

# BIOS® Turf Tonic

## A microbial pro-biotic nutriment

Sports turf is "stressed" much of the time due to close mowing, wear, temperature extremes and drought. In these conditions the plant often struggles to deliver sufficient nutrients to support a healthy microbial community. **BIOS® Turf Tonic** contains a multitude of varied and balanced components to both stimulate and maintain the growth of beneficial aerobic bacteria and fungi. Healthy levels of microbes improve soil structure, root development and availability of nutrients. This provides the basis for a healthier more cost effective turf management programme.

### How does it work?

- The amino acids, fatty acids, vitamins, simple and complex carbohydrates in **BIOS® Turf Tonic** promote the growth of a range of beneficial aerobic microbes.
- Biological metabolites and organic chelators increase nutrient availability.
- Enhanced mycorrhizal colonisation of the rootzone increases plant nutrition, growth and vigour.

### Why use BIOS® Turf Tonic

- Promotes a healthy microbial community
- Improves soil structure
- Increases aerobic environment
- Stimulates the development of deep rooting
- Increases nutrient availability for improved plant health, vigour and colour
- Improves the plants natural resistance to disease and drought
- Easy to use liquids with good tank mix compatibility

### Where/when

- Suitable for use on all types of sports and amenity turfgrass
- Suitable for all year round application
- Can be used with **Factor<sup>70</sup>** or **OxyMax 0-8®** to aid penetration and efficiency
- Can be tank mixed with **Plus range** nutrients to boost their efficiency

### Application Rates & Timings

**Pack Sizes: Part 1 4 x 10L + Part 2 10L  
Part 1 1000L + Part 2 250L**

BIOS® Turf Tonic is supplied as a two part liquid solution and applied together as a tank mix.

**Sand rootzones** Apply Part 1 @40 l/ha (4.0 ml/m<sup>2</sup>) with Part 2 @ 10 l/ha (1.0ml/m<sup>2</sup>). Repeat monthly - 12 times per annum.

**Rich loam soil** Apply Part 1 @40 l/ha (4.0 ml/m<sup>2</sup>) with Part 2 @ 10 l/ha (1.0ml/m<sup>2</sup>). Repeat monthly - minimum of 6 times per annum.

**Dilution:** Recommended for application at water rates of minimum 150 l/ha.

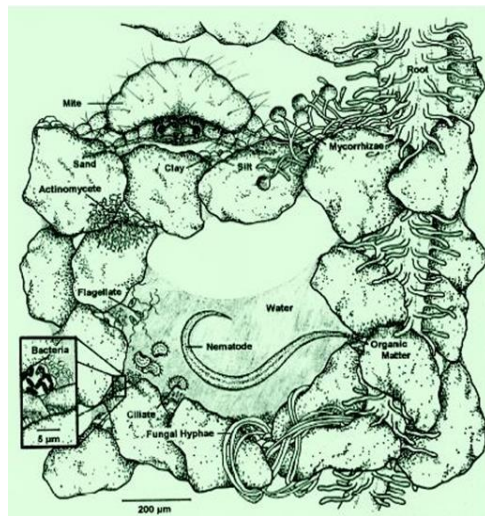
**Method:** Always use a fully calibrated sprayer at the recommended dosage.

## The Science - A "beneath the surface" approach

Though largely invisible to the naked eye, the effect of the soil's microbial community is colossal. Their interactions are many and diverse and it is the understanding of these functions that enables Soil Harmony to harness their power and improve turf ecology, health and ultimately its performance.

Just beneath the surface is the rhizosphere: the narrow layer of soil directly influenced by root secretions and associated microbial activity. This is the focus of the symbiotic relationship between the growing plant and the microbes where the nutrients 'processed by microbes' are taken up and utilised by the plant and the 'sugars' produced by photosynthesis within the plant leaves are exuded from the roots to feed and support the same microbes.

The biological activities of the various populations of fungi, bacteria and actinomycetes in the rhizosphere influence all the essential processes related to plant nutrition and health. In addition to recycling and assisting with the uptake of nutrients, collectively and through more specialised functions, the different species help with plant resilience and soil structure. A healthy microbial community can suppress the development of harmful pathogens by out competing them for resources and producing antibiotic compounds. It can also improve soil structure through the creation of organic matter and formation of aggregates and soil pores for better water retention and drainage.



## The Results

Independent research carried out by London University recorded increased abundances of bacteria of above 70% and mycorrhizal by over 82% in a low nutrient sand dominated rootzone where **BIOS® Turf Tonic** is applied.

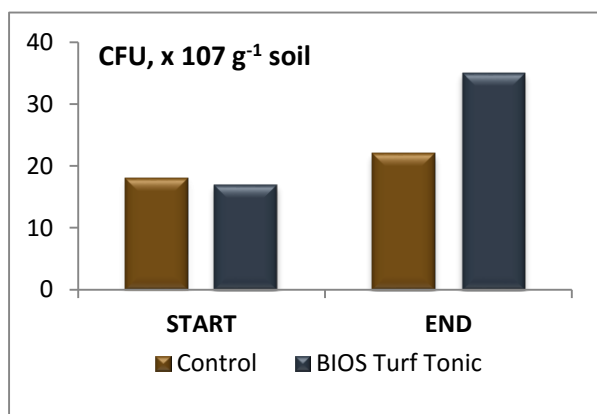


Fig. 1. Bacterial abundance  
CFU: colony forming unit

Notes: END 10 weeks after first application

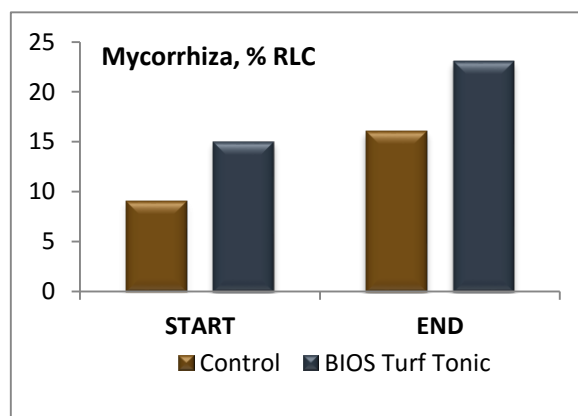


Fig. 2 Mycorrhizal colonisation of roots, expressed as percent of the root length

**YOUR LOCAL DISTRIBUTOR**

*This product is physically compatible with a wide range of tank-mix partners. Check compatibility prior to adding to the spray tank. Consult your local advisor or Ilex EnviroSciences for specific recommendations. Efficacy may be effected by plant health, growth stage and weather conditions. Ilex EnviroSciences accepts no liability for damage to treated turf.*