EARTHGEN215, LLC

March 2024 Newsletter

Archaea – the definition of Resiliency and Adaptability!! (What are they, you say?)

Archaea are ubiquitous, beneficial microorganisms that survive and thrive in almost any and every environment. They are among the most ancient forms of life on Earth. Humans can find where archaea live, but to date, it appears that humans are unable to reproduce archaea in laboratories, making archaea's' DNA beyond the reach of human modification. Archaea may be the most primary, longstanding non-GMO (non-genetically modified organisms) organism we know of.

Members of the archaea domain have been found thriving in hydrothermal vents and terrestrial, boiling hot springs such as the midway Geyser Basin in Yellowstone National Par, Wyoming (pictured below). Temperatures in such places can reach 235 degrees Fahrenheit. These microscopic organisms also thrive in volcanoes.

By contrast, archaea thrive in the Artic and Antarctic oceans, and have been found in areas where soil and water remain frozen most months during the year. The picture below shows a part of the Artic Ocean and some mountains surrounding it. Thriving in the depths beneath oceans indicates that archaea also can tolerate exposure to high pound-force per square inch (PSI) as well.

Archaea members also thrive in very diverse pH environments, ranging from a pH around zero (0), to areas having a pH above 9.0. For example, archaea members thrive in very acidic forest-areas where the soil is covered in pine needles, pine cones, and various types of decomposing woods and roots. By contrast, different members of the archaea domain

thrive in highly alkaline soils such as salt deposits on the shores of the Great Salt Lake in northern Utah.

Members of archaea can thrive in anaerobic environments such as in marshes and hot springs, as well as in the **digestive tracts of humans and animals.** Within digestive tracts, archaea perform health-giving functions. Among those gut-related, health-promoting functions, archaea contribute to the production of intestinal gas that assists motility and elimination of waste matter.

Archaea and enzymes they produce, play essential roles in nutrient cycles including nitrogen fixation, sulfur metabolism, and cyclin carbon. Enzymes are proteins. These enzymes (proteins) endure and function long after the demise of the organism that produced the enzymes.

The product line EarthGen215 provides is comprised of enzymes harvested from compatible collections of beneficial organisms. Archaea can be found in some of the raw ingredients included in processes to make the microbial biological stimulant. The functions of archaea help maintain proportionate balance between and among soil elements and other nutrients essential for producing and maintaining production of nutrient-dense crops. Without archaea, nutrient cycles are disrupted **significantly.** Any such disruption adversely affects the health of plants, animals, and humans. Highly concentrated sugars and minerals in the product line fuel reproduction cycles of beneficial soil organisms, likely including archaea.

In addition to facilitating plant-availability of soil nutrients, archaea serve essential functions in decomposition of dead matter, and transforming dead matter into nutrient-dense humus. One way in which archaea implement this service is that they live in the gut of termites, where they assist in decomposing cellulose matter.

Archaea are exceptionally adaptable. In aerobic (well-oxygenated) environments they harness light energy from the sun, and use photosynthesis as its means for deriving energy to do its tasks.

In anaerobic (no atmospheric oxygen) conditions, archaea employ chemosynthesis to obtain energy to perform its work. Chemosynthesis, briefly described, is the process of combining substances that are bonded to carbon. These combinations, or compounds are referred to as “organic compounds.” (“organic” in this sense has nothing to do with organic food production methods). The energy archaea need to build organic compounds is derived by their oxidizing materials that are not bonded to carbon. Organic compounds being constructed using chemosynthesis have coherent bonds that become foundational parts of stones, soil, or other matter, depending on the materials being combined to construct the organic compounds.

Great Salt Lake in northern Utah. Soil in this area usually is very alkaline. The pH of soil in this area can reach 9.0, or higher.

Fermentation is another anaerobic process archaea use to obtain energy. Archaea metabolize carbohydrates, converting them into energy without requiring oxygen. Fermentation processes produce ATP (adenosine triphosphate), caron dioxide, lactic acid, and other compounds essential for crop production.

Archaea themselves are not visible with bare eyes. <u>Results of their work however, can be seen everywhere. Excessive applications of herbicides, pesticides and fungicides, can tarnish and interfere with beneficial results of archaea functions.</u> Applying the products that EarthGen215 represent, as recommended can accelerate soil remediation, and cleanse if from accumulations of chemicals that harm soil life and living soil’s production!

- July 30-31 we will have our booth at the Carolina Meat Conference in Boone, NC (ASU)

Thank you!

Tom

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