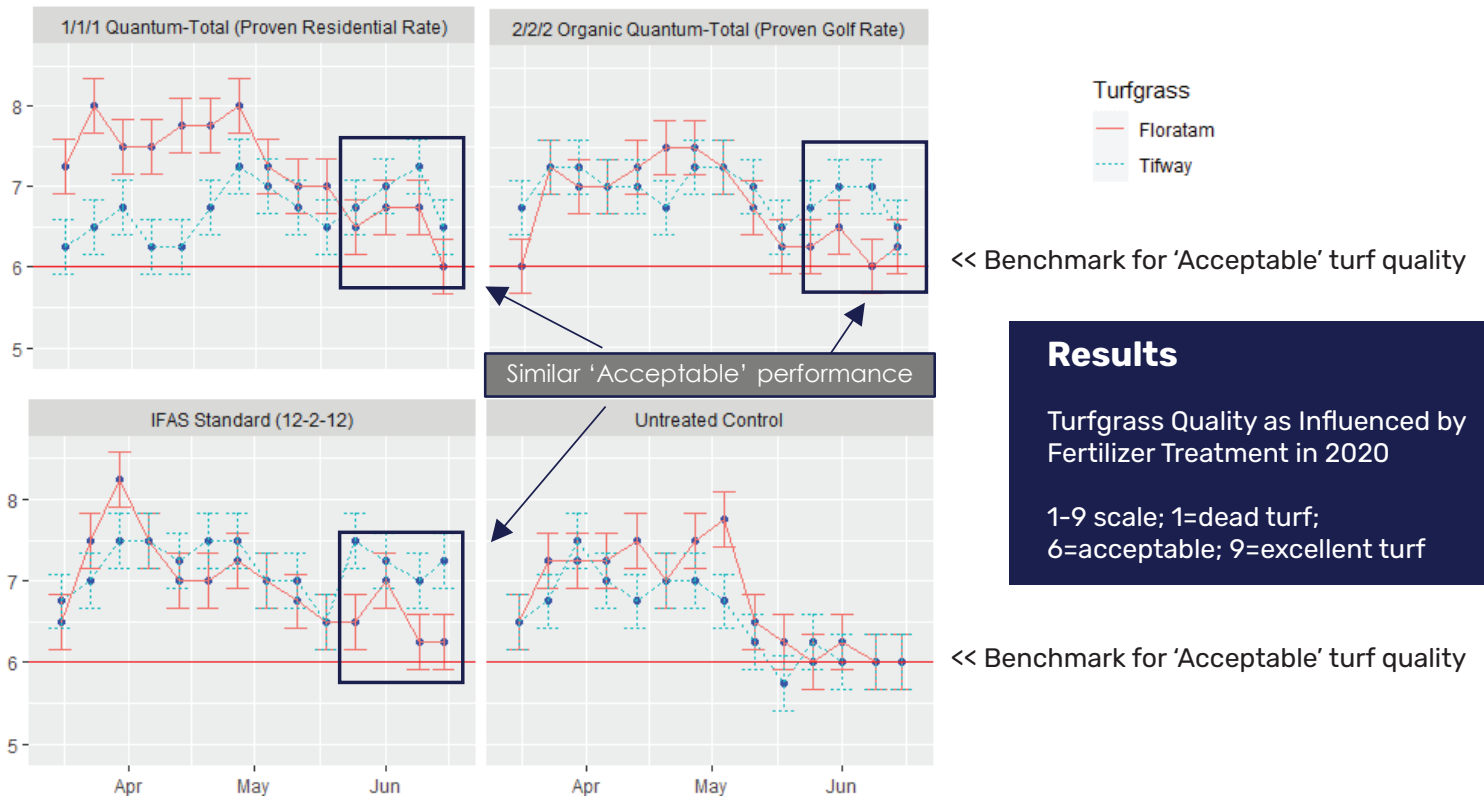
Simulated Fertilizer Blackout Study



Trial Purpose

Evaluate 3 monthly Quantum applications (no added fert. prior to or during the trial period) vs IFAS std fert. program (applied on Day 0) and an untreated control.

- Floratam and Tifway turfgrass
- 4 replications per treatment



Results

Turfgrass Quality as Influenced by Fertilizer Treatment in 2020

1-9 scale; 1=dead turf; 6=acceptable; 9=excellent turf