EARTHGEN215, LLC

Spring 2024 News Letter!!

Atmospheric Carbon Dioxide is an Essential Component in Photosynthesis

Hay produced by the products EarthGen215 represents, that customers are using in warmer climates is greening, indicating their hay is emerging from its winter dormancy. When hay emerges from its winter dormancy is an opportune time to apply EarthGen215's Biological/Microbial Product Line. Please consult Our General Mixing and Application Guidelines for more details. Please call Tom, Jeff or Skeeter if you need a copy of those guidelines sent to you, and to discuss any questions regarding those guidelines. When this Newsletter is being written, other hay producers still have one to two feet of snow in their hayfields. Springtime is a great time to remember that light energy from the sun's ultra violet rays hitting the cumulous clouds as they reach tens of thousands of feet high, combined with certain atmospheric gases produce the beginnings of life in plants, and then, as the rains reach the earth the activated rain reaches throughout the soil. Those atmospheric gases are carbon, oxygen, and hydrogen. Despite many negative claims regarding carbon dioxide in the atmosphere, it is an **essential** component within the photosynthesis process. Plant leaves capture the light energy from the sun, as well as carbon combined with oxygen, (which is carbon dioxide), and oxygen fused with hydrogen (which is water vapor, H2O). Through the cellular respiration processes, these collective plant-captures create natural chemical energy. Much of that natural chemical energy is stored as sugars within growing plants' cells. Some of this sugary material created by photosynthesis can be seen in the picture below, oozing out of the roots of a corn stalk oozing out of the roots of a corn stalk.

Phloem within the vascular systems of growing plants deliver this sugary energy source into the soil where it nourishes beneficial soil organisms in the soil immediately surrounding roots through which the sugar oozes. The corn pictured on the front page was in a field that had been cultivated for weeds a day or so before the picture was taken. We often refer to the sugary material oozing from its roots as photosynthate. By way of photosynthesis sunlight energy is transformed and transported to be life-giving energy for all life on earth, including microorganisms, macro-organisms, plants, animals, and humans. The efficiency of growing plants to make these captures, transformations, and transportations is unmatched by any other function known to man. It is not an exaggeration, and it is worth

emphasizing: Without photosynthesis there would be no life on earth. Without carbon dioxide and water vapor, and the perfect intensity of light energy from the sun, there would be no photosynthesis.

Weather events during many, many years formed this magnificent canyon.

Weather and its patterns have always changed and has changed for a variety of reasons, not the least of which is solar flares and the gradual altering of the position magnetic poles. One of our goals for providing the products EarthGen215 represents and distributes is to help develop the soil structure so that the plants that grow out from it become resilient to all types of weather extremes. We also strive to have these products and protocols deliver benefits when weather patterns do not present extreme challenges. EarthGen215 also encourages producers to use considerably fewer synthetic fertilizers and chemicals, or to use none if producing organic crops. Please contact Tom, Jeff or Skeeter here at EarthGen215 to find out more of the How, What, When Where and Why of these incredible biological/microbial products.

A wonderful view of what these products will do even in the harshest of climates!

HERE IS A PARTING WORD ABOUT EARTHWORMS!!

Earthworms fertilize the soil by eating organic matter in the soil and excreting **castings that are rich in nitrogen, phosphorus, and potassium**. These are the key minerals needed for plant growth, and having them available in soil can help plants thrive. Earthworms leave behind excrement and castings that contain from **5 to 11 times** the amount of nitrogen, phosphorus, and potassium that they have ingested by concentrating the organic constituents in their food and making it more available to plants. Earthworm castings also help bind key minerals such as calcium, iron, and sulfur to soil particles. Furthermore, when earthworms die, their bodies decompose quickly, adding nitrogen and other nutrients to the soil.

Earthworms can also help create good soil structure. When they burrow through the soil, they create a channel for the gases that have been produced to reach the leaves as 70% of a plants uptake of these gases is via their leaves. By the breaking down of these essential elements the feeding of the plant via its root structure is readily achieved. Oxygen easily

reaches not only the plan's root system, but also the microbial civilization that is doing the work to feed the plant as well. The burrows of these worms break up hard soil as well , thus allowing plant roots to reach deeper. They also create better drainage by making channels in the soil; soils with earthworms can drain up to 10 times faster than soils without earthworms.

Earthworms can be very beneficial to crop production; one study found that on average, earthworm presence increases crop yield by 25% and aboveground biomass by 23%, all while increasing the quality of the crops.

WORMS AND MICROBES WORK HAND IN HAND!

In addition to solubilizing and mineralizing nutrients, microbes also make nutrients like nitrogen, phosphorus, and potassium available by breaking down crop residue. Crop residue is filled with valuable nutrients. WHEN WORMS ARE IN ABUNDANCE, THE SOIL IS HEALTHY!!

We look forward to speaking with you!!

Tom

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