STRUCTURING LIQUID NITROGEN SOURCES

Liquid nitrogen solutions for agricultural crops in the northern plains and abroad are among the top sources used in agriculture.

With fertilizer inputs rising each year, it is imperative that every step be taken to insure that what is applied to the soils for crop growth are utilized by the plant to the optimum.

When incorporating liquid nitrogen sources, many reactions involving nitrogen occur in the soil. Nitrogen is made available to plants from organic matter through two of these reactions. Protein and allied compounds are broken down into amino acids through a reaction called aminization. Soil organisms acquire their energy from this digestion and also utilize some of the amino nitrogen in their own cell structure.

Ammonium nitrogen is formed by the second reaction which converts amino compounds into ammonia(NH_3) and ammonium(NH_4^+) compounds. This reaction is called ammonification. These two reactions are referred to as mineralization. Soil organisms acquire their energy from this digestion.

Ammonomical forms of liquid nitrogen are changed to nitrate that the plant can use by two distinct groups of bacteria. (nitrosomona, nitrosococcus) that convert ammonia to nitrite. Nitrobacter than oxidizes nitrite to nitrate and this two step reaction is referred to as nitrification. The reactions occur readily under conditions of adequate oxygen, warm temperature, moisture and soil pH. When any of these conditions are inadequate, valuable nitrogen becomes lost from the soil to the atmosphere by reactions that convert nitrate to gaseous compounds of nitrogen. This process is called denitrification.

Under anaerobic conditions caused by excessive moisture or soil compaction, certain bacteria are capable of removing oxygen from chemical compounds in the soil to meet the needs of their own life processes. When nitrate is used, various gases such as nitrous oxide and nitric oxide are formed. As these gases are lost from the soil into the atmosphere, **there is a definite loss of crop producing nitrogen.**

Note! Water makes up a large portion of liquid nitrogen such as ammonium nitrate 32% with higher salt out temperature, to make a lower salt out temperature such as 28% nitrogen. These nitrogen sources have a salt out characteristic, however, one is lower than the other.

The salts at lower salt out temperature will separate from the carrier producing a higher salt index and leech near or below the root zone pre-emerge or near or below the root zone post emerge due to inadequate oxygen, nitrogen fixing bacteria, temperature, etc. This may become phytotoxic to the roots and the plant.

The key is Structuring liquid fertilizer.

While filling liquid applicators, structure the liquids first through a Structuring unit which will help eliminate denitrification and lower the salt out temperature of liquid sources.

Other benefits of importance are it will increase oxygen to the soil media for more nitrogen fixing bacteria to reduce compaction.

Structuring will also increase bio photon or life force energy to the liquids for key beneficial organisms to reproduce at a rapid rate and increase nutrient absorption and stimulate root development. This provides the proper environment for establishment and development of a good root system. Once established, the root zone is surrounded by an increased field of energy to push the plant forward with increased energy and eliminate premature plant growth.

This provides a wall of defense against invading organisms or pests that would normally rush to the dinner table of a low energy plant and feast off a producers net earnings.

Remember! The law of quantum physics supports- everything is energy, **But, Energy is everything.**