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JOHN'S CORNER

ORGANIC FERTILIZERS AND NUTRIENTS 17 - IRON PHOSPHATE

by John Ferguson

Most of our readers know both iron (Fe) and phosphorous (P) are required for plant growth and health. So this begs the question, where do they come from?

Natural sources include the mineral apatite, fossilized bones, and bird droppings (guano). It is often found in excess from the outflows of sewage treatment plants.

Phosphorus is usually found in nature combined with oxygen (O) into the form we call Phosphate (PO_4^{-3}). Phosphate is used in many molecules that are essential for life such as ATP (adenosine triphosphate), which is used for the storage of energy as well as DNA and RNA molecules. It is found in all plants and animals from algae to humans.

A lack of phosphorous can be a limiting agent in the growth of plants. Too little and growth may be slow or stunted and too much then excessive growth. Phosphorous deficiency induces reddening to purple stems and leaves, poor flowering and fruiting. The too much is often the cause of massive algae blooms in our waterways or leads to leaf chlorosis. Too much phosphorous in the soil prevents roots from absorbing iron and manganese (Mn). It also reduces or prevents the growth of mycorrhizal fungi that is so critical for healthy plants.

So what does this have to do with Iron Phosphate? The most common source of iron phosphate (FePO_4) is from products to control snails and slugs in our gardens like Sluggo[®]. These products work well and are inexpensive but they can build up in the soil with frequent repeated use. Iron phosphate slowly dissolves in water hence it is normally relatively benign in the environment. The problem occurs with the additives such



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as EDTA, a chemical to make the iron and phosphorous more absorbable by life forms. There are numerous reports that this combination can kill earthworms and our dogs that like to lick it.

SUMMARY:

Iron phosphate is not a good choice to provide iron or phosphorous to our gardens. If it comes from a bait for slugs and snails we need to use sparingly as it can build up in the soil and cause problems if it contains additives often listed as inert ingredients. May cause excessive amounts of phosphorous in the soil creating nutrient imbalances and tie-up problems. If we only use it occasionally to help control our slugs and snails then it should not be a issue. High organic matter content of our soils with healthy microbial populations minimizes the risks and problems.

PROS:

- inexpensive
- readily available
- controls slugs and snails

CONS:

- not water soluble
- may contain additives
- too much causes soil and plant health problems
- may be toxic to pets
- may be toxic to earthworms
- may cause nutrient tie-up problems.