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JOHN'S CORNER

GREENSAND

By John Ferguson

Last week we started talking about soil amendments (Expanded Shale) and their role in the garden. Fall is one of the best times to work on improving one's soil and preparing new beds. Hence, for the next few weeks we will be talking about soil amendments.

Most of the soils around Houston tend to be very nutrient deficient. We are located far from any areas where the weathering of igneous rocks would release the required minerals and allow them to be deposited in our soil for plants to use. Historically, we also receive a lot of rainfall. The slight acidity of rain tends to make these minerals soluble and allows them to be leached out of the soil. The result is soils that are low in the minor and trace elements. This is why it is so important that we have lots of organic matter in our soils to feed the microorganisms. These guys will absorb the nutrients into their bodies and prevent them from leaching. As they eat each other the nutrients are released into the soil and the plant roots can get them. For example, fungus will form calcium oxalate crystals on their hyphae and store it into the soil untill it is needed. Blossom end rot on tomatoes is an example of a calcium deficiency. Some weeds like Dandelions prefer soils low in available calcium.

Traditionally, we were taught that plants can grow with only 16 elements. However recent research has shown that plants grown with a much wider assortment of nutrients have less disease and insect problems, use less water, taste better, have larger and more fragrant flowers, etc. The human body has 90 elements in it. If these elements are not in the soil then plants cannot absorb them, and we do not get them when we eat the plants and fruits, nuts, etc. Many health problems are the end result of this type of scenario.

There is an excellent lecture available on CD on the importance of trace elements. It is called "Dead Doctors Don't Lie", By Joel Wallach, DVM, N.D, (available at many health food stores or online). It

explains why we have so many health problem associated with the lack of nutrients in our food supply. Almost all of Dr. Wallach's statements have been confirmed by other researchers since this lecture was recorded many years ago. This is a fun lecture to listen to, as Dr, Wallach has quite a sense of humor as he explains the importance of trace elements for both animal and human health.

So what does this have to do with greensand? For years many gardening books and horticultural publications talked about the importance of New Jersey greensand. However shipping it into Houston was extremely expensive as it can weighs over 3,000 pounds per cubic yard. About 10-15 years ago deposits of greensand were discovered in Texas and now it costs only pennies per pound! It is the most economical way of adding these nutrients to your soil.

As we all know seawater has almost all the elements known to mankind in it. Greensand is a naturally occurring mineral mined from ocean deposits from a sedimentary rock known as "Glauconite," hence it contains these nutrients. It is often an olive-green colored sandstone like rock found in layers in many sedimentary rock formations.

Origin of Greensand

Greensand forms in anoxic (without oxygen) marine environments that are rich in organic detritus and low in sedimentary inputs. Thus when greensand is exposed to oxygen, the complex minerals break down and the nutrients are released into the soil.

Greensand in our area is a dark greenish gray color when dry and turns almost black when wet. Greensand is a very heavy mineral with a density of approximately 90 pounds per cubic foot (over 1 ton per cubic yard). The minerals are normally released slowly over time but occur much faster in organic rich soils full of beneficial microbes (microbes produce organic acids as they break down organic matter which facilitates the release of the minerals for plant absorption).

The pH of greensand varies from slightly acidic to slightly alkaline depending on the source and has little effect on soils. For those that want a more technical explanation and references see the paper on Greensand on the Nature's Way Resources website at www.natureswayresources.com.

Uses of Greensand

Greensand has been used for over 100 years as a natural source of slow release fertilizer and soil conditioner. The slow release of potash and phosphate does not burn plants and the minerals improve the moisture holding properties of soil.

Greensand often has the consistency of sand but is able to absorb 10 times more moisture, making it a good amendment for use in agriculture and horticulture for many soils types. Greensand does not burn plants and helps the beneficial microbes to grow in the soil. It also has been found to be a good conditioner to help loosen heavy and tight soils and help bind loose soils.

Recommended application is 2-4 pounds of greensand per 100 square feet or 1 ton per acre. For potting soils 5-20 pounds per cubic yard can be beneficial. It is a good idea to repeat this every few years to replace the nutrients that have been used up or leached from the soil.

A field test by Rutgers University in a sandy loam soil with greensand applied in the row at the time of planting, found that the application of greensand increased the yield of potatoes by 16%.

The benefits of greensand, largely unexplained by scientific research are far more than a laboratory analysis would indicate. However numerous greenhouse and field studies have shown significant improvement in the growth of plants. Other studies have shown that the use of greensand improves the taste, color, nutritional value, the health of plants and the health of soils.

Note: The crushing process of the glauconite rock produces both greensand and rock. The rock can be screened to different sizes and used as a landscape rock. It gives a very different look than commonly used gravels, crushed granite or basalt. The green rock portion when used on pathways packs well, is black when wet and greenish grey when dry. The greenish grey color makes yellow flowered plants (daylilies, turnera, etc.) stand out and really "sizzle and pop".