

HOW TO BUILD YOUR SOIL

Compiled from

RESEARCH and STUDIES

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What Hybro-Tite is:

Hybro-Tite is a mineral of rather unique properties.

Strictly speaking, it is a gneiss but with the granular structure of granite; hence the name "Hybro-Tite", is indicating a hybrid between gneiss and granite.

It is a silicate mineral containing 72.96% silica, 4.73% to 5.20% potash, 4.18% soda, 1.28% lime, .07% magnesia; furthermore, alumina, which forms into clay upon weathering, and iron.

Its content of trace minerals is impressive; strong: titanium, phosphorous; medium: manganese; fair: strontium; trace proper; copper, yttrium, silver, zinc, lead, chromium, nickel and vanadium. To the agriculturist, silica and potash are of importance. Everybody knows about potash as an important soil and plant nutrient. Less known is the fact that silica has an importance, too!

Silica plays an important role in plant metabolism. This has been much neglected in the modern fertilizer concept. It is contained in the straw, stem, cell walls and epidermis of plants. Tobacco, for instance, is very receptive to silica and improves the structure of the leaf as well as its burning quality. Inasmuch as Hybro-Tite also contains potash, which likewise improves the burning quality of the tobacco leaf, there is an ideal combination of both elements in Hybro-Tite.

It has also been observed that silica-containing cell membranes are less susceptible to fungus diseases and pest attacks. It has also been observed that silica, at least in grains, oats and barley, improves the utilization of phosphates. Silica

functions also as growth stimulator, favoring all growth into length (stretching) of stems, therefore protecting against lodging.

We quote from an agricultural textbook: "The more silica available, the better was the absolute yield, and less yield was obtained with additional phosphate. Silica, therefore, has a phosphate sparing property. The content of organic matter and humus in soils promotes these beneficial effects of silica. Apparently organic silica compounds are formed."

Potash, the other important component in Hybro-Tite, affects the sugar and starch production.

Why does not every silica compound perform alike?

Sand, for instance, is pure SiO_2 , but pure sand is a poor provider. Here enters the problem of availability and utilization. Sand is dead; it is the end product of weathering; it is "old", used up.

The hybrid-granite gneiss in Hybro-Tite is young, virgin. It is the product which stands at the beginning of a life cycle of natural soil building.

It is this virgin quality which is of decisive importance and which lends Hybro-Tite so successfully to enzymatic and other organic activation.

The natural weathering process:

Rock minerals form soils by gradual weathering over long periods of time. It is said that it takes thousands of years to produce one inch of soil. The natural agents which produce soil from rock are: water, air (oxidation), weak organic acids such as

carbonic acid (HCO_3), other weak organic acids as are produced by microlife in soil and excreted by plant roots.

Experience has shown that Hybro-Tite in the presence of soil organic matter and such weak organic acids as mentioned, is particularly susceptible to these natural weathering agents. The nutrients contained in Hybro-Tite therefore become easily available.

A great break-through: enzymatic activation of Hybro-Tite as soil builder:

Experience has shown that Hybro-Tite "weathers" and therefore becomes quickly available in the presence of soil microorganisms which produce weak organic acids, carbon dioxide and enzymes. In this regard, Hybro-Tite has behaved very successfully as soil amendment. It is this property of enzymatic activation which characterizes Hybro-Tite in contrast to the slow weathering process of other granite or gneiss rock meals.

Hybro-Tite is now being blended with organic materials, which contain suitable soil organisms producing the necessary and most efficient enzymes and organic acids.

It is known in the laboratory that rock can be brought into solutions with strong acids or alkaline materials under high pressure and at high temperatures. Enzymes, in nature, do the same much faster and without the need of pressure and heat.

In composting and mixing with farm manures it is bred together with rich organic materials, teaming with soil life. In soils to which it has been added, this process continues to work. In fact, the natural soil life will be stimulated, inasmuch as the acti-

vating material itself serves as food for the soil organisms.

Hybro-Tite is not a fertilizer according to the strict concept of a nitrogen-phosphate-potash fertilizer concept, but it contains potash which is held available when the plant root needs it; it is absorbed by plant roots and it therefore provides potash and silica, plus trace minerals. But its essential value is in the dynamic activating process, thus enabling a better utilization of all other nutrients, too.

Dynamic vs. static: the proper balance:

Soil life and plant life are not static, never at a standstill. They change continuously. There is a dynamic equilibrium. Nitrogen, for instance, is considered to be an important plant food. It effects fast and lush growth; produces, as the farmer says, yield. But nitrogen is efficiently used only when it is balanced by potash. In potash-deficient soils, a multiple of the actually needed amount of nitrogen needs to be given to produce results; hence the danger of excessive nitrogen effects.

Potash is frequently added in water soluble form. This makes it too easily available and the danger of luxury consumption of potash exists. Also that part of potash which is not used by the plant roots, because of its water solubility, is lost by leaching out, being literally washed out, or, because of an unfavorable soil condition, it may be locked up and become entirely unavailable. In the dynamic equilibrium of a soil, living organic matter, that is, humus, acts as a stabilizer. As the silica in Hybro-Tite has a sparing effect upon phosphate so the potash in it has a sparing effect upon nitrogen.

Hybro-Tite provides the factors for such living organic matter. It is therefore economical - slowly but steadily available, avoiding the pitfalls of fast, forced release or of tying down, both of which are wasteful procedures.

In a well stabilized, activated soil, plants grow firm and do not store excessive water in order to balance the uptake of excessive nutrients such as nitrogen or potash. They keep better; therefore are more resistant. The taste is preferable - more aromatic.

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