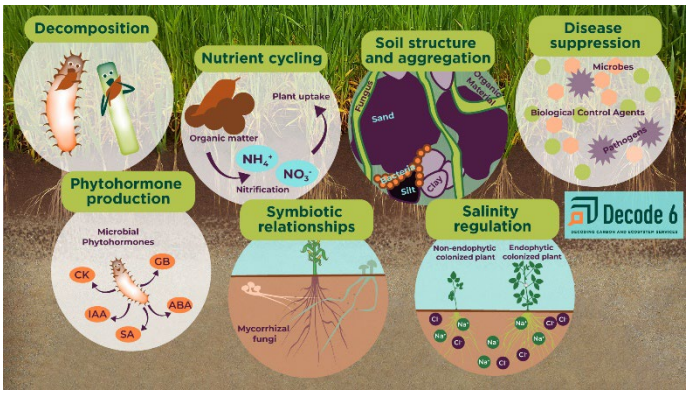
Measuring Microbes

Microbes are important for many soil functions such as crop performance and nutrient cycling. Like many biological functions, building up microbe populations and soil health takes time. Knowing the quantity of microbes in the soil allows us to get an idea of soil health and functionality.



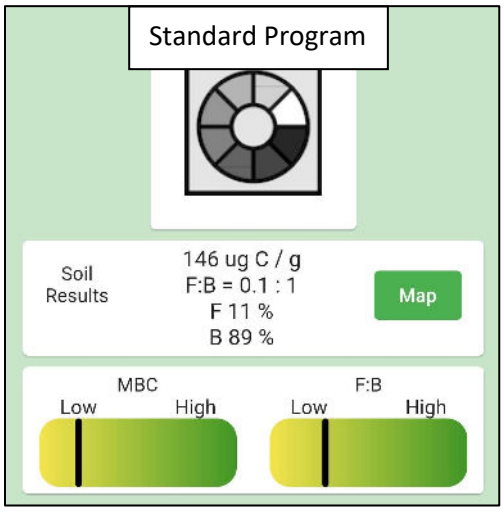
To assess soil health, microbial biomass and respiration are tools for measuring. Microbial biomass is a measurement of the mass of living and dormant microbes in the soil. The microbe biomass correlates with the nutrients in the soil. Respiration is a measure of carbon dioxide given off by microbes and is used to show microbial activity in the soil. Microbial biomass carbon is a measure of the carbon contained within the living component of soil organic matter (i.e. bacteria and fungi).

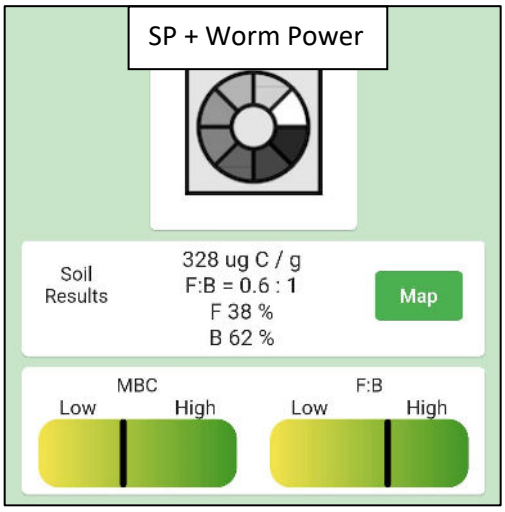
Microbes can also vary based on seasonal changes. Just as the environment affects plant growth, this too can affect the soil microbes. Cooler temperatures can affect the organic matter decomposition rates and nutrient cycling. Understanding the microbial presence is important for long term management.

Measuring Microbes in Turf

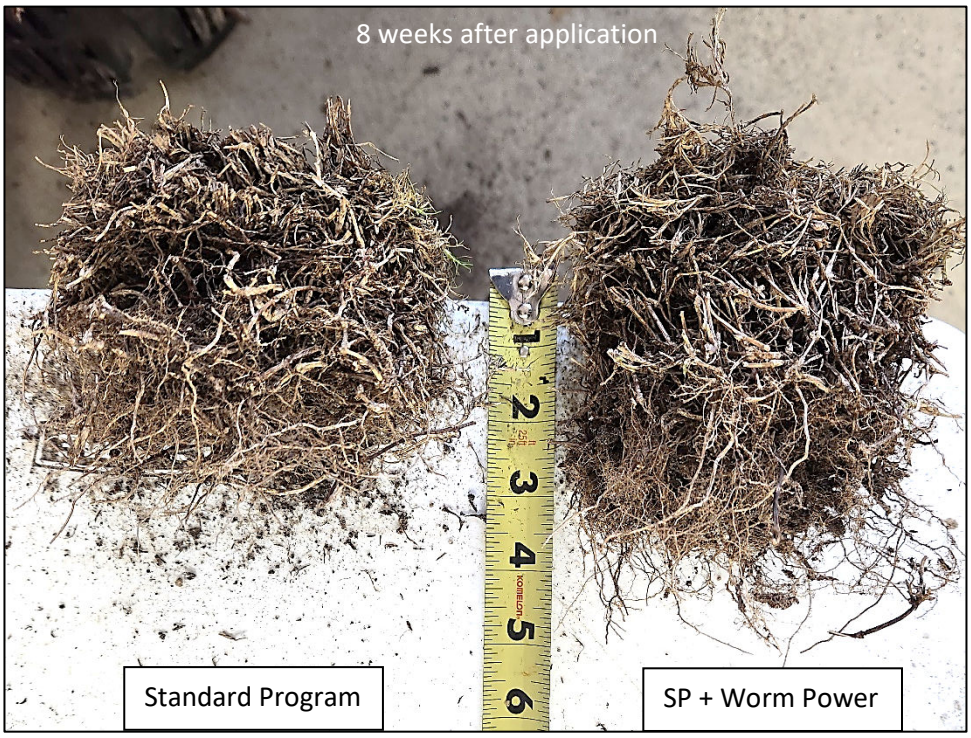
Worm Power Granular was applied to a polo ground's turf program at 20 lbs./1,000 ft^2 and compared to a control of a standard program (SP). The turf on the polo field is a high traffic area and deals with wear and tear issues from humans and horses alike. A MicroBIOMETER was used to measure the presence of soil microbes from root samples, shown as micrograms of carbon per gram of soil (µg C/g), the fungal to bacteria ratio (F:B), and the microbial biomass carbon rating (MBC).

Below are results of the Standard Program (SP) compared to the addition of Worm Power after 4 weeks.





Around 4 weeks after application, root samples were taken, and physical differences were hard to accurately measure at that early stage. Using a MicroBIOMETER, the control and treated areas were tested for soil microbes. Comparing the microbes from those samples showed more than double the number of microbes present after being treated with Worm Power Granular.



8 weeks after application (pictured above), root samples showed physical differences between the treatments. Turf treated with Worm Power was observed to have more root hairs, better structure, and deeper root development.

Many beneficial microbes have been identified in Worm Power Granular and Worm Power Liquid Extract. Using Worm Power products, as recommend in the chart below, as an addition to your current program can increase soil microbes and improve root development.

Program	Granular	Liquid Extract
Golf Course		
Tees & Greens	Two Seasonal Applications Spring: 5lbs/ 1000 sq ft applied at core aeration Late Fall 5 lbs/ 1000 sq ft as a winterizing treatment	Apply monthly throughout the season beginning two weeks after core aeration. 16 oz / 1000 sq ft applied as a soil spray
Fairways	Divot Mix Combine 10% (by volume) into existing mix. Repair: Till 30lbs /1000 sq ft into top 4" of soil prior to seeding	16 oz / 1000 sq ft applied as a soil spray beginning 45 days after emergence
Sports Turf	20lbs / 1000 sp ft 5 applications throughout the seasons beginning at time of crabgrass control	16 oz/ 1000 sq ft applied on a monthly basis throughout the growing season
Combination	20lbs / 1000 sp ft 2 applications: 1) Early Spring 2) Late fall	16 oz/ 1000 sq ft applied on a monthly basis beginning 1 month after Spring granular treatment

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