



HumaGrow™

Liquid Humic Acid

What HumaGrow™ Can Do For You!

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In many respects soil is similar to a living organism. Under natural conditions the nutrients and microorganisms in fertile soil will replenish themselves through the process of decay of dead cells in plants and animals. These essential products are then available to living organisms. Unfortunately, modern agricultural techniques and procedures have a very strong tendency to deplete the productivity of soils, primarily by reducing the number of microorganisms that assist plants in absorbing vital nutrients from soil. The massive uses of artificial fertilizers and extensive irrigation have a cumulative, detrimental effect upon the fertility of soils by reducing the amount of organic matter in the soil and by a build-up of salt deposits.

What Humic Substances are

Among the most important organic constituents of fertile soil are organic compounds known collectively as "humic substances." These can be generally described as humic acids, fulvic acids, and humin. Humic acids are large molecular organic compounds composed mostly of carbon, oxygen, and hydrogen. They are soluble in water at higher pH (caustic) levels but not at lower pH (acidic) levels. Fulvic acids are soluble in water under all pH levels. Humin is that portion that is insoluble in water at any pH, and is biologically inactive. Humic acids are present in, and can be extracted from a number of substances including coal, lignite, peat, leonardite, wood, manure, and even sea water. Of these sources, leonardite is the best source of humic/fulvic acid because it is more highly oxygenated than the others and can, without additional oxygenation (which increases cost) perform at a more efficient level. Leonardite is a low rank (early stage) of coal, somewhere between peat and sub-bituminous coal.

Importance of Humic Acids

The importance of humic acids and fulvic acids is that they have a number of chemical characteristics that are very beneficial to the growth and development of plants—micronutrient transference, water penetration and retention,

microorganism stimulation, and soil improvements. HumaGrow™ contains both humic and fulvic acids.

HumaGrow™ has the ability to attract and release positive ions under different conditions cation exchange capacity. Without going into the complex chemical details, this ability allows the humic acids to improve the capability of plant roots to acquire nutrients, such as nitrogen and calcium, from the soil.

How Bacteria Helps Soil

Soil bacteria are critical to plant growth since they secrete enzymes that change insoluble calcium, phosphorus, and iron compounds into soluble ones that the plant roots can absorb. HumaGrow™ assists in the process by stimulating the growth of these microorganisms.

Humic/fulvic acids are also beneficial in improving seed germination. Seeds treated with these substances germinate faster and higher percentage of the treated seeds germinate as compared to untreated seeds.

HumaGrow™ in Clay

HumaGrow™ is also very helpful in heavy clay soils by improving water penetration. An accumulation of salt in clay soils causes the clay platelets to lose their negative electrical charges which normally keep the platelets loosely joined. A second problem with clay soils is that the percentage of clay can be very high. Again electrical reactions between positive and negative ions can cause extreme compaction making it difficult for plants roots to penetrate the soil. Humic acid reduces this problem by segregating salts from the surface of the clay particles, restoring the negative charge. This causes the platelets to separate, allowing greater water and root penetration.

HumaGrow™ in Sand

Water evaporation is a problem in sandy soils, in arid areas, and where clays are in very low concentration. Once again the cation exchange capacity of HumaGrow™ causes a bonding of water molecules to the cation and greatly reduces the evaporation of water, making it more available to plants.

Advantages of HumaGrow™

Liquid humic substances are much more effective than those in solid form because they are much more quickly available to plants. Nevertheless, it is important to realize that humic substances are not fertilizers or "plant food" in any sense. They should be, and are readily, used in combination with other

resources. They can be applied in a number of different ways including being fed directly into large irrigation systems, as well as being used in smaller applications in greenhouses, gardens, and on house plants.

Affiliated Minerals, Inc. owns a vast amount of raw humate (leonardite) in the Big Bend region of West Texas. This raw humate is the source of HumaGrow™, through a proprietary process of all natural ingredients. HumaGrow™ has not less than 12% humic acid.

CAUTIONS:

1. Humic Acid is a misnomer – it is NOT an acid. HumaGrow's pH will range from 9 to 13 – it is alkaline. It is caustic in high concentrations - dilute well and test on a couple of plants before use in foliar sprays.
2. Do not leave pumps with aluminum tubes in the drums or totes after removing the HumaGrow. The high pH seems to strip the aluminum off in thin layers.
3. You will periodically need to re-mix HumaGrow. Over time it will fall out of suspension and a small percentage of it will collect as a goo on the bottom of the container. Always re-mix before use to bring your Humic Acid percentage up to maximum.
4. Always test or "bottle mix" HumaGrow with any fertilizer (especially containing phosphate) or soil/foliar amendment before you mix it in an application tank. HumaGrow works very well with Liquid 32 – About 4% to 8% by volume for knifed in applications – normally 1 to 4 gallons per acre.
5. Keep out of reach of children. Do not store with food, feed or other material to be used or consumed by humans or animals. Harmful if swallowed. Avoid contact with eyes. This product may cause severe eye irritation. Flush eyes with water for 15 minutes, holding eyelids open. Obtain medical attention if irritation develops. This material must be disposed of according to Federal, State, or Local procedures under the Resource Conservation and Recovery Act.
6. No warranties are implied or expressed. Buyer assumes all responsibility for proper use of this product. For the agronomic application rates suitable for your geographical area or the maximum allowable non-nutrient application rates per acre, consult a trained soil specialist or write to Manufacturer. Information about the components of this product may be obtained by contacting: Affiliated Minerals, Inc. , P.O. Box 249, Somerville, TX 77879, 979-596-1723 Fax: 979-596-1583

Available in gallons, 30 & 55 gallon barrels and 275 gallon totes.



For Sales or additional info call Compost CoOp 979-589-1702 in Bryan, TX