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JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

Researchers at Penn State did a study to find where the fungal pathogen *Colletotrichum fioriniae* comes from. This fungus causes the disease known as anthracnose in over 100 species of fruit and vegetable plants from apples to strawberries. This fungus thrives in warm and humid conditions like we have along the Gulf coast.

Previously it was thought that the disease survives on the leaves of infected plants. What they discovered was that this fungus was present in at least 24 species of forest plants, however it did not cause any disease. This finding explains why just pruning off diseased (infected) wood does not work as a control method. *Journal of Phytopathology* 2020.

I suspect that plants grown in organic soils full of microbes and trace elements (minerals) like that found in a forest, are naturally resistant to this disease. Organic apple growers have far less and issue with this disease than those using chemicals and artificial fertilizers.

We often talk about trace elements in this column. A paper in the journal *Nature's Communications* (2020) was on the element uranium (U). Very small amounts of uranium have been found in human bones as well as plants, microbes and animals.

When uranium is in the +6 electrical state it is highly soluble in water and can spread through the ecosystem. When in the +4 state it is not as soluble. They found the presence of the



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mineral magnetite helped convert uranium from +6 to the +4 electrical state. This was done by the formation of small wires only 1-2 nanometers in size (1-2 billionths of a meter).

What interests me is “Why does the body store uranium in our bones as the body has an elaborate mechanism to remove heavy metals from our body”?

A few years ago, we did a study on all 79 elements found in the human body and uranium was not one of them. At the same time the element Europium (Eu) had no known biological role. Europium is not easily absorbed by plants hence very little gets into the food chain. However, a couple laboratory studies on animals fed diets with Europium increased their lifespan by 100%.

Research from Ludwig-Maximilians-University published in the journal ChemBioChem (2018) has found the bacterium *Methylobacterium thermophilum* uses europium to make an enzyme that converts methanol into formaldehyde. Its active site consists of the cofactor PQQ (pyrroloquinoline quinone) which is critical for many biological functions from microbes to humans.

Members of the *Carya* family (hickories and pecans) often have 16 ppm of this element (IF it is in the soil).

We are still in our infancy of learning how the body uses trace elements hence always a good reason to Re-mineralize your soil. This element is found in mineral sands of igneous rocks. This is why the Re-mineralizer product from Nature's Way Resources has granite and basalt sand (both igneous rocks) along with greensand in it to ensure all the trace elements are present.



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Benefits of Remineralization of one's soil:

- Provides slow, natural release of elements and trace minerals.
- Increases a plants resistance to insects, disease, frost and drought.
- Increase the nutrient intake of plants.
- Increase yields and increases Brix reading.
- Increases growth rate and diversity of microorganisms.
- Increases earthworm activity.
- Speeds up formation of the humus complex in soil.
- Prevents soil erosion.
- Increases the carbon storage rate and capacity of soils.
- Increases nutrient density of food crops.
- Enhances flavor of crops.
- Reduces weed problems.
- Rebalances soil pH.
- Makes organic fertilizers work more efficiently.

Speaking of nutrients and trace elements, over the past year there have been numerous studies released on protecting oneself from COVID-19 by nutrition. At the gym the other day while warming up on the treadmill, I saw a new commercial for a vitamin package with extra vitamins D and C, and the trace minerals magnesium and zinc for immune system support. These are the same nutrients given President Trump when he had COVID-19 and recommended by many doctors to protect oneself from this virus.



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Note: Consuming foods with glyphosate (the active ingredient of the herbicide Round Up) on them prevents this from working as it prevents the absorption of these essential elements from the food one eats. Genetically modified foods (GMO's) have the highest level of contamination. Another reason to grow one's own food or at least buy organic whenever possible.

For those whom want to learn more about the importance of re-mineralizing our soils there is an organization dedicated to this cause known as ["Re-mineralize The Earth"](#)

The Soil Health Institute has a [new film out called "Living Soil"](#) on modern regenerative agriculture and gardening.