By way of introduction, Steiner indicates what is most important to agriculture. Instead of talking about the chemical and physical components of something, he asks us to look carefully at how human beings live. We find a considerable degree of emancipation from the outer world, but this is less so with animals. Plants are still embedded in and quite dependant on what is occurring in their earthly surroundings, still very much a reflection of the universe.

An example of this would be that plants can only breed at specific seasons, animals have a boarder range, and humans are totally emancipated from the annual cycle. The point here is that plants reflect directly the celestial positions, where as in animals it is less so, and humans appear quite free in regard to heavenly positions. I say appear because astrology certainly questions this. Nevertheless we are much freer than plants, whose growth requires very specific seasons.

The first thing we need to take into account is the extremely important role silica plays, silica is a combination of elements silicon and oxygen, and makes up one half of the earth's crust. Quartz, sand and many rocks are primarily silica, and so are computer chips. Why is silica so important?

Communication and intelligence are the answers. Fungal hyphae, the underground parts of fungis, are tubes made of silica. They are the roads, so to speak, that allow live soil nitrogen to be transported into the plant. Silica-rich, fungal hyphae unite the plant root with distant soil particales, nutrients and water. They are also called mycelium.

When a plant needs nitrogen, or any other element, a signal is sent down to the root. Bacteria and fungi living on the roots help the plant get what it is needing, in return for their food, which is what sloughs off of the root as it is growing. It is a symbolic relationship in healthy soil. Every plant species has specific microbes that colonize their roots, and make sure the plant grows well.

Not all nitrogen is the same. Live nitrogen in the form of amino acids is the most easily used by

the plant. This comes from the living beings in the soil, from the microscopic to dead bugs to earth worm castings. Just the right amounts are whisked away up the silica-rich tubes of the fungal hyphae and into the plant.

Silica has an antagonist, nitrate. This is the dead nitrogen. It takes then times as much energy (sugar) for the plant to use. Nitrates harm the soil fungi, and repeated use causes fungal populations to decrease.

Live nitrogen in a plant means more sugar. W hen our kale grows with amino acids nitrogen, the sweetness is astounding. If the compost was too fresh, or it rains heavily, nitrates get into the kale and it doesn't taste as sweet. Soil life is capable of utilizing a portion of the 1400 pounds of atmospheric nitrogen in the air above every square foot of soil. But nitrate nitrogen destroys these nitrogen-fixers and the fungal transportation system made of silica.

This is why organic farmers do not want water-soluable nutrients in the soil. They wont use fresh manure or chemical fertilizers, but rely on the wisdom of nature for growing healthy plants silica is responsible for the communication and intelligence between plants, fungi and the soil.

What moves the nitrogen-rich amino acids and other nutrients through the silica-rich fungal hyphae transport system? Calcium is the prime mover, and is always bound up with other elements. It grabs whatever the plant needs and gets it there. Calcium and silica are the great polarities in nature, with the plant in between. Clay in the soil mediates the forces of these two poles.