



**Organic Matters** is a highly concentrated liquid humic acid that is needed on most soils for a variety of reasons. Humic Acid is soluble portion of humus that evolves naturally when organic material has decomposed to its final stage. Just because organic matter may be defined as humus does not necessarily mean that it is useable as humic acid or that it will have any effect on the soil or plants.

Soluble Humic Acids have three major fractions of great importance.

1. Humic Acid (singular), is a long chain molecule of high molecular weight,, dark brown to black in color, and is completely soluble in an alkaline solution.
2. Ulmic Acid, this acid is also sometimes called (Hymatomelanic Acid). This small acid fraction is one of the most biologically active compounds that we know of. It is extremely beneficial in many plant actions and accentuates plant functions.
3. Fulvic acid is a short chain molecule of low molecular weight, yellow to orangeish in color, and is soluble in either acid or alkaline solutions. Like Ulmic Acid, it is extremely biologically active. Humic Acid (ORGANIC MATTERS) is needed on almost all soils that you will encounter, and in particular soils on golf courses and athletic playing fields.

#### **BENEFITS OF USE:**

##### **PHYSICAL:**

- 1) Increases water holding capacity in sand based greens and tees.
- 2) Chemically improves aeration of soils.
- 3) Improves soil workability.
- 4) Helps plants resist drought.
- 5) Makes soil more friable or crumbly.
- 6) Helps to prevent erosion.

##### **CHEMICAL:**

- 1) Retains water soluble inorganic nutrients ( fertilizers ) in the root zone and releases them when they are needed by the plants.
- 2) Promotes the conversion of many nutrients into forms that can be used by plants.
- 3) Has extremely high ion exchange capacity.
- 4) Helps in the decomposition of rocks and minerals thus providing plant nutrition.
- 5) Increases buffering properties of soils.
- 6) Chelates elements under alkaline conditions.
- 7) Rich in organic and mineral substances essential to plant growth.
- 8) Increases the percent of total nitrogen in the soil.

##### **BIOLOGICAL:**

- 1) Stimulates plant growth by accelerating cell division.
- 2) Increases the rate of development in plant root systems.
- 3) Increases germination and viability of seeds.
- 4) Increases vitamin content of plants.
- 5) Increases permeability of plant membranes thus promoting the uptake of nutrients.
- 6) Stimulates root growth (particularly lateral root growth).
- 7) Stimulates growth of beneficial soil microorganisms, algae, and soil yeasts.
- 8) Aids in photosynthesis.
- 9) Stimulates plant enzymes.
- 10) Acts as an organic catalyst.
- 11) Has absolutely no detrimental effects on plants whether it is applied to the soil, or sprayed onto the foliage: regardless of where you are, or what plants are growing, organic matters will deliver more benefits for the cost than anything you can buy anywhere.