



Alpha Agri-Products Inc.'s *HumiKa*™ is a naturally occurring carbon made from lignite coal. Carbon based products have an almost inexhaustible application in many different sectors. The reason for this versatility is that carbon is the building block of life. ¹

Understanding Carbon

Much work has been done in the field of Carbon research in the last century. With today's technology, scientists have unlocked many of the secrets unknown to our forefathers. At the forefront of this research was Canadian scientist Morris Schnitzer who is probably the most decorated in the field of Soil Science in this century. Carbon sources like, lignite coal contains humic acid, fulvic acid and trace elements (minors). Each of the groups has its own characteristics and functions.

Process of Humification

All organisms will return to humic compounds. This process is known as Humification. The first law of thermodynamics states that energy can neither be created nor destroyed in the universe³. All this to say that when humification of once living organisms into humic compounds has been completed, the end product has energy trapped inside each molecule⁴.

Carbon

As previously discussed carbon compounds are the building blocks of life. It has been said that all of creation is part of the carbon cycle and that this cycle will continue as long as the sun produces light. The benefit of the carbon element is that this molecule has the ability to bind to itself and to other elements using either absorption or adsorption. This process makes the carbon element a desirably property for decontamination and purification in many applications^{5, 6}.

Humic Acid

Perhaps more research has been done on humic substances in soil than any other specific element in soil itself. Humic acid can promote the growth of certain groups of algae, bacteria, fungi, and yeasts^{7, 8, 9, 10, 11, 12}. Humic acid can modify cell membranes³, and supply an adequate environment for many micro-organisms (microbial stimulation)⁴.

Fulvic Acid

A small part of humic substances is fulvic acid, often at a concentration lower than 2%. The difference between Humic Acid and Fulvic Acid is that Fulvic Acid has low molecular weight and is able to carry with it many important nutrients efficiently penetrating a cell membrane thus taking other nutrients or micros into the cell (assimilation)⁵. Fulvic Acid has been described as a root hormone for plants. Soils with high organic content and therefore usually high Fulvic Acid content often demonstrate healthy root systems. ^{16, 17}

References

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