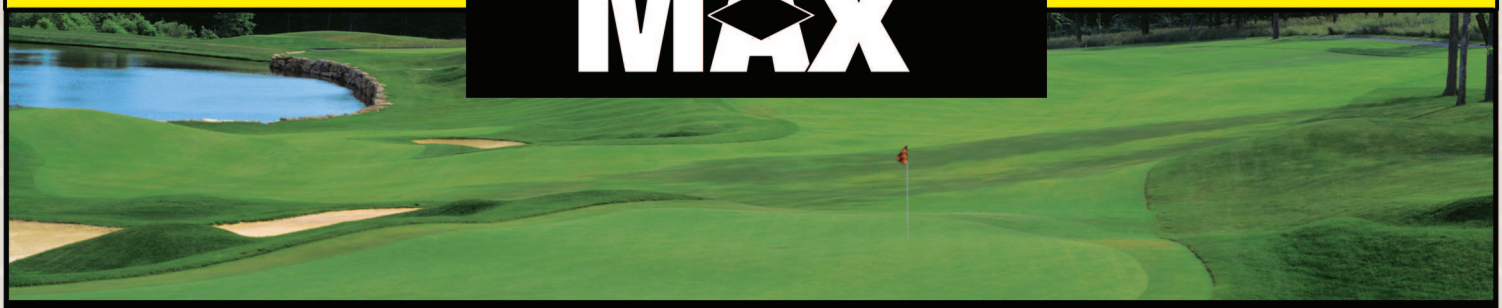
HUMIC MAX

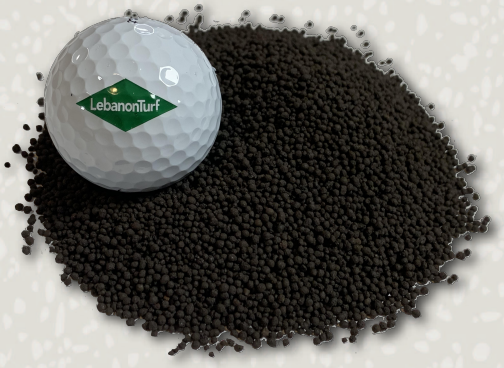


Humic Max® is LebanonTurf's branded humic acid component specifically intended to optimize plant and soil health while mitigating environmental stress on the turf plant. The numerous real-world benefits of combining this biostimulant with turfgrass specific nutrition illustrate the positive synergy between the two by maximizing the plant and soil performance throughout the growing season.

Fertilizers containing Humic Max will simultaneous feed both the plant and the soil, allowing you to better utilize the bound up nutrients already present in the soil. They will also influence the turfgrass plant to function more efficiently by stimulating multiple internal functions to help promote root growth, chlorophyll development and the trigger the natural defense mechanism to protect it during times of environmental stress. Fertilizers with Humic Max will deliver everything you need to maximize the potential of your turf.

To understand how Humic Max can achieve this level of performance, a basic understanding of how humic substances work and what they actually do in the soil and to the turfgrass is important.

The Basics of Humic Substances (Humates)



Humic substances, or humates, are that are important components of , the major ingredient of the . These humates are generally classified into three distinct categories: humic acid, fulvic acid and humin, with each category separated on the basis of their solubility in water as a function of pH. It has long been recognized that humic substances have many beneficial impacts on both the soil and plant growth. Each of these categories has properties that help them enhance their effectiveness to complement turfgrass fertility programs.

Humins are the largest-sized molecules and can be hundreds of times larger than humic acids. It is very stable in the soil, but also very insoluble and not very active in chelating nutrients. The primary benefits of humin are improving the soil structure and increasing water holding capacity.

Humic Acids are medium-sized molecules that are much smaller than Humin but possess a higher cumulative surface area. They function as essential ion exchange and chelation agents because other elements readily bind to them in a form that can be easily absorbed by the turf roots and micro-organisms. The impact of humic acid in the soil normally is illustrated with increased cation exchange capacity (CEC), which is why humic acid granular applications are favorable. As humic acid naturally degrades over time, they become fulvic acid.

Fulvic acids are the smallest of the three category molecules, yet they are the most water soluble. Due to their small size, they are capable of entering the turfgrass roots and leaf tissue while transporting complex nutrients. Fulvic acids increase the absorption quantity of nutrients and the efficiency of the turfgrass plant's metabolic functions.

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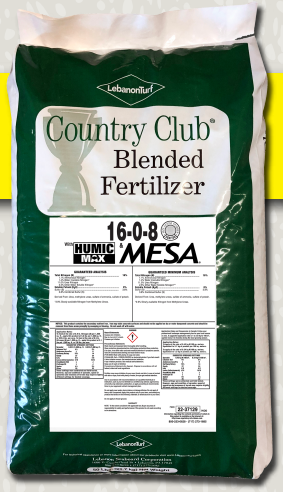

Humic Acid in the Turf World

Professional turfgrass managers have known about the multiple real-world benefits of humic acids for quite a long time. These benefits are grouped into two specific types of changes; chemical changes to the fixation properties of the soil and biological stimulates to the turfgrass plant and the activity of micro-organisms.

Humic acids chemically change the soil to provide numerous benefits such as:

- Promotes the conversion of N,P,K, Fe, Zn and other trace elements into forms available to the plant
- Reduces the reaction of phosphorus with Ca, Fe and Mg and alters them into a form that is plant available
- Retains water soluble inorganic fertilizers in the root zone and reduces leaching
- Improves and optimizes the uptake of nutrients and water by the turfgrass plant
- Provides extremely high cation-exchange capacity (CEC)
- Neutralizes both acid and alkaline soils by regulating the pH-value of the soil
- Frees up carbon dioxide from soil calcium carbonate to enable its use in photosynthesis
- Reduces the availability of toxic substances in the soil

Humic acids biologically stimulate the plant to provide benefits such as:

- Increases root growth, respiration and formation to enable better uptake of nutrients
- Enhances plant's natural resistance defenses against environmental stress
- Stimulates the turfgrass plant's natural enzymes and increases their production
- Stimulates plant growth by accelerating cell division and increasing rate of development in root systems
- Promotes the development of chlorophyll, sugars and amino acids in the turfgrass plant
- Stimulates the growth and proliferation of desirable micro-organisms
- Increases vitamin and mineral content of the turfgrass plant

Fertilizers containing Humic Max can help you reach the potential of both your soil and turf by delivering an unsurpassed level of real-world benefits. To find out more, contact your LebanonTurf representative for more details on our current offering of all the products featuring Humic Max.