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## NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

I will start with a little trivia this morning. Most gardeners have noticed the rich earthy aroma that wafts up after a good rain. This wonderful aroma is called *petrichor* and often a sign of healthy soils and comes from a family of chemicals we call terpenes.

A member of the terpene family is known as geosmin, is produced by the *Streptomyces* bacteria along with a few other microbes. Researchers have discovered that this is a signaling chemical that tells most predator microbes I am not good to eat.

However, the study found that this chemical attracts springtails whom can eat the bacteria without harm and then they spread the bacterial spores throughout the soil. *Journal of Applied Microbial Microbiology* (2022).

Other studies have found this chemical repels fruit flies at levels as low as one part per 100 million molecules. Lastly, humans can detect geosmin at levels of only 400 parts per trillion! For humans to be this sensitive to it, I suspect it is good for us and why nature/forest bathing is so therapeutic.

The Alliance for Natural Health had an interesting report in their newsletter (11/01/22), on neonicotinoid pesticide treated seeds. The treated seeds are often used to make alcohol used in gasoline, however it creates a lot of toxic waste water in the process that is stored in large lagoons.

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Farmers use these toxic seeds to grow our food and 150 million acres are planted with these seeds every year. A lot of this toxic pesticide escapes to the environment poisoning wells, streams, and lakes.

This process has led to some towns being declared a super fund site.

From the article, "Let this sink in: the seeds used to grow our food have led to an entire town becoming a superfund site. The EPA is once again selling out consumers to protect special interests."

The recycling magazine Biocycle (April 2023), had a good article on micro-plastics that is contaminating our environment and causing many health problems.

For gardeners the micro plastics (MP's) can adhere to the surfaces of seeds and roots, and thus inhibit seed germination, root elongation, and absorption of water and nutrients, and ultimately inhibit plant growth. Which can lead to insect and disease issues.

These MP's especially nano-plastics can be absorbed by roots and then moved to stems, leaves, and fruits. When consumed they lead to animal and human health problems.

We have talked about this issue in the past and a major source is biosolids (sewage sludge), fertilizers made from biosolids and some low-quality composts that use a lot of food waste residuals.

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**A** new study of tree rings confirmed that the heat wave of 2021 that swept from parts of North America from British Columbia to Washington and Oregon was the worst in 1,000 years.

The tree rings also showed that the last 40 years are the hottest on record and 2021 the hottest year on record. It was even hotter than the Medieval Climate Anomaly during the years 1028-1307. Journal Climate and Atmospheric Science (2023).

**We** have often talked about the importance of the element magnesium (Mg) to plants, animals, and humans. A new study from the National Center for Epidemiology and Population Health of the Australian National University has found a relation to dementia which is the second leading cause of death in Australia and 7<sup>th</sup> worldwide.

They found a 41% increase in magnesium intake was found to help prevent age-related brain shrinkage.

Many foods from greens like spinach and most nuts are rich in this element which we discussed in detail during our study of the elements last year. However, if one eats conventionally grown food that was raised with glyphosate herbicides like Round-Up, it prevents the body from absorbing this essential nutrient.

Researchers at MIT university found that during the pandemic, the port cities that required ships to use biodiesel, which was made from genetically modified soy beans and had large amounts of glyphosate used on them, had greatly increased cases of COVID. Burning of the fuel aerosolized the glyphosate into the atmosphere where it

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could easily be absorbed in our lungs preventing the absorption of magnesium required by our immune systems to fight viruses.

**M**y wife and I have quit buying strawberries at the grocery store as they lack flavor and often have the consistency of cardboard. A 2023 study has found that two fungicides, boscalid (BOS) and difenoconazole (DIF) are part of the reason.

When treated with these chemicals the strawberries had a dramatic reduction in vitamin-C, there was a reduction in sugar and some of the remaining sugars were converted to acids. The oxidative damage to the berry also muted the scent, flavor, and aroma.

The other reason is in the selective breeding to develop larger and pest resistant strawberries has resulted in strawberries with less nutrients, texture, and flavor.

I look forward to my retirement home being finished and having a large vegetable garden where I can grow organic heirloom varieties of strawberries again.

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