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JOHN'S CORNER

Organic Fertilizers and Nutrients –11 Rock Phosphate

By John Ferguson

For years many gardeners have used a product known as rock phosphate as a source of the element phosphorous (P) which is required by all life including plants. It is one of the big three we often see advertized on a bag of fertilizer as (N-P-K).

Most of the world's phosphate rock comes from sedimentary deposits (often limestone's or mudstones) that contain minerals with the element phosphorous these are called Phosphorites. There are a few sources of phosphate rock from igneous sources and a few found around hydrothermal vents in the deep ocean that we will not discuss. In the United States the majority of rock phosphate comes from deposits in Florida and North Carolina and a small amount of rock phosphate comes from Idaho and Utah.

The amount of the element phosphorous in the deposits is usually small and varies greatly. To provide a more cost effective product the raw deposits are mined and processed to concentrate the phosphorous and remove clay, sand, rocks, limestone, etc. After processing it is sold as hard rock phosphate or soft rock phosphate (or sometimes colloidal phosphate). The phosphorous is in the form of phosphorus oxide (P_2O_5). Larger particle sizes are referred to as hard rock phosphate and smaller sizes as soft rock phosphate.

To make artificial fertilizers like super phosphate, triple phosphate etc. the above phosphate minerals undergo additional processing. A natural by-product of phosphate processing occurs in the form of a water rich slime that goes to settling pits to dry out. After drying the product is easily ground into a powder that is also called soft rock phosphate and often used in gardening. It contains 20-25% phosphorus oxide (P_2O_5) and 25% lime and some other minerals. These minerals are not soluble in water hence it works best when mixed into the soil where microbes can release the phosphorous and other minerals. The phosphorous release

rate with soft rock phosphate is typically 1-2% at any given time even though the total analysis is much higher.

Many gardeners like to add a tablespoon in the bottom of their transplant holes as many species of plants require more phosphorous when they are young.

SUMMARY:

Soft rock phosphate is a good way to improve soils low in phosphorous and supply plants with related nutrients. One should only use *IF* a soil test shows it is needed.

PROS:

- readily available
- natural source of phosphorous
- inexpensive

CONS:

- may contain trace amounts of radionuclide's (Uranium, thorium, radium, etc.)
- may be slow to release in alkaline soils
- too much can cause other nutrients to be locked up
- mining cause some environmental damage
- requires a large transportation cost to get it to our area

PROS:

- good source of major nutrients
- contains some minor and trace elements
- feeds soil microbes
- does not affect soil acidity
- increases soil organic matter
- naturally low in salts
- only apply once per year
- doesn't leach and pollute

CONS:

- most likely GMO (unless certified organic)
- not water soluble
- may contain BT poison from genetically modified varieties (GMO)
- not approved for organic production unless certified organic.