



BioSci Humates

Frequently Asked Questions.....

What is Humic Acid and why is it so important to my crop?

There's no better way to enhance the economics of farming than to build soil humus and enhance the natural processes, such as microbial activity, which can be sustained over a long productive life. Building levels of natural Humic Acids has shown to reduce the need for commercial fertilizers because it improves fertilizer efficiency. The utilization of Humic Acid has shown to reduce the leaching of fertilizers and pesticides into water tables and surface waters. By using Humic Acids, growers have gradually reduced nitrogen and phosphate applications while improving overall crop quality and yields.

What are some of the benefits after applying Humic Acid to my fields?

- Physical modification of soil structure, increasing soil aggregates--thereby improving water infiltration, aeration, soil tilth and workability, and reducing erosion and runoff
- Breaking down primary soil minerals and releasing elements as available nutrients
- Holding nitrogen in reserve in the soil and gradually making it available to plants
- Providing the environment and stimulus for microbial activity
- Organically complexing nutrients therefore making them bio-available to plants
- Increasing root growth, root penetration and chlorophyll density, thus aiding in photosynthesis
- Substantially increasing proteins, fibers, and sugars which help improve quality and yields

Where does Humic Acid and Leonardite come from?

Humic and Fulvic acids are the final break-down constituent in the natural decay of plant and animal materials. These organic acids are found in pre-historic deposits. The most common sources of agricultural organic acids are from lignite (also known as Leonardite or Humate).

What is Leonardite?

The deposition of concentrated organic acids is a lengthy process taking millions of years in the natural environment. If you can imagine a prehistoric marsh or peat bog where plants are harvesting carbon dioxide from the atmosphere and using the sun's energy to build plant biomass. These plants feed insects and vertebrates and as plants and animals die they contribute the carbon back to the bottom of the bog. Over millions of years this cycle of organic matter is concentrated and compressed into layers in the earth. The upper layers (lignite or Leonardite) were, at one time, called immature coal and were a byproduct of coal mining before it was realized they had agricultural value.

One of the first recognized reserves of Leonardite came from the Dakotas, (named after a Mr. Leonard). These strata were not very deep which allowed for simple mining techniques. Since the early beginning, the term Leonardite has been widely used as a name for all humic and fulvic acids containing mined products.

What does the term "Oxidized Lignite" mean and why is it so important?

Naturally Oxidized Lignite provides a greater humic acid value since it possesses a superior humic acid content, including the very important Fulvic Acid fraction. Since Humic and Fulvic acids are insoluble in water, they break down very slowly. Lignite can be treated chemically, with

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a strong base (opposite of acid) to liberate a portion of its humic acid into a completely water soluble product. However, what this saves in time it adds in expense. However, a water soluble form has distinct advantages for foliar or micro-irrigation injections.

To allow soil applied Oxidized Lignite to release as much humic acid as possible in the shortest amount of time, you'll need to select the finest particle size that is practical to apply. Finely ground or milled and screened Oxidized Lignite provides a particle size with the highest surface to volume ratio. This allows the microbial and chemical processes in the soil to make the organic acids available. Although, a fine particle size is desirable, the relative ease of application may be a concern (very fine preparations may be too difficult or dusty to broadcast) therefore some growers prefer a larger particle size.

There are many different Leonardite and Oxidized Lignite preparations on the market today. You should choose a preparation that fits your broadcast equipment capabilities. Likewise, you should pay for the most finely ground preparation that you can afford and easily apply. Humic Acid content ranges from 35% to 70% and it is advised that you select the product that has the highest guaranteed humic acid available.

What makes BioSci Humates different from the competition?

BioSci Humates have a significant portion of Fulvic Acid fraction (estimated at up to 30%), which makes them much more valuable to the grower. This is the difference that sets **BioSci Humates** apart from those mined in other areas- particularly those found in the North Dakota deposits. This difference will result in a direct competitive advantage in your crops versus crops raised without Humic Acids or with products containing less Fulvic Acid.

Because of **BioSci Humate's** mining techniques, they have grades as high as 70% available while competitive products have only as much as 50%. **BioSci Humates** can provide many different grades and preparations that are suited any grower's needs. We can also custom formulate to specific needs.

ECONOMIC BENEFITS

- ❖ **Stimulates root growth**
- ❖ **Reduces drought stress and improve yield stability**
- ❖ **Reduces heat and salt stress**
- ❖ **Increases soil water holding capacity-- reduces runoff , helps reduce erosion, and increases aeration**
- ❖ **Increases soil water holding capacity**
- ❖ **Increases water uptake**
- ❖ **Stimulates top growth**
- ❖ **Stimulates chlorophyll production**
- ❖ **Provides stimulus for beneficial soil micro-organisms**
- ❖ **Increases nutrient uptake**
- ❖ **Makes nutrients available to plants**
- ❖ **Assists in pest and disease defense**
- ❖ **Reduces absorption of toxic metals and pesticides**
- ❖ **Reduces absorption of herbicides**

For more information call: 877-4BIOSCI