

Product Overview

Every plant is a world unto its own. Microscopic organisms inhabit each plant, helping them adapt to disturbance. If disturbed, simple to use microbial products can give plants the advantage; this is what we do at Functional Soils (FS). We are building biology in unnatural places, taking what we know is possible in science and bringing it into the world. After conducting rigorous field science, we find the correct microbes, and synthesize them into safe products for your use. This biotech made accessible. A data-driven scientific solution empowering you to improve plant and soil health.

This product contains several beneficial endophytes, isolated from natural environments, from a genus with no known pathogens. Endophytes are a type of fungus that live in the soil and in the spaces between plant cells, which can form symbiotic relationships with plants, residing in the roots, shoots, and leaves of plants with no apparent negative effects. FS microbes are an economical way to make your plants more adaptable, more resilient, and better supported when stressed.

What can this product do for your plants?

- **Enhance germination:** this product will help break down seed coats, increasing germination and initial plant growth
- **Increase Root Mass:** more complex root mass allows better use of nutrients and water
- **Nutrient Utilization:** our endophytes increase bioavailability of nutrients and micronutrients to the plant
- **Increase Stress Tolerance:** this product will assist with environmental stressors, such as drought or prolonged heat

Directions for Use

Established Trees and Shrubs

Purpose: Support long-term soil biology, nutrient cycling, and stress tolerance.

Timing: Can be applied anytime. For best results, apply where soil temperature is at or above 6 degrees Celsius.

Method: Soil drench, soil injection, or application through existing irrigation.

1. Determine the application area. This packet, mixed in full, will treat 2 trees of the 6-8' foot range. Medium to large shrub
2. Cut open the pouch. Mix with 10 to 20 L of cold water. Stir vigorously allowing the microbes to fully dissolve and no clumps appear. Use the product within 12 hours.
3. Apply 5-10 L of solution per mature tree, targeting the soil at the base of the tree.

New Trees and Shrubs

Purpose: Establish beneficial microbes in the root zone for faster establishment and improved early growth.

Timing: At planting or within the first month of planting.

Method: Soil/Root drench.

1. Determine the application area. This packet, mixed in full, will treat 1 tree 6-8' range, 2-3 trees on a 3-4' tree, 5-10 trees for 1L pots. The same application rate applied for shrubs
2. Cut open the pouch. Mix with 10 to 20 L of cold water. Stir vigorously allowing the microbes to fully dissolve and no clumps appear. Use the product within 12 hours.
3. Apply equal proportions of liquid to the number of trees you are treating. Target soil at the base of the tree.

Turfgrass, Lawn or Sports Fields

Purpose: Maintain a balanced soil microbiome, improve nutrient efficiency, and enhance stress tolerance.

Timing: Spring green-up and throughout active growth.

Method: Foliar/soil spray or through an irrigation system.

1. Determine the application area. This packet, mixed in full, will provide a single application on 3500 square feet.
2. Cut open the pouch. Mix with 10 to 20 L of cold water. Stir vigorously allowing the microbes to fully dissolve and no clumps appear. Use the product within 12 hours.
3. Can be applied with sprayer, irrigation system, watering can etc.

***Mix with larger quantities of water as desired, but applications should still occur within chosen application area of 3500 square feet.*

Turfgrass application tips:

- Apply when turf is not under acute stress (avoid midday heat).
- Apply after aerification/topdressing to help microbes colonize new pore spaces and organic matter.
- For best results, combine application with balanced fertility and proper mowing and irrigation practices.
- Light irrigation after application can help move microbes into the upper root zone.

Golf Course: Greens

Purpose: Support root mass, thatch breakdown, and resilience to high traffic, low cutting heights, and environmental stress.

Timing: Throughout the growing season; focus on recovery areas and stress areas.

Method: Standard boom sprayer

Rate: Similar rate to greens of the same size, depending on turf density and thatch.

1. Determine the application area. This packet, mixed in full, will provide a single application on 3500 square feet.
2. Cut open the pouch. Mix with 10 to 20 L of cold water. Stir vigorously allowing the microbes to fully dissolve and no clumps appear. Use the product within 12 hours.
3. Mix with the range of water normally applied/recommended to greens of your size.
4. Apply using a sprayer with an appropriate nozzle to the predetermined area.

Golf Course: Fairways

Purpose: Enhance rooting, nutrient use efficiency, and recovery from divoting and traffic.

Timing: Initiate program at spring green-up or start of active growth. Continue through the season, emphasizing times of stress (summer heat, transition, winter prep).

Method: Sprayer (boom or walk-behind) with appropriate nozzles to ensure uniform coverage.

1. Determine the application area. This packet, mixed in full, will provide a single application on 5000 square feet.
2. Follow steps 2-4 as listed in **Golf Course: Greens** instructions.

Golf application tips:

- Apply when turf is not under acute stress (avoid midday heat).
- Apply after aerification/topdressing to help microbes colonize new pore spaces and organic matter.
- For best results, combine with balanced fertility and proper mowing and irrigation practices.
- Light irrigation after application, or applying before a rainfall, is suitable for application to help move microbes into the upper root zone.

Environmental, Storage & Handling Considerations

- Store in a cool (ideally 4–20 °C), dry location out of direct sunlight. Can be kept in freezer.
- Do not expose to temperatures above 35 °C for prolonged periods.
- Keep the packet closed when not in use, or transfer to a small sealable container.
- Heavy chemical inputs (especially broad-spectrum fungicides and some soil sterilants) can reduce microbial populations; allow an interval between such treatments and microbial applications whenever possible.
- For best performance, integrate with: Proper pH management, adequate organic matter, balanced fertilization and irrigation, aeration to relieve compaction
- In Turfgrass and Golf applications, this product is compatible with most balanced fertility and wetting agent programs when not tank-mixed with strong fungicides/biocides.

Safety & Precautions

- Keep out of reach of children and pets.
- Avoid breathing spray mist and avoid contact with eyes or open wounds.
- Wear standard protective equipment: long sleeves, gloves, and eye protection when mixing and applying.
- Wash hands and exposed skin thoroughly after handling.
- In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice if irritation persists.

Disclaimer

Use only as directed. Performance may vary depending on soil conditions, climate, turfgrass/tree species, and management practices. The user assumes all risk from use, storage, or handling of this product when not used according to label directions.

Ready for the next step? Let's talk!

For all product and sales enquiries: info@functionalsoils.com | www.functionalsoils.com