



NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

The Environmental Working Groups (EWG) guide to healthy eating has just been released for 2023. Yet again, strawberries top [EWG's Dirty Dozen list](#). 22 different pesticides were detected on a single strawberry sample! See the full list of fruits and vegetables we recommend you buy organic, when possible, because they are less likely to have traces of pesticides.

On the flip side they found the top 15 vegetables with the least amount of pesticides called the [Clean 15](#).

Another research paper on the dangers of glyphosate, the active ingredient in the herbicide Round Up, was published last year. It is well known that one of the breakdown products of glyphosate called AMPA (aminomethylphosphonic acid), which is often found on food, is known to cause breast cancer, thyroid dysfunction, birth defects, fatty liver disease, endocrine disruption and more.

Researchers at the University of California can add one more item to the list of health problems caused by consuming foods with glyphosate (Round Up) on them. Glyphosate was found to cause greater epigenetic age acceleration. Environmental Health Perspectives, April 2022

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Conventionally grown food which is full of toxic chemicals (see article above), commonly has glyphosate on them. Genetically engineered food has the highest levels of glyphosate. More reasons to grow one's own food organically or at least purchase organic food whenever possible.

I have often reported that using municipal water that has been fluoridated hurts the growth of many species of plants as well as microbes in the soil. It weakens the plants immune system making it more susceptible to insects and disease.

I read this week that they are now over 20 studies since 2017 showing fluoride significantly lowers the IQ of children. The Fluoride Action Network (FAN) has filed a lawsuit against the EPA to get fluoride removed from our water systems.

Fluoride is a waste product from the production of aluminum (Al) and the production of phosphate for artificial fertilizers. The EPA by allowing it to be put in our water supplies, has saved these companies many tens of billions of dollars in disposal costs. It is not known as The Enhanced Profit Agency for nothing.

Hence another benefit of using an organic fertilizer is one is not contributing to the production of fluoride.

Nature regularly uses fire in our forest and prairies to maintain the health of our ecosystems. When fire occurs every few years it is very beneficial for many reasons. However, researchers have discovered that when natural systems are not allowed to be

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burned regularly, the fuel load builds up and eventually burns extremely hot hence instead of being beneficial it causes harm.

Researchers from the University of California Riverside have found that microbial life in the 2018 fires in California was destroyed and the mass of the microbes dropped by 50-80 percent after the fires. Journal Molecular Ecology, 2022

We know that plant health and growth is directly tied to microbial activity. This another study that shows God knew what he was doing and Smokey The Bear was wrong.

Plants with higher levels of the element silicon (Si) in their tissues have less disease and pest issues than those with out the silicon. So how does a gardener build up available silicon in our soils? Hence, let us work backwards.

Most plants absorb their silicon in the form of orthosilicic acid whose formula is $\text{Si}(\text{OH})_4$. Microbes produce this form of silicon by breaking apart silicon compounds such as calcium silicate (CaSiO_3), magnesium silicate (MgSiO_3), and potassium silicate (K_2SiO_3). These minerals are commonly found in the breakdown or weathering of igneous rocks like granite and basalt. If the weathering continues long enough clay soils may be formed hence some clays are high in these minerals.

Hence, products like Re-mineralizer (a mix of granite, basalt and greensand) provides these silicates as do some clays. Silicon can compose form 0.1 to 10% of a plants dry weight so obviously it is very important. Now what are the benefits of increased silicon in our plants? From the Acres USA classroom:

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- it binds with other elements increasing their availability like copper, manganese, zinc, and boron.
- it helps reduce phosphorus leaching makes it more available to plants
- it reduces the plant uptake of toxic elements like aluminum and sodium
- silicon increases a plants height, stem diameter, root length, and root activity
- it increases the strength of stems
- it increases photosynthetic activity (efficiency)
- it reduces leaf evaporation/transpiration losses (helps plants be more drought tolerant)
- it increases antioxidant enzymes in plants
- increases a plants resistance to both biotic and abiotic stresses
- silicon helps the plants cells become tougher and less attractive to chewing insects
- it is used in the production of some root exudates
- required by some species like rice, wheat, and sorghum

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