Soil Quality is the ability of soil to:
- supply plants with adequate nutrients
- have good drainage and aeration
- promote root growth and biological activity

Many of today’s crop production methods, including mono culture and the use of herbicides, pesticides, and inorganic fertilizers have reduced the size and vigor of our soils microbial population; thereby reducing soil quality and its inherent ability to sustain crop production.

In today’s fast paced agriculture, growers have had to minimize soil-building rotations and practices such as green manuring, in favor of programs equating to continuous cropping, resulting in a variety of soil and soil-related maladies becoming commonplace:
- soil compaction and poor water infiltration rates
- mineral deficiencies
- mineral toxicities
- soil-borne and/or foliar diseases
- herbicide persistence and concomitant toxicity problems

Highly productive soils have the following characteristics:
- pH close to neutral (6-7)
- high microbial populations, diversity and activity
- excellent aggregate formation and resulting water infiltration rates
- minimal capacity for mineral tie-up
- low inoculums levels of soil-borne pathogens
- low electrical conductivity (0.25 – 1.50) high cation exchange capacity

The one factor that would contribute most towards development of all favorable soil characteristics, is high microbial populations, diversity and activity.

QLF Liquid Terra Stimulator Technology is carbon based and IS FOCUSED ON GIVING NATURALLY-OCCURRING MICROBES THE NUTRIENTS THEY NEED TO GROW AND DO THEIR JOBS.

It was developed to help the grower meet the demands of today’s fast paced and high productive agriculture in an ecologically safe manner. We want a rich, complex soil microbiology system in which the microbes work on our behalf. Terra Stimulator Technology is a technology for soil development designed to restore soil fertility by accelerating the growth and development of selected microbial populations occurring naturally in the soil resulting in:
- Improved air and water exchange and drainage
- Improved aggregate formation and stability
- Reduced soil compaction
- Leaching of salts, lowering electrical conductivity and osmotic stresses
- Improved decomposition of organic matter
(crop residues, green manure, and livestock manure) mediated by microbes contributing to formation of humic substances increasing cation exchange capacity.

- Releasing tied up minerals.

When the soils improve, so do the plants. When soils are in optimum biological health, we grow plants with reduced cost
  - lower water input
  - less fertilizer use
  - less pesticide use
  - less erosion loss
  - greater yields

This means that stimulating soil bacteria is the key to helping restore the balance in soil.

Increasing soil microbial life improves the formation of soil aggregates and the creation of pore spaces for improved water infiltration, drainage, and aeration. Compacted soil is a common problem that reduces soil productivity and increases soil erosion resulting in contamination of surface water and ground water. The risk of soil compaction is higher today due to tillage practices and larger farm equipment.

One of the best methods for reducing soil compaction is increasing organic matter (OM) content through soil amendments that enhance microbial life. Organic Matter decomposition is necessary to release nutrients back to the plant and is mediated by various microbial species. As part of the decomposition process, many bacteria and fungi produce humic acids. In the soil, these acids chemically combine with each other to form large molecules of stabilized OM.

Plants are then able to develop stronger roots, which increases their access to water. When the crop is harvested, the left-over roots leave much food for soil life and the next crop. The channels in the soil keep oxygen levels up, something that is totally essential for good biological activity. Root systems tend to grow faster, larger and function better when beneficial organisms are present. A major effect of soil bacteria on roots is helping them to take up nutrients. Most of the soil nutrients are unavailable to roots by being chemically tied-up in the complex molecules of soil minerals and OM.

Those bacteria that help decompose raw organic matter (plant residues, green manures, animal manure) release a major part of the plant’s nitrogen and sulfur, and much phosphorus and trace elements. Almost all of the nitrogen stored in crop residues, soil OM, manures and composts, is in the form of complex organic molecules (proteins) that are not available to plants. We rely on microbial species to convert this organic nitrogen into the ammonium and nitrate forms that plant roots can utilize.

Certain other bacteria can break down some of the minerals in clays and loams to release potassium, phosphorus, magnesium, calcium and trace elements in available forms. They also aid plant growth by fighting root diseases by out competing them (competitive inhibition). Some bacteria and fungi produce substances that are antagonistic to disease organisms (antibiotics). The presence of growth-promoting substances (hormones, vitamins, humic acids and other organic compounds) in the soil will increase root system growth, sometimes dramatically. Soil bacteria, actinomycetes and fungi release enzymes onto the OM they are decomposing that speeds up the degradation process. The purpose of soil microorganisms is to help the soil achieve a healthy state of equilibrium. Key functions of soil microbes include:

- Decomposition of crop residue;
- Mineralization and recycling of nutrients;
- Creation of pore space for water infiltration;
- Detoxification of pollutants;
- Maintenance of soil structure and layers;
- Formation of good soil aggregates
- Biological suppression of plant pests.

This means that stimulating soil bacteria is the key to helping restore the balance in soil.