

JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

Many companies that handle sewage sludge and handle waste water from sewage treatment plants, often want to dispose of this toxic waste on gardeners.

One of the contaminants of this waste is painkillers like aspirin and ibuprofen which interferes with a plants growth and immune system. One of the things recently discovered is that these painkillers interfere with the flow of auxins which are a plants major growth hormone. They also interfered with the whole endomembrane system that resulted in disrupted cellular systems.

These changes lead to faulty plant growth, an example is that roots grew up rather than down. Journal Cell Reports (2020)

A lot of our food supply is grown with sewage sludge (biosolids) as a fertilizer or they fields are watered with the waste water. No wonder we see so many reports on the news about health problems from our conventional food supply. Another reason to buy organically grown food whenever possible.

One of the issues facing the worlds food supply is a lack of phosphorous (P) as most of the geologic deposits are almost mined out. So, on the positive side of the sewage sludge issue which is rich in phosphorous, some nitrogen and other elements that plants require, is new research to remove these nutrients and leave the heavy metals, pharmaceuticals, etc. behind.



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Research at The National University of Singapore has discovered a new strain of bacterium that can remove both of these elements efficiently as compared to current methods. Hence, maybe in the future we can find better methods of handling this waste. Journal Water Research (2020).

Most gardeners know that ants often protect certain insects like aphids to get the honeydew they produce. The Journal Ecological Entomology (2020) had an interesting article on how some caterpillars also use ants for protection.

Ants have very poor eyesight and sense the world by chemical signaling in the environment. Some caterpillars produce chemicals on their skin that mimic the chemicals that plants put out, a form of camouflage. Other species of caterpillars produce a sugary nectar that feed the ants, so they protect the caterpillar.

God's creation is amazing with all the subtleties of how nature works.

A paper in the Journal Antibiotics (2020) had a paper on oak trees in health care. They were studying drug-resistant bacterial on surfaces of many materials. An estimated 700,000 people die each year from infections linked to antimicrobial resistant organisms.

Contrary to what they expected, they found that wood from oak trees inhibited bacterial growth. They also discovered that how the wood was cut, with the grain, against the grain, etc. made a difference. Wood that was cut transversal or tangential, rapidly decreased bacterial counts when they were placed on the wood!

My wife's hobby is cooking, hence the next time I need a gift for my wife, I think I will look for some nice oak cutting boards.



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When we are low in iron (Fe) we tend to feel weak, dizzy and fatigued. Similarly, the microbes that make our soil healthy need iron also. When the soil is low in iron the microbes slow down the carbon absorbing process since they have to invest a lot of their energy into making mineral dissolving compounds to survive.

Proceedings of the National Academy of Sciences (2020).

A while back I reported that researchers found that basalt sand could speed up humus formation (carbon sequestering) in soils by 400%. Basalt is a good source of iron. Texas greensand is another natural source of iron. The red soil of East Texas is caused by iron that is oxidized (think rust). Re-mineralizer contains both greensand and basalt and a great way to get iron and other essential elements into one's soil.

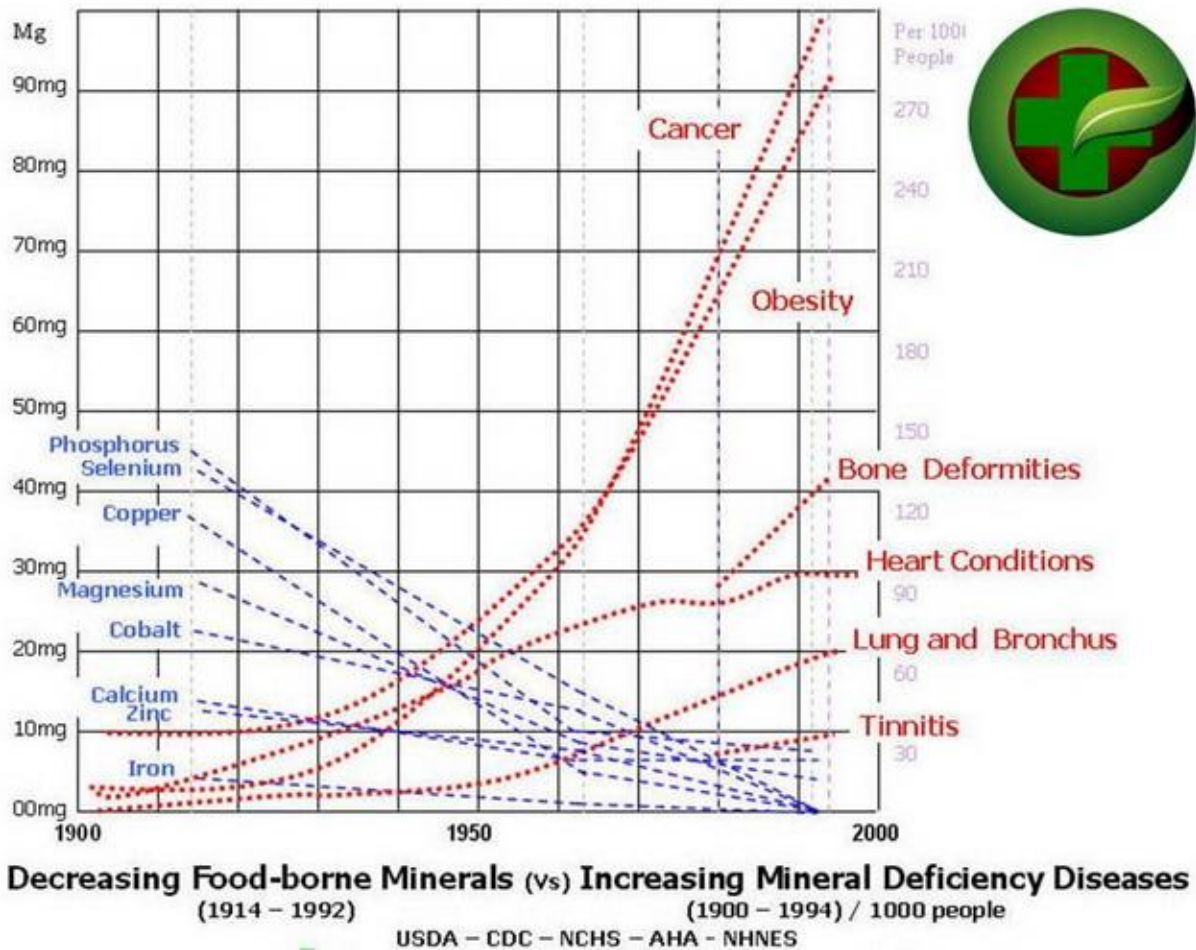
A study published in the journal Nature's Communications (2020) using new techniques, examined carbon in the soil at the atomic scale (size of atoms). They discovered that there are several types of carbon stored in the soil. One surprise was that a lot of the carbon they found was from microbes, from their waste material and from their dead bodies.

They confirmed that the form of nitrogen (N) supplied to plants affects carbon storage in the soil. The nitrogen interreacts with elements in the soil like iron (Fe) and aluminum (Al) to form stable carbon compounds at the atomic level. The research suggests that organic forms of nitrogen work best at increasing carbon storage in the soil.

Soils with higher organic matter (carbon-based molecules) are healthier and grow better plants. This is another reason to use organic fertilizers and re-mineralizer and build one's soils. Toxic agricultural chemicals destroy soil life and destroy carbon compounds in the soil.

A recent paper titled "Why are there Fewer Nutrients in Our Food?" released by the Orthomolecular Medicine News Service (December 2020) talks about some of the issues.

Nutrient density is a subject we have talked about numerous times. As shown on the chart below, as nutrients decrease health problems increase.



A report by the USDA found that between 1963 and 2000 there was a 50% decline in all types of fruits and vegetables.

There are multiple reasons for this decline, and a few are:



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- 1) When one grows a crop and then harvests it, nutrients (elements in the form of minerals) are removed from the soil. Over time these essential elements are depleted and they are no longer in the soil for the plants to absorb.
- 2) Many elements require microbes in the soil to help roots absorb these essential elements. When toxic chemicals are used (pesticides, herbicides, artificial fertilizers, etc.) the required microbes are killed off.
- 3) Many genetically modified and some hybridized crops have lost the ability to absorb these nutrients even if they were in the soil. Note: Heirloom varieties tend to have higher nutrient density and better flavor.
- 4) Herbicides like glyphosate (Round Up) bind with many elements in the soil (zinc, magnesium, manganese, etc.) and prevent them from being absorbed.
- 5) Plants prefer to absorb potassium than calcium and magnesium. Too much potassium in the soil (artificial fertilizers) prevents these elements from being absorbed. A shortage of calcium and magnesium leads to weak bones. Elements like zinc and magnesium are essential for our immune system to fight viruses like covid-19.
- 6) From our study of all the elements found in the human body a few years ago, we learned there are 79 elements found in the human body. Our agricultural universities tell us we only need 16 elements. This is a huge disconnect. We need to apply rock dusts and re-mineralize our soil for better health.

The reasons to grow as much of one's own food from vegetables to fruits is essential to good health. Next best is buying local organic food from farmers markets and least beneficial is organic from the grocery store. Non organic food is not good and has many problems from GMO's to toxic chemicals.